December 2022 version

Environmental Assessment Worksheet

This most recent Environmental Assessment Worksheet (EAW) form and guidance documents are available at the Environmental Quality Board's website at**:** https://www.eqb.state.mn.us**/** The EAW form provides information about a project that may have the potential for significant environmental effects. Guidance documents provide additional detail and links to resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item or can be addressed collectively under EAW Item 21.

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: Superior Sand and Gravel Crow Pit – Greenfield, MN

2. Proposer: Superior Sand and Gravel

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3. RGU: City of Greenfield

Contact person: Brad Scheib, AICP
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4. Reason for EAW Preparation: (check one)

Required:
□ EIS Scoping
□ Mandatory EAW

Discretionary:
□ Citizen petition
√ RGU discretion
□ Proposer initiated

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s): N/A

5. Project Location:

- County: Hennepin
- City/Township: Greenfield
- PLS Location (¼, ¼, Section, Township, Range): E ½ of the NW ¼ of Section 10, T119N, R24W
- Watershed (81 major watershed scale): Crow River
- GPS Coordinates: -93.69880, 45.13321
- Tax Parcel Number: 1011924240001

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project;
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); and
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.
- List of data sources, models, and other resources (from the Item-by-Item Guidance: *Climate Adaptation and Resilience* or other) used for information about current Minnesota climate trends and how climate change is anticipated to affect the general location of the project during the life of the project (as detailed below in item 7. Climate Adaptation and Resilience).

6. Project Description:

a. Provide a brief project summary to be published in the *EQB Monitor*, (approximately 50 words).

Superior Sand and Gravel (SSG) operates an existing sand and gravel mine located in Greenfield, Hennepin County, MN. SSG is proposing to expand the existing mine by an additional 30.43 acres. The expansion is a result of the depletion of usable aggregate at the existing mining site. The mining operation(s) would move into the new expansion area and SSG would continue reclamation of the existing Site. Operation would primarily include excavation of native sand and gravel resources, and processing of the materials to produce aggregate products for use in area construction projects.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities

The Project includes the expansion of an existing sand and gravel mining operation located in Hennepin County, MN. The Project site is located approximately 2 miles southwest of Hanover, MN. *Figure 1: General Location Map* shows the location of the site with respect to Hennepin County. *Figure 2: United States Geological Survey Quad* Map Excerpt shows the topography and natural features of the site and surrounding area. *Figure 10: Aerial Map* shows recent aerial photography of the Site and surrounding area.

SSG proposes to establish new mine limits, phasing, and a reclamation plan for an additional 30.43 acres to the west and south of the existing mine (Site). The Site is currently zoned agricultural and there are no permanent structures located within the proposed mining limit(s). Mining is an allowed interim use that may include topsoil and overburden removal, excavation, processing (screening, crushing, and washing), stockpiling, loading, recycling of concrete and asphalt, and reclamation. Processing operations would take place on the floor of the mine.

The mining area (Phase II) is illustrated on Sheet 3 of the attached Mining Plans and encompasses a total of 30.43 acres. Active mining and processing would take place within the mining boundary shown on Sheet 3, and would generally consist of the following activities, which may occur throughout the duration of the mining operation:

- **Overburden Stripping** – Topsoil and overburden will be stripped and stockpiled for use as future reclamation fill.
- **Excavation** – Sand and gravel will be excavated at the working face and transported to the processing area.
- **Screening** – Material will be screened to produced different sized aggregates.

- **Crushing** – Larger cobbles and boulders, if encountered, will required crushing for use in aggregate products.
- **Washing** – Material will be washed to separate fine particulates sand and coarse aggregates.
- **Stockpiling** – screened materials will be stockpiled in the processing area prior to export.

The processing of sand and gravel for a specific market involves the use of different combinations of washers, screens, and classifiers to segregate particle sizes; crushers to reduce oversized material; and storage and loading facilities (commonly referred to as the "processing plant").

Production of recycled concrete will also occur periodically throughout the duration of the mining operation. This will include transporting concrete rubble to the Site and subsequently crushing, screening, and stockpiling the materials within the processing area.

The existing Site has previously been used for a temporary asphalt plant. SSG plans to continue intermittent operation of a temporary asphalt hot mix plant within Phase I. The asphalt plant is not planned to operate within Phase II.

The types of equipment used during typical mining operations are listed below:

- Excavators
- Front-End Loaders
- Bulldozers
- Skid-Steer Loaders
- Classifying Screens
- Conveyors
- Crushers
- Haul trucks

Specialized mining or processing equipment may occasionally be brought to the Site as needed. No explosives would be used on site.

Excavation will generally occur to depths ranging from approximately 10 – 25 feet below existing ground surface (bgs). Excavation will not extend below the seasonal high water table.

While Phase 1 mining is being completed, the processing area will remain at the location shown on Sheet 2 of the Mining Plans, with process water (i.e. wash water) being discharged to the sediment basins and wash ponds as shown. Mining reclamation will continue as areas are backfilled to reclamation grades and the land will be returned to agricultural use. Once mining is completed in Phase 1, mining will be initiated in Phase 2. Reclamation of the Phase 1 area will take place as Phase 2 is mined for aggregate.

No changes to the existing hours of operation are proposed as part of this Project. Hours of operation for mining and processing operations are from 7:00 a.m. to 7:00 p.m., Monday through Friday and 7:00 a.m. to 4:00 p.m. on Saturdays. The pit will not operate on national holidays.

The overall volume of the excavation shown on Sheet 3 of the Mining Plans is 595,100 cubic yards. Of this volume, it is anticipated that approximately 436,500 cubic yards of material would be exported as aggregate product, with the remaining 158,600 cubic yards assumed to be topsoil and non-granular overburden material that would remain on site for use as reclamation fill. The overall excavation volume and lifespan of the mine would be determined by market demand for aggregates. For the purposes of the EAW, it is estimated that the rate of export would be 55,000 to 89,000 cubic yards per year, resulting in a 5- to 8-year operating life. The actual life of the operation would depend on market demand.

Upon completion of the mining, the mine would be restored to be used as an agricultural field or grassland. Reclamation conditions are shown on Sheet 4 of the Mining Plans. It is anticipated that reclamation would require approximately 323,500 cubic yards of reclamation fill to establish the grades shown on Sheet 4. It is anticipated that the estimated 158,600 cubic yards of overburden at the site would be used as reclamation fill. Therefore, an estimated 164,900 cubic yards of fill would be imported to establish reclamation grades. For the purposes of this EAW, it is estimated that the rate of import would be 18,000 to 36,000 cubic yards of reclamation fill per year. Reclamation will be conducted in accordance with applicable local regulations, and will generally include site grading, placing topsoil and establishing vegetation.

The final topography will be established such that the peaks and depressions of the area shall be reduced to a surface which will result in a gently rolling topography in substantial conformity to the land area immediately surrounding, and which will minimize erosion due to rainfall.

Reclamation slopes will be graded to a slope of 10H:1V or flatter, over the entire reclamation area. As finished reclamation grades are established, areas that will not be reclaimed for future agricultural use will be seeded with MnDOT seed mixture 25-121 at a seeding rate of 61 pounds per acre. MnDOT Type 1 Mulch (2 tons/acre) and commercial fertilizer (application rate will be determined from soil testing prior to reclamation) will be used to promote successful regrowth. Land reclaimed for future agricultural use may be left fallow, if requested by the property owner. Upon establishment of end-use conditions, sediment carried by stormwater over reclaimed areas will be collected within surficial depressions created by mining, in a similar manner to the current surface drainage.

c. Project magnitude:

Description	Number
Total Project Acreage	30.43
Linear project length	NA
Number and type of residential units	NA
Residential building area (in square feet)	NA
Commercial building area (in square feet)	NA
Industrial building area (in square feet)	NA
Institutional building area (in square feet)	NA
Other uses – specify (in square feet)	NA
Mining and Reclamation	30.43
Setbacks and Screening	Included within 30.43

d. 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 recover naturally occurring sand and gravel resources present at the Site to supply aggregate for use in various construction material and projects. The aggregate produced at the Site would be used for private and public construction projects in the area. Aggregate from the Site may be used in the production of bituminous asphalt, ready-mix concrete, precast concrete, aggregate base, general fill, and ice control.

e. 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.

f. Is this project a subsequent stage of an earlier project? ☑ Yes ☐ No
If yes, briefly describe the past development, timeline and any past environmental review.

The Site historically has been utilized for agriculture prior to the current mining. A Conditional Use Permit (CUP) was originally obtained for the north ½ of the northeast ¼ of Section 10 (T 119N, R 24W) by Buffalo Bituminous, Inc, in 1972. Amendments to the CUP were obtained in 1982 and 2003 (for expansion of mining), as well as requested in 2006; however, documents do not show that it was granted in 2006 (it is unclear if it was denied or withdrawn). SSG purchased and began operating the Site in 2021.

7. Climate Adaptation and Resilience:

a. Describe the climate trends in the general location of the project (see guidance: *Climate Adaptation and Resilience*) and how climate change is anticipated to affect that location during the life of the project.

Between 1990 and 2019, within the *Big Woods* Ecological Subsection (where the Site is located), the trend for average annual temperature has been increasing by 0.56 degrees F. per decade and for this same period, annual average precipitation has been increasing by 0.13" per decade (MNDNR Minnesota Climate Trends tool, 2024). Both trends are expected to continue with a slight increase in precipitation projected and a moderate increase in temperature over the life of the project.

Climate Trends (Annual): Big Woods			
Climate Variable	Period/Scenario	Annual Mean	Projected Difference
Precipitation	1990-2019 Present	31.48 in.	
	2040-2059 Projected Mid-Century	31.49 in.	0.01 in.
Average Temperature	1990-2019 Present	44.83 deg. F	
	2040-2059 Projected Mid-Century	48.31 deg. F	3.48 deg. F

Reference: MNDNR Minnesota Climate Trends tool and MNDNR Minnesota Climate Explorer tool, 2024

For the Census Tract 027001 (where the Site is located), the National Risk Index Rating for climate hazards is *relatively low* for Extreme Heat, Drought; and *relatively moderate* (1 out of 5) for Flooding and Wildfire. The Project is not located within a disadvantaged community and no part of the county is required to adhere to a hazard-resistance building code.
(Climate Mapping for Resilience and Adaptation - Hazard Report, 2023: https://livingatlas.arcgis.com/assessment-tool/explore/details).

Projections of storm intensification differ from those of average conditions. Unlike changes in annual precipitation, more intense storms present a more acute challenge in water resource management and infrastructure protection. The range of future climate conditions is defined by two scenarios: from a 'Not as Stormy' future to a 'Stormy' one. For the period centered on 2035, changes in the 100-year Storm Intensity for the project area range from 2.6% Not as Stormy future to 13.8% Stormy. (CREAT Climate Change Scenarios Projection Map https://epa.maps.arcgis.com/apps/MapSeries/index.html?appid=3805293158d54846a29f750d63c6890e)

It is not anticipated that these climate trends or climate related hazards would have any material affect at the proposed location (or mine operations) during the life of the project.

b. For each Resource Category in the table below: Describe how the project's proposed activities and how the project's design will interact with those climate trends. Describe proposed adaptations to address the project effects identified.

Mining configuration, design, and reclamation for the expansion of the mining operation to the southwest would have minimal effect on aspects or features that may amplify or interact with climate change.

Current land use is agricultural land, and undeveloped grassland and woodlands. Although ground cover would be removed and the area mined, increased runoff resulting from current climate trends and/or storm events is

not anticipated due to mine design and mining practice. Current stormwater management practice/standards and project stormwater catchment design would accommodate any increase in stormwater management needs resulting from the projected increase in 100- year storm intensity and can be modified throughout mine operating life as needed.

Projected climate trends and anticipated climate change in the general location of the project are not expected to materially influence the potential environmental effects of generation/use/storage of hazardous waste and materials. Hazardous waste generation and storage of hazardous wastes are not part of typical mining operations. Annual precipitation trends are projected to remain flat/slight increase over the lifespan of the project, therefore current (2024) management practice for erosion control and stormwater management are deemed adequate regarding design and operation. Increases in temperature would not create any material change beyond that which has been previously discussed.

Resource Category	**Climate Considerations**	**Project Information**	**Adaptations**
Project Design	Mining configuration, design, and reclamation would have minimal effect on aspects or features that may amplify or interact with climate change	Projected climate change risks and vulnerabilities are expected to have no effect on the project.	It is not anticipated that these climate trends would have any material affect at the proposed location (or operations as designed) during the life of the project.
Land Use	Current land use is agricultural land and undeveloped grassland and woodlands. Although seasonal ground cover would be removed and the area mined, increased runoff resulting from current climate trends and/or storm events is not anticipated.	Stormwater catchment design would accommodate any increase in stormwater management needs associated with operations and can be modified throughout mine operations if/as needed.	It is not anticipated that these climate trends would have any material affect given the stormwater management provisions that are and will continue to be in place.
Water Resources	Address in item 12	Address in item 12	Address in item 12
Contamination/ Hazardous Materials/Wastes	Projected climate trends and anticipated climate change in the general location of the project are not expected to materially influence the potential environmental effects of	Hazardous waste generation and storage of hazardous wastes are not part of typical mining operations. Waste	It is not anticipated that these climate trends would have any material affect since

	generation/use/storage of hazardous waste and materials.	generated from mining operations would be managed according to applicable practice and regulation.	contamination/ hazardous materials are not expected to be encountered or generated.
Fish, wildlife, plant communities, and sensitive ecological resources (rare features)	Address in item 14.	Address in item 14.	Address in item 14.

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

Cover Types	Before (acres)	After (acres)
Wetlands and shallow lakes (<2 meters deep)	0	0
Deep lakes (>2 meters deep)	0	0
Wooded/forest	0	0
Rivers/streams	0	0
Brush/Grassland	23.24	23.24*
Cropland	7.19	7.19*
Livestock rangeland/pastureland	0	0
Lawn/landscaping	0	0
Green infrastructure TOTAL (from table below*)	0	0
Impervious surface	0	0
Stormwater Pond (wet sedimentation basin)	0	0
Other (describe)	0	0
TOTAL	30.43	30.43

** Depends on landowner's desired use.*

Green Infrastructure	Before (acreage)	After (acreage)
Constructed infiltration systems (infiltration basins/infiltration trenches/ rainwater gardens/bioretention areas without underdrains/swales with impermeable check dams)	0	0
Constructed tree trenches and tree boxes	0	0
Constructed wetlands	0	0
Constructed green roofs	0	0
Constructed permeable pavements	0	0
Other (describe)	0	0
TOTAL	0	0

Trees	**Percent**	**Number**
Percent tree canopy removed or number of mature trees removed during development	100	462*
Number of new trees planted	0	0

** Estimated using aerial imagery.*

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

Unit of Government	Type of Application	Status
City of Greenfield	Conditional Use Permit	Submitted 9/12/24
Minnesota Pollution Control Agency	Air Emission General Permit	To be submitted
Minnesota Pollution Control Agency	MNG490000 Non-metallic mining permit	Permit MNG490592 issued. Expansion area to be added.
Minnesota Department of Natural Resources	Water Appropriations Permit	Received.

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 10-20, or the RGU can address all cumulative potential effects in response to EAW Item No.22. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 21.

10. Land use:

a. Describe:
   i. Existing land use of the site as well as areas adjacent to and near the site, including parks and open space, cemeteries, trails, prime or unique farmlands.

Existing and past land use of the site is cropland and undeveloped woodland/grassland (zoned *Farm* and *Farm – Non Productive*). Surrounding land use is the Crow River to the west, undeveloped woodlands to the north, a mixture of agriculture and aggregate mining to the east, and agricultural to the south.

Figure 4: Land use within One-half Mile illustrates the surrounding land use(s). Sheet 2: Existing conditions illustrates the topography.

   ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

The current land use is *agricultural* and the future planned land use is *rural residential*. There is existing mining in the area, the proposed expansion would be consistent with surrounding land use. (https://www.ci.greenfield.mn.us/2040plan)

   iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The Site is zoned agricultural. The Crow River Floodplain is near to, but not within, the Site (https://www.fema.gov/flood-maps/national-flood-hazard-layer). The portion of the Crow River near the Site is not designated as a wild and scenic river. The Site is not designated as a critical area, or agricultural preserve.

   iv. If any critical facilities (i.e. facilities necessary for public health and safety, those storing hazardous materials, or those with housing occupants who may be insufficiently mobile) are proposed in floodplain areas and other areas identified as at risk for localized flooding, describe the risk potential considering changing precipitation and event intensity.

No hazardous materials would be stored on site.

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

Mining is an allowed conditional use within the agricultural zoning district. The project is compatible with current nearby land uses including the rural residential land uses to the north. With implementation of proposed mitigation measures that have been developed to minimize or eliminate potential nuisance conditions including noise, dust, surface water runoff, groundwater contamination, traffic, and visual impacts; potential impacts are minimized. SSG would comply with the mining standards established in the City of Greenfield City Code. These standards are intended to prevent or minimize impacts to surrounding properties.

The project includes the development of a comprehensive reclamation plan for the Site (Sheet 4). Reclamation grades have been developed in consultation with the property owner to provide a surface that is compatible with potential future land use options and minimize potential for adverse impacts (e.g., erosion, sedimentation) to neighboring properties.

Surrounding land use is characterized by primarily agricultural zoned areas, some of which have also been developed for sand and gravel mining.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 10b above and any risk potential.

Potential impacts resulting from the mining and processing operation(s) include the generation of noise and dust, impacts to surface and groundwater quality, air quality, traffic, and general aesthetics. The project would be operated in a manner to minimize these potential impacts and comply with applicable local, state, and federals permits, standards, and regulations.

The Project would incorporate setbacks, buffers, and screening to avoid or minimize potential conflicts with surrounding land use. Mining is a conditional use and is subject to specific performance standards established to control potential impacts generated by its operation. Proposed setbacks include a 50-ft setback from road rights-of-way and property lines not permitted for mining operations. Processing equipment will not be located within 200 feet of a property line or road right-of-way. No setback is proposed along the common mining border between Phase I and Phase II. Sheet 3: Mining Plan illustrates the proposed mining plan and setbacks.

Existing berms for visual screening and stormwater diversion are located around the perimeters of current mining operations as shown on Sheet 2 of the Mining Plans. Screening berms (constructed out of topsoil and overburden removed from the mining area) will be located around Phase 2 as mining operations progress. The berm will be located within the 50-ft setback area to screen mining and processing activities. The berm will be stabilized to minimize erosion and sedimentation by seeding and mulching to establish vegetation. Weeds or noxious vegetation would be controlled as necessary to preserve the appearance of the area.

Access to the existing mining area is from Greenfield Road to the east. Access to the expansion area would remain from Greenfield Road. No new access roads or approaches are proposed.

11. Geology, soils and topography/land forms:

a. Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

According to the Geologic Atlas of Hennepin County, the Site is located within a complex depositional environment of many overlapping glacial advances. Most of the site is shown as an ice-contact deposit of the Twin Cities Member of the New Ulm Formation. Ice contact deposits are often formed in bands along the edges of glacial ice. The resulting deposits are highly variable both spatially and with regards to mineral composition and particle size. The Atlas suggests the ice contact soils at this site range from silty clay to loamy sand and gravel. Ice contact deposits can also contain cobbles and boulders, although these larger materials typically do NOT appear consistently throughout the deposit.

The Twin Cities Member deposits tend to include a mix of soils from the last three major ice advances, including the Superior and Rainy lobes from the north and northeast, and to a lesser degree, the Grantsburg sublobe from the northwest. Therefore, the deposits can include a mix of reddish brown to grayish brown soils, where the colors relate to the different source materials.

The western margins of the site include more recent alluvial (water-deposited) soils related to the Crow River, including sand and gravel. Between the river and the ice contact deposits, a deposit

of Twin Cities outwash is shown in the mapping. These outwash deposits consist of fine sand to sandy gravel, which typically contains little silt and clay.

The southeastern portion of the site is mapped as Villard Till. This unsorted till deposit consist of soils ranging from loam to sandy loam, which contains little to no gravel, cobbles, or boulders. The Villard Till generally contains more silt and clay size particles and the source material tends to contain more shale than the other deposits mapped at this site.

Soil borings conducted on site report overburden consisting of topsoil, clayey sand (USCS classification SC), sandy lean clay (CL), and lean clay with sand (CL) ranging from 0 to 20 feet thick. Below this overburden, mineable layers of sand and gravelly soils (including sand (SP), sand with silt (SP-SM), silty sand (SM), Sandy gravel with silt (GP-SM), and sandy gravel (GP)) were encountered ranging in thickness from 5 to 34 feet.

Bedrock was not encountered in any of the soil borings, and estimated depth to bedrock at the site ranges from approximately 77 to 170 feet. Bedrock is reported to be late Cambrian age Jordan sandstone, consisting of coarse-grained, friable sandstone with few shale lenses. No limestone formations or karst features are indicated from the boring logs or published geologic information, and no sinkholes are reported on site.

On Site soil borings encountered groundwater within the unconsolidated sediments, as described below in Section 12. Mining is expected to occur above the water table, and appropriate engineering controls and best management practices will be employed as described elsewhere in this EAW to prevent impacts to groundwater and surface water.

There are no apparent limitations or impacts from the project to geologic features. The project is not expected to have significant effects on the unconfined surficial aquifer

b. Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 12.b.ii.

The Natural Resources Conservation Service Soil Survey identifies five soil types at the Site, shown on Figure 5: Soils Map. These are: Malardi-Hawick complex (43.2% of Site), Angus loam (20.1% of Site), Lester loam (19.2% of Site), Hanlon fine sandy loam (10.5% of Site), gravel-Udipsamments complex (6.0% of Site), Southhaven Loam (4.5% of Site), and Hamel Complex (0.8% of Site). The slopes on the site vary from 0 to 35 percent.

- The Malardi-Hawick complex consists of very deep, somewhat excessively drained soils formed of loamy outwash sediments and the underlying sandy and gravelly outwash sediments. These soils are found on nearly level or convex slopes on outwash plains, stream terraces and on collapsed glacial alluvium within ground moraines or end moraines.
- The Angus loam series consists of very deep, well drained soils formed in loamy calcareous till. These soils are found on slightly convex slopes on backslopes, shoulders, and summits on ground moraines and till plains.
- The Lester loam series consists of very deep, well drained soils that formed in calcareous, loamy till.

These soils are found on convex slopes on moraines and till plains.

- The Hanlon fine sandy loam series consists of very deep, moderately well drained soils formed in alluvium. These soils are found on flood plains.
- The gravel-Udipsamments complex is a map unit used for areas of sand and gravel mining operations that were active during the field survey of the area. Most of these areas are located within areas of glacial fluvial deposits of stratified sands and gravel.
- The Hamel Complex consists of very deep, poorly drained and somewhat poorly drained soils that formed in slope colluvium and glacial till on moraines. These soils have moderately slow permeability.

All series (other than the gravel- Udipsamments complex) are considered good for cultivation and/or native prairie vegetation.

The site consists of a topography that generally drains towards the west, towards the Crow River. Following reclamation, the majority of the Site will be returned to similar topography (relatively flat surface, draining towards the Crow River to the west).

Overall, 595,100 cubic yards of soil will be excavated during mining operations. Of this volume, it is anticipated that approximately 436,500 cubic yards of material will be exported as granular product, with the remaining 158,600 cubic yards assumed to be topsoil and non-granular overburden material that will remain on site for use as reclamation fill. An additional 164,900 cubic yards of fill materials will be imported to the site for final reclamation.

Special conditions during mining operations include steep mining slopes and exposed permeable soils. Issues arising from these two conditions will be mitigated by directing all runoff from these areas into the active mining area, where the runoff will be allowed to infiltrate and thus will not endanger polluting nearby surface waters. All potential erosion and sediment issues will be managed as described in a site-specific Pollution Prevention Plan (P2 Plan).

- NOTE: For silica sand projects, the EAW must include a hydrogeologic investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 12 must be consistent with the geology, soils and topography/land forms and potential effects described in EAW Item 11.

The proposed facility is not a silica sand mining operation; a hydrogeologic study was not conducted.

12. Water resources:

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i. Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, shoreland classification and floodway/floodplain, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include the presence of aquatic invasive species and the water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

The Site is located within the Crow River Major Watershed (as shown on Figure 3: Major Watershed). Crow River (MN Public Waters Inventory #27001a) is located along the western boundary of the Site (as shown on

Figure 6: Public Waters Map). This stretch of the Crow River is listed as an impaired water (AUID #07010204-502) for Aquatic Consumption, Aquatic Life, and Aquatic Recreation due to the following pollutants/stressors: mercury, nutrients, fecal coliform, turbidity fish bioassessments, and benthic macroinvertebrates bioassessments. A Shoreland District Area is designated within a 300 feet buffer from the ordinary high-water level of the Crow River. The Shoreland District Area overlaps a portion of the proposed mining Site. Mining and processing operations will not take place within the 100-year floodplain and will be setback a minimum of 150-feet from the ordinary high-water mark.

A wetland, incidental to the mining operation in Phase I, is located northeast of the site, and a natural wetland with an outlet to a stream is located north of the Site. There are no lakes or county/judicial ditches on or adjacent to the Site. A Wetland Delineation Report completed for the Site and Wetland Conservation Act (WCA) and US Army Corps of Engineers (USACE) approval letters are included as Attachment A. Figure 8 depicts National Wetlands Inventory (NWI) listings within one-half mile of the Site.

Figure 6: Public Waters Map illustrates surface water resources within one mile of the site.

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

There are no wells on the Site, but a review of the geotechnical report shows a depth to groundwater ranging from 19.6 to 20.6 feet below ground surface (bgs) on the east side of the Site, dropping to depths ranging from 5.0 to 10.8 feet bgs on the west side. The water table elevation was calculated to range from 927 feet to 932 feet on the east side, dropping down to 915 to 922 on the west side. Numerous wells are present within one-half mile of the site as shown on Figure 7: Minnesota Well Index Map. The project site is not within a wellhead protection area (WPA). The closest WPA is the Joint Powers Water Board South WPA, located approximately 2.65 miles northeast east of the Site.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

The mining operations would not discharge wastewater to a publicly owned treatment facility.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system. If septic systems are part of the project, describe the availability of septage disposal options within the region to handle the ongoing amounts generated as a result of the project. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion.

There is not, and would not be, any domestic sanitary wastewater produced at the Site. Portable toilets would be used at the Site to serve employees.

Industrial wastewater would be generated seasonally during operation of the processing plant. It is anticipated that aggregate washing would appropriate no more than 400 gallons per minute (gpm) of groundwater to be used as process water. This water would be discharged into on-site sedimentation basins for treatment and reuse back to the processing plant. The composition of the industrial wastewater is water and naturally occurring fine-grained sediment that has washed off the larger sand and gravel particles contained in the aggregate.

Wastewater would also be generated during operation of the asphalt plant. These activities are permitted under the Site's Non-metallic mining permit (MNG490592).

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects.

Wash water would not be discharged off-site or to surface water. Wash water would be recirculated back to the processing plant, recycled, and reused. Wash water from the processing plant contains suspended solids that would be treated in a series of sedimentation ponds. The sedimentation ponds would be designed to allow fine particles to settle out of the water. Once sufficient settling has occurred, the water is clean enough to be used in the processing plant again. The ponds would be built in series, so the initial pond removes most of the sediment. Additional settling occurs throughout the series to the final pond where it is pumped back to the processing plant. The sedimentation ponds are cleaned out on a periodic basis to remove the accumulated sediment and maintain treatment efficiency and pond volumes. The sediment, which is composed of naturally occurring silt and clay that has been rinsed off the surface of the aggregates, is allowed to dry. The dried sediment is typically blended with other overburden soils and used in reclamation activities.

ii. Stormwater - Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the project site (major downstream water bodies as well as the immediate receiving waters). Discuss environmental effects from stormwater discharges on receiving waters post construction including how the project will affect runoff volume, discharge rate and change in pollutants. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion. For projects requiring NPDES/SDS Construction Stormwater permit coverage, state the total number of acres that will be disturbed by the project and describe the stormwater pollution prevention plan (SWPPP), including specific best management practices to address soil erosion and sedimentation during and after project construction. Discuss permanent stormwater management plans, including methods of achieving volume reduction to restore or maintain the natural hydrology of the site using green infrastructure practices or other stormwater management practices. Identify any receiving waters that have construction-related water impairments or are classified as special as defined in the Construction Stormwater permit. Describe additional requirements for special and/or impaired waters.

Prior to construction, stormwater either infiltrates to groundwater or flows into the Crow River via sheet flow runoff, due to the sloping topography of the Site. During active mining, stormwater contacting exposed soils within the active mining area would be handled internally and would not be discharged off-site. Diversion berms and swales would be constructed as needed at the perimeter of active mining areas to direct stormwater internally. As mining progresses during the Project, drainage would be directed to low areas within the mine floor where it would temporarily collect, infiltrate through the granular soils, or evaporate. Mining activity would create steep slopes on a temporary basis. The active mine face is typically at a slope that ranges from 1:1 to 2:1

(horizontal to vertical). The active face is not vegetated and therefore is subject to erosion. The active face always slopes towards the interior of the mining operation and sedimentation from any erosion of these slopes is handled internally through infiltration and evaporation and is not discharged off-site.

Potential impacts to the water quality of stormwater runoff are addressed through the facility's National Pollutant Discharge Elimination System (NPDES) / State Disposal System (SDS) permit. The facility will have coverage under the MNG490000 Nonmetallic Mining and Associated Activities General Permit (MNG490592) Permit), which is administered by the MPCA under the NPDES/SDS program. As required by the MNG49 Permit, the facility will implement a site-specific P2 Plan. The P2 Plan provides for the design and implementation of stormwater best management practices (BMPs) in conjunction with the phasing of mining operations. Perimeter controls would consist of silt fence, diversion swales, and or berms placed around the downslope edge of any area that has the potential to drain off-site during stripping operations. Perimeter controls would remain in place until mining has redirected drainage internally.

Infiltration areas and temporary sedimentation basins would be used as needed on the floor of the mine to manage stormwater on the mine floor. The locations of these stormwater management features would move as mining progresses through the Project. Establishment of vegetation through seeding and mulching would be conducted as soon as reclaimed areas have been final graded. Erosion control matting, sediment logs and other erosion and sediment control practices would be used as needed throughout the mining operations.

Other BMPs for the Site would include good housekeeping, employee training on proper handling of Site materials, on-going maintenance of all Site equipment, containing all stormwater on-site, routine inspections, seeding and stabilization of perimeter berms, no discharge of storm water runoff from the Project Area (storm water runoff generated within the active mining area would be managed internally), routine street and entrance sweeping to prevent sediment from leaving the Site, rock construction entrances if needed to prevent tracking offsite, and on-going reclamation of the Site once the sand and gravel resource in the perimeter areas has been recovered.

Typically, a fuel service would be used to fuel on-site equipment. The fuel service truck carries a spill containment kit. If on-site fuel storage is needed, the fuel storage tank would be an above ground double walled tank and meet all MPCA petroleum storage tank requirements. Tanks with capacities over 500 gallons located within 500 feet of a Class 2 surface water or over 1,100-gallon capacity located over 500 feet from a Class 2 surface water require registration with MPCA and must meet other MPCA requirements such as labelling, secondary containment, substance transfer safeguards, and routine inspections. If tanks with capacities that require registration are brought to the Site, the operator would register the tanks and comply with the applicable MPCA regulations.

iii. Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe anywell abandonment. If connecting to an existing municipal water supply, identify the wells tobe used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Discuss how the proposed water use is resilient in the event of changes in total precipitation, large precipitation events, drought, increased temperatures, variable surface water flows and elevations, and longer growing seasons. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation. Describe contingency plans should theappropriation volume increase beyond infrastructure capacity or water supply for the project diminish in quantity or quality, such as reuse of water, connections with another water source, or emergency connections.

Sand and gravel washing is proposed for the Project and a Minnesota Department of Natural Resources (MDNR) water appropriations permit (Permit number 2021-1425) has been obtained. Aggregate washing occurs seasonally during nonfreezing weather conditions (generally April – November). The processing plant discharge, which contains a high concentration of suspended solids, would be treated through a series of sedimentation ponds. Treated water is recycled back through the processing plant for reuse. The quantity of water depends upon the percentage of fine material in the deposit. Flow rates are approximately 1,200-1,500 gpm. The processing plant typically uses approximately 80% - 85% recycled water and 15% - 20% makeup water. The volume of makeup water would be approximately 400 gpm. The processing plant could run 7 months (mid-April through mid-November), 5 days per week, and 12 hours per day. Under full production, and assuming makeup water requirements of 400 gpm, the processing plant is permitted to use up to 25 million gallons per year. It is anticipated that the makeup water would be pumped from a groundwater pond created as part of mining operations.

This relatively limited draw on the local groundwater aquifer would likely not impact any of the nearest water supply wells due to their distance from the site and the considerable source, as evidenced by the Crow River which is hydrologically connected to the local groundwater aquifer the Site will appropriate from. As referenced above, the maximum water volume possible is recycled for washing, in an effort to minimize the amount that is required to be appropriated. The MNDNR water appropriations permit contains contingency provisions regarding monitoring, drought, water use conflicts, etc.

iv. Surface Waters

a) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigationfor unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.

There are no wetlands on the Site. Figure 8: Wetland Map depicts wetlands located within one mile of the Site. Two wetlands and a stream were delineated near the Site in 2022 (see Attachment A); however, the proposed mining activities will not impact these resources.

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicialditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering thewater features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The Crow River is located west of the Site and an unnamed ephemeral stream was delineated north of the Site. These features are outside of the site and untreated stormwater contacting exposed soils, stockpiles or mining areas would not be discharged off-site to these or other surface waters. No draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration are proposed for these features. Stormwater BMPS discussed earlier in this section will prevent impacts to these features from the proposed mining. This project should not change the number or type of watercraft on the Crow River (the ephemeral stream cannot hold watercraft).

13. Contamination/Hazardous Materials/Wastes:

a. Pre-project site conditions - Describe existing contamination or potential environmental hazardson or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

Past land use of the Site has been agricultural or mining. There are no known existing soil or groundwater contamination hazards at the Site. The geotechnical borings completed did not identify any indications of contamination.

b. Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solidwaste including source reduction and recycling.

Solid waste generation at the Site would be limited to small quantities of solid waste generated from employees. Dumpsters would be used on-site during active operations and a hauling service would be contracted to haul the solid waste to a licensed disposal facility. Recycling of concrete containing metal rebar could produce limited quantities of scrap metal. This metal would be placed in metal recycling dumpsters and hauled to a metal recycling facility.

c. Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any new above or below ground tanks to store

petroleum or other materials. Indicate the number, location, size and age of existing tanks on the property that the project will use. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverseeffects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

There would be no storage of hazardous materials at the Site. Very small quantities of hazardous materials may be brought to the Site when performing routine maintenance of on-site equipment. These materials are considered Materials of Trade and are carried on the service truck that comes to the Site to perform the routine maintenance. The Project would not generate hazardous waste and therefore is not subject to hazardous waste licensing. The Project would not store hazardous waste and therefore is not subject to Sara Title III, Tier II Reporting.

d. Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, anddisposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling

Hazardous waste would not be generated at the Site. The service truck performing equipment maintenance would take all used fluids generated from maintenance activities to the operator's main shop where they are properly stored until final disposal. The service truck carries a spill containment kit.

14. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):

a. Describe fish and wildlife resources as well as habitats and vegetation on or near the site.

The natural communities and land cover on and near the Site have been documented by Minnesota Department of Natural Resources (MN DNR) through surveys and landscape scale assessments. The results of these assessments indicate a variety of natural plant communities and ecological qualities. The MN DNR Biological Survey (MBS) completed surveys of the natural areas and natural communities that were most likely to support rare plant and animal habitats and rare plant communities. The Site is approximately 200 feet north of the *Greenfield Woods* significant ecological area. The area has a high biodiversity significance rank and is listed as a *Sugar Maple Forest*. There are no significant ecological areas within the Site and there are no natural areas listed near the Site. A portion of the Site is cultivated agricultural field with no significant fish or wildlife resources; or wildlife habitat and/or vegetation would be affected by the Project. However, a majority of the Site consists of natural grassland and woodlands. This natural habitat will still be connected to the riparian corridor since mining activities will not occur within 150 feet of the Crow River. In addition, the Site will be reclaimed after completion of the mining activities, albeit with the loss of the current mature trees, and numerous nearby parcels offer similar habitat that can be utilized by wildlife in the interim.

No wetlands or waterbodies are located on the Site.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number (MCE_____) from which the data were obtained and attach the Natural Heritage Review letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

In Minnesota, the status of rare species is legally designated in Minnesota Rules Chapter 6134 as endangered,

threatened, and special concern species. A species is considered threatened if the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota. A species is considered a special concern species if it is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status.

The MN DNR's Natural Heritage Information System (NHIS) was queried for the project area and the vicinity within an approximate one-mile radius of the Site. The MN DNR provided a letter response (Correspondence # MCE 2024-00445), which is included as Attachment B. The results of the NHIS database search indicate that there is a documented occurrence of one state listed threatened species, Blanding's turtle (*Emydoidea blandingii*), in the direct vicinity of the Project.

An approved Blanding's Turtle Avoidance Plan has been created, as required by the MNDNR, and is included as Attachment C.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project including how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

As discussed in Section 7, It is not anticipated that climate trends or climate related hazards would have any material affect at the proposed location during the life of the project.

Disturbance of surface soil(s) during construction and operation increases the potential for invasive/noxious weeds to become established. Noxious weeds are required to be controlled by county ordinance and can be controlled by mowing and/or herbicide application.

The US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (PIAC) tool was utilized to review the site. The Northern long-eared bat, Whooping crane, and Monarch butterfly were listed species that may occur at the Site. IPAC Determination Keys indicate that the project will have either "No Effect," or "not reasonably certain to cause incidental take" determinations and no coordination with the USFWS is required. USFWS letters are included in Attachment D.

d. Identify measures that will be taken to avoid, minimize, or mitigate the adverse effects to fish,wildlife, plant communities, ecosystems, and sensitive ecological resources.

The following measures would be incorporated into Project operations to minimize the potential for any impact to state listed species on or near the Site.

1. Erosion control mesh would be limited to wildlife-friendly materials to avoid entanglement of a variety of reptiles and birds. Wildlife friendly materials include biodegradable rectangular (not square) netting made from flexible natural fibers or biodegradable polyester. Photodegradable products or non-biodegradable plastic erosion control mesh would not be used on site.

2. Invasive vegetation would be monitored and controlled as needed. Reclamation would be monitored and managed to ensure successful restoration to agricultural use.

3. Adherence to the Blanding's turtle avoidance plan (included as Attachment C).

15. Historic properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or

inclose proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

In correspondence with the Minnesota State Historic Preservation Office (SHPO) received May 22, 2024, SHPO stated "Due to limited staff and resources, the Minnesota State Historic Preservation Office is no longer able to provide formal responses to technical assistance requests." Review of the Minnesota's Statewide Historic Inventory Portal (MnSHIP), which is an online tool that can help identify any previously identified above-ground historic resources and the Office of the State Archaeologist's Public Map was recommended as a substitute. Both of these public databases were reviewed and there were no historic or archeological structures or sites identified within the Project Area. The results of these reviews are included as Attachment E.

16. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

Visual impacts would be minimized by the construction of perimeter berms and maintenance of vegetated setback areas as mining progresses through the Site. Operating equipment is typically located on the floor of the mine recessed below surrounding grade. Periodically, stripping operations would occur for a limited amount of time at grade.

Lighting of processing equipment may be needed for morning or evening operations during the spring or fall when there are fewer daylight hours. This lighting would be downcast and in recessed portions of the Site to minimize visibility from off-site areas.

17. Air:

a. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effectsfrom stationary source emissions.

Mining operation(s) would move from the existing excavation area to the new expansion Site in phases. No increase in equipment, working hours, etc., would occur.

Processing equipment operates under a MPCA Non-metallic Mining General Air Permit and is subject to certain operating standards, which include limits on the amount of emissions, opacity standards, establishes minimum moisture content of feed material, fugitive dust control measures, equipment controls, record keeping and reporting requirements.

The Project will generate minor emissions from generators used to power the processing equipment. These generators are stationary source emissions. The generator/engine runs on diesel fuel and produces diesel exhaust emissions. Diesel exhaust emissions from the combustion of diesel fuel typically contain nitrogen oxide, particulate matter, sulfur dioxide, carbon monoxide, carbon dioxide, and organic compounds. The processing equipment will only be run periodically. Stationary source diesel emissions are regulated and permitted by the

MPCA and the United States Environmental Protection Agency (EPA).

Processing equipment is included in the MPCA Non-metallic Mining General Air Permit. The processing equipment is subject to operating standards which include limits on the amount of emissions, opacity standards, establishes minimum moisture content of feed material, fugitive dust control measures, equipment controls, record keeping and reporting requirements. Processing operations have been established in recessed portions of the existing Site. The recessed nature of the operations creates a topographic barrier and further reduces fugitive dust emissions associated with the processing equipment. The limited generation of stationary source emissions related to Processing operations is not likely to produce any significant changes to air quality in the area.

The processing plant would not be a significant source of particulate emissions. Water used in the washing process saturates the aggregates and eliminates the generation of fugitive dust. Many of the stockpiles would have sufficient moisture content from the washing process to keep fugitive dust levels low during loading operations.

The asphalt plant will also operate under the conditions of the MPCA Air Emission General Permit for Nonmetallic Mineral Processing, as applicable based on potential and actual emissions. This will include emissions monitoring and reporting, and annual compliance certification for the plant as well.

b. Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g.
traffic operational improvements, diesel idling minimization plan) that will be taken to minimizeor mitigate vehicle-related emissions.

Vehicle emissions from mobile equipment and vehicles are generated at the Site. Mining operation(s) would move from the existing excavation are to the new expansion Site; therefore, the Project will not change the number of vehicles or pieces of equipment that are operating at the Site and there will be no increase in annual emissions. However, it will extend the number of years that the emissions will be produced. The volume of truck traffic generated per day is relatively small with little to no anticipated effect on ambient air quality including criteria pollutants. The U.S. Environmental Protection Agency (U.S. EPA) has enacted regulations to reduce emissions from on-road diesel engines. The Federal government regulates the chemical make-up of gasoline and diesel fuel. Removing lead from gasoline and reducing sulfur in diesel fuel has significantly reduced vehicle emissions of those pollutants. Another U.S. EPA standard applies to diesel engine manufacturing, which requires reduced engine emissions for new engine construction over several years using a tiered approach. More efficient vehicles produce less pollution per mile driven. The Site is not expected to have an adverse impact on air quality.

c. Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust andodors generated during project construction and operation. (Fugitive dust may be discussed under item 17a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize ormitigate the effects of dust and odors.

The Site generates fugitive dust. Primary sources of dust are from vehicle travel on unpaved haul roads within the mine, stripping operations, when vegetation is removed and fine soil particles associated with topsoil and overburden are exposed, processing operations from crushing rocks creating a component of finer particles that may become airborne, stockpiled materials, and backfilling and grading operations that are associated with reclamation activities prior to establishment of vegetation.

The Site operates under a Fugitive Dust Control Plan. The Fugitive Dust Control Plan outlines a number of BMPs that have been adopted at the Site to minimize the generation of
fugitive dust from these sources. These fugitive dust control measures include:

- Applying calcium chloride chemical dust suppressant to major haul roads throughout the pit
- Applying water to unpaved roads, stockpiles and other unvegetated areas, and continuously on aggregate production equipment while in use
- Stabilizing unworked areas with topsoil and vegetation
- Limiting unnecessary traffic through the mine
- Limiting traffic speed within the mine
- Limiting the size of the active mine area
- Performing prompt reclamation of mined areas following completion of mining

Water for dust control will be collected onsite in sediment basins and low areas in the pit.

18. Greenhouse Gas (GHG) Emissions/Carbon Footprint

a. GHG Quantification: For all proposed projects, provide quantification and discussion of project GHG emissions. Include additional rows in the tables as necessary to provide project-specific emission sources. Describe the methods used to quantify emissions. If calculation methods are not readily available to quantify GHG emissions for a source, describe the process used to cometo that conclusion and any GHG emission sources not included in the total calculation.

According to the National Stone Sand and Gravel Association (NSSGA), aggregate mining has inherently low GHG emissions compared to some other industrial processes. This is because aggregate materials are not heated, and the typical conveyors, screens, and crushers do not use high levels of energy. Use of locally mined and recycled aggregate materials helps reduce diesel emissions from trucking.

The North American Asphalt Pavement Association (NAPA) Greenhouse Gas Calculator was used to quantify GHG emissions for this facility (www.asphaltpavement.org/ghgc). The results of the calculator are summarized in the tables on the following page. Emissions of carbon dioxide, methane, and nitrous oxide are multiplied by their global warming potentials and summed using the following equation to estimate total greenhouse gas emissions (in carbon dioxide equivalents, or CO_2e):

$$CO_2e = 1*CO_2+28*CH_4+265*N_2O$$

GHG emissions are expected to result from:

1. Operation of petroleum fueled equipment during mining, trucking, and reclamation; and
2. Use of propane to power the processing plant.

For the purposes of this assessment, it is assumed that up to 25,000 gallons of diesel fuel and 350,000 gallons of propane would be used during a normal operating year (based on the last three-year averages). Using this method, the proposed sand and gravel operation is estimated to generate 339.7 tons of CO_2e per year.

Equipment	Fuel Type	Fuel Units of Measure	Fuel Quantity use per Year	Lbs CO2 per gal[1]	CO2/year Short Tons	Lbs CH4 per Gal[1]	CO2e as CH4/yr in Short Tons	Lbs N2O per gal[1]	CO2e as N2O/yr in Short Tons	Total CO2e in Short Tons /year	Fraction of CO2e due to CO2
Off-Road Vehicles and Screening Equipment	Diesel	Gal	25,000	22.5100	281.4	0.01232	4.31	0.000441	1.46	287.1	98.0

[1]Emission factor base on The Climate Registry May 2013, Updated May 2022

Stationary Equipment	Fuel Type	Fuel Units	Fuel use per Year	MMBTU per Unit of Fuel[1]	Energy in MMBTU/yr	CO2 Lbs/yr[1]	CO_2 in short tons/year	CH4 Lbs per MMBTU[1]	CH4 in short tons/year	CH4 in CO2e short tons	N2O Lbs per MMBTU[1]	N2O in short tons/year	N2O in CO2e Short Tons	Total CO2e, short tons per year
Processing Plant	Propane	Gal	350,000	0.002	758	138.63	52.56	.0022	.001	.023	.00022	.008	.02	52.6

[1]Emission factor base on The Climate Registry May 2013, Updated May 2022

b. GHG Assessment

i. Describe any mitigation considered to reduce the project's GHG emissions.

SSG plans to apply appropriate GHG mitigation measures when feasible. Such measures may include:

- Practicing good vehicle and equipment maintenance;
- Turning off equipment when not in use; and
- Using electric or hybrid equipment, if feasible.

ii. Describe and quantify reductions from selected mitigation, if proposed to reduce the project's GHG emissions. Explain why the selected mitigation was preferred.

The reduction in GHG emissions from the mitigation measures listed above will be variable and cannot be accurately predicted. In general, vehicle maintenance and operation practices will have a relatively small effect on emissions but are easy and inexpensive to implement. Using electric or hybrid equipment will have a larger effect on emissions, but this requires a high initial investment for the equipment and charging infrastructure and is subject to equipment availability. Current pricing and availability make this method of emission control cost prohibitive, but it may become a more realistic option as this type of equipment becomes more prevalent during the life of the mine.

iii. Quantify the proposed projects predicted net lifetime GHG emissions (total tons/#of years) and how those predicted emissions may affect achievement of the Minnesota Next Generation Energy Act goals and/or other more stringent state or local GHG reduction goals.

Using the results from the calculations above, estimated lifetime GHG emissions for a 5-year operating life are 1,699 tons CO_2e. This is far below the respective mandatory EAW threshold, which is 100,000 tons of CO_2e emissions per year from a stationary source (Minnesota Rules Part 4410.4300, Subp. 15.B). SSG anticipates the net lifetime GHG emissions for the Project would be small and expects that the GHG effects from the Project will have little impact on achieving the Next Generation Energy Act goals.

19. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Noise will be generated from the operation of processing equipment including a crushing and screening spread and the operation of diesel generators to power processing equipment. Loading operations and back up alarms also produce noise at the Site. Sand and gravel processing equipment typically generates sounds levels of approximately 80 dBA at a distance of 100 feet from the equipment. Loaders, excavators, and haul trucks typically generate sound levels of 75-85 dBA at 100 feet from the source.

1) Existing noise levels/sources in the area: Mining activities generate noise through operation of earthmoving and processing equipment. A noise study was conducted at the Site on August 5, 2021 by American Engineering Testing, Inc (AET). The study showed levels of noise from active mining operations were within MPCA standards. The study is attached as Attachment F.

2) Nearby sensitive receptors: Nearby sensitive receptors include residences located in the vicinity of the Site. There are an estimated 19 residences located within ¼ mile of the mine limits and an estimated 33 additional residences located between 0.25 and 0.5 miles from the mine limits. F*igure 4: Hennepin County Land Use Map*, illustrates the location of nearby residences with respect to the mine site.

3) Conformance to state noise standards: The Site will be subject to the Minnesota State Noise Standards. The standards have been established based on preservation of health and welfare and are consistent with speech, sleep, annoyance, and hearing conservation requirements of receptors associated with various land use classifications. The Site will operate in compliance with State Noise Standards. The MPCA enforces noise standards at mining facilities for which it has issued an air permit. The facility is operating under an air permit for processing activities.

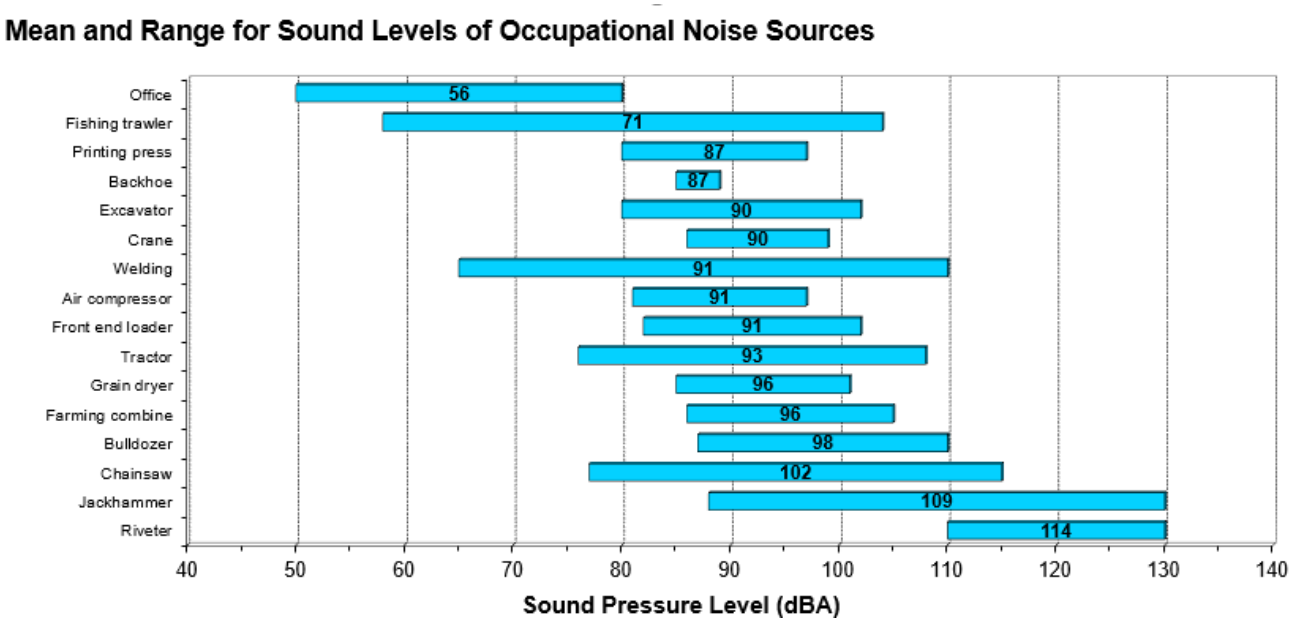
Noise standards vary as to the type of receptors and land uses surrounding the Site. Residential land uses, including rural residential receptors are included in noise area classification 1 (NAC1). NAC1 is subject to the most stringent noise standards and includes both a daytime and nighttime standard. Daytime hours are defined as 7:00 a.m. to 10:00 p.m. Nighttime hours are defined as 10:00 p.m. to 7:00 a.m. Nighttime standards are more restrictive than daytime standards. The State standards are listed in the following table.

Minnesota Noise Standards

NAC	Daytime 7 am - 10 pm		Nighttime 10:00 pm – 7:00 am	
	L_{10} (dBA)	L_{50} (dBA)	L10 (dBA)	L50 (dBA)
1	65	60	55	50
2	70	65	70	65

State standards are applied at the location of the receptor and not the property line of the Site. The L10 standard represents the sound level that can be exceeded ten percent of the time or no more than 6 minutes within an hour-long survey. The L10 standard is applicable to intermittent noise sources. The L50 standard represents the sound level that can be exceeded fifty percent of the time, or thirty minutes within an hour-long survey. The L50 standard is applicable to continuous noise sources typically associated with mining operations and processing equipment.

The following figure illustrates the mean and range for sound levels of occupational noise sources. Typical pieces of mining equipment (backhoe, excavator, front end loader, bulldozer) as well as typical pieces of agricultural equipment (tractor, grain dryer, and combine) are listed for comparison.



4) Quality of life effects and measures to minimize or mitigate the effects of noise: The Project will generate similar noise levels to existing conditions with some variation as mining progresses and the processing equipment moves through the Site. Noise control measures will be utilized at the Site including locating processing and loading activities on the floor of the mine. This allows the mine faces to provide topographic shielding for deflection and absorption of noise. Processing equipment and mobile equipment will be fitted with standard noise reduction equipment such as mufflers. The processing plant loading operations are established to load in a circuitous manner to minimize back up maneuvers and associated back up alarms of haul trucks.

If noise complaints are received, the operator will work to address the specific complaint(s). Actions to address a complaint may include sound level monitoring, additional berms, additional setbacks from processing equipment, or other noise reduction strategies.

Mitigation measures to be implemented at the Site to reduce sound levels at surrounding receptors include:

- Processing equipment will be located on the mine floor, which is recessed from the existing ground surface. The perimeter slopes and berms surrounding the mine block sound and reduce the decibel levels experienced at surrounding receptors.
- Truck traffic will be routed in a loop to the extent practical in order to minimize the use of back up alarms.
- White noise backup alarms will be utilized if existing controls do not sufficiently mitigate the noise generated by traditional beeping backup alarms.
- Equipment will be maintained in good working order and with standard noise reduction equipment such as mufflers; and will be operated in such a manner as to minimize, as far as is practicable, noises and vibrations which are injurious or substantially annoying to persons living in the vicinity.

20. Transportation

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

The mine will generate vehicle traffic resulting from the import/export of soil and aggregate materials to and from the mine site, as well as employee commuting and vendor/supplier visits to the Site. Traffic generation from the site is summarized in the table. Production rates are based on market demand. Market demand for aggregates is tied to the economy and the amount of development in the surrounding communities and the availability of other aggregate sources in the immediate area.

1) Existing and proposed additional parking spaces added:

The Project will not add any parking spaces.

2) Estimated total average daily traffic generated:

Most of the traffic is generated seasonally during the construction season, although some hauling may occur during the winter months. Numbers are averaged over the hauling season which is assumed to run from April 1 to November 15 and 6 days/week (196 hauling days). Some days there may be more trips than indicated below and some days there is no hauling.

It is estimated that the average production would result in approximately 71,500 cubic yards of exported material per year, and high production would result in approximately 89,000 cubic yards of exported material per year. Similarly, the estimated average rate of import for reclamation fill is 28,500 cubic yards per year, and a high of 36,000 cubic yards per year. Assuming a unit weight of 1.4 tons per cubic yard, this equates to an average of 100,000 tons per year and a high of 125,000 tons per year for export, and an average of 40,000 tons per year and a high of 50,000 tons per year for import. To determine the corresponding number of truck trips, the following assumptions are used:

- A typical load of exported aggregate or imported reclamation fill is 20 tons.
- Each load includes two trips: one into the Site and one out of the Site.
- Approximately half of the exported loads will back haul a load of reclamation fill.
- Hauling occurs 180 days per year.

Table 1. ADT Summary

	Loads per day - Average	Loads per day - High
Aggregate	28	35
Reclamation Fill	11	14
	Trips per day – Average	Trips per day - High
Aggregate	56	70
Reclamation Fill	0	0
Employees/Suppliers	6	8
Total trips per day (ADT)	**62**	**78**

3) Estimated maximum and peak hour generated

The a.m. peak hourly traffic is estimated to be 8 trips per hour, or 10% of the High ADT, and is expected to occur between 7:00 a.m. and 8:00 a.m. The p.m. peak hourly traffic is estimated to be 7 trips per hour, or 8% of the High ADT, and is expected to occur between 3:00 p.m. and 4:00 p.m.

The "worst-case" hourly traffic is estimated using an import/export rate of one load every 4 minutes, which SS&G estimates is the highest feasible rate based on anticipated site equipment and operational constraints. This results in 15 loads, or 30 truck trips per hour. The worst-case traffic would occur infrequently and for limited duration throughout the life of the mine.

4.) Truck hauling is the only transit option available.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. *If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW.* Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 *(available at: http://www.dot.state.mn.us/accessmanagement/resources.html)* or a similar local guidance.

The Project is not expected to have an adverse impact on traffic or traffic patterns. The Project would shift an active aggregate mining location to an adjacent location. No new access roads are proposed. Traffic patterns are expected to remain the same.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

A traffic control program in the interest of safe trucking operations will be employed and includes the following:

- Truck traffic to and from the operation is limited to one specific entrance/exit.
- SSG will provide warning signs for proper traffic safety during periods of heavy traffic to and from or past the site and at times as the RGU may require.
- Signs will be placed at the truck scale to encourage safe and courteous driving practices in accordance with

all traffic rules and regulations.

- SSG will follow-up directly with drivers or customers who are not driving safely.

21. **Cumulative potential effects:** (Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

    a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

The Site is in an area characterized by high quality sand and gravel deposits. As a result, sand and gravel mining has been an on-going land use in the area since at least the 1960s. The operation of several different mine sites spreads this production out among active sites, but all within the same geographic area. Collectively these mine sites have been, and will continue to, produce the volume of material needed to meet local demand. Shifting operations to a new area of the same Site will have no significant effect on overall cumulative impacts or regional environmental effects.

    b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

No future projects are known at this time although it can be expected that eventually additional land that is mapped as an Identified Resource on the MN DNR's, Classification of Aggregate Resources Hennepin County, Minnesota and is available for mining, will be mined. By the time this occurs, previously mined areas will possibly have been reclaimed.

    c. Discuss 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.

The Project does not propose to change production, production capacity, or expand activities at the mine, only to expand the footprint of the existing mine and extend its useful life. Because the existing mine is currently active and in full operation, cumulative potential effects are represented in terms of their aggregate effects which is existing conditions for most of the environmental impacts in question.

22. **Other potential environmental effects:** If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

There are no other known potential environmental impacts resulting from this project that are not addressed in items 1-21.

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

I hereby certify that:

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

Signature_____ Date _____

Title _____