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: Larson Quarry Expansion

2. Proposer: Holcim – MWR, Inc.
Contact person: Patty Bestler
Title: Regional Mgr., Environmental & Land
Address: 2815 Dodd Road, Suite 101
City, State, ZIP: Eagan, MN 55121
Phone: (651) 683-8133
Email: patty.bestler@holcim.com

3. RGU: Washington County, Minnesota
Contact person: Daniel Elder
Title: Zoning Administrator
Address: 11660 Myeron Road North *City, State, ZIP:* Stillwater, MN 55082 *Phone:* (651) 430-4307
Email: daniel.elder@co.washington.mn.us

4. Reason for EAW Preparation: (check one)

Required:	Discretionary:
☐ EIS Scoping	☐ Citizen petition
☒ Mandatory EAW	☐ RGU discretion
	☐ Proposer initiated

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

Minn Rules 4410.4300 Subp. 12 Nonmetallic mineral mining Paragraph B: For development of a facility for the extraction or mining of sand, gravel, stone, or other nonmetallic minerals, other than peat, which will excavate 40 or more acres of land to a mean depth of ten feet or more during its existence, the local governmental unit is the RGU.

5. Project Location:

- *County:* Washington
- *City/Township:* Grey Cloud Island Township

- *PLS Location (¼, ¼, Section, Township, Range):* Part of the SW ¼ of the NE ¼, Section 24, Twp. 27N, Range 22W, lying southerly and westerly of the Grey Cloud Slough; Part of the SE ¼ of the NW ¼, Section 24, Twp., 27N, Range 22W, lying southerly and westerly of the Grey Cloud Slough; Part of the NW ¼ of the SE ¼, Section 24, Twp., 27N, Range 22W, lying southerly and westerly of the Grey Cloud Slough, except 24.027.22.42.0002; and NE ¼ of ; Part of the East ½ of SW ¼, Section 24, Twp., 27N, Range 22W; Part of the SE ¼ SW ¼ Section 24, Twp. 27N Range 22W; Part of the SE ¼ SW ¼ Section 24, Twp. 27N Range 22.
- *Watershed (81 major watershed scale):* Watershed #20, Mississippi River
- *GPS Coordinates:* 44°48' 42.27" N; 92° 59' 42.06" W.
- *Tax Parcel Number:* 24.027.22.13.0001, 24.027.22.24.0001, 24.027.22.42.0001, 24.027.22.31.0001, 24.027.22.34.0006, 24.027.22.34.0009, 24.027.22.34.0015

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 (photocopyacceptable);
- 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).

The following figures are included in or are attached in the figures section at the end of this EAW:

- Figure 1: County Location Map
- Figure 2: U.S.G.S Quad Map Excerpt
- Figure 3: Aerial Photo
- Figure 4: Existing Land Use
- Figure 5: Grey Cloud Island Township Planned Land Use
- Figure 6: Grey Cloud Island Township Zoning Map
- Figure 7: MRCCA Districts
- Figure 8: Grey Cloud Island Township Shoreland Management District
- Figure 9: Karst Features
- Figure 10: NWI Wetlands Map
- Figure 11: FEMA Floodplain Map
- Figure 12: Monitoring Well Locations
- Figure 13: Groundwater Well Locations
- Figure 14: MPCA What's in my Neighborhood Map
- Figure 15: PFAS Sampling Residential Wells Map

The following plan sheets are included in the Plan Set Section at the end of this EAW:

- C1 – Existing Conditions
- C2.1 – Site Plan Option 1
- C2.2 – Site Plan Option 2
- C3.1 – Reclamation Plan Option 1

- C3.2 – Reclamation Plan Option 2

The following attachments are included in the Attachment Section at the end of this EAW:

- Attachment 1 – Climate Adaptation Resources
- Attachment 2 – Soil Survey Information
- Attachment 3 – 2023 Wetland Delineation Report
- Attachment 4 – Groundwater Monitoring Well Data
- Attachment 5 – Nearby Residential Well Information
- Attachment 6 – NPDES 2021-2022 Monthly Discharge Reports
- Attachment 7 – Water Appropriations Permits and Records
- Attachment 8 – Barr Engineering Technical Memos 2004, 2018, and 2023
- Attachment 9 – SPCC Plan
- Attachment 10 – Minnesota DNR – Natural Heritage Database Review Correspondence
- Attachment 11 – SHPO Review Letters and 2024 Phase 1 Archaeological Investigation
- Attachment 12 – General Air Emission Permit
- Attachment 13- Greenhouse Gas Emissions Worksheet
- Attachment 14 – County Road 75 Realignment Noise Assessment

6. Project Description:

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

Holcim-MWR, Inc. proposes to expand their existing limestone quarry, known as the Larson Quarry, to the east onto an adjacent 148-acre property that they own located east of County Road 75. The Larson Quarry and expansion area is in Grey Cloud Island Township, Washington County, Minnesota. No change in quarry operations or production levels is proposed. The expansion will extend the life of the mine by 20-25 years.

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.

Project Description

Holcim-MWR, Inc. (Holcim) currently operates a limestone quarry, known as the Larson Quarry, located in Grey Cloud Island Township, Washington County, Minnesota. Holcim (formerly Aggregate Industries) proposes to expand the existing quarry (Project) onto a 148-acre property (Site or Project Area) located east of County Road (CR) 75, the majority of which they have owned since 1972. The Project will involve either the relocation of CR 75 around the eastern perimeter of the proposed quarry limits (Option 1) or the construction of a bridge on CR 75 with an underpass below CR 75 (Option 2) to access the eastern limestone reserves. The expansion will increase the quarry area by approximately 53 to 70 acres depending upon the option ultimately permitted. Figure 1 - County Location Map illustrates the general location of the Site. Figure 2 - U.S.G.S Quad

Map Excerpt and Figure 3 - Aerial Photo, illustrate the Site and surrounding area. Plan Sheet C1 shows existing conditions of the Site and surrounding area. Plan Sheets C2.1 and C2.2 are Site Plans for the two options evaluated in this environmental review document.

Project Background

The existing quarry was initially established in 1957 and has been in operation for over six decades. The quarry mines limestone and produces high quality construction aggregates, serving the twin cities metropolitan area. Existing quarry operations include clearing and grubbing, removal of topsoil and overburden, dewatering, drilling, and blasting, extraction, processing (crushing, screening, and washing), stockpiling, and loading operations. Equipment utilized in the mining operation includes a rock drill, front-end loaders, a hydraulic shovel, a mobile track-mounted primary crusher and feeder, and an overland conveying system to the main processing plant, which is in the southern portion of the existing Larson Quarry. The mining season typically extends from late March through November each year. No changes to the existing hours of operation, staffing, mining, or processing activities are proposed.

Operations Overview

The limestone is currently being quarried in two separate cuts or benches within the active mining area. The upper bench, about 50 feet thick, is typically removed first followed by extraction of the lower bench, also about 50 feet. Once material is blasted and extracted, it is transported via a conveyer system to the processing plant where it is crushed, screened and/or washed. Processed materials are loaded onto barges or trucks for transportation to their destination. The majority of the processed material is currently and will continue to be transported via barge up the Mississippi River to the company's distribution yard in St. Paul. Some material will also be trucked out on CR 75, depending upon the demand of local projects.

The location of this deposit along the Mississippi River, in conjunction with Holcim's existing barge fleet at the Larson Quarry allows for the end product to be delivered into the heart of the Twin Cities for commercial and residential uses in a more efficient manner than if all of the material was transported by truck. This results in reduced truck traffic and CO2 emissions. Existing transportation modes are anticipated to continue throughout the life of the expansion area.

Mining Methods

The expansion area will be mined utilizing the same methods used at the existing Larson Quarry. The quarry is dewatered, which lowers the groundwater table within the limestone deposit to allow removal of the limestone using dry mining methods. Trees are removed in phases as areas are prepared for mining. Topsoil and overburden are removed and used to create screening berms and safety berms. The berms are seeded and mulched, and vegetation is established to reduce the potential for erosion. The material used to construct the screening berms may eventually be used in reclamation activities.

Following the removal of topsoil and overburden, the underlying bedrock is drilled and blasted to break up the rock into small pieces that can be transported by conveyor to the processing plant located in the southern portion of the existing Larson Quarry. Blasting is conducted by a third-party explosives contractor who is responsible for the engineering design of each blast. Each blast consists of a number of holes spaced and drilled to exact specifications according to the blast design. Each blast is designed to minimize ground vibration and sound pressure level while still providing sufficient energy to fracture the bedrock for extraction.

Seismographs are placed between the blasting area and the closest structures to record ground vibration and sound pressure levels from each blast to verify that safe limits established by the US Bureau of Mines are not exceeded as well as to provide data for the blast contractor to use in the analysis and design of subsequent blasts.

Blasting at the quarry has been occurring at the Site since the 1950's and occurs as needed based upon production needs. All blasting occurs during normal business hours, Monday through Friday. The plant manager maintains a text list to notify neighbors of the blast schedule and provide a 5 minute warning before blasting occurs

The quarry operates seasonally, typically from late March through November each year. The main processing plant is located approximately three quarters of a mile to the southwest of the expansion area and operates in conformance with the hours permitted by Grey Cloud Island Township. The approved operating hours for the 2023 and 2024 mining seasons were from 6:00 a.m. to 10:00 p.m., Monday through Friday and 7:00 a.m. to 12:00 p.m. on Saturdays.

Expansion Area

The majority of the expansion area has been held in reserve since 1972 and has been part of the long-range planning of the quarry since at least 1971. The expansion area has been identified as a future mine expansion on local land use plans for the last several decades. An environmental review was completed for the expansion area in 2005 with Washington County as the RGU. The 2005 Environmental Review included the northern portion of the existing Larson Quarry located west of CR 75 as well as the eastern portion of the Larson Quarry located west of CR 75. Washington County adopted a Findings of Fact and a Negative Declaration on the need for an Environmental Impact Statement for the proposed expansion on September 20, 2005.

CR 75 runs north-south between the existing quarry and the proposed expansion area, creating a physical barrier between the properties. In order to access the eastern limestone reserves and provide for material transport between the expansion area and the existing processing facility, Holcim is considering two options to access the eastern reserves: 1) Realignment of CR 75 and 2) Bridge on CR 75 with underpass through CR 75 right of way on quarry floor. Both options are described in detail in the paragraphs below and are further analyzed in this EAW.

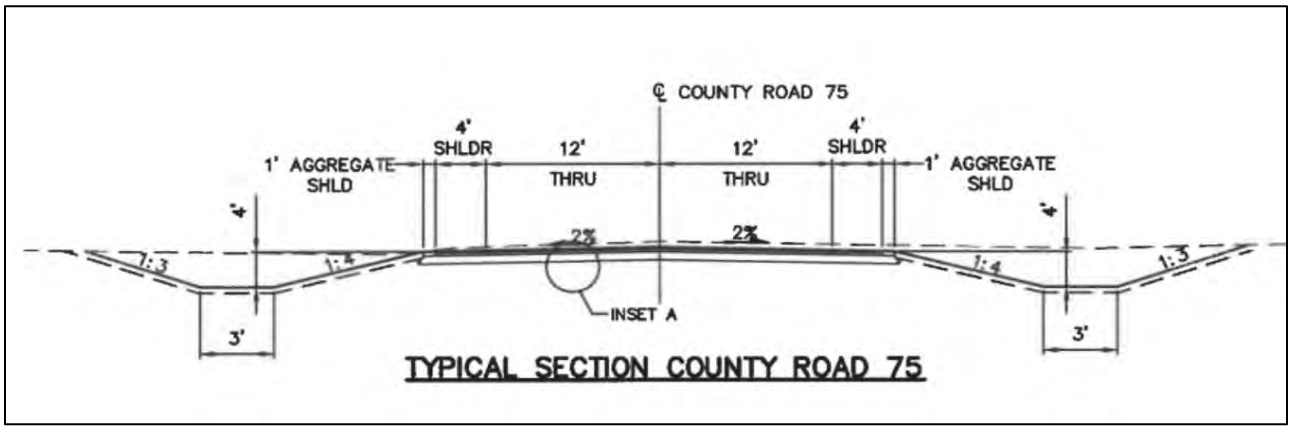
Option 1 involves relocation of CR 75 to the east around the proposed quarry expansion limits. This option allows the natural progression of the quarry to proceed uninterrupted to the east. The current quarry limits are set back 200 feet west of the CR 75 right-of-way. Under this option, the Proposer will relocate CR 75 and establish a new right-of-way, the current right-of-way will be vacated and quarry activity will continue from the current mine limits through the vacated right-of-way in a west to east progression.

Plan Sheet C2.1 - Site Plan Option 1 illustrates the conceptual site layout of the road relocation option. The final alignment will be subject to future input from the County and Township. The plan sheet identifies the locations of adjacent homes, driveways and property lines with respect to the proposed realignment. As shown on Plan Sheet C2.1, minor modifications to an existing private driveway easement through the expansion area will be necessary to provide access from the new road realignment to three homes located southeast of the expansion area. Access to all other residents will not be impacted. The existing Larson Quarry

site access will not be impacted and a new site access to the east will not be needed. The eastern reserves will be accessed by progressive quarry activity from the existing eastern quarry limits moving to the east. Extraction and transfer of material from the active quarry face to the processing area would occur at recessed elevations well below the surrounding grade.

CR 75 is a rural two-lane roadway with no turning lanes, sidewalks, or trails. Based on Minnesota Department of Transportation (MnDOT) 2018 traffic count data, the segment of CR 75 proposed for relocation has an annual average daily traffic (AADT) volume of 1,550 with a posted speed of 40 mph. The current right-of-way width is 66 feet. The existing roadway functional classification of CR 75 is identified in the Washington County 2040 Transportation Plan[1] (2040 Transportation Plan) as a major collector, serving shorter trips and distributing traffic from neighborhoods, commercial and industrial areas to the arterial system. CR 75 from 105th Street S. to 14th Avenue (which includes the segment proposed for relocation) is identified as a candidate for jurisdictional change from a county road to a local township road in the 2040 Transportation Plan.

The proposed realignment maintains the 66-foot right-of-way rural undivided roadway with 12-foot lanes and 4-foot shoulders as illustrated on the typical section below. The new road realignment will be constructed within the 500-foot mining setback from Grey Cloud Channel. CR 75 relocation will require 9-16 acres of clearing and grubbing, the construction of approximately 6,000 linear feet of new roadbed replacing approximately 2,500 linear feet of existing CR 75 roadbed, and the relocation of utilities located along the current right-of-way.



Much of the construction of the new alignment can be accomplished without disrupting typical CR 75 traffic patterns. Construction to connect the north and south end sections of the newly aligned road could take several days up to several weeks.

Option 1 allows for the location of the existing Larson Quarry site access to be maintained. Extraction and transfer of material from the active quarry face to the processing area would occur at recessed elevations below the surrounding grade. The eastern reserves would be accessed by progressive quarry activity from

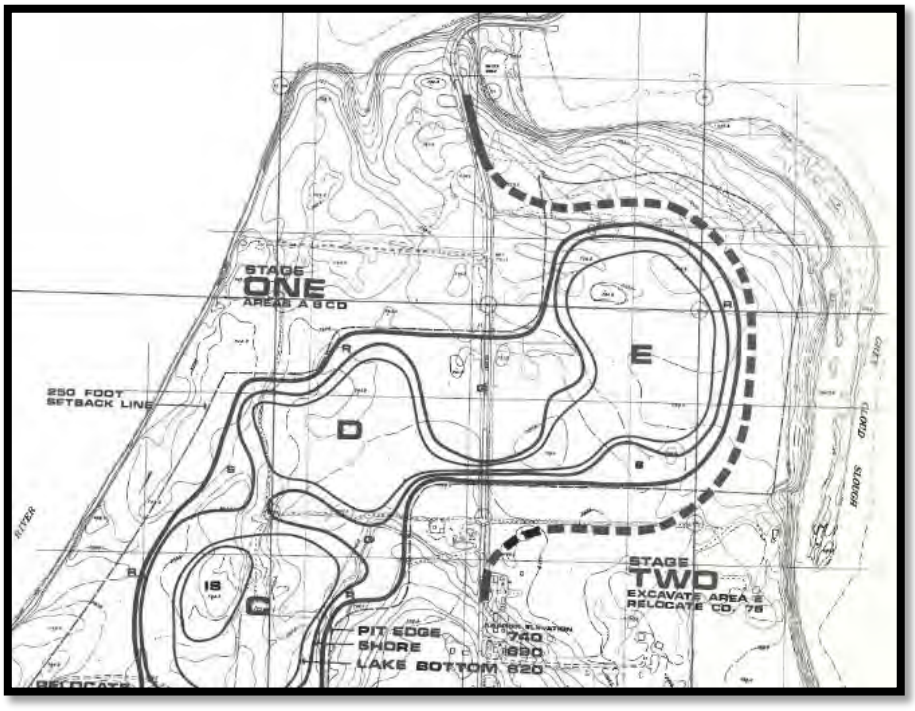
[1] Washington County 2040 Comprehensive Plan, Chapter 5. Accessed online at: https://www.co.washington.mn.us/DocumentCenter/View/38128/Chapter-5---Transportation

the existing eastern quarry limits moving to the east.

Since road realignment represents a relatively small section of road and does not include any new connections, the average daily traffic volume is not expected to change current traffic patterns or volumes. Washington County has jurisdiction for CR 75, therefore, any plans to modify the road would require coordination with and approval from the County. It is anticipated that a Memorandum of Understanding or Developer's Agreement would be executed that would address approved engineering design and construction plans, establish the method for financing (Proposer will be financially responsible for the realignment), as well as the establishment of maintenance responsibilities of the realigned roadway.

Option 1, CR 75 Realignment has been part of the long-range quarry plan since at least 1971, when a 50-year planning study was prepared (1971 Plan) that provided a blueprint for quarry development within the Grey Cloud Island Township community.[2] The longstanding plan of relocating CR 75 is indicated as Stage Two on Inset 6-1 of the Operations Plan from the 1971 Plan shown below.

INSET 6-1 FROM OPERATION PLAN JANUARY 1971



Option 2 Bridge Option

Option 2 is to construct a bridge on CR 75 with an underpass below CR 75 that provides an east-west connection at the existing quarry floor elevation beneath the CR 75 roadway and access to the eastern quarry reserves. This option will allow equipment and material to be transported by trucks or conveyor between the existing quarry and the expansion area along the quarry floor. Under Option 2, mining will be continuous from one quarry area to the other without having to start the eastern operations "at grade." Option 2 will not

[2] J.L. Sheily Company. Larson Plant Planning Study/Grey Cloud Island. Grey Cloud Township, Minnesota. Setter, Leach and Lindstrom, Inc. Community Planning & Design Associates, Inc. January 1971

require a new site access off CR 75 or an at grade truck or conveyor crossing at CR 75 between the processing area and the expansion area. Truck traffic or conveying equipment between these areas will be below CR 75 through the underpass.

The bridge will be located near the middle of the western mining limits of the expansion area, (Plan Sheet C2.2 Site Plan Option 2.) Construction of the bridge will involve a temporary relocation of County Road 75 and utilities around the eastern portion of the construction area. The existing roadway will be removed within the construction area. Limestone will be removed through a corridor running from the existing eastern limits through the 200-foot setback area west of CR 75, through the CR 75 R-O-W and through the 200-foot setback area on the east side of CR 75. The corridor will be approximately 100 feet wide benching down to the floor of the quarry and creating a fifty-foot wide underpass at the floor of the quarry that can accommodate vehicles, mine equipment between the two quarry areas, and the transfer of limestone from the expansion area to the processing area located in the existing quarry. Once the limestone has been removed through the corridor, additional limestone mining will be required to open a staging area for mining the eastern reserves and provide sufficient room for bridge construction. The bridge will be constructed, the current road realignment and utilities restored, and the temporary road removed. The construction of the bridge will require a temporary detour for an estimated three to five years to allow time to create the underpass, staging area, and build the bridge.

Reclamation

Reclamation of the Larson Quarry will be performed upon conclusion of mining activity. The intent of reclamation is to leave the site in a stable condition, minimize the potential for erosion, and establish site conditions that allow for future development of the land. Plan Sheets C3.1 and C3.2 illustrate the reclamation condition of the existing quarry and expansion area and include information on the approximate site elevations upon completion of reclamation grading. The Reclamation Plan is subject to the ongoing regulatory authority of Grey Cloud Island Township and Washington County and the standards contained within their land use ordinances and is subject to a reclamation bond. Reclamation involves final grading, slope stabilization, and seeding and mulching to establish vegetation in upland areas of the site. Option 1 will leave the site edge matched with the current approved reclamation plan of the existing Larson Quarry and will include a quarry lake with a shallow bay wetland area near the south end of the existing quarry, a deeper lake on the northern end of the existing quarry, and a deeper bay in the eastern expansion area. A gentle entry lake access area will allow for future development of a beach and boat access on the eastern portion of the Site. The lakeshore will include safe water exits along the shoreline. Option 2 Reclamation creates the same shallow bay and deeper lake areas as described above, but the eastern bay will be separated from the main lake by the CR 75 corridor and setback areas with a channel under the bridge that connects the eastern bay with the main lake.

Most of the lake perimeter will be bordered by near vertical limestone bluffs extending from the existing grade at approximately 740 feet above mean sea level (msl) down to the lake level of approximately 690 msl consistent with the existing approved quarry reclamation plan. The bluffs will be like those present along the Mississippi River on the western boundary of the existing Larson Quarry property. The water level in the lake will be established once the dewatering ceases and water levels return to pre-project conditions. The entire quarry expansion area that is quarried will become a lake once dewatering operations have ceased and will not require reclamation grading or establishment of vegetation.

Reclamation for both options will leave the setback areas outside of the quarry limits available for open space and/or future rural residential development along the northern and eastern perimeter of the quarry in accordance with zoning and standards in effect at that time. Final development of the property is outside of the scope of this EAW. When a development proposal is ultimately brought forward, it will be required to meet the ordinances in effect at that time and must go through the permitting processes in place at that time.

Life of the Project

The existing Larson Quarry has provided construction aggregate material essential for private and public infrastructure and development projects since the 1950's. There are only five to seven years of life remaining in the existing permitted quarry area and the Project is expected to extend the life of the quarry by an additional 20-25 years.

c. Project magnitude:

Option 1 CR 75 Realignment

Description	Number
Total Project Acreage	148
Linear project length	+/- 6,000 new roadway
Number and type of residential units	Not applicable
Residential building area (in square feet)	Not applicable
Commercial building area (in square feet)	Not applicable
Industrial building area (in square feet)	Not applicable
Institutional building area (in square feet)	Not Applicable
Other uses – specify (in acres) Quarry Extraction Area	70 acres
Structure height(s)	Not Applicable

Option 2 Bridge/Underpass

Description	Number
Total Project Acreage	148 acres
Linear project length	+/- 100 new bridge
Number and type of residential units	Not applicable
Residential building area (in square feet)	Not applicable
Commercial building area (in square feet)	Not applicable
Industrial building area (in square feet)	Not applicable
Institutional building area (in square feet)	Not applicable
Other uses – specify (in acres) Quarry Extraction Area	53 acres
Structure height(s)	Not applicable

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 existing Larson Quarry has been supplying the twin cities market with high quality limestone construction aggregate for over six decades. The resource within the current quarry limits is nearing depletion. The Project seeks to obtain access to the existing resource located east of CR 75, consistent with the long-range planning for the development of the Larson Quarry. The Project will allow a continued local supply of limestone resources to the Twin Cities and other local markets for an additional 20 to 25 years.

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 Project is the continuation of the development of the existing Larson Quarry, which began operations in the 1950's prior to the adoption of environmental review rules. Long range planning for the quarry completed in 1971 included the development of the eastern reserves and relocation of CR 75.

An environmental review was completed for the expansion area in 2005 with Washington County as the RGU. The 2005 environmental review included the northern portion of the existing Larson Quarry located west of CR 75 as well as the eastern portion of the Larson Quarry located west of CR 75, the subject of this review. Washington County adopted a Findings of Fact and a Negative Declaration on the need for an Environmental Impact Statement for the proposed expansion on September 20, 2005.

Washington County concluded that the Project did not have significant environmental effects and adopted a negative declaration on the need for an EIS. The resolution was based on their findings which concluded that based on type, extent, and reversibility of environmental effects, effects of the Project were similar to effects associated with other mining operations and the Project did not have potential for significant environmental effects. No cumulative potential effects of related or anticipated future projects exist that would pose significant environmental effects, and further found that the anticipated environmental effects were subject to ongoing regulatory authority including the Minnesota Department of Natural Resources, the Minnesota Pollution Control Agency, Washington County and Grey Cloud Island Township.

Although projects for which environmental review has already been complete are exempt from further environmental review (MN Rule 4410.4600 Subp. 2 item E.), the 2005 EAW did not include the option of relocating CR 75 and potential environmental impacts resulting from the road relocation were not evaluated. As a result, the RGU has determined that an environmental review that incorporates the option of relocating CR 75 must be conducted.

7. Climate Adaptation and Resilience:

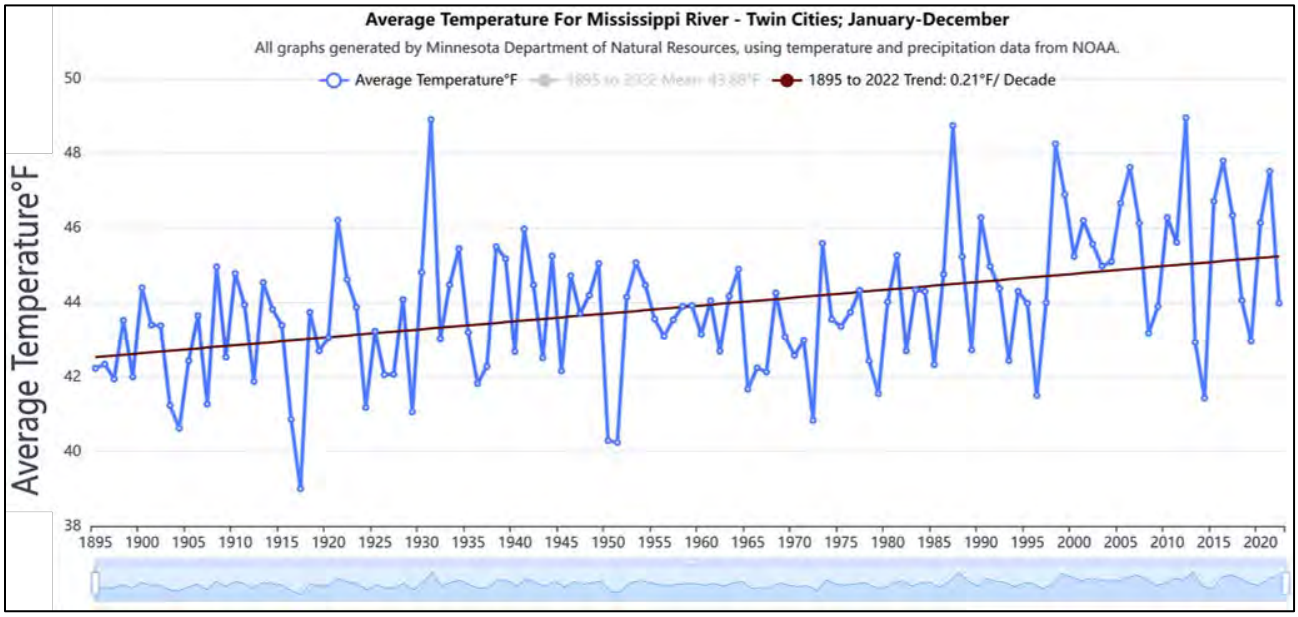
a. Describe the climate trends in the general location of the project (see guidance: Climate Adaptation and Resilience) and how climate change is anticipated to affect that location during the life of the project.

The Site is situated in Grey Cloud Island Township in Washington County, Minnesota, and falls within the Mississippi River – Twin Cities Watershed (Watershed). Since Grey Cloud Island Township is located on the east this analysis is based on the Mississippi River – Twin Cities Watershed to provide a more accurate evaluation of climate data, rather than Washington County. Attachment 1 includes a list of resources used to obtain climate trend information.

Temperature Trends

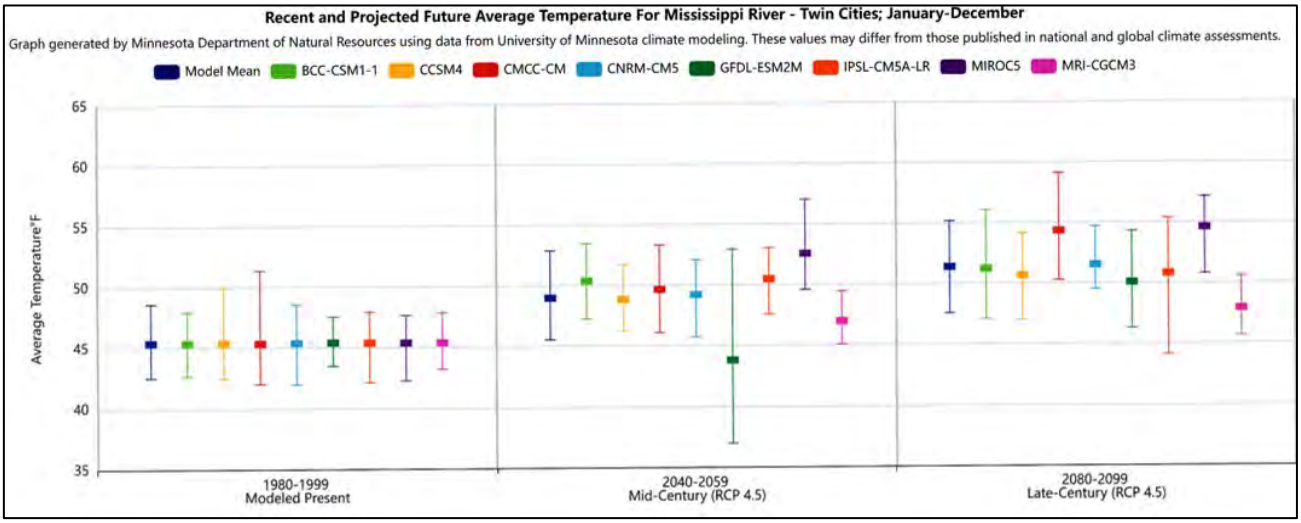
According to information from the Minnesota Department of Natural Resources (MDNR) climate explorer website[3], average annual temperature for the historical period of record (1895-2022) was 43.88°F and the overall temperature trend since 1895 indicates an increase of 0.21°F per decade (Graph 7-1 Historical Temperature Trends). In 2022, the average annual temperature was 43.98°F, which is 0.10°F higher than the average annual temperature (43.88°F) over the last 125 years. Future predictive models indicate that the average annual temperature will increase over the next several decades, showing a rise of 5°F (48.98°F) by mid-century (2040-2059) and nearly 8°F (51.38°F) by the end of this century (2080-2099) (Graph 7-2 Future Temperature Trends).

GRAPH 7-1 HISTORICAL TEMPERATURE TRENDS



[3] Climate Explorer Map. *Minnesota Climate Explorer* Available at https://arcgis.dnr.state.mn.us/ewr/climateexplorer/main/historical

GRAPH 7-2 FUTURE TEMPERATURE TRENDS



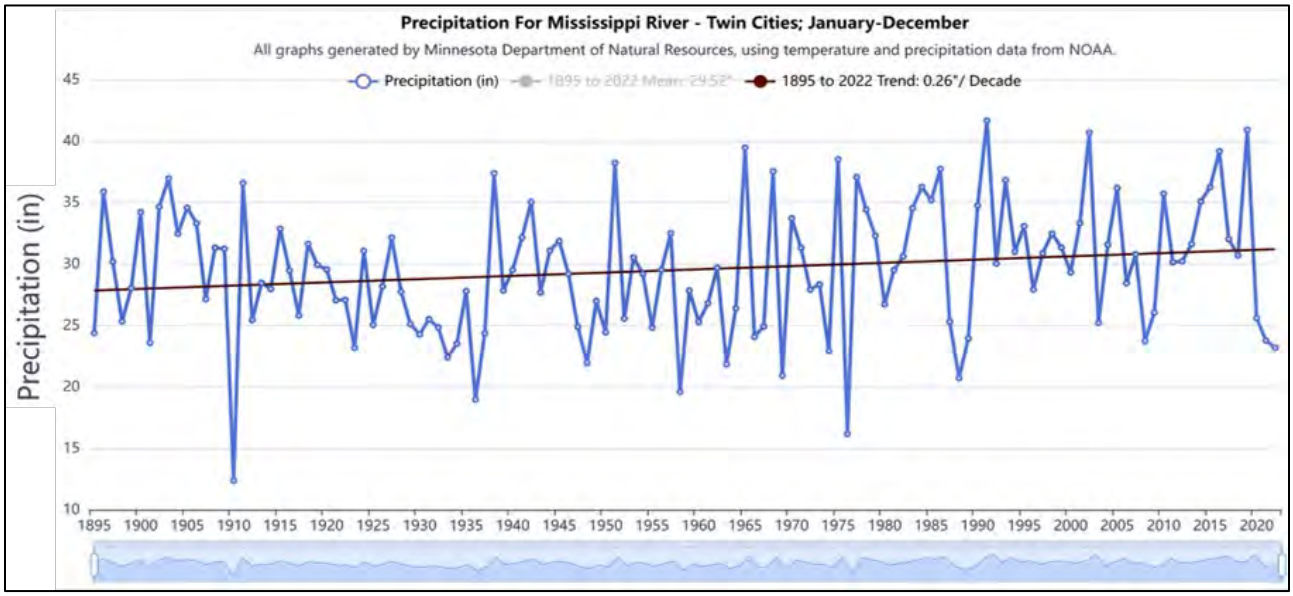
Precipitation Trends

According to information from the MDNR climate trends website[4], the average annual precipitation from the historical period of record (1895-2022) was 29.52 inches and the overall precipitation trend since 1895 indicates an increase of 0.26 inches per decade (Graph 7-3 Historical Precipitation Trends). In 2022, the average annual precipitation for the watershed was 23.18 inches, which is lower than expected. However, most of the watershed experienced moderate to severe drought conditions in the fall of 2022. Future predictive models indicate that the average annual precipitation will increase over the next several decades, showing an increase of 3 inches per year to 32.43 inches by mid-century (2040-2059) and 3.6 inches per year to 33.11 inches by the end of this century (2080-2099) (Graph 7-4 Future Precipitation Trends). However, a closer look at recent history (2000-2023) indicates a decreasing trend of 0.88 inches per decade and highly variable average annual precipitation values ranging from 23.18 to 40.91 illustrating that transgressional patterns can occur over shorter periods.[5]

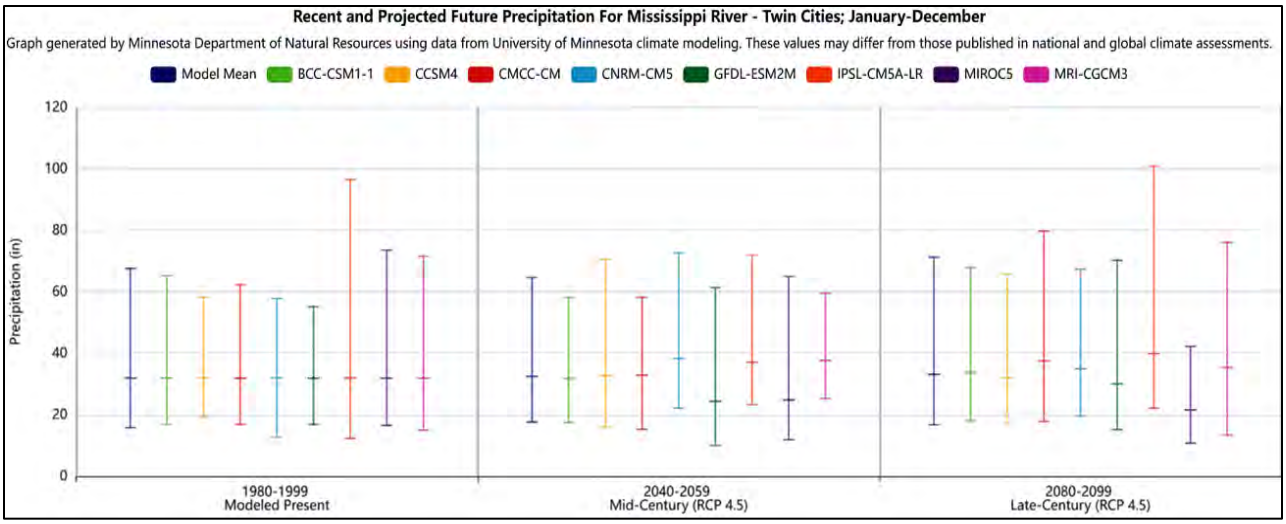
[4] Minnesota Climate trends. *Minnesota Department of Natural Resources* Available at: https://arcgis.dnr.state.mn.us/ewr/climatetrends/#

[5] U.S. Drought Monitor Minnesota. *U.S. Drought Monitor* Available at: https://droughtmonitor.unl.edu/Maps/MapArchive.aspx

GRAPH 7-3 HISTORICAL PRECIPITATION TRENDS



GRAPH 7-4 FUTURE PRECIPITATION TRENDS



Climate Trend Summary

Given the current temperature and precipitation trends described above, the climate within the Project Area is expected to get warmer, wetter throughout the life of the Project (20-25 years), and even long after. However, as explained above, there is potential for minor transgressive periods to occur during the life of the Project. In terms of how climate may affect the proposed project into the future, warmer temperatures may result in drier summers requiring the use of more water on-site to control dust, and wetter conditions in the spring and fall may require slightly more dewatering than is needed today to facilitate mining operations. However, the changing climate overall is not expected to noticeably affect mining operations during the life of the mine.

b. For each resource category in the table below: Describe how the projects' proposed activities and

how the project's design will interact with those climate trends. Describe proposed adaptations to address the project effects identified.

Resource Category	Climate Considerations	Project Information	Adaptations
Project Design	Intense rainfall events predicted by warmer wetter trends that could result in localized flooding.	Project design converts land cover from woodland and pastureland to open space and end use lake and/or a county road. Option 1 with relocated CR 75 will increase the total amount of impervious surface within the Project Area. Option 2 will have a minor impact to the total amount of impervious surface. The Project does not involve design elements that would add to an urban heat island effect such as dark roofing materials or large paved parking areas. Aspects of site design that may negatively affect changing climatic conditions include exposure of soils to increased precipitation events and higher potential for erosion of disturbed soils. Warmer temperatures may create more difficulty in establishing vegetation during reclamation.	Within the active mine area, stormwater runoff will be diverted internally to the recessed portions of the mine, thereby reducing volume and peak rate of runoff during rainfall events. Post reclamation conditions maintain the internally drained condition of the quarry area for both options. The created lake(s) provide(s) a substantial volume of storage for more intense rainfall events. By containing these events on-site, downstream effects of more intense events are mitigated. Because the portions of the site disturbed by mining activity will drain internally, there is low potential for increased erosion or sedimentation impacting off-site discharges resulting from more intense rainfall events. Stormwater management practices will be incorporated into the final CR 75 design to meet stormwater management requirements for volume

Resource Category	Climate Considerations	Project Information	Adaptations
			and rate control. The rural section will provide ditches for stormwater conveyance and will be sized in accordance with current standards.
Land Use	Changes in floodplain elevations from increased precipitation events and stormwater runoff from the proposed land use. Loss of shade for protection during extreme heat.	The Project is located on property that includes a portion of a regulatory floodplain. The Project does not propose 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) in floodplain areas and other areas identified as at risk for localized flooding. The Project will result in the loss of trees that could affect shade or reduce air quality.	The proposed mine limits have been established outside of the regulatory floodplain. Conversion of land use from woodland and pastureland to mine will reduce the volume and flow rates of stormwater runoff from the site to the floodplain and will not increase the vulnerability of the Site to localized flooding should future climate observations align with predicted trends of a warmer and wetter climate. Trees will be cleared on a phased basis maintaining as much tree cover for as long of a period as possible. For both options, vegetation along Grey Cloud Channel will remain undisturbed. Option 1 with CR 75 realignment requires additional tree removal along the road corridor. Tree removal will be limited to the area necessary to

Resource Category	Climate Considerations	Project Information	Adaptations
			construct the road. Option 2 does not remove existing vegetation within the 500-foot setback area. Use of native vegetation in reclamation of upland areas.
Water Resources	Address in item 12	Address in item 12	Address in item 12
Contamination/ Hazardous Materials/ Wastes	Current Minnesota climate trends and anticipated climate change in the general location of the Project include rainfall events of greater intensity and more localized flooding that may influence the potential environmental effects of generation/use/ storage of hazardous waste and materials	The Project will not store, produce, or dispose of hazardous waste.	Fuel storage at the existing quarry includes aboveground storage tanks that have secondary containment. Warmer and wetter climate may accelerate tank corrosion, requiring maintenance that is more frequent or replacement should future climate observations align with predicted trends of a warmer and wetter climate.
Fish, wildlife, plant communities, and sensitive ecological resources (rare features)	Address in item 14.	Address in item 14.	Address in item14.

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

Option 1 – County Road 75 Realignment[1]

Cover Types	Before (acres)	After (acres)
Wetlands and shallow lakes (<2 meters deep)	14	14
Deep lakes (>2 meters deep)	0	76
Wooded/forest	113	34
Rivers/streams	9	9
Brush/Grassland	19	25
Cropland	0	0
Livestock rangeland/pastureland	0	0
Lawn/landscaping	0	0
Green infrastructure TOTAL (from table below*)		
Impervious surface	2	5
Stormwater Pond (wet sedimentation basin)		
Other (describe)		
TOTAL	157	157

[1]Note that Option 1 involves mining the 200-foot setback area on the Existing Larson Quarry Mine along the west side of CR 75. This area encompasses approximately 9 acres and was added to the cover type table to depict overall Project related changes to cover types.

Green Infrastructure*	Before (acres)	After (acres)
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) created deep water lake		76
TOTAL*		76

Trees	Percent	Number
Percent tree canopy removed, or number of mature trees removed during development	70	
Number of new trees planted	0	0

Option 2 Bridge/Underpass[2]

Cover Types	Before (acres)	After (acres)
Wetlands and shallow lakes (<2 meters deep)	14	14
Deep lakes (>2 meters deep)	0	54
Wooded/forest	105	62
Rivers/streams	9	9
Brush/Grassland	19	7
Cropland	0	0
Livestock rangeland/pastureland	0	0
Lawn/landscaping	0	0
Green infrastructure TOTAL (from table below*)		
Impervious surface	2	3
Stormwater Pond (wet sedimentation basin)		
Other (describe)		
TOTAL	149	149

[2]Note that Option 2 involves removing limestone from a 100 ft wide corridor through the 200-foot setback area on the Existing Larson Quarry to the western mining limits of the expansion area. This area encompasses approximately one acre and was added to the cover type table to depict overall Project related changes to cover types.

Green Infrastructure*	Before (acres)	After (acres)
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) created deep water lake		53
TOTAL*		53
Trees	**Percent**	**Number**
Percent tree canopy removed, or number of mature trees removed during development	40	
Number of new trees planted	0	

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 these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.

Because the Project is an expansion of the existing quarry and the expansion area has already undergone environmental review, many of the required permits have been issued. Some of the existing permits will require a permit amendment or reissuance as noted below.

Unit of Government	Type of Application	Status
Washington County	Conditional Use Permit (5-year term)	To be submitted
	Approval of CR 75 Relocation Plans including memorandum of understanding/developer's agreement (for Option 1)	To be submitted
	Approval of CR 75 bridge plans, temporary reroute and limited use permit for right of way crossing (for Option 2).	To be submitted
Grey Cloud Island Township	Administrative Permit (Annual)	To be applied for
	Mississippi River Corridor Critical Area (MRCCA) Annual Operating Permit	To be applied for
	Approval of Road Relocation Project Plans or Bridge Plans if County Road 75 turned back to Township	To be applied for
	Stormwater Management Plan approval	To be applied for
	Rezoning	To be applied
Minnesota Department of Natural Resources (MDNR)	Water Appropriation Permit (Aggregate Washing)	Permit obtained. 67-200
	Water Appropriation Permit (Dewatering) Permit obtained.	Permit obtained. 2002-6042
Minnesota Pollution Control Agency (MPCA)	Nonmetallic Mineral Mining General Air Emission Permit 03700352-001	MN0030473Permit obtained 03700352-101
	NPDES/SDS Permit (Pit dewatering and washwater discharge)	Permit obtained. MN0030473
	Construction NPDES/SDS	To be applied for
South Washington Watershed District	Site Review that may include the following as applicable: • Erosion and Sediment Control	In conjunction with County IUP permitting

	• Floodplain Management • Stormwater Management • Groundwater Management • Water Appropriation • Greenways and Open Space	
	WCA Notice of Decision regarding wetland delineation wetland Boundary/Type concurrence	11/22/2023

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.

Grey Cloud Island Township is characterized as a semi-rural community. The existing land use of the Project Area is predominantly idle woodland and pastureland/grassland that has been held in reserve by Holcim for more than 50 years. Land use adjacent to the Site includes the existing CR 75 roadway and existing Larson Quarry immediately to the west of CR 75. The Grey Cloud Channel borders the Project Area to the north and east, and the remaining area near the Project Area includes open space, residential and agricultural land uses. There are approximately 12 residences located between 600 and 1,000 feet from the proposed mining limits. The existing Larson Quarry is the only full-time employer within the community. Figure 4 - Existing Land Use illustrates existing land use of the expansion area and in the vicinity of the Site.

Utilities are located along the existing CR 75 roadway that will be relocated in conjunction with Option 1 CR 75 Road Realignment. A liquid pipeline carrying crude oil runs under the Mississippi River, around the southern boundary of the Existing Larson Quarry and then diagonally through the very southeastern corner of the Project Area, outside of proposed mine limits (Plan Sheet C1).

There are no local parks located within Grey Cloud Island Township. Reclamation of the Larson Quarry will provide opportunities to develop new parks and open space within the community if the community determines it appropriate. According to the Township's 2040 Comprehensive Plan, there are no existing or planned regional, county, or local trails or sidewalks within the township, except a corridor has been identified for the future Mississippi River Regional Trail along the eastern border of the Township.

The Grey Cloud Island cemetery, also known as the Old County Line Cemetery, is located one-quarter mile south of the expansion area. The Project will not affect the cemetery. There are no prime farmlands located within the expansion area. There are 77 acres of Copaston loam soils within the Project Area, which are rated as Farmland of Statewide Importance. The Project will remove 30 (Option 2) to 40 (Option 1) acres of

Copaston loam soils. These lands are currently not being used for agricultural production.

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.

2040 Washington County Comprehensive Plan

Comprehensive plans are prepared to identify goals and objectives for the immediate and long-range growth and development of a community. Washington County has identified mineral deposits having significant economic potential and discourages encroachment of development in those areas. Included in the 2040 Washington County Comprehensive Plan[6] (County 2040 Plan) is Land Use Goal 3: Design the Land Use Plan to Support Economic Development: "Provide for the removal and processing of sand and gravel, rock, soil, and other aggregate materials vital to the economic well-being of the region, while protecting adjacent land uses from adverse impacts." The County 2040 Plan states "The County will work with landowners and local communities to reserve enough potentially productive aggregate areas from development to meet long-term regional needs." Mining is conducted in accordance with the county's mining ordinance in order to provide for orderly, economic, and safe removal and processing of aggregates and suitable reclamation of the mined sites. The Project is compatible with the County 2040 Plan.

2040 Grey Cloud Township Comprehensive Plan

The Grey Cloud Island Township 2040 Comprehensive Plan (Twp 2040 Plan)[7] includes a section on aggregate resources that recognizes large reserves of dolomitic limestone present in the Township. The Twp 2040 Plan states "Mining of these deposits began in 1955, and the long-range plans are for continuation of these operations for several decades." Under the Physical Environment and Land Use Section, the Twp 2040 Plan states "Large reserves of limestone are present on Upper Grey Cloud Island. Deposits are currently being mined and long-range plans are for continuation of these operations." The Twp 2040 Plan establishes the Future Land Use Plan, which identifies the entire mine site, including the area east of CR 75, with the overlay of "Existing Mining" as indicated on Inset 10-1 below which is an excerpt from Figure 13: Future Land Use in the Township's 2040 Plan and on Figure 5 – Grey Cloud Island Township Planned Land Use. This designation acknowledges that the limestone deposits located east and west of CR 75 are part of one contiguous underlying deposit.

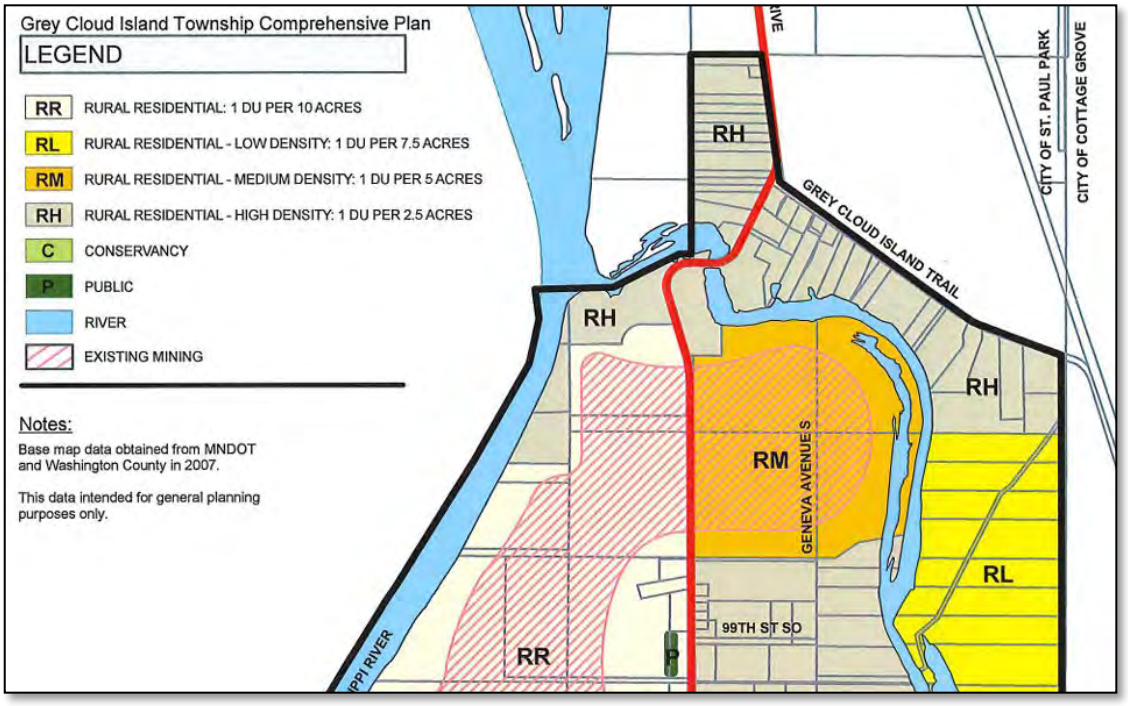
The Project is consistent with the Twp 2040 Plan. There are five to seven years of remaining reserves at the Larson Quarry and the Project, which has been included in long range planning for the Larson Quarry since the early 1970's, is necessary in order to sustain operations for the next several decades consistent with the expectations articulated in the Twp 2040 Plan. While the intent to expand mining operations to the east of CR 75 and the area has been included in long-range planning efforts for several decades, the Twp 2040 Plan notes that mining in this area is subject to rezoning. The Twp 2040 Plan also identifies the expansion area as potential mining as indicated on Inset 10-2 an excerpt from Figure 10: Existing and Potential Mining Areas which shows potential mining through the existing CR 75 right-of-way consistent with Option 1 CR 75

[6] Washington County 2040 Comprehensive Plan retrieved from: https://www.co.washington.mn.us/DocumentCenter/View/21955/Washington-County-2040-Comprehensive-Plan-?bidId

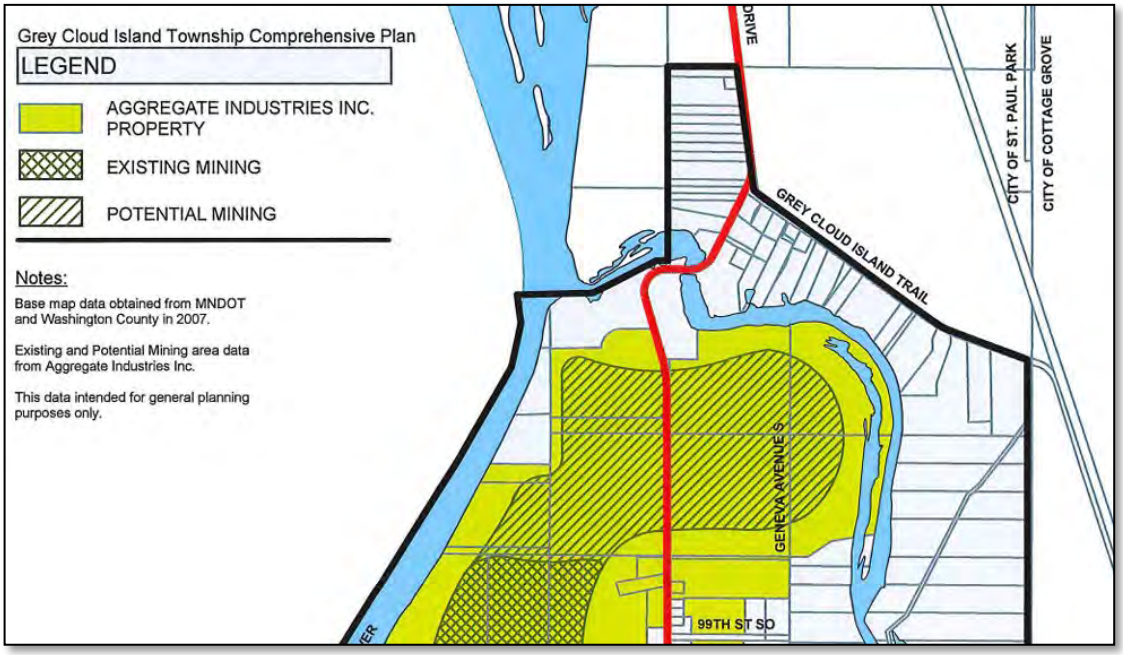
[7] Grey Cloud County 2040 Comprehensive Plan retrieved from: https://www.greycloudislandtwp-mn.us/documents

Realignment.

Inset 10-1 Grey Cloud Island Township 2040 Plan Excerpt from Figure 13 Future Land Use Plan



Inset 10-2 Grey Cloud island Township 2040 Plan Excerpt from Existing and Potential Mining Areas.



Goals and Policies for Special Resources included in the Twp. 2040 Plan that address aggregate resources are as follows:

Goal 2: To allow areas for mining prior to development for other uses, as shown on the Comprehensive Plan, provided that there are measures to ensure that mining is compatible with rural residential development and all required environmental documentation has been completed.

Policy 2.1: Mining operation and reclamation regulations will be upgraded as required to assure that mining continues to be a good neighbor in the community.

Policy 2.2: Identify mining reserves to alert prospective residential property owners of the locations where future mining operations are likely to occur.

Policy 2.3: Utilize the Mining Overlay District as an interim use and that the long term use is defined by the underlying zoning district.

Policy 2.4: Prohibit other land uses from encroaching into the Mining Overlay District.

Existing and future land use maps contained in the Twp 2040 Plan designate the Project Area as rural residential. Setback areas from the proposed quarry limits ensure retention of useful landforms after rock extraction. Though the overall design of the post-reclamation landform is expected to be somewhat different depending on which option is selected, the overall post-reclamation landform is still expected to support a final end use of a mixture of rural residential homes and open space and lake, which is compatible with the Township's long-term land use plans. Option 1 road relocation allows for the eventual development of medium density lots along the new alignment of CR 75. Similarly, Option 2 with a bridge along CR 75 is also compatible with existing and future land use plans. After mining reserves are exhausted and after the reclamation plan is completed, the post mining landform could support a mixture of open space, lake, and residential land uses within the setback areas along CR 75. Under Option 2, development of the setback area along Grey Cloud Channel on the east end of the expansion property would require construction of a new local road, similar to the alignment proposed for CR 75 under Option 1 in order to access those lands as part of any future development. Option 2 would therefore result in two roadway corridors leaving behind valuable aggregate resources that were intended to be preserved until utilized prior to final development.

Metropolitan Council

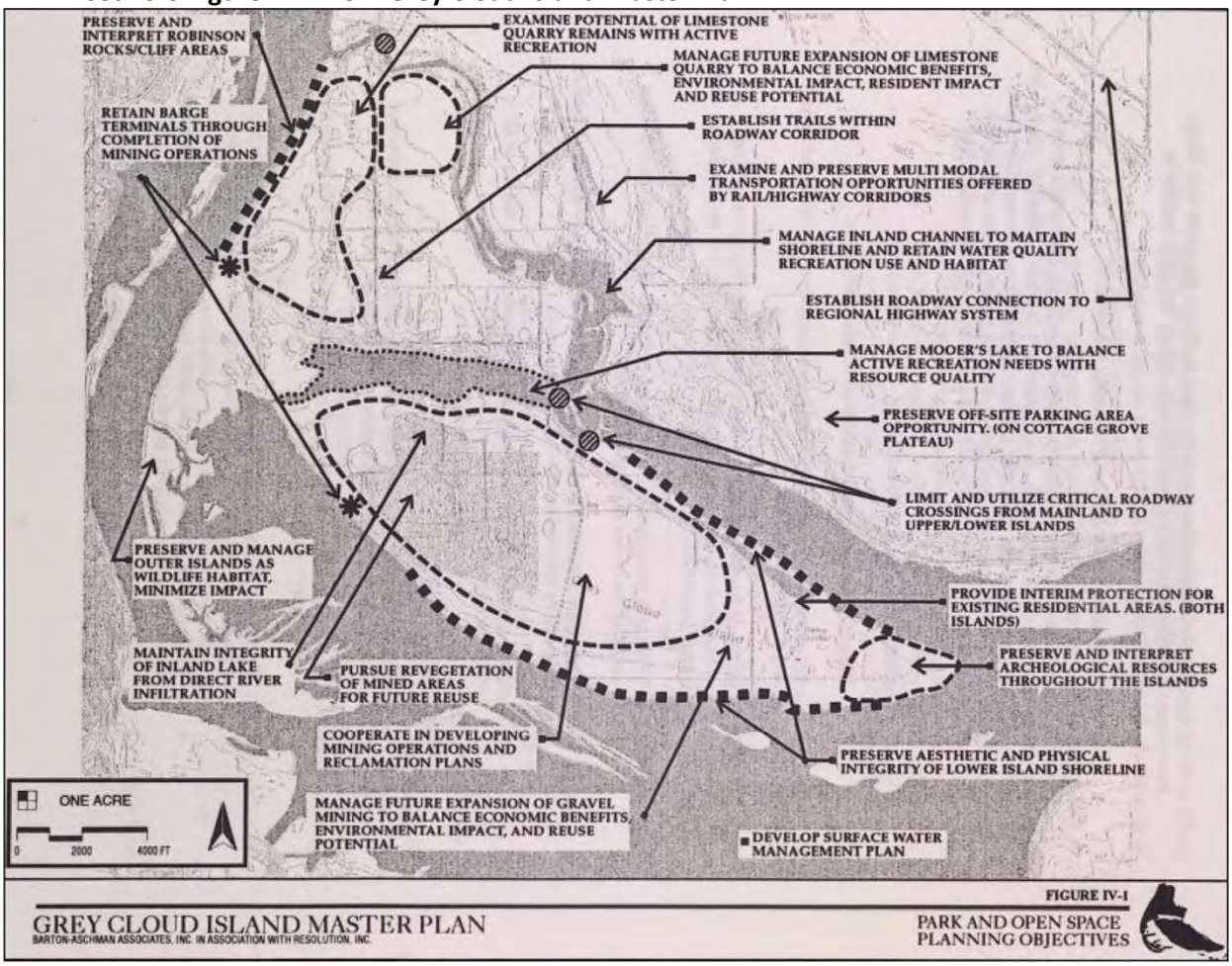
The Metropolitan Council has studied the supply of aggregates in the metropolitan area for the past several decades. A 2000 Aggregate Resource Inventory of the Seven-County Metropolitan Area prepared in conjunction with the Minnesota Geological Survey recognized that aggregate resources available for mining within the metropolitan area were rapidly diminishing. The report concluded that that the region needs to develop and implement a mechanism for protecting its future supply of aggregates because large areas of reserves were being lost to urban development. As aggregate reserves are "finite and fixed," and as the depletion of these reserves has continued at a rapid rate in the Twin Cities' metropolitan area, obtaining access to the limestone reserves in the Project Area is a valuable asset to the economic vitality of the Twin

Cities.[8] Option 1 better serves the intent of Metropolitan Council's recommendation of protecting aggregate resources in order to secure future aggregate supply to the Twin Cities' metropolitan area.

Grey Cloud Island Park Master Plan

A long-term Grey Cloud Island Park Master Plan was completed in 1994 by Barton-Aschmann Associates, Inc.[9] Figure IV-1 (see excerpt below) of that plan includes mention of both the existing Larson (formerly Shiely) Limestone Quarry and the currently proposed northeast expansion area.

Inset 10-3 Figure IV-1 from Grey Cloud Island Master Plan



The 1994 Master Plan indicates preserving the Robson Rocks/Cliff area along the Mississippi River and examining active recreation opportunities in the existing quarry area. The post-reclamation state of the existing Larson Quarry will provide ample opportunities for active recreation. The plan indicates managing the expansion area to balance economic benefit, environmental impact, resident impact, and reuse potential. The proposed expansion would support economic development through the continued

[8] Southwick, D.L., Jouseau, M., Meyer, G.N., Mossler, J.H., and Wahl, T.E., 2000. Information resources inventory of the seven-county metropolitan area, Minnesota: Minnesota Geological Survey Information Circular 46 Retrieved from the University of Minnesota Digital Conservancy, https://hdl.handle.net/11299/59412.

[9] Barton-Aschman Associates. *Grey Cloud Island Regional Park Master Plan, Washington County, Minnesota*. 1994. Washington County Parks Division, collection.mndigital.org/catalog/p16022coll49:670 Accessed 1 Feb. 2024.

employment of local workers and the continued generation of sales tax and aggregate tax revenues. Reclamation of the Site will leave the expansion area with the potential for final development along the perimeter of the quarry. Based on the information provided above, the proposed Project is consistent with the Grey Cloud Island Park Master Plan.

The Parks and Open Space Plan included in the Grey Cloud Island Township, Minnesota 2040 Comprehensive Plan states:
"As the mined areas within the Township transition into residential areas, there will be opportunities to acquire additional park land and enhancement of existing parks to meet the needs of new residents. The Township would support an overlook at Robinsons Rock should a project arise."

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

The current zoning for most of the proposed expansion area is Rural Residential – Medium Density (1 DU per 5 acres) (RM) and a smaller portion of the Project Area to the south is Rural Residential - High Density (1 DU per 2.5 acres) (RH). The land surrounding the Project Area to the north and east (across the Grey Cloud Channel), and to the south is similarly zoned large lot residential. To the west of the proposed Project across CR 75 is Holcim's existing limestone quarry and commercial limestone extraction facility. The existing RM district is described as "area owned by Aggregate Industries Mining" and contemplates future mining. The expansion area will require rezoning to commercial extraction. This will bring the zoning into alignment with the 2040 Comprehensive Plan which shows the expansion area as existing mining.

General Zoning Restrictions

Washington County regulates mining operations within townships through Chapter 7 of their Development Code and requires a five-year Conditional Use Permit for the operation of a mine within unincorporated areas of the County. Grey Cloud Island Township regulates mining operations through their Zoning Ordinance #49, Section V Mining Regulations. The Township Zoning Ordinance was most recently amended on March 10, 2021, and is illustrated in Figure 6, Grey Cloud Island Township Zoning Map. The Township adopted the Washington County mining regulations with the adoption of some more restrictive standards and operating conditions including more restrictive setbacks for mining activity. Because the Larson Quarry was established and has been in operation since before the stricter setback and operating requirements were adopted, the Proposer maintains that the quarry has legal nonconforming rights to setback and operational characteristics . This EAW studies the greatest area of impact proposed by the Proposer. Final setback requirements will be determined during the IUP process.

MNRRA and MRCCA

The Mississippi National River and Recreation Area (MNRRA) is a special type of National Park, known as a Partnership Park, that relies on state and local government and other stakeholders to both own and manage the park. In Minnesota, the Minnesota DNR adopted the portion of the MNRRA within state boundaries and renamed it the Mississippi River Critical Corridor Area (MRCCA). Today, the MRCCA is a joint state, regional and local program that provides coordinated planning and management for the 72-mile stretch of the Mississippi River throughout the seven-county metropolitan area and 54,000 acres of surrounding land across 30 local jurisdictions. MRCCA is home to a full range of residential neighborhoods and parks, as well as river-

related commerce, industry, and transportation. Although the river corridor has been extensively developed, many intact and remnant natural areas remain, including bluffs, islands, floodplains, wetlands, riparian zones, and native aquatic and terrestrial flora and fauna. The purpose of the program is to manage the lands and waters within the Mississippi River Corridor to preserve and protect natural, aesthetic, cultural and historical values.

All local governments in the river corridor are required to have a plan that meets the MRCCA requirements, including the establishment of a permit program for vegetation management and land alterations in specific environmentally sensitive areas. In March of 2023, Grey Cloud Island Township adopted Ordinance 60, an ordinance regarding zoning regulations for the Mississippi River Critical Corridor Area (MRCCA Ordinance), depicted on Figure 7 – MRCCA Districts. Grey Cloud Island Township is entirely within the MRCCA and contains two MRCCA zoning districts, Rural and Open Space (CA-ROS) and River Neighborhood (CA-RN). The proposed northeast expansion area is located entirely within the River Neighborhood (CA-RN) District.

Nonmetallic mineral mining is allowed within the CA-RN District, subject to an IUP or CUP, and requires an annual operating permit from the Township. Existing regulations prohibit mining within the shore impact zone, bluff impact zone, or within 500 feet of the ordinary high water level (OHWL) of the Mississippi River. Among the requirements for mining facilities, a Site Management Plan must be prepared by the operator that describes how the site will be developed over time with emphasis on eliminating environmental risk to public waters and a reclamation plan compatible with the purposes of the MRCCA Ordinance must be submitted to and approved by the Township. The MRCCA rules indicate that District CA-RN "*must be managed to maintain the character of the river corridor within the context of residential and neighborhood development and to protect and enhance habitat, parks and open space, public river corridor views, and scenic, natural, and historic areas.*" The MRCCA rules also prescribe setbacks for structures from the OHWL and bluff lines, height limits for buildings, and open space requirements for subdivisions and redevelopment areas by district.

Primary Conservation Areas (PCAs) within MRCCA Districts are identified to reflect key resources and features within each District. In Grey Cloud Island Township, PCAs include the shoreland impact zone, wetlands and floodplains, natural drainage routes, bluff impact zones, native plant communities and significant vegetation stands, cultural and historic properties, and unsuitable soils and bedrock. PCAs within or near the Project Area include all of those mentioned above and are described below.

Shoreland Impact Zone

The shoreland impact zone setback under MRCCA rules for the CA-RN District is 50 feet landward from the OHWL. The proposed expansion or road realignment will not encroach into the shoreland impact zone under any of the proposed options. Therefore, no impacts to the shoreland impact zone are anticipated to occur with either Option 1 or Option 2 of the proposed project.

Wetlands and Floodplains

The National Wetland Inventory and a desktop review indicates that there are no wetlands within the proposed quarry or road realignment area. Areas of disturbance are outside of the 100-year and 500-year floodplains. The closest wetlands are floodplain wetlands in the Grey Cloud Channel floodplain. Similarly, the closest floodplain is the Grey Cloud Channel floodplain located adjacent to and east of the Project Area. See Section 12 – Water Resources for more information. No impacts to wetlands or floodplains are anticipated to

occur with either Option 1 or Option 2 the proposed project.

Natural Drainage Routes

Portions of the Grey Cloud Channel are located within the Project Area but outside of the proposed quarry limits of the proposed expansion. No significant changes in major drainage routes are anticipated because of the Project. However, localized drainage is expected to change throughout the life of the Project due to the advancement of mining. During active mining, drainage will largely be directed towards the interior of the mine, creating an internally drained site over time. Option 1 Road Realignment will not require extensive grading along the road corridor as the landscape is fairly level across the proposed realignment area and no significant changes to drainage patterns as a result of the realignment are expected. Stormwater management facilities will be incorporated into the design of the roadway to manage the volume, rate, and stormwater water quality. Post-reclamation, primary natural drainage routes (Mississippi River and Grey Cloud Channel) will be unchanged. However, some local drainage routes that previously drained directly to the Grey Cloud Channel will change to drain towards the post-reclamation interior lake.

Bluff Impact Zones

The Grey Cloud Island Township bluff impact zone setback is a 20-foot buffer around all existing bluffs. According to the Grey Cloud Island Township Bluff Impact Zone Map, the only bluffs located within the Project Area are along the western shoreline of the Grey Cloud Channel to the north and east of the proposed expansion area. The proposed expansion (under any of the options) does not include any work within the bluff impact zone or bluff impact zone buffer. The bluff impact zone and buffer would be preserved through the life of the Project, including reclamation. Therefore, no impacts to the bluff impacts zone would occur as part of either Option 1 or Option 2 of the Project.

Native Plant Communities and Significant Vegetation Stands

The Project Area contains one area identified by the National Park Service as a Significant Existing Vegetative Stand, and one area identified by the MDNR as a native plant community. Both of these areas are part of the same overlapping forested area. These areas are considered significant because “they are largely intact and connected and contain a sufficient representation of the original native plant community to be identifiable as a distinct community. Much of this vegetation includes an overstory or tree canopy that contributes to the scenic value of the MRCCA and provides ecological, water quality, and scenic values."[10] In 1959, Curtis characterized this area as southern dry-mesic forest association. Curtis also goes on to mention in that same document that this is the “most common woodland remaining in the Twin Cities area as it is found along the entire metropolitan Minnesota River, St. Croix River and along the Mississippi River below St. Anthony Falls.” [11] Traditionally, this forest stand would be comprised primarily of oak and basswood, but this forest is now substantially impacted by succession species and non-native species which has degraded the native state. As the mine progresses the forested habitat would be lost and subsequently converted to aquatic habitat in accordance with the reclamation plan. Though mining operations in the proposed expansion area will result in the incremental loss of the native forest within the Project Area and an identified significant vegetation

[10] MRCCA Significant Existing Vegetation Stands MN Geospatial Commons retrieved from https://gisdata.mn.gov/en/dataset/biota-mrcca-vegetation

[11] Curtis, J. T. (1959). The vegetation of Wisconsin: An ordination of plant communities. Madison, WI: University of Wisconsin Press.

stand in the MRCCA, this native forest type is common in the region, and is currently in a degraded state due to successional transition and the presence of invasive species and diseases such as oak wilt. Consequently, the loss of this forested area would not be a significant loss of unique forest resources in the region.

Project compatibility with MNRRA and MRCCA

For a project to be compatible with the MRCCA, the land use must be managed to maintain the character of the river corridor within the context of residential and neighborhood development, and also to protect and enhance habitat, parks and open space, public river corridor views, and scenic, natural, and historic areas. The proposed project complies with MRCCA setback requirements, and the mining limits will be far enough from the Mississippi River and the Grey Cloud Channel to preserve the character of the river corridor in terms of its scenic and natural value. The post-reclamation end use is a vision of a mixture of open space, lake, and residential development which supports the Townships future rural residential land use plans. Summarily, the proposed mine expansion plan in combination with the reclamation plan is compatible with the national MNRRA Program and the state MRCCA Program.

Washington County Shoreland Management District

Washington County has land use authority in designated shoreland management districts and regulates certain activities within 1,000 feet landward of the OHWL. The proposed quarry expansion will be within the Grey Cloud Island Shoreland Management District (Figure 8) and a conditional use permit will be needed from Washington County.

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.

The Project does not include the construction of any buildings, structures, or other critical facilities in a floodplain. There are no areas at risk for localized flooding since the Project Area is outside the 500-year floodplain and the majority of stormwater that falls near the site will be directed towards and contained within mining limits. The Project does not involve storing hazardous materials susceptible to localized flooding.

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

Mineral extraction is a permitted use in the Township subject to specific performance standards under the Grey Cloud Island Township Zoning Ordinance. Potential effects of noise, dust control, truck traffic, and blasting, if not regulated or subject to specific standards, have the potential to be incompatible with residential land uses. These topics are covered in more detail in items 17, 19, 20, and 22 of this EAW, including a discussion of existing regulatory standards and mitigation measures to be adopted to ensure compatibility with nearby residential land uses. Proposed mining limits have been established that avoid potentially environmentally sensitive areas including wetlands, floodplains, and bluff lines. Potential environmental impacts associated with Grey Cloud Channel, a public waterway, are discussed in item 12. Water Resources. The Project is subject to the on-going regulatory land use authority of Grey Cloud Township and Washington

County and their respective land use, and mining ordinances, development codes, and permitting programs.

Post-reclamation, the planned future land use of the Project Area is a mixture of open space, lake, and residential homes which is consistent with Grey Cloud Township's proposed future land use of expansion area.

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

During active mining operations, the Project will be subject to operational standards established in the local zoning regulations related to setbacks, screening, noise, dust control, truck traffic, and other potential nuisance conditions which are intended to minimize the potential for land use conflicts. These items including mitigation measures are discussed within the individual items included in the EAW analysis.

11. Geology, soils and topography/landforms:

a. Geology - Describe the geology underlying the project area and identify and map any susceptiblegeologic 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.

Geology: The geology of the Project Area described in this section is based on past mining operations, available well log data from the Minnesota Well Index[12] for on-site and nearby wells, and the Washington County Geologic Atlas[13].

The geology of the Site consists of a thin layer of unconsolidated material consisting primarily of a glaciofluvial terrace deposit overlying bedrock. Unconsolidated materials beneath the topsoil typically consist of gravelly sandy loam ranging from 2-10 feet below ground surface (bgs).

Shallow bedrock is present across the majority of the site. The general stratigraphic section of the Site is illustrated below. The eroded surface of the Shakopee Formation forms the bedrock subcrop beneath the Site. The Shakopee Formation is the upper member of the Ordovician Prairie du Chien Group which consists of the Shakopee Formation and the Oneota Dolomite[14]. The Shakopee Formation is a dolostone that is characterized by thin to medium bedding and includes beds of sandy and oolitic dolostone along with some thin discontinuous sandstone beds and intermittent thin shale partings or beds. The Oneota Dolomite is commonly massive to thick bedded and forms the lower portion of the Prairie du Chien Group. Although the Prairie du Chien Group is composed primarily of dolostone, the common industry name of "limestone" is used to describe the target resource and end product throughout this document.

[12] Access to data base available online at: https://mnwellindex.web.health.state.mn.us/#

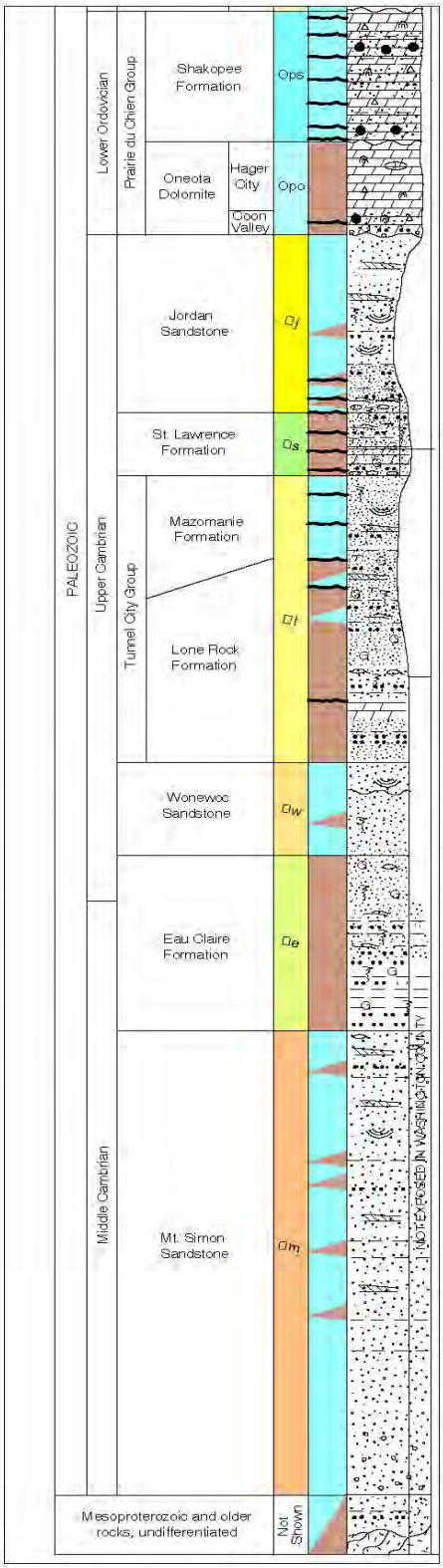
[13] Bauer, Emily J. (2016). C-39, Geologic Atlas of Washington County, Minnesota. Minnesota Geological Survey. Retrieved from the University of Minnesota Digital Conservancy, https://hdl.handle.net/11299/178852.

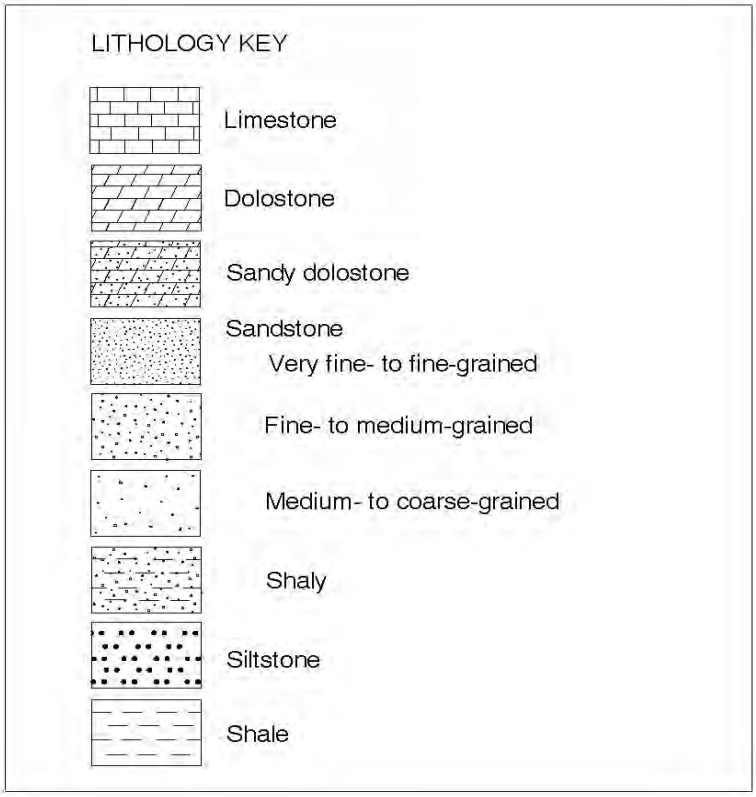
[14] Nomenclature for the stratigraphy of the Site follows the convention established by the Minnesota Geological Survey buy Mossler: Mossler, John H. (2008). RI-65 Paleozoic Stratigraphic Nomenclature for Minnesota. Minnesota Geological Survey. Retrieved from the University of Minnesota Digital Conservancy, https://hdl.handle.net/11299/58940.

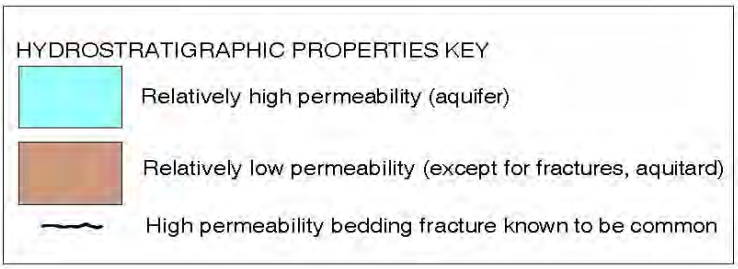
The Prairie du Chein Group is 130-170 feet thick across the Site. The elevation of the top of bedrock ranges from approximately 735-750 feet above mean sea level (msl) across the expansion area to be quarried. To the north and west, the upper portion of the Shakopee Formation has been eroded where the Grey Cloud Island Channel has cut through the upper portions of the formation.

The expansion area will be quarried with two approximately 50-foot-high benches, in the same fashion as the existing Larson Quarry, removing the limestone to an elevation of approximately 640 msl. The bottom of the Oneota Dolomite is at 585-595 msl leaving 45-55 feet of Oneota intact above the Jordan Sandstone.

Beneath the Prairie du Chien Group, the Jordan Sandstone, St. Lawrence Formation, Tunnel City Group, Wonewoc Sandstone, Eau Claire Formation, and the Mt. Simon Sandstone make up the remainder of the bedrock units beneath the Site as illustrated below on the Generalized Stratigraphic Column for the Site.







Stratigrapghic Section, Lothology Key and Hydrostatic Prooperties Key from the Washington County Geologic Atlas Plate 2 Bedrock Geology

(Bauer, Emily J.. (2016). C-39, Geologic Atlas of Washington County, Minnesota. Minnesota Geologica Survey. Retrieved from the University of Minnesota Digital Conservancy, https://hdl.handle.net/11299/178852.)

General Stratigrapghic Column beneath the Larson Quarry Expansion Area.

Susceptible Features – Shallow Limestone Deposits/Karst Features: Shallow limestone and dolostone bedrock deposits are often associated with a karst landscape. Karst features result when water dissolves soluble rocks like limestone, dolostone, or gypsum. The Project is located in an area that is mapped by the Minnesota Department of Natural Resources (MDNR) as a region prone to surface karst feature development[15]. Karst features that form because of the dissolution process include caves, large voids, fractures, sinkholes, disappearing streams, and springs. Karst topography can affect groundwater flow, contaminant transport, foundation design, and stormwater management options.

The Project is located in an area where there is only a thin layer of sediment covering carbonate rocks and is susceptible to development of karst features. A review of the MDNR Karst Feature Inventory[16] data was conducted to identify potential geologic hazards. The inventory does not indicate any karst features on the site itself, but did identify one karst feature, a sinkhole, located approximately one-third of a mile northeast of the Site Figure 9 – Karst Features.

Karst features can include a network of fractures and solution cavities that create high flow systems that affect groundwater flow and contaminant transport. Faster and more variable contaminant transport may occur in karst terrain than in a more homogeneous non-karst terrain. Karst features may also allow direct pathways for contaminants to reach underground aquifers from the surface. The Project involves both dewatering and removal of the karst prone bedrock. The dewatering activity changes the direction of groundwater flow in the immediate vicinity of the mine. This eliminates the potential for contaminant transport from the mine off-site but increases the potential for contaminant transport from off-site sources to the mine.

The operator will follow MPCA and MDNR applicable state standards with respect to development in and around areas that may be susceptible to karst, particularly with respect to stormwater management and quarry dewatering. Stormwater management at the quarry is subject to the on-going regulatory authority of the MPCA's National Pollutant Discharge Elimination System/State Disposal System Nonmetallic Mineral Mining/Associated Activities General Permit (NPDES General Permit). Off-Site discharge of dewatering water is subject to water quality monitoring and surface water discharge standards of the (NPDES General Permit. See also Item 12. Water Resources and Item 13. Contamination/Hazardous Materials/Wastes, for additional information regarding spill prevention and protection of groundwater and surface water quality.

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 inresponse to Item 12.b. ii.*

[16] Available online at https://arcgis.dnr.state.mn.us/portal/apps/webappviewer/index.html?id=9df792d8f86546f2aafc98b3e31adb62

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/landforms and potential effects described in EAW Item 11.

Soils: According to the NRCS Web Soil Survey, site soils are composed of loam, silt loam, loamy sand, and rock outcrop. There are two predominant soil types located within the Project Area, the Copaston Loam 0-6% slopes (100B) and the Sparta Loamy Sand 0-6% slopes (1848B). Copaston Loam is soil formed in glacial outwash. The soil is moderately permeable, but it has a relatively low water capacity due to its shallow depth. This makes it susceptible to long periods of drought and wind erosion. Erosion and runoff may be less of a concern if this soil is on flat or gentle grades. The Sparta series consists of very deep, excessively drained soils formed in sandy outwash that has been reworked by wind. This soil series is found on nearly stream terraces in river valleys, outwash terraces, outwash plains, and dune fields. The other two soil types within the Project Area include the Dorerton-Rock Outcrop Complex 25-65% slopes (1819F) and Chaska Silt Loam (329) which are found on the perimeter of the property and are associated with Grey Cloud Channel and bluff area. The occurrence of these two soil types is outside of the limits of any disturbance associated with the quarry or road relocation limits. within the setback area of both road relocation and proposed quarry limits.

The Hydrologic Soil Group (HSG) of the two soil types that will be affected by both mining options are HSG Type D (Copaston loam) and HSG Type A (Sparta loamy sand) soils. Type D soils have very slow infiltration rates with high runoff potential and are typical of soils that are shallow over bedrock while Type A soils are well to excessively drained and have moderate to high infiltration rates and moderate to low runoff potentials. There are no hydric soils located in the portions of the site that are to be disturbed by mining or road realignment activity.

Table 11-1, 11-2, and 11-3 NRCS Soil Types, list the relative occurrence of the different soil types across the entire Site, Option 1 CR75 realignment mining limits and Option 2 bridge/underpass respectively. Because the final alignment of the CR 75 road relocation has not been determined, a conceptual road corridor through

the general area between the bluff setback and the quarry limits was used to provide the general acreage of each soil type anticipated to be disturbed under Option 1. See Attachment 2 – Soil Survey Report for additional information on site soils.

TABLE 11-1 PROJECT AREA SITE SOILS			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
100B	Copaston loam, 0 to 6 percent slopes	77.0	52.1%
329	Chaska silt loam	8.9	6.0%
1819F	Dorerton-Rock outcrop complex, 25 to 65 percent slopes	9.7	6.6%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	40.1	27.1%
W	Water	12.1	8.2
Totals for Area of Interest		**147.9**	**100.0%**

TABLE 11-2 OPTION 1 CR 75 REALIGNMENT			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
100B	Copaston loam, 0 to 6 percent slopes	46.6	63.0%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	27.3	27.3%
Totals for Area of Interest		**73.9**	**100.0%**

TABLE 11-3 OPTION 2 BRIDGE			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
100B	Copaston loam, 0 to 6 percent slopes	27.6	52.2%
1848B	Sparta loamy sand, bedrock substratum, 0 to 6 percent slopes	25.3	47.8%
Totals for Area of Interest		**52.9**	**100.0%**

Topography: Topography in the Project Area ranges from zero to 65 percent slopes with the majority of the Project Area having less than a 6% slope (see Plan Sheet C1 for existing topography). The steeper slopes within the Project Area are associated with the bluff along the Grey Cloud Channel. The bluff line is within the setback area and will not be disturbed by any component of the Project. Up to approximately 75 acres in total will be cleared of vegetation and stripped of topsoil and overburden. This will be completed in phases to minimize the disturbed area at any given time throughout the life of the mine. The topsoil will be used to construct perimeter berms around the active quarry or used in reclamation to shape upland grades around

the perimeter of the future lake and to create safe water exists along the shoreline of the future lake.

Estimated volume and acreage of soil excavation and/or grading:
Estimated volume of soil and rock excavation Option 1: 11 mcy 74 acres
Estimated volume of soil and rock excavation Option 2: 8 mcy 53 acres

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.*

Surface Waters: Grey Cloud Channel is located along the northern and eastern perimeter of the Project Area. The main channel of the Mississippi River is a quarter mile to the west of the Project Area and Mooers Lake is located approximately three quarters of a mile south of the Project Area. These water resources are all designated as public water 19-5 P. No work is proposed below the ordinary high-water level, therefore, a public waters work permit is not required for the Project.

The Mississippi River and Grey Cloud Channel are both classified as Section 10 waters under the Rivers and Harbors Act. No work is proposed in, over, or under either waterbody, therefore a Section 10 permit is not required for the Project. The Mississippi River and Grey Cloud Channel are both classified as waters of the United States under Section 404 of the Clean Water Act. The Project does not involve the discharge of dredged or fill material into either waterbody. Therefore, a Section 404 permit is not required for the Project.

Minnesota's Buffer Law requires a perennial vegetative buffer of 50 feet along Grey Cloud Channel[17]. These buffers help filter out phosphorus, nitrogen, and sediment from stormwater. Mining limits are setback 500 feet from the OHW of Grey Cloud Channel and the proposed roadway corridor will be set back from the OHW by at least 50 feet. All the proposed components of the Project are outside of the required vegetative buffer.

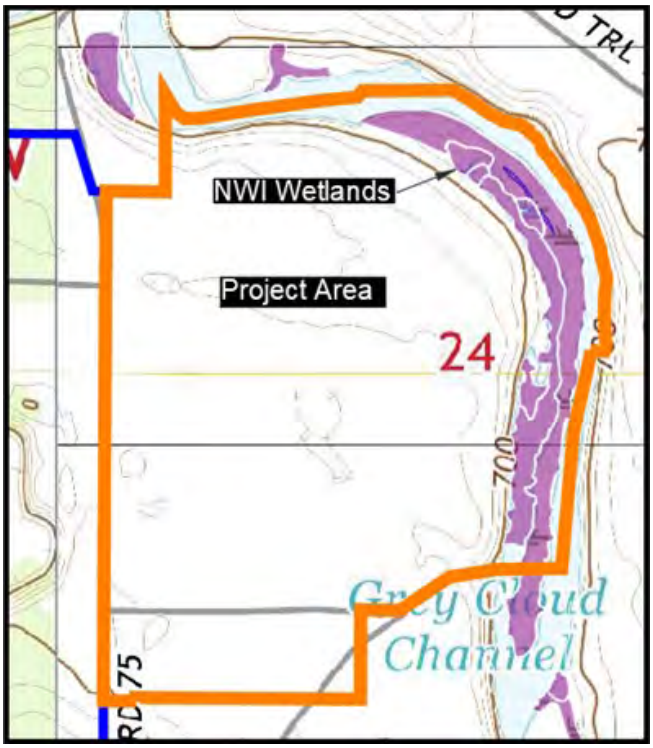
The Project will result in the creation of a quarry lake. Under Option 1 the deep-water quarry lake associated with the reclamation of the existing Larson Quarry will be expanded, adding up to an additional 69 acres of surface area to the lake for a total lake area of 176 acres. Under Option 2, two main deep-water quarry lake basins would be connected by a channel for a total lake area of 161 acres.

[17] https://bwsr.state.mn.us/minnesota-buffer-law

Wetlands: A review of the National Wetland Inventory (NWI) map indicates that seven (7) NWI wetlands are mapped within the Project Area and are classified as riverine, freshwater forested/shrub, freshwater pond, and freshwater emergent wetland types.18 Grey Cloud Channel is also mapped on the MDNR Public Waters and Wetlands Inventory within the boundary of the Site. No wetlands are identified on the NWI map within the quarry expansion area or the proposed road relocation area. (See Figure 10, NWI Wetlands Map). A review of the NRCS web soil survey map does not indicate the presence of any hydric soils within the proposed quarry limits or within the proposed road relocation alignment. A review of available historic aerial photographs did not reveal the presence of any wet signatures within the proposed expansion area or road relocation area.

Westwood Professional Services conducted a field delineation of wetlands in July 2023 over the proposed quarry expansion area including the area of the potential CR 75 road relocation. Westwood delineated seven wetlands totaling 3.28 acres and one watercourse totaling 12.83 acres within the Site. All of the wetlands were located at the base of the bluff adjacent to Grey Cloud Channel, consistent with the NWI. The area of delineated wetlands is located well outside of the limits of any proposed disturbance from either quarry activity or road realignment work.

NWI WETLANDS



FIELD DELINEATED WETLANDS

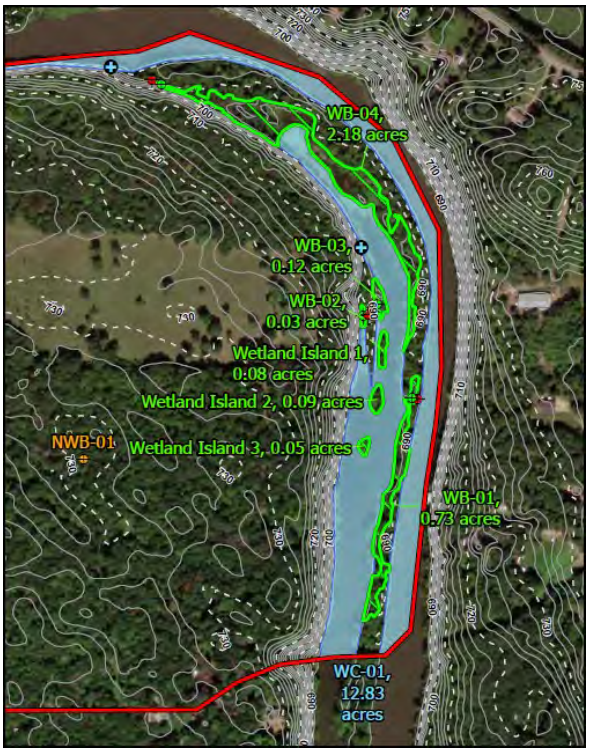


Table 10-4 is a summary of the wetlands that were delineated in the field. Attachment 3 includes a copy of the Wetland Delineation Report.

[18] National Wetland Inventory Map retrieved from US Fish and Wildlife Service National Wetlands Inventory Map Viewer on June 12th, 2023. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

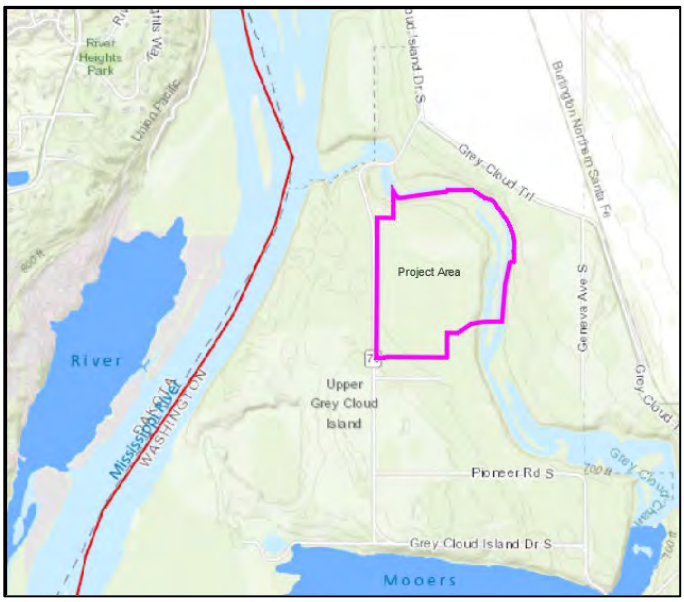
TABLE 10-4 – PROJECT AREA WETLAND SUMMARY TABLE

Wetland ID	Mapped on NWI	Mapped on NHD	**Cowardin Classification**	**Eggers & Reed Classification**	**Circular 39 Classification**	Acres within Delineation Area	Latitude	Longitude
WB-01	PFO1A, PUBHh	No	PFO1A, PEM1B, PEM1C	Floodplain forest, fresh wet meadow, shallow marsh	Type 1, Type 2, Type 3	0.73	44.810251	-92.990277
WB-02	No	No	PEM1C	Shallow marsh	Type 3	0.03	44.812266	-92.99068
WB-03	PUBHh	No	PEM1C	Shallow marsh	Type 3	0.12	44.812452	-92.990437
WB-04	PEM1C, PFO1A, PABHh	No	PFO1A, PEM1B, PEM1C	Floodplain forest, fresh wet meadow, shallow marsh	Type 1, Type 2, Type 3	2.18	44.813675	-92.990806
Wetland Island 1	PUBHh	No	PFO1B	Hardwood swamp	Type 7	0.08	44.811916	-92.990388
Wetland Island 2	PABHh, PUBHh	No	PFO1B	Hardwood swamp	Type 7	0.09	44.811382	-92.990475
Wetland Island 3	PABHh, PUBHh	No	PFO1B	Hardwood swamp	Type 7	0.05	44.810887	-92.990666

Floodway/Floodplain: The northern and eastern boundary of the Project Area associated with Grey Cloud Channel is located within the regional floodplain of the Mississippi River. The elevation of the 100-yr floodplain in the vicinity of the Site is 697 msl[19] (See Figure 11 FEMA Floodplain Map). The elevation of the area where mining or road relocation will occur ranges from 710-750 msl. The quarry expansion or road relocation limits are not located within the regulatory floodway or within the 100-year floodplain and the Project will not impact existing floodplain or flood stage elevations.

[19] FEMA NFHL Map retrieved from: FEMA's National Flood Hazard Layer Viewer on June 1st, 2023. https://hazards-fema.maps.arcgis.com/apps/webappviewer

MPCA 303d Impaired Waters List



The Mississippi River is an MPCA 303d impaired water located within one mile of the Site. This river segment has an EPA-approved impairment for: Aluminum; Fecal coliform; Mercury in fish tissue; Mercury in water column; Nutrients; PCBs in fish tissue; Perfluorooctane sulfonate (PFOS); Perfluorooctane sulfonate (PFOS) in fish tissue; Total suspended solids (TSS).[20] These impairment(s) are considered to be construction related parameters, which are the parameters of concern associated with aggregate mining facilities.

The existing Larson Quarry has a discharge point to the Mississippi River and is subject to on-going regulatory authority under their current MPCA NPDES/SDS Permit (MNG0030473). In accordance with the conditions of the NPDES permit, the Larson Quarry operates under a Stormwater Pollution Prevention Plan (SWPPP), conducts routine inspections, performs water quality sampling and reporting, and is subject to specific discharge limits established in the MPCA NPDES/SDS Permit.

CR 75 relocation or bridge work will also be subject to an MPCA General Construction NPPDES/SDS permit. The permit requires a Pollution Prevention Plan that includes Best Management Practices (BMPs) for preventing erosion and controlling sedimentation to protect receiving surface waters. The pollution prevention plan will be designed by a certified designer in accordance with industry standards. It will be the responsibility of the road construction contractor to obtain the permit and implement the pollution prevention plan. Typical BMPs will be selected which include erosion prevention and sediment control practices, inspections and maintenance, and temporary/permanent stormwater treatment systems as may be applicable based on final road design plans. Because the realignment area is within one mile of an impaired water, the work will be subject to additional conditions established by the MPCA including:

- Immediate initiation of stabilization of exposed soil areas and complete the stabilization within seven (7) calendar days after the construction activity in that portion of the site temporarily or permanently ceases.
- Provide temporary sediment basins for common drainage locations that serve an area with five (5) or more acres disturbed at one time.

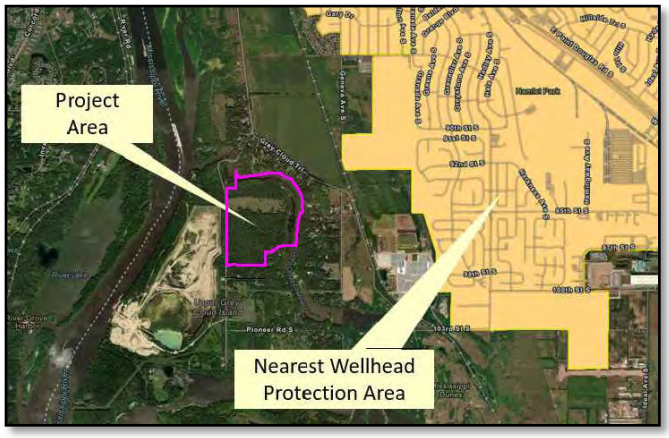
Trout streams/lakes, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water: There are no designated trout streams/lakes, designated migratory waterfowl feeding or resting

[20] MPCAs Construction stormwater special waters search on July 5, 2023, https://mpca.maps.arcgis.com/apps/webappviewer/index.html?id=e03ef170fa3e41f6be92f9fafec100cc

lakes, or outstanding resource value waters within or adjacent to the Project Area[21]. The closest trout streams are located several miles south of the Project Area, across the Mississippi River in a separate watershed. The Project does not have the potential to impact trout streams.

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.*

Depth to groundwater: The water table aquifer in the Project Area is the Prairie du Chien aquifer. The normal depth to groundwater is 30-45 feet below the ground surface at approximately 690 msl. In the immediate vicinity of the Larson Quarry the water table is lowered to accommodate dry mining conditions. Current dewatering operations associated with the existing Larson Quarry will continue during the life of the Project. Dewatering lowers the groundwater table across the quarry floor approximately 50 feet to an elevation of around 640 msl. See Section 12.b.iii Water Appropriation, for additional information regarding dewatering and potential impacts to adjacent wells and surface waters.



Wellhead Protection Area: The Project is not within a wellhead protection area. The closest wellhead protection area is within the city of Cottage Grove approximately 0.65 miles northeast of the proposed expansion area[22] as illustrated in the inset to the left.

Onsite and Nearby Wells: Holcim maintains five groundwater level monitoring wells in Grey Cloud Island Township. One of the monitoring wells (MW-5) is located within the Project Area, the other four are located just south of the Project Area. Figure 12 – Monitoring Well Locations illustrates the locations of the monitoring wells. There are no other known wells located within the Project Area. If any wells are encountered during quarry operations, they will be sealed in accordance with the Minnesota Department of Health (MDH) regulations. Attachment 4 includes a graph of the groundwater elevation data collected from the monitoring wells from 2008-2022.

Grey Cloud Island Township is located in an area that is not served by municipal services and water is

[21] MN Trout Streams and Lakes Map retrieved from MN DNR Trout Stream and Lakes viewer on June 1st, 2023. https://www.dnr.state.mn.us/fishing/trout/map.html

[22] Wellhead Protection Area Map retrieved from Minnesota Department of Health's Source Water Protection Web Map Viewer on June 15th. 2023. https://mdh.maps.arcgis.com/apps/View/index.html?appid=8b0db73d3c95452fb45231900e977be4

supplied by individual residential water supply wells. Based on well log records from the Minnesota Well Inventory (MWI), most residential wells in the surrounding are completed in the Jordan Aquifer.[23] Figure 13 – Groundwater Well Locations, illustrates the location of nearby residential water supply wells. Attachment 5 includes well log information for the surrounding residential wells. Groundwater appropriations and potential effects of the dewatering operation on adjacent wells are further described under Section 12.b.iii Water Appropriation.

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 ofall 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 andwaste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.*

The Project will not discharge to a public treatment facility. There is no public treatment system in Grey Cloud Island Township.

2) *If the wastewater discharge is to a subsurface sewage treatment system (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.*

Sanitary waste from the office is discharged into an on-site SSTS located at the existing Larson Quarry. Portable sanitation units will be utilized within the quarry. Portable units are serviced as needed and are not subject to effects of climate change or anticipated changes in rainfall frequency, intensity, or amounts. Locations of the portable units are subject to change as the mining activity progresses across the Project Area. There will be no change in the number of employees at the facility and the Project will have no impact on sanitary sewer needs for the quarry.

There is one residence located on the southwest corner of the expansion property (9821 Grey Cloud Island Drive), owned by Proposer, which is served by an SSTS system. This residence is located outside of the proposed mine limits. However, under Option 1, this residence may need to be removed depending upon the final alignment of the relocation project. If the residence is removed, the SSTS, or any other SSTS, sewage tank, dry well/cesspool, or SSTS component will be properly abandoned and a county permit for septic system abandonment shall be submitted to the Washington County Department of Public Health and Environment.

[23] Minnesota Well Index map viewer on June 15th, 2023. https://mnwellindex.web.health.state.mn.us/

3) *If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigateimpacts. 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.*

Water which is discharged into the Mississippi River is generated from dewatering (which includes stormwater), and the aggregate wash plant (process water). Washwater, which carries suspended solid particles, is pumped to the on-site settling ponds where the fine soil particles settle out. The clarified water from these settling ponds is either recycled and returned to the wash plant or is discharged into the Mississippi River, in accordance with the permit conditions within the Company's NPDES/SDS Individual Permit MN0030473. Dewatering, stormwater, and aggregate washwater will continue to be comingled and then the process water discharged from the outfall treatment pond into the Mississippi River at the established discharge point located at the existing Larson Quarry. Under the requirements of the NPDES/SDS permit, the discharged water is tested for the parameters listed in Table 12-1 with permit limits for total suspended solids. The Project will continue to operate under MN0030473. Test results have consistently been within permit limits. Attachment 6 includes copies of the 2022 discharge monitoring reports.

TABLE 12-1 PROCESS WATER DISCHARGE MONITORING EXISTING LARSON QUARRY

Parameter	Permit Limit	Frequency
Flow	Monitor only. Calendar month total	Once per week
Nitrite + Nitrate, Total (as N)	Monitor only. Calendar month maximum	Once per year
Nitrogen, Kjeldahl (as N)	Monitor only. Calendar year maximum	Once per year
Nitrogen, Total (as N)	Monitor only. Calendar year maximum	Once per year
pH	6.0 -9.0 calendar month min/max	Once per week
Phosphorus Total (as P)	Monitor only. Calendar month average	Once per quarter
Solids, Total Suspended (TSS)	30 mg/l Calendar month average 60 mg/l Calendar month maximum	Twice per month

The Project will not require changes to the existing system for washwater or dewatering discharge. The existing aggregate washwater system will be unchanged and will continue to be used to wash the material which is mined from the east quarry area under terms of the existing NPDES/SDS permit. The proposed Project is not expected to increase the amount of limestone being washed.

If a new surface discharge station for dewatering is required, the discharge will either be regulated under the company's multi-site NPDES/SDS General Permit for Non-Metallic Mineral Mining and Associated Activities, or an amendment to their existing NPDES/SDS Individual Permit MN0030473. If a new surface discharge station is established in the east quarry area, dewatering would be directed into a settling basin within the proposed Project Area where fines would be allowed to settle out before the water would be discharged into the Grey Cloud Channel. Negative impacts to the Mississippi River or Grey Cloud Channel are not anticipated as a result of the Project. Process water and dewatering discharges are subject to monitoring, reporting, and on-going regulatory authority under the MPCA's NPDES/SDDS permit program and therefore are not a potential significant environmental effect.

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.

Surface hydrology of the Project Area is characterized by a relatively flat terrace with shallow depressions and gentle slopes (0-6%). The terrace sits 30 to 50 feet above the Grey Cloud Channel and encompasses approximately 117 Acres within the Project Area. Steep slopes define a bluff from the channel to the terrace. Site soils across the terrace include Hydrologic Soil Group (HSG) A and D soils. HSG A soils allow rapid infiltration of precipitation and generates low volumes of stormwater runoff. HSG D soils typically have limited infiltration capacity and generate high rates of runoff. Stormwater that does not collect in shallow depressions and infiltrate flows towards the bluff and to Grey Cloud Channel. Grey Cloud Channel flows to the main channel of the Mississippi River.

All the components of the Project will be located on the terrace, setback from the bluff line. The Project will disturb approximately 79 acres (Option 1) to 55 Acres (Option 2). Both options will result in a reduction of the drainage area to the bluff, (Option 1 will reduce the 117-acre drainage area to the bluff by up to 70 acres and Option 2 will reduce the 117-acre drainage area to the bluff by up to 53 acres) by creating an internally drained condition within the quarry footprint. This reduction in drainage area will result in a reduction in the rate and volume of stormwater runoff down the bluff to Grey Cloud Channel once the Site is reclaimed. During active mine operations while the Site is dewatered, stormwater that is directed internally will still be collected in the quarry sump and discharged into the river. Option 1 will also result in a change in land cover of approximately nine acres over the new CR 75 alignment from a predominantly pastureland and wooded area to impervious roadway surface and grassed rural section ditches.

In the active mining area, stormwater and snowmelt will carry particulates from the exposed mine surfaces to the quarry floor. Stormwater that collects on the quarry floor will continue to be pumped to the existing settling basins (where it is comingled with process water from aggregate washing as well as water from the dewatering operations) in the existing Larson Quarry before being discharged off-site in accordance with the NPDES/SDS Permit. It is not anticipated that the current discharge location for treated stormwater will be modified, although it is possible that a dewatering sump is established in the east expansion area, a new settling basin constructed, and a new surface water discharge location established. This would require either an amendment to the existing NPDES permit or adding the east quarry to Holcim's existing General Non-Metallic Mineral Mining and Associated Activities Permit.

The design of the roadway realignment under Option 1 or the Bridge/underpass under Option 2 will include

a stormwater management component. Construction of a new roadway or the bridge and temporary roadway will be subject to an MPCA General Construction NPDES/SDS permit. As a condition of this permit, the road realignment project must be designed so that all stormwater discharged during and after construction activity does not cause a violation of state water quality standards, including nuisance conditions, erosion in receiving channels or on downslope properties, or a significant adverse impact to wetlands caused by inundation or decrease of flow. In addition, under this permit, the realignment will be required to provide a permanent stormwater treatment system because the realignment will result in a net increase in impervious area of one acre or more. A SWPPP will be prepared as part of the final design of the roadway and include both erosion control BMPs designed to keep dirt and sediment in place, and sediment Control BMPs designed to capture sediment that is generated from the construction activity before it leaves the site. Because the SWPPP will be developed as part of the roadway design, specifics are not available. However, the SWPPP will incorporate standard BMPs to minimize erosion and control sedimentation such as perimeter controls including vegetated filter strips, silt, fence, diversion berms and swales, seeding and mulching, temporary sedimentation basins, inlet protection, riprap, timely establishment of vegetation, and permanent infiltration devices.

After quarry activity is complete, the reclamation plan calls for the creation of a large lake with no outlet. The lake, which will be created as part of the reclamation process will catch and retain all precipitation that falls into it. The unmined setback area will provide a buffer around the quarry lake and the end use grades will direct some runoff into the quarry lake, and some into the Mississippi River or the Grey Cloud Channel. Although most of the perimeter of the quarry lake in the expansion area will be near vertical limestone bluff, any reclaimed slopes inside the quarry footprint will direct runoff into the quarry lake and will be seeded with appropriate vegetation.

Negative impacts are not anticipated to result from stormwater runoff from the Project to the Grey Cloud Channel or the Mississippi River. Stormwater discharges are subject to the on-going regulatory authority of the MPCA through their NPDES/SDS Permit program. A SWPPP is required to be prepared and implemented whether the activity (such as construction of the new road alignment) is subject to a general construction NPDES/SDS Permit, the existing individual NPDES/SDS Permit which covers process water, stormwater, and dewatering discharges, or the General Non-Metallic Mineral Mining and Associated Activities Permit.

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 any well abandonment. If connecting to an existing municipal water supply, identify the wells to be 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 the appropriation 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.*

The Larson Quarry currently operates under two Water Appropriation Permits from the MDNR. Permit 2002-6042 appropriates 340 million gallons of water per year (mgy) for aggregate washing and Permit 1967-200

appropriates 5,500 mgy for water level maintenance (quarry dewatering). The Project will not result in the need to change the volume of water appropriated in either of these two permits and dewatering will continue under the regulatory authority of the MDNR. Refer to Attachment 7 – Water Appropriations Permits, for a copy of the existing Water Appropriation Permits. Dewatering is conducted at the existing Larson Quarry and will continue throughout the life of the Project. Dewatering is required to blast and remove the limestone resource under dry mining conditions. Current dewatering rates are around 2,000 mgy. Annual dewatering volumes are expected to increase over time as the quarry footprint expands and as more areas are mined to the deeper 640 bench. The annual volume of dewatering is also influenced by precipitation trends. Wetter years typically result in higher dewatering rates both because of an increase in stormwater collecting in the quarry sump and a general increase in the regional water table and more groundwater entering the quarry. Drier years may result in lower dewatering rates due to a general drop in the regional water table and less water entering the quarry. Table 12-2 provides annual dewatering rates for 2017-2021.

TABLE 12-2 DEWATERING RATES 2017-2021

Year	Permit Limit	2017	2018	2019	2020	2021
Volume Million Gallons Per year (mgy)	5,500	1,927	2,002	2,221	2,038	1,919

Water is also used to supply the aggregate wash plant for the production operation. The Larson Quarry currently operates under two Water Appropriation Permits from the MDNR. Permit 2002-6042 appropriates 340 million gallons of water per year (mgy) for aggregate washing and Permit 1967-200 appropriates 5,500 mgy for water level maintenance (quarry dewatering).

Project Appropriations: The Project will not result in the need to change the rate or total volume of the current Water Appropriation Permits. Dewatering will continue throughout the life of the quarry operations. Dewatering within the quarry expansion area will continue to a depth of approximately 50 feet below the normal water elevation of the Mississippi River and Grey Cloud Channel, similar to the dewatering elevations at the existing Larson Quarry. Barr Engineering developed a groundwater model for the Project Area in conjunction with the 2005 environmental review and expansion. The model was used to predict potential dewatering rates and the extent and magnitude of impacts to water levels in the surrounding area because of future dewatering of the proposed expansion areas**.** The expansion area defined in the 2004 memorandum included approximately 45 acres of new mining in the northern portion of the quarry located west of CR 75 (2005 Northern Expansion) and approximately 55 acres of new mining area east of CR 75, separated by CR 75 consistent with Option 2 of this environmental review. Barr updated their modeling in 2018 to include Option 1 CR 75 Realignment around the east side of the quarry limits and extending the quarry footprint through the existing CR 75 right-of-way. Barr also prepared a 2023 memorandum that elaborates on predicted drawdown for the Project and the potential for impacts to nearby surface waters and residential water supply wells. The Barr 2004, 2018, and 2023 Technical Memorandums are included as Attachment 8.

Predicted total dewatering rates for the existing quarry and proposed expansion areas at full build out maximum quarry footprint and maximum quarry depth) are included in Table 12-3. Barr's analysis concluded that dewatering rates are predicted to remain well within the current appropriation permit's limit of 5,500

mgy.

TABLE 12-3 MODELLED DEWATERING RATES FULL BUILDOUT

Current (mgy)	Option 1 Existing Quarry and Expansion Area (mgy)	Option 2 Existing Quarry and Expansion Area (mgy)	Permit Limit (mgy)
2,000	4,028	4,015	5,500

mgy - million gallons per year

Figure 1 of the 2004 Barr groundwater modeling memorandum and Figure 2 of the Barr 2018 groundwater modeling memorandum (Attachment 8) show the predicted drawdown of the water table resulting from quarry dewatering for the Project. As stated in the Barr 2018 memorandum, drawdown (i.e. cone of depression) of the water table caused by dewatering of the future quarry expansion is predicted to be confined to the immediate vicinity of the quarries and within the boundaries of upper Grey Cloud Island; Moore Lake, the Mississippi River, and Grey Cloud Slough are effective hydraulic boundaries. Predicted decreases to water levels in monitoring wells near the Larson Quarry are expected to range from 1.4 feet (MW-3, approximately 4,000 feet south of the mining area) to 24.2 feet (MW-5, approximately 250 feet from the quarry face).

Several of the domestic water-supply wells listed in the Minnesota Well Index within the area predicted to be affected by dewatering have well construction logs available. The available well logs indicate that the wells are generally at least 175 feet deep, are completed in the Jordan Sandstone and generally have over 100 feet of available drawdown. Test pumping of these wells at the time of construction indicates that aquifer transmissivity is high and test pumping at sustained rates of 15-20 gpm (on the high end for domestic well pumping) resulted in little measurable drop in water level in the well during pumping. Therefore, it is unlikely that the water-table drawdown that will result from quarry dewatering will cause any impact to water supply to existing wells. However, if well interference issues arise, they will be resolved in accordance with the MDNRs well interference resolution process and Minnesota Statue 103G.261.

Water Appropriation Permit 1967-0200 allows for continuous pumping at the quarry provided there is no residential well interference. If a private well has lost its ability to produce water because of the dewatering activity, then Holcim will be required to mitigate to re-establish the water supply for the owners (lowering the pump in an existing well or drilling a new, deeper well). Holcim has never received a “Well Interference Investigation” notice from the Department of Natural Resources, which has been associated with operations at the Larson Quarry.

Holcim maintains a water level monitoring network to monitor the impact of dewatering on water levels in the surrounding area (Figure 12 – Monitoring Well Locations). A graph of groundwater elevations from 2008 to 2023 for the monitoring wells is included in Attachment 4 – Groundwater Monitoring Level Data**.** Monitoring of the wells takes place each month with the oversight of a member of the Grey Cloud Island Township Board. Holcim has been monitoring the water table elevations around the quarry since the early 1980’s.

Dewatering is an established practice at the quarry, regulated through the MDNR Water Appropriation Permit

and MPCA water quality standards are followed. Based on past operations and monitoring, dewatering and water use at the facility is not anticipated to impact water quantity or quality of private wells in the surrounding area. In accordance with the Washington County Groundwater Plan, the dewatering operation has been planned and conducted with appropriate attention to the potential karst conditions that may be present in shallow limestone deposits present in the surrounding area.
No change to the current water appropriation volume is anticipate, however, it may be more efficient to establish a dewatering sump in the eastern quarry area, in which case an amendment to the permit may be necessary to establish the additional sump or amend the current sump location.

The normal water table elevation in the setback area where the road realignment will be constructed is at approximately 690 msl. The road grade is expected to range from 710-750 msl. Dewatering for the construction of the roadway or associated utilities is not anticipated.

No installation or sealing of wells will be required for the proposed Project. However, if a well is encountered through the course of quarry operations, it will be sealed in accordance with MDH rules. The wash plant will remain at its current location and the existing re-circulation pond system will be sufficient for future production. The proposed Project will not require connection to a public water supply.

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 located within the proposed expansion area or within the area of proposed road relocation (See Section 12.a.i. and Figure 10). However, there are wetlands associated with Grey Cloud Channel itself. As described above, additional seepage from Grey Cloud Channel is approximately 0.1% of the total groundwater seepage into the Larson Quarry and will have no measurable impact on the hydrology of Channel. The 2018 Barr Assessment concluded that adjacent wetlands would not be affected by the proposed project.

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 proposed Project will have no significant impact to surface waters. According to the results of the modeling conducted by Barr Engineering, dewatering of the quarry may cause induced seepage from the Grey Cloud Channel. However, because the channel is connected to the Mississippi River and Mooers Lake, no appreciable change is expected in the channel stage.

Groundwater entering the quarry as seepage is from three sources: seepage from the main Mississippi River Channel, seepage from the Grey Cloud Channel, and regional groundwater flow in the bedrock (primarily the Prairie du Chien-Jordan aquifer). Regional groundwater flow in the bedrock is east-to-west and regional groundwater discharge from the bedrock is the Mississippi River. The predictive simulations of groundwater flow for the proposed Project indicate that the proposed expansion will result in 43.5 gallons per minute (gpm) (approximately 0.1 cubic feet per second) of additional seepage from Grey Cloud Channel. The 43.5 gpm additional seepage from Grey Cloud Channel is approximately 0.1% of the total groundwater seepage into the Larson Quarry. Because Grey Cloud Channel is hydrologically connected to the main Mississippi River channel, the induced seepage of 43.5 gpm will have no *measurable* impact on the hydrology of Grey Cloud Channel, either in terms of water stage or flow. In practical terms, the additional induced seepage from Grey Cloud Channel from the project is so small compared to natural fluctuations in hydrologic condition and stage controls at dams, that it would be impossible to measure with current instrumentation. Furthermore, pump discharge return to the surface-water system (a component of the quarry-hydrology water balance) was purposefully not included in the model in order for the model results to represent a worst-case condition.

There will be no impact to the number or type of watercraft using the Grey Cloud Channel. The majority of the limestone products are transported from the existing Larson Quarry facility by barge via the Mississippi River. The proposed Project will not increase production, therefore, the number and type of watercraft on the river will not change.

Post-reclamation, the uplands within the Project Area would be converted to a lake with residential homes on the north and east shoreline and much of the area along the Mississippi River is expected to be open for public recreation. It is anticipated that this lake would provide an additional opportunity for watercraft recreation in the region. Though no formal plans are currently in place, it is anticipated that the lake would include a public access and be publicly accessible.

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.*

There are no known sites of existing contamination or potential environmental hazards located within the Project Area or the existing Larson Quarry. Past land use of the expansion area has been undeveloped vacant land/open space/pasture. Equipment operating at the quarry utilizes diesel fuel, motor oil, hydraulic oil, and gasoline. Because the Site stores more than 1,320 gallons of petroleum products, it is subject to a Federal Spill Prevention Control and Countermeasures Plan (SPCC Plan) included as Attachment 9**.** The SPCC Plan outlines measures used for the prevention and containment of spills. Spill containment equipment is located throughout the mine. Site employees go through annual site-specific training for maintenance, monitoring, and appropriate response actions in the event of a spill.

MPCA's" What's In My Neighborhood" database was queried for sites of known spills, leaks, or soil or groundwater contamination in the area surrounding the Site. The search area included the modelled limits of the radius of influence of the dewatering operation as well as the area upgradient of the quarry for two miles. Particular attention was paid to known sites of groundwater contamination because the Project can influence groundwater flow directions within the radius of influence of the groundwater pumping, drawing contaminated groundwater towards the quarry sump. Listed sites of known spills, leaks, soil, or groundwater contamination were reviewed. No sites are listed within the modeled radius of influence of the quarry but there are seven sites upgradient sites listed within two miles upgradient of the Site. Table 13-1 includes information and status of the listed Sites. Figure 14 – MPCA What's in my Neighborhood Map illustrates the location of the listed Sites with respect to the Project Area.

TABLE 13-1 SITES OF SOIL OR GROUNDWATER CONTAMINATION

MPCA Site ID	Name	Description	Status
1-MND980612378	Cottage Grove Tank Farm	CERCLIS Site Listing 4/1/1983	Does not qualify for National Priority List
2-SR0001461 VP18810 BF0000429 SA-gen LS0016778 (Amoco) LS0016057 VP20680 (Goodyear)	Cottage Square Mall /Former Amoco/Former Goodyear Tire	Brownfield Voluntary Investigation and Cleanup Metals contaminated sediments from onsite septic system/leach tanks	Site Closed 12/30/2007
		State Special Assessment Site	Opened 3/02/2020 Currently Active
		Superfund non listed Site/Brownfield Voluntary Investigation and Cleanup Vapor intrusion - Soil Gas Investigation	Site Closed 7/29/2020
		Petroleum Remediation Leak Site (Amoco)	Site Closed 11/21/2008
		Petroleum Remediation Leak Site (Goodyear)	Site Closed 3/5/2007
3-LS0017417	Super America Ga Station	Petroleum Remediation – Leak Site	Site Closed 4/3/2012
4-MND 985678960 SA-gen VP1230 VP7410 VP7411	Aero Precision	CERCLIS Site Listing VOCs in groundwater exceeding drinking water standards	Delisted March of 2003
		Brownfields, Voluntary Investigation and Clean Up	VP 1230 Site Closed 7/19/1996 VP 7410 Site Closed 7/31/1999 VP7411 Site Closed 3/1/2004

		State Special Assessment Site	Opened 3/02/2020 Currently Active
5- ER-Gen LS0020667 LS0021110	Transmission Shop Inc	Emergency Response Petroleum remediation UST Leak Site (Used Oil, Fuel Oil #1 and #2)	Em Gen Site Closed 10/22/2019 Leak Site Closure 5/25/2018 Leak Site Closure 10/19/2021
6-LS 0003050	Five Star Auto	Petroleum Remediation Leak Site	Site Closed 1/30/1991
7-LS0014961	Sweningson Residence	Petroleum Remediation Leak Site	Site Closed 12/01/2003

The Cottage Grove Tank Farm was listed on the Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) in 1983 which means that the site was known or suspected of being contaminated. After the site was investigated it was determined that it did not qualify for the National Priorities List (NPL). The Site is currently operating under an MPCA Air Permit Industrial Stormwater Permit and a Large Quantity Hazardous Waste Generator.

Cottage Square Mall was a mall with tenants that may have included dry cleaners, a drug store, a hardware store, photo processing, and a screen printer. The initial Brownfield Voluntary Investigation and Cleanup Voluntary work was related to heavy metal contaminated soils from an on-site septic system/leaching tanks and two flammable waste traps. Tetrachloroethene (PCE), a common dry-cleaning solvent, was found in groundwater samples as well. Approximately 6,200 gallons of water remaining in the on-site septic system and 254 tons of sediment, piping and residual contaminated concrete were removed as part of a voluntary investigation and site clean-up in the early 2000's and a closure letter issued in 2007. A subsequent voluntary site investigation was completed in 2020. In 2020, the MPCA designated the site A State Assessment Special Project. State Assessment sites are places the MPCA investigates due to suspected contamination. They are assessed to determine if they pose a risk to human health or the environment. If so, they are referred to a cleanup program.

The Cottage Square Mall property also had a former Amoco gas station and former Goodyear tire store. In 2007 after pump islands were removed at the Amoco station, concentrations of diesel range organics (DRO), gasoline range organics (GRO) and volatile organic compounds (VOCs) indicative of a petroleum release were detected. A limited site investigation was conducted, and the site was closed in 2008. Gasoline remains at this parcel, but no groundwater contamination was indicated. At the former Goodyear Tire location, petroleum and non-petroleum soil contamination was reported near one of the eight in-ground hoists and the flammable waste trap. Groundwater impacts were determined to be not significant based upon one groundwater sampling. Remedial work included soil screening, removal of eight in ground hoists, the flammable waste trap, approximately 61 tons of impacted soil, and a previously undocumented maintenance pit.

The Sweningson Site was a petroleum leak site from an AST that was initially investigated, tanks removed and closed by the MPCA on December 17, 2002. The Site was reopened in November 2003 because the original release was not fully investigated during the initial work done at the site. After review of the additional site investigation, the MPCA issued a site closure letter in December 2003.

Arrow precision started operations in 1980. Private residential wells were found to be contaminated with

trichloroethene (TCE) tetrachloroethene (PCE) and chloroform. The site was investigated under the Superfund Program and determined to be the source of the groundwater contamination. Several private wells and affected households and businesses were hooked up to municipal water service. In 1994 a recovery well and pump and treat system were installed at the site to treat the groundwater. The system was shut down in 1998 once clean-up goals were reached. The site was delisted from the state's permanent list of priorities in March of 2003.

All the sites with leaks or known soil or groundwater contamination have been closed by the MPCA. Site Closure generally means that the MPCA does not require any additional investigation and/or clean up at the time of closure or in the foreseeable future. Any remaining contamination that is present does not appear to pose a threat to the public health or the environment under current conditions. However, two of the Sites that were former CERCLIS Sites are currently listed as State Special Assessment Sites. State Assessment sites are places the MPCA is further investigating due to suspected contamination. They are assessed to determine if they pose a risk to human health or the environment. If so, they are referred to a cleanup program. An inquiry was made to the MPCA regarding the status of the special assessments, and they are still in progress. No other information was available.

In addition to the sites noted above, the Project Area overlaps with or is closely situated to per- and polyfluoroalkyl substances (PFAS). MPCA has developed a PFAS Blueprint that outlines strategies for studying and managing PFAS in Minnesota. The MPCA and MDH continue to sample private residential wells in the east metro. The MPCA's website interactive map shows where wells have been sampled. Well advisories have been issued for wells that have been sampled and results indicate PFAS levels above health-based guidance values for drinking water. Several residential drinking water wells in the area surrounding the Site have well advisories (Figure 15 PFAS Sampling Residential Wells Map). Point of entry treatment systems are managed by the MPCA for eligible residential supply wells. No known PFAS contaminated soils are known to be present on the Project Area. To the extent that the state adopts rules for monitoring, testing, and management of soil in PFAS contaminated areas. Holcim will follow all rules developed by the MPCA for testing and removing soils in areas impacted by PFAS that may be applicable to the Project.

Dewatering at the Site has the potential to draw groundwater towards the site influencing groundwater flow directions and gradients in the immediate vicinity of the Quarry. Because the quarry is situated adjacent to the Mississippi River, the regional direction of groundwater flow in the area surrounding the site remains east to west-southwest towards the discharge area of the Mississippi River. With no Project, groundwater from the Prairie du Chein Aquifer discharges to the Mississippi River. With the Project, groundwater is ultimately discharged to the river as well, although some of the groundwater gets intercepted by the dewatering operation prior to reaching the river. This groundwater is treated in a sedimentation basin and then discharged into the river. The quarry is not a source of PFAS, and the Project will not impact the existing regional PFAS contamination. The Project will follow state rules and guidance as they are developed through MPCAs PFAS Blueprint and continued work in addressing and cleaning up existing PFAS contamination.

There is one pipeline near the proposed Project Area. The pipeline is operated by Magellan Pipeline Company and carries crude oil. It is 16 inches in diameter and was installed in 1954. The pipeline runs approximately 500 feet outside the main quarry along the southern and southeastern boundaries, and then northeast across Grey Cloud Island toward the Grey Cloud Channel passing approximately 300 feet southeast of the proposed

expansion area before crossing the Grey Cloud Channel. The location of the pipeline is indicated on C2 Existing Conditions Plan.

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.*

There is currently a small quantity of solid waste generated by onsite employees. The Project will not change the generation rate or management of solid waste at the Site. Solid waste is collected in on-site containers and hauled by a waste hauler to a licensed solid waste facility. There will be some construction related solid waste generated during the construction of County Road 75 realignment. Most of the solid waste generated from the removal of the existing County Road 75 roadway (asphalt pavement and road base) will be recycled. Demolition and construction waste that cannot be recycled will be collected in on-site containers and hauled to an appropriate licensed solid waste disposal facility. All solid waste, including waste from historic dumping if encountered, will be removed from the facility and appropriately managed, recycled, or disposed of at a permitted waste disposal 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 are seven aboveground storage tanks located at the existing Larson Quarry facility as follows: one 10,000-gallon diesel fuel tank, one 525-gallon gasoline tank, one 300-gallon used oil tank, one 528-gallon refueler tank, one 251-gallon diesel tank and two 280-gallon motor oil tanks. All tanks are double walled and/or are located within a concrete secondary containment area. . All tanks comply with MPCA above ground storage tank requirements. No new storage stationary storage tanks will be needed to serve the Project. Equipment such as the front-end loaders and other vehicles utilized in the proposed Project Area will continue to be fueled at the existing quarry under or will be fueled by portable tanks or a mobile fuel truck.

Chemicals that will be utilized in the Project Area will be diesel fuel, hydraulic fluids, and gasoline used in the mobile equipment and ANFO used in blasting. Any spill or release of these would be a relatively small quantity and would be captured within the quarry. Spill kits are located throughout the quarry and can be used to respond to a spill. There is no significant risk of groundwater contamination since dewatering creates an inward gradient and draws the underlying shallow groundwater to the dewatering sump. Any spill that did infiltrate through the quarry floor to the underlying groundwater would be captured by the dewatering. Dewatering discharge is directed to a settling pond where an oil sheen would be visible. The facility's SPCC Plan is described in Section 13.1 and is included as Attachment 9. The SPCC plan will be modified to include the Project Area.

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.*

No hazardous waste will be generated or stored within the proposed Project Area. Any waste generated will continue to be managed at the existing Larson Quarry facility. This waste includes parts washing solvent and used oil. The parts washing solvent is stored, handled, recycled, and manifested according to the MPCA's hazardous waste guidelines. The used oil is stored in a tank at the shop, collected and properly disposed of by a licensed handler. Any other hazardous waste generated or otherwise encountered, including waste encountered from historic dumping on the Site, will either be recycled or disposed of at licensed hazardous waste facility. The Hazardous Waste License for the Larson Quarry was "inactivated" on January 22, 2010, due to the low amount of hazardous waste generated at the facility.

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.*

Fisheries and Wildlife Resources: No fisheries, mussel, or aquatic macroinvertebrate resources are present within the proposed quarry expansion limits, but the nearby Mississippi River and the Grey Cloud Channel contain a wide variety of fish species such as walleye, sauger, smallmouth and largemouth bass, white bass, bluegill, crappie, northern pike, catfish, and mussels. All discharges to the river are regulated under the MPCA NPDES/SDS Permit and the Project is not anticipated to have any impact to fisheries, mussels, aquatic macroinvertebrates, or other aquatic resources.

Species of woodland creatures including a wide variety of birds, insects, rodents, deer, skunks, fox, pheasants, turkeys, a variety of songbirds, beaver, rabbit, squirrel, coyotes, and other small mammals, notably rodents likely inhabit the wooded portions of the Site. Pasture areas may also support a variety of butterflies and other insects such as pollinators. As mining progresses, the wood and pasture habitats will be reduced and upon final reclamation, will ultimately be replaced by an aquatic habitat (lake) surrounded by a native vegetated upland area in accordance with the reclamation plan. Because mining will expand incrementally eastward, it is expected that the animals will gradually disperse to other sections within Grey Cloud Island Township and the surrounding wooded river valley and return as reclamation conditions become established.

Vegetation: Approximately 60% of the proposed expansion area is mature forest and the remaining 40% is open pasture. According to the Grey Cloud Township 2040 Comprehensive Plan[24], extensive biological surveys of the Township have been completed. Prior to the emergence of the dry mesic forest predominant today, oak savannas, oak barrens, and possibly some prairie covered the island. Heavy grazing eliminated much of the native ground layer flora, and elimination of fires resulted in the emergence of aspen, birch, red cedar, and young oak. The wooded areas of the Township have no rare floristic components that make them unique. The understory is typical for deciduous and mixed forests but troubled with invasion of exotics like buckthorn

[24] Grey Cloud County 2040 Comprehensive Plan July 16, 2018, retrieved from: https://www.greycloudislandtwp-mn.us/documents

and prickly ash. Older oak mortality is now occurring, and replacement by ironwoods, hickories, basswoods, and sugar maples. The woodlands in the Township have become a mesic forest.

The area surrounding the proposed expansion is comprised of a similar quality woodland habitat, which is found in other areas of the Twin Cities metropolitan region along the MN and St. Croix Rivers, and the Mississippi River below St. Anthony Falls. The remaining pastureland within the Project Area is the result of previous deforestation sometime prior to 1947 and is dominated today by a mixture of native dry-mesic prairie and dry tolerant non-native or invasive species.

b. *Describe rare features such as state-listed (endangered, threatened, or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, andother sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-_____) and/or correspondence number (MCE 2023-00446) 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.*

A Natural Heritage Review (Review) of the Proposed Larson Quarry Expansion was requested by the Minnesota Department of Natural Resource and correspondence # MCE 2023-00446 dated 08/07/2023 was received in response to that inquiry (Attachment 10 – MDNR NHIS Review). The following is a summary of results received from that review, which includes rare plant and animal species, or other significant natural features known to occur within a one-mile radius of the proposed project.

Ecologically Significant Areas: The proposed Project Area is within an area the Minnesota Biological Survey (MBS) has identified as an area ranked as an *Area with Potential Local Conservation Value* within the Project boundary that the Minnesota Biological Survey considered for Sites of Biodiversity Significance, but the area was determined to be below the minimum biodiversity threshold for statewide significance. The area contains two mapped areas of the native plant community FDs37a-Oak-(Red Maple) Woodland a DNR native plant community which is uncommon, but not rare in Minnesota with a conservation rank of S4 – Apparently Secure. However, the Site may still have local conservation value for one or more qualities such as habitat for native plants and animals, corridors for animal movements, buffers surrounding higher quality natural areas, or as areas with high potential for restoration of native habitat. In general, the vegetation of this site is noted to be of poor quality and dominated with exotics/invasives.

The Project is near Pool 2 of the Mississippi River identified as a Lake of Outstanding Biological Significance based largely on the fish and mussel species present. Pool 2 of the Mississippi River extends from Lock and Dam 1 near St. Anthony Falls in Minneapolis to Lock and Dam 2 near Hastings, MN.

State-listed Species: Minnesota's Endangered species Statutes and Rules prohibit the take of endangered or threatened plants, or animals.

State Listed Threatened or Endangered Plants: There are no listings of state listed endangered plants in the vicinity of the Project. There is one state listed threatened plant, Waterhyssop (*Bacopa rotundifolia*) that has been documented in the vicinity of the Project. The waterhyssop is found along the sandy or silty margins of islands in the Mississippi River.

State Listed Threatened or Endangered Animals: The Blanchard's cricket frog (*Acris blanchardii*) is a state-listed endangered frog that has been located in the vicinity of the proposed project. This frog is found in shallow wetlands, lakes, streams, and rivers, occupying areas along the water's edge, and preferring open areas and muddy shorelines.

There are also two state listed threatened species of mussels, Rock pocketbook (*Arcidens confragosus*) Threatened) and Wartyback (*Quadrula nodulata*) that have been documented in the Mississippi River in the vicinity of the Project.

The Natural Heritage System also tracks special concern species. Special concern species are considered extremely uncommon in Minnesota or have unique or highly specific habitat requirements. Species on the periphery of their range that are not listed as threatened may also be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations. There are two birds and one snake of special concern species documented in the vicinity of the site. Special Concern species have no special legal status, the MDNR recommends that if feasible, avoid initial disturbance to the grassland areas and tree and shrub removal from May 15 through August 15th to avoid disturbance of nesting birds and to limit the use of erosion control netting to wildlife friendly materials.

Federally listed Species: A review of the U.S. Fish and Wildlife's IPaC website on June 21st, 2023 identified three listed species that may occur in the Project Area; the rusty patched bumble bee (*Bombus affinis*; endangered), the northern long-eared bat (*Myotis septentrionalis*; endangered), and the Higgins-eye pearlymussel (*Lampsilis higginsii*; endangered). Of the three listed species identified through the IPaC website, two species have the potential to reside within the active portions of the Project Area, the northern long-eared bat, and the rusty patched bumblebee. The proposed quarry limits and road relocation area are entirely located in uplands; therefore, the Project would have no effect on the Higgins-eye pearlymussel. There is no critical habitat identified within the proposed Project Area.

Rusty Patched Bumble Bee (Endangered): Historically, the rusty patched bumblebee was broadly distributed across the eastern United States, Upper Midwest, and southern Quebec and Ontario in Canada. However, since 2000, reports of confirmed presence have only been received from 13 states and 1 Canadian province. Rusty patched bumble bees have been observed in a variety of habitats, including prairies, woodlands, marshes, agricultural landscapes and residential parks and gardens.[25] They live in colonies with a single queen, who is the largest, and smaller male and female workers. All rusty patched bumblebees have entirely black heads, but only workers and males have a rusty reddish patch centrally located on the back. From April through October, this species uses underground nests in upland grasslands, shrublands, and forest edges, and forages where nectar and pollen are available. From October through April the species overwinters under tree litter in upland forests and Woodlands. The rusty patched bumblebee may be impacted by a variety of land management activities including, but not limited to, tree removal, haying, grazing, herbicide use, pesticide use, land clearing, or soil disturbance or compaction. The Project Area is on the border between a High Potential Zone and a Low Potential Zone and within a Primary Dispersal Zone, suggesting that likelihood of encountering a rusty-patched bumblebee in the Project Area is moderate to high.

[25] Colla, Sheila & Dumesh, Sheila. (2010). The bumble bees of southern Ontario: notes on natural history and distribution. Journal of the Entomological Society of Ontario. 141. 38-67.

Northern Long-eared Bat (Endangered): The northern long-eared bat (NLEB) is found across much of the eastern and northcentral portions of North America. White-nosed syndrome, a fungal disease that attacks bats, is currently the primary threat to the continued existence of the species. White-nosed syndrome has caused population mortality rates as high as 99% in infected hibernacula and is expected to continue to have similarly detrimental results to other hibernacula populations as it spreads into uninfected areas. NLEBs hibernate in caves during winter months and may occupy hibernacula or other roosts during the warmer summer months. When NLEBs roost in trees, they prefer larger (>3" DBH) trees (alive or dead) with big cracks or crevices or coarse or rutted bark with interstitial spaces for roosting and/or pupping. The Project is within known range of the NLEB and with the White-nosed Syndrome Zone.

The NLEB hibernates in caves or mines only during the winter. In Minnesota and Wisconsin, the hibernation season is considered to be November 1 to March 31. During the active season (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields, and pastures. This includes forests and woodlots containing potential roosts for northern long-eared bat that have exfoliating bark, cracks, crevices, and/or hollows, fencerows, riparian forests, and other wooded corridors. No hibernacula or maternity roost trees are indicated within one mile of the Project Area based on the MDNR/USFWS 2016 list of documented townships containing documented NLEB maternity roost trees and or hibernacula. The closest known hibernacula are more than 12 miles to the northwest and the closest known maternity roost tree is two counties away to the southeast[26] and the 2023 MDNR's review of the NHI database did not identify any known hibernacula or roost trees in the vicinity of the Project Area.

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.*

Fish and Wildlife: The Project could adversely affect fish, mussels, or other aquatic species if it were to contribute to the siltation of the Mississippi River or Grey Cloud Channel. Pool 2 of the Mississippi River is ranked as Outstanding Biological Significance due to the fish and mussel species present. These species are intolerant of environmental degradation, especially turbidity and siltation. Woodland creatures living in or using the woodland or pastureland areas would be displaced from their existing habitats, but because mining operations would be incremental over a long period; these creatures would likely disperse to adjacent woodland or field areas to the north or south of the Project Area.

Ecologically Significant Resources: The Project will require the removal of a portion of woodlands located within the proposed quarry limits and under Option 1, the CR 75 realignment area. Woodlands within the Project Area are listed by the Minnesota Biological Survey as being below the minimum biodiversity threshold for statewide significance. Though this forested area is part of a remnant native plant community identified as Oak (Red Maple) Woodland, the presence of non-native and/or invasive species has degraded the site

[26] https://efotg.sc.egov.usda.gov/references/public/MN/MN_NLEB_Township_List_and_Map_4-1-16.pdf

substantially from its pre-settlement condition. In addition, climate change over the last several decades has resulted in transitional or successional species encroaching into the native woodland community. This encroachment has further degraded the woodland from its natural composition. As climate change continues, it is anticipated that the integrity of the native woodland community will continue to suffer from non-native and invasive species expansion and continued successional transition. Fewer trees would be removed under Option 2. However, given the current and expected future degradation of this forest community, the loss of woodland habitat under either of the options would not be considered a significant ecological impact.

State Listed Threatened or Endangered Species: Mussels are particularly vulnerable to deterioration in water quality and siltation. If the Project were to discharge sediment laden water into the Mississippi River or Grey Cloud Channel, mussels could be impacted. However, the Project as planned will not discharge sediment laden water to off-site surface waters. The discharges are subject to treatment prior to discharge and regular monitoring and reporting requirements to verify compliance with permit limits established to protect the receiving water's water quality. Holcim has demonstrated a long track-record of discharging water within water quality permit requirements. Since these measures will continue to be in place during operation of the Project, the Project is not expected to result in any adverse impacts to mussels.

The waterhyssop is found along the sandy or silty margins of islands in the Mississippi River. The Project will not affect the waterhyssop habitat and will not affect this state listed threatened plant.

The Blanchard's cricket frog is found in shallow wetlands, lakes, streams, and rivers, occupying areas along the water's edge, and preferring open areas and muddy shorelines. The Project will not disturb the bluff or bottom lands of Grey Cloud Channel and will not affect Blanchard's cricket frog.

Federally Protected Species: NLEB: The Project involves removing woodlands and therefore could affect NLEB summer habitat. This species hibernates in caves or mines only during the winter. In Minnesota and Wisconsin, the hibernation season is considered to be November 1 to March 31. During the active season (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields, and pastures. The range-wide determination key was used to determine potential impacts to the NLEB. The analysis concluded that the proposed project "is not reasonably certain to cause incidental take", and "the Action is not likely to result in unauthorized take of the northern long-eared bat". Therefore, a determination of may affect, but not likely to adversely affect was reached for the northern long-eared bat.

Rusty patched bumble bee: The Minnesota-Wisconsin Federal Endangered Species Determination Key was used to determine potential impacts. That analysis concluded that the proposed Project may affect the rusty patched bumblebee because the Project is located on the boundary between the high potential zone and the low potential zone and also borders the primary dispersal area. As a result, the determination key requested additional coordination with the U.S. Fish and Wildlife Service (USFWS) Twin Cities Field Office. Coordination with the USFWS in June 2023 included a determination of may affect, but not likely to adversely affect the rusty patched bumblebee because the pasture within the Project Area is degraded from animal grazing, is isolated from other suitable habitat, is largely within the low potential zone and is largely outside the primary

dispersal zone.

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 existing Larson Quarry facility maintains a 500-foot setback from the Mississippi River. The Project will maintain a 500-foot setback between Grey Cloud Channel as illustrated on Site Plans C2.1 and C2.2. In addition, under Option 1, a minimum twenty-foot setback will be maintained between the top of bluff and the new road realignment and will leave most of the vegetation within the 500-foot setback area undisturbed. Maintaining this setback and vegetation will filter stormwater runoff and preserve the natural shoreline and bluff line along the Grey Cloud Channel and maintain a forested corridor for animal movements between woodlands to the north and south. The Project includes effective stormwater BMPs and erosion prevention and sediment control measures as part of a site-specific pollution prevention plan. Dewatering, stormwater, and washwater will continue to be treated in sedimentation basins prior to discharge to the river. Discharges to the Mississippi River/Grey Cloud Channel are under the ongoing regulatory authority of the MPCA's NPDES/SDS Permit and are subject to monitoring, reporting and permit limits for total suspended solids established to be protective of the receiving water's water quality. The monitoring results have consistently demonstrated the effectiveness of these operating practices. With these measures in place the Project does not have the potential to cause impacts to mussels or other aquatic resources.

Wildlife habitat will be reestablished in reclamation of the Site. A deep-water lake surrounded by upland areas with native vegetation will be established as part of site reclamation. Erosion control products used to establish vegetation will be wildlife friendly materials. During reclamation, MDNRs recommendations will be followed. Effective erosion prevention and sediment control measures will be implemented, construction equipment will be inspected and cleaned prior to mobilizing on site to prevent the introduction and spread of invasive species, native plants will be used in reclamation and only weed free mulches, topsoil, and seed mixes will be used noting in particular to avoid Crown vetch and bird's-foot trefoil.

State listed Threatened or endangered species. The habitat areas of state listed threatened or endangered species will be avoided with setbacks and buffers remaining intact throughout the duration of the Project.

Federally Protected species.
NLEB: The greatest potential impact to the northern long-eared bat resulting from the proposed project will be the removal of trees. The USFWS recommended conservation measures will be implemented and tree removal will be completed outside the active roosting season (April-October) of the NLEB to the extent feasible.

Rusty patched bumble bee: The Proposer will follow the USFWS recommendation that to the extent practical, ground disturbing activities within the potential nesting habitat area (pasture) will take place outside the RPBB nesting season (April 10 – October 10), or RPBB surveys will be conducted prior to the commencement of ground disturbing activities in the pasture area if work must occur during the active season.

In addition, Holcim implemented an oak savanna restoration program in 2015 at the existing Larson Quarry within the 500-foot setback (buffer area) along the Mississippi River. For the past seven years, the Company

has been removing invasive species in this area such as buckthorn and honeysuckle, replacing these invasive species with native vegetation. This work will continue at the proposed Project within the setback area of the Grey Cloud Channel. In 2016, the Company also established a pollinator garden surrounded by native prairie vegetation at the main entrance to the existing quarry. Holcim will continue these restoration efforts along the Mississippi River and the Grey Cloud Channel, to control invasive species and restore the native vegetative habitat.

15. Historic properties:

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

An Archaeological Reconnaissance Survey was conducted by Archaeological Research Services in 2004 (2004 ARS Survey) for the proposed expansion area. The ARS survey included both the northern portion of the Existing Quarry located west of CR 75 as well as the current eastern expansion area. Results of this survey indicate that archeological sites have been recorded on the Upper and Lower Grey Cloud Islands; however, they have mainly been discovered along the shorelines and bluffs. Archeological sites that have been found in the general vicinity of the Project include a Euromerican town site, Woodland period campsites, and several burial mounds.

The 2004 ARS Survey included visual assessment of the proposed quarry areas east and west of CR 75 and the 500-foot setback area along the west quarry limits to check for the possible presence of cultural features, particularly mounds. The results of the survey found no historic, archeological, or cultural resources located within the Project Area itself and concluded "*Results of the archaeological review proved negative, indicating that the proposed undertaking can proceed without any danger to archaeological resources*."

The 2004 Report noted that the 500-foot setback area along the eastern expansion area was not visually inspected due to the presence of cattle. The report also indicates that the owner mentioned the remains of an old cabin closer to the Grey Cloud Channel. This EAW evaluates the proposed realignment of CR 75 through the 500-foot setback area.

The Grey Cloud Township 2040 Comprehensive Plan (2040 Plan) indicates that historic sites have been identified on Grey Cloud Island. According to the 2040 Plan, the camp of Medicine Bottle's band of Dakota Sioux Indians was located on Upper Grey Cloud Island near the lower portion of the cliff at a location now known as Robinson's Rocks. Additionally, Michaud-Koukal aboriginal burial mound sites are located along the north and south shores of Mooers Lake. The 2040 Plan also identifies the historic Lime Kiln on the east side of Grey Cloud Island that overlooks the Grey Cloud Channel. The Washington County Historical Society lists Grey Cloud Island Cemetery and the Lime Kiln as the two historic sites within the Township. These sites are located well outside the expansion area and the limits of disturbance of both options.

As part of the EAW preparation, SHPO was contacted regarding the potential for archeological resources on or near the Site. The SHPO review letter (attachment 11) recommended that based on the location of the

proposed project as well as information contained in the 2004 ARS Survey, there are possible remains of a historic cabin within the quarry expansion area or within the proposed relocation of County Road 75 and that based on the presence of the Shakopee Formation near the surface on Grey Cloud Island, this location may have been a possible source for a quarry prior to European contact and recommended that additional archaeological survey, in the form of shovel testing, may be warranted in some areas consistent with the current SHPO survey guidelines.

As recommended by SHPO, In Situ Archaeological Consulting LLC (In Situ) conducted a Phase 1 Archaeological Investigation (2024 Phase 1) for the expansion area that included the 500-foot setback area along Grey Cloud Channel to account for planned disturbance associated with CR 75 relocation. The 2024 Phase I investigation included a background literature review within and surrounding the proposed Project Area, along with an intensive field survey of the Project. During the field survey, a total of 125 acres were inventoried and 2,016 shovel test units were conducted, all of which were negative for cultural resources and no cultural resources 50 years or older were observed during this investigation. In Situ recommended a finding of *No Historic Properties Affected* within the surveyed Project area and no further cultural resource work for the Project. The 2024 Phase 1 was submitted to SHPO for review. SHPO provided a review letter dated August 2, 2024concluding that there are no properties listed in the National or State Registers of Historic Places or known or suspected archaeological resources in the area that will be affected by the Project. A copy of the SHPO concurrence letter and the 2024 Phase 1 Archaeological Investigation is included as Attachment 11.

Both the 2004 ARS Survey and the 2024 Phase 1 concluded no historic properties affected, however, if during the course of mining activity mounds or other significant cultural features are found, the Office of the State Archaeologist (OSA) and the Minnesota Indian Affairs Council (MIAC) will be consulted.

16. Visual:

Describe any scenic views or vistas on or near the Project site. Describe any project related visualeffects 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.

There are no nearby scenic views or vistas on or near the Project Area that would be impacted by the Project. There will be no intense lights creating glare, no tall structures, vapor plumes, or similar visual impacts resulting from the Project. The visibility of the quarry will be very limited from all vantage points. The Project Area is largely surrounded by wooded setback areas. Visual receptors for the proposed expansion area include a few residential homes adjacent to the Project Area and vehicle-borne traffic along CR 75. The proposed expansion area is not visible from the main channel of the Mississippi River or the Grey Cloud Channel due to high bluff lines and vegetated shoreline. Required setbacks from residential houses and CR 75 further restrict visibility of the working quarry from nearly any vantage point.

Option 1 – Relocation of County Road 75: This option includes the relocation of CR 75 within the 500-foot setback areas around the southern, eastern, and northern perimeter of the quarry. Tree removal in the setback area would be limited to that required to construct the roadway. The remaining wooded areas would provide screening of the mine from the new alignment. The roadway will be set back from the bluff and

vegetation will be preserved along the bluff and shoreline of Grey Cloud Channel. The roadway will not be visible from Grey Cloud Channel and visual impacts associated with the road realignment option would be negligible.

Option 2 – Bridge: Under this option, the transfer of material will be recessed to approximately 100 feet below grade on the floor of the quarry and beneath the roadway and largely screened from view along the existing road corridor.

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 to 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.*

The MPCA issues air quality permits to comply with federal and state rules and regulations. Air permits issued identify the various emission sources at each mining facility that generate air pollutants and, where applicable, place limits on those emissions. Air permits also contain performance testing and recordkeeping to demonstrate compliance with conditions listed in the issued air permits. Permits issued to mining facilities control air emissions from crushing and handling of rock, and fugitive dust from material handling, unpaved roads, and/or tailings basins.

The Larson Quarry operates under an MPCA General Non-Metallic Air Emission Permit No. 03700352-101 (Attachment 12) The General Permit regulates air emissions from non-metallic mine facilities that operate crushers, screens, wet screening operations, and transfer operations (including belt conveyors, stackers, feeders), sand heaters, internal combustion engines, storage piles, paved and unpaved roads and parking lots, bulldozers, loaders, and other related vehicles, and/or any insignificant activities and/or conditionally insignificant activities as defined in Minnesota Rules. Any new equipment added because of the Project, such as overland conveyors, screens, crushers, etc., would be added to the existing permit. The primary processing operations will not change because of the Project and the main processing plant where the crushing, screening, and aggregate wash plants are located is located within the existing Larson Quarry. The existing quarrying operation does not have any stationary source emissions such as boilers or exhaust stacks and processing equipment is run on electricity.

The Permit requires submitting an annual air emission inventory based on the amount of material produced, crushed, screened and transferred, as well as the number of miles driven on unpaved haul roads and fuel usage for stationary equipment. Facilities are categorized as small, medium, or large based on production, number of crushers, screens, and transfer operations. The Larson Quarry is categorized as a small facility. The Project will not change the current facility designation. The facility will continue to operate under the on-going regulatory authority of the MPCA and will not significantly change air emissions and will not cause a potential for significant air emission impacts.

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.

The Project will not have a significant impact on vehicle emissions. Aggregate production levels are expected to be consistent with the past ten years of production at the Larson Quarry and the percentage of product hauled via haul trucks and barge is anticipated to remain the same. Therefore, the Project will not have a potential for significant impacts to vehicle related emissions associated with quarry operations. Vehicle related air emissions are not expected to create a significant environmental effect to air quality. The following measures are utilized at the quarry to minimize vehicle emissions.

1. Turn off engines when vehicles are stopped for more than a few minutes. Do not idle near the air intake of a building.

2. Retrofit engines with pollution control devices and or use cleaner burning fuel.

3. When purchasing new vehicles, consider buying the lowest emitting vehicles available.

4. Keep engines well-tuned and maintained.

Option 1 – Road Realignment: The proposed realignment of CR 75 will add less than one mile of travel distance between 99th Street South and Grey Cloud Trail South, which will result in a small increase long-term of vehicle emissions in the local area due to the additional travel distance. CR 75 is a low volume road, and the increase is not expected to have a measurable impact on air quality in the region. Localized increases in emissions during construction of the new roadway are expected to occur but would be temporary in nature and not considered significant.

Option 2 – Bridge: Constructing the bridge will result in a temporary increase in local emissions due to the additional equipment needed to construct the bridge and a temporary bypass around the construction area. These temporary changes in emissions are not considered significant.

b. *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.*

Some of the activities associated with mining have the potential to generate dust. Limestone material generally runs between 3-5% moisture as it is mined which aids in suppressing potential dust. The mining activity is conducted in a large, recessed area which further contains fugitive dust. The limestone transfer system will be recessed on the quarry floor.

The largest source of fugitive dust within a mining operation is generally from vehicle travel on internal unpaved haul roads. Fugitive dust is controlled by use of conveyors, applying water or calcium chloride to internal haul roads, and by constructing berms around the perimeter of the quarry, all of which minimize off-site fugitive dust emissions. During the crushing and sizing process, water is introduced which further acts to

suppress dust during subsequent transfer and loading operations. These control measures are currently implemented, at the existing Larson Quarry and will continue as applicable in the expansion area. The majority of the limestone will continue to be transported from the Larson Quarry by barge which greatly reduces truck traffic and consequently greatly reduces the potential for fugitive dust. Material that is hauled by truck will continue to use the main access road located in the existing Larson Quarry and truck hauling will not impact the fugitive dust generation within the expansion area. The proposed Project mining operation rates and equipment will remain unchanged from present levels at the existing Larson Quarry.

There will be no odors generated from the proposed Project.

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.*

The following tables are examples; other layouts are acceptable for providing GHG quantification results.

When greenhouse gases (GHGs) are released from their sources, they get trapped in the Earth's atmosphere, acting as a layer of insulation that prevents heat from escaping. This is known as the greenhouse effect, and results in a warming of the planet. Gases that contribute to the greenhouse effect are known as GHGs. GHGs are primarily carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), sulfur hexafluoride (SF_6), and two families of gases known as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). These gases trap Earth's heat and contribute to climate change. Greenhouse gases are typically measured in the units of metric tons of Carbon Dioxide Equivalents (CO_2e), (all emissions are reported in CO_2e short tons as requested in the EQB Revised Environmental Assessment Worksheet Guidance)[28]. CO_2e is a unit of measurement that standardizes the effects of the different GHGs to that of carbon dioxide. Each GHG has a specific Global Warming Potential (GWP), which means they remain in the atmosphere for various amounts of time. For the other GHG's to be comparable to CO_2, they are converted to units of CO_2 equivalents.

The Project will be a source of GHG emissions. Direct sources are those that are owned or controlled by the reporting company and are categorized as Scope 1 Emissions. Indirect emissions are sources that are owned or controlled by another company, but a portion of their emissions are a result of the reporting company, like off-site electricity generation. Indirect emissions are categorized as Scope 2 emissions.

Annual GHG emissions are calculated for annual operations and for total construction emissions prorated over the life of the facility. Both Option 1 and Option 2 emissions were evaluated. GHG emissions from operations are the same for both options. Operational GHG sources are from the mobile equipment operating at the Project Area (Scope 1) during mining activity and grid-based electrical use (Scope 2) to power the

[28] Environmental Quality Board. (n.d.). Revised Environmental Assessment Worksheet (EAW) Guidance. Retrieved from Minnesota Environmental Quality Board: https://www.eqb.state.mn.us/sites/default/files/documents/EQB_Revised%20EAW%20Form%20Guidance_Climate_Sept%202021_1.pdf

processing equipment, scale, and office of the existing facility. Operational related emissions will be from diesel fueled mining equipment, biodiesel fueled haul trucks, gasoline powered light-duty trucks, and electricity used to run the crushing and screening plant, wash plant, dewatering pumps, scale, and office. Mobile equipment emissions and electricity usage are based on recent annual fuel and electrical usage at the existing Larson Quarry.

Construction emissions are related to the construction of the road and bridge projects and will be different for each Option. Option 1 construction related Scope 1 emissions will be from diesel fueled mobile equipment used to construct a ±6,000 linear foot two-lane roadway around the expansion area. Option 2 construction related Scope 1 emissions include diesel fueled equipment to construct the bridge and 2,900 LF of the temporary bypass of CR 75. GHG emissions during construction of roads include fuel consumption during transportation of base and pavement materials to the jobsite and fuel consumption associated with placing, compacting, and paving operations. Pre-purchase emissions associated with the manufacture of the materials used in the construction (concrete, cement, asphalt bonder, aggregates, etc.) upstream of the construction project are also included in this assessment. Construction related emissions are pro-rated over the life of the Project, estimated to be 25 years for Option 1 and 20 years for Option 2.

GHG emissions were quantified on an annual basis using the EPA's Simplified GHG Emissions Calculator (SGEC), August 2022 for operations and records of fuel consumption and electrical consumption from recent years production at the quarry. GHG emissions for the construction phase were estimated using the Minnesota Infrastructure Carbon Estimator Tool version 2.1 (MICE). Annual operating emissions and annualized construction related emissions were added to obtain the total annual CO2e emissions for the Project. GHG emissions are reported in short tons of CO2e per year. The calculations are included in Attachment 13. The results are summarized in Tables 18-1 and 18-2 below.

TABLE 18-1. TOTAL ANNUAL GHG EMISSIONS – OPTION 1

Scope	Type of Emission	Emission Sub-type	Project-related CO2e Emissions (short tons/year)	Calculation method(s)
Operation Emissions				
Scope 1	Combustion	Mobile Equipment	768.14	SGEC
Scope 2	Off-site Electricity	Grid-based	1,228.68	SGEC
Subtotal Operations			**1996.82**	
Annualized Construction Emissions				
Scope 1	New CR 75 Alignment Construction and land use conversion	Mobile Equipment	30.03	MICE

Scope 3	Upstream Materials		7.52	MICE
Scope 3	Transportation		1.0	MICE
Subtotal Construction			**38.55**	
Project Total			**2035.37**	

TABLE 18-2. TOTAL ANNUAL GHG EMISSIONS – OPTION 2

Scope	Type of Emission	Emission Sub-type	Project-related CO2e Emissions (short tons/year)	Calculation method(s)
Operation Emissions				
Scope 1	Combustion	Mobile Equipment	768.14	SGEC
Scope 2	Off-site Electricity	Grid-based	1,228.68	SGEC
Subtotal Operations			**1996.82**	
Annualized Construction Emissions				
Scope 1	Bridge Construction Combustion	Mobile Equipment	0.74	MICE
Scope 3	Bridge- Upstream Materials		3.93	MICE
Scope 3	Bridge- Transportation		0.11	MICE
Scope 1	Temp Roadway-Construction (Combustion)	Mobile Equipment	4.28	MICE
Scope 3	Temp Rdway Upstream Materials		4.28	MICE
Scope 3	Temp Roadway Transportation		0.57	MICE
Subtotal Construction			**13.91**	
Project Total			**2010.73**	

b. *GHG Assessment*

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

The Larson Quarry uses a biodiesel blend as a fuel source to reduce GHG emissions. By law, all diesel fuel is blended with 5% biodiesel from October 1st to March 31st, 10% biodiesel from April 1st to April 14th, and 20% biodiesel from April 15th to September 30th. Biodiesel is a renewable and biodegradable alternative to regular diesel fuel and burns cleaner to reduce GHG emissions.

Holcim MN employees volunteer and donate to many charities in the Twin Cities area. One organization in particular is Great River Greening. This organization leads and supports community-based restoration of local prairies, forests, and waters.

By purchasing electricity from a company that uses renewable energy sources to produce electricity, Holcim will therefore reduce their carbon footprint. Xcel Energy intends to provide 100% carbon free electricity by 2050 using renewable energy. By 2030, their goal is to reduce GHG emissions by 80% from initial standards set in 2005. Holcim also leases a portion of their land for a community solar garden located adjacent to the proposed expansion area, providing an alternative source of energy to the local grid.

Holcim is a limited partner in Suffolk Technologies' venture capital fund that supports construction technology startups at the forefront of innovative and sustainable building solutions. Suffolk Technologies' portfolio includes building solutions to achieve verifiable carbon neutrality; innovative energy storage solutions to electrify construction sites; and AI-driven solutions that improve job site planning and processes. Through its open innovation ecosystem, Holcim engages with hundreds of startups worldwide to scale up innovative technologies, accelerating the construction industry's transition to net zero.

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

Electricity usage contributes the most GHG emissions for the Project. By reducing the leading contributor of emissions, the Project will continue to reduce the carbon footprint. With the assistance of renewable fuel sources and restoring habitats, together will help achieve the goal of reducing overall GHG emissions.

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.*

Quantification of net lifetime GHG emissions is better defined as annual total short tons times the number of years. The anticipated lifetime of the quarry is 20-25 years. Total lifetime project-related emissions are anticipated to be 50,884 short tons CO_2e for Option 1. The total lifetime project related emissions are anticipated to be 40,215 short tons CO_2e for Option 2. With the use of Xcel Energy and more renewable fuel sources, these emissions are expected to decrease over the life of the Project and be on track to achieve the goals set forth in the Minnesota Next Generation Energy Act.

19. Noise

a. *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 existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to statenoise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigatethe effects of noise.*

Sound travels like a wave through the air. The wave is generated at the source and travels to the receptor, typically an ear, where it is perceived as a sound. Sound pressure waves may have different amplitudes, frequencies, and durations; all of which affect how a sound is perceived and measured. Sound pressure level is commonly measured in decibels (dB). Because the human ear cannot hear very low or very high frequencies, an adjustment is made to approximate the sensitivity of the human ear. The adjusted sound levels are stated in units of A-weighted decibels or "dBA".

Decibels are logarithmic, not linear, and so in general, an increase of 3 dBA is considered to be barely detectable, an increase of 5 dBA is considered to be a noticeable change and an increase of 10 dBA is considered to be perceived as twice as loud. There are several factors that affect how loud a sound is at a receptor. One of the primary factors of interest in the Project setting is the nature of the topography between the sound source and the receptor. Topography can provide a shield or barrier that prevents sound waves from travelling from a source directly to a receptor. In the case of mining, many noise sources are located on the floor of the mine. The elevation of the active bench or quarry floor is recessed well below the surrounding grades. Mine faces can effectively absorb, block, and deflect sound energy. Perimeter berms also serve as barriers that block the direct sound path between source and receiver and can also absorb sound energy significantly reducing overall sound levels at a receiver.

The distance between the sound source and the receptor is another primary factor that affects how loud the sound is at a receptor. As a general rule of thumb, doubling the distance from a point source will result in a 6 dBA decrease. For example, if an excavator creates a sound level of 75 dBA at a point 100 feet from the plant, the sound level will be approximately 69 dBA at a point 200 feet from the plant, 63 dBA at a point 400 feet from the plant, and 57 dBA at a point 800 feet from the plant. At greater distances, sound absorption by the atmosphere also plays a role.

Noise regulations: Noise pollution is defined in Minnesota Statutes 116.06 as follows:
"Noise pollution" means the presence in the outdoor atmosphere of any noise or combination of noises in such quantity, at such levels, of such nature and duration or under such conditions as could potentially be injurious to human health or welfare, to animal or plant life, or to property, or could interfere unreasonably with the enjoyment of life or property.

Minn. Rule 7030, Noise Pollution Control, regulates noise. These standards have been established based on preservation of public health and welfare and are consistent with speech, sleep, annoyance, and hearing conversation requirements (Minn Rule 7030.0040. Subpart 1). The rules define a NAC system which establishes applicable daytime and nighttime noise standards based on the land use activity at the location of the receiver or receptor. Standards vary depending upon the NAC. Residential land uses, including the rural residences that are located near the Project Area, are classified as NAC-1 and are subject to the strictest noise standards at the residence. Adjacent land uses that are classified as NAC-2 include parks and recreational

activities and NAC-3 land uses include mining activities and agricultural and related activities. NAC-4 land uses are not subject to noise standard and include undeveloped and unused land and water areas.

The rules establish acceptable noise levels for both the L50, the sound level that must not be exceeded for more than 50% of any given hour (no more than 30 minutes in a given hour) and the L10, the sound level that must not be exceeded for more than 10% of any given hour (no more than 6 minutes in a given hour). There is not a limit on maximum noise. Within NAC-1, there are two sets of standards, one for daytime and one for nighttime. The Minnesota Noise Standards define daytime hours as 7:00 a.m. to 10:00 p.m. and nighttime from 10:00 p.m. until 7:00 a.m. Minn. Stat. § 116.07 Subd. 2 (c) establishes that no local governing unit is allowed to set standards describing the maximum levels of sound pressure which are more stringent than those set by the MPCA.

Grey Cloud Island Township Ordinance 49.2 limits the majority of noise producing activities to daytime hours as described below although the Twonship has granted the operator operating outside of the ordinance for several years.

a. Excavation, crushing, screening, washing, and stockpiling to weekdays between 7 am – 7 pm;
b. Blasting to weekdays between 8 am and 4 pm;
c. Truck loading to weekdays and non-holidays between 7:30 am and 4 pm
d. Truck hauling on public roads to weekdays and non-holidays between 8:30 am and 4 pm

Typically, these activities occur during daytime hours and daytime noise standards apply. However, the Town Board can approve modifications to these operating hours in case of a public emergency or upon the request of the operator when the seasonal nature of the work or unusual circumstances require longer working hours, and some activities, including barge load, maintenance activities, and drilling of blast holes are permitted to occur 24 hours. Therefore, daytime noise standards apply to these activities when they occur during daytime hours (7am - 10pm) and nighttime standards apply to these activities when they occur during nighttime hours (10 pm - 7 am).

TABLE 19-1 MINNESOTA NOISE STANDARDS

	Daytime (7 am - 10 pm)		Nighttime (10 pm - 7 am)	
Noise Area Classification	L50 dBA	L10 dBA	L50 dBA	L10 dBA
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

Existing noise sources in the area: The land use of the surrounding area is the existing Larson Quarry, rural residential and open space. Ambient noise levels in the area rural residential. Ambient noise levels determined in previous monitoring in the region range from 45 dBA in the night to 49 dBA during daytime.[29]

[29] Barr Engineering Company 2020 Technical Memorandum County Road Realignment Noise Assessment (Included as Attachment 14)

Project Noise Sources: Noise will be generated at the Project by the clearing of trees, stripping of topsoil, blasting, and by quarry operations. The range of maximum sound levels (Lmax) from the types of equipment associated with these activities (chain saw, dozer, scraper, excavator, front end loader, backhoe, rockdrill, shovel, and impact crusher) and that could be operated within the expansion area is approximately 78-84 dBA measured at 50 feet from the source[30]. The processing plant site, product stockpiles, loading and hauling operations will remain at their current locations and will not occur within the expansion area.

Intermittent Noise Sources: Stripping and tree clearing operations are typically performed annually or bi-annually in the spring of the year to prepare new ground for the upcoming mining season. Stripping operations occur during normal business hours and the typical duration is one to three weeks. The noise generated from the stripping operation are mainly the sounds of heavy equipment operating which includes "white noise" alarms and the engine sounds of backhoes, dozers, and haul trucks.

Tree clearing operations are performed during normal business hours and the typical duration is one week. The noise generated from tree clearing includes the sound of saws and wood chipping equipment as well as the engine sound from large mobile equipment.

Blasting produces a brief (1-2 second) sound like that of thunder. Blasting is discussed separately under item 22. Other Potential Environmental Effects.

Continuous Noise Sources: The existing Larson Quarry operation produces finished products during the operating season, which is typically the months of late March through the end of October. The Larson processing plant, shovel, impact crusher, and conveyor systems are a continuous source of low-level noise. These systems run during the quarry's permitted operating hours. The processing plant, which consists of a crusher, vibrating screens, conveyors, and bins, is in the southwest corner of the existing Larson Quarry. The processing plant is separated from neighbors by distance and a section of dense woods. The processing plant produces a steady low level of noise.

The shovel and impact crusher system that is located on the floor of the existing quarry moves with the progression of mining and will be located on the floor of the quarry within the proposed Project area. The depth of the quarry as well as the surrounding perimeter berms attenuate the sound levels associated with these operations and are an effective means of shielding the neighbors from the low-level sounds of this operating equipment. The conveyors are the lowest level noise emitters. Proper maintenance ensures that this equipment is in good working condition, which prevents unwanted noise.

Option 1 Road Relocation Noise Sources: In the event CR 75 is re-routed, tree clearing, and road construction equipment will generate noise. Road construction will take a portion of a single season. Thereafter, the road realignment and associated traffic noise will move easterly, closer to the Grey Cloud Channel. Barr Engineering completed screening modeling, and the results are included in Attachment 14 Barr Engineering Technical Memorandum: County Road 75 Realignment Noise Assessment - Larson Quarry Expansion EAW). The work evaluated the proposed realignment, and the results indicate that noise levels associated with the new alignment are expected to fall below FHWA noise criteria guidelines. Residents are not expected to experience

[30] Federal Highway Administration August 2006 FHWA Highway Construction Noise Handbook 9.0 Construction Equipment Noise Levels and Ranges.

a significant increase in peak hour noise levels compared to existing conditions. During construction, noise impacts to nearby residences will be minimized by maintaining equipment in good working condition and limiting construction to daytime hours where practical.

Nearby Receptors: Residential noise receptors are located around the northern, eastern, and southern portions of the expansion area. The proposed quarry limits are set back from adjacent property lines and the ordinary high-water elevation of the Grey Cloud Channel by 500 feet. The nearest residential receptors outside the setback area are located south and southeast of the Site between 600 and 700 feet from the proposed quarry limits. The nearest residential receptors to the north and east are all located more than 900 feet from the proposed quarry limits and across the Grey Cloud Channel. There is one home (9301 Grey Cloud Island Drive) located within the 500-foot setback area, but a setback waiver agreement is already in place for this property. Other potentially sensitive receptors including schools (over two miles), libraries, hospitals, or care facilities, (over one mile), are not located close enough to the Project to be affected by any noise generated at the Site. Nearby residences are depicted on sheet C1 – Existing Conditions.

Mitigation measures include recessed mining areas where much of the noise producing equipment is located, perimeter berms to absorb and deflect sound, and setbacks from noise producing equipment. The MPCA regulates their noise rules through the general non-metallic mineral mining air emission permit and the Site must operate within the applicable noise standards. Historically, the existing Larson Quarry facility has received very few, if any, complaints related to the "continuous" noise sources associated with its operation. Neighbors are encouraged to contact the Plant Manager to alert the Company of any unusual noise levels and/or concerns. Holcim has a long history of working with the community to address noise concerns that may arise. The Project will not create significant impacts related to noise.

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 alternativetransportation modes.*

The proposed Project will have no impact on traffic generation and no change to the timing of haul traffic. It will not generate additional employee or customer traffic over the current daily or annual average levels. It will not change the mode of delivery of the limestone product. Most of the mined limestone will continue to be barged upriver to St. Paul. The Project will not add parking spaces. There is currently a designated parking area near the processing that accommodates approximately 10 vehicles.

b. *Discuss the effect of 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 proposed Project will have no effect on traffic counts or congestion. There will be no change in daily traffic

or peak traffic because of the Project. The main access to the Larson Quarry is off CR 75 and will not change because of the Project. A new Site access will not be constructed, and all traffic will continue to utilize the existing site access. The Project will not generate or result in a change to daily traffic. The number of employees or vendors will not change because of the Project. The amount of final product transported to market vs hauled by truck will not change because of the Project. Although mass transit is not an option for shipping product from the Site or employee commutes, barges are used to ship the majority of product from the Site.

Traffic Generated Impacts from Project	
Project increase in generated daily traffic	0 trips per day
Peak Hourly Traffic	0 trips per hour

There are currently no traffic congestion issues and none are anticipated with the Project. CR 75 is a rural two-lane roadway with no turn lanes or sidewalks. Based on Minnesota Department of Transportation (MnDOT) 2018 traffic count data, the segment of CR 75 proposed for relocation has an annual average daily traffic (AADT) volume of 1,550 with a posted speed of 40 mph. Annual average traffic volumes over the past three decades has ranged from 1,150 AADT in 2015 to 2,100 AADT in 2000 and 2003. The current right-of-way width is 66 feet. The existing roadway functional classification of CR 75 is identified in the Washington County 2040 Transportation Plan[31] as a major collector, serving shorter trips and distributing traffic from neighborhoods, commercial and industrial areas to the arterial system. The planning level capacity of a rural two lane is 12,000 ADT and approaching capacity is defined as 85% ADT or 10,200 ADT.

Option 1 County Road 75 realignment

The realignment of CR 75 bypass system for Option 1 may temporarily disrupt traffic patterns when the realigned section of road is connected with the existing road. The new roadway alignment will add less than one mile of travel path and add 1-2 minutes to normal commute times. The existing CR75 will remain open during the majority of the construction of the new alignment. It is anticipated at the end of the Project there will be a short period of lane closures while the connection to the existing roadway is made lasting from a few days to a few weeks.

Option 2 Bridge

A temporary realignment of CR 75 around the bridge construction area will be required for an estimated three to five years while the corridor is established, and the bridge is constructed. This period of time is anticipated to be required in order to be able to remove the roadbed, remove the limestone material across the setback areas and a large enough staging area to allow the construction of the bridge to begin, in addition to the time needed to construct the bridge. It is anticipated that there will be some lane closures during the construction of the temporary bypass when connecting to the existing drive lanes and when the bypass is removed. The temporary realignment will be located within the expansion area mine limits as shown on Site Plan C2.2.

c. *Identify measures that will be taken to minimize or mitigate project related transportationeffects.*

[31] Washington County 2040 Comprehensive Plan, Chapter 5. Accessed online at: https://www.co.washington.mn.us/DocumentCenter/View/38128/Chapter-5---Transportation

No measures are planned, as no impacts on transportation are expected. Truck traffic is expected to remain the same as at the existing Larson Quarry. The majority of the limestone product will continue to be barged upriver to Holcim's distribution facility in St. Paul.

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

a. *Describe the geographic scales and timeframes of the Project related environmental effects thatcould combine with other environmental effects resulting in cumulative potential effects.*

Cumulative potential effects analysis is intended to address the combined effects of the proposed Project with other proposed projects that could contribute similar environmental effects due to overlapping environmental footprints. In determining whether a project must be considered the future project must be reasonably likely to occur, applications shall have been filed with government agencies, detailed plans and specifications have been prepared, and sufficiently detailed information must be available about the project to contribute to the understanding of cumulative potential effects. Future land uses within the Project Area post reclamation are not considered as a cumulative effect as those uses have not been proposed, designed, or applications submitted. They will not coincide with the Project but will be considered once the Project is complete. No development plans have been proposed and no development applications have been made with respect to final development post reclamation. In the expansion area future development of the Site is anticipated to be residential consistent with the Future Land Use Plan described in Item 10. With Option 1 access to lots along Grey Cloud channel would be from the relocated CR 75. For Option 2 a local road would have to be constructed along the same general alignment as the Option 1 relocated CR 75 alignment to provide access to lots developed along the 500 ft setback area between Grey Cloud Channel and the quarry lake. Therefore, it is expected that Option 2 will ultimately result in more linear feet of roadway than Option 1 once final development occurs.

For projects that have already been approved, cumulative effects are covered within the environmental review as existing or baseline conditions and do not require a separate analysis. The geographic scale for which cumulative potential effects would be relevant is topic specific but generally is located within Grey Cloud Island Township.

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 geographicscales and timeframes identified above.*

There are no known reasonably foreseeable future projects that may interact with environmental effects of the Project.

c. *Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmentaleffects due to these cumulative effects.*

Not Applicable

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.

Blasting: Consistent with the current Larson Quarry, the Project will utilize blasting to break the bedrock into small enough pieces to be able to extract, transport, and process. Blasting is conducted throughout the operating season which is typically during the months of late March through the end of October. Blasting occurs during normal business hours Monday through Friday and the exact timing of the blast will vary depending upon site and weather conditions and other factors. Blasting typically occurs one to two times per week during the production season. Environmental effects that can result from blasting include air overpressure and ground vibration.

Air Overpressure: Air overpressure is a measurement of the change in pressure created from the blasting process and other naturally occurring events. This pressure change travelling through the air in waves transmits noise and inaudible blast energy. Air overpressure is measured in decibels. While the audible portion of the blast energy results in noise that can be a nuisance, the lower frequency (inaudible) blast energy may be felt physically or be transferred to other objects causing secondary noise effects like windows rattling that is noticed by the receptor.

Ground Vibration: Ground vibration is measured in inches per second and is a measure of particle movement within the ground. Energy released during the blast travels away from the blast in waves through the ground. At high enough levels, ground vibration can cause damage to nearby structures. Peak particle velocities decrease rapidly as the distance from the source increases and most energy in a well-designed blast is absorbed as it fractures and moves the rock away from the mine face into a pile for loading. Maximum efficiency is achieved by adjusting the amount of explosives to match the amount of rock to be broken and by utilizing delay intervals to control the frequency of the blast and the amount of ground vibration.

State Regulations: The State of Minnesota Department of Natural Resources defines blasting requirements for air overpressure and ground vibration from metallic mineral mining in the Minnesota Administrative Rules Chapter 6130, Part 6130.3900. Subpart 1 states that air overpressure on lands not owned or controlled by the permittee shall not exceed 130 decibels as measured on a linear scale, sensitive to a frequency band ranging from six cycles per second to 200 cycles per second.

Subpart 2 states that the maximum peak particle velocity from blasting shall not exceed 1.0 inch per second (ips) at the location of any structure located on lands not owned or controlled by the permittee.

Federal Regulations: Title 30 of the Code of Federal Regulations (CFR) Part 816.67 defines blasting requirements for air blast (a.k.a. air overpressure) and ground vibration from the use of explosives for surface mining. According to the CFR requirements, the air blast shall not exceed 133 decibels as measured on a linear scale, for a lower frequency measuring system of 2 hertz or lower. Ground vibration limits are based on the US Bureau of Mines Report of Investigation 8507 which establishes protective limits at different frequencies as indicated on the excerpt blow.

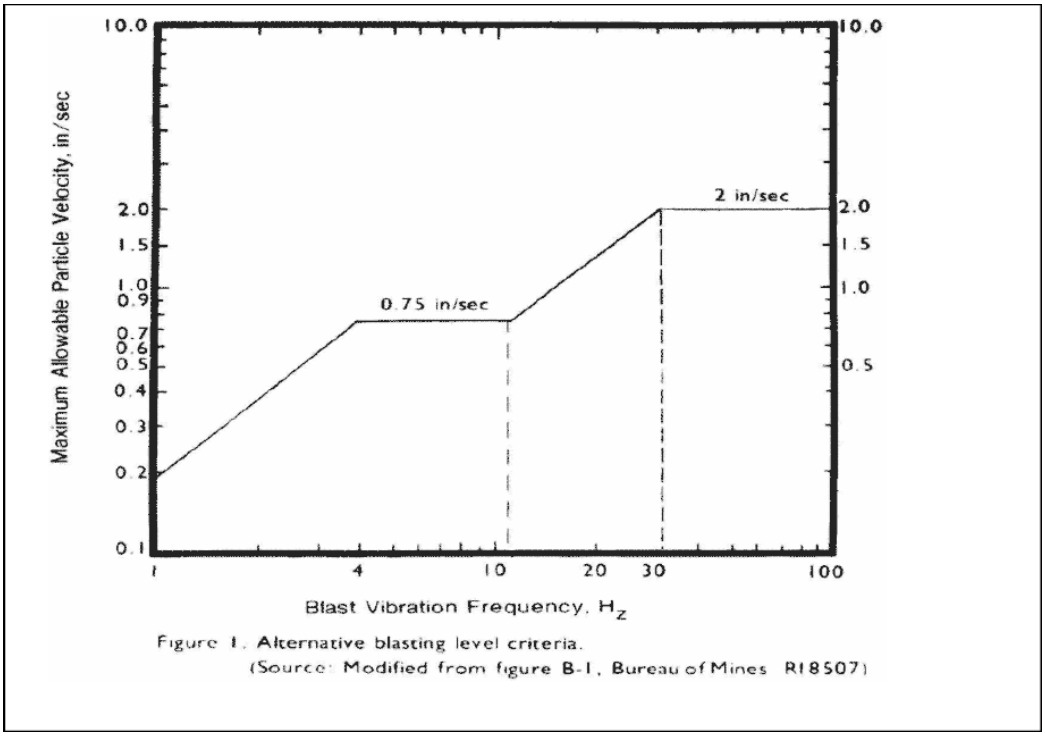


Figure 1. Alternative blasting level criteria.
(Source: Modified from figure B-1, Bureau of Mines RI 8507)

Monitoring, Reporting, and Compliance: There are four permanent seismographs strategically placed around the existing Larson Quarry that monitor both air overpressure and peak particle velocity for each blast. In addition, a portable seismograph is placed at the nearest residence to ensure blasting standards are not exceeded at the nearest structure to any given blast. Holcim has an independent third-party design, conduct, monitor, and submit reports to the Township monthly. All blasting records show that federal and state blasting regulations and rules are consistently being met.

Blasting in the expansion area will use the same procedures. Blasting operations in the expansion area will be compliant with federal and state regulations and rules and not result in significant environmental effects from excessive air overpressure or vibration.

RGU CERTIFICATION. (The Environmental Quality Board will only accept **SIGNED** EnvironmentalAssessment 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 myknowledge.
- 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 Daniel Ellen Date 11/5/24

Title Planner II