

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: <u>Dabelstein Quarry</u>	
2. Proposers: <u>Roger Dabelstein</u>	3. RGU: <u>Winona County</u>
Contact Person <u>Geoffrey G Griffin – G-Cubed Inc.</u>	Contact Person <u>Jason Gilman, AICP</u>
and Title <u>PE, LS Consultant to the Owners</u>	and Title <u>Planning and Environmental Services Director</u>
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4. Reason for EAW Preparation:

EIS	Mandatory	Citizen	RGU	Proposer
Scoping	<u> </u> EAW	<u> </u> Petition	<u> </u> Discretion	<u> </u> Volunteered <u>X</u>

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

The owners of the proposed quarry have volunteered to prepare the EAW to assist the RGU in making a determination of potential significant environmental effects and in reviewing and assessing their application for a Conditional Use Permit, as required by Winona County Zoning Ordinance Section 9.10.

5. Project Location: County Winona City/Twp Saratoga Twp
Part of SW ¼ of SW ¼ Section 15, Part of SE ¼ of SE ¼ Section 16, Part of NE ¼ of NE ¼ Section 21 and Part of NW ¼ of NW ¼ of Section 22; ALL in Township 105 North, Range 10 West

GPS Coordinates: Dabelstein – N 43.890271° W 92.018877°

Tax Parcel Number Dabelstein - 14.000.1420, 14.000.1030, 14.000.0990, 14.000.1520

- The Dabelstein property – 213.1 acres - is owned by Roger Dabelstein, 13125 County Road 6, St. Charles Mn 55972. This proposed quarry is 36.5 acres in size.

Notes – acreages are from the Winona County GIS parcel ID's.

Figures attached to the EAW:

- Figure “General Site Location Map”
- Figure “United States Geological Survey Dabelstein Quarry Boundary”
- Figure “Hydrology Map”
- Figure “NHIS data”
- Figure “Environmental Benefits Index map”
- Figure “Land Cover Types”
- Figure “CWI Map”
- Figure “Utica Well Head Protection Map and Information”
- Figure “St.Charles Well Information”
- Figure “Protected Waters Map”
- Figure “Bedrock Geology”
- Figure “Depth to any Restrictive Layer”
- Figure “Karst Inventory Map”
- Figure “Soil Map”
- Figure “EPA National Clean Diesel Campaign (NCDC) Quantifier”
- Figure “State Historical Preservation Office Report”
- Figure “Custom Soil Resource Report Map – Crop Productivity Index”
- Figure “1940 & 1991 Aerial Maps “Figure “Archaeological Assessment “Figure “Draft Operation and Reclamation Plan for Dabelstein Quarry “Figure (ADD TEXT HERE FOR MAP OF REGIONAL SITES)
- Figure “Map of Proposed Silica Sand Mining Operations in Project Area”

6. Description:

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

The proposed Dabelstein Quarry is for the primary purpose of mining silica sand, in Saratoga Township, Winona County Minnesota. This EAW is a Volunteer submittal summarizing and informing the public of the owner's intent. Materials will be trucked to processing facilities via CSAH 6, 29 and Interstate 90 to Winona.

- 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.**

Proposed Project

The proposed project involves a silica sand mining operation in Saratoga Township in Winona County, Minnesota (Figure "Location Map"). The Project is located in an area that contains abundant, high quality silica sandstone resources which will be mined and transported to other transportation and/or processing facilities where it will ultimately be processed and shipped out of the state for final use. This project does not address final processing of the material as that will take place at offsite facilities. One such facility is currently located in Winona, MN with other facilities available in Wisconsin and Iowa. Processing facilities are not reviewed as part of this project.

Minnesota Sand, has a signed contract to operate the mine. They will be responsible for following all Local, State, and Federal Regulations. During the life of the mine the operation may change operators. This is noted because a Conditional Use Permit is issued to the property not the operator. If a new operator is to take over the mine, they will be responsible for following all regulations and conditions established in the CUP.

This mining operation is an interim use of the property, that is, the use will not continue indefinitely. The project is subject to the Winona County Zoning Ordinance as well as any other applicable County, State or Federal laws or regulations. Prior to any extraction of materials from the site, a Conditional Use Permit following the guidelines of Section 9.10 Extraction Pits/Land Alterations will need to be reviewed and approved on the County level. Additional information specific to the operation and reclamation of the site may be found in the attached Figure "Draft Operation and Reclamation Plan for Dabelstein Quarry".

Property and Project Site Information

The Dabelstein property encompasses 213.1 acres of agricultural land. The property consists of four parcels with unique parcel ID numbers as assigned by the Winona County Assessor's Office. The 36.5 acres proposed quarry site consists of tillable cropland on relatively level land and pasture land on the steeper slopes that have a sparse population of stubby cedar trees on the side slopes. There are no wetlands, water courses, major drainage systems or impounded waters within the limits of the proposed quarry.

The site is located in part of the Part of SW $\frac{1}{4}$ of SW $\frac{1}{4}$ Section 15, Part of SE $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 16, Part of NE $\frac{1}{4}$ of NE $\frac{1}{4}$ Section 21 and Part of NW $\frac{1}{4}$ of NW $\frac{1}{4}$ of Section 22, ALL in Saratoga Township, Winona County. The site is 2 miles west of the former unincorporated community of Clyde, 2.5 miles northeast of Troy, 2.5 miles east of Saratoga and 5 miles southeast of St. Charles. The property is surrounded by agricultural cropland and pasture lands similar to the land use of the site. County Road 6 runs along the south property line.

The closest residence is greater than 1000 feet from the quarry boundary. This rural residential parcel was split from the agricultural land and is designated as Agricultural/Resource Conservation. This parcel is not included in the project limits. There are no wells on the project property. There are no wells planned for this project.

Winona County shows the property is currently zoned Agricultural/ Resource Conservation. Mining operations are permitted in the Ag/RC zone when reviewed and approved as part of a Winona County Conditional Use Permit.

New Construction

New construction will be limited to berms, ditches, stockpiles, access roads and staging areas which all can be constructed from on-site materials and finished with topsoil that will be salvaged onsite. There will not be any permanent structures for storage of equipment or materials. Temporary structures may include scales, scale shack, screeners, crushers and portable bathroom facilities (port-a-potty). All operation management will be housed in off-site offices.

The access road within the property will be constructed to a width of 28 feet to support two-lane passage of haul trucks. The road bed will be constructed of materials from on-site and will be capped with a crushed aggregate driving course. Dust control will be applied as required.

Operations Methods - Mining Sequence

Mining will begin in the southwest quadrant of the quarry and work north to excavate the materials along the slope where the overburden is minimal. Subsequent phases will work easterly to the quarry limits. A maximum limit of 10 acres will be open (disturbed) at any one time. Excavation will not intercept the water table. There will be no dewatering at the site.

A new access to the site will be constructed from County Road 6. This access will eliminate the need for haul trucks to pass by the residence near the site and will require an access permit from Winona County.

Haul routes to and from the site will avoid residential streets. Plans are for access from County Road 6 to County Road 29 to Interstate 90 (exit #242). Once on Interstate 90, trucks may haul material east to existing washing and processing facilities in the City of Winona or States of Wisconsin or Iowa. Routes to Winona will exit I-90 at Exit 252 and follow MN TH 43 north into the City of Winona. Routes to Wisconsin processing facilities will follow Interstate 90. Routes to Iowa processing facilities will exit Interstate 90 at Exit 276 and travel southerly on US TH 61 to MN TH 16 to MN TH 26 into Iowa. The haul routes occurs along County, State and Federal highways designated as haul routes and do not affect primary residential streets. At the site, proper signage per MnDOT MUTCD shall be installed near accesses. This is to ensure only the approved access sites are utilized for ingress and egress.

Haul routes must be approved as part of the Winona County Zoning (Conditional Use) permitting process and are subject to public hearing. The development is proposing to generate a total of 600 truck trips per day (300 trucks in and 300 trucks out) and 14 employee trips per day (7 in and 7 out). This equates to 60 truck trips and 7 employee trips in the peak hours (30 trucks in and 30 trucks out ~ 7 employee trips in or out) Truck traffic is proposed to travel along CSAH 6 and CSAH 29 and enter and exit off of I-90 east of CSAH 29.

A Traffic Impact Study was prepared for this development by Spack Consulting. Spack Consulting is a traffic study company operated by Michael Spack. Michael Spack is a Professional Engineer registered in Minnesota and Wisconsin and is a Certified Professional

Traffic Operations Engineer. The purpose of the study was to determine if the proposed development will significantly impact the adjacent transportation system and to recommend mitigation measures. According to the study, all of the study intersections are forecasted to operate acceptably at Level of Service A with the additional truck traffic from the proposed quarries. Level of Service A represents light traffic flow (free flow conditions). No road segments are forecasted to reach capacity with the additional truck traffic.

Proposed mining and hauling may take place between 6 am and 10 pm CST. Permission from the County Zoning Administrator may be granted for operations beyond these hours to respond to public or private emergencies or whenever any reasonable or necessary repairs to equipment are required to be made. Mining can take place year round but hauling and excavation of materials are greatly affected when temperatures are below freezing. Hauling is further affected by spring road bans which are established by MnDOT.

As depicted in the DRAFT operation plan, trucks will enter the site and be stacked in the defined area. The trucks will be loaded using a front end loader and be immediately covered with a tarp system attached to the trucks. Dust suppression can be achieved by BMP's such as watering of drives, misting of sand stockpiles and dust suppression technologies.

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 24-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.

It is estimated that Blasting of 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. With the operator processing 2.9 million tons a year, blasting should occur once a year.

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.

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. Pasture mixes with a nursery crop of oats or rye are acceptable seed mixes.

5. Construct any temporary sedimentation basins and their outlets.
6. Construction 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. 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.
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 and stockpiled. Unsuitable limestone will be placed with overburden in stockpiles or in 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. The proposer has indicated that water for dust suppression will be supplied by tanker trucks.
10. Course 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 may be followed.
11. Fine 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 shall be followed.
12. Material is loaded into trucks and weighed for transport to an off-site transfer facility or processing facility. Winona County's silica sand mining application packet indicates a proposed requirement for regular reporting to the County Highway Department of all material weights leaving the property in order to account for road impacts.
13. Unsuitable sand, approximately 25% hauled to the off-site processing facility, is 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. Once covered with an average minimum of 6" of topsoil it shall be seeded and mulched to establish a vegetative cover. Winona County's Conditional Use Permitting process will require all exposed stockpiles to be treated to mitigate airborne erosion by either covering them or by regular watering/misting operations.
14. 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. Process reject material will be used in the reclamation process. If the reject material has come in contact with any chemical additives all regulations on testing will be followed prior to placing the material on-site.
15. The site will be seeded and stabilized through revegetation within 14 days of vacation of the area. A pasture mix with a nursery crop of oats or rye is acceptable seed mixes.

16. 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.
17. 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 Winona 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.

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

Reclamation

As defined in the Operation and Reclamation Plan, reclamation will take place in phases such that disturbed areas are limited to a maximum of 10 acres being open at any one time. After sand has been removed to the design elevation, overburden and unsuitable sands will be placed in lifts, leveled and compacted. Once this area has reached its final design elevation, an average minimum of 6" of topsoil from either stockpiles or ongoing stripping will be spread evenly on top. The reclaimed area will be seeded with a pasture grade grass mix.

Reclamation will be an ongoing process, occurring as each new phase is opened. Depending on the market for the material and potential expansions, the timeline for mining and reclaiming the site could be 5 to 20 years. If the site is dormant for an extended period of time, the operator is responsible for applying the requirements outlined by the Reclamation Plan for site stabilization. This requirement will be further stipulated in the Conditional Use Permitting process. A performance bond is required which may be drawn on if the operator does not produce.

Areas that have been reclaimed shall be inspected yearly with a report placed into the SWPPP documents. Reclaimed areas that are not stabilized to the conditions outlined in the plan will be addressed and reinspected until stabilization is complete. All parts of the mine are under a performance bond as required by Ordinance.

Final Use

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 Winona 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.

- 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.

The mined material is subject to taxes/fees which will provide a benefit to the State of Minnesota, Winona County and Saratoga Township. The mining will employ approximately 7 people plus truck drivers. Employment levels and hours of operation may be reduced during the winter as temperature and weather reduce productivity.

- 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.

“This development” in this question is being interpreted to mean the actual quarry or mine being proposed in this application. In this regard, the proposer has indicated that the areas shown are all that are available per the setback requirements and lease agreements.

Additional limestone and silica sand resources are on adjacent, contiguous properties and where the boundaries were delineated based on economic and environmental means of extraction of the desired mineral, if demand for silica sand remains high and extraction is economically and environmentally feasible, expansion of the site across property lines may be warranted, however, the timeline for expansion is unknown and unlikely for years to come. Any expansion would be subject to the Winona County Zoning Ordinance. A separate environmental review may be warranted when and if such a proposal were initiated.

We acknowledge that other developers are currently in the planning stages developing concepts for a future slurry injection facility within a close proximity of the quarry. According to public statements by the developer this slurry system would include a pipeline that would transport industrial silica sand to a processing and rail trans-load facility proposed on the east side of St. Charles MN. Depending upon approval and facility construction timing, the pipeline location and final design capacity sand from the Dabelstein quarry could utilize the slurry injection facility, pipeline and trans-load facility in the future. The slurry pipeline and St. Charles load-out would reduce truck traffic to a short haul from the quarry to the slurry station. However, this project has not been formally proposed at this time.

- 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.

7. Project Magnitude Data

Total Project Area (acres)	<u>213.1</u>	Area to be mined (acres)	<u>36.5</u>
	NA		NA
Number of Residential Units:		Maximum Units Per	
NA	Unattached	Attached	Building:
Commercial/Industrial/Institutional Building Area (gross floor space):		total square feet	
Indicate area of specific uses (in square feet):			
Office	<u>NA</u>	Manufacturing	<u>NA</u>
Retail	<u>NA</u>	Other Industrial	<u>(mining) 36.5 acres</u>
Warehouse	<u>NA</u>	Institutional	<u>NA</u>
Light Industrial	<u>NA</u>	Agricultural	<u>176.6 acres</u>
Other Commercial (specify)	Staging Area	A level area will be graded for stockpiles, truck loading areas, turn arounds and a scale. This area will vary in size from 40,000 sq ft to 160,000 sq ft but in all situations is temporary and will be reclaimed when mining is complete.	
Building height	<u>NA</u>	If over 2 stories, compare to heights of nearby buildings	

The operator, Minnesota Sand, has committed to processing 2 million tons of sand per year from the Winona County sand reserves. This equates to 300 trucks 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 process. Regardless of the location of the processing facility the total operation will be 2 million tons per year. As worst case calculation we assume that a cumulative 160 acres of mines will be approved within Winona County, each having 100 feet of average mining depth, a 20 year supply of sand would be available.

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 Minn. R. 4410.3100.

Unit of Government	Type of Application	Status
Winona County	Conditional Use Permit	To be applied for
Winona County	Driveway Access (change of use)	To be applied for
Winona County	Road Use Agreement	To be applied for
Minnesota Pollution Control Agency (MPCA)	Nonmetallic Mining and Associated Activities NPDES/SDS Permit	To be applied for

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.**

Pre-settlement vegetation documented by the MNDNR County Biological Survey maps from the 1846-1908 Public Land Survey with Pre-Settlement Vegetation indicated the Dabelstein site was prairie before the passage of the Homestead Act of 1862 where the majority of land in Winona County was plowed for agricultural production. The 1927 Atlas – Plat Book and Rural Directory of Winona County, Minnesota indicated Section 15, 16, 21 and 22 of Saratoga Township was divided between 40 - 160 acre parcels. Historical review of the 1940 and 1991 aerial photographs showed the Dabelstein site was in agricultural land use (See 1940 & 1991 Aerial Maps). Since the 1940s the site has been farmed for agricultural purposes.

The site is currently zoned Agricultural/ Resource Conservation. Current and recent land uses are/were agricultural in nature with row crop, farmsteads and pasture lands located within the property. These are the same uses as adjacent lands. The mining operations will be located within the crop land and pasture lands. Previous environmental impacts within the agricultural portion of the property would be due to the application of fertilizers and pesticides and any erosion that has occurred. There is no evidence to indicate that there are or have been environmental hazards due to this use attributable to the site.

The project is a temporary use, that is; it will not continue indefinitely. Once the mine site is reclaimed, the property will again be pasture or forest land. This project is compatible with adjacent and nearby land uses.

Winona County’s Comprehensive Plan’s Goals and Policies (p. 17, Development Goals and Policies) indicates the promotion of protection and preservation of agricultural lands by limiting non-agricultural development in agricultural areas. Although extraction of mineral resources has been a historic land use attributable to agricultural areas, industrial mining on a larger scale must be considered when altering land use patterns, specifically the removal of prime agricultural lands from crop production or pastures. While it is important to recognize that the proposed mining area is largely in crop production and a portion in brush/pasture, this will be an important consideration of post-mining reclamation.

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

Dabelstein	Before	After		Before	After
Types 1-8 wetlands	0	0	Farm sites/lawn	0	0
Wooded/forest	2.0	2.0	Impervious Surfaces	0	0
Brush/pasture land	25.5	46.5	Stormwater pond	0	0
Cropland	180.5	159.5	Other (Right of Way)	5.1	5.1
			TOTAL	213.1	213.1

If before and after totals are not equal, explain why.

Existing cover of the 36.5 acre quarry = 21.0 acres cropland and 15.5 acres of brush/pasture. Post mining, all 36.5 acres will be pasture.

All access roads are temporary and will be reclaimed. During the life of the mine, the Dabelstein access will add approximately 1.45 acres (2250 linear feet x 28' width) of impervious surface.

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 intensive cropped agricultural land that lies within the Money Creek subwatershed of the Root River basin. The closest protected water is Money Creek located 2.5 miles to the south (See Figure Hydrology Map).

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 at the site includes: whitetail deer, raccoons, skunks, wild turkeys, pheasants and a variety of other small birds and mammals.

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 restored back to existing conditions and used as a pasture. 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 impacts to wildlife during the construction and mining phases. Any wildlife present within the agricultural cropland of the site will be 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.

- b. Are any state (endangered or threatened) 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.

The 1997 Minnesota County Biological Survey of Natural Communities and Rare Species of Winona County indicated the mining site is located within an area ranked as having significant biodiversity. However, the Dabelstein Quarry is ranked as a “below” biodiversity significance because the area lacks occurrences of rare species and other natural features. Rare species are defined by the MN DNR generally as those species that are endangered, threatened, and of special concern as designated by MN Rules Chapter 6134.

In June 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. (See Figure “NHIS data”).

The following species were identified on the NHIS:

- 1) Vertebrate animal, the Loggerheaded Shrike (*Lanius ludovicianus*), a bird species listed as “threatened” was documented within Section 15 and 16 of Saratoga Township, in 1993, but the exact location of their last observation is unknown. The shrike favors shrub, scrub habitat for nesting. MN DNR has noted that the MN Natural Resource Heritage Information Database indicates that there are Loggerhead Shrike’s in the area and encourages Loggerhead Shrike habitat be considered in reclamation plans.
- 2) Vertebrate animal, Pickerel Frog (*Lithobates palustris*) (Section 3 and 10 of Saratoga Township) listed as a Species of Special Concern, from an observation in 2000. The Pickerel frog requires water resources which do not exist on-site.
- 3) Vascular plant, Long-bearded Hawkweed (*Hieracium longipilum*) (Section 12 and 13 of Saratoga Township) listed as tracked but has no legal status was documented within one mile of the Dabelstein Quarry. The recent inspection of the site (listed below) did not identify any obvious or suspected Long-bearded Hawkweed (*Hieracium longipilum*).

In November 2012 the U.S. Fish and Wildlife Service commented on the project noting the following currently Federally listed species found in Winona County:

- Eastern massasauga (Candidate) - rattlesnake
- Karner blue butterfly (Endangered) - butterfly
- Higgins eye pearl mussel (Endangered) – mussle (no water source onsite)
- Sheepnose (Endangered) - mussle (no water source onsite)

Data does not indicate any records of the above listed species within or adjacent to the project. If Federally listed species are identified at any point within or adjacent to the project sites, the U.S. Fish and Wildlife Services are to be consulted.

Another measure to determine if sensitive ecological resources are present includes the use of the Minnesota Board of Soil and Water Resources (BWSR) Environmental Benefits Index (EBI). The EBI is a statewide ecological ranking tool that helps to determine which lands are most valuable from a conservation perspective. The EBI database ranks the Dabelstein Quarry with an index of 81 to 190 on a scale of 300. The EBI considers soil erosion potential, water quality risks and habitat quality by ranking each factor on a scale from 0-100. Combining each factor generates a score from 0-300 that is then used to help prioritize and conserve land with the best conservation potential. In general lands ranked below a score of 200 have low to moderate conservation perspective. In our analysis EBI scores for the Dabelstein Quarry were ranked 81-190, low to moderate; the higher scores are assigned to the evergreen plantations that are now sparsely wooded pastures that will be mined (See Figure “EBI map”).

A field assessment of the site was conducted on September 12, 2012 by McGhie & Betts Environmental Services, Inc. professionals familiar with local ecological resources. The inspection and assessment was performed to further assess the vegetative communities present. They discovered two small isolated occurrences (<0.3 acres) of short grass prairie dominated by smooth brome grass with a few forb species remaining. The remainder of the Dabelstein Quarry has no areas supporting sand prairies or native plant communities and is dominated by row crop agriculture and smooth brome/bluegrass pastures that are sparsely wooded.. They identified seven distinct areas of vegetative communities as summarized below (See Figure “Land Cover Types”):

- 1) Pasture (4.7 acres) – smooth brome grass dominated by Kentucky blue grass with forbs

- 2) Pasture with Sparse Trees (2.6 acres) – smooth brome grass dominated by deciduous trees and shrubs
- 3) Pasture with Sparse Trees (4.4 acres) – smooth brome grass dominated by evergreen trees with native remnant plants
- 4) Evergreen Forest (1.8 acres) – evergreen trees dominate with smooth brome grass understory
- 5) Deciduous Forest (2.1 acres) – dominated by maple and box elder trees with smooth brome grass understory
- 6) Degraded Short Grass Prairie (0.2 acres) – little bluestem, smooth brome grass, side oats and forbs
- 7) Row Crop (22.3 acres) – planted corn in 2012

Based on our vegetative site evaluation the majority of the Dabelstein Quarry is farmed for row crop agriculture, consists of degraded pastures dominated by smooth brome grass and has woodland pastures on areas that were too steep to farm. Although we discovered two small areas with native remnant plant species there were no occurrences of state-listed (endangered, threatened or special concern) species identified at the time of the survey. The remaining remnant prairie plant communities will be mined.

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 20120383 Winona County Sand Pits) 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.

MN DNR has indicated an invasive species management plan be included in the operations and reclamation plans.

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 (PWI) number(s) if the water resources affected are on the PWI. _____

Describe alternatives considered and proposed mitigation measures to minimize impacts.

The closest protected water, Money Creek, is located 2.5 miles south of the Dabelstein Quarry. There are no designated trout streams within this subwatershed. Intermittent drainage ways leading from the toe of the slope on the sand ridge flows overland through 2.5 miles of sandy agricultural cropland, grassed waterways, drainage swales and road ditches before reaching Money Creek (See Figure “Hydrology Map”). Further downstream Money Creek drains into the Root River. On-site erosion control measures will be installed and maintained to prevent any sediments from reaching adjacent water courses or drainageways.

Since there are no 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 effect on surface water resources. Stream diversions, outfall structures, diking or impounding of surface water and dewatering will not occur.

Analysis of the Minnesota Department of Health County (MDH) Well Index (CWI) for nearby water well records and well logs indicated the groundwater is located at an elevation of 1,070 feet above mean sea level, 50 feet below the final mine elevation of 1,120 feet. (See Figure “CWI 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 September 11, 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 or streams and no manmade ponds or drainage ditches feeding to or flowing from the site, however, to the west of the proposed mining area there is an intermittent stream. The soils are rapidly permeable and recent studies completed on Wisconsin Discovery Farms in similar terrain of the Driftless area of Wisconsin show that on average only 8% of precipitation runs off the loess and residuum soils. This indicates the only source of runoff will occur during spring melt and during intense rainfall events on saturated ground (see” Precipitation-Runoff Relations and Water-Quality Characteristics at Edge-of-Field Stations, Discovery Farms and Pioneer Farm, Wisconsin, 2003–8 By Todd D. Stuntebeck, Matthew J. Komiskey, Marie C. Pepler, David W. Owens, and Dennis R. Frame)

To protect surface and subsurface water quality during rain events construction of temporary sediment trapping infiltration basins will be constructed as berms and swales. The berms will direct any Stormwater flow during the intense melt and rain events and the swales will trap sediment and allow for the rapid infiltration of the Stormwater. In order to avoid any unnecessary sinkhole risks permanent ponds will not be employed because ponds may create permanent soil saturation that can mobilize sand particles to flow into any voids in the underlying Shakopee formation karst.

Excavation will remove sand that is currently filtering water from the surface. The Dabelstein site will maintain a minimum of 5 feet of sand above the estimated top of the Shakopee dolomite (estimated elevation 1115) so the mined area will continue to provide water filtration. 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. 3 feet of separation from seasonally saturated soils or from bedrock is the standard also established by the Minnesota Pollution Control Agency in reference to design of Infiltration/Filtration basins required under the NPDES permit program (Permit No: MN R100001). Neither standard has additional criteria pertaining to working in Karst areas.

Once mining and restoration is completed the entire mined area will still have 5 feet or more of sand, a thin veneer of topsoil for rooting and maintenance of perennial grassy vegetation and the area where the mining meets the un-mined slopes will expose a small area of sand as a natural looking sandstone bluff with a near vertical (70-80% slope).

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 the standard stormwater pollution control measures will be required for all site operations.

Nearby water wells are not expected to be at risk from excessive water usage operations due to the fact that the proposer has not proposed water withdrawal or water appropriation needs for the mine, therefore there are no expected 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 a sand filter below the depth to be mined and that undisturbed sand will continue to provide a filter for suspended solids migrating into the underlying Prairie du Chein/Jordan aquifer. Additional mitigation measures will be considered for well interference due to vibration from blasting and operations.

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 potentially reducing the amounts of fertilizers and pesticides that can leach into the underlying aquifers. The mine will also divert Stormwater laden with ag-chemicals away from the mine allowing any farm chemicals to naturally infiltrate into existing down gradient waterways, in the same fashion that currently exists.

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. Small leaks and spills of petroleum related materials on the soil surface provides for a period of sequestration and an opportunity for bioremediation that will not be reproduced atop the bedrock sands of the St. Peter sandstone. Sand filtration for most materials but suspended solids will be ineffective due to the lack of a biological load which provides a biomat in sand filters that slows infiltration and supports bacteria which can consume some contaminants. The contamination risk from hydraulic fluid could be mitigated by requiring biodegradable based fluids where these fluids meet equipment operating specifications. Fueling spills and leaks could be mitigated by conducting all operations on undisturbed soils where the conditions found in farming are reproduced. The operation will also utilize the wetting of the working face for dust control that may also contribute to the mobilization of spilled contaminants.

In order to assist neighbors in ensuring water safety, Winona County may recommend a provisions as part of the Conditional Use Permitting process for testing for Diesel Range Organics (DRO) and potentially Gas Range Organics (GRO); however this would only be performed in down-gradient older well construction where the well borehole is open to the Shakopee Formation. As DRO/GRO are lighter than water their presence would occur atop the water table therefore sampling points would need to open to the Shakopee to be able to detect impacts from the operation. The water wells cased and grouted into the Jordan or Oneota Formations would not be able to impacted or detect contamination.

Because the mine will continue to filter suspended solids and will reduce the use of nitrogen fertilizers and pesticides while using the same fuels and lubricants as farming the County mandate to monitor wells in close proximity to the mine cannot be used to differentiate water quality impacts from mining versus farming, therefore the application proposes to conduct only a standard Nitrate and bacteria test for nearby wells with one sample before mining exits and one

sample per year until the mine is restored. Impacts that are proven to occur from mining, as opposed to farming or any additional action not related to the mine, will be mitigated by the mine operator.

Limits and controls for diesel fuels, lubricants and hydraulic fluids shall be in conformance with Minn R. ch. 7060. Monitoring of groundwater in and around the proposed mining sites is recommended in order to monitor and mitigate potential spills and to identify and mitigate increases in the levels of minerals such as manganese and iron from acidic groundwater conditions resulting from mining. (See MPCA letter, rc'd 11/19/12).

Mine excavation, grading and construction activities during reclamation will be completed in accordance with the Winona County Zoning Ordinance Section 9.10.4 Reclamation Standards 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 required to protect surface water.

Near the completion of mining, any sandstone slopes that are to remain exposed will be shaped to not exceed 1 foot horizontal to 2 feet vertical. Areas where overburden has been placed shall not exceed 4 foot horizontal to 1 foot vertical. The leveled area will vary in slope from 0.5% to 2% and may be terraced to balance the final reclamation process. Completed reclaimed areas will be shaped to blend into the character of the surrounding landscape.

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 subsoil, 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 Winona 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

The project will not connect to any public water supply or drill wells for material processing. Water suppression for dust control will come from tanker trucks according to the proposer.

Water used for misting and erosion control will be received from existing off-site 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.

Note: The slurry system is not proposed to be located on this site, nor will any of the slurry processes. Any portion of the process from the slurry system, including water, will come from another source not related to this site. The only impact the slurry would have on this site would be shorter hauling distance.

Additionally, the quarry boundary is outside the Utica Well Head Project zone (see Figure “Utica Well Head Protection Map and Information”). Wells serving the City of St.Charles do not have a mapped protection zone (see Figure “St.Charles Well Head Protection Information”). Both aquifers serving the public wells have high sensitivity to contamination because of local geological settings (karst topography). 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 some filtration and protection from direct connections to potential karst features.

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.

14. **Water-related land use management districts. 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.

Winona County GIS shows that portions of the major drainage ways through the property are defined as X500 on their Floodplain maps. This is confirmed by the FEMA FIRM Map Community Number 270525 Panel Number 0150 C. This designation is attributed to a 500 year storm event meaning the drainage way would be inundated during such an event. The quarry is not within this area nor does the access road create an impact. The X500 designation does not pose a water-related concern that will not be addressed using Best Management Practices.

There are no shoreland zoning districts, delineated 100 yr flood plains or state or federally designated wild or scenic river land use districts.

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.

Not Applicable

16. Erosion and Sedimentation. Give the acreage to be graded or excavated and the cubic yards of soil to be	36.5 Quarry	Acres	4.7 million	Cubic yards.
moved:	3.8 Access Road	Acres	9200	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.

Chapter 9.15 of the Winona County Zoning Ordinance outlines the requirements for Soil Erosion and Sediment Control for the proposed Project. A conservation plan will be developed with the Winona County Soil and Water Conservation District which will adopt “Best Management Practices” to minimize soil erosion.

Currently the site is a mix of crop land and pasture with some trees. According to the Natural Resource Conservation Services Soil Survey for Winona County, there are four predominant soil types within the quarry boundary. Port Byron silt loam (with slopes ranging from 3 to 12 percent) and Frankville silt loam (with slopes ranging from 2 to 12 percent) are located at the top of the knob with the Port Byron in pasture and Frankville currently in crop production. Sogn silt loam (with slopes ranging from 6 to 30 percent) and Bellechester-Brodale complex, rocky (with slopes ranging from 15 to 60 percent) are the steep slopes that are pasture lands. 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.

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. Stockpiles will be required to be covered or regularly watered to prevent airborne erosion.

According to the proposer, dust suppression misting systems to be implemented at the site will cause the dust particles to settle out of the air and 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.

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 330 (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 sand.

The site will operate under a Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) permit which will require a Stormwater Pollution Prevention Plan (SWPPP). This SWPPP is part of the Operation and Reclamation plan. The focus of the SWPPP is to eliminate or minimize stormwater 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 stormwater to internally low areas on the site. Structured entrances or tire washes will be used at the site to control tracking onto adjacent roadways.

Reclamation will be ongoing once the process begins, thereby limiting the number of open acres at any given time to a maximum of 10 acres.

The length and surfacing of the access road should limit the tracking of soils onto County Road 6. If tracking occurs, the operator will sweep County Road 6 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. Structured entrances or tire washes will be used at the site to control tracking onto adjacent roadways.

Near the completion of mining, any sandstone slopes that are to remain exposed will be shaped to not exceed 1 foot horizontal to 2 feet vertical. Areas where overburden has been placed shall not exceed 4 foot horizontal to 1 foot vertical. The leveled area will vary in slope from 0.5% to 2% 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. 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 storm-water pollution prevention plans.**

Existing soil conditions across the site consist of the Port Byron, Frankville and Lindstrom silt loams which are classified as well-drained to excessively well-drained. These soils rapidly infiltrate water, leaving little to no standing water at the surface. According to the Winona County Soil Survey these soils have properties that allow water to transmit the most limiting layer in the soil profile at rates up to 1.98 in/hr. In isolated areas the Bellechester-Broadale complex found on the backslope of the hillside is considered excessively drained with capacity to transmit water through the most limiting layer at rates of 5.95 in/hr to 19.98 in/hr.

Chapter 9.15 of the Winona County Zoning Ordinance outlines the requirements for Soil Erosion and Sediment Control for the proposed Project. During mining, BMP's such as silt fence, diversion berms and swales and temporary sedimentation basins will be designed and installed to collect and treat runoff from the disturbed areas during rainfall events. All runoff from the site is to be routed to the temporary sedimentation/infiltration basins through the construction of the berms and swales. Periodically the sedimentation basins shall be excavated, and the fines used in the reclamation efforts of the project. Surface water originating outside the site may be diverted around the mining operation, to eliminate any degradation of water quality, as long as it doesn't negatively affect the adjoining properties. These installations will ensure that water runoff does not cause any flooding, erosion, or deposition of sediment on adjoining properties. Proper engineering standards will need to be employed to assure sufficient cover during these excavations to avoid sinkhole formation risk. Sediment must be removed from the basin when the sediment has filled 50% of the sedimentation basin's capacity. A stormwater pollution prevention plan will be required in order to address the realm of mitigation measures needed.

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. Mining will eliminate the use of fertilizer and chemicals on the site.

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 that infiltrates. Since the reclamation area will be pasture versus row crop, the quality of runoff will also be improved. 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 impervious surfacing so no permanent treatment controls are required nor warranted.

The stormwater pollution prevention plan must address the erosion potential of the loess soils that compose the ridge top areas of Winona County and address excavation and final reclaimed slopes of up to 4:1 as these slopes will have an erosion potential that needs to be addressed.

- 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.**

The project site is currently located in the upland portion of the Money Creek subwatershed and is surrounded by intensively cropped agricultural land that is rapidly permeable and does not require drain tile. The closest intermittent drainage way is located just west of the Dabelstein Quarry which flows 1.6 miles to the nearest perennial stream, or 2.5 miles to a designated protected water, Money Creek (See Figure “Hydrology map and Protected Waters Map”).

Due to the site’s rapid soil infiltrating capacity (described above) and the distance to receiving waters the impact of stormwater runoff and infiltration from the site will be negligible. Any runoff that is produced on-site will be protected by erosion control measures described in Item #12.

18. Water Quality – Wastewater.

- 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 Dabelstein Quarry.

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: existing conditions:** 150 – 190 ft; minimum 150 ft; average 170 ft; **Final conditions 85-90 feet to bedrock:** exposed at surface to over- 6.6 ft; minimum 0 ft; 2.5 ft (above elevation 1,240 ft), more than 6.6 feet (below elevation 1,240 ft) 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 exposed bedrock geology of the site is of Middle Ordovician age where the Platteville and Glenwood Formations are the first encountered bedrock and underlain by St. Peter Sandstone that will be mined for silica sand. (See Figure “Bedrock Geology”). The Winona County Soil Survey indicates bedrock is shallow and is found only 1 to 6.6 feet below the ground surface and the thin soils adequately expose the bedrock to reveal the stratigraphy (See Figure “Depth to any Restrictive Layer”). The St. Peter Sandstone that ranges from 90 to 100 feet thick.

The mining footprint of the site is underlain by bedrock of the Platteville Limestone, Glenwood Shale at the top of the ridge above elevation 1,240 and is underlain by the St. Peter Sandstone that will be mined for silica sand. The St. Peter Sandstone ranges from 90 to 100 feet thick.

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.

No karst features, sinkholes or caves are known to exist on the site and there are no mapped sinkholes in the immediate vicinity of the property however, the absence of sinkholes does not mean karst conditions are not present at the mine site, approximately 2,000 feet to the south west a small cluster of sinkholes do exist. The presence of well construction completed in the Shakopee and Oneota Formations is evidence that well developed karst conditions are present. The reference that the top 70-80 feet of the St. Peter is not prone to sinkholes only reflects that sinkholes form only in carbonate rock formations. The presence of a sinkhole where a clastic rock is at first bedrock is termed a collapse sinkhole where the rock underlying the clastic rock dissolves to the point that the overlying weight of rock collapses into the void in the carbonate formation. As the thickness of overlying rock increases, the ability of the clastic formation to withstand the forces of gravity also increases. It is also possible for material from the clastic formation to fill the void but the effects are not visible at the surface. The sinkhole probability as defined by the Minnesota Geological Survey County Geological Atlas shows the Dabelstein site is within an area above an approximate elevation of 1,145 feet where the site is classified as low to moderate probability for karst features, while below an approximate elevation of 1,115 feet the site is classified as moderate to high (Figure “Karst Inventory Map”). The low to moderate

classification means only widely scattered individual sinkholes or isolated cluster of 2 to 3 sinkholes occur where the average sinkhole density is less than one sinkhole per square mile. The moderate to high classification means diffuse clusters of three or more sinkholes occur with an average sinkhole density of one per square mile.

The final mining grade will extend at a maximum depth of 1,120 feet. Based on the geologic assessment of nearby water well logs the bottom of the quarry will be approximately 6 feet into the Shakopee Formation of the Prairie du Chien Group where sinkhole risks will be present. The mining will cause the area to be classified as a moderate to high sinkhole risk.

Sinkholes formation can be most easily avoided by preventing the concentration of water in ponds. If sinkholes do occur the sinkholes can be mitigated by bridging or filling in accordance with Best Management Practices that are widely accepted in the areas where sinkholes do occur.

Static water levels in the immediate vicinity have been recorded from County Well Index data at an elevation of approximately a range of 1,070-1,080 feet in the vicinity of the site, at least 50 feet below the proposed base of the mining excavation.

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. 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.

An evaluation of topsoil adequacy and appropriate seed mixes given topsoil availability shall be required as part of the reclamation plan.

According to a letter received from the Winona County SWCD Director, according to the geologic atlas for Winona County, the current rating for susceptibility of the groundwater system to pollution is moderate. The rating for post mining conditions must be evaluated.

- b. Describe the soils on the site, giving Natural Resources Conservation Service classifications, if known. Discuss soil texture and potential for ground-water contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.**

The Natural Resource Conservation Service online Web Soil Survey maps fourteen different soil types on the site. The site belongs to the Mt. Carroll-Port Byron-Lindstrom Associations. The Mt. Carroll-Port Byron-Lindstrom Association is defined as very deep, nearly level to steep, well-drained and moderately well drained soils derived from loess located on uplands. The table below provides an index of the soils identified on the property and denotes if the soils are highly erodible, hydric or floodplain soils, the Crop Equivalency Rating for each soil, and the slopes on which they are found (See Figure “Soil Map”).

Soil #	Soil Name	Slope	Hydric	Floodplain	CER	HEL
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		%				
11D	Sogn silt loam	1-6	N	N	6	HEL
1954C	Spinks loamy fine sand, bedrock substratum	6-15	N	N	39	PHEL
285B	Port Byron silt loam	3-6	N	N	98	NHEL
301A	Lindstrom silt loam	1-3	N	N	99	NHEL
301C	Lindstrom silt loam	6-12	N	N	92	PHEL
301D	Lindstrom silt loam	12-20	N	N	73	HEL
476C	Frankville silt loam	6-12	N	N	55	HEL
476D	Frankville silt loam	12-18	N	N	43	HEL
484D	Eyota fine sandy loam	12-20	N	N	59	HEL
898F	Bellechester-Broadale complex, rocky	15-60	N	N	3	HEL

HEL – Highly Erodible Land; NHEL – Not Highly Erodible Land; PHEL – Potentially Highly Erodible Land; Hydric – Yes=listed on the Hydric Soils In Winona County, Minnesota, 1994, No=Not Listed; CER – Crop Equivalency Rating; Slope – in percent

According to the Winona 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 0.41 in/hr on the lower end to 0.57 in/hr to 1.98 in/hr on the higher end. In isolated areas across the Dabelstein Quarry the Spinks loamy fine sand, bedrock substratum found on the shoulder and backslope of the hillside has the capacity to transmit water at rates of 1.98 in/hr to 5.95 in/hr. Whereas the Bellechester-Broadale complex found on the backslope of the hillside is considered excessively drained with capacity to transmit water through the most limiting layer at rates of 5.95 in/hr to 19.98 in/hr and the. As a result the potential for groundwater contamination from chemical inputs under these conditions is high due to the rapid infiltration capacities of the soil.

Excavation will require the use of heavy equipment and truck hauling along with the use of fuels, lubricants and hydraulic fluids. Mobile transport venders will be used to replenish and maintain heavy equipment and trucks.

In the event that a spill does occur mitigation measures including spill containment and emergency preparedness materials such as absorbent materials and pads will be keep on-site during construction and mining operations.

The reclamation plan is recommended to be prepared by a qualified scientist or soil technician.

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.

During mining activities land and brush clearing is anticipated. Wood will be used for firewood or chipped for use on site and brush may be burned on site after receipt of a burning permit from the MN DNR. No buildings are present on the site, 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 Dabelstein Quarry and utilized for dust control mitigation measures.

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.

- 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 ground water. 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:

- 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 shall 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.

- 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.

The project will not involve the installation of any above or below ground tanks to store petroleum products or other materials.

21. Traffic. Parking spaces added:	<u>8</u>	Existing spaces (if project involves expansion):	<u>0</u>
Estimated total average daily traffic generated:	600 Truck Trips (300 in and 300 out) 14 cars (7 in and 7 out)		
Estimated maximum peak hour traffic generated and time of occurrence:	67 (30 in and 30 out) (7 in or out)		

The development is proposing to generate a total of 600 truck trips per day (300 trucks in and 300 trucks out) and 14 employee trips per day (7 in and 7 out). This equates to 60 truck trips and 7 employee trips in the peak hours (30 trucks in and 30 trucks out ~ 7 employee trips in or out) Truck traffic is proposed to travel along CSAH 6 and CSAH 29 and enter and exit off of I-90 east of CSAH 29.

A Traffic Impact Study was prepared for this development by Spack Consulting. Spack Consulting is a traffic study company operated by Michael Spack. Michael Spack is a Professional Engineer registered in Minnesota and Wisconsin and is a Certified Professional Traffic Operations Engineer. The purpose of the study was to determine if the proposed development will significantly impact the adjacent transportation system and to recommend mitigation measures if necessary. The Traffic Impact Study took into account traffic volumes of a proposed quarry within the vicinity of the Dabelstein Quarry and the respective haul routes for each quarry. The scope of the report was outlined by the Winona County Highway Engineer prior to commencement of the study.

The objectives of the study were:

- i. Document how the adjacent existing public transportation system operates.
- ii. Analyze how the adjacent public transportation system will operate in 2012 with the full operation of the quarry and a nearby quarry.
- iii. Recommend improvements (if needed) to ensure traffic on the public infrastructure within the study area will operate acceptably in 2012 with full operation of the quarry and a near by quarry.

The scope of this traffic study was developed in coordination with the Winona County Engineer. The following intersections were analyzed for capacity and sight distance:

- i. CSAH 6 & CSAH 35/CR 113
- ii. CSAH 6 & CSAH 33
- iii. CSAH 6 & CSAH 29
- iv. CSAH 29 & CR 109 (Southern Side)
- v. CSAH 29 & CR 109 (Northern Side)
- vi. CSAH 29 & South I-90 Ramp
- vii. CSAH 29 & North I-90 Ramp
- viii. CSAH 6 & Dabelstein Mine Driveway
- ix. CSAH 35 & Dabelstein Mine Driveway

In Summary all of the study intersections are forecasted to operate acceptably at Level of Service A with the additional truck traffic from the proposed quarries. Level of Service A represents

light traffic flow (free flow conditions), however, MN DOT has acknowledged the fact that the proposed vehicles have a slow acceleration rate and a gap analysis should be conducted to address potential safety concerns. No road segments are forecasted to reach capacity with the additional truck traffic. It was found the sight distance on CSAH 29 surrounding the I-90 ramps is deficient for the 55 mph speed limit (no signs are posted, so the speed limit is 55 mph by State Statute). The sight distance at the interchange meets the requirements for a 45 mph speed limit. To be in compliance with MnDOT sight distance standards, it is recommended CSAH 29 at the I-90 interchange be analyzed further by MnDOT and Winona County to determine if lowering the speed limit to 45 mph is appropriate. No modifications to the existing public transportation system will be needed to accommodate the proposed quarry trucks.

An analysis of staggering truck activity to specific time intervals has been suggested by MN DNR to minimize impacts on County and City roads and school bus schedules.

MNDOT has acknowledged potential safety concerns related to the proposed volume of trucking (1 truck every 1.6 minutes) due to the slow acceleration rates of heavy vehicles.

While the TIS from the Dabelstein and Yoder Quarries identified up to 1200 trips per day, the mine operator, Minnesota Sand, has committed to limiting the maximum number of trucks to 300 per day (600 trips). Currently trucks are earmarked for processing facilities in the vicinity of the City of Winona but may be routed to processing and shipping facilities in Wisconsin, Iowa or elsewhere in Minnesota. If a new processing and/or shipping facility is proposed and material from the Yoder and Dabelstein quarries are the chosen source, those proposals will need to address haul routes and traffic impacts.

The active processing and shipping facilities identified to handle 300 trucks per day in the vicinity of the City of Winona are:

- Up to 100 trucks per day will be directed to an existing facility located at 2121 Goodview Road in Goodview Mn. The route from I-90 is proposed along MN 43 to US 61/14, turning left on US 14 thence right on Old Goodview Road to the facility. At this location the sand will be washed, loaded and trucked to a rail loading facility east of 70 Gould Street.
- Up to 200 trucks per day will be directed to an existing facility located at 6930 West 5th Street in Minnesota City. The route from I-90 is also proposed along MN 43 to US 61, turning right on 6th Street (Old Hwy 61) thence left to the facility. At this location the sand will be washed, loaded and trucked southeast on 5th Street (Theurer Blvd) to Riverview Road to a rail loading facility at 370 West Second Street.

Material processed at the above facilities is currently coming from outside Winona County, primarily from Wisconsin. Sand from the Yoder and Dabelstein quarries will replace these sources.

Trucks will be covered which will help minimize potential for release of particulates from the load.

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 air emissions generated by this project will consist primarily from emissions from

mobile sources including heavy equipment at the mine 2 backhoes, 2 loaders, 2 off-road trucks, 2 elevators and a power screen and 40 ton over-the-road trucks. The mining equipment will be confined to a 10 acre working/staging area that will migrate across the Dabelstein site as the mining progresses. The over-the-road trucks will circulate between the loading at the mine site and the load-out in Winona.

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 16 hour day 600 trucks/day haul vehicles will pass by any particular point on the haul route at a rate of 38 trucks/hour. Based upon the EPA’s online Diesel Emission Quantifier (DEQ) we have modeled and quantified the annual diesel emissions from the Dabelstein quarry for 600 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.

No detail is available on the potential for fugitive dust and ambient air changes associated with projected haul routes and dust from vehicles. MN Statutes require heavy vehicles to secure loads and Winona County will require vehicles be covered and cleaned satisfactorily to avoid accumulation of tracked material onto public roadways.

The Minnesota Department of Health has cautioned on the health risks associated with silica dust but has acknowledged that no data is available on ambient air conditions having possible lower concentrations of silica dust, noting it is the subject of on-going research. (See MDH Publication “Frac Sand Mining in Minnesota, September, 2012).

Annual Vehicle-related Air Emissions from the Dabelstein Quarry (600 trucks/day)

Pollutant	NO_x	PM_{2.5}	HC	CO	CO₂
Emissions (short tons/yr)	16.8	0.16	0.4	2.2	5,838.6

Note: Results are based on 526,000 gallons of diesel fuel per year.

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”

There are no known air quality issues existing 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), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.**

All mine equipment will be mobile and will move as the working face migrates across the mine site. The mine equipment will be placed across a 10-acre area.

Silica sand excavated out of the mine is not easily airborne due to moisture content and the round sand grains are not easily suspended in the air for prolonged periods according to occupational health information related to sand blasting and like occupations. However, blasting, crushing and screening may induce airborne particulate which will have to be mitigated by BMP's, watering and other methods. 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.

It is estimated that Blasting will occur as needed in 10 acre phases. Once the area is blasted the material will be excavated and sent through a crushing and screening process which will sort the material according to size. A 10 acre phase will produce an average of 2.4 million tons of material. With the operator processing 2 million tons a year, blasting should on average occur once a year. The operator will retain professional and licensed blasting contractors who will 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 24-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.

There will not be any boilers or stationary engine installations.

In describing the impact of proposed operations on air quality, the RGU can refer to several

sources of recommendation.

MN DNR recommends air monitoring both upwind and downwind of the site for both PM 4 and PM 10 silica particles, along the project perimeter.

The quarry will be required to adhere to Occupational Health and Safety standards for exposures for mine workers. The impacts of lower concentrations of dust off-site are unknown according to MDH and are the subject of ongoing research. A Health Impact Analysis is a suggested method of risk evaluation by the Minnesota Department of Health.

The “Silica Sand Mining in Wisconsin” report of the Wisconsin DNR, January 2012, acknowledges that “any facility that operates a crusher unit is subject to New Source Performance Standards (NSPS), Wisconsin Administrative Code requirement subjecting these units to a limitation of no greater than 15% opacity (emissions)”. The report goes on to state that most crushers do not utilize any capture system for operational emissions and is considered a source of fugitive emissions. A fugitive dust management plan must address fugitive emissions from sources such as crushing, screening and blasting. This report also addresses screening, noting “air pollution from this activity includes particulate, stacked, and/or fugitive emissions”. The report notes that resulting particulate from screening is typically controlled by use of a cyclone or baghouse or when operations are conducted within a building.

A report on Carcinogens by the National Toxicology Program, Department of Health and Human Services from 2011 indicates, in some instances, where “grinding” of sand is required, it increases the levels of dust containing respirable crystalline silica. The same report notes that residents near quarries and sand and gravel operations potentially are exposed to respirable crystalline silica, a statement confirmed by a MDH official at a public forum held at the Winona Middle School in 2012.

Air Control Techniques, P.C., a consultant being employed by EOG Resources in Wisconsin, released a report dated October 24, 2012, which states, that the crystalline silica that should be controlled, in contrast to the low levels of crystalline silica concentrations all around us in the environment, are the high exposures (above OSHA 100 ug/m³ permissible exposure level) being reported in certain inadequately controlled workplaces and they recommend that industrial sources and regulatory agencies conduct limited ambient air sampling programs to better characterize the ambient PM₄ crystalline silica concentrations.

Stockpiles may also be a source of fugitive dust particulate and must be managed to prevent airborne erosion as they may dry out in the open environment and are subject to activities that may promote dust such as moving material with front end loaders or conveyors.

- 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. The proposer does not anticipate odors will occur during mining or post construction other than vehicle exhaust during heavy commute times.

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 breaking while hauling.

Back-up beepers will be utilized on all equipment in accordance with MNOSH Rules.

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 the Winona Zoning Code and 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 24-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/or chloride applications to graded areas, the mined material before crushing and screening,

stockpiles and haul roads. Wet suppression frequency will be identified in the operations plan and adhered to through project management. 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 less than 10-acres. 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 will 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 will have cabs with filtration systems to protect workers. Water will be employed on travel surfaces.
- Processing areas: Crushers and screens will employ wet suppression for dust at transfer points.
- Private haul roads: The roads will be constructed of crushed limestone aggregate and recycled bituminous. The driving surface will be treated with chloride and water to control dust. There is no hauling on crushed rock public roads and dust suppression will not be used on paved surfaces. 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 in addition to structured entrances or tire washes

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

- a. Archaeological, historical, or architectural resources? Yes No
- b. Prime or unique farmlands or land within an agricultural preserve? Yes No
- c. Designated parks, recreation areas, or trails? Yes No
- d. Scenic views and vistas? Yes No
- e. Other unique resources? Yes No

If yes, describe the resource and identify any project-related impacts on the resources. 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 Port Byron Silt loams which have CER ratings ranging from 91 to 98. The disturbance of these areas is not avoidable. The largest impact of removing these areas from cropland will be on the property owner who is the Project proposer. Figure - “Custom Soil Resource Report Map – Crop Productivity Index”.

A search of the Winona County GIS maps (powered by GeoCortex) did not show any designated parks, recreation areas or lands affected by County Bluffs or Mississippi River Bluffs.

An archaeological assessment of the site was performed by Summit Envirosolutions and is attached for reference (Figure Archaeological Assessment). Summit Envirosolutions is an environmental consulting firm that provides specialized service in cultural resource management and environmental assessment and remediation. Summit has completed a formal Phase IA survey of archaeological resources for the Project: Laurie Ollila, Principle Investigator for Summit conducted literature and archival research in September 2012 and Garrett Knudsen, Principal Investigator for Summit, conducted a field assessment on September 20th, 2012. Their work did not find any evidence of cultural resources within the area of potential effect (APE). No burial sites or other evidence of prehistoric land use was identified with the project APE. No artifacts of cultural debris were identified during the survey.

Although there are no identified scenic views or vistas, the site is visible from adjacent roadways and properties.

Minnesota Historical Society has concurred with recommendations of the assessment prepared by Summit Envirosolutions on a phase 1 assessment in the proximity to the identified farmstead, but notes the Summit Assessment does not address requirements of Section 106 of NHPA of 1966.

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 6:00 AM to 10:00 PM and lighting will only be utilized when 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. No stationary sources or fixed exhaust stacks are anticipated which would create additional visual impacts. The site is located in a rural area and there are few residences that would be visually impacted by the mining and quarrying operation.

Stockpile areas shall be placed within the mining limits will 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.

Due to visibility from surrounding roadways and properties, it is expected that current viewsheds will be affected by mining operations.

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.

Winona County has land use and zoning authority in the Project area. The property is subject to the Winona County Comprehensive Plan (2000). The property is zoned Agricultural/ Resource Conservation as defined in the Winona County Zoning Ordinance. Mining operations are permitted in this zone when reviewed and approved as part of a Conditional Use Permit (CUP). CUPs requirements are outlined in Chapter 6.10 of the Winona County Zoning Ordinance. Extraction Pits/Land Alterations are outlined in Winona County Zoning Ordinance Chapter 9.10 and includes the requirement of a mandatory Operations and Reclamation Plan (attached) for all new quarries. The objective of this section of the ordinance is to control alterations to land surfaces, minimize soil erosion and land scarring, to monitor the consumption of natural resources and minimize its impact on the adjacent lands and persons residing in the area. The project will also be subject to any other applicable County, State or Federal Laws and Regulations.

Winona County's Comprehensive Plan's Goals and Policies (p. 17, Development Goals and Policies) indicates the promotion of protection and preservation of agricultural lands by limiting non-agricultural development in agricultural areas. Extraction of mineral resources has been a historic land use attributable to agricultural areas and therefore mining is consistent with the Winona County Comprehensive Plan recommendations in agricultural areas, however, industrial mining on a broader scale must be considered when altering land use patterns, specifically the removal of prime agricultural lands from crop production or pastures. While it is important to recognize that the proposed mining area is largely in crop production and a portion in brush/pasture, this will be an important consideration of post-mining reclamation.

- 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. The impacts to public roadways are identified in item 21. Any maintenance or upgrades to the haul route would be addressed in a roadway agreement with Winona County.

Further processing of the sand at off-site facilities may have an impact on public facilities. Those impacts are outside the realm of this EAW.

The "Silica Sand Mining in Wisconsin" report of the Wisconsin DNR, January 2012, acknowledges that "vehicular traffic on local roads will have an impact on the service life and condition of the roads and that the degree of road deterioration will depend on the amount of traffic, the type of vehicles and the design of the road." Winona County anticipates the use of a road impact exaction, required as part of the conditional use permit process for County Highways in order to address this impact.

The proposed quarry operations anticipate up to 600 truck trips per day (300 out and 300 in). The impact on County Highways is being mitigated by proposed requirements for a road impact

agreement requiring an exaction for road impacts.

Additional impact on public services is due to required staff time in EAW and permitting review and projected administration of permits.

29. **Cumulative potential effects.** Minn. R. 4410.1700, subp. 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 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
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, Minnesota Sand, has committed to processing 2 million tons of sand per year from the Winona County sand reserves. This equates to 300 trucks 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 2 million tons per year.

As worst case calculation the proposer has assumed that a cumulative 160 acres of mines will be approved within Winona County, each having 100 feet of average mining depth, a 20 year supply of sand would be available.

As identified in item 6d, there are other projects being discussed within the vicinity of this project which is related to the cumulative availability of the high quality silica sand within the region. If a transportation and/or processing facility is constructed, it will greatly reduce the number of miles material must be trucked. Any processing and/or transportation facility will have constraints which are outside the realm of this assessment worksheet. What is currently being presented is how the Dabelstein Quarry may operate at maximum capacity based on truck transportation of material, which is the only current available option.

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

- 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 4 million tons of sand and a trans-load rail facility.
- 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.
- A 84 acre quarry (William Yoder site) .75 miles from this project site, also in Saratoga Township, Winona County, MN.

- Additionally, there is at least one known mine proposed in Fillmore County located in Holt Township on County Road 10 about ½ mile southwest of Highland (approx. 50 acres). Fillmore County has also 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 5 miles from the Dabelstein property), the Randy Boyum quarry (approx. 50 acres and approximately 3.75 miles from the Dabelstien property) and the Kessler Quarry (apprx. 30 acres and approximately 3 miles from the Dabelstien property). The mine operator for these sites is Minnesota Sands LLC according to information from Fillmore County.
- 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 of traffic entering the cities of Winona and Goodview with regards to levels of service, safety and infrastructure capacity.
- 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 contained herein.

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:

- Susceptibility to Karst formations – reference Item 19. Winona 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. Shakopee is and has been experiencing karst conditions for millions of years. Karst is inherent to many carbonate rock formations. Channelizing water flows and point infiltration speed dissolution along these preferential flow paths. Sinkholes can be filled, but it is not cost effective. Diversion and buffer areas are the most economical and effective methods for minimizing impacts to groundwater via sinkholes; however, the areas surrounding sinkholes often provide conducive conditions for contaminant infiltration as the sinkhole itself. There are cost effective measures to minimize the potential as well as mitigate sinkhole formations which may be exposed.

- Susceptibility to pollution of drinking water – reference item 12, 17 and 18. Mining will not come in contact with groundwater and will not require any dewatering or chemical flocculation of storm water runoff.
- Traffic – reference Item 21. Should a nearby slurry, processing and or transload facility be constructed, truck traffic from this project will travel less miles to haul the same quantity of material, which overall is a positive outcome. The route from the mine to the point it is delivered will potentially see an increase if additional quarries are hauling materials to the same locations.
- 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.

RGU CERTIFICATION

I hereby certify that:

1. The information contained in this document is accurate and complete to the best of my knowledge.
2. 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 Minn. R. 4410.0200, subps. 9b and 60, respectively.
3. Copies of this EAW are being sent to the entire EQB distribution list.

Name and Title of Signer:

**Jason Gilman, Planning and Environmental Services Director
Winona County Planning Department**

Date:

The format of the Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board. For additional information, worksheets, or for EAW Guidelines, contact: Environmental Quality Board, 520 Lafayette Road, St. Paul, Minnesota, 55155-4194, 651-296-6300, or at their website <http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm>.