APRIL 16, 2024

ENVIRONMENTAL ASSESSMENT WORKSHEET (EAW)

SHAKOPEE GRAVEL REDEVELOPMENT

FOR: CITY OF SHAKOPEE

wsb

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December 2022 version

Environmental Assessment Worksheet

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

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

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

1. **Project title:**
   Shakopee Gravel Redevelopment

2. **Proposer:**

Rachel Development
Contact person: David Stradtman
Title: Vice President of Development
Address: 4180 Napier Court NE
City, State, ZIP: St. Michael, MN 55376
Phone: 763.424.1500
Email: dstradtman@racheldevelopment.com

RGU: City of Shakopee
Contact person: Michael Kerski
Title: Director of Planning and Development
Address: 485 Gorman Street
City, State, ZIP: Shakopee, MN 55379
Phone: 952.233.9346
Email: mkerski@shakopeemn.gov

3. **Reason for EAW Preparation: (check one)**

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

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

Subpart 19D: Residential Development

4. **Project Location:**

- County: Scott
- City/Township: Shakopee
- PLS Location (¼, ¼, Section, Township, Range): SE ¼ NE ¼ S 17 T 115 R 022
- Watershed (81 major watershed scale): Lower Minnesota River Basin
- GPS Coordinates: 44.462 N, -93.282 W
- Tax Parcel Number(s): 279170020, 279160102, 279160110

5. Project Description:

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

A residential and mixed-use development is proposed on approximately 146 acres southwest of the intersection of Mystic Lake Dr. (County Highway 83) and 17th Ave E (County Highway 16), in Shakopee, Minnesota. This proposed development is located at the site of a sand and gravel pit and includes 223 single family homes, 98 attached townhomes, up to 534 apartment units, 174,300 square feet of mixed commercial uses, and approximately 24 acres of open space. Construction will also include a water treatment plant owned and operated by the Shakopee Public Utilities Commission, stormwater infrastructure, internal roads, and utilities.

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

Rachel Development is proposing a residential and mixed-use development in Shakopee. The project is located southwest of Mystic Lake Dr. and 17th Ave E, at the site of a sand and gravel pit and encompasses approximately 146 acres (**Figure 1, Figure 2, Figure 3**). The project concept includes 223 single family homes, 98 attached townhomes, up to 534 apartment units, and 174,300 square feet of mixed commercial use space including grocery, offices, medical, and retail, and approximately 24 acres of public open space (**Figure 4**). Construction will also include a water treatment plant owned by Shakopee Public Utilities Commission (SPUC), internal roads, stormwater BMPs, and utilities.

Figure 1: Project Location

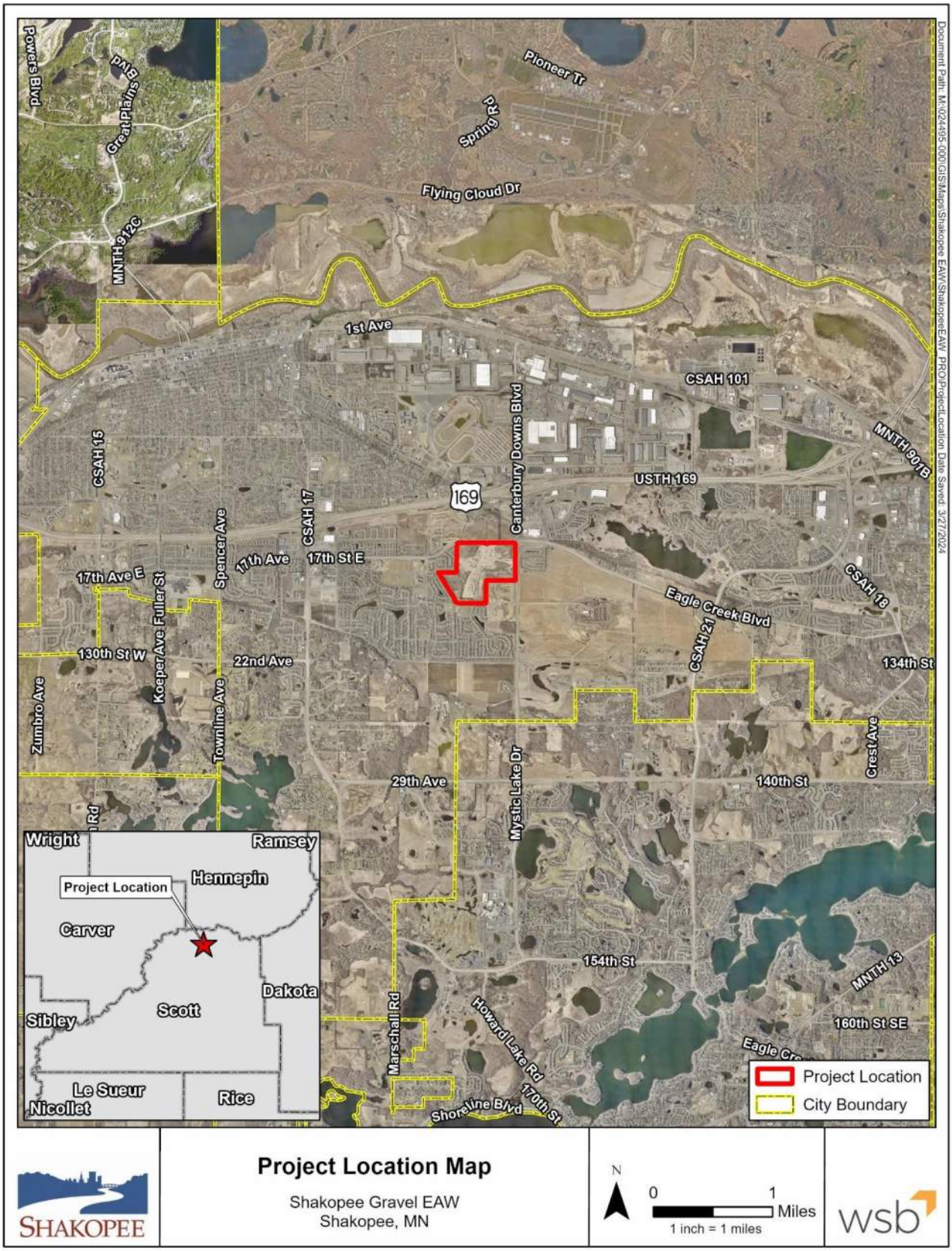


Figure 2: USGS Topography

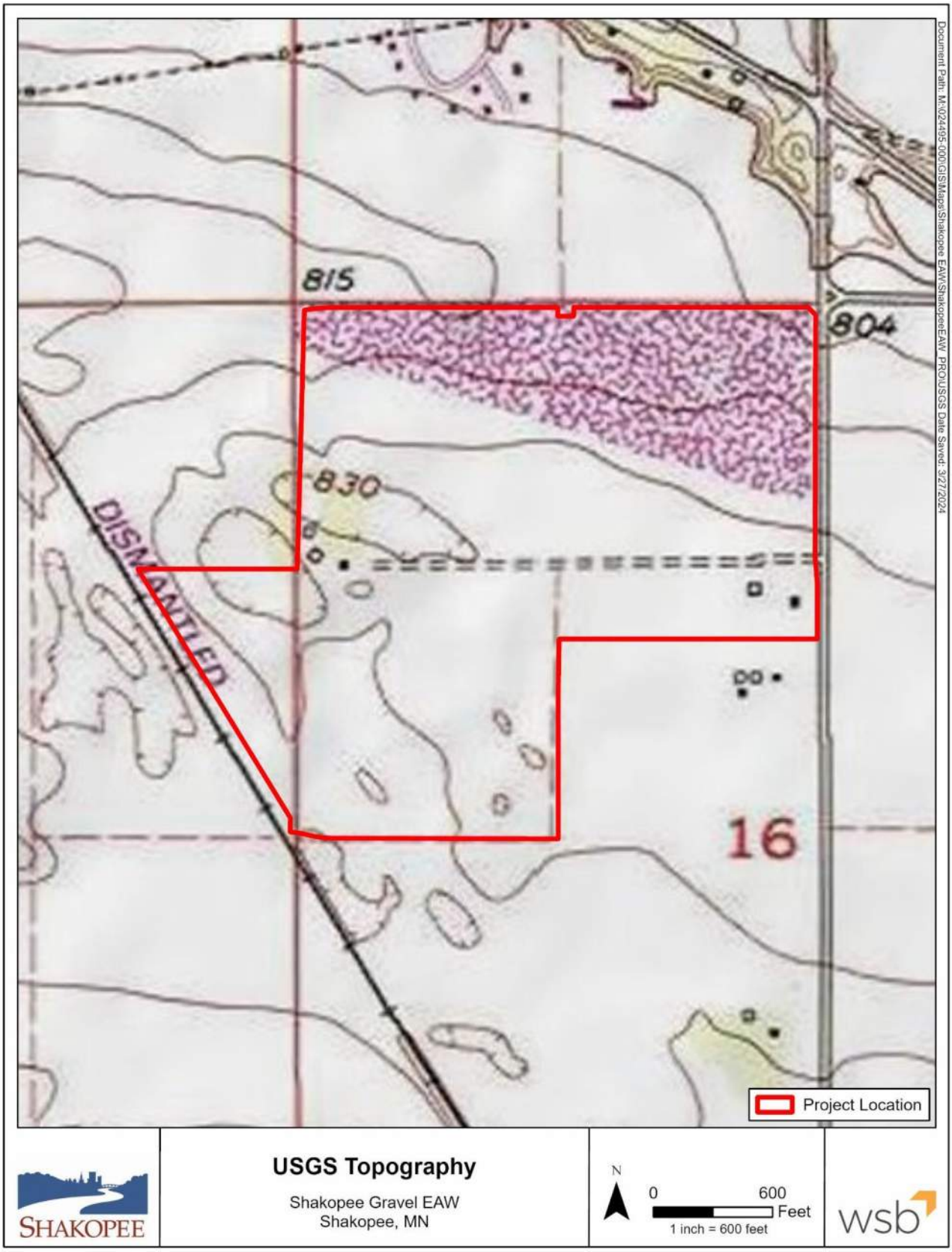
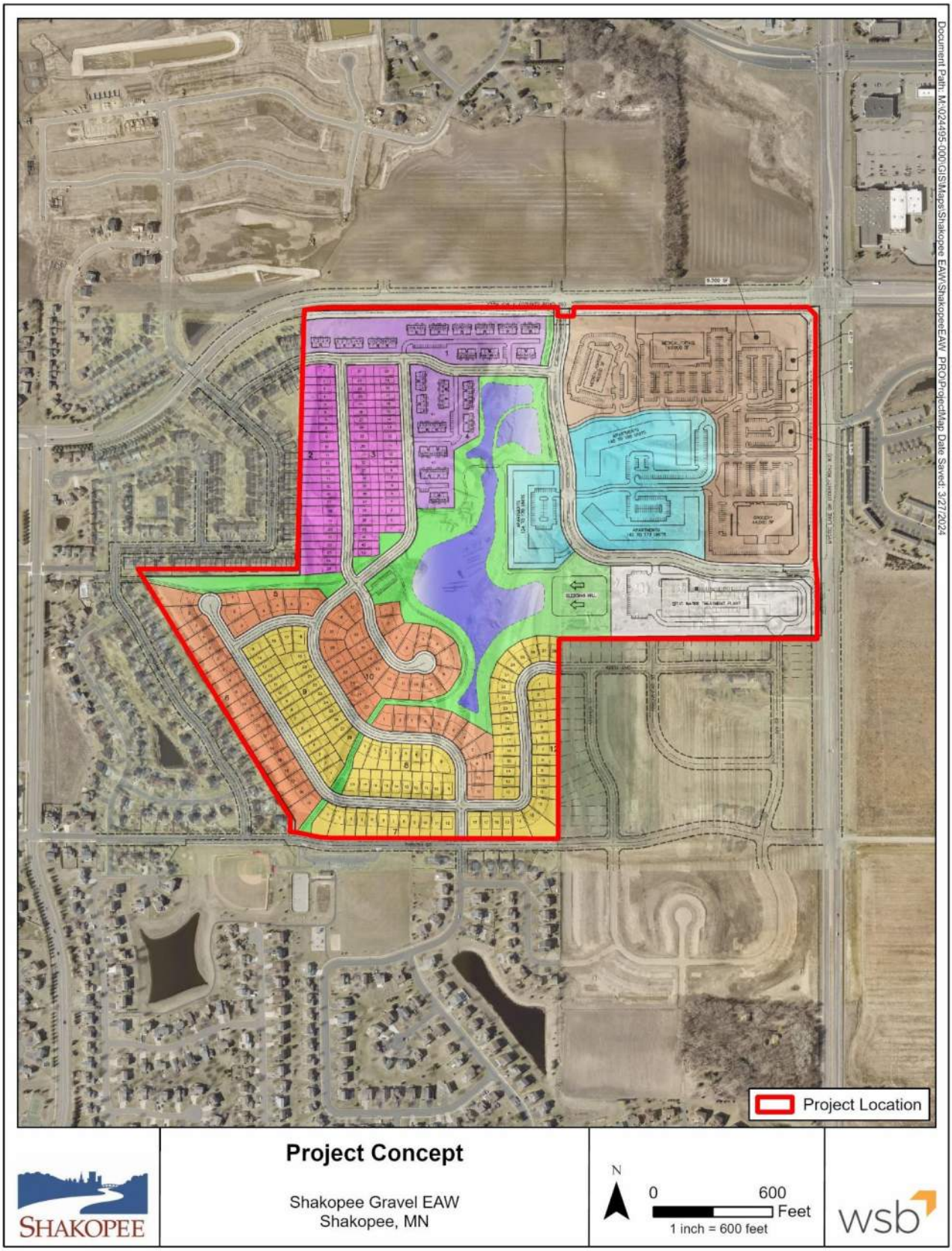


Figure 3: Project Aerial

Figure 4: Proposed Project Concept



Construction on the site will utilize equipment typical of residential and commercial developments. Building demolition will be necessary to remove the building located on the future SPUC property. The initial site reclamation is expected to occur in 2024 – 2025 and will involve excavation of existing fill material and backfill with engineered soils. Periods of time will then be allowed for settlement of the fill material. Construction of the first phase is expected to start in late 2025. Construction of the commercial and attached residential will be constructed in earlier phases, over 1 – 3 years, whereas the single family residential areas are expected to be phased over 4 – 6 years. Full buildout within the project area is expected to be accomplished by 2030.

Existing site conditions include developed land primarily consisting of a sand and gravel mine, stormwater ponds, and some herbaceous upland, shrublands, and wooded areas that have revegetated following their use as a gravel mine (**Figure 5**).

c. Project magnitude:

Description	Number
Total Project Acreage	146 acres
Linear project length	n/a
Number and type of residential units	
Single Family Homes	223 units
Attached Townhomes	98 units
Apartments	422-534 units
Residential building area (in square feet)	2,994,750 sf
Commercial building area (in square feet)	174,300 sf
Industrial building area (in square feet) Water Treatment Plant	97,140 sf
Institutional building area (in square feet)	n/a
Other uses – specify (in square feet)	n/a
Structure height(s)	

Table 1 Project Magnitude

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

The purpose of this project is to provide places for people to live, work, and recreate in Shakopee. A portion of the project is dedicated to the building of a new water treatment plant that will be owned and operated by the Shakopee Public Utilities Commission. This will benefit the residents and visitors of Shakopee to ensure access to clean water.

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

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

Not Applicable.

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

6. 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.

According to the Minnesota Department of Natural Resources (DNR) across the state, "Minnesota's climate already is changing rapidly and will continue to do so for the foreseeable future. Temperatures are increasing -- especially in winter -- and larger, more frequent extreme precipitation events are occurring. Substantial warming during winter and at night, increased precipitation, and heavier downpours already have affected our natural resources, and how we interact with and use them. The decades ahead will bring even warmer winters and nights, and even larger rainfalls, along with the likelihood of increased summer heat and the potential for longer dry spells."[1]

Climate change projected impacts to this specific site have been analyzed below, utilizing resources from the guidance document supplied by the EQB. The life of the improvement is expected to be 20 years for the life of the roadway and for the life of the building and site is expected to be 50 years.

Variables included in this analysis include precipitation and temperature, storm intensity, floods and droughts, and extreme heat.

Precipitation and Temperature
According to NOAA's Climate at a Glance County Time Series mapping tool[2] for Scott County, utilizing the mean model, **Table 2** demonstrates the changes expected on precipitation and temperature in the County.

Recent and Projected Future for Scott County: January-December, Mean Model	Precipitation: Mean (in)	Average temperature: Mean (˚F)	Maximum Temperature: Mean (˚F)	Minimum Temperature: Mean (˚F)
1980-1999 Modeled Present	31.72	44.81	54.34	35.29
2040-2059 Mid-Century (RCP 4.5)	32.12	48.87	55.82	42.14
2080-2099 Late-Century (RCP 4.5)	32.94	51.27	57.92	44.94
2080-2099 Late-Century (RCP 8.5)	35.7	55.03	61.46	49.13

Table 2 Estimated Future Precipitation and Temperature Changes

These models generally predict that the project area will see more precipitation and warmer average, maximum and minimum temperatures. The mid-century (2040-2059) calculation is

[1] https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html
[2] https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/county/time-series

more relevant to the roadway portions of the project, given the 20-year life of improvement. The late-century (2080-2099) calculation is more relevant to the life of the structures for the project, given the 50-year expected life of the project.

Storm Intensity

In the Shakopee area, according to the EPA's CREATE: Storms map[3], the scenarios demonstrate that by 2035, there will likely be an increase in 100-year storm intensity. With the 'not as stormy' scenario, by 2035, there may be a 2.9% increase and by 2060, there will be a 5.6% increase in 100-year storm intensity. In the 'stormy' scenario, by 2035, there may be a 13.7% increase and by 2060, a 26.6% increase in 100-year storm intensity. Generally, there is an expected increase in 100-year storm intensity, per the modelling.

Floods

Risk Factor: Flood Factor Tool

According to the Risk Factor: Flood Factor tool from the nonprofit First Street Foundation®, the City of Shakopee has a Moderate Flood Factor risk overall. "There are 928 properties in Shakopee that have greater than a 26% chance of being severely affected by flooding over the next 30 years. This represents 13% of all properties in Shakopee."[4] Within the categories, residential, roads, commercial and social facilities have moderate risk, and critical infrastructure has minimal risk.

Metropolitan Council Localized Flood Mapping

Per the tool, "the interactive Localized Flood Map Screening Tool is intended for community use. The data is part of the regional Climate Vulnerability Assessment project for the Twin Cities metro area. Communities may use this tool to screen for potential surface or localized flooding locations. The Localized Flood Map Screening Tool was created using the State of Minnesota's LiDAR elevation data from 2011." The site has multiple locations of identified primary, secondary, and tertiary flooding, however, much of this area will be graded as development begins. On the southwestern edge of the site, there are currently areas that have primary flood hazard identified which are currently planned for residential units, but these areas will be raised during site reclamation and are not anticipated to be a flood hazard.[5]

Extreme Heat

EPA CREAT Map

In the Shakopee area, the EPA's CREATE: Extreme Heat map[6] shows that the number of days over 100°F historically mapped. Where the project area is located, there has been one day in the project area historically over 100°F. By 2035, projections show the project area with three scenarios as follows:

- in the Hot/Dry scenario, four days will be over 100°F;
- in the central scenario, three days will be over 100°F;
- in the warm/wet scenario, three days will be over 100°F

By 2060, the modeling of the scenarios show the following:

- in the Hot/Dry scenario, ten days will be over 100°F;

[3] https://epa.maps.arcgis.com/apps/MapSeries/index.html?appid=3805293158d54846a29f750d63c6890e
[4] https://riskfactor.com/city/garrison-mn/2723192_fsid/flood#flood_risk_overview
[5] https://metrocouncil.maps.arcgis.com/apps/webappviewer/index.html?id=100fa3012dcc4e288a74cbf4d95027bf
[6] https://epa.maps.arcgis.com/apps/MapSeries/index.html?appid=3805293158d54846a29f750d63c6890e

- in the central scenario, six days will be over 100°F;
- in the warm/wet scenario, six days will be over 100°F.

This indicates that the project area may see more extreme heat days in the future.

University of Minnesota Heat Exposure Tool
Heat Exposure mapping tools from the University of Minnesota show high composite sensitivity and moderate exposure scores for Scott County. These composite scores help to "visualize datasets that contribute to a community's vulnerability, including sensitivity (i.e., demographic, socio-economic, health, and environmental variables) and exposure (i.e., temperature-related variables). Variables can be mapped individually or layered to develop a composite score."[7] High scores indicate high community vulnerability to extreme heat overall. The project area scores indicate community vulnerability to extreme heat.

b. For each Resource Category in the table below: Describe how the project's proposed activities and how the project's design will interact with those climate trends **Table 3**. Describe proposed adaptations to address the project effects identified.

Resource Category	Climate Considerations	Project Information	
		Climate Change Risks and Vulnerabilities	**Adaptations**
Project Design	Aspects of the building architecture/materials choices and site design that may negatively affect urban heat island conditions in the area considering changing climate zones, temperature trends, and potential for extended heat waves	This site is in an area with risk of the urban heat island effect, increasing temperatures and precipitation, and increase storm intensity. The site is planned to have a buildings and paved parking surfaces	• The project proposes underground stormwater storage. The project may consider green infrastructure solutions, such as rain gardens, green roofs, vegetation and vegetative buffer strips, tree trenches, cisterns, and other solutions. • The project will follow all applicable federal, state, and local standards and regulations, as listed throughout this report.
Land Use	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) proposed in floodplain areas and other areas identified as at risk for localized flooding; describe the risk potential	• Potential risk of future flooding in the project area due to increasing storm intensity. • The proposed land use is very different to the existing use (gravel pit) and is proposed to be commercial and residential. • The new land use will include residential and commercial structures that will use energy	• The project proposes underground stormwater storage. The project may consider green infrastructure solutions, such as rain gardens, green roofs, vegetation and vegetative buffer strips, tree trenches, cisterns, and other solutions. • As practicable, the project will evaluate additional strategies beyond the BMPs described above to improve climate resiliency. • The project will follow all applicable federal, state, and local standards

[7] https://maps.umn.edu/climatehealthtool/heat_app/

	considering changing precipitation and event intensity	and create transportation needs.	and regulations, as listed throughout this report. • This mixed-use project will utilize energy efficient appliances and fixtures, lighting, and efficient building practices and will pursue other sustainability efforts such as LEED certification. The apartment buildings will also consider provision of solar power on rooftops and electric vehicle charging stations. In addition, approximately 16% of the project area will be converted into public open space including connection trails, etc., for non-vehicle trips.
Water Resources	Addressed in item 12	Addressed in item 12	Addressed in item 12 Water will be captured and directed to a central pond within the development, with any overflow channeled into an infiltration chamber.
Contamination/ Hazardous Materials/Waste	Addressed in item 13	Addressed in item 13	Addressed in item 13
Fish, wildlife, plant communities, andsensitive ecological resources (rare features)	Addressed in item 14	Addressed in item 14	Addressed in item 14

Table 3 Climate Considerations

7. **Cover types:**

Estimate the acreage of the site with each of the following cover types before and after development **Table 4, Figure 5**:

Cover Types	Existing/Before (acres)	After (acres)
Wetlands and shallow lakes (<2 meters deep)	0	0
Deep lakes (>2 meters deep)	0	0
Wooded/forest	0	0
Rivers/streams	0	0
Brush/Grassland	73.5	0
Cropland	0	0
Livestock rangeland/pastureland	0	0
Lawn/landscaping	0	65
Green infrastructure TOTAL (from table below*)	0	2
Impervious surface	1	72
Stormwater Pond (wet sedimentation basin)	1	9
Other (gravel mine)	70.5	0
TOTAL	146	146

Table 4 Cover Types

Figure 5: Cover Types – Existing/Before

Green Infrastructure*	Before (acreage)	After (acreage)
Constructed infiltration systems (infiltration basins/infiltration trenches/ rainwater gardens/bioretention areas without underdrains/swales with impermeable check dams)	0	2
Constructed tree trenches and tree boxes	0	0
Constructed wetlands	0	0
Constructed green roofs	0	0
Constructed permeable pavements	0	0
Other (describe)	0	0
TOTAL*	0	2

Table 5 Green Infrastructure

Trees	**Percent**	**Number**
Percent tree canopy removed or number of mature trees removed during development	100%	--
Number of new trees planted*	TBD	TBD

Table 6 Trees

*The development will be consistent with the city's tree preservation ordinance.

8. Permits and approvals required:

List all known local, state and federal permits, approvals, certifications and financial assistance for the project **Table 7**. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibiteduntil all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

Unit of Government	Type of Application	Status
Federal		
US Environmental Protection Agency	Sole Source Aquifer Project Review	Only applicable if project has federal financial assistance
State		
Pollution Control Agency	NPDES/SDS Construction Stormwater Permit	To be obtained
	Intent to Perform Demolition Notification	To be obtained
	Section 401 Certification	To be obtained
	Sanitary Sewer Extension	To be obtained

Department of Health	Watermain Extension Plan Review	To be obtained
	Well and Boring Sealing Record	To be submitted
Department of Natural Resources	Water Appropriation (Construction Dewatering) Permit	To be obtained, if needed
Local		
City of Shakopee	Zoning Amendment	To be obtained
	Commercial & Industrial Building Permit	To be obtained
	Residential Building Permit	To be obtained
	Sewer and Water Permit	To be obtained
	Grading Permit	To be obtained
	Preliminary Plat	To be obtained
	Final Plat	To be obtained
	Minor Subdivision	To be obtained
	Planned Unit Development	To be obtained
	Sign Permit	To be obtained
	Right of Way Permit	To be obtained
Scott County	Right of Way Permit	To be obtained
	Access Permit	To be obtained

Table 7 Permits and Approvals

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.

9. Land use:

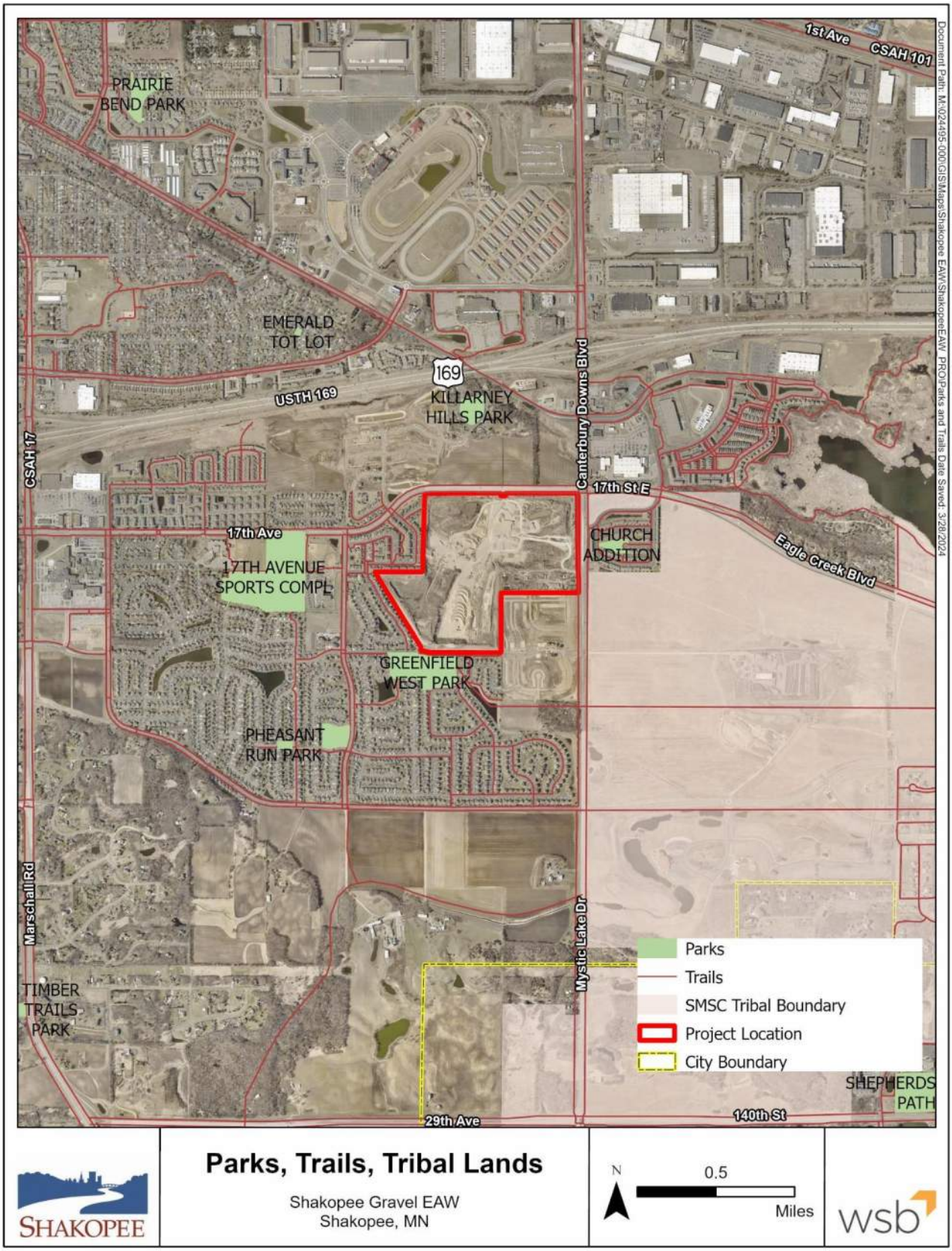
a. Describe:

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.

The existing site is shown in **Figure 5** and includes primarily a sand and gravel mine, stormwater ponding, and some areas of herbaceous upland, shrublands, wooded areas within areas that have revegetated after their use as a gravel pit and along the berms of the gravel pit. The project area has been utilized as a sand and gravel mine since the 1990s; prior to that it was undeveloped or agricultural land.

Current planned land uses include single and medium family residential within the project area, rural residential and planned residential to the east, single family residential to the south, single family residential and medium density residential to the west, and single family residential (some currently under development) and commercial to the north. Nearby parks include Green Meadows Park, Greenfield East Park, Killarney Hills Park, Greenfield West Park, and 17th Avenue Sports Complex. Green Meadows Park and the Sports Complex provides the area with several outdoor sporting fields. Multi-use trails and sidewalks are adjacent to the site and connect to neighboring residential areas and parks. The Shakopee Mdewakanton Sioux Community (SMSC) also owns land in Trust to the east of the site, which is currently restored prairie area **Figure 6**.

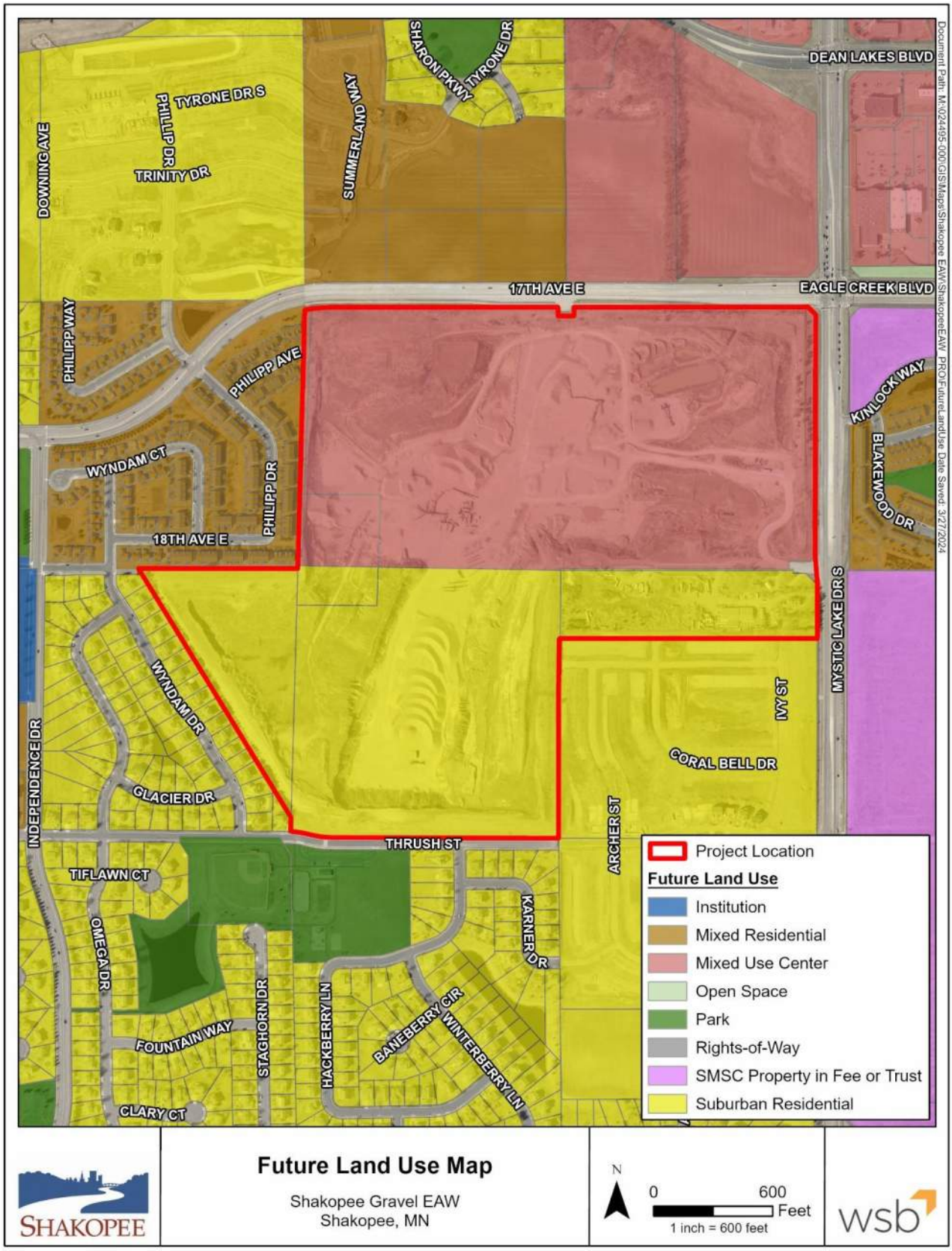
Figure 6: Parks, Trails and Tribal Lands



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

The city's future land use plan indicates the project area is planned to be a combination of mixed use center and suburban residential **Figure 7**. Adjacent future land uses include mixed residential and suburban residential to the east and south, suburban residential and mixed residential to the west, and mixed residential and mixed use center to the north.

Figure 7: Future Land Use

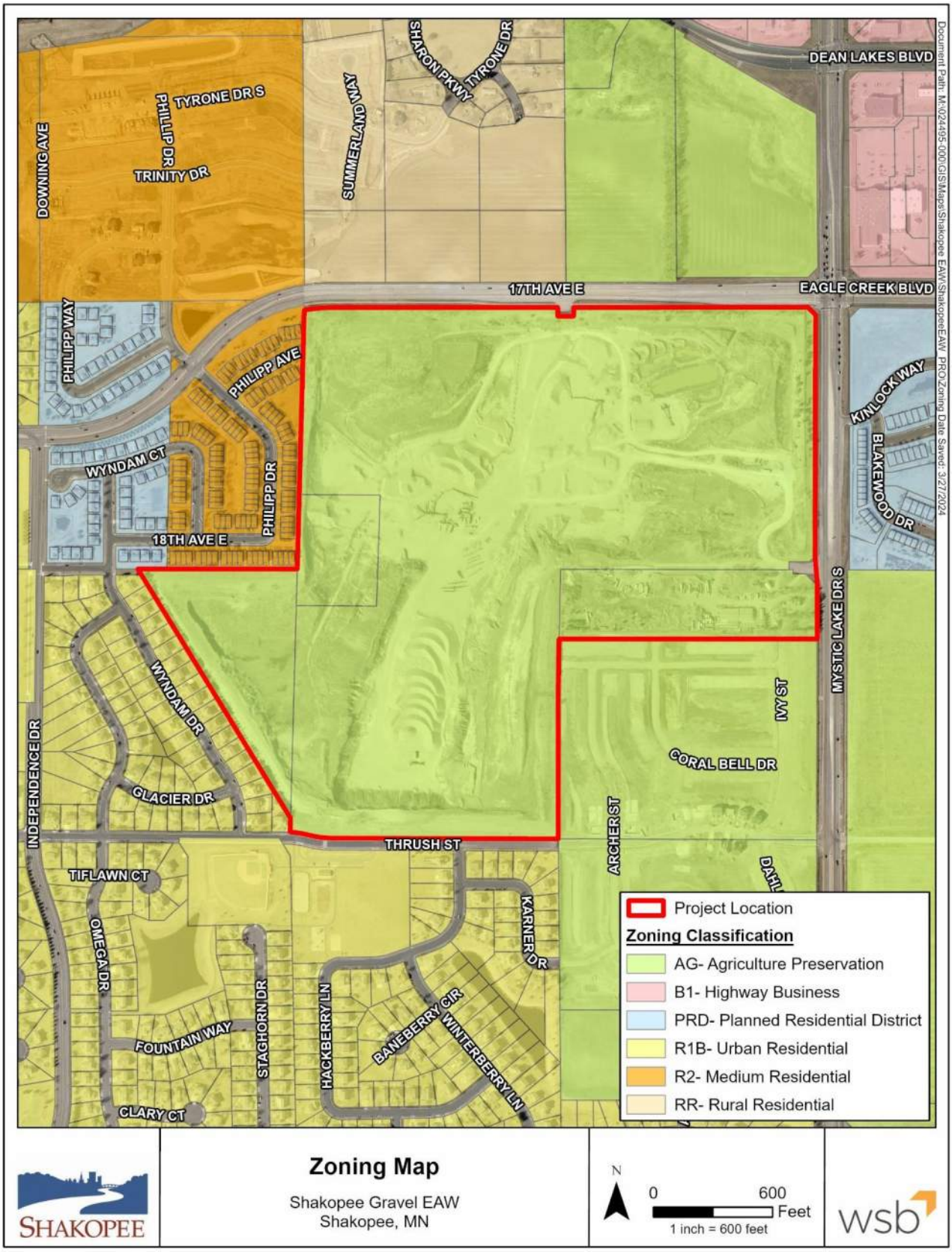


The 2040 Comprehensive Plan for the City of Shakopee outlines plans specific to the site as it is considered a greenfield area. The Shakopee Gravel Quarry greenfield area has a suburban residential planned land use with up to 370 housing units expected by the year 2040. The planning document allows for zoning amendments as long as the overall plan matches the general goals and vision outlined in the plan.

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

The project site is zoned Agricultural Preservation **Figure 8**. The site is not located in any special district or overlay.

Figure 8: Shakopee Zoning Map



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.

Not applicable. Area is not within a floodplain.

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

The proposed use at the site is for single family residential, medium to high density residential and mixed commercial. While the proposed land use conforms with the general goals and vision outlined in the City's Comprehensive Plan, a greater density is proposed and it also includes areas of mixed use/commercial development. The proposed project is also not compatible with the future land use plan or current zoning for the area.

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

Project development will require rezoning of the project area and approval of a Planned Unit Development.

10. Geology, soils and topography/land forms:

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

According to the Minnesota Geological Survey for Scott County Plate 3, The bedrock at the project area consists of the Lower Ordovician, Prairie du Chien Group described as sandy dolomite. As documented in nearby test hole drilling logs, the bedrock is underlain by over 50 feet of sand, sandy gravel, and sandy clay.

The site is currently utilized as a sand and gravel mine. Typically, gravel pits are backfilled with fill from unknown sources that does not meet construction compaction requirements. Soil borings have been conducted onsite and confirmed that the backfill used to create the berms surrounding the site, as well as areas that were backfilled when mining in certain areas ceased was intermixed with organics and debris. This fill is not suitable for the proposed uses. The existing fill material within the area will need to be removed and replaced with an engineered fill suitable for construction of the proposed land uses. In addition, construction delays are recommended between completion of the backfilling and the beginning of construction to allow for settlement of the fill material. Depending on the depth of fill, the time allowed for settlement could range from 3 to 18 months.

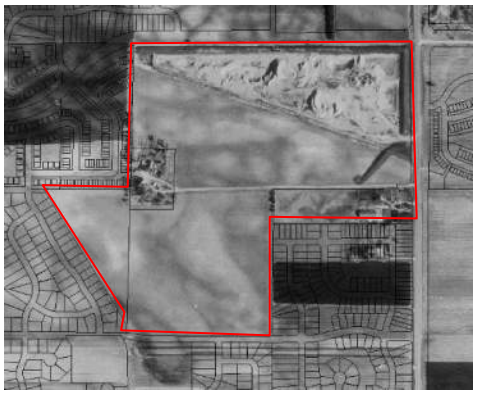
According to the Minnesota Karst Land Map, the project area is not located in a region prone to surface karst features. Based upon the geological findings, the current and historical gravel pit activities at the project area have been identified as a potential geological risk for future construction.

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

Redevelopment activities will involve earthwork across the project area, which will be a combination of excavation, backfill, and grading. As noted previously, much of the existing fill materials will need to be removed and replaced with engineered backfill. The existing mine pits will also need to be backfilled with engineered soils. There will be approximately 4 million cubic yards of excavation required on site. To accomplish this, the existing backfill from the site will be excavated, organics removed, and then the soils will be conditioned and recompacted onsite to make them suitable to support construction. There will be some import of fill materials to achieve the current concept grading plan elevations, but not the entirety of the sites. The proposed grading will require a NPDES stormwater permit from the MN Pollution Control Agency.

The existing topography at the project area is generally undulating with areas of excavated soil, fills, and piles of sand and gravel throughout. The data provided by the NRCS Web Soil Survey for the project area are provided in **Table 8** and shown on **Figure 9**, however given that the gravel pit has been in operation since the 1990s very few native soils remain and these data likely do not apply. Historically, the site was utilized as agricultural land. The gravel mine began operation in 1989 and expanded across the study area over the following decades, encompassing nearly the entire study area by the mid-2000s. Mining extended down to approximately 780 feet mean sea level (MSL) in the northern portion of the project area to 792 feet MSL in the southern portion of the site.

1990 Aerial



2007 Aerial

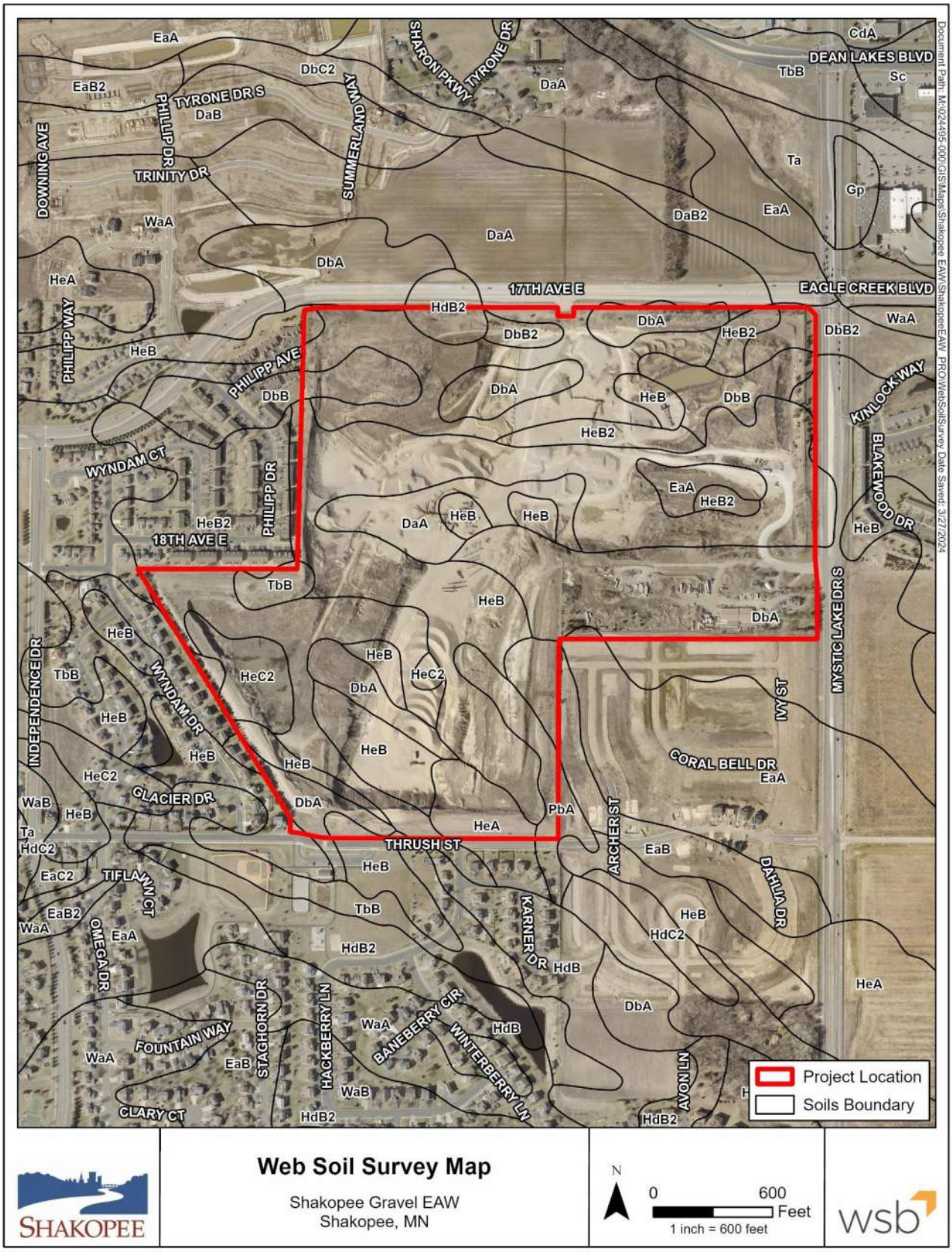
Map Unit Symbol	Soil Name	Percent Slope	Farmland Classification	Ksat Value[1]	Hydrologic Group[2]
DaA	Dakota Loam	0 to 2	Prime Farmland	0.57 to 1.98 in/hr.	B
DbA	Dickman Sandy Loam	0 to 2	Of Statewide Importance	2.00 to 6.00 in/hr.	A
DbB	Dickman Sandy Loam	2 to 6	Of Statewide Importance	2.00 to 6.00 in/hr.	A
EaA	Estherville Loam and Sandy Loam	0 to 2	Of Statewide Importance	1.98 to 5.95 in/hr.	A
EaB	Estherville Sandy Loam	2 to 6	Of Statewide Importance	0.60 to 6.00 in/hr.	A
HdB2	Sparta Fine Sand	2 to 6	Not Prime Farmland	5.95 to 19.98 in/hr.	A
HeA	Sparta Loamy Fine Sand	0 to 2	Not Prime Farmland	1.98 to 5.95 in/hr.	A
HeB	Sparta Loamy Fine Sand	2 to 6	Not Prime Farmland	1.98 to 5.95 in/hr.	A
HeB2	Sparta Loamy Find Sand	2 to 6	Not Prime Farmland	1.98 to 5.95 in/hr.	A
HeC2	Sparta Loamy Fine Sand	6 to 12	Not Prime Farmland	1.98 to 5.95 in/hr.	A
PbA	Houghton Muck	0 to 1	Of Statewide Importance	0.20 to 6.00 in/hr.	A/D
TcB	Terril Loam	2 to 6	Prime Farmland	0.20 to 2.00 in/hr.	B

1 Ksat value indicates the susceptibility of a soil to erosion by water. Other factors being equal, the higher the value, the more susceptibility the soil is to erosion.

2 A = high infiltration rate, low runoff potential; B = moderate infiltration rate; C = slow infiltration rate; and D = very slow infiltration rate, high runoff potential. Only the soils in their natural condition are in group D and are assigned to dual classes. If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Table 8 Soils in Project Area

Figure 9: Web Soil Survey



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

11. Water resources:

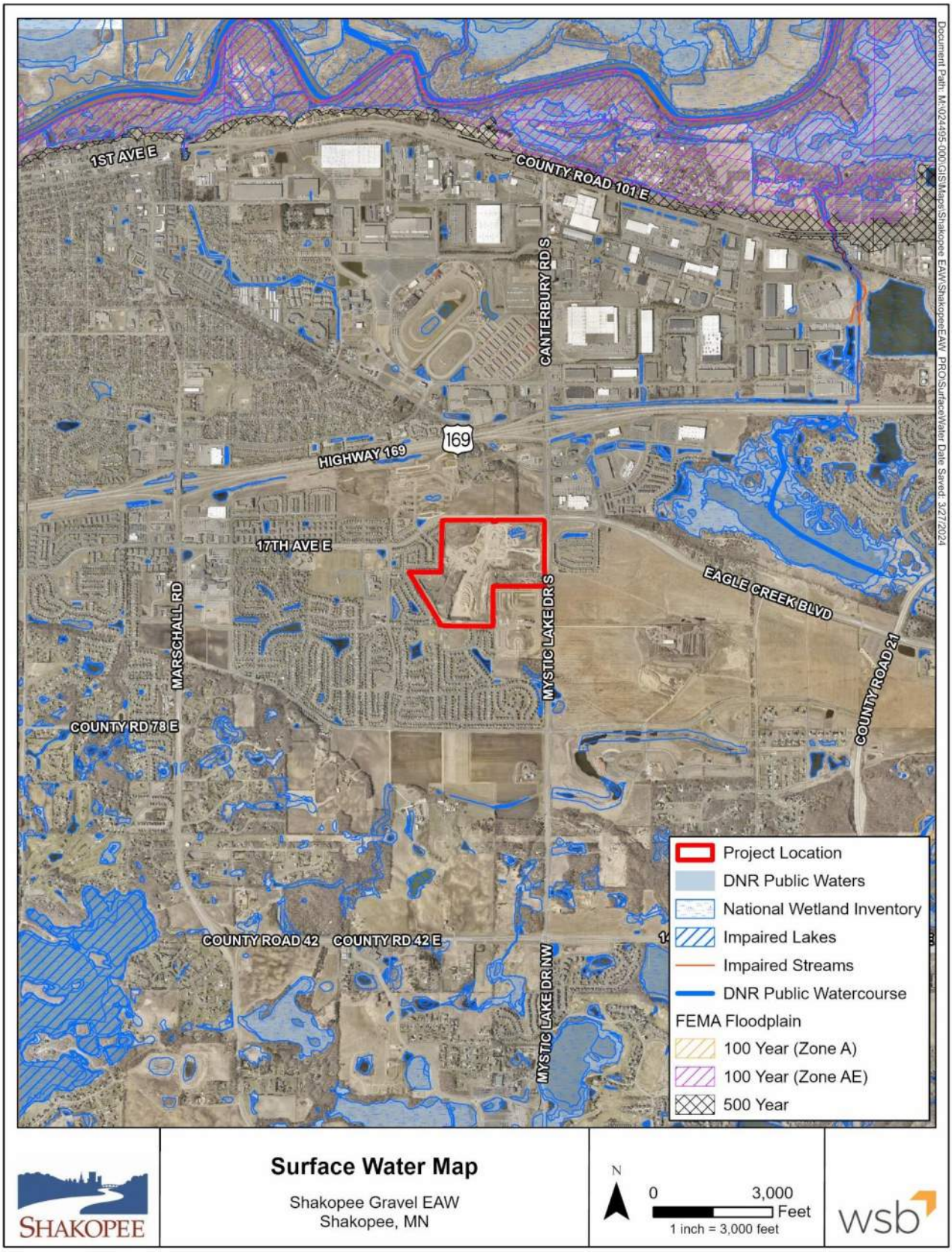
a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

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.

There are no MPCA 303d listed impaired waters within 1 mile of the project area.

There are no natural lakes, streams, wetlands, intermittent channels, or county/judicial ditches within the project area **Figure 10**. There are currently stormwater BMPs within the project area, which have been constructed to manage water from within the gravel pit.

Figure 10: Surface Waters



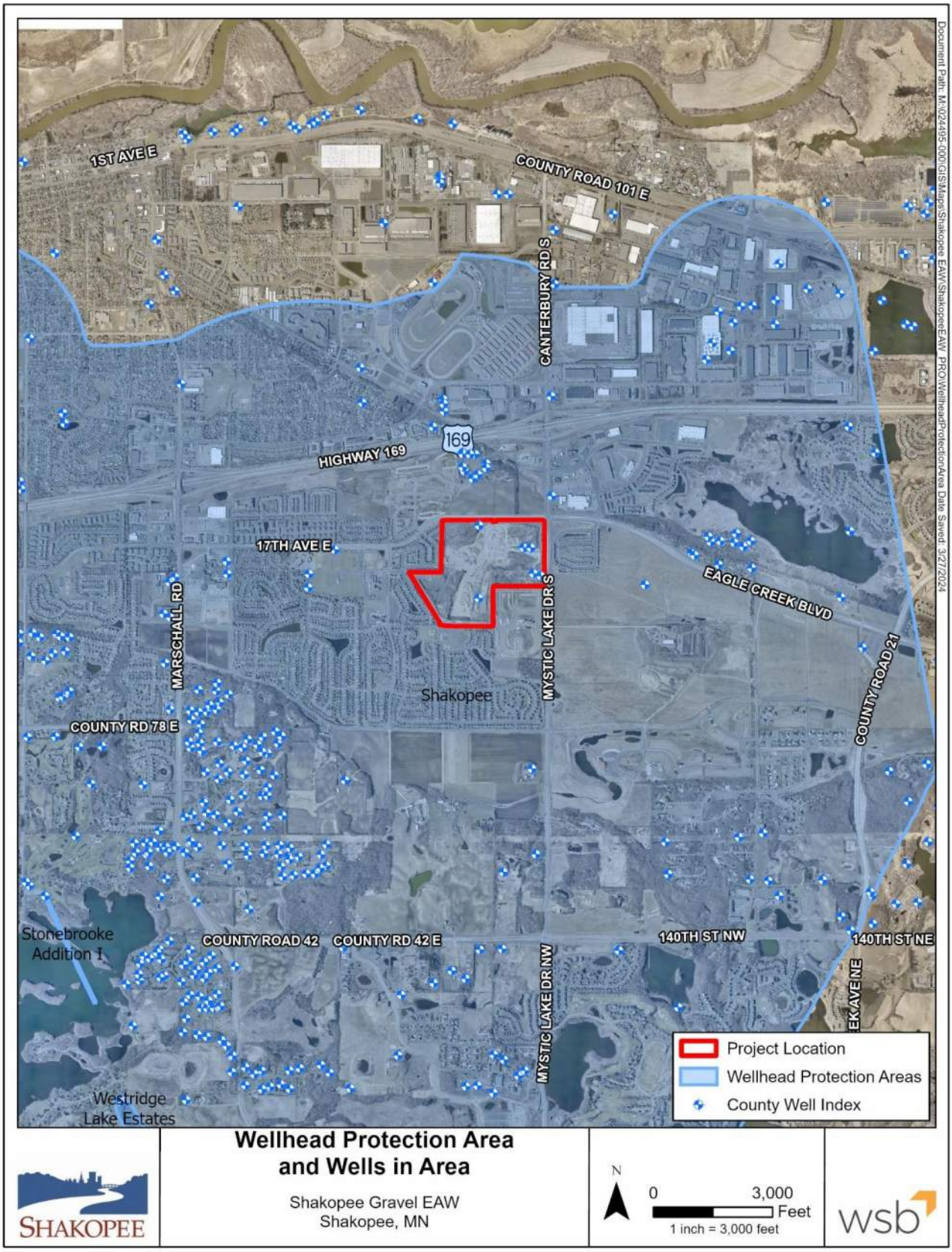
ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology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

The project area is within the Shakopee Wellhead Protection area (**Figure 11).** The depth to groundwater on and near the site is expected to be 75-100 feet below land surface. There are six (6) wells on site. Three were drilled as test wells (80 Feet) while the other three are listed for Domestic or Other uses and range between 100-300 feet deep **Table 9**. Well logs are available in **Appendix A**. These wills will need to be sealed by a contractor licensed in Scott County and a Well and Boring Sealing Record filed with the Department of Health.

Well ID #	Use	Status	Static Water Depth (ft)
Within Project Area			
510437	Other	Active	300
250093	Domestic	Active	112
572689	Domestic	Active	280
228357	Test Well	Sealed	80
228356	Test Well	Sealed	80
228358	Test Well	Sealed	80

Table 9 Wells within project area and within 700 feet of the project area

Figure 11: Wellhead Protection Area and Wells



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

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

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

Wastewater from the site will discharge to the City of Shakopee sanitary sewer system and be conveyed to the Metropolitan Council Environmental Services (MCES) regional collection and treatment system. Wastewater will be treated at the Blue Lake Wastewater Treatment Plant (WWTP) which has a capacity of 42 million gallons per day (MGD) and receives 24.5 MGD as of May 2023. The projected wastewater flow for the site is detailed in **Table 10**.

Land Use	Area (acres)	Units	Unit Flow (gpd/unit)	Average Flow (gpd)	Peak Factor	Peak Hourly Flow (gpd)
Single Family	43.98	223	240	53,520		
Townhome	10.31	98	180	17,640		
Apartment	14.46	534	150	80,100		
Retail/Mixed Use	23.33	-	800	18,664		
Open Space	23.79	-	0	0		
Right of Way	22.34	-	0	0		
SPU WTP*	7.53	-	600	4,518		**
Total	**145.74**			**174,442**	**3.9**	**680,324**

Table 10 Projected Wastewater Flow

*Shakopee Public Utilities Water Treatment Plant
**The SPU WTP will generate an additional 400 gallons per minute (gpm) when the backwash tank sludge waste pumps are running, which must occur outside of peak wastewater generation hours (morning and evening).

Based on the Shakopee Sanitary Sewer Master Plan, the majority of the site is in the South Shakopee sanitary sewer district which will have a trunk sewer in Mystic Lake Dr (CR83) along the east boundary of the site. Small portions of the west and south of the site may connect to the Central Shakopee sanitary sewer district.

Based on a capacity analysis of the downstream sanitary sewers between the site and the MCES Interceptor prepared by the City's sanitary sewer consultant in January 2024 and the projected wastewater flows above, the existing 24-inch diameter sewers in Mystic Lake Dr and 18-inch diameter sewers crossing Hwy 169 can accommodate the proposed development and the SPU WTP *with a backwash tank* and still have at least fifty percent (50%) capacity remaining. However, the projected flows will consume ninety percent (90%) of a 10-diameter sewer at minimum slope of 0.28%, and the city should consider upsizing such sewers or installing a new larger or steeper crossing south of 17th Avenue to provide additional residual capacity.

If the SPU WTP did not have a backwash tank and the full filter backwash flow rate of

8,640 gpm were directed the sanitary sewers, many segments of downstream trunk sewers would need to be upsized. The city would not support plans for this facility that did not provide a backwash tank. The latest plans for the SPU WTP do include a backwash tank.

Sewers in the vicinity of the SPU WTP will need to follow the minimum separation distances from buried water storage tanks required by the Minnesota Department of Health (MDH).

Aside from the SPU WTP, wastewater from the site is anticipated to have typical residential and commercial strength and character, and pretreatment is not expected. The SPU WTP residuals may require special permitting with MCES and the Minnesota Pollution Control Agency (MPCA).

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

   Not applicable.

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

   Not applicable.

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.

Existing conditions

Existing land use of the project area is primarily a gravel pit with areas of herbaceous

vegetation, shrubs and trees in areas that have revegetated since their use as a gravel mine and on berms **Figure 5**. Most parcels in the area belong to Shakopee Gravel Inc., including the portion of the site containing the privately owned stormwater detention pond. The parcel that is proposed for SPUC is privately owned, not by Shakopee Gravel, Inc.

The future land use plans for the project area envision a blend of mixed-use center and suburban residential developments. Surrounding areas are designated for mixed residential and suburban residential to the east and south, suburban residential and mixed residential to the west, and mixed residential and mixed-use center to the north. Planned land uses include single and medium family residential within the project area, with rural residential and planned residential to the east, single-family residential to the south, single-family residential and medium-density residential to the west, and single-family residential (some currently under development) and commercial to the north. Nearby parks are present, and multi-use trails and sidewalks border the site, connecting it to neighboring residential areas and parks.

Under existing conditions, water is collected via catch basins integrated into the existing storm drain system. These catch basins, positioned to the south, west, and north of the site, intercept water flow and channel it downstream through a network of pipes, ditches, and small creeks, ultimately directing it to the Minnesota River for discharge. Runoff from existing impervious surfaces is not pre-treated prior to discharge to the creek.

As noted previously, the prevailing topography of the project area exhibits undulating terrain, characterized by areas of excavated soil, fills, and deposits of sand and gravel. According to findings from the NRCS Web Soil Survey, the soils predominant in the project vicinity are primarily classified as sandy loam **Figure 9**. The Web Soil Survey indicates that the soils within the project area are prime farmland.

Proposed conditions

For the developable portion of the project area, the developer is proposing mixed-use residential with townhomes, apartments, wide lots, retail space, and open space with stormwater management features. The project is anticipated to disturb approximately 146 acres throughout all phases of development. Based on the concept plan the project will increase impervious surface by 72 acres.

As part of the development plan, the developer intends to construct a detention basin centrally located within the site to effectively manage stormwater runoff **Figure 12**. This basin will be designed with a minimum 120-inch layer of geosynthetic clay liner beneath it to prevent infiltration into the surrounding soil. During intense rainfall events, such as the 100-year event, the basin will have provisions for overflow. Overflow water will be directed to an infiltration chamber designed to cleanse and treat the first inch of rain water before it is released into the existing storm drain system. Based on the current development plan, the project will need to provide 262,558 cubic feet of treatment. Ultimately, the treated water will discharge into the Minnesota River, ensuring compliance with regulatory standards and minimizing environmental impact.

Figure 12: Stormwater Overview

To determine the proposed conditions for the Peak Runoff Rates, the development design will need to provide a high-level proposed condition HydroCAD model to show the 2-year (cfs), 10-year (cfs), 100-year (cfs) rates and the ten (10) day snow melt event for each discharge point. The analysis will assume an aggregate discharge rate.

Minnesota's current climate trends include rising temperatures, extreme storms and higher dew points. These trends are creating more intense and extreme weather events at a frequency much higher than previous decades. With these changes, it is anticipated that the changes in rainfall will produce at least three inches or more of precipitation in a single day which is double what has been seen over the past 50 years. The development will use best management practices (BMPs) that are designed to manage these extreme storm events.

Relevant Regulations and Considerations

The City of Shakopee regulates the stormwater requirements for the proposed development. City regulations are noted in the City's ordinances and the City's design criteria. The City regulates stormwater and requires all subdivisions to demonstrate how they will adequately manage surface or subsurface runoff of storm water and snow melt directed to natural drainageways. The design criteria, policies, and objectives shall be those described in the City's "Local Surface Water Management Plan". No existing ditch, stream, wetland, pond, drain or drainage canal shall be deepened, widened, filled, re-routed or filled without approval from the City Council.

The City's ordinance requires that:

- Runoff analysis shall be based upon proposed land use and shall take into consideration all contributing runoff from areas outside of the study area.
- The analysis of storm runoff from existing developed areas lying outside of the study area shall be based upon present land use and topographic features.
- All undeveloped land lying outside of the study area shall be considered as fully developed based upon the most probable anticipated future land use. Provided, however, that whenever the future land use of a specific undeveloped area cannot be accurately predicted, the average runoff coefficient to be used in said area shall not be less than 0.60 for the Rational Method runoff coefficient or an approved equivalent value for any other method.
- The probable future flow pattern in undeveloped areas shall be based on existing natural topographic features (existing slopes, drainage ways, etc.) and shall conform to the Local Surface Water Management Plan.
- Average land slopes in both developed and undeveloped area may be used in computing runoff. However, for areas in which drainage patterns and slopes are established, these shall be utilized.
- Flows and velocities which may occur at a design point when the upstream area is fully developed shall be considered. Drainage facilities shall be so designed such that increased flows and velocities will not cause erosion damage.
- The use of on-site detention and natural drainage ways is recommended and encouraged whenever possible. The changing of natural drainage way locations will not be approved unless such change is shown to be without unreasonable hazard and liability, substantiated by thorough analysis and investigation.
- The planning and design of drainage systems shall be such that problems are not

transferred from one location to another. Outfall points shall be designed in such a manner that will not create flooding hazards downstream.

- The rainfall intensities to be used in the computation of runoff shall be obtained from the Intensity - Duration - Frequency Curves for the Shakopee area in City of Shakopee Design Criteria Page 16 accordance with Atlas 14 data and shall be based upon a two (2) year, ten (10) year and one-hundred (100) year return frequency.
- The event depth to be used for the one-hundred (100) year, ten (10) day snowmelt event is 7.4 inches.

Stormwater management requirements for permanent facilities.

Proposed Stormwater Management Plans shall incorporate volume control, water quality control, and rate control as the basis for stormwater management in the proposed development plan on sites without restrictions. All proposed projects shall be in conformance with the City of Shakopee's Local Surface Water Management Plan, Design Criteria, and the most current requirements of the Minnesota Pollution Control Agency (MPCA) Municipal Separate Storm Sewer Systems (MS4) Permit, as applicable, meeting the more restrictive criteria.

a. Volume Control. Volume reduction practices (e.g., infiltration or other) to retain the volume control criteria on-site must be considered first when designing the permanent stormwater treatment system. Ponds and filtration systems are not considered to be volume reduction practices.
    i. Construction activity (excluding linear projects) where the sum of the new impervious surface and the fully reconstructed impervious surface equals one or more acres.
        1. Stormwater runoff volumes will be controlled and the post-construction runoff volumes shall be retained on site for 1.0 inches of runoff from the new impervious surface and fully reconstructed impervious surface.

Pond design standards.

Stormwater detention facilities constructed in the city shall be designed according to standards established by the Engineering Division, and identified as follows:

- A permanent pool (dead storage) volume below the principal spillway (normal outlet) which shall be greater than or equal to the runoff from a 2- 1/2 inch rainfall over the entire contributing drainage area assuming full development;
- A permanent pool average depth (basin volume/basin area) of 4 to 10 feet;
- An emergency overflow (emergency outlet) adequate to control the 1% frequency/critical duration rainfall event;
- Basin side slopes between the 100-year high water level and the NWL should be no steeper than 4:1, and preferable flatter. A basin shelf with a minimum width of 10 feet and 1 foot deep below the normal water level is recommended to enhance wildlife habitat, reduce potential safety hazards,
- To prevent short-circuiting, the distance between major inlets and the normal outlet shall be maximized;
- A flood pool (live storage) volume above the principal spillway shall be adequate so that the peak discharge rates meet the requirements of the city's Local Surface Water Management Plan;

- Pond outlets may not be smaller than the minimum size indicated in the city's Local Surface Water Management Plan;
- Consideration for aesthetics and wildlife habitat should be included in the design of the pond;
- A skimming device must be provided to deter floatable pollutants from discharging out of pond;
- Design of stormwater facilities shall accommodate the 100-year critical event (100-year, 24-hour storm event or 10-day snowmelt event). This includes lakes, ponds, and their outlets; and
- Pond normal water level elevations shall be established above the ordinary high water level of adjacent public waters, except where topography of the site, floodplain mitigation activities, or other design considerations are determined to be unfavorable for these conditions to occur. This determination shall be performed by the applicant's engineer and approved by the City Engineer.

Water Quality Control.

The water quality control standard shall be considered satisfied if the volume control standard has been satisfied. In the event that it is infeasible to meet the volume control standard due to contaminated soils, site constraints, etc., the proposed plan will need to demonstrate the TSS and TP loading from proposed conditions is equal to or less than existing conditions.

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.

Water for the site will be supplied by the Shakopee Public Utilities (SPU) water system which draws water from eighteen (18) groundwater wells in the Prairie du Chien-Jordan, Tunnel City-Wonewoc, and Mt. Simon-Hinckley aquifers. The projected water demands for the site are detailed in **Table 11**.

Land Use	Area (acres)	Units	Unit Demand (gpd/unit)	Average Day Demand (gpd)	Peak Factor	Max Day Demand (gpd)
Single Family	43.98	223	300	66,900		
Townhome	10.31	98	225	22,050		
Apartment	14.46	534	180	96,120		
Retail/Mixed Use	23.33		1,000	23,330		

Open Space	23.79		0	0		
Right of Way	22.34		0	0		
SPU WTP	7.53		750	5,648		
Total	**145.74**			**214,048**	**2.77***	**592,912**

Table 11 Projected Water Demand

*The peak factor is from the SPU Comprehensive Water System Plan and was the highest historical peak factor observed from 2007 to 2016.

The SPU water system has a firm capacity (largest two wells out of service) of 20.3 MGD, which is sufficient for the highest maximum day demand observed over the last fifteen years (16.3 MGD in 2012) plus the additional max day demand for this site. The system's total usable storage volume is 10.25 MGD, which is sufficient for the average day demand (4.7 MGD from 2007 to 2016) plus the additional average day demand for this site.

The southeast corner of the site is reserved for a new SPU Water Treatment Plant (WTP) to treat several of SPU's wells. Based on the SPU Comprehensive Water System Plan, the majority if not all of the site will be in the Main Pressure Zone. A new 16-inch diameter trunk watermain is planned along the north boundary of the site, and new 12-inch diameter trunk watermain and booster pumps are planned at the south boundary at the interface with the First High Pressure Zone. The trunk and distribution watermains through the site will need to be coordinated with the WTP and pumping facility locations.

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 mitigation for unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.

The project area contains stormwater BMPs that were excavated within upland to manage the stormwater within the gravel mine site. No natural wetlands exist within the project. Nearby surface waters **Figure 10** include primarily stormwater management basins with some interspersed seasonally flooded basins in the nearby agricultural areas. No direct impacts to wetlands are anticipated. Stormwater from the site will be treated prior to discharge from the site, so indirect impacts to wetlands are also not expected.

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) 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 the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

There are three stormwater BMPs within the project area that will be impacted by the project. These were created within upland areas and therefore not regulated waters. The stormwater treatment function they provide will be replaced with new stormwater BMPs at different locations within the project area.

The nearest DNR public water to the site is Deans Lake (DNR ID No. 70007401), located approximately 0.6 miles to the east. No impacts to this lake are expected and the project will not change watercraft usage.

Erosion control BMPs, including silt fence and erosion control blanket, will be implemented throughout construction to minimize the potential for runoff from the site that could impact surrounding surface waters.

12. Contamination/Hazardous Materials/Wastes:

a. Pre-project site conditions - Describe existing contamination or potential environmental hazards on 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.

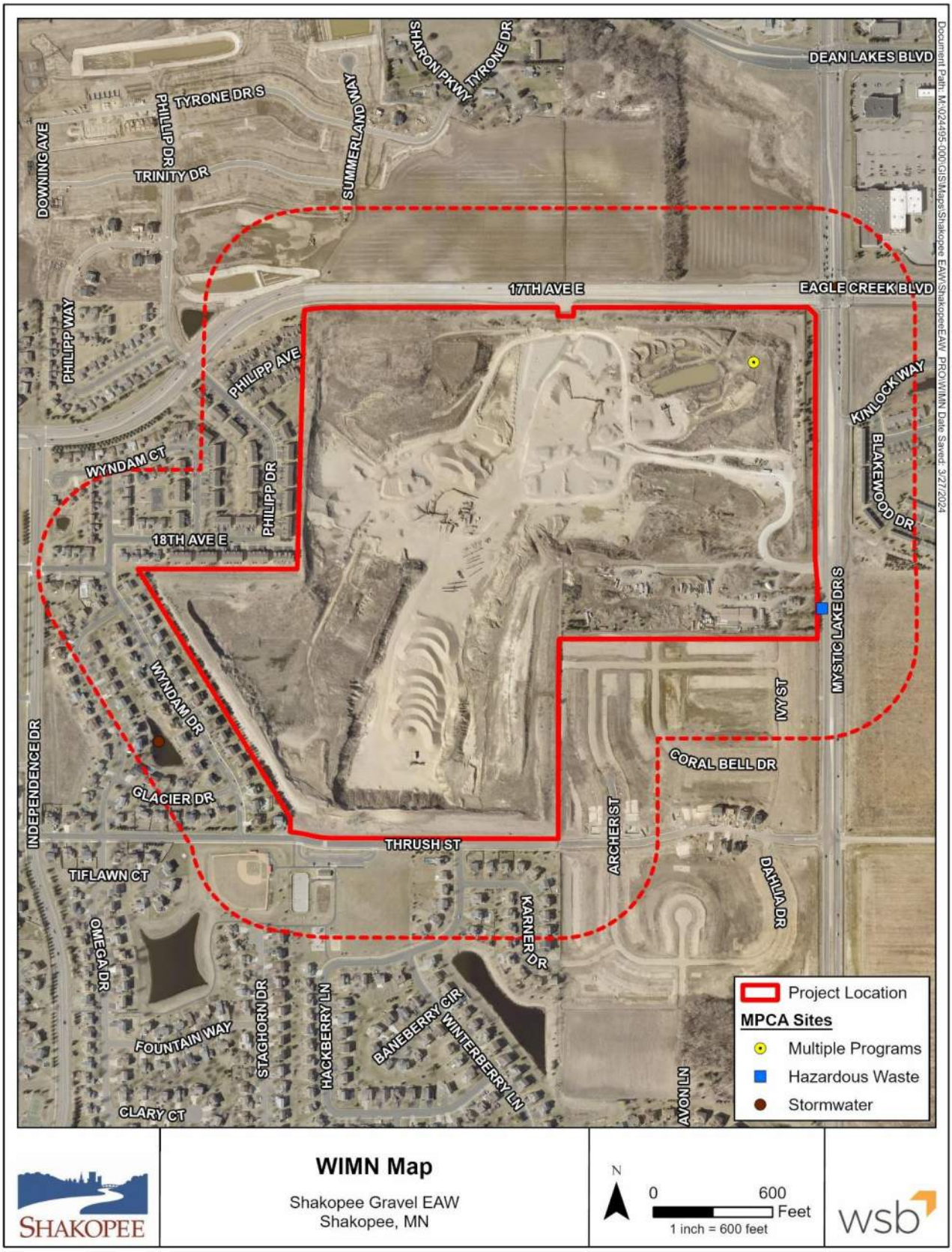
The Minnesota Pollution Control Agency (MPCA) and Minnesota Department of Agriculture (MDA) What's in My Neighborhood (WIMN) online databases were reviewed on February 26, 2024 to identify sites with documented or potential contamination within 500 feet of the project area **Figure 13**. Based on this review, the following pertinent MPCA/MDA WIMN database listings were identified:

Site 1 – Shakopee Gravel, 1650 County Road 83, Shakopee, MN 55379

This site is associated with the existing gravel mine operation. The site is included on the Aboveground Storage Tanks (ASTs) database ID TS0122702. Three ASTs including two 960-gallon diesel fuel and one 265-gallon used oil tank are reported for the site. The tanks are listed as active and no leak or spills were reported.

A Phase I Environmental Site Assessment was also completed for the site and released no recognized environmental conditions or controlled recognized environmental conditions within the project area. It is not anticipated that any existing contaminated or hazardous materials will be encountered during construction.

Figure 13: What's In My Neighborhood (WIMN) Map



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 solid waste including source reduction and recycling.

   During construction, solid waste and construction debris typical of a construction site may be produced. All waste and unused material will be properly disposed of off-site and not allowed to be carried by runoff to a receiving channel or storm sewer system. Following construction, solid waste disposal would be contracted through existing local, licensed companies, who offer both residential and commercial disposal.

   A trailer/office and scales currently exist at the project area and will be removed with the initial grading. The structures will be inspected prior to demolition and any regulated materials will be disposed of properly. A notification of Intent to Perform Demolition form will be provided to the MPCA at least 10 days prior to demolition. If asbestos is discovered at the structures, it will be abated and disposed of per MPCA/MDA regulations.

   In addition, historic structures have occupied the project area that have since been demolished. It is unknown if the demolition debris associated with the structures was buried on the project area or hauled away for disposal. Based on this information, there is a potential that buried materials are present at the project area that may require management as solid or hazardous waste if encountered during future earthwork or redevelopment activities. If fill soils, which could include demolition debris and other wastes, are encountered, then additional assessment may be required to evaluate or confirm appropriate management and/or disposal requirements.

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 adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

   During construction, hazardous waste typical of construction sites (e.g., fuel oil) will be present. Minimal amounts of gasoline may be stored on the project area, in approved containers with secondary leak protection. The potential for contamination is low and no toxic or hazardous materials will be present after construction. Fuel trucks and any other hazardous materials will be locked when not in use to avoid vandalism. Degreasing and washing of construction equipment onsite are prohibited by the city's standard construction specifications.

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, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

   Construction of the project will not involve the generation of a significant amount of

hazardous waste.

Upon completion, the project use and storage of typical household hazardous materials is expected. Household hazardous wastes are expected to be disposed of at licensed facilities. Small quantities of fertilizers and pesticides typical for lawn care use may be stored at the project area. If stored on site, the chemical would be stored in spill-proof containment. Quantities stored would not require permitting by MN Department of Agriculture.

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

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

Nearly the entire project area has been disturbed at some point within the last 20 years, with some re-vegetation occurring as gravel mining activities ceased in certain areas. These areas have re-vegetated with herbaceous upland species, shrubs, and deciduous trees. The stormwater BMPs located within the site may also provide habitat.

Wildlife species that may use the deciduous woodlands and shrublands year-round include the gray squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), northern white-footed mouse (*Peromyscus leucopus*), raccoon (*Procyon lotor*), black-capped chickadee (*Poecile atricapillus*), white-breasted nuthatch (*Sitta carolinesnsis*), downy woodpecker (*Picoides pubescens*), wild turkey (*Meleagris gallopavo*), and gray treefrog (*Hyla versicolor*). Wildlife species that may use the deciduous woodlands seasonally include the common garter snake (*Thamnophis sirtalis*), American toad (*Anaxyrus americanus*), American robin (*Turdus migratorius*), eastern red bat (*Lasiurus borealis*), silver-haired bat (*Lasionycteris noctivagans*), and other migratory bird and bat species.

Man-made wetlands within the project area are not likely to support fish species. Wildlife species that may use the man-made wetlands include the mallard (*Anas platyrhynchos*), Canada goose (*Branta canadensis*), painted turtle (*Chrysemys picta*), common snapping turtle (*Chelydra serpentina*), and northern leopard frog (*Lithobates pipiens*).

Wildlife species that may use the herbaceous upland areas include the white-tailed deer, northern leopard frog, wild turkey, and meadow vole (*Microtus pennsylvanicus*).

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 2024-00221) 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.

Information from the MNDNR (MCE #2024-00221) Natural Heritage Inventory (NHI) is included in **Appendix B**. The MNDNR (MCE #2024-00221) indicated that no records of state-listed endangered or threatened species or species of special concern were identified within the project area. The MNDNR also indicated there are records of calcareous fens (a rare and hydrologically sensitive type of wetland) within the project vicinity. The nearest known calcareous fen records are more than four miles from the project area. No Minnesota Biological Survey (MBS) sites of biodiversity significance, DNR Native Plant communities (NPC), or MBS railroad rights-of-way prairies were identified within the project area. A MBS site of high biodiversity significance and a MNDNR NPC

are mapped approximately 0.6 miles northeast of the project area, near Deans Lake. The MNDNR NPC is a northern bulrush-spikerush marsh that is associated with the MBS site of high biodiversity significance.

Based on the USFWS Information for Planning and Consultation (IPaC), two federally endangered species, a candidate species for listing, a proposed endangered species, and a non-essential experimental population may occur within the Project area or surrounding region. The five species include federally endangered northern long-eared bat (*Myotis septentrionalis*) and rusty patched bumble bee *(Bombus affinis*), proposed endangered tricolored bat (*Perimyotis subflavus*), non-essential experimental population of whooping crane (*Grus americana*), and candidate for listing monarch butterfly (*Danaus plexippus*). There are no known northern long-eared bat hibernacula within Scott County. There is a known northern long-eared bat maternity roost tree in Scott County located more than 1.8 miles from the project area. The entire project area and surrounding area within one mile of the project area is within the USFWS Rusty Patched Bumble Bee High Potential Zone.

The federally listed northern long-eared bat, and proposed endangered tricolored bat are also state special concern species, but have not been identified within or near 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.

The MBS site of biodiversity significance and the MNDNR NPC do not occur within the project area or adjacent to the project area. As such, no direct or indirect impacts to the MBS site of biodiversity significance or the MNDNR NPC are expected from project construction or operation. Calcareous fens do not occur within the project area, and the nearest known records are more than four miles from the project area. As such, direct or indirect impacts to calcareous fens is not expected.

Climate change impacts, whether positive or negative, on ecological and biological resources will likely vary among populations, species, and ecological communities. Some species may be able to adapt to climate change (e.g., ubiquitous species, habitat generalists, etc.). However, many species will likely struggle to adapt to the change in climate (e.g., habitat specialists, endemic species, etc.). The protection of movement corridors and population refugia (i.e., important focal habitats), and efforts to increase landscapes that allow for wildlife movements, are likely to be of key importance in a changing climate. Maintaining and enhancing ecological connectivity reduces barrier effects development has on individual animals, populations, and ecological communities, improving the resiliency of natural resources.

The project-related tree removal will impact migratory bird and bat species, northern long-eared bats, or tricolored bats if they occur in the project area. The entire project area is within rusty patched bumble bee high potential zone. As such, the species will be impacted, if they occur within the project area. Tree removal will also impact other wildlife species that use the wooded portion of the project area.

The project related grassland/shrubland conversion will impact any migratory bird species or rusty patched bumble bee that use the project area. The loss of grassland/shrubland areas will also impact other wildlife species that use these portions of the project area.

There does not appear to be suitable habitat for the whooping crane within the project area. As such, no impacts to the species are expected.

Overall, given the disturbed nature of the existing project site, significant, permanent negative impacts to wildlife are not expected. Some temporary impacts to wildlife may occur during construction because of habitat removal. The project proposer will implement measures to avoid or minimize the introduction or spread of invasive plant species from project construction and operation. The project proposer will control the spread or introduction of invasive plant species in accordance with local and state invasive and noxious weed regulations, as appropriate. Any invasive plants that are established within the project area prior to the proposed action may be excluded from the invasive species control plan.

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 removal of trees or shrubs will occur outside of the peak nesting season for birds protected by the Migratory Bird Treaty Act (May 1 to August 31), or nest surveys should be performed if removal is within that timeframe.
- If grading of non-manicured herbaceous areas occurs during the peak nesting season for birds protected by the Migratory Bird Treaty Act (May 1 to August 31), nest surveys should be performed before construction activity.
- Incorporate pollinator species into landscaped planting areas.
- Plant native, weed-free plants in re-vegetated areas.
- A rusty patched bumble bee habitat assessment will be completed to determine if suitable summer or winter habitat is available within the project area. The results of the rusty patched bumble bee habitat assessment will dictate if a presence/probable absence survey and further coordination with the USFWS are warranted.
- Follow current USFWS guidelines for tree removal to avoid or minimize impacts to northern long-eared bats and tricolored bats.
- Use wildlife-friendly erosion control blankets to avoid entanglement with wildlife.
- Invasive plant species will be controlled during site construction by inspecting and decontaminating equipment.

14. Historic properties:

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

The project area has been disturbed by the current use as a gravel mine. Therefore, no cultural resources are expected to occur within the project area. Correspondence from SHPO indicates there are no known historic or cultural resources on the site (**Appendix B**).

15. Visual:

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

There are no scenic views or vistas within or near the project area. The project area is primarily a gravel mine with some vegetated areas where prior mining has ceased. The current stormwater ponds will be drained and filled. A new stormwater pond will be constructed and is anticipated to be an amenity to the project area. The development will result in increased lighting and noise associated with a typical mixed-use development. Lighting will be used in parking areas that aim to reduce glare and light pollution. Lighting plans will be reviewed by the city during the development plan reviews and will conform to city ordinance.

16. Air:

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

   The proposed project will not have stationary source emissions.

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

   EPA rule requires controls that will dramatically decrease Mobile Source Air Toxin (MSAT) emissions through cleaner fuels and cleaner engines by 72 percent from 1999 to 2050. In the short term is expected there will be slightly higher MSAT emissions in the project area with the project relative to the no build condition due to increased average daily traffic (ADT). However, the EPA's vehicle and fuel regulations will bring about lower MSAT levels in the future when compared to today.

c. Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors 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 or mitigate the effects of dust and odors.

   During construction, particulate emissions will temporarily increase due to generation of fugitive dust. The nearest and most sensitive receptors to the construction activity are the residential properties that immediately surround the property. Construction dust control is required to be in conformance with City ordinances and the NPDES Construction Stormwater permit. The construction and operation of the proposed site development is not anticipated to involve processes that would generate odors.

17. 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 come to that conclusion and any GHG emission sources not included in the total calculation.

Per **Table 12** below, the project's predicted GHG emissions are estimated at 16,862 CO2e (metric tons per year). Specific, detailed calculations and references to the methods used to quantify emissions are included within the calculation tables in **Appendix C**.

Emission Source	Scope*	Data Source Notes**	Amount	Units	Site Energy Use Index (kBtu/sq. ft.) [3]	Emission Factors	GHG (tonnes)	GHG (kg/sq. ft.)	Percent of Total GHG
Uses and project average daily vehicle miles traveled (ADVMT):									
Operational emissions, mobile equipment, after project is operational	1	2	23,156	ADVMT		0.44	3,734	1.20	22%
Combustion, stationary equipment, natural gas (therms/sq. ft./yr.):	1			therms					
Commercial		3	1,674,011	sq. ft.	36.4	0.36	3,227	1.93	
Single Family Residential		4	747,150	sq. ft.	43.2	0.43	1,710	2.29	
Apartments/Townhomes (576 units)		3	691,000	sq. ft.	50.5	0.50	1,850	2.68	
Subtotal			**3,112,161**	**sq. ft.**			**6,787**	**2.18**	40%
Combustion area (diesel, back-up generators, GHG kg/gal.)	1	1 & 2	**182**	gallons		10.74	**2**		0.0%
Off-site electricity, Xcel 2021 (GHG kg/sq. ft.)	2			kWh					
Commercial		3	1,674,011	sq. ft.	19.2	5.64	2,704	1.62	
Single Family Residential		4	747,150	sq. ft.	22.8	6.69	1,433	1.92	
Apartments/Townhomes (576 units)		3	691,000	sq. ft.	26.7	7.83	1,550	2.24	
Subtotal			**3,112,161**	sq. ft.			**5,686**	**1.83**	34%
Off-site waste management	3	2	**2,613**	tons of waste			**653**	**0.21**	4%
Total emissions (tonnes)							**16,862**	**5.4**	100%

***Scope:**

For an explanation of Emissions scopes, please reference the following:

•Scope 1: "Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles)." (EPA, http://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance)

•Scope 2: "Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling." (EPA, http://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance)

•Scope 3: "Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain. Scope 3 emissions include all sources not within an organization's scope 1 and 2 boundary. The scope 3 emissions for one organization are the scope 1 and 2 emissions of another organization. Scope 3 emissions, also referred to as value chain emissions, often represent the majority of an organization's total GHG emissions." (EPA: https://www.epa.gov/climateleadership/scope-3-inventory-guidance)

**** Data Source Notes:**

1 EPA Simplified GHG Emissions Calculator ("the Calculator"), https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

2 Refer to the sheet "Mobile Equipment." ADVMT = Average Daily Vehicle Miles Travelled.

3 Source (Zip Code: 55379): US EPA Energy Star Portfolio Manager Target Finder. Refer to Energy Finder sheet. https://www.energystar.gov/buildings/resources_audience/service_product_providers/commercial_new_construction/target_finder

Table 12 Project Emissions

b. GHG Assessment

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

During this phase in site planning, plans are concept-level; exploration and development of potential mitigation practices is dependent on further development planning and design.

The proposed scenario includes varied housing types and nearby access to grocery, retail, and office space. Pedestrian and trail connections are proposed within the project, which may encourage non-vehicle travel within the development. The following are potential design strategies and sustainability measures that could be considered for the proposed development to further reduce emissions.

- Use energy efficient appliances, equipment, and lighting
- Energy efficient building shells
- Implement waste best management practices; recycle and compost appropriate material when applicable
- On-site native landscaping to reduce potable water and pesticide use, along with the inclusion of trees and tree trenches to improve local air quality, absorb greenhouse gas emissions, and reduce local urban heat island effect
- Provide on-site electric vehicle charging infrastructure
- On-site solar PV installations
- Purchase of off-site carbon sequestration credits
- Grid-based wind and solar power purchases
- Other

Implementation of the above strategies will be evaluated on a case-by-case basis based on feasibility, schedule, code requirements, and tenant considerations.
The project will follow all applicable federal, state, and local standards and regulations as required, as listed throughout this report.

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

This information is not known at this phase in the project development, due to the preliminary designs and uncertainty of any specific sustainability practices of the future development. Exploration of the aforementioned potential mitigation practices is dependent on further development planning and design.

The project will follow all applicable federal, state, and local standards and regulations as required, through which further mitigation strategies may be required.

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.

Methods for modeling air emissions were completed in accordance with EAW (Environmental Assessment Worksheet) standards. The expected lifespan of the project is 50 years. Per the tables presented in **Appendix C** the project's predicted net GHG emissions over the project's lifespan are estimated at 16,862 CO2e metric tons per year.

This estimate does not account for future integration of the goals for the Built, Natural, and Community Environments that are referenced in the city's 2040 comprehensive plan. Minnesota's Next Generation Energy Act requires the state to reduce greenhouse gas emissions in the state by 80% between 2005 and 2050, while supporting clean energy, energy efficiency, and supplementing other renewable energy standards in Minnesota. Within the city's comprehensive plan, it is identified that the city aims to:

- Develop and encourage public and private renewable energy production systems,
- Promote and integrate resource-efficient systems into public and private facilities,
- Integrate sustainable design and management practices into public spaces, and
- Balance the needs of all transportation users, among others.

These items, as implemented, will support the Minnesota Next Generation Energy Act goals.

Developments within the project could also implement any applicable state or local GHG goals as determined by the city or project proposers. The proposer may explore additional sustainability measures such as the examples listed above to reduce operational emissions to the extent practicable. The proposed project will be built in compliance with state regulations and city building codes.

18. Noise

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

Existing sources of noise include surrounding roadways. Highway 169 is just north of the project area and is a source of existing noise in the area. Traffic volumes on city streets through surrounding neighborhoods have traffic volumes low enough that noise impacts are not significant. Nearby sensitive receptors include existing adjacent housing to the east, south, and west of the project area.

During construction, noise levels will temporarily increase and vary in intensity based on the types of construction equipment being used **Table 13**. To minimize the effects of this noise, construction will be limited to daytime hours consistent with the City's construction and noise ordinances. In addition, construction equipment will be fitted with mufflers that would be maintained throughout the construction process.

Equipment Type	Manufacturers Sampled	Total Number of Models in Sample	Peak Noise Level	
			Range	Average
Backhoe	5	6	74-92	83
Front Loader	5	30	75-96	85
Dozer	8	41	65-95	85
Grader	3	15	72-92	84
Scraper	2	27	76-98	87
Pile Driver	N/A	N/A	95-105	101

Table 13 Typical Roadway Construction Equipment Noise Levels at 50 feet

Source: United States Environmental Protection Agency and Federal Highway Administration

Following construction, noise in the area will be typical of a suburban housing development and mixed-use commercial development. Additional traffic added to surrounding roadways is not expected to generate noise to a degree which would exceed noise standards or diminish quality of life for people living or working nearby.

19. Transportation

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

A Traffic Impact Study was completed for the proposed project and is included in **Appendix D**. The study evaluated the existing conditions and the traffic generation anticipated from the proposed project. Potential impacts and associated mitigation measures were identified.

The evaluation of existing conditions included collecting traffic volumes, observing roadway characteristics, analyzing intersection capacity at 11 intersections, and reviewing crash history. The intersections evaluated in the Study included:

- Mystic Lake Drive (CR 83) and Eagle Creek Boulevard/Dean Lakes Boulevard
- Mystic Lake Drive (CR 83) and 17th Avenue/ Eagle Creek Boulevard (CR 16)
- Mystic Lake Drive (CR 83) and Thrush Street*
- Mystic Lake Drive (CR 83) and Valley View Road**
- 17th Avenue (CR 16) and Independence Drive
- 17th Avenue (CR 16) and Philipp Drive*
- 17th Avenue (CR 16) and Emblem Way*
- Eagle Creek Boulevard (CR 16) and Dean Lake Trail / Kinlock Way
- Thrush Street and Independence Drive
- Thrush Street and Hackberry Lane
- Thrush Street and Archer Street / Dahlia Drive

* Indicates 13 hours of data (6 a.m. to 7 p.m.)
** Data was provided from the County

Traffic forecasts for the proposed development were developed for year 2030 conditions, which is the year that full build out is anticipated. The forecasts include information regarding area infrastructure changes, assumed adjacent developments, general background growth, and trip generation from the proposed development. Forecasts were developed for both build and no build conditions, with the build condition representing the proposed development. Trip generation was developed using the *ITE Trip Generation Manual 11th Edition*, and includes trips for typical weekday a.m. and p.m. peak hours, as well as daily. Several assumptions were used, which are described in the Study.

Based on the trip generation estimate, the proposed development will generate approximately 709 a.m. peak hour (351 in/ 358 out), 1,120 p.m. peak hour (546 in / 574 out) and 11,578 daily (5,789 in / 5,789 out) site trips. When accounting for trips already traveling along adjacent roadways that will use the proposed development (i.e., pass-by/diverted-link trips), the net new system trips from the proposed development is approximately 617 a.m. peak hour (305 in / 312 out), 880 p.m. peak hour (426 in / 454 out), and 9,098 daily (4,549 in / 4,549 out) trips. Trips generated by the proposed development were distributed throughout the study area based and are shown on Figure 5 of the Traffic Study, which was developed based on existing travel patterns, previous area studies, the proposed site layout, and engineering judgement.

The City of Shakopee offers a variety of transit opportunities including Minnesota Valley Transit Authority (MVTA), SmartLink Transit, and Park and Ride lots. Nearest to the project area, MVTA operates Route 495 out of the Marschall Road Transit Station. A variety of routes are available out of that Transit Station, serving areas within the city as well as to Burnsville, Bloomington (Mall of America), and MSP Airport. SmartLink Transit offers dial-a-ride and share-ride options and is available by reservation. There are also two Park and Ride options, Marschall Road Transit Station and Eagle Creek Park & Ride, within approximately 2 miles of the project area. The proposed project will connect to existing trails and sidewalks along 17th Avenue/Eagle Creek Blvd, Mystic Lake Drive, Thrush Street which serve the larger trail network within the city

and provide non-motorized transportation throughout the community.

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

   An intersection capacity analysis was completed for the intersections adjacent to the proposed development. This analysis indicated that the study intersections can support the assumed adjacent and proposed developments under both year 2030 build and no build conditions, except at the 17th Avenue and Emblem Way/north site driveway intersection under 2030 build conditions.

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

   Mitigation measures recommended to improve operations in or near the project area includes:

   - A traffic signal at the 17th Avenue and Emblem Way/ north site driveway intersection.
   - Provide a minimum of 2-lanes (i.e., a left- and a shared thru/right-turn lane) on both the north and south approaches of the 17th Avenue (CR 16) and Emblem Way / North Site Driveway intersection; providing dedicated left-, thru, and right-turn lanes on the north and south approaches would have additional benefits.
   - Realign Emblem Way or the proposed development driveway to ensure north-south lane continuity.
   - Locate internal roadways and driveways a minimum of 330 feet apart, including Philipp Avenue from 17th Avenue (CR 16); review internal intersections and provide appropriate internal traffic controls (i.e., stop signs) in collaboration with the City Engineer.
   - Review truck maneuverability and loading / wayfinding procedures to limit potential internal circulation conflicts and locate signage / landscaping to avoid creating any sight distance issues.
   - Provide multimodal facilities (i.e., sidewalk and / or trail) throughout the site with connectivity to existing adjacent facilities.

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

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

The proposed project will impact resources within the project area and directly adjacent to the project area, such as neighboring roadways and utilities. Phasing of the project may occur over the next approximately 6 years, and improvements to infrastructure will be phased as necessary with construction. As development proceeds, appropriate agency coordination will occur and permits will be obtained. Review and approval of development activities through the necessary regulatory programs and implementation of mitigation measures will ensure that impacts are managed appropriately and do not combine to result in cumulative potential effects.

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

Recent and reasonably foreseeable future projects within the vicinity of the Shakopee Gravel Redevelopment project includes the following:

- Quarterra, a multifamily development located immediately north of the project area. This project is currently under construction with an anticipated completion date of Summer 2024.

- Summerland Place, a residential development located immediately north of the proposed project, began in 2020 and is nearing completion. An EAW was completed for that project and the identified mitigation measures incorporated into the project as development proceeded.

- Valley Crest, a residential development located immediately south of the proposed project. The project is in the final phase of development and includes approximately 175 lots.

- Arbor Bluff, a residential development that is currently proposed and anticipates a total of 196 single family lots on approximately 80 acres. This development is located approximately 0.6 miles southwest of the proposed Shakopee Gravel Redevelopment project. It is separated from the proposed project by existing residential areas.

Some impacted resources from these projects, such as stormwater, water, sanitary, and traffic could combine with the proposed Shakopee Gravel Redevelopment project. However, the evaluation of resources and potential impacts have been evaluated and mitigation has been proposed with these other developments in mind.

A variety of projects are also continually reviewed near the Canterbury Park area, but not in the immediate vicinity of the proposed development.

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

The project will not cause any known or reasonably expected cumulative potential effects.

21. 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 environmentwill be affected, and identify measures that will be taken to minimize and mitigate these effects.

No other environmental effects are anticipated.

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

Signature _____ Date 4/16/2024

Title Director, Planning and Development

APPENDIX A

Well Logs

Minnesota Unique Well Number

228356

County Scott
Quad Eden
Quad ID 104C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/18/1994
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
TEST HOLE 1	115	22	W	16	BBABAD

Elevation 817 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W SHAKOPEE MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SAND, CLAY, LOAM,	0	5		
MEDIUM SAND &	5	20		
COARSE SAND &	20	25		
MEDIUM SAND &	25	30		
MEDIUM SAND &	30	45		
MEDIUM SAND &	45	60		
COARSE SAND &	60	65		
CLAY, GRAVEL &	65	67		
LIMESTONE	67	80		

Remarks

MG.S. NO. 1749.

Well Depth 80 ft. **Depth Completed** 80 ft. **Date Well Completed** 05/19/1981

Drill Method **Drill Fluid**

Use test well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**

Drive Shoe? Yes ☐ No ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Prairie Du Chien Group Aquifer

Last Strat Prairie Du Chien Group Depth to Bedrock 67 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - NAD83, Zone 15, Meters X 462320 Y 4958088

Unique Number Verification Information from Input Date 01/01/1990

Angled Drill Hole

Well Contractor

Associated Well Co. 27259

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

228357

County Scott
Quad Eden
Quad ID 104C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/18/1994
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
TEST HOLE 2	115	22	W	16	BADBBB

Elevation 825 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W SHAKOPEE MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOPSOIL	0	5		
FINE SAND & GRAVEL	5	10		
MEDIUM SAND &	10	50		
COARSE SAND &	50	55		
MEDIUM SAND &	55	60		
FINE SAND & GRAVEL	60	70		
COARSE SAND &	70	75		
COARSE SAND &	75	78		
LIMESTONE	78	80		

Remarks

M.G.S. NO. 1750.

Well Depth 80 ft. **Depth Completed** 80 ft. **Date Well Completed** 05/19/1981

Drill Method **Drill Fluid**

Use test well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Prairie Du Chien Group Aquifer

Last Strat Prairie Du Chien Group Depth to Bedrock 78 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - NAD83, Zone 15, Meters X 462661 Y 4957914

Unique Number Verification Information from Input Date 01/01/1990

Angled Drill Hole

Well Contractor

Associated Well Co. 27259

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

228358

County Scott
Quad Eden
Quad ID 104C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/18/1994
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
TEST HOLE 3	115	22	W	16	BCACDD

Elevation 832 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W SHAKOPEE MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SOIL	0	2		
CLAY	2	10		
MEDIUM SAND &	10	25		
FINE SAND & GRAVEL	25	35		
COARSE SAND &	35	40		
FINE SAND & GRAVEL	40	47		
FINE SAND & CLAY	47	50		
CLAY & FINE SAND	50	55		
CLAY	55	62		
FINE SAND	62	72		
GRAVEL & CLAY	72	75		
LIMESTONE	75	80		V.HARD

Remarks

M.G.S. NO. 1751.

Well Depth 80 ft. **Depth Completed** 80 ft. **Date Well Completed** 05/19/1981

Drill Method **Drill Fluid**

Use test well **Status** Sealed

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Prairie Du Chien Group Aquifer

Last Strat Prairie Du Chien Group Depth to Bedrock 75 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - NAD83, Zone 15, Meters X 462317 Y 4957531

Unique Number Verification Information from Input Date 01/01/1990

Angled Drill Hole

Well Contractor

Associated Well Co. 27259

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

250093

County Scott
Quad Eden
Quad ID 104C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 02/15/1996
Update Date 05/30/1996
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	115	22	W	16	BDABAD

Elevation 833 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W 1776 CANTERBURY DR SHAKOPEE MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	81		
PRAIRIE DU CHIEN	81	112		

Remarks

GAMMA LOGGED 10-12-1995.

Well Depth 112 ft. **Depth Completed** 112 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? **Yes** ☐ **No** ☐ **From** **To**

Casing Type Single casing **Joint**

Drive Shoe? **Yes** ☐ **No** ☐ **Above/Below** 0 ft.

Casing Diameter **Weight**

4 in. To 91 ft. lbs./ft.

Open Hole From 91 ft. To 112 ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Prairie Du Chien Group Aquifer Prairie Du Chien

Last Strat Prairie Du Chien Group Depth to Bedrock 81 ft

Located by Minnesota Geological Survey

Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)

System UTM - NAD83, Zone 15, Meters X 462737 Y 4957718

Unique Number Verification Information from Input Date 03/25/1996

Angled Drill Hole

Well Contractor

Minnesota Geological Survey MGS

Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

510437

County Scott
Quad Eden
Quad ID 104C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 06/29/1992
Update Date 03/10/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
SHAKOPEE	115	22	W	16	BADBAB

Elevation 816 ft. **Elev. Method** CALC FROM 2-FOOT COUNTY DEM

Address

Well 1650 83 CR SHAKOPEE MN 55379

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GRAVEL	0	42		
SAND	42	58		
SAND, GRAVEL	58	62		
LIMESTONE	62	200		
JORDAN, BEDROCK	200	300	WHITE	MEDIUM

Remarks

CANTERBURY PIT CO RDS 83 & 16
SUB-CONTRACTED DRILLING TO BERGERSON-CASWELL.

Well Depth 300 ft. **Depth Completed** 300 ft. **Date Well Completed** 08/03/1990

Drill Method Non-specified Rotary **Drill Fluid** Bentonite

Use industrial **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint** Welded
Drive Shoe? Yes ☒ No ☐ **Above/Below** 1 ft.

Casing Diameter				Weight		Hole Diameter			
24	in. To	25	ft.	94.6	lbs./ft.	24	in. To	25	ft.
12	in. To	200	ft.	49.5	lbs./ft.	22	in. To	68	ft.
18	in. To	68	ft.	70.5	lbs./ft.	17	in. To	200	ft.

Open Hole From 200 ft. To 300 ft.

Screen? ☐ **Type** **Make**

Static Water Level

75 ft. land surface Measure 08/03/1990

Pumping Level (below land surface)

130 ft. 32 hrs. Pumping at 1000 g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount		From	To
neat cement	8	Cubic yards	0 ft.	200 ft.
neat cement	3	Cubic yards	0 ft.	68 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed 08/16/1990

Manufacturer's name GRUNDFOS
Model Number 600 S 400-3 HP 40 Volt 460
Length of drop pipe 189 ft Capacity 725 g.p. Typ Submersible

Abandoned

Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance

Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous

First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat Jordan Sandstone Depth to Bedrock 62 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 462716 Y 4957915
Unique Number Verification Information from Input Date 08/11/2004

Angled Drill Hole

Well Contractor

Bohn Well Co. 70350 LEZER, J.
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

572689

County Scott
Quad Eden
Quad ID 104C

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 06/12/1996
Update Date 02/14/2014
Received Date

Well Name	Township	Range	Dir	Section	Subsection
FITCH, ANNE	115	22	W	16	BDAABD

Elevation 831 ft. **Elev. Method** CALC FROM 2-FOOT COUNTY DEM

Address

C/W 1776 CANTERBURY RD S MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
TOPSOIL	0	4	BLACK	MEDIUM
GRAVEL & SAND	4	55	VARIED	MEDIUM
MEDIUM SAND	55	70	VARIED	MEDIUM
CLAY	70	82	BROWN	MEDIUM
SAND & GRAVEL	82	86	VARIED	MEDIUM
LIMESTONE	86	209	TAN	HARD
SANDSTONE	209	280	WHITE	MEDIUM

Remarks

Well Depth	Depth Completed	Date Well Completed
280 ft.	280 ft.	11/13/1995

Drill Method Non-specified Rotary **Drill Fluid** Bentonite

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type Step down **Joint**
Drive Shoe? Yes ☒ No ☐ **Above/Below**

Casing Diameter	Weight	Hole Diameter
8 in. To 87 ft.	lbs./ft.	12 in. To 87 ft.
4 in. To 220 ft.	lbs./ft.	8 in. To 220 ft.

Open Hole From 220 ft. To 280 ft.

Screen? ☐ **Type** **Make**

Static Water Level
97 ft. land surface Measure 11/13/1995

Pumping Level (below land surface)
97 ft. 3 hrs. Pumping at 30 g.p.m.

Wellhead Completion
Pitless adapter manufacturer WHITEWATER Model S-5-4
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☒ Yes ☐ No ☐ Not Specified

Material	Amount	From	To
neat cement	13 Cubic yards	ft.	212 ft.

Nearest Known Source of Contamination
51 feet South Direction Septic tank/drain field Type
Well disinfected upon completion? ☒ Yes ☐ No

Pump ☐ Not Installed Date Installed 11/16/1995
Manufacturer's name AERMOTOR
Model Number S100M HP 1 Volt 230
Length of drop pipe 120 ft Capacity 0 g.p. Typ Submersible

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☒ No

Miscellaneous
First Bedrock Prairie Du Chien Group Aquifer Jordan
Last Strat Jordan Sandstone Depth to Bedrock 86 ft
Located by Minnesota Geological Survey
Locate Method Digitization (Screen) - Map (1:24,000) (15 meters or
System UTM - NAD83, Zone 15, Meters X 462792 Y 4957698
Unique Number Verification Information from Input Date 08/11/2004

Angled Drill Hole

Well Contractor
R.E.S. Well Co. 27276 SCHULTZ, C
Licensee Business Lic. or Reg. No. Name of Driller

APPENDIX B

Agency Correspondence

DEPARTMENT OF NATURAL RESOURCES

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Shakopee Gravel Redevelopment

Project Proposer: Rachel Development

Project Type: Development, Mixed Use

Project Type Activities: Tree Removal

TRS: T115 R22 S16, T115 R22 S17

County(s): Scott

DNR Admin Region(s): Central

Reason Requested: State EAW

Project Description: The proposed project will involve the construction of a water treatment plant, commercial use, multi- and single-family residences, open area, and a man-made ...

Existing Land Uses: Most of the project area is developed (gravel mine), interspersed with man-made pond, and grassland, shrubland, and wooded areas.

Landcover / Habitat Impacted: Much of the project area is disturbed from gravel mining, interspersed with man-made ponds, and grassland, shrubland, and wooded areas. All areas are proposed to be impacted.

Waterbodies Affected: There are some man-made ponded areas that will be filled, and a new man-made pond will be constructed.

Groundwater Resources Affected: Unknown

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	Comments	Tree Removal - Recommendations
Ecologically Significant Area	Comments	Protected Wetlands: Calcareous Fens
State-Listed Endangered or Threatened Species	No Comments	No Further Review Required
State-Listed Species of Special Concern	No Comments	No Further Review Required
Federally Listed Species	Comments	RPBB High Potential Zone

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

February 27, 2024

Project ID: MCE #2024-00221

Lucas Wandrie
WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416

RE: Automated Natural Heritage Review of the proposed Shakopee Gravel Redevelopment
See Cover Page for location and project details.

Dear Lucas Wandrie,

As requested, the above project has been reviewed for potential effects to rare features. Based on this review, the following rare features may be adversely affected by the proposed project:

Project Type and/or Project Type Activity Comments

- The Natural Heritage Information System (NHIS) tracks bat roost trees and hibernacula plus some acoustic data, but this information is not exhaustive. Even if there are no bat records listed below, all seven of Minnesota's bats, including the federally endangered northern long-eared bat (*Myotis septentrionalis*), can be found throughout Minnesota. During the active season (approximately April-November) bats roost underneath bark, in cavities, or in crevices of both live and dead trees. Tree removal can negatively impact bats by destroying roosting habitat, especially during the pup rearing season when females are forming maternity roosting colonies and the pups cannot yet fly. To minimize these impacts, the DNR recommends that tree removal be avoided from June 1 through August 15.

Ecologically Significant Area

- One or more calcareous fens have been documented in the vicinity of the proposed project. A calcareous fen is a rare and distinctive peat-accumulating wetland that is legally protected in Minnesota. Many of the unique characteristics of calcareous fens result from the upwelling of groundwater through calcareous substrates. Because of this dependence on groundwater hydrology, calcareous fens can be affected by nearby activities or even those several miles away. Calcareous fens are fragile and may be impacted by activities within the fen, activities that affect surface water flows (e.g., stormwater flow/runoff, erosion), or activities that affect groundwater hydrology (e.g., groundwater pumping, contamination, or discharge). For more information regarding calcareous fens, please see the Calcareous Fen Fact Sheet. To minimize stormwater impacts, please refer to the Minnesota Pollution Control Agency's General Principles for Erosion Prevention and Sediment Control in the Minnesota Stormwater Manual. Please note that calcareous fens are "Special Waters"

and a buffer zone may be required.

Depending on the distance to the calcareous fen(s), additional guidance may be provided below if you indicated that potential project activities include wetland impacts or groundwater impacts. **If you did not correctly identify wetland or groundwater impacts as part of your project, this impact analysis may be incorrect.**

State-Listed Endangered or Threatened Species

No state-listed endangered or threatened species have been documented in the vicinity of the project.

State-Listed Species of Special Concern

No state-listed species of special concern have been documented in the vicinity of the project.

Federally Listed Species

- The area of interest overlaps with a U.S Fish and Wildlife Service (USFWS) Rusty Patched Bumble Bee High Potential Zone. The rusty patched bumble bee *(Bombus affinis)* is federally listed as endangered and is likely to be present in suitable habitat within High Potential Zones. 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 bumble bee may be impacted by a variety of land management activities including, but not limited to, prescribed fire, tree-removal, haying, grazing, herbicide use, pesticide use, land-clearing, soil disturbance or compaction, or use of non-native bees. If applicable, the DNR recommends reseeding disturbed soils with native species of grasses and forbs using BWSR Seed Mixes or MnDOT Seed Mixes. To ensure compliance with federal law, please conduct a federal regulatory review using the U.S. Fish and Wildlife Service's online Information for Planning and Consultation (IPaC) tool. Please note that all projects, regardless of whether there is a federal nexus, are subject to federal take prohibitions. The IPaC review will determine if prohibited take is likely to occur and, if not, will generate an automated letter. The USFWS RPBB guidance provides guidance on avoiding impacts to rusty patched bumble bee and a key for determining if actions are likely to affect the species; the determination key can be found in the appendix.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota’s rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and the project description provided on the cover page. If project details change or construction has not occurred within one year, please resubmit the project for review.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

Jim Drake Jim Drake
Natural Heritage Review Specialist
James.F.Drake@state.mn.us

Links: USFWS Information for Planning and Consultation (IPaC) tool
Information for Planning and Consultation (IPaC) tool
DNR Regional Environmental Assessment Ecologist Contact Info
https://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html

Shakopee Gravel Redevelopment

Aerial Imagery With Locator Map

N
W E
S

0 0.15 0.3 0.6 0.9 1.2 Miles

Project_Boundary

Project Type: Development, Mixed Use

Project Size (acres): 131.00

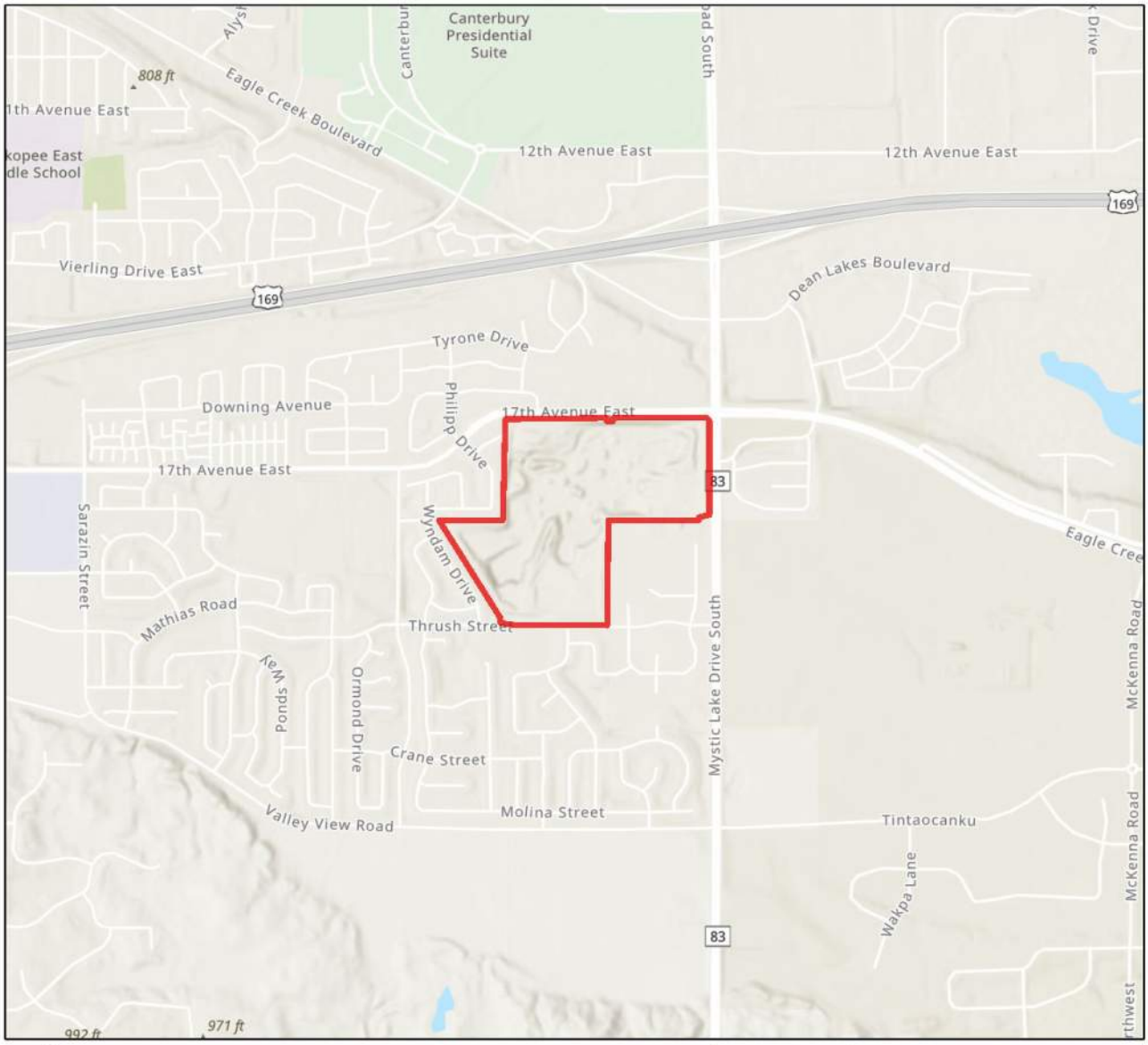
County(s): Scott

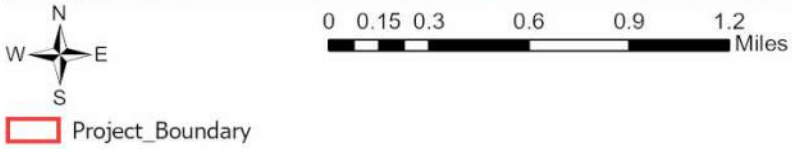
TRS: T115 R22 S16, T115 R22 S17

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Metropolitan Council, MetroGIS, Three Rivers Park District, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US

Shakopee Gravel Redevelopment

USA Topo Basemap With Locator Map





Project_Boundary

Project Type: Development, Mixed Use

Project Size (acres): 131.00

County(s): Scott

TRS: T115 R22 S16, T115 R22 S17

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Metropolitan Council, MetroGIS, Three Rivers Park District, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US

-------- Original message --------
From: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Date: 3/29/24 7:05 PM (GMT-06:00)
To: Mary Newman <mnewman@wsbeng.com>
Cc: Hayden Garza <HGarza@wsbeng.com>
Subject: RE: Data Request: Site in Scott County for EAW document

EXTERNAL EMAIL

There are no previously documented aboveground historic properties or archaeological sites in the location you requested. We recommend that you also check MnSHIP and the OSA Portal, links below. **Please note that this email does not constitute consultation with SHPO under state or federal law.** For more information about submitting a project to SHPO for review, visit our website. https://mn.gov/admin/shpo/environmental-review/

Visit the MnSHIP application to research aboveground historic properties. The OSA Portal is a web viewer for archaeological site information. Please note that information on whether a site is listed in the National Register of Historic Places, Determined Eligible for Listing, or SHPO has concurred a site is eligible must be obtained from SHPO and is not currently available via the OSA Portal.

Visit the Research at SHPO webpage for general information or the Survey and Inventory webpage for links to information about each application.

Lucy Harrington
Environmental Review Archaeologist | (651) 201-3283

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

SHPO Data Requests

Minnesota State Historic Preservation Office
50 Sherburne Avenue, Suite 203
Saint Paul, MN 55155
datarequestshpo@state.mn.us

Notice: This email message simply reports the results of the cultural resources database search you requested. The database search is only for previously known archaeological sites and historic properties. **IN NO CASE DOES THIS DATABASE SEARCH OR EMAIL MESSAGE CONSTITUTE A PROJECT REVIEW UNDER STATE OR FEDERAL PRESERVATION LAWS –** please see our Environmental Review Program Website for further information regarding our Environmental Review Process.

Because the majority of archaeological sites in the state and many historic/architectural properties have not been recorded, important sites or properties may exist within the search area and may be affected by development projects within that area. Additional research, including field surveys, may be necessary to adequately assess the area's potential to contain historic properties or archaeological sites.

Properties that are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP are indicated on the reports you have received, if any. The following codes may be on those reports:

NR – National Register listed. The properties may be individually listed or may be within the boundaries of a National Register District.

CEF – Considered Eligible Findings are made when a federal agency has recommended that a property is eligible for listing in the National Register and MN SHPO has accepted the recommendation for the purposes of the Environmental Review Process. These properties need to be further assessed before they are officially listed in the National Register.

SEF – Staff eligible Findings are those properties the MN SHPO staff considers eligible for listing in the National Register, in circumstances other than the Environmental Review Process.

DOE – Determination of Eligibility is made by the National Park Service and are those properties that are eligible for listing in the National Register, but have not been officially listed.

CNEF – Considered Not Eligible Findings are made during the course of the Environmental Review Process. For the purposes of the review a property is considered not eligible for listing in the National Register. These properties may need to be reassessed for eligibility under additional or alternate contexts.

Properties without NR, CEF, SEF, DOE, or CNEF designations in the reports may not have been evaluated and therefore no assumption to their eligibility can be made. Integrity and contexts change over time, therefore any eligibility determination made ten (10) or more years from the date of the current survey are considered out of date and the property will need to be reassessed.

If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic/architectural properties, you may need to hire a qualified archaeologist and/or historian. If you need assistance with a project review, please contact Kelly Gragg-Johnson, Environmental Review Specialist @ 651-201-3285 or by email at kelly.graggjohnson@state.mn.us.

The Minnesota SHPO Archaeology and Historic/Architectural Survey Manuals can be found at https://mn.gov/admin/shpo/identification-evaluation/.

Please subscribe to receive SHPO notices for the most current updates regarding office hours, accessing research files, or changes in submitting materials to the SHPO.

To access historic resource information please visit our webpage on Using SHPO's Files.

From: Mary Newman <mnewman@wsbeng.com>
Sent: Wednesday, March 20, 2024 10:03 AM
To: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Cc: Hayden Garza <HGarza@wsbeng.com>
Subject: Data Request: Site in Scott County for EAW document

APPENDIX C

GHG Emissions

Scenario 1 Greenhouse Gas Emissions, Shakopee Gravel Pit EAW

Backup Generator Fuel Consumption

Building	Size	Generator Size (kW) [1]	Diesel Consumption (gal.) [2]	GHG (kg)
Non-Residental Land Uses (sq.ft.)	1,674,011	8,420	182	1,953
Total			**182**	**1,953**

Notes:

1 Backup generator: Assume 50 kW + 5 W per sq. ft. (source: https://woodstockpower.com/blog/how-to-size-a-generator-for-commercial-building/).

2 Diesel consumption per hour from chart below. Monthly testing for 30 minutes (source: https://www.health.state.mn.us/facilities/regulation/engineering/docs/lscgensets.pdf)

Scenario 1 Greenhouse Gas Emissions, Shakopee Gravel Pit EAW

Average daily vehicle miles traveled (ADVMT) in the vicinity of the site

Category	ADVMT	GHG (kg)
ADVMT (Average Daily Vehicle Miles Traveled)	23,156	3,733,580

Notes:

Average Daily Trips multiplied by Centerline Miles (2.0 mi)

Scenario 1 Greenhouse Gas Emissions, Shakopee Gravel

Project Components

Use	Size (sq ft)	Units
Uses:		
Commercial/Business		
Commercial	1,674,011	
Residential:		
Apartments/Townhomes	691,000	576
>>Average sq. ft. per unit	1,200	
Single Family Residential	747,150	

Scenario 1 Greenhouse Gas Emissions, Shakopee Gravel Pit EAW

Waste Generation

Solid Waste Generation	Data Source	Amount	Units	Emission Factor (tonnes/ton)	Waste Amounts	Waste (kg per sq. ft.)
Commercial (kg @ 0.921 kg/sq. ft./yr.)	2	1,674,011	sq. ft.		1,541,764	0.9
Single Family (kg @ 2030 kg/household/yr.)	3	223	households		446,000	0.6
Apartments/Townhomes (kg @ 664 kg/unit/yr.)	3	576	units		382,464	0.6
Subtotals (kg)		**3,112,161**			**2,370,228**	**0.8**
Waste (tons)					**2,613**	
Landfilled waste, 46.3% (tons) and emission factor	4, 5, 6	1,210	tons	0.54	653	
Waste to energy, 0% (tons) and emission factor	4, 5, 6	-	tons	0.52	-	
Subtotal emissions (tonnes)					**653**	

Notes:

2 Source: Table 21, "Targeted Statewide Waste Characterization Study: Waste Disposal and Diversion Findings for Selected Industry Groups , 2006. https://www2.calrecycle.ca.gov/Publications/Details/1184

3 Source: "Residential Sector Generation Rates" table. Assumes 12.23 lb/household/day for residential source and 4 lb/dwelling unit/day. https://www2.calrecycle.ca.gov/wastecharacterization/general/rates

4 Source: "2022 SCORE REPORT," Scott County 2022 average waste generation, MPCA Data Services, https://public.tableau.com/app/profile/mpca.data.services/viz/2022SCOREReport/2022SCOREreport?publish=yes

5 Source for emission factor for landfilled waste: "Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM), Organic Materials Chapters," Exhibit 1-10, U.S. Environmental Protection Agency Office of Resource Conservation and Recovery, February 2016. https://www.epa.gov/warm/documentation-chapters-greenhouse-gas-emission-energy-and-economic-factors-used-waste

6 Source for emissions from the Hennepin Energy Recovery Center: https://www.pca.state.mn.us/air/permitted-facility-air-emissions-data. Source for tons processed by the HERC: https://www.pca.state.mn.us/waste/report-2019-score-programs

APPENDIX D

Traffic Study

REPORT

To:	Michael Kerski, Director of Planning and Development City of Shakopee
From:	Matt Pacyna, PE, Principal Transportation Collaborative & Consultants, LLC
Date:	April 12, 2024
Subject:	Shakopee Gravel Development Traffic Study

INTRODUCTION

TC2 has completed a traffic study for the proposed Gravel Development in the City of Shakopee. The subject site, shown in Figure 1, is in the southwest quadrant of the Mystic Lake Drive (CR 83) and 17th Avenue / Eagle Creek Boulevard (CR 16) intersection. The main objectives of the study are to quantify current area operations, identify transportation impacts associated with proposed development, and recommend improvements, if necessary, to ensure safe and efficient operations for all users. This study supports the transportation section of the Environmental Assessment Worksheet (EAW) being completed for the development. The following study assumptions, methodology, and findings are offered for consideration.

Figure 1 Project Location

EXISTING CONDITIONS

Existing conditions were reviewed within the study area to establish current operations and help determine impacts associated with the proposed development. The evaluation of existing conditions included collecting traffic volumes, observing roadway characteristics, analyzing intersection capacity, and reviewing crash history, which are described in the following sections.

Traffic Volumes

The following intersections were included as part of the study process.

- Mystic Lake Drive (CR 83) and Eagle Creek Boulevard/Dean Lakes Boulevard
- Mystic Lake Drive (CR 83) and 17th Avenue/ Eagle Creek Boulevard (CR 16)
- Mystic Lake Drive (CR 83) and Thrush Street*
- Mystic Lake Drive (CR 83) and Valley View Road**
- 17th Avenue (CR 16) and Independence Drive
- 17th Avenue (CR 16) and Philipp Drive*
- 17th Avenue (CR 16) and Emblem Way*
- Eagle Creek Boulevard (CR 16) and Dean Lake Trail / Kinlock Way
- Thrush Street and Independence Drive
- Thrush Street and Hackberry Lane
- Thrush Street and Archer Street / Dahlia Drive

** Indicates 13 hours of data (6 a.m. to 7 p.m.)* *** Data was provided from the County*

Intersection turning movement and pedestrian/bicyclist counts were collected on Wednesday, January 24, 2024, at most of the study intersections. The counts were collected from 7 to 9 a.m. and 4 to 6 p.m., which coincides with the peak activity of the adjacent roadways. Note that 13-hour counts (i.e., 6 a.m. to 7 p.m.) were collected at several intersections to help identify the potential future need for a traffic control change (i.e., a signal warrant). Existing count data at the Mystic Lake Drive (CR 83) and Valley View Road intersection was obtained from the *Intersection Analysis Memorandum,* dated May 22, 2023. Note that the collected peak hour traffic volumes are approximately 10 to 15 percent lower than historical area counts, which is primarily related to post-covid travel behavior changes.

Roadway Characteristics

Observations were conducted within the study area to identify various roadway characteristics such as roadway geometry, functional classification, multimodal facilities, speed limits, and traffic controls. The following information provides a general overview of key roadways within the study area.

- ***Mystic Lake Drive (CR 83)*** - a four-lane divided Minor Arterial roadway with left- and right-turn lanes at key intersections; multi-use trails are present on both sides of the roadway except the west side between 17th Avenue and Hwy 169; the posted speed limit is 45- and 55-mph to the north and south of 17th Avenue / Eagle Creek Boulevard (CR 16), respectively.
- ***17th Avenue / Eagle Creek Boulevard (CR 16)*** - a four-lane divided Minor Arterial roadway with left- and right-turn lanes at key intersections; multi-modal facilities (i.e., trail or sidewalk) are present on both sides of the roadway except the north side between Philipp Way and Mystic Lake Drive (CR 83); the posted speed limit varies from 40-mph west of Independence Drive to 45-mph between Independence Drive and Mystic Lake Drive (CR 83) to 55-mph east of Mystic Lake Drive (CR 83).

- ***Eagle Creek Boulevard (west of Mystic Lake Drive / CR 83)*** - a four-lane undivided Collector roadway that widens near Mystic Lake Drive (CR 83) to accommodate turn lanes; a multi-use trail is along the north side of the roadway; the posted speed limit is generally 50-mph, but transitions to 35-mph near Mystic Lake Drive (CR 83).
- ***Dean Lakes Boulevard*** - a four-lane divided Collector roadway with left- and right-turn lanes that transitions to a three-lane local roadway east of Dean Lakes Trail; multi-modal facilities (i.e., trail or sidewalk) are along both sides of the roadway; the posted speed limit is 35-mph.
- ***Dean Lakes Trail*** - a three-lane undivided Collector roadway with select turn lanes; a multi-use trail is along the east side of the roadway; the posted speed limit is 35-mph.
- ***Independence Drive*** - a two-lane undivided Collector roadway; multi-modal facilities (i.e., trail or sidewalk) are along both sides of the roadway; the posted speed limit is 35-mph.
- ***Valley View Road*** - a two-lane undivided Collector roadway; multi-modal facilities (i.e., trail or sidewalk) are along both sides of the roadway, except the south side from approximately ¼-mile east of Independence Drive to Mystic Lake Drive (CR 83); the posted speed limit is 35-mph.
- ***Thrush Street*** - a two-lane undivided local roadway; sidewalk is along both sides of the roadway, except the north side between Independence Drive and 250' west of Archer Street; the posted speed limit is 30-mph.

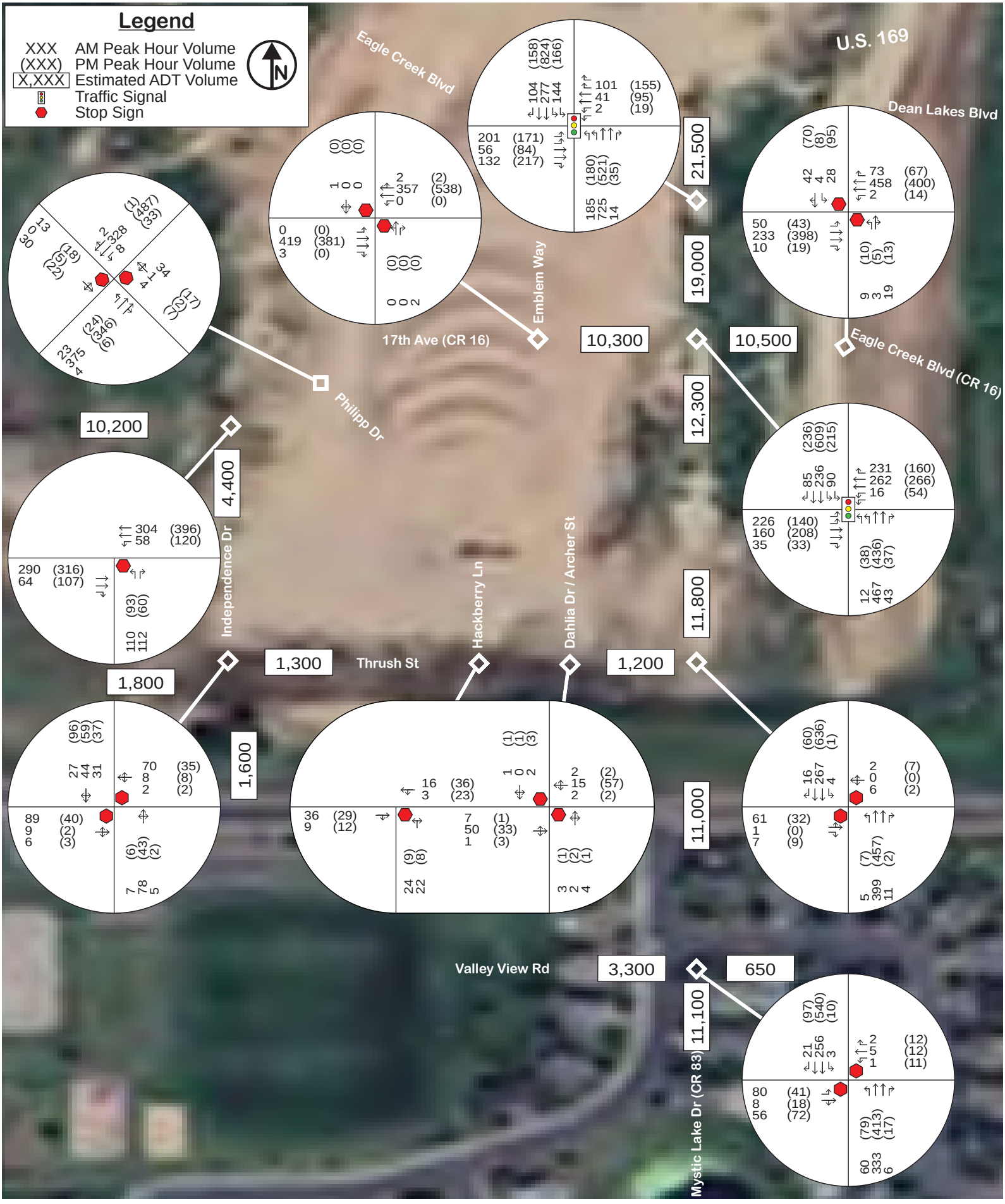
All other study area roadways are two-lane local facilities with sidewalk along at least one side of the roadway. The intersections along Mystic Lake Drive (CR 83) at Eagle Creek Boulevard / Dean Lakes Boulevard and 17th Avenue / Eagle Creek Boulevard (CR 16) are signalized; all other study intersections are unsignalized with side-street stop control. Existing geometrics, traffic controls, and traffic volumes in the study area are shown in Figure 2.

Intersection Capacity

Intersection capacity was evaluated using Synchro/SimTraffic Software (version 11), which incorporates methods outlined in the *Highway Capacity Manual, 6th Edition*. The software is used to develop calibrated models that simulate observed traffic operations and identify key metrics such as intersection Level of Service (LOS) and queues. These models incorporate collected traffic, pedestrian, and bicyclist volumes, traffic controls, and driver behavior factors. Existing signal timing obtained from MnDOT was incorporated into the analysis.

Level of Service (LOS) quantifies how an intersection is operating. Intersections are graded from LOS A through LOS F, which corresponds to the average delay per vehicle values shown. An overall intersection LOS A though LOS D is generally considered acceptable in the Twin Cities. LOS A indicates the best traffic operation, while LOS F indicates an intersection where demand exceeds capacity.

Level of Service	Average Delay / Vehicles	
	Stop, Yield, and Roundabout Intersections	Signalized Intersections
A	< 10 seconds	< 10 seconds
B	10 to 15 seconds	10 to 20 seconds
C	15 to 25 seconds	20 to 35 seconds
D	25 to 35 seconds	35 to 55 seconds
E	35 to 50 seconds	55 to 80 seconds
F	> 50 seconds	> 80 seconds


Legend
XXX AM Peak Hour Volume
(XXX) PM Peak Hour Volume
X,XXX Estimated ADT Volume
Traffic Signal
Stop Sign
N
U.S. 169
Eagle Creek Blvd
Dean Lakes Blvd
Emblem Way
17th Ave (CR 16)
Eagle Creek Blvd (CR 16)
Philipp Dr
Independence Dr
Hackberry Ln
Dahlia Dr / Archer St
Thrush St
Valley View Rd
Mystic Lake Dr (CR 83)
21,500
19,000
10,300
10,500
12,300
10,200
4,400
11,800
1,300
1,200
1,800
1,600
11,000
3,300
650
11,100

For side-street stop-controlled (SSS) intersections, special emphasis is given to providing an estimate for the level of service of the side-street approach. Traffic operations at an unsignalized intersection with side-street stop control can be described in two ways. First, consideration is given to the overall intersection level of service, which takes into account the total number of vehicles entering the intersection and the capability of the intersection to support the volumes. Second, it is important to consider the delay on the minor approach. Since the mainline does not have to stop, most delay is attributed to the side-street approaches. It is typical of intersections with higher mainline traffic volumes to experience high-levels of delay (i.e., poor levels of service) on the side-street approaches, but an acceptable overall intersection level of service during peak hour conditions.

Results of the existing intersection capacity analysis, shown in Table 1, indicates that all study intersections currently operate at an overall LOS C or better during the a.m. and p.m. peak hours. In addition, all side-street approaches and/or driveways operate at LOS D or better during the peak hours. All queues stay within the existing turn lanes provided, while 95th percentile queues at most side-street approaches range from 50 to 100 feet (i.e., two to four vehicles) during the peak periods. Thus, no significant intersection capacity issues are present within the study area. Analysis results showing the average delays and queue lengths are available upon request.

Table 1 Existing Intersection Capacity

Intersection	Traffic Control	Level of Service (Delay)	
		AM Peak Hour	PM Peak Hour
Mystic Lake Dr (CR 83) / Eagle Creek Blvd / Dean Lakes Blvd	SIGNAL	C (28 sec)	C (27 sec)
Mystic Lake Dr (CR 83) / 17th Ave / Eagle Creek Blvd (CR 16)	SIGNAL	C (27 sec)	C (25 sec)
Mystic Lake Dr (CR 83) / E. Gravel Drwy	SSS	A / B (10 sec)	A / B (12 sec)
Mystic Lake Dr (CR 83) / Thrush St	SSS	A / B (10 sec)	A / B (12 sec)
Mystic Lake Dr (CR 83) / Valley View Rd	SSS	A / B (11 sec)	A / B (14 sec)
17th Ave (CR 16) / Independence Drive	SSS	A / A (8 sec)	A / B (13 sec)
17th Ave (CR 16) / Philipp Drive	SSS	A / A (6 sec)	A / B (10 sec)
17th Ave (CR 16) / Emblem Way / N. Gravel Drwy	SSS	A / A (4 sec)	A / A (3 sec)
Eagle Creek Blvd (CR 16) / Dean Lake Trl / Kinlock Way	SSS	A / A (7 sec)	A / B (12 sec)
Thrush St / Independence Dr	SSS	A / A (6 sec)	A / A (8 sec)
Thrush St / Hackberry Ln	SSS	A / A (4 sec)	A / A (7 sec)
Thrush St / Archer St / Dahlia Dr	SSS	A / A (5 sec)	A / A (8 sec)
Thrush St / Ivy St / Dahlia Dr	SSS	A / A (6 sec)	A / A (4 sec)

SSS – Side-Street-Stop

Crash History

A review of historical crash data was completed at the study intersections to identify any trends or hotspots. Five (5) years of crash history was reviewed within the study area, which included data from January 2019 through December 2023. The crash data was obtained using MnDOT's MnCMAT2 crash mapping tool. Intersection crash data is summarized in Table 2.

Table 2 Crash Rate Summary

Study Intersection	Total Crashes	Crash Rates			Severity Rates		
		Actual	Ave.	Critical	Actual	Ave.	Critical
CR 83 / Eagle Creek Blvd(1)	53	1.040	0.608	0.900	0.000	0.963	3.710
CR 83 / CR 16 / 17th Ave(1)	48	1.009	0.548	0.830	0.000	1.024	3.960
CR 83 / Thrush St(2)	0	0.000	0.138	0.360	0.000	0.350	4.230
CR 83 / Valley View Rd(2)	15	0.631	0.138	0.360	8.409	0.350	4.010
CR 16 / 17th Ave / Independence Dr(2)	4	0.178	0.138	0.360	0.000	0.350	4.180
CR 16 / 17th Ave / Philipp Dr(2)	1	0.051	0.138	0.380	0.000	0.350	4.590
CR 16 / 17th Ave / Emblem Way(2)	0	0.000	0.138	0.390	0.000	0.350	4.750
CR 16 / Dean Lakes / Kinlock Way(2)	12	0.524	0.138	0.360	0.000	0.350	4.120
Thrush St / Independence Dr(2)	2	0.252	0.138	0.540	0.000	0.350	9.340
Thrush St / Hackberry Ln(2)	0	0.000	0.138	0.940	0.000	0.350	25.050
Thrush St / Archer St / Dahlia Dr(2)	0	0.000	0.138	1.010	0.000	0.350	28.290

(1) Signal (2) Side-Street Stop

During the analysis period, there were a total of 135 reported crashes at the study intersections. Most occurred along Mystic Lake Drive (CR 83) at Eagle Creek Boulevard / Dean Lakes Boulevard, 17th Avenue / Eagle Creek Boulevard (CR 16), or Valley View Road, as well as the Eagle Creek Boulevard (CR 16) and Dean Lakes Trail / Kinlock Way intersection. Of these crashes, the predominant crash types were rear-end or angle / left-turn (i.e., 75% to 90%). At these crash frequency levels, the number of crashes that have occurred at these locations are significantly higher than intersections with similar characteristics. In addition, the Mystic Lake Drive (CR 83) and Valley View Road intersection has a severity rate higher than intersections with similar characteristics.

These signalized locations are candidates for potential safety mitigation, including larger signal heads and/or signal/retroreflective backplates. In the case of the Valley View Road intersection, a traffic signal is planned to be installed in the summer of 2024, which should mitigate the current crash trend. At the Eagle Creek Boulevard (CR 16) and Dean Lakes Trail / Kinlock Way intersection, a potential access modification or traffic control change could be considered. Further discussion with County/City staff should occur to determine if/when any of these mitigation strategies should be implemented to address the crash issues identified. No other study intersections have any existing crash issues from a frequency or severity perspective.

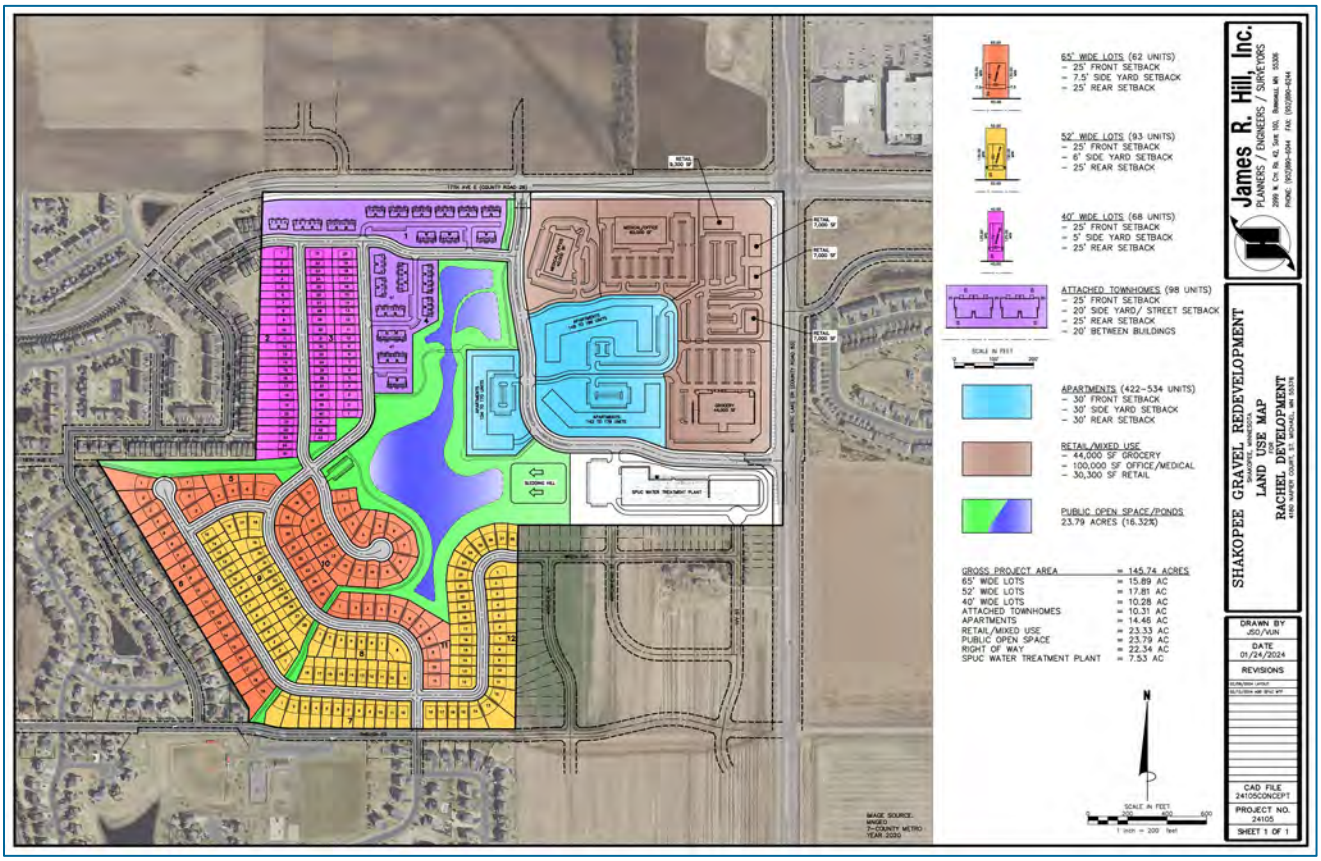
PROPOSED DEVELOPMENT

The proposed development, shown in Figure 3, encompasses the existing Shakopee Gravel Pit area generally in the southwest quadrant of the Mystic Lake Drive (CR 83) and 17th Avenue / Eagle Creek Boulevard (CR 16) intersection. The overall site is approximately 145 acres and is planned to include a range of uses, including residential, commercial retail, office, and public open space. A new water treatment plant (SPUC) is also planned for the southeast portion of the overall development, but has limited to no impact on traffic activity associated with it. For purposes of this study, the following land uses were assumed to be included as part of the proposed development.

- 225 Single-Family Residential Units
- 100 Townhome Residential Units
- 540 Apartment Residential Units
- 75,000 SF of Commercial Retail (including a 44,000 SF Grocery Store)
- 100,000 SF of Commercial Office/Medical Office

Access to the site is planned to be provided via five locations. Primary access will be via 17th Avenue (CR 16) across from Emblem Way and along Mystic Lake Drive (CR 83) at the existing Gravel Pit access. Secondary access will be provided to 17th Avenue (CR 16) via Philipp Avenue and Thrush Street via Hackberry Lane or Archer Street. For purposes of this study, all roadways were assumed to be full-access, allowing all movements. Additional discussion on site access is provided later in this report.

Figure 3 Proposed Site Plan



TRAFFIC FORECASTS

Traffic forecasts were developed for year 2030 conditions, which represents the expected full-build out of the proposed development. The forecasts include information regarding area infrastructure changes, assumed adjacent developments, general background growth, and trip generation from the proposed development. Forecasts were developed for both year 2030 no build and build conditions, with the build condition including the proposed development.

Infrastructure Changes

As noted earlier, the Mystic Lake Boulevard (CR 83) and Valley View Road intersection is planned to be signalized in the summer of 2024. Therefore, this traffic control change was assumed to be in place as part of the year 2030 condition. In addition, all signal timing was assumed to be optimized under future conditions, given signal timing is typically updated every three (3) to five (5) years. Note that the planned roadways/connections within the proposed development are expected to have minimal impact on existing area travel patterns and the new roadways will primarily serve the proposed development.

Adjacent Developments

Based on discussions with project staff, several adjacent developments were identified that have been approved or are expected to be partially constructed and/or completed by the year 2030. The purpose of incorporating adjacent development is to best represent future conditions, understand future infrastructure needs/timing, and help agencies plan for and implement appropriate improvements to support the area as it develops over time. A summary of the assumed adjacent developments are illustrated in Figure 4.

Using these assumptions and past traffic study information, the trip generation estimates shown in Table 3 were developed for the adjacent developments using the *ITE Trip Generation Manual, 11th Edition.* These trips were routed to the adjacent roadway network based on their respective traffic studies or existing area travel patterns and are included as part of the year 2030 no build traffic forecasts.

Table 3 Adjacent Development Trip Generation Summary

Adjacent Development *(ITE Code)*	**Size**	**AM Peak Hour**		**PM Peak Hour**		**Daily**
		In	**Out**	**In**	**Out**	
A – Summerland Place *(210)*	175 units	31	91	104	61	1,650
A – Summerland Place *(220)*	300 units	29	91	96	57	2,022
B – Shakopee Master Plan *(220)**	200 units	15	49	51	30	1,078
B – Shakopee Master Plan *(822)**	25,000 SF	28	19	66	66	1,090
C – Valley Crest *(210)*	100 units	18	52	59	35	944
D – Arbor Bluff *(210)***	400 units	70	210	237	139	3,772
Total 2030 Adjacent Development Trips		**191**	**512**	**613**	**388**	**10,556**

* *Includes a 20% multi-use reduction to account for internal capture within the Master Plan Area*

** *Assumes 50% of the overall 800-units will be built by year 2030.*

Year 2030 Adjacent Developments

Shakopee Gravel Development Traffic Study

Figure 4

Background Growth

To account for general background growth in the study area, an annual growth rate of 1.5 percent was applied to the existing traffic volumes to develop year 2030 background traffic forecasts. This growth rate is based on a combination of historical ADT volumes published by MnDOT and traffic forecasts identified within various studies and the *Scott County Transportation Plan*. This growth rate is in addition to the adjacent developments and accounts for area growth outside of the immediate study area.

Trip Generation

The proposed development trip generation estimate, shown in Table 4, was developed using the *ITE Trip Generation Manual, 11th Edition* and includes trips for typical weekday a.m. and p.m. peak hours, as well as daily. For purposes of this study, the following assumptions were leveraged:

- The high-end of potential residential units was used to provide a conservative estimate.
- The 100,000 SF of office space was assumed to be 60% general office / 40% medical office, which is consistent with other clinical / medical office spaces in the region.
- Per ITE Code 821, "a supermarket is often the major tenant of a general retail / shopping plaza, which also typically contains retail merchandising, offices, movie theaters, restaurants, banks, health clubs, and/or recreational facilities"; note that the shopping plaza trip generation rate is consistent with estimates using individual retail uses (i.e., restaurant, grocery, strip retail) and was therefore used to simplify the overall trip generation estimate.
- A 20% multi-use / modal reduction was applied to account for interactions between the residential and commercial uses (15%), as well as trips by alternatives modes (i.e.,5% for walk, bike, or transit).
- A 35% pass-by / diverted-link reduction was applied to the retail land use to account for trips already traveling along 17th Avenue (CR 16) or Mystic Lake Drive (CR 83).

Table 4 Proposed Development Trip Generation Summary

Land Use *(ITE Code)*	**Size**	**AM Peak Hour**		**PM Peak Hour**		**Daily**
		In	**Out**	**In**	**Out**	
Residential - Single-Family *(210)*	225 units	39	119	133	79	2,122
Residential - Townhomes *(215)*	100 units	12	36	34	23	720
Residential - Apartments *(221)*	540 units	46	154	128	83	2,452
Commercial - General Office *(710)*	60,000 SF	80	11	15	71	650
Commercial - Medical Office *(720)*	40,000 SF	98	26	47	110	1,440
Commercial - Retail / Shopping Plaza *(821)*	75,000 SF	164	101	325	352	7,088
Subtotal		**439**	**447**	**682**	**718**	**14,472**
Multi-use / Modal Reduction (20%)		*(-88)*	*(-89)*	*(-136)*	*(-144)*	*(-2,894)*
Total Proposed Development Site Trips		**351**	**358**	**546**	**574**	**11,578**
Pass-by / Diverted-Link Reduction (35%)		*(-46)*	*(-46)*	*(-120)*	*(-120)*	*(-2,480)*
Net New System Proposed Development Trips		**305**	**312**	**426**	**454**	**9,098**

Based on the trip generation estimate, the proposed development will generate approximately 709 a.m. peak hour (351 in / 358 out), 1,120 p.m. peak hour (546 in / 574 out), and 11,578 daily (5,789 in / 5,789 out) site trips. When accounting for trips already traveling along adjacent roadways that will use the proposed development (i.e., pass-by/diverted-link trips), the net new system trips from the proposed development is approximately 617 a.m. peak hour (305 in / 312 out), 880 p.m. peak hour (426 in / 454 out), and 9,098 daily (4,549 in / 4,549 out) trips.

Trip Distribution

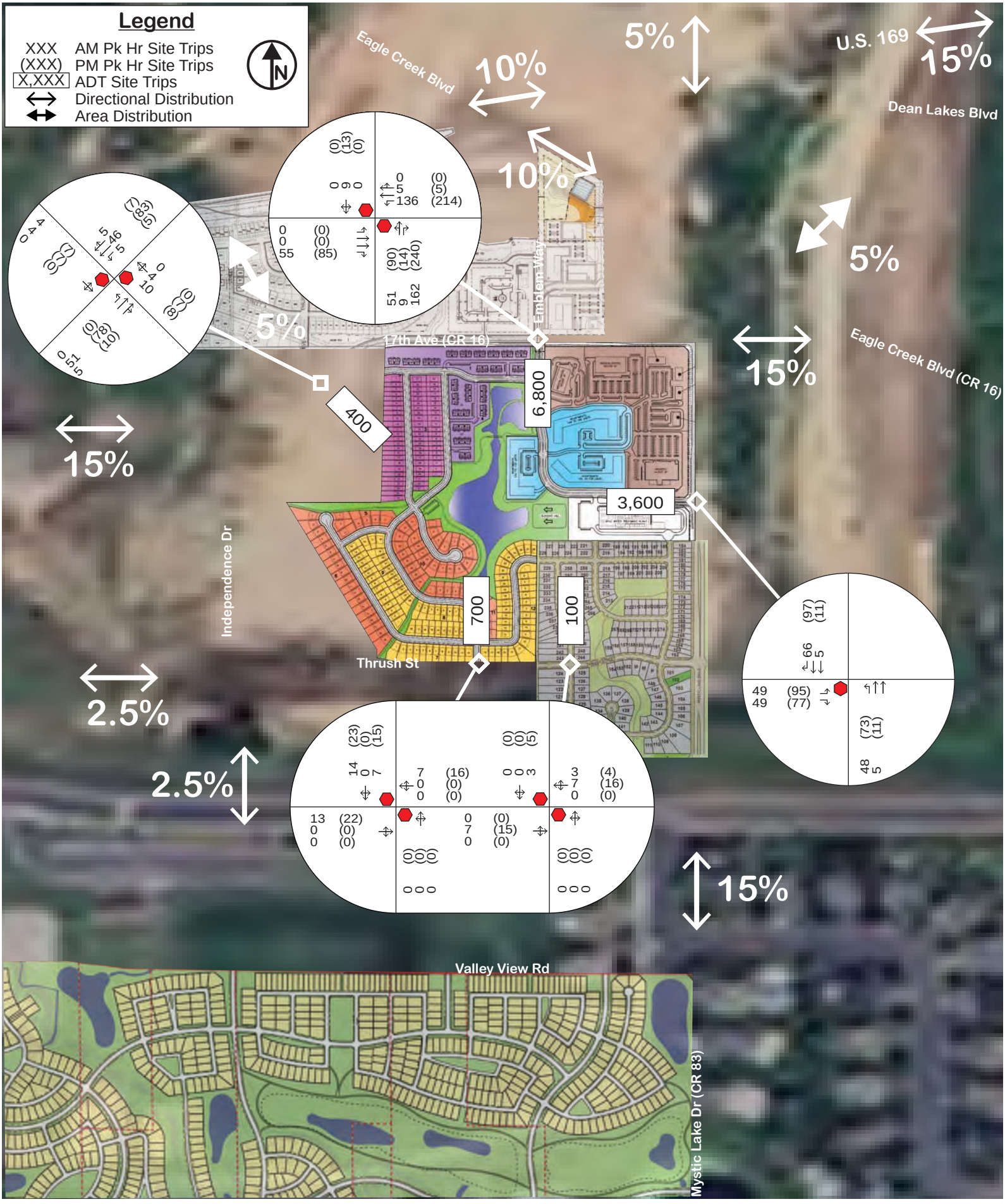
Trips generated by the proposed development were distributed throughout the study area based on the directional distribution shown in Figure 5, which was developed based on existing travel patterns, previous area studies, the proposed site layout, and engineering judgement. The overall site generated trips, not including the pass-by reductions, are also shown in Figure 5. Note that the planned roadways/ connections within the proposed development are expected to have minimal impact on existing area travel patterns and the new roadways will primarily serve the proposed development.

The resultant year 2030 no build and year 2030 build condition traffic forecasts are shown in Figure 6 and Figure 7, respectively. Note that the no build condition includes trips generated from the assumed adjacent developments, as well as the background growth rate applied to the existing traffic volumes. The build condition represents the no build condition, with the proposed development traffic added. Note that the pass-by/diverted-link trips were applied assuming two-thirds (2/3) were via Mystic Lake Drive (CR 83) and one-third (1/3) were via 17th Avenue / Eagle Creek Boulevard (CR 16) and evenly distributed in both directions.

YEAR 2030 INTERSECTION CAPACITY ANALYSIS

To understand how intersection capacity is expected to change as the area develops, including the proposed development, a detailed intersection capacity analysis was conducted for year 2030 no build and build conditions. This analysis again leveraged Synchro/SimTraffic Software (*version 11*). Results of the future intersection capacity analysis are summarized in Table 5 by time and condition. Detailed information showing the average delays and queue lengths is available upon request.

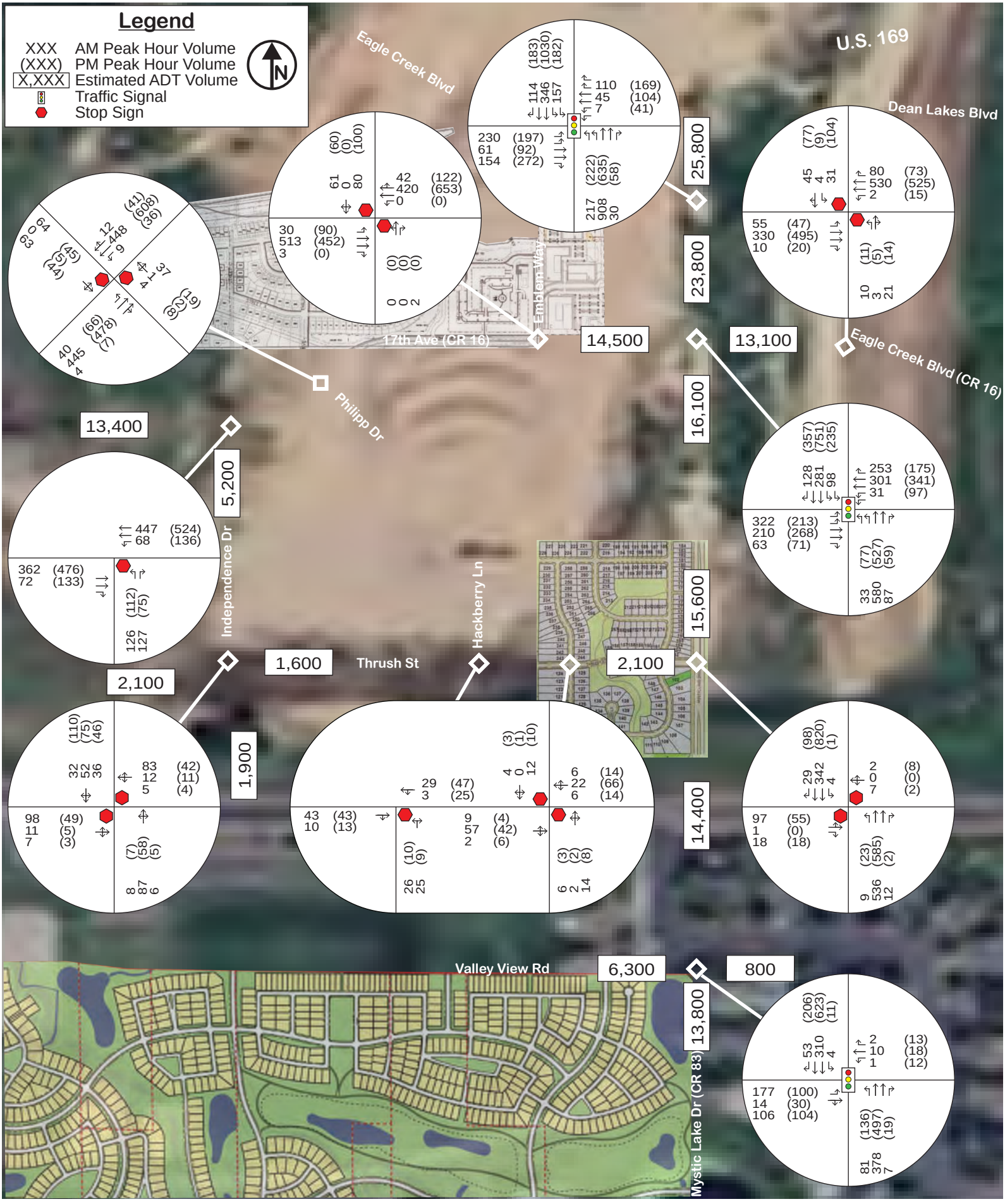
The capacity analysis indicates that the study intersections can support the assumed adjacent and proposed developments under both year 2030 no build and build conditions, except at the 17th Avenue (CR 16) and Emblem Way / North Site Driveway under year 2030 build conditions. With the addition of the proposed development, motorists on the side-street approaches at this intersection are expected to experience significant delays and queues attempting to cross or turn left onto 17th Avenue (CR 16). Thus, an iterative process was conducted that identified a traffic signal would significantly improve operations at the 17th Avenue (CR 16) and Emblem Way / North Site Driveway intersection, which the operations are illustrated in Table 5. With the traffic control change, the overall intersection and approaches are expected to operate at LOS C or better under year 2030 build conditions. The addition of the traffic signal does not impact adjacent intersections and all queues remain within the existing turn lanes provided.



Directional Distribution and Site Trips

Shakopee Gravel Development Traffic Study

Figure 5


Legend
XXX AM Peak Hour Volume
(XXX) PM Peak Hour Volume
X,XXX Estimated ADT Volume
Traffic Signal
Stop Sign
N
Eagle Creek Blvd
U.S. 169
Dean Lakes Blvd
Emblem Way
17th Ave (CR 16)
Philipp Dr
Eagle Creek Blvd (CR 16)
25,800
23,800
14,500
13,100
16,100
13,400
5,200
Independence Dr
Hackberry Ln
15,600
1,600
Thrush St
2,100
2,100
1,900
14,400
Valley View Rd
6,300
800
13,800
Mystic Lake Dr (CR 83)

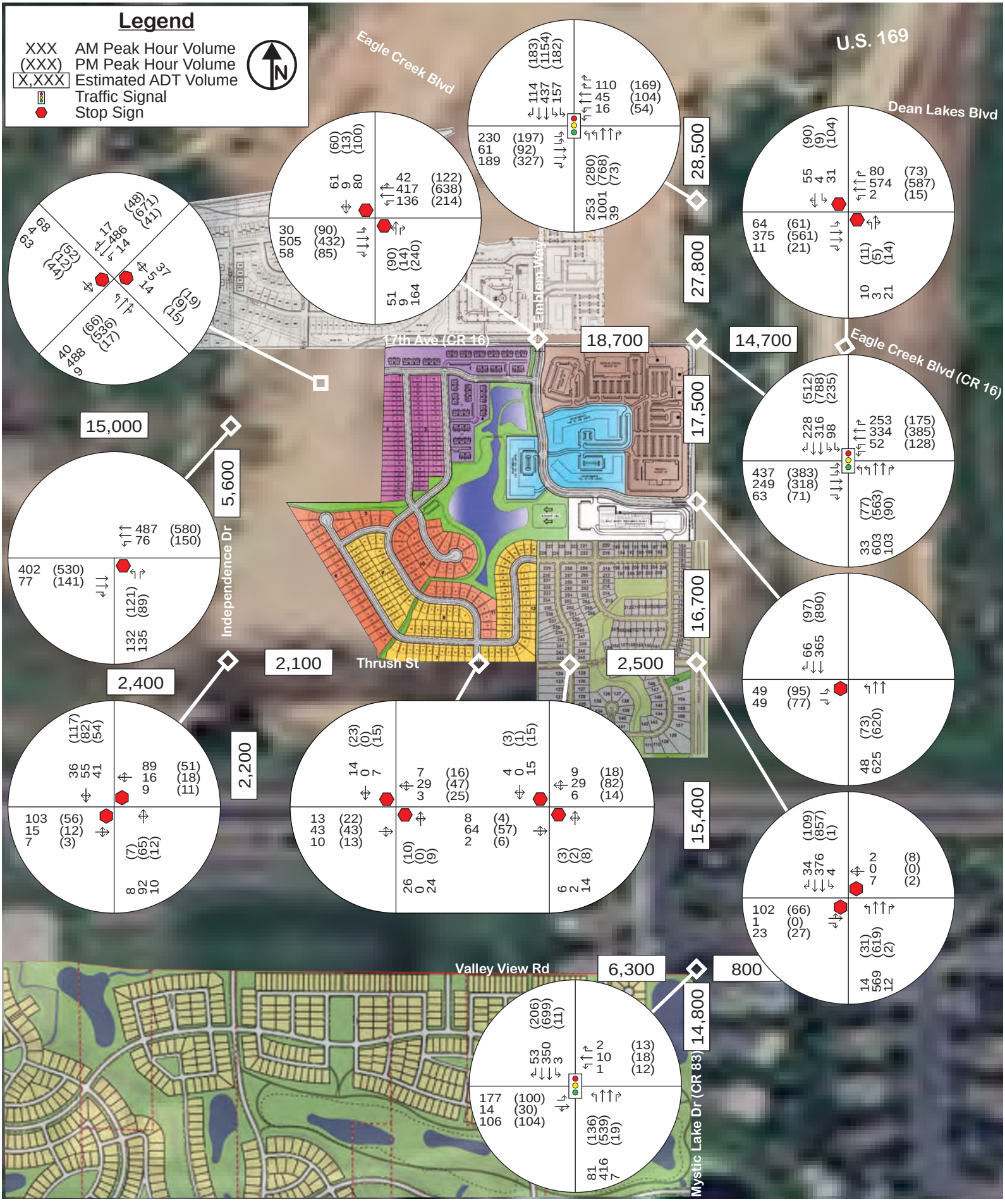

Legend
XXX AM Peak Hour Volume
(XXX) PM Peak Hour Volume
X,XXX Estimated ADT Volume
Traffic Signal
Stop Sign
N
U.S. 169
Eagle Creek Blvd
Dean Lakes Blvd
Eagle Creek Blvd (CR 16)
17th Ave (CR 16)
Emblem Way
Independence Dr
Thrush St
Valley View Rd
Mystic Lake Dr (CR 83)
28,500
27,800
18,700
14,700
17,500
15,000
5,600
16,700
2,100
2,500
2,400
2,200
15,400
6,300
800
14,800

Table 5 Year 2030 Intersection Capacity Summary

Intersection	Level of Service (Delay)			
	AM Peak Hour		PM Peak Hour	
	No Build	Build	No Build	Build
Mystic Lake Dr (CR 83) / Eagle Creek / Dean Lakes	C (29)	C (33)	C (33)	D (41)
Mystic Lake Dr (CR 83) / 17th Ave / Eagle Creek (CR 16)	C (31)	C (34)	C (32)	D (39)
Mystic Lake Dr (CR 83) / E. Site Drwy	A / B (14)	A / C (15)	A / C (18)	A / C (24)
Mystic Lake Dr (CR 83) / Thrush St	A / B (14)	A / C (15)	A / C (18)	A / C (20)
Mystic Lake Dr (CR 83) / Valley View Rd *(Signal)*	C (21)	C (21)	C (22)	C (24)
17th Ave (CR 16) / Independence Drive	A / B (10)	A / B (11)	A / C (19)	A / C (22)
17th Ave (CR 16) / Philipp Drive	A / B (13)	A / C (15)	A / C (16)	A / C (21)
17th Ave (CR 16) / Emblem Way / N. Site Drwy	A / C (16)	**B / F (60)**	A / C (22)	**E / F (60+)**
Eagle Creek Blvd (CR 16) / Dean Lake Trl / Kinlock Way	A / A (9)	A / B (12)	A / C (15)	A / C (16)
Thrush St / Independence Dr	A / A (7)	A / A (7)	A / A (8)	A / A (8)
Thrush St / Hackberry Ln	A / A (4)	A / A (4)	A / A (7)	A / A (7)
Thrush St / Archer St / Dahlia Dr	A / A (5)	A / A (5)	A / A (6)	A / A (7)
Thrush St / Ivy St / Dahlia Dr	A / A (7)	A / A (7)	A / A (4)	A / A (5)
Mitigation (Traffic Signal)				
17th Ave (CR 16) / Emblem Way / N. Site Drwy **(Signal)**	--	B (15)	--	B (19)
Mitigation (Traffic Signal + Access Modification at E. Site Drwy)				
17th Ave (CR 16) / Emblem Way / N. Site Drwy **(Signal)**	--	B (16)	--	C (20)

Note that a sensitivity test was conducted to determine if additional mitigation would be needed if the eastbound left-turn movement from the East Site Driveway to Mystic Lake Drive (CR 83) was restricted. Based on this test, which is illustrated in Table 5, maintaining full access at the East Site Driveway is not critical to overall intersection operations within the area and that no significant change in overall operations to the 17th Avenue (CR 16) and Emblem Way / North Site Driveway intersection or any adjacent intersections were noted. Therefore, if operational and / or safety issues were to develop along Mystic Lake Drive (CR 83) at the East Site Driveway, an access modification would not result in the need for additional infrastructure or impacts at adjacent intersections.

Finally, no significant queuing issues were identified under year 2030 no build or build conditions. There are minor queueing issues that are expected, primarily where queues in the through lane along Mystic Lake Drive (CR 83) will occasionally (i.e., 5 to 10% of a peak hour) extend beyond an adjacent turn lane. However, these queues do not significantly impact overall operations or necessitate extending any turn lanes in the area. Most 95th percentile queues within the proposed development and the approaches at adjacent side-street stop-controlled intersections are expected to extend approximately 100 feet or less. Therefore, no additional mitigation is needed to accommodate any queuing.

SITE PLAN REVIEW / OTHER CONSIDERATIONS

Based on a review of the proposed site plan, the overall capacity analysis, and transportation planning best practices, the following potential considerations were identified. These items are not needed from a capacity perspective, but could help improve safety, reduce conflicts / queues, and / or overall site efficiency and are offered for further discussion with the project team.

1) A minimum of 2-lanes (i.e., a left- and a shared thru/right-turn lane) should be provided on both the north and south approaches of the 17th Avenue (CR 16) and Emblem Way / North Site Driveway intersection. However, dedicated left-, thru, and right-turn lanes on the north and south approaches would help minimize any operational / queuing issues, accommodate additional potential development within the area, and provide future signal timing / phasing flexibility; realignment of Emblem Way or shifting the proposed development driveway to ensure north-south lane continuity at this intersection should also be considered.
2) The 3-lane internal roadway is expected to provide sufficient long-term reserve capacity, as well as reduce potential conflicts with left-turning vehicles; the addition of right-turn lanes within the development does not appear necessary.
3) Locate internal roadways and driveways a minimum of 330 feet apart, including Philipp Avenue from 17th Avenue (CR 16); review internal intersections and provide appropriate internal traffic controls (i.e., stop signs) in collaboration with the City Engineer.
4) Review truck maneuverability and loading / wayfinding procedures to limit potential internal circulation conflicts.
5) Locate signage and landscaping to avoid creating any sight distance issues.
6) Provide multimodal facilities (i.e., sidewalk and / or trail) throughout the site with connectivity to existing adjacent facilities; direct connections to trails / sidewalks along Mystic Lake Road (CR 83) and 17th Avenue (CR 16) would be beneficial.

SUMMARY

The following study conclusions and ***recommendations*** are offered for consideration.

1) All study intersections currently operate at an overall LOS C or better and all side-street approaches and / or driveways operate at LOS D or better during the a.m. and p.m. peak hours.
2) There were a total of 135 reported crashes at the study intersections during the last 5-years, with significant crash frequency and/or severity issues relative to locations with similar characteristics at:

    a. Mystic Lake Drive (CR 83) at Eagle Creek Boulevard / Dean Lakes Boulevard
    b. Mystic Lake Drive (CR 83) at 17th Avenue / Eagle Creek Boulevard (CR 16)
    c. Mystic Lake Drive (CR 83) at Valley View Road
    d. Eagle Creek Boulevard (CR 16) at Dean Lakes Trail / Kinlock Way

    *The signalized locations are candidates for potential safety mitigation such as larger signal heads and / or signal / retroreflective backplates; at Valley View Road, a traffic signal is planned to be installed in the summer of 2024, which should mitigate the current crash trend; at Dean Lakes Trail/ Kinlock Way, a potential access modification or traffic control change could be considere*d.

3) Traffic forecasts were developed for year 2030 conditions, which represents the expected full-build out of the proposed development. Forecasts were developed for both year 2030 no build and build conditions, with the build condition including the proposed development. Details include:
   a. Adjacent developments were identified that have been approved or are expected to be partially constructed and/or completed by the year 2030 (i.e., Summerland Place, Shakopee Master Plan, Valley Crest, and Arbor Bluff).
   b. An annual growth rate of 1.5 percent was applied to the existing traffic volumes to develop year 2030 background traffic forecasts.
   c. The proposed development will generate approximately 709 a.m. peak hour (351 in / 358 out), 1,120 p.m. peak hour (546 in / 574 out), and 11,578 daily (5,789 in / 5,789 out) site trips.
   d. When accounting for trips already traveling along adjacent roadways that will use the proposed development (i.e., pass-by/diverted-link trips), the net new system trips from the proposed development is approximately 617 a.m. peak hour (305 in / 312 out), 880 p.m. peak hour (426 in / 454 out), and 9,098 daily (4,549 in / 4,549 out) trips.
4) The capacity analysis indicates that the study intersections can support the assumed adjacent and proposed developments under both year 2030 no build and build conditions, except at the 17th Avenue (CR 16) and Emblem Way / North Site Driveway under year 2030 build conditions.
   a. ***A traffic signal is recommended to improve operations at the 17th Avenue (CR 16) and Emblem Way / North Site Driveway intersection and is not expected to impact overall operations or progression at adjacent intersections; the specific implementation timeframe should be coordinated with County staff.***
   b. If operational and / or safety issues were to develop along Mystic Lake Drive (CR 83) at the East Site Driveway, an access modification would not result in the need for additional infrastructure at adjacent intersections.
5) Other site plan considerations, include:
   a. ***Provide a minimum of 2-lanes (i.e., a left- and a shared thru/right-turn lane) on both the north and south approaches of the 17th Avenue (CR 16) and Emblem Way / North Site Driveway intersection; providing dedicated left-, thru, and right-turn lanes on the north and south approaches would have additional benefits.***
   b. ***Realign Emblem Way or the proposed development driveway to ensure north-south lane continuity.***
   c. ***Locate internal roadways and driveways a minimum of 330 feet apart, including Philipp Avenue from 17th Avenue (CR 16); review internal intersections and provide appropriate internal traffic controls (i.e., stop signs) in collaboration with the City Engineer.***
   d. ***Review truck maneuverability and loading / wayfinding procedures to limit potential internal circulation conflicts and locate signage / landscaping to avoid creating any sight distance issues.***
   e. ***Provide multimodal facilities (i.e., sidewalk and / or trail) throughout the site with connectivity to existing adjacent facilities.***