

# Environmental Assessment Worksheet

Brooklyn Center Opportunity Site #1  
2500 CO and 5900 Shingle Creek Parkway  
Brooklyn Center, Minnesota

*Prepared For*

**Alatus, LLC**

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# Environmental Assessment Worksheet

September 2021 version

**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

Brooklyn Center Opportunity Site #1

## 2. Proposer

Company: Alatus, LLC  
Contact person: Chris Osmundson  
Title: Director of Development  
Address: 80 S 8th Street, Suite 4155  
City, State, ZIP: Minneapolis, MN 55402  
Phone: 612.455.0712  
Email: [cbosmundson@alatusllc.com](mailto:cbosmundson@alatusllc.com)

Contact person: Meg Beekman  
Title: Community Development Director  
Address: 6301 Shingle Creek Parkway  
City, State, ZIP: Brooklyn Center, MN 55430  
Phone: 763.569.3305  
Email: [mbeekman@ci.brooklyn-center.mn.us](mailto:mbeekman@ci.brooklyn-center.mn.us)

## 3. RGU

RGU Agency: City of Brooklyn Center

## 4. Reason for EAW Preparation:

Required:

☐ EIS Scoping

☒ **Mandatory EAW**

Discretionary:

☐ Citizen petition

☐ RGU discretion

☐ Proposer initiated

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

Mandatory EAW: Minn. Rules 4410.4300 Subp. 14 Industrial, Commercial, and Institutional Facilities; and Subp. 19 Residential Development

## 5. Project Location:

County: Hennepin

City/Township: City of Brooklyn Center

PLS Location (¼, ¼, Section, Township, Range): SE 1/4, NW 1/4, Section 2, T 118N, R 21W

Watershed (81 major watershed scale): Mississippi River- Twin Cities (20)

GPS Coordinates: 45.060 N, -93.312 W

Tax Parcel Numbers: 0211821240019; 0211821240020



**6. Project Description:**

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

The proposed project is a mixed-use site redevelopment in Brooklyn Center, Minnesota. The site would be developed with the construction of eight commercial and residential buildings; public plazas; park area; and stormwater ponds.

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

The site is currently occupied by a restaurant, impervious pavement and landscaping. The proposed project mixed-use site redevelopment in Brooklyn Center, Minnesota.

**Table 6-1-Proposed Site Construction Dimensions Site:**

<b>Building</b>	<b>Number of stories</b>	<b>GSF without parking</b>	<b>Number of units</b>	<b>Number of Parking Stalls</b>
Resurrecting Faith World Ministries (RFWM) Event Center	1 story	31100		
Alatus Market Rate	varies from 4 to 6	269300	295 units	458 stalls
Alatus Mixed Income	varies from 2 to 6	203200	215 units	334 stalls
Project for Pride in Living (PPL) Affordable Housing 1	4	74500	65 units	101 stalls
PPL Affordable Housing 2	4	74500	65 units	101 stalls
PPL Affordable Housing 3	4	74500	65 units	101 stalls
PPL Workforce Housing	4	74500	75 units	117 stalls

The proposed project would also include a plaza, underground, and aboveground parking. There would be a total of 780 units (295 market-rate units, 215 mixed income units, 270 affordable units) and 1,212 parking stalls. All buildings would include outdoor courtyards, sidewalks, and landscaping. Two stormwater ponds would be added to the east side. Site plans and architectural renderings of the proposed project are shown in Appendix A.

Physical manipulation of the environment would be necessary for removal of existing buildings/pavement. Construction would include soil excavation and grading for proposed project site preparation. New utilities would connect with the existing utilities present at and adjacent to the Site. An existing bike trail would be re-routed through the proposed project. In addition, private roads and driveways would be constructed between the buildings, and a public road would be constructed along the north side of the site.

This project does not involve permanent equipment or industrial processes. All existing facilities would be demolished, and a new mixed-use development would be constructed.

Construction timeline:

The proposed project would include the following construction activities on portions of the project site from fall of 2022 through 2025:

- RFWM Event Center October 2022
- Alatus Market-Rate November 2022
- Alatus Mixed-Income December 2022
- PPL Affordable Housing #1 Q4 2023
- PPL Workforce Housing Q4 2024
- PPL Housing #2 & #3 Q4 2025

**c. Project magnitude:**

**Table 6-2 Project Magnitude**

Total Project Acreage	Approximately 25.7 acres
Linear project length	Not applicable
Number and type of residential units	780 Units Total, 295 Market Rate Units, 215 Mixed-Income Units, 270 Affordable Units
Residential building area (in square feet)	770,500 square feet
Commercial building area (in square feet)	31,100 square feet
Industrial building area (in square feet)	Not applicable
Institutional building area (in square feet)	Not applicable
Other uses – Parking (in square feet)	318,676 square feet
Structure height(s)	1-6 stories

**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 project would be carried out by a private entity. The purpose of the project is to redevelop largely vacant parcels existing surface parking lot and existing building into a mixed-use residential and commercial development and provide needed residential housing to accommodate an increasing population in the City of Brooklyn Center.

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

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

The site would be redeveloped as the first stages of a larger area known as the Brooklyn Center Opportunity Site. The Opportunity Site is planned for redevelopment in approximately 13 separate blocks. This project represents the first component. Additional development, including a potential road on the north side and park improvements would take place as separate projects. As the future projects are not fully defined, additional environmental review will be conducted as those developments are proposed.

**f. Is this project a subsequent stage of an earlier project? ☐Yes ☒No**

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

Not applicable.

## 7. Climate Adaptation and Resilience:

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

The proposed site is located within the Mississippi River – Twin Cities watershed. The Minnesota Climate Explorer (<https://arcgis.dnr.state.mn.us/ewr/climateexplorer/main/historical>) was used to evaluate the climate trends based on this watershed. The 1895 to 2021 profile shows a wide variability of temperature and precipitation data from year to year. The overall trends are described below:

- Average daily mean temperature of 43.76 °F and an increase of 0.21 °F per decade.
- Average daily maximum temperature of 53.63 °F and an increase of 0.09 °F per decade.
- Average daily minimum temperature of 33.90 °F and an increase of 0.33 °F per decade.
- Average annual precipitation of 39.39 inches and an increase 0.33 inches per decade.

The future projected data from the Minnesota Climate Explorer was also used to evaluate the anticipated climate conditions within the Mississippi River – Twin Cities watershed during the life of the project. Thus, the mid-century (2040-2059) projections were used in this evaluation, as summarized below. This range of years is assumed at a representative concentration pathway (RCP) of 4.5 which is an intermediate scenario where emissions decline after peaking around the year 2040. The values presented below are the model mean, with the upper and lower ranges from the eight general circulation global climate models obtained from CMIP5 (Coupled Model Intercomparison Project, Phase 5 (<https://pcmdi.llnl.gov/mips/cmip5/>)):

- Average daily mean temperature of 48.98 °F with an upper range of 57.01 °F and a lower range of 36.94 °F.
- Average daily maximum temperature of 55.99 °F with an upper range of 64.41 °F and a lower range of 46.72 °F.
- Average daily minimum temperature of 42.2 °F with an upper range of 50.12 °F and a lower range of 27.02 °F.
- Average annual precipitation of 32.43 inches with an upper range of 71.95 inches and a lower range of 9.99 inches.

If future climate conditions follow the projected values, the average daily mean, maximum, and minimum temperatures are each expected to rise over the life of the project. These conditions may slightly change energy inputs for heating and cooling of the buildings. The climate models also project an increase in the average annual precipitation over the life of the project. This increase would be accounted for in the future emergency overflow plan (EOF) which would be prepared as more of the Brooklyn Center Opportunity Site are developed.

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

**Table 7-1 Climate Considerations by Resource Category**

Resource Category	Climate Considerations	Project Information	Adaptations
Project Design	<p>All buildings in this phase of construction would have solar panels as part of their design. Geothermal heat pumps are being considered for affordable housing units and VRF HVAC would be used for the remaining residential units. The proposed project would increase infiltration at the site.</p>	<p>Climate change risks and vulnerabilities identified include:</p> <ul style="list-style-type: none"> <li>• During intense rainfall events, impervious surface on a site may result in more localized flooding in the immediate area of the project, in addition to other stormwater effects, especially if vegetative buffers are absent. However, the proposed project would increase the potential for infiltration at the site by increasing green spaces.</li> </ul>	<p>The facility would utilize stormwater best management practices to effectively manage stormwater runoff including sizing stormwater ponds and systems to the expected increased levels of precipitation. The solar panels would decrease the need for other sources of electricity to the Site</p>
Land Use	<p>The site is located in an area designated as Zone X, areas of minimal to no flood risk, with a small area of the Site in a moderate flood risk area, according to the FEMA map, which is attached as Appendix B. Increased flooding associated with climate change is not anticipated to be of significant concern at the site.</p>	<p>Climate change risks and vulnerabilities identified include:</p> <ul style="list-style-type: none"> <li>• The removal of low-lying areas reduces the ability of these areas of the land to retain and absorb stormwater, leading to more intense stormwater runoff, nutrient loading, and more effects.</li> <li>• The change in weather would cause increased freeze/thaw, resulting in increased icing of roadways, trails, sidewalks, and parking lots, resulting in the need for increased salting. Chlorides degrade lake water quality and impact aquatic life. Chlorides also degrade soil and can kill landscape plantings.</li> </ul>	<p>The facility would utilize stormwater best management practices to effectively manage stormwater runoff and road salting best management practices to minimize salt usage.</p>

Resource Category	Climate Considerations	Project Information	Adaptations
Water Resources	Addressed in item 12	Addressed in item 12	Addressed in item 12
Contamination/ Hazardous Materials/Wastes	No hazardous waste is expected to be generated during construction. Any hazardous or universal waste generated would be stored indoors in marked containers, in accordance with all applicable laws, and disposed of at facilities licensed to accept such wastes. Changes to climate patterns would not pose any concerns related to storage of hazardous materials or wastes at the site.	No climate change risks and vulnerabilities identified.	N/A
Fish, wildlife, plant communities, and sensitive ecological resources (rare features)	Addressed in item 14	Addressed in item 14.	Addressed in item 14.

#### 8. Cover Types:

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

**Table 8-1 Cover Types**

Cover types	Before (Acres)	After (Acres)
Wetlands and shallow lakes (<2 meters deep)	0	0
Deep lakes (>2 meters deep)	0	0
Rivers/streams	0	0
Wooded/forest	0	0
Brush/Grassland	0	0
Cropland	0	0
Lawn/landscaping	2.92	7.62
Green infrastructure (from table 8-2 below)	N/A	N/A
Impervious surface	16.53	10.88
Stormwater (wet) Pond	0	0.95
Other (describe)	N/A	N/A

Cover types	Before (Acres)	After (Acres)
<b>TOTAL</b>	<b>19.45</b>	<b>19.45</b>

**Table 8-2 Green Infrastructure**

Green Infrastructure	Before (Acres)	After (Acres)
Constructed infiltration systems (infiltration basins, infiltration trenches, rainwater gardens, bioretention areas without underdrains, swales with impermeable check dams)	0	N/A
Constructed tree trenches and tree boxes	N/A	N/A
Constructed wetlands	N/A	N/A
Constructed green roofs	N/A	N/A
Constructed permeable pavements	N/A	N/A
Other	N/A	N/A
<b>TOTAL (add to table 8-1 above)</b>	<b>0</b>	<b>N/A</b>

**Table 8-3 Trees**

Trees	Percent	Number
Percent tree canopy removed, or number of mature trees removed during development	N/A	N/A
Number of new trees planted	N/A	N/A

**9. Permits and Approvals Required:**

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

**Table 9-1 Permits and Approvals**

Unit of Government	Type of Application	Status
<b>State</b>		
<b>Economic Development Authority</b>	Tax Increment Financing, Purchase and Redevelopment Agreement	To be submitted
<b>Minnesota Department of Health</b>	Water Main Installation Permit	To be submitted, if needed
	Drainage Permit	To be submitted, if needed
<b>Minnesota Pollution Control Agency</b>	NPDES/SDS Construction Stormwater Permit	To be submitted
	Construction Contingency Plan	To be submitted
	Sanitary Sewer Extension Permit	To be submitted, if needed
	Storage Tank Registration	To be submitted
<b>Minnesota Department of Natural Resources</b>	Water Appropriation Permit	To be submitted

Unit of Government	Type of Application	Status
<b>Regional</b>		
<b>Metropolitan Council</b>	Sewer Availability Charge (SAC) Determination Request	To be submitted
	Sanitary Sewer Extension Permit	To be submitted
<b>Shingle Creek Watershed District</b>	Stormwater	To be submitted
<b>Local</b>		
<b>City of Brooklyn Center</b>	Preliminary Concept Approval	To be submitted
	Planned Unit Development (PUD) Rezoning	To be submitted
	Community Benefit Agreements	To be submitted
	Purchase and Redevelopment Agreement	To be submitted
	Building Permits	To be submitted
	Demolition Permit	To be submitted
	Emergency Generator for Fuel Storage Permit	To be submitted
	Erosion and Sedimentation Control Plan Approval and Grading Permit	To be submitted
	Stormwater Management Plan Approval	To be submitted
	EIS Need Decision (EAW Process)	In progress
	Temporary Water Discharge Permit	To be submitted, if needed
	After Hours Work Permit	To be submitted, if needed
	Utility Repair Permit	To be submitted, if needed
	Sidewalk Construction Permit	To be submitted, if needed
	Testing and Inspection Permit	To be submitted, if needed
	Remediation Permit	To be submitted, if needed
	Temporary On-Site Storage of Impact Soil Approval	To be submitted, if needed
	Approval of Impacted Soil Reuse	To be submitted, if needed
	Preliminary and Final Plat Approval	To be submitted
	Municipal Water Connection Permit	To be submitted
	Sanitary Sewer Connection Permit	To be submitted

**Table 9-2 Financial Assistance**

Unit of Government	Type of Financial Assistance	Status
<b>City of Brooklyn Center, Economic Development Authority</b>	Tax Increment Financing	To be submitted
	Installation of utilities	To be complete

## 10. Land Use:

### a. Describe:

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

According to the *Brooklyn Center Official Zoning Map* the Site is zoned for commercial use and currently consists of parking lots with several landscaped islands and a small commercial building. The existing building is currently occupied by the Ocean Buffet restaurant. The Site is bound by Shingle Creek Parkway to the west and Bass Lake Road (County Road 10) to the south.

Land use in the surrounding area is mixed, and includes Centennial Park, municipal buildings, commercial development, single family homes and multi-family residential complexes.

The Shingle Creek Regional Trail is planned to be re-routed through along the northern edge of the proposed project Site.

There are no prime or unique farmlands or cemeteries on or near the Site.

- 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 Site is part of Brooklyn Center's core, which is described as the "Center City" in the *Brooklyn Center Comprehensive Plan Update 2040 (2040 Plan Update)*. The Center City area also includes the location of the former Brookdale Mall and has been a focus of continued study by the city as they have explored redevelopment options for the existing vacant and underdeveloped parcels present. The Site is currently zoned for commercial use but new land use designations for the Center City, including the Site and the planned 80-acre area around the Site, are discussed in the *2040 Plan Update* (Chapter 3- Land Use and Redevelopment) to encourage mixed-use and transit-oriented development in particular locations within the city.

Increases in mixed-use and transit-oriented development that include housing are key land use changes discussed in the *2040 Plan Update*. These changes in land use, particularly along major transportation routes through the city are important steps toward the city meeting current market trends for urban development. Additionally, these proposed land use changes would provide increased housing stock, and economic development to under-utilized areas of Brooklyn Center. Additional housing, increased employment opportunities and economic development are all vital to Brooklyn Center's future growth and were also reflected in community input to the *2040 Plan Update*.

Additionally, these proposed changes in land use are consistent with recommendations provided to the city from the Metropolitan (Met) Council for the *2040 Plan Update*. The Met Council recommended that redevelopment or new development within the city occur around key transportation corridors or where investments in regional transit systems are known. Since the Site is near both Highway 100 and the Brooklyn Center Transit Center (which is now connected to the Bus Rapid Transit C-Line route to and from Minneapolis and



would be connected to the planned D-Line route in the future), it is well positioned for a mixed-used development like the proposed project.

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

According to Federal Emergency Management Agency (FEMA) flood maps (Appendix B), the site is zoned X, with a small area of the western portion of the Site located within the Shingle Creek floodplain (located west of the Site across Shingle Creek Parkway). This location is mapped as an area of moderate flood hazard by FEMA with the potential for flooding to occur between the limits of 100 and 500-year flood events. Since Shingle Creek has been deeply channelized near the Site to manage regional stormwater flow, flooding is not anticipated to be a significant concern for the proposed project.

The current city zoning for the Site is Planned Unit Development/Commerce.

The Site is not located within a shoreland, wild and scenic river, critical area or agricultural preserve.

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

No critical facilities would be located in floodplain areas.

**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 project's mixed-use development which includes a significant number of residential units is not compatible with the Site's current zoning for commercial use. (Appendix C) The area would need to be re-zoned. This process is listed in the permits required in Table 9-1 above.

Land use surrounding the Site is currently mixed and the proposed project would complement the surrounding development, since the Site has been primarily vacant land over the past decade. The proposed project would benefit the project site by decreasing the amount of existing impervious surface. The comprehensive plan outlines the area as a transit-oriented development which may encourage future development.

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

As discussed in the *2040 Plan Update*, seven new zoning districts would be created for Brooklyn Center to allow for transit-oriented development and new mixed-use (neighborhood, commercial and business mixed-use designations would be included) within the city. The new zoning districts would be applied to areas in the city where there is potential for redevelopment or new mixed-use development, such as the Center City parcels (including the Site). The new zoning is waiting approval by the City Council, and once approved would then be written into

code. The Site would be appropriately zoned, and the proposed project would meet all applicable land use regulations.

#### **11. Geology, Soils, and Topography/Land Forms:**

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

The unconsolidated sediments within the Site vicinity are late Pleistocene age terrace deposits which consist of fine to coarse grained sand and gravel. These terrace deposits typically contain scattered organic sediments and coarsen with depth. These sediments are associated with meltwater from glacial River Warren and the ancestral Crow and Mississippi Rivers (Steenberg et. al 2018). The surficial geology is shown in Figure 7.

The depth to bedrock within the Site vicinity is estimated to be between 50-100 feet below ground surface. The uppermost bedrock units within the vicinity of the Project Area are the Ordovician period St. Peter Sandstone, and the Shakopee Formation of the Prairie du Chien group (Steenberg et. al 2018). The bedrock geology is shown on Figure 8.

The St. Peter Sandstone is a white to tan fine to medium grained, friable quartzose sandstone typically without structures or bedding in the upper 110 to 140 feet of its deposits. The lower most 20-40 feet of its deposits include white, gray, red and green feldspathic shale and siltstone interbedded with coarser grained sandstone. Deposits of the St. Peter vary from 150-175 feet in thickness. The Shakopee Formation is a light brown to red-brown, thin to medium bedded dolostone, sandy dolostone, sandstone and shale. It commonly contains oolites, intraclasts, microbial mounds, chert nodules, quartz sandstone and green-gray shale partings. The Shakopee Formation averages 40 feet in thickness where it is present (Steenberg et. al 2018).

No sinkholes or karst conditions are known to be present on the Site. According to the Phase II ESA by Braun Intertec in 2019 (Appendix I), a shallow water table on the site ranges from approximately 7 to 15 feet below ground surface and is representative of the regional water table aquifer at the Site. The water table aquifer is not a significant source of groundwater within Hennepin County.

Since the proposed project involves redevelopment of a previously developed parcel, the construction of new buildings, roads, parking lots, stormwater basins and utility infrastructure are not anticipated to adversely affect the geologic conditions at the Site.

- 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.

According to the USDA-NRCS Web Soil Survey, the soil at the proposed project area consists of the following classifications (Figure 6):

**Table 11-1 USDA-NRCS Soil Types**

Map Unit Symbol	Map Unit Name	% of Project Area
U1A	Urban land-Udorthents, wet substratum complex, 0 to 2 percent slopes	12%
U4A	Urban land-Udipsamments (cut and fill land) complex, 0 to 2 percent slopes	88%

The urban fill soils at the Site are classified as well drained to excessively drained and little additional information on the physical properties of the two mapped soil units was available from the USDA-NRCS Web Soil Survey.

No limitations or construction suitability concerns of the Site's soil are currently known. If any soil is of limited use for construction purposes, implementation of additional engineering practices may be necessary to achieve the proposed project's goals. If any soil is deemed to be completely unsuitable for the proposed project's construction, it may be excavated and replaced with suitable imported fill material. The earthwork contractor would be responsible for the reuse or export of any excess soil generated during construction.

The topography of the Site is relatively level with a gentle slope to the west towards Shingle Creek Parkway. Elevations at the Site range from approximately 845 to 850 feet above mean sea level.

## **12. Water Resources:**

- a. **Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.**
- i. **Surface water** - lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, shoreland classification and floodway/flood fringe location, 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.

No lakes, streams, wetlands, or intermittent channels are located on or directly adjacent to the Site (Figure 9). Shingle Creek (County Ditch 13) is located approximately 150 to 200 feet

west of the Site. Shingle Creek is identified as a Minnesota Department of Natural Resources (DNR) Public Water – inventory number M-058. It is identified as an Impaired Water (07010206-506) for aquatic life and aquatic recreation. Numerous wetlands are present along Shingle Creek, particularly in Centennial Park to the north of the Site and within Lions Park located south of Highway 100 (Figure 9).

Upper Twin Lake is the only other natural waterbody within 1 mile of the Site and is also a Minnesota DNR Public Water – inventory number 27004201. Upper Twin Lake is identified as an Impaired Water (27-0042-01) for fish consumption and aquatic recreation.

Several additional wetlands and small ponds are mapped as excavated basins within 1 mile of the Site by the National Wetlands Inventory (NWI). These wetlands and ponds are primarily located along Highway 100 and Interstate 94. Given their locations and that they are mapped as excavated, these wetlands and ponds were presumably created as stormwater management features for the highways.

- 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.**

According to the 2019 Phase II Environmental Site Assessment completed by Braun Intertec, the depth to groundwater at the Site ranges from approximately 7 to 15 feet below ground surface and is representative of the regional water table aquifer at the Site. The water table aquifer is not a significant source of groundwater within Hennepin County. The deeper Prairie du Chien – Jordan Aquifer is the most heavily used aquifer for public water supply within the Site vicinity and in Hennepin County (Kanivetsky, 1989).

The Site is located within the Minnesota Department of Health (MDH) wellhead protection area and specifically in the Brooklyn Center Drinking Water Supply Management Area (DWSMA). The Brooklyn Center DWSMA is listed as moderately vulnerable to groundwater contamination.

Based on a review of the MDH Minnesota Well Index (MWI), one well was identified on the Site and a second well is mapped within a quarter mile of the Site. According to MWI well records, well #203424 is located approximately a quarter mile southwest of the Site and was sealed on September 2, 2011. Well #203425 is located in the southeast portion of the Site and was associated with the former Brookdale Ford dealership. This well is listed as active in the MWI well record. Additional details of both wells 203424 and 203425 are listed in the table below.

**Table 12-1 Wells**

Unique ID	Well Name	Depth (ft)	Aquifer	Listed Use	Date
203424	Brookdale Shopping Center	192	St. Peter- Prairie Du Chien	Domestic	09/02/2011 (sealed)
203425	Brookdale Ford	150	St. Peter- Prairie Du Chien	Commercial	06/22/1964 (completed)

- 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.**

Estimates for wastewater flow from the proposed project are listed below

The estimated wastewater flow for the proposed project is 176,569 gallons per day (GPD). The usage is based on the Metropolitan Council 2022 Sewer Availability Charge (SAC) Procedure Manual. According to the *Brooklyn Center Comprehensive Plan Update 2040*, the existing sewer main connected to the Site along with downstream sanitary sewer have sufficient capacity for the proposed project and anticipated 2040 sewer flow rates. The proposed project's estimated wastewater flow is based on the following calculations:

- 780 residential units at 274 gallons per unit per day (with 20% discount for units without in-unit laundry) = 170,976 GPD
- 77,563 square feet of commercial/retail space at 274 gallons per day 3,800 square foot per day = 5,593 GPD
- Estimated total = 176,569 GPD

The Site discharges to the City of Brooklyn Center wastewater collection system, which is connected to the Metropolitan Council Metropolitan Wastewater Treatment Plant in St. Paul, Minnesota. According to the Metropolitan Council Environmental Services Plant Inflow Summary Report for the 12-month period ending November 2020, the Metro wastewater treatment plant handles approximately 176 million gallons per day (GPD) and can handle up to 314 million GPD. The treatment plant would not need additions or improvements to treat the estimated wastewater flow for the proposed project, which would be an additional 176,569 (0.17 million GPD).

- 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.**

No STS is present on the Site or planned for the proposed project.

- 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.**

No wastewater from the proposed project would be discharged to surface water.

- ii. Stormwater – Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the 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 (BMPs) to address 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.**

Pre-construction stormwater drainage on the Site occurs via overland flow, primarily to the west-southwest following topography toward storm drains along the existing parking lot perimeter. These storm drains flow to a municipal storm sewer system. There are no current stormwater best management practices (BMPs) located within the Site. Runoff from the Site likely contains pollutants associated with the current land use which is primarily parking lots. These pollutants include but are not limited to road salts, sediment, oil, grease, heavy metals, and chemicals from motor vehicles. Runoff captured by the municipal stormwater system drains untreated to Shingle Creek and eventually to the Mississippi River.

Post-construction, BMPs, such as stormwater ponds and landscaped areas, would be implemented as applicable at the Site to manage and treat stormwater runoff generated. Using these BMPs, stormwater runoff leaving the Site would meet the applicable Minnesota Pollution Control Agency (MPCA) and local treatment requirements, including requirements for sizes of stormwater pond, basin design requirements, and decreasing runoff from rain events. Other features of the proposed project that would also serve as stormwater BMPs include multiple stormwater retention ponds along the eastern portion of the Site and decreasing impervious surfaces on the Site.

Since the proposed project would involve disturbance of more than one acre of land (15 acres), a Stormwater Pollution Prevention Plan (SWPPP) and an MPCA administered National Pollutant Discharge Elimination System (NPDES) permit is required. The proposed project would be required to provide both temporary and permanent erosion and sediment control as required by MPCA's stormwater construction general permit. Temporary and

permanent erosion and sediment control measures may include rock entrances, silt fence, wood chip logs, inlet protection, rock check dams, temporary seeding and mulching, erosion control blankets for disturbed areas, filtration treatment devices, and seeding or placement of sod or other vegetative material for final stabilization.

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

The estimated water usage for the proposed project is 194,226 gallons per day (GPD). This estimate is based on water consumption is approximately 110 percent of estimated wastewater generation. Please see Section 11.b.i.1 for a discussion on the estimated wastewater generation for the proposed project. It is assumed the existing water main connected to the Site has sufficient capacity for the proposed project.

The well on site would be abandoned by a licensed contractor and would be reported to MDH as an unactive/sealed well.

The Site is connected to Brooklyn Center's water supply that is drawn from the Prairie du Chien – Jordan Aquifer through nine municipal groundwater wells. The City has a 7 million GPD water treatment facility with a peak capacity of 10 million GPD. Based on this information, Brooklyn Center would not need additional capacity or improvements to supply the estimated water demand for the proposed project.

Once complete, permanent dewatering is not anticipated for the proposed project and would not cause environmental impact. After construction, permanent dewatering and water appropriation is not anticipated to be necessary.

Temporary dewatering during construction is not anticipated but may be required for deeper excavations or in the event of extreme rainfall. If required, a Minnesota Department of Natural Resources temporary dewatering water appropriations permit would be obtained and discharge would comply with NPDES, state and City permit requirements.

**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. 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.**

No wetlands are present on or adjacent to the Site (Figure 9). No impacts to wetlands or wetland features are anticipated for the proposed project. The closest surface water is Shingle Creek across Shingle Creek Parkway, which is not anticipated to be impacted by the project.

- 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. 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.**

No physical alterations or effects to existing surface waters are anticipated from the proposed project.

**13. 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) "What's in My Neighborhood" (WIMN) online database was reviewed to determine if any existing contamination or potential environmental hazards exist on or near the Site. The former Brookdale Ford dealership is mapped in the southeast portion of the Site and is listed for multiple MPCA programs. The MPCA program listings include one Voluntary Investigation and Clean Up (VIC) entry (VP24140), two Petroleum Remediation Leak Site entries (LS0011810, LS0017135) and one Tank Site entry (TS0001557). Numerous other sites within a quarter mile were identified in the WIMN database, the majority



of which are businesses with hazardous waste generator permits or various construction stormwater permit sites.

Several environmental investigations have been completed at the Site, primarily involving the former Brookdale Ford dealership. A Phase I Environmental Site Assessment (ESA) was prepared for the Site by Braun Intertec dated April 22, 2019 (2019 Phase I ESA). The 2019 Phase I ESA also included review of additional parcels within the opportunity site.

The historical information reviewed indicates the Site was first developed by 1937 as a farmstead with cultivated crop land or pastures. By 1964 the buildings of the former Brookdale Ford dealership had been constructed and by 1972 the last farmstead buildings were removed. Brookdale Ford consisted of two buildings that were used for vehicle sales and service. Lifts, underground storage tanks, and aboveground storage tanks were associated with the dealership. The existing Ocean Buffet restaurant building was constructed on the Site by 1984. The Brookdale Ford buildings were demolished by 2018 and the majority of the Site has since been used as a parking lot.

The 2019 Phase I ESA identified the following recognized environmental conditions (RECs) in connection with the Site:

- Part of the Site was developed by 1964 with an automobile dealership, Brookdale Ford, that consisted of two buildings that were used for vehicle sales and service. Lifts, underground storage tanks, and aboveground storage tanks were associated with this development. Based on previous investigations, contamination remains in association with those activities. The presence of the documented contamination and the potential for contamination resulting from the past uses of the Site represents a potential that soil, groundwater, and or soil vapor contamination may be present. This potential represents a recognized environmental condition.
- The regulatory information suggests that contamination has been identified or is suspected at facilities located in the vicinity of the Site. Although it appears that some of these surrounding sites have been remediated and/or redeveloped in accordance with the oversight and approval of the MPCA, there is a potential that these sites, or past unreported releases from the historical uses of the surrounding area, may have caused soil, groundwater and/or soil vapor impacts at the Site. This potential represents a recognized environmental condition.

Based on the results of the 2019 Phase I ESA, a Phase II ESA was completed at the Site by Braun Intertec (2019 Phase II ESA). The objective of the Phase II ESA was to characterize Site soil, groundwater and soil vapor to identify environmental issues that could potentially affect future land use. The investigation focused on delineating previously identified contamination and investigating previously unassessed areas of the Site. Like the Phase I, the 2019 Phase II ESA also included investigation of additional parcels within the opportunity site.

Fill soils were encountered during the 2019 Phase II ESA from the ground surface to the terminal depths of all the borings, which ranged from 12 to 20 feet. The fill soils generally consisted of poorly graded sand and poorly graded sand with silt, clay, and/or gravel. Groundwater was encountered at depths of 7 to 15 feet below ground surface (bgs) across the Site. Various debris,

including concrete, brick, bituminous, plastic and wood fragments was observed in the upper 7 feet of soil within several borings in the northern portion of the Site.

Analytical results of soil samples collected during the 2019 Phase II ESA did not identify impacts above MPCA action levels. Except for the soil boring locations where debris observed in the northern portion of the Site, the soils characterized by the 2019 Phase II ESA meet the MPCA definition of unregulated fill and may be reused on-Site or at off-Site properties.

Groundwater sample analytical results from the 2019 Phase II ESA did not identify impacts greater than MDH drinking water criteria. However, based on the results of previous environmental investigations at the Site, groundwater impacts are present in the vicinity of the former Brookdale Ford Dealership (southeast portion of the Site).

Laboratory analysis of soil vapor samples collected during the 2019 Phase II ESA did not identify Volatile Organic Compounds (VOCs) at concentrations greater than the MPCA action levels that would require vapor mitigation (33X Intrusion Screening Values (ISVs)) for the proposed development. However, based on the detection of benzene, ethylbenzene, and tetrachloroethene (PCE) at concentrations greater than MPCA ISVs, as well as the previously identified soil vapor impacts at the former Brookdale Ford Dealership, additional soil vapor sampling was conducted in March 2020 (2020 Heating Season Soil Vapor Sampling Report). No VOCs were detected at concentrations greater than 33X their respective ISVs in the soil vapor samples collected during the March 2020 Soil Vapor Sampling. Based on the soil vapor sample results from the 2019 Phase II ESA and the March 2020 Soil Vapor Sampling, vapor intrusion is not a concern at the Site and vapor mitigation would not be required for the proposed development.

Both the debris containing soils identified in the northern portion of the Site and known contaminated groundwater associated with the former Brookdale Ford dealership may be encountered during construction of the proposed project. A Construction Contingency Plan (CCP) would be prepared for the proposed project and submitted for review and approval by MPCA Voluntary Investigation Cleanup (VIC) and Petroleum Brownfields (PB) Programs. The CCP would outline methods for segregating and handling unexpected or unknown contaminated media (soil, groundwater etc.) during construction.

A Limited Hazardous Building Materials Inspection (2019 Hazardous Building Materials Inspection) of the Ocean Buffet restaurant building was completed concurrently with the 2019 Phase I ESA in April 2019. The 2019 Hazardous Building Materials Inspection identified 17 materials found or assumed to contain asbestos including mirror mastic and adhesives, floor and wall tile grout and adhesives, carpet adhesives, foundation waterproofing and roofing materials. No lead-based paint was found on any of the surfaces tested within the restaurant building.

Other regulated wastes identified in the restaurant building include fluorescent lights, batteries, electronics (TVs, computers, monitors, microwaves etc.), printer inks, a water heater, refrigerators, freezers and HVAC units. Mercury containing components were also identified in the building's heating and electrical systems. Additionally, the refrigerants used in the HVAC system, refrigerators, freezers and walk in cooler are assumed to contain chlorofluorocarbons (CFCs) and/or hydrochlorofluorocarbons (HFCs).

Section 12.d. discusses how these materials would be handled and disposed of prior to demolition of the restaurant building for construction of the proposed project.

- 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.**

Typical construction wastes from the project, such as concrete, bituminous, drywall, wood, metal, and plastic sheeting, etc., would result from construction of the buildings and associated facilities. The construction contractor would have a waste minimization and recycling program to reduce the volume of solid waste, including segregating and recycling concrete. Waste produced during construction would be disposed of by a licensed waste hauler at an appropriate facility.

Mixed municipal waste and recyclable waste, typical of commercial and residential properties, would be generated by the proposed project once construction is complete. The waste would be handled by an appropriately-licensed waste hauler and would be disposed of in accordance with applicable regulations. It is anticipated that the mixed municipal wastes would be hauled to the Hennepin County Waste Incinerator in Minneapolis and recyclable materials would be separated at disposal and hauled to an appropriately licensed facility.

- c. Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any new above or below ground tanks to store petroleum or other materials. Indicate the number, location, size and age of existing tanks on the property that will be utilized in the project. 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.**

Hazardous waste is not currently generated on the Site. Toxic or hazardous materials would not be present at the construction site, except for construction materials such as paint and adhesives and fuel and lubricants as necessary for the construction equipment used on the proposed project. Cleaning solutions and synthetic oils/lubricants may be used during project construction and as part of Site operations and would be stored in marked containers in accordance with all applicable laws. All required spill kits and containment materials would be present during work activities and easily accessible if needed. Any hazardous materials generated by the contractor during construction would be disposed of by the contractor at facilities licensed to dispose of such wastes. If a spill were to occur during construction, the Minnesota Duty Officer would be contacted and appropriate action to remediate would be taken immediately in accordance with MPCA guidelines and regulations in place at the time of project construction.

Following construction, the use of chemicals/hazardous materials is expected to be limited. Types, quantities, and composition of chemicals/hazardous materials would be typical of residential and non-machine commercial activities. These chemicals and materials would be labeled, stored, and disposed of in accordance with applicable regulations.

No below ground storage tanks would be present once the project is complete. A small above ground fuel tank would be present to power an emergency generator for the development once the project is complete. The generator and associated fuel tank would be installed with a secondary containment system to prevent leaks. The generator and fuel tank would also be registered and inspected regularly in accordance with all applicable MPCA and local regulations.

- 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.**

Hazardous materials present within the Ocean Buffet restaurant including all asbestos containing materials would be removed by a licensed abatement contractor prior to demolition of the restaurant building. The abatement contractor would be responsible for removing and disposing of the materials in a manner that meets state and federal regulations. Asbestos containing materials would be sealed in plastic sheeting or barrels after removal and transported for disposal at an appropriate land fill licensed to accept this type of hazardous waste. Other regulated wastes present inside the restaurant building (ballast lights, appliances, electronics, grease etc.) would be disposed of by the project contractor at facilities licensed to dispose of such wastes.

Following construction, the proposed project is not anticipated to generate hazardous waste but would generate universal waste such as spent fluorescent lamps and bulbs. These materials would be labelled, stored and disposed of in accordance with applicable regulations.

**14. Fish, Wildlife, Plant communities, and Sensitive Ecological Resources (rare features):**

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

The Site is located across Shingle Creek Parkway to the east of the Site and approximately 1.2 miles west of the Mississippi River and the Mississippi River Corridor Critical Area. The existing Site provides little or no habitat value for fish and wildlife. Nearly the entire surface area is paved and/or impervious in an urban environment. A few landscaped islands with turf grasses and trees are present. However, these small, vegetated areas contain no native plant communities or rare ecological features.

- b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-997) and/or correspondence number (ERDB \_\_\_\_\_) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.**

A review of the Minnesota DNR Natural Heritage Inventory System was conducted per license agreement LA-997 within three radial miles of the Site. The database includes the known Element Occurrence Records (EOR) of any rare natural feature or state endangered, threatened,

or special concern species. The review identified EORs that have been documented within three miles of the Site. Also, the US Fish & Wildlife Service database Information for Planning and Conservation (IPaC) was queried for federally listed species and critical habitat (January 5, 2022; Consultation Code 03E19000-2022-SLI-1194; Event 03E19000-2022-E-04048). The IPaC report is attached as Appendix D.

Results of both reviews include the following:

**Table 14-1 State and Federal Species or Rare Features within 3 miles of the Site**

<b>Species or Rare Feature</b>	<b>Status</b>	<b>Habitat</b>
Autumn Fimbry ( <i>Fimbristylis autumnalis</i> )	State Special Concern	Wet meadows underlain by primarily sandy soils with a thin peat layer, lakeshores
Beach Heather ( <i>Hudsonia tomentosa</i> )	State Threatened	Sand dunes, upland prairie and savanna
Black Sandshell- mussel ( <i>Ligumia recta</i> )	State Special Concern	Medium to large rivers and streams
Blanding's turtle ( <i>Emydoidea blandingii</i> )	State Threatened	Wetland complexes and adjacent sandy uplands.
Colonial Waterbird Nesting Area	Rare natural feature	Island with sand dunes along the Mississippi River
Fawnsfoot- mussel ( <i>Truncilla donaciformis</i> )	State Threatened	Large rivers
Ghost Tiger Beetle ( <i>Cicindela lepida</i> )	State Threatened	Savanna, typically on sand dunes
Lance-leaf Violet ( <i>Viola lanceolata</i> var. <i>Lanceolata</i> )	State Threatened	Wet meadows with sandy substrates, lake shores
Least Darter ( <i>Etheostoma microperca</i> )	State Special Concern	Small rivers and streams, lakes
Marginated Rush ( <i>Juncus marginatus</i> )	State Endangered	Shallow wetlands in the Anoka Sandplains
Monarch Butterfly ( <i>Danaus plexippus</i> )	Federal Candidate	Fields and parks where native plants are common
Northern Long-eared Bat ( <i>Myotis septentrionalis</i> )	Federal Threatened; State Special Concern	Overwintering hibernacula in caves and mines; summer roosts in trees with loose bark and cavities.
Peregrine Falcon ( <i>Falco peregrinus</i> )	State Special Concern	Cliffs and tall buildings
Plains Hog-nosed Snake ( <i>Heterodon nasicus</i> )	State Special Concern	Upland prairie and savanna
Rusty-patched Bumble Bee ( <i>Bombus affinis</i> )	Federal Endangered	Variety of native herbaceous and woody plant species and urban gardens that provide floral resources April through

Species or Rare Feature	Status	Habitat
		October. It nests and winters underground.
Seaside Three-awn ( <i>Aristida tuberculosa</i> )	State Threatened	Upland prairie and savanna
Tall Nutrush ( <i>Scleria triglomerata</i> )	State Endangered	Sand dunes, upland prairie and savanna
Twisted Yellow-eyed Grass ( <i>Xyris torta</i> )	State Endangered	Wet Meadow
Water-willow ( <i>Decodon verticillatus</i> var. <i>laevigatus</i> )	State Special Concern	Boggy or marshy margins of lakes, slow moving streams and wetlands.

The IPaC report also listed several species of migratory birds that are “Birds of Conservation Concern,” but that list is neither a comprehensive list of migratory birds that may occur in the area nor does it include all birds protected under the Migratory Bird Treaty Act. The IPaC report identified no areas of federally designated critical habitat within the Site vicinity.

- c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project including how current Minnesota climate change 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.**

Since the existing Site consists of paved/bituminous parking lots, it has little value as a habitat for fish and wildlife, native ecosystems or plant communities. Development of the Site is not anticipated to adversely affect the rare and protected species identified in federal and state databases. The Site is not within a township containing known hibernacula or roosting sites of Northern long-eared bats, and suitable habitat is absent from the Site. The few trees present at the Site may provide potential nesting habitat for migratory birds.

The listed species of fish and mussels are aquatic and occur only in the Mississippi River or small lakes within the Site vicinity, neither of which would be affected by the proposed project. Peregrine falcon roosts are present in nearby downtown Minneapolis and the species coexists with features of the urban landscape. Additionally, grassland, prairie or savanna habitat is not present at the Site. No adverse effects to any of the listed plants, aquatic species, Ghost Tiger beetle, Plains Hog-nosed snake or Peregrine falcons would occur from the proposed project.

According to the U.S. Fish and Wildlife Service (USFWS), the Site is located within a high potential zone for the Rusty Patched Bumble Bee (RPBB). Despite this location, suitable RPBB foraging habitat (abundant floral resources that bloom throughout the growing season) is not present at the Site. Overwintering/nesting habitat (dense wooded cover with abundant leaf litter and/or undisturbed soils) for the bee is also absent from the Site. Subsequently, no impacts to Rusty Patched bumble bees are anticipated from the proposed project.

A separate RPBB habitat evaluation of the Site was completed following the steps outlined in the USFWS Endangered Species Action Section 7(a)(2) guidance document for the RPBB. The Xerces Society RPBB Assessment Form & Guide was used to define the specific parameters to evaluate. The RPBB habitat evaluation is attached as Appendix E.

There is little risk for the introduction and spread of invasive species from the proposed project. Project plans are for construction of buildings, impervious surfaces and landscaped areas. The landscaping would be planted with native or naturalized plant species and managed to control establishment and growth of invasive vegetation.

**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.**

Based on recommendations from guidance documents from the USFWS including the Migratory Bird Treaty Act and *Conservation Management Guidelines for the Rusty Patched Bumble Bee* (USFWS 2018) the following conservation measures would be implemented with the proposed project:

- Conduct vegetation and tree clearing between September 1 and April 30 to avoid impacts to nesting migratory birds (nesting season is typically May to August).
- Incorporate native trees, shrubs and flowering plants in landscaping, use plants that bloom spring through fall and remove/control invasive plant species present.

These measures would allow successful construction of the proposed project while avoiding impacts to migratory birds and assist with conservation efforts for the RPBB.

**15. 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 Minnesota State Historic Preservation Office (SHPO) conducted a search of the Minnesota Archaeological Inventory and Historic Structures Inventory in addition to the National Register of Historic Places. No known historic structures, designations, districts, architectural features, archeological sites, cultural properties or artifact areas were identified at the Site by SHPO. A comment letter from SHPO is provided in Appendix F.

No adverse effects to any historic properties, archeological sites or cultural resources are anticipated from the proposed project.

**16. Visual:**

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

The project site is in an urban/suburban landscape. Land use in the surrounding area is mixed, and includes Centennial Park, municipal buildings, commercial development, single family homes and multi-family residential complexes. Roads border three sides of the site, including Highway 100, Bass Lake Road, and Shingle Creek Parkway. There are no unique scenic views or vistas near the project site.

The proposed redevelopment project would enhance the visual features and aesthetics of the site and surrounding neighborhood. The proposed buildings would provide a modern design that would include open space and landscaping, in contrast with the current appearance that is mostly paved and vacant land. The proposed project would also increase shading in the surrounding area.

The proposed buildings would be 65 ft high, which is taller than the single existing structure. The buildings would be visible from more distant vantage points than the current structure. There are taller buildings present in and around the Earle Brown Center to the north.

There would be no unusual plumes, lighting or glares from the proposed development. All exterior lighting would be provided for safety and security in a manner consistent with other structures in the area.

#### **17. Air:**

- a. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. 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.**

There are minimal stationary sources of emissions associated with the proposed project and they are typical of other mixed-use developments. There is no anticipated effect on air quality in the area from stationary source air emissions associated with the proposed project.

Design of the heating and cooling systems for the proposed project is not yet finalized, but the anticipated system is a Variable Refrigerant Flow System. This is not a fuel-fired system and therefore there are no air emissions generated by the equipment itself. The system uses a refrigerant. Refrigerants are greenhouse gases, but the system would be designed, installed, and maintained according to American Society of Heating, Refrigerating, and Air-Condition Engineers standards to prevent releases of refrigerant to the atmosphere.

The proposed project would have an emergency generator. Emissions from the generator would be infrequent as the generator is designed to provide backup power. Emissions from the generator include small amounts of criteria pollutants, hazardous air pollutants, and greenhouse gases. Based on the magnitude of emissions from this type of equipment, minimal effect on air quality in the area is expected. Impacts from the generator can be minimized through best practices such as venting emissions upwards, sizing the generator to the appropriate load, and maintaining the generator according to the manufacturer's recommendations.



Other stationary sources or air emissions are very small and include air emissions from fuel use for the production of hot water or food preparation, routine housekeeping, janitorial activities, and fugitive dust from paved roads and parking lots.

- 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.**

As described further under item 20, there would be some increase in traffic as a result of the project which would result in an increase in the type of air pollution generated by vehicle exhaust. These air pollutants include carbon monoxide, nitrogen oxides, volatile organic compounds, particulate matter, greenhouse gases, and air toxics; however, the project would not substantially worsen traffic conditions and therefore a significant decrease in air quality is not expected.

Additional air pollution from the project's traffic generation can be minimized by the mitigation measures identified in item 18 that would promote efficient flow of traffic in the area.

- 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 16a). 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.**

The construction of the proposed project would generate dust. Construction is anticipated to last approximately three years. Fugitive dust is expected from the handling of soils or other silt-containing or dusty material, including activities associated with demolition and debris removal, site preparation, construction, and wind erosion of storage piles. Fugitive dust is also expected from resuspension of loose material on both paved and unpaved roads from construction vehicle traffic. The amount of fugitive dust generated would vary by the type of construction activity, the level of activity, and the prevailing meteorological conditions. Effects on air quality from fugitive dust generated from construction activities would be temporary and localized. Fugitive dust from construction would be minimized with water application as necessary and other best practices to minimize dust that would be outlined in the Construction Stormwater SWPPP.

Fugitive dust associated with operation of the project is described in item 16a.

Odors associated with the construction phase of the project include diesel exhaust fumes. Minimal and temporary odors onsite during construction would include solvent and adhesives, but that are not expected to be long term or noticeable outside of the project area. No other odors are expected from the construction of the project or after the site is developed. Odor mitigation measures include minimizing equipment used on-site, minimizing idling, and maintaining engines in good repair.

## 18. Greenhouse gas (GHG) emissions/Carbon footprint

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

Table 18-1 includes a summary of the potential GHG emissions for this project. The supporting calculations are included in Appendix H.

The primary greenhouse gases emitted from the buildings include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) from the combustion of fossil fuels. A common way to report emissions of these gases is to multiply the emissions of each gas (in tons) by its global warming potential (GWP) and to report the total GHG emissions as total carbon dioxide equivalents (CO<sub>2</sub>e).

The following assumptions were made in estimating the greenhouse gas emissions from the project site buildings:

- Heating and cooling systems for all buildings would be either variable refrigerant flow (VRF) or geothermal heat pump systems
- Multifamily housing units would use only electric cooking and clothes drying appliances
- Natural gas would be used for water heating for all buildings
- The 58,453 square foot commercial building would use natural gas-fired cooking appliances
- The market rate housing building would include a diesel emergency generator engine with a rated power of approximately 2,750 horsepower, which would operate no more than 500 hours per year
- The mixed income housing building would include a diesel emergency generator engine with a rated power of approximately 2,561 horsepower, which would operate no more than 500 hours per year
- The affordable housing building would include a diesel emergency generator engine with a rated power of approximately 680 horsepower, which would operate no more than 500 hours per year

The total building GHG emissions from the project site (stationary source emissions) are estimated to be approximately 4,403 tons per year (tpy) of CO<sub>2</sub>e.

Other direct sources of emissions added under Scope 1 include:

- Land Use Change
- Mobile Sources (vehicle tailpipe emissions) from for onsite operations
- Mobile Sources for construction

Mobile source emissions associated with onsite building operations (deliveries, building maintenance, etc.) are expected to be minimal and infrequent, and have not been quantified. Vehicle trips taken by building employees, residential building occupants, and commercial building business tenant employees were determined to be out of scope of this greenhouse gas analysis and were not included.

With emissions from these sources included, the total Scope 1 GHG emissions are approximately 4,780 tpy of CO<sub>2</sub>e.

- b. Indirect Emissions include Scope 2 emissions from offsite electricity generation for electricity consumed at the facility (approximately 2,900 tpy of CO<sub>2</sub>e) and Scope 3 emissions from offsite waste management (approximately 342 tpy of CO<sub>2</sub>e). Actual electricity consumption would be dependent on the efficiency of the building heating systems, electrical fixtures, and appliances installed in the buildings. Actual types and quantities of wastes generated onsite would depend on the types of residential and commercial wastes generated and waste diversion programs implemented onsite (e.g. diversion of compostable organic materials and/or diversion of recyclable materials).

**Table 18-1. Greenhouse Gas Emissions**

**Direct Emissions (Scope 1)**

Emission Source		CO <sub>2</sub> e TPY
Facility Natural Gas Use		659
Emergency Generator Engine 1 (Market Rate Housing Building)		3,744
Emergency Generator Engine 2 (Mixed Income Housing Building)		2,615
Emergency Generator Engine 3 (Affordable Housing Building)		199
<b>Facility Total GHG Emissions</b>		<b>4,403</b>
<b>Other Scope 1 Emission Sources</b>	Mobile Sources (Onsite Operations) <sup>1</sup>	-
	Mobile Sources (Construction)	<b>377</b>
	Land-Use (Construction) <sup>2</sup>	-
<b>All Scope 1 Emissions</b>	<b>Total Direct Emissions</b>	<b>4,780</b>

<sup>1</sup> Following the completion of the construction phase, mobile source emissions associated with onsite operations (deliveries, maintenance, etc.) are expected to be minimal and infrequent, and have not been quantified.

<sup>2</sup> Carbon flux associated with land-use changes is expected to be negligible and has not been quantified. The land-use category for the site prior to construction is "settlement" and would remain categorized as "settlement" after the project is completed.

**Indirect Emissions (Scope 2 and 3)**

Scope	Emission Source	CO <sub>2</sub> e TPY
<b>Scope 2</b>	Off-Site Electricity Production	<b>2,899</b>
<b>Scope 3</b>	Off-Site Waste Management	<b>342</b>

**Atmospheric Removal of GHGs**

Scope	Emission Source	CO <sub>2</sub> e TPY
Other	Land-Use (Sinks) <sup>3</sup>	-

<sup>3</sup> Carbon flux associated with land-use changes is expected to be negligible and has not been quantified. The land-use category for the site prior to construction is "settlement" and would remain categorized as "settlement" after the project is completed.

**Total Emissions including Sinks = Direct Emissions + Indirect Emissions + Sinks**

Scope	Emission Source	CO <sub>2</sub> e TPY
Scope 1, 2, and 3	Total	8,022

**c. GHG Assessment**

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

Design of the heating and cooling systems for the proposed project is not yet finalized, but the anticipated systems include a variable refrigerant flow (VRF) system for the Market-Rate residential building and Mixed-Income residential building. Geothermal heat pump heating and cooling systems are currently being considered for affordable housing units. These are not fossil fuel-fired systems and therefore there are no greenhouse gas emissions generated by the equipment itself. The systems use refrigerants. Refrigerants are greenhouse gases, but the system would be designed, installed, and maintained according to American Society of Heating, Refrigerating, and Air-Condition Engineers standards to prevent releases of refrigerant to the atmosphere.

Onsite solar power generation would be implemented to reduce greenhouse gas emissions associated with electricity consumption at the project site.

Reduction of solid waste generation is another greenhouse emissions mitigation approach that was evaluated. For the construction phase of the project, the construction contractor would have a waste minimization and recycling program to reduce the volume of solid waste, which would in turn reduce greenhouse gas emissions associated with landfilling or incinerating this material.

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

A 2013 study to characterize multifamily building energy consumption in Minnesota found that multifamily housing building heating systems with 50 or more units use approximately 380 therms of natural gas/year per unit for space heating.<sup>1</sup> 2012 commercial buildings energy consumption data presented by the U.S. Energy Information Administration (U.S. EIA) shows that commercial buildings located in the "very cold/cold" climate region with building floorspaces of 10,001 to 100,000 square feet had natural gas consumption rates of approximately 37.4 to 44.0 cubic feet of natural gas per square foot of floorspace.<sup>2</sup>

Based on these average natural gas usage rates, the theoretical natural gas usage avoided by the non-fossil fuel heating systems for the proposed project (up to 744 residential units and up to 77,365 sq ft of commercial or institutional space) would be approximately 23.5 million cubic feet (MMcf) of natural gas per year, or approximately 1,405 tons per year (tpy) of avoided direct CO<sub>2</sub>e emissions. Some of the power required for these building heating systems would be provided by onsite solar power generation, but the remainder would be supplied by power from the electrical grid. Power generation in Minnesota comes from coal combustion (33.6%), natural gas combustion (17.0%), fuel oil combustion (0.1%), renewable energy (22.8%), and nuclear power (26.5%).<sup>3</sup> The net greenhouse gas emissions reductions associated with using non-fossil fuel building systems are dependent on the energy efficiency of the heating systems installed, the net power generation of the onsite solar panels, and the percentage of electrical grid power generation derived from renewables (wind and solar) and nuclear power vs. fossil fuels (coal, natural gas, and fuel oil).

**iii. Quantify the proposed project's predicted new 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.**

It is conservatively assumed that the project lifetime is 30 years. Over this 30-year period, the estimated greenhouse gas emissions associated with this project are approximately 241,000 tons of CO<sub>2</sub>e. As discussed earlier, this estimate includes emissions from onsite natural gas combustion, construction-phase mobile source emissions, electricity usage, and waste generation. This estimate does not include mobile source emissions associated with vehicle trips to and from the site.

Additional power requirements for building heating systems above what is generated using onsite solar panels would use electricity from the power grid. The estimated electricity usage from the building heating is included in the overall greenhouse gas emissions from offsite energy generation provided in Table 18-1 above. This estimate is expected to be slightly conservative, as it includes electricity usage estimates for building heating based on older, less-efficient electrical building heating systems. Actual electricity consumption from the heating systems would depend on the energy efficiency of the heating systems installed. As Minnesota's power generation portfolio shifts toward using more renewable power generation sources such as wind and solar, the greenhouse gas emissions from offsite power generation would continue to be reduced over the lifetime of these buildings.

According to a report published by the Minnesota Department of Labor and Industry, buildings are responsible for over 40% of energy use in Minnesota<sup>4</sup>. Installing high-efficiency building heating systems that do not rely on fossil fuel combustion is necessary in order for Minnesota to achieve greenhouse gas emissions reduction targets under the Minnesota Next Generation Act.

The proposed location of the project may also assist Minnesota in meeting greenhouse gas emissions reduction targets. The project site is uniquely located approximately 1,000 feet to the east of the Brooklyn Center Transit Station. The proximity of the project site to this transit station may enable some building occupants to use public transportation instead of single-occupancy vehicles for routine trips to and from the site, thereby reducing greenhouse gas emissions associated with these trips.

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<sup>1</sup> Energy Center of Wisconsin, "Minnesota Multifamily Rental Characterization Study," July 2013

<sup>2</sup> U.S. Energy Information Administration (US EIA), "Commercial Buildings Energy Consumption Survey, Table C30. Natural gas consumption and conditional energy intensity by climate region, 2012," May 2016  
<https://www.eia.gov/consumption/commercial/data/2012/c&e/cfm/c30.php>

<sup>3</sup> U.S. Energy Information Administration (US EIA), "Minnesota End-use energy consumption 2019, estimates,"  
<https://www.eia.gov/beta/states/states/mn/overview>

<sup>4</sup> Minnesota Department of Labor and Industry, "Improving building energy efficiency in commercial and multi-family construction," December 2020  
<https://www.dli.mn.gov/sites/default/files/pdf/BuildingsEnergyEfficiency2020.pdf>

## **19. Noise:**

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

### **Existing noise levels/sources in the area**

The Site is located in an urban area with typical noise levels and sources associated with commercial and mixed-use developments.

The Site is approximately three miles East of the Crystal Airport. Based on the noise contours prepared by the Metropolitan Airports Commission for the Crystal Airport 2035 Long Term Comprehensive Plan, the site is well outside of the 60 Day-Night Average Sound Level (DNL) contour for both the existing conditions and the 2035 Preferred Alternative Condition. The Federal Aviation Administration considers the 65 decibel (dB) DNL contour line as the threshold of significance for noise impacts.

The site is not in the vicinity of any railroads or industrial noise sources. The largest noise source is expected to be roadway noise from Bass Lake Road (County Road 10) to the South, Shingle Creek Parkway to the West, and Highway 100 to the East.

The MN Department of Transportation's (MNDOT) "flat-earth noise level estimating tool" was used to estimate noise at the residential building façade nearest to the intersection of County Road 10 and Shingle Creek Parkway, approximately 50 feet from both roadways. This location is considered the "worst-case" noise location as it is closest to both roadways. The tool was designed to estimate traffic noise levels from up to two roadways using the calculations tools from the Federal Highway Administration Stamina noise model. The tool is a screening tool and therefore provides estimates only of the potential noise impact from roadways.

Inputs into the calculator include the roads' posted speed limits and an estimate of hourly cars, medium truck, and heavy trucks. The hourly traffic count estimates were based on the most recent year of Annual Average Daily Traffic data for the road segments at the intersection of County Road 10 and Shingle Creek Parkway from MNDOT's Traffic Mapping Application. The percentage of medium and heavy trucks was estimated using the US Department of Housing and Urban Development's default assumptions for vehicle type distributions for major roadways in urban areas. The tool calculated an estimated equivalent sound level (Leq) of 68 dB. Leq is the average sound pressure level over time but can be thought of as an average sound level over time. The flat-earth noise level estimating tool inputs and outputs are contained in Appendix G.

### **Conformance to state and local noise standards**

State noise standards are contained in Minn. R. ch. 7030. The noise standards are based on the land use at the location of the person that hears the noise and the sound level in A-weighted decibels (dBA) over ten percent (L10) or fifty percent (L50) of an hour. Noise limits for residential locations are L10=56 dBA and L50=60 dBA during the daytime and L10=55 dBA and L50=50 dBA during the nighttime.

Additionally, Brooklyn Center City Ordinance contains general prohibitions on noise which would unreasonably annoy, injure, or endanger the safety, health, morals, conform or repose of any number of members of the public.

Under Minn. Stat. 116.07 subd. 2a(3), except for in the cities of Minneapolis and St. Paul, an existing or newly constructed segment of a road, street, or highway under the jurisdiction of a road authority of a town, statutory or home rule charter city, or county, except for roadways for which full control of access has been acquired is exempt from the state's noise standards. Although roadway noise may be exempt from state noise standards, the standards still provide a reasonable benchmark for the suitability of the noise environment for residential uses.

Based on the noise estimates using the flat-earth noise level estimating tool noise mitigation may be appropriate for the residential units in the facing County Road 10 and Shingle Creek Parkway. Mitigation can be achieved with exterior wall construction, windows, and doors that provide adequate attenuation. Based on the proposed wall construction and window type and the Federal Highway Administration's (FHWA) Guidance on Insulation of Buildings Against Highway Noise, adequate attenuation is achieved by the building and no further mitigation is recommended based on FHWA guidance. Appendix G contains this analysis. Based on the proposed site layout, potentially noise sensitive outdoor spaces are largely shielded from the roadway noise by site structures or topography.

Minnesota noise standards were established consistent with speech, sleep, annoyance, and hearing conservation requirements for receivers within residential areas. However, they do not identify the limiting levels of impulsive noise needed for the preservation of public health and welfare. Sources of impulsive noise such as industrial operations were not identified in the vicinity of the site.

Additionally, the proposed site is not expected to generate significant noise. Noise associated with construction of the project would be typical of the noise impacts from construction and there are no especially sensitive receptors nearby. Noise generated from the site after construction would be negligible compared to the noise from surrounding roadways. Additional traffic volume on County Road 10 and Shingle Creek Parkway due to the project is not expected to greatly increase roadway noise experienced at the site. Therefore, the proposed project is not expected to contribute to excessive noise or nonconformance with the noise standards on or off-site.

## **20. Transportation:**

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

The existing site consists of surface parking lots. All existing parking would be replaced at the project site. This portion of the Opportunity Site consists of Blocks 11, 12, and 13 as identified in the 2040 Plan Update. Plans for the Brooklyn Center Opportunity Site #1 include 75 surface parking stalls, 722 below grade parking stalls, 217 podium stalls, and 121 parallel stalls. This would allow for 140 stalls for the event center, childcare center, therapy suites, and barber suites, 47 flex street stalls, 441 stalls for market rate units, 286 stalls for mixed income, and 227 stalls for affordable units (1135 total stalls).



The site is anticipated to have multiple access points to the existing roadway network. A Traffic and Transportation Analysis was prepared by Bolton & Menk, Inc. for the EAW comparing to the Opportunity Site. The analysis includes trip generation estimates determined using historical traffic data and the Institute of Transportation Engineers (ITE), Trip Generation Manual 10th Edition. Using this method, the Traffic and Transportation Analysis report presented trip generation estimates for the Brooklyn Center Opportunity Site #1 of AM trip peaks totaling 231 entering and 332 exiting and PM peaking at 304 trips entering and 293 trips exiting), and total weekday trips totaling 2587 entering and 2587 exiting). No disruption to traffic operations is expected.

Shingle Creek Road and Bass Lake Road near the site are served by an existing suburban local bus route that connects to several other suburban local and urban local routes as well as express routes that provide ridership to downtown Minneapolis. The Brooklyn Center Transit Station is a transit hub located at Bass Lake Road and Northway Drive, approximately 1,000 feet to the west of the southwest corner of the site. The Transit Station provides local connection and opportunities to transfer between intersecting routes. The C-Line Bus Rapid Transit offers frequent bus service on dedicated bus lanes and the service runs between the Brooklyn Center Transit Station and downtown Minneapolis and offers connection to the Blue Line and Green Line of the Light Rail Transit system.

The Downtown Brooklyn Center Master Plan that includes the Opportunity Site highlights the goals for a transportation system that reduces the need to own a car by providing safe, affordable, and convenient alternatives; a mobility hub that offers convenient connections between BRT Lines, Park and Ride, cycling, and private vehicles; complete pedestrian and bicycle connectivity within the downtown area and beyond to connect to the rest of the City; and the use of emerging transportation technologies, such as an AV circulator, drop off zones, and micro mobility, that reduce the need to use a single occupancy vehicle for many trips within the downtown area.

**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.**

The Traffic and Transportation Analysis report also provided a traffic operations analysis. The analysis uses software models that models take the forecasted traffic volumes, roadway geometry, and the estimated trip generation volume to analyze future traffic operations. Traffic analysis results are described as Level of Service (LOS) ranging from A to F. LOS is a qualitative measure of the effect of traffic flow factors, such as speed and travel time, interruption, freedom to maneuver, driver comfort and convenience, and indirectly, safety and operating costs. LOS A through D is commonly considered an acceptable design year LOS. LOS F indicates an intersection where demand exceeds capacity and drivers experience substantial delay.

The model for year 2022 traffic that takes into account an increase in traffic as a result of the site's development indicates that all intersections operate within an acceptable LOS with the eastbound left and thru movement at the Earle Brown Drive and Summit Drive N intersection reaching a LOS F during the PM peak. The model for 2022 full Opportunity Site development and

the model for 2042 full Opportunity Site development indicate a number of individual movements reaching a LOS of F during the PM peak hour.

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

Signal retiming is recommended to optimize the roadway system around the site after development.

Roadway improvement options are recommended to mitigate the impacts associated with the full Opportunity Site development, but not for the traffic impacts from this site alone. Modeling using the mitigation improvements described below for the full Opportunity Site development in year 2022 and 2042 result in all intersections operating within acceptable LOS.

Mitigation:

- Construct a westbound channelized right turn lane at the Shingle Creek Parkway and Summit Drive N. Intersections. Construct an acceleration lane that continues into the existing northbound right turn lane to I94 eastbound ramp.
- Install a traffic control signal at the Summit Drive N and Earle Brown Drive Intersection, east of Shingle Creek Parkway.

**21. Cumulative Potential Effects:**

**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 area of Brooklyn Center in which the site is located is undergoing active redevelopment and revitalization. Nearby to the south, the site for the former Brookdale Mall has been experiencing growth. The larger Opportunity Site, of which the proposed project is the first phase, is 81 acres of both public and private landownership that is a subject of a City of Brooklyn Center master plan. The objective of the plan is to redevelop underutilized properties and create a vibrant new downtown that would combine low, medium, and high-density housing, commercial and institutional spaces, as well as open space and new parks.

The exact timeline for development of the Opportunity Site has not been defined, but substantial progress is expected over the next three to five years. The City has engaged planners, engineers, community groups and the general public in a process to define the objectives and purposes of the redevelopment.

**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.**

As the vision of the Opportunity Site is realized, further development would combine with impacts of the current project as cumulative potential effects. While the current project is the first phase, it is anticipated as plans develop, further environmental review would either be accomplished through an Alternative Urban Areawide Review process (Minn. Rules 4410.3610) or individual EAWs.

- 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.**

Development of the Opportunity Site would increase demands for water supply and wastewater treatment. It is anticipated that City infrastructure would be sufficient to accommodate these increases in demand. The Site previously had more use by businesses and is connected to City infrastructure. However, the planned objectives would include higher density use than in the past. City planning and future environmental review through EAWs or an AUAR would have to consider the capacity of infrastructure to serve the new demands.

The redevelopment of the Opportunity Site and expected higher density use would incur environmental effects in the areas of air emissions, dust, noise, odor, and traffic.

The effects on air quality would be similar to those described above for this project because develop would be for commercial, institutional, and housing purposes. Minor emissions from heating and cooling equipment and potentially infrequent emissions from onsite generators. Emissions, dust, odor, and noise from construction activities should be temporary and can be mitigated to be of minor impact.

As the site grows and businesses and residents relocate to the area, traffic would increase. A traffic study has been developed for the larger Opportunity Site. Mitigation measures to accommodate increased traffic are described above in Section 18c.

**22. Other Potential Environmental Effects:**

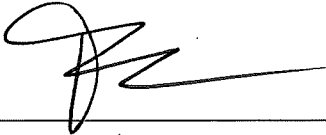
**If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.**

No other environmental effects or issues from the proposed project have been identified.

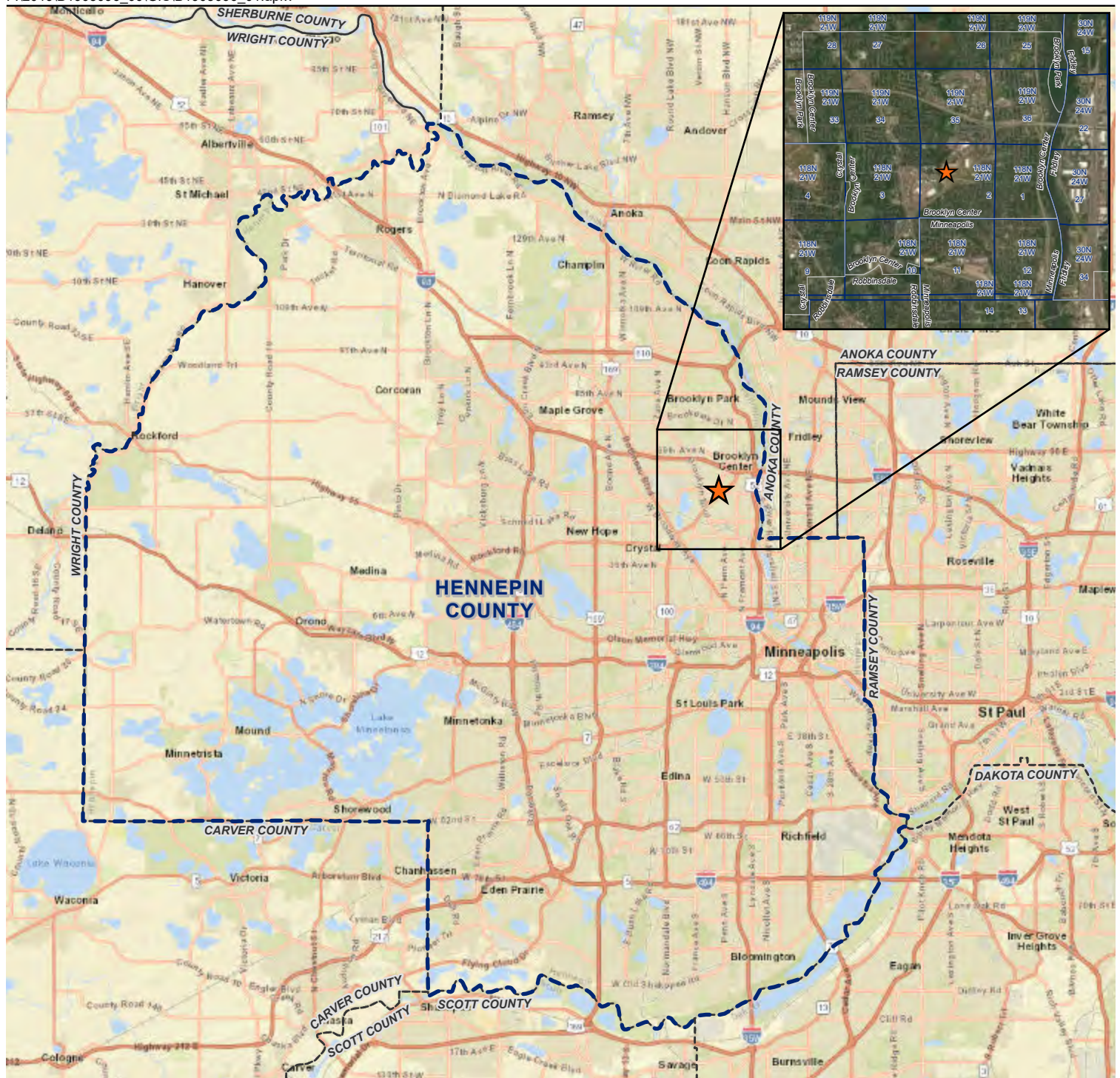
**RGU CERTIFICATION.** *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

**I hereby certify that:**

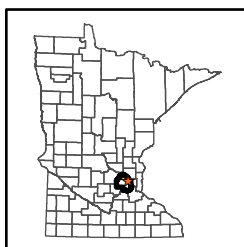
- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions,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

Signature  Date 4-11-2022  
Title CITY MANAGER

## Figures



Data Sources: Esri, USGS, OpenStreetMap



★ Project Site



0 2.5 5 Miles

Scale 1" = 5 mi

**BRAUN  
INTERTEC**  
The Science You Build On.

11001 Hampshire Avenue S  
Minneapolis, MN 55438  
952.995.2000  
braunintertec.com

Project No:  
B1905096\_01

Drawing No:  
Fig1\_CountyLoc

Drawn By: JPM  
Date Drawn: 12/18/2020  
Checked By: BR  
Last Modified: 1/13/2022

Brooklyn Center Opportunity Site Phase #1

Shingle Creek Parkway & Bass Lake Road

Brooklyn Center, Hennepin County, Minnesota

**County  
Location  
Map**

Figure 1



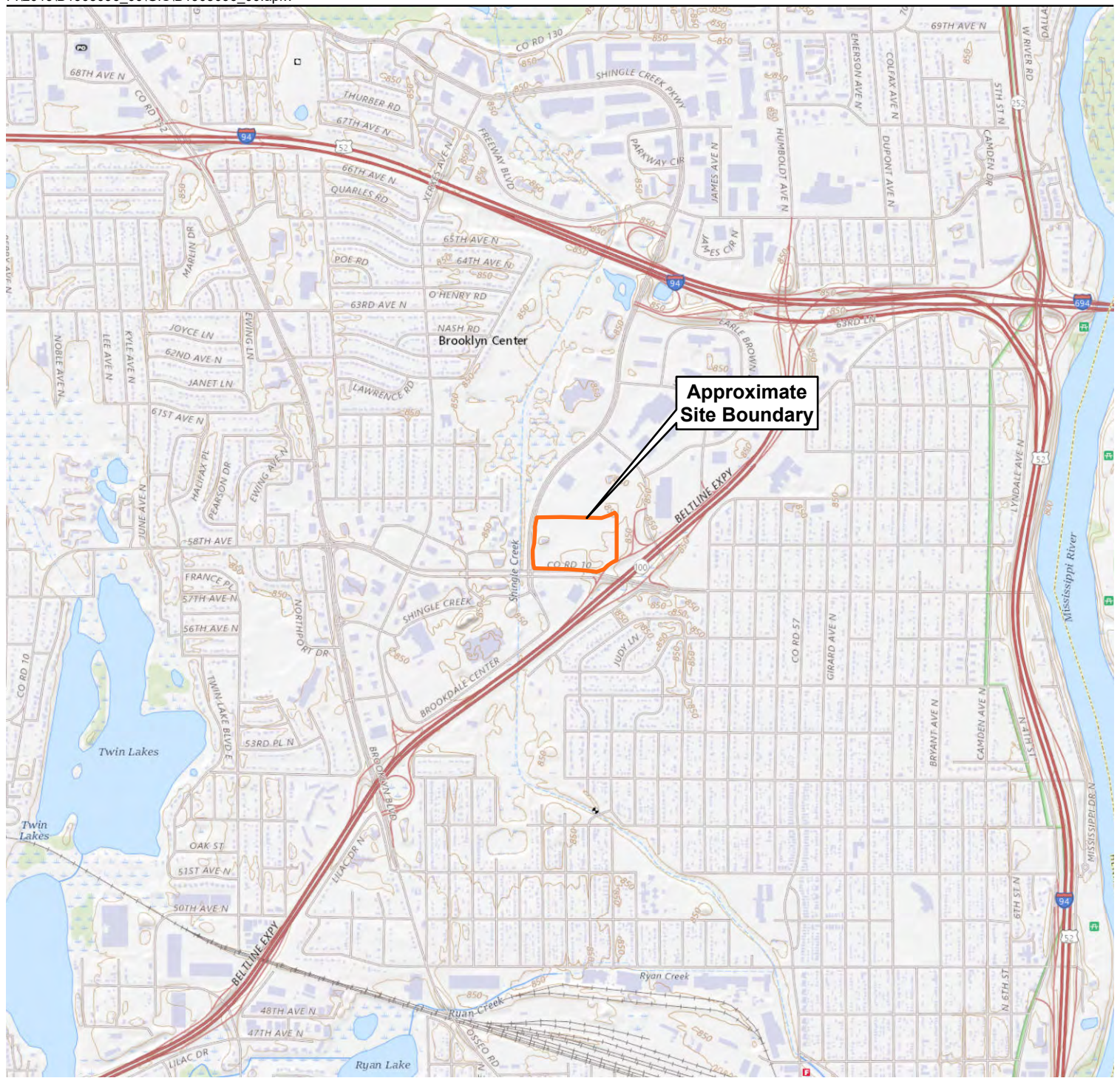

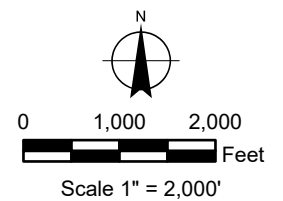


Image Source: USGS US Topo Map

 Approximate Site Boundary



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11001 Hampshire Avenue S  
Minneapolis, MN 55438  
952.995.2000  
braunintertec.com

Project No:  
B1905096\_00

Drawing No:  
Fig2\_ProjectLoc

Drawn By: CMF  
Date Drawn: 12/18/2020  
Checked By: BR  
Last Modified: 1/22/2021

Brooklyn Center Opportunity Site Phase #1

Shingle Creek Parkway & Bass Lake Road

Brooklyn Center, Hennepin County, Minnesota

**USGS, Project  
Location Map**

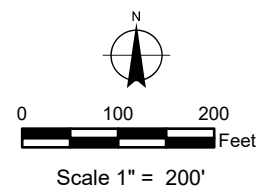
Figure 2





Data Sources: Hennepin County GIS, MNDOT

- Hennepin County Parcels within Site Boundary
- Hennepin County Parcels
- Approximate Site Boundary



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Minneapolis, MN 55438  
952.995.2000  
braunintertec.com

Project No:  
B1905096\_00

Drawing No:  
Fig3\_Existing

Drawn By: JPM  
Date Drawn: 12/18/2020  
Checked By: BR  
Last Modified: 1/22/2021

Brooklyn Center Opportunity Site Phase #1

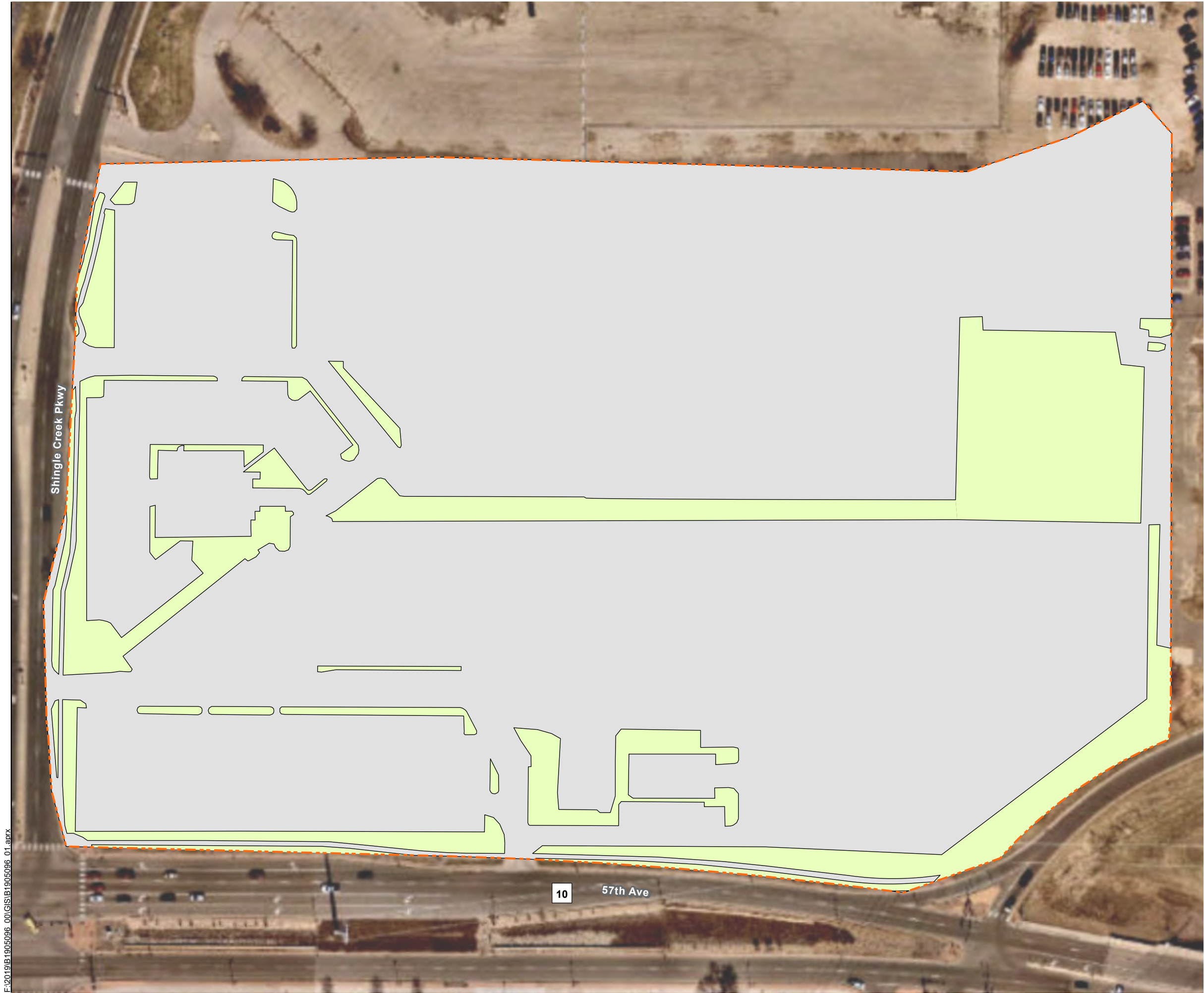
Shingle Creek Parkway & Bass Lake Road

Brooklyn Center, Hennepin County, Minnesota

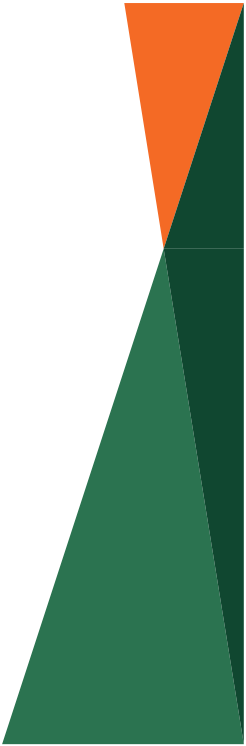
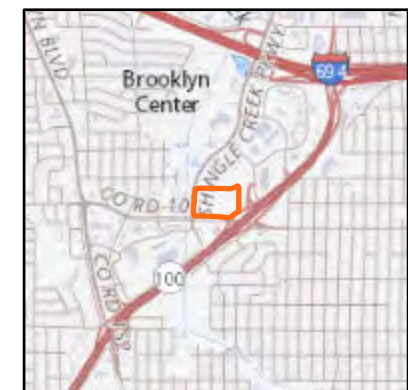
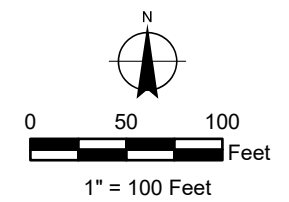
**Existing  
Conditions**

Figure 3





- Approximate Site Boundary (~19.45 acres)
- Existing Pervious Surface (~2.92 acres)
- Existing Impervious Surface (~16.53 acres)



#### Drawing Information

Project No:  
B1905096\_01

Drawing No:  
Fig4\_LandCoverExist

Drawn By: JPM  
Drawn Date: 1/12/2022  
Checked By: MU  
Last Modified: 1/13/2022

#### Project Information

Brooklyn Center  
Opportunity  
Site Phase #1

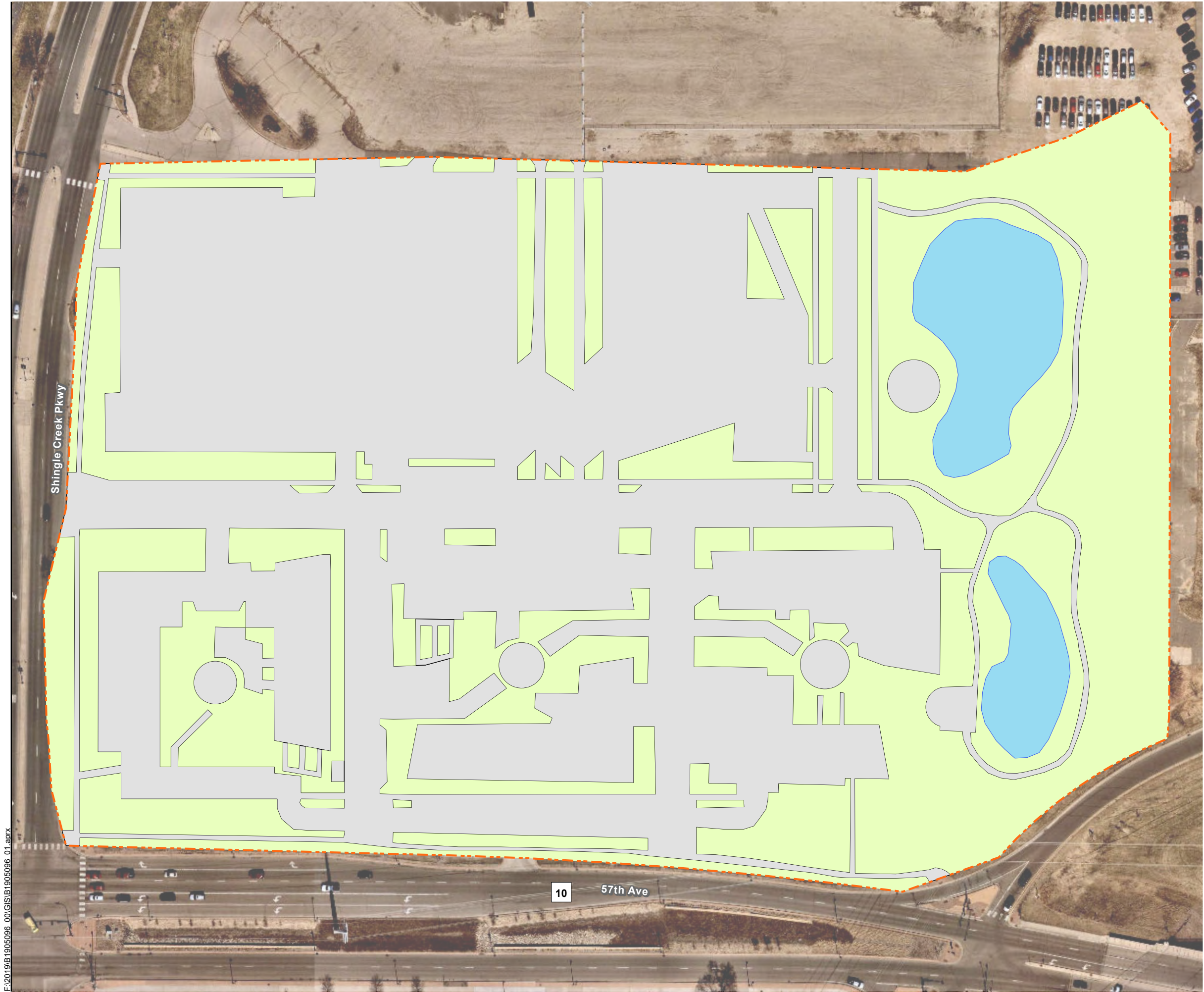
Shingle Creek Parkway  
& Bass Lake Road

Brooklyn  
Center, Hennepin  
County, Minnesota

**Land Cover:  
Existing  
Conditions**

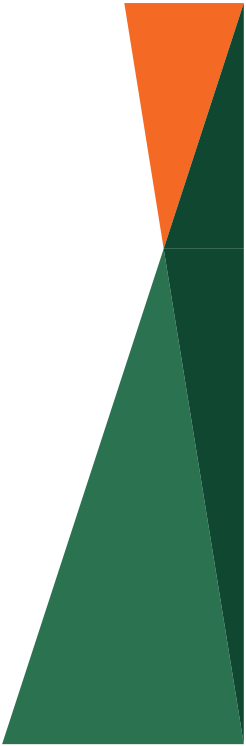
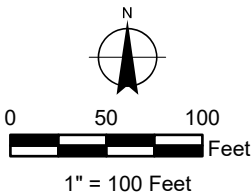
Figure 4





F:\2019\B1905096\_00\GIS\B1905096\_01.aprx

- Approximate Site Boundary (~19.45 acres)
- Impervious Surface (~10.89 acres)
- Stormwater Pond (~0.95 acres)
- Pervious Surface (~7.62 acres)

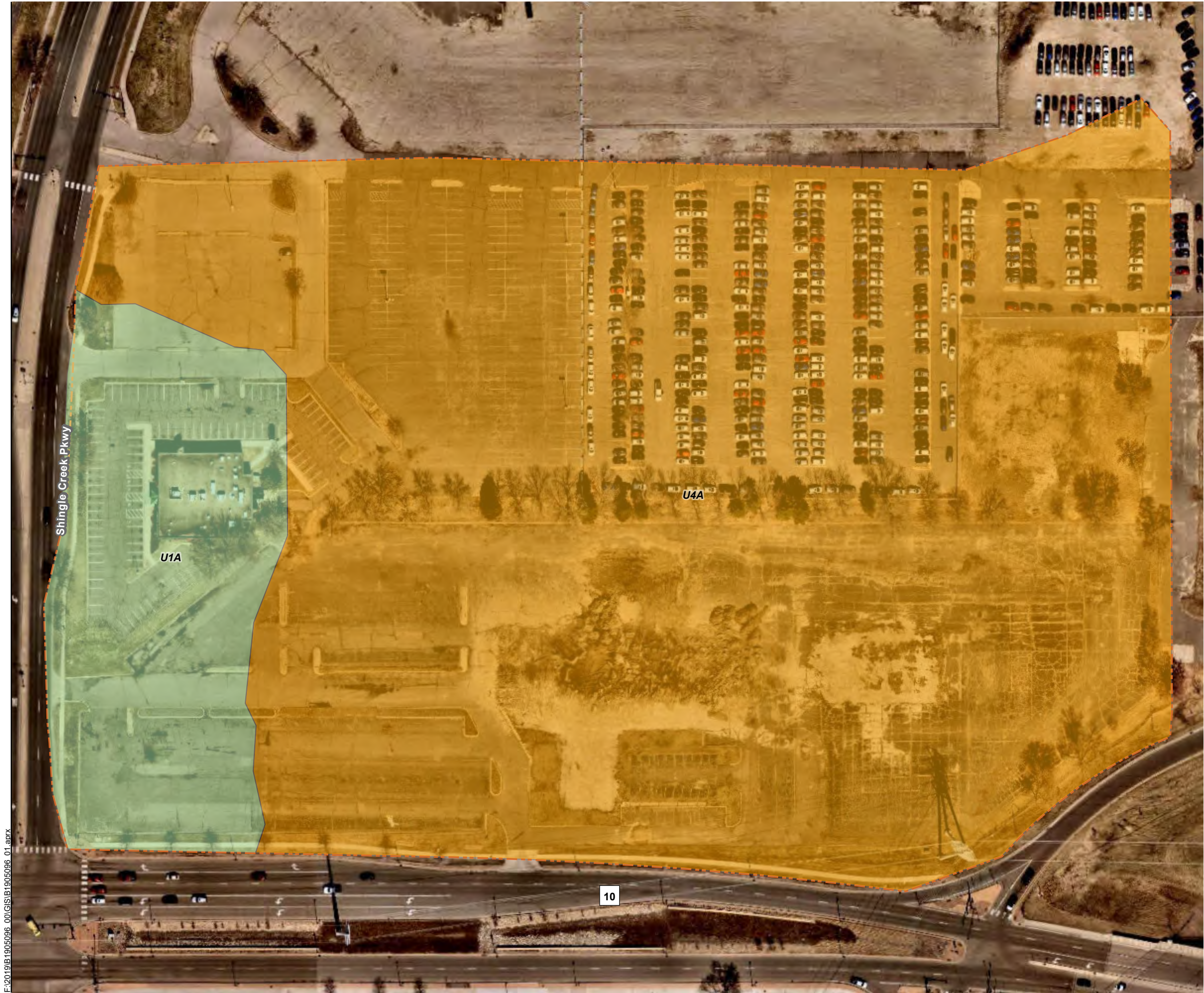


Drawing Information	
Project No:	B1905096_01
Drawing No:	Fig5_ProposedDev
Drawn By:	JPM
Drawn Drawn:	1/12/2022
Checked By:	MU
Last Modified:	1/13/2022
Project Information	
Brooklyn Center Opportunity Site Phase #1	
Shingle Creek Parkway & Bass Lake Road	
Brooklyn Center, Hennepin County, Minnesota	

**Proposed Project  
Development**

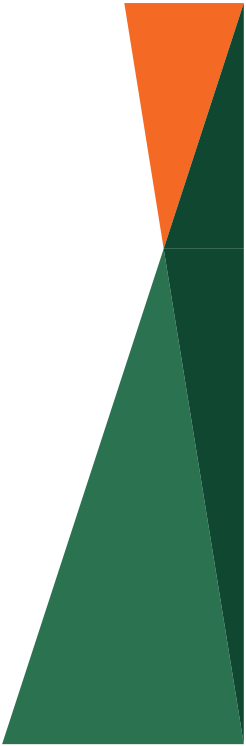
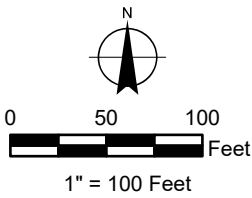
Figure 5





F:\2019\B1905096\_00\GIS\B1905096\_01.aprx

- Approximate Site Boundary
- U1A - Urban land-Udorthents, wet substratum, complex, 0 to 2 percent slopes
- U4A - Urban land-Udipsamments (cut and fill land) complex, 0 to 2 percent slopes

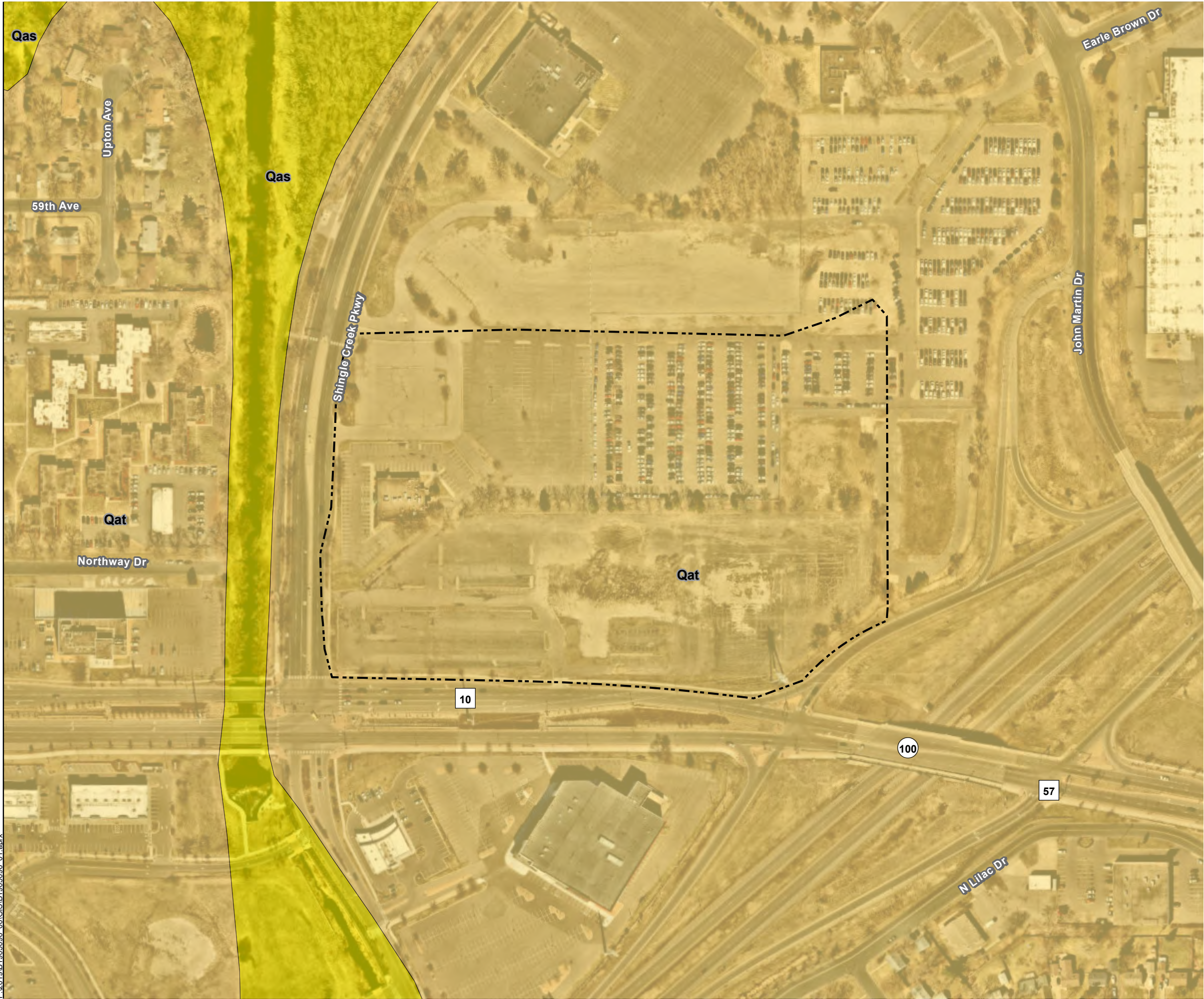


Drawing Information	
Project No:	B1905096_01
Drawing No:	Fig6_SoilSurvey
Drawn By:	JPM
Drawn Drawn:	1/12/2022
Checked By:	MU
Last Modified:	1/13/2022
Project Information	
Brooklyn Center Opportunity Site Phase #1	
Shingle Creek Parkway & Bass Lake Road	
Brooklyn Center, Hennepin County, Minnesota	

**County  
Soil Survey**

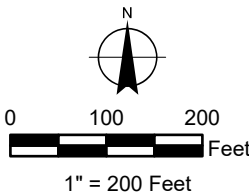
Figure 5





F:\2019\B1905096\_00\GIS\B1905096\_01.aprx

- Approximate Site Boundary
- HOLOCENE
- Qas, Alluvium, fine-grained
- HOLOCENE-LATE PLEISTOCENE
- Qat, Terrace sediment



Drawing Information

Project No:	B1905096_01
Drawing No:	Fig7_SurficialGeol
Drawn By:	JPM
Drawn Drawn:	1/12/2022
Checked By:	MU
Last Modified:	1/13/2022

Project Information

Brooklyn Center  
Opportunity  
Site Phase #1

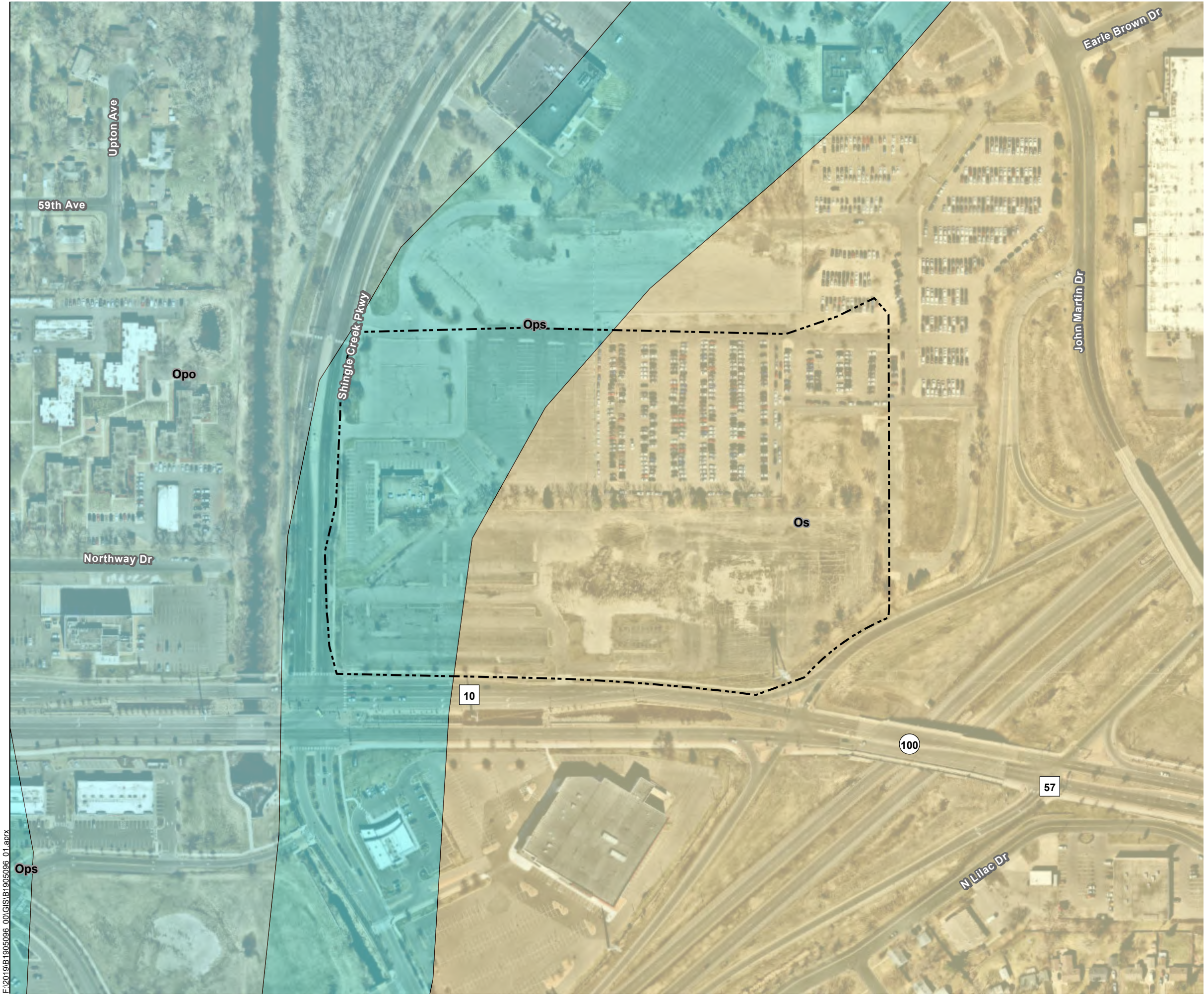
Shingle Creek Parkway  
& Bass Lake Road

Brooklyn  
Center, Hennepin  
County, Minnesota

Surficial Geology

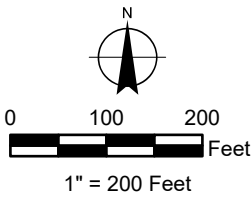
Figure 7






F:\2019\B1905096\_00\GIS\B1905096\_01.aprx

- Approximate Site Boundary
- Bedrock Geology
- PALEOZOIC
- Os, St. Peter Sandstone
  - Ops, Prairie du Chein Grp, Shakopee Fm
  - Opo, Prairie du Chein, Grp, Oneota Dolomite





11001 Hampshire Avenue S  
Minneapolis, MN 55438  
952.995.2000  
braunintertec.com

Drawing Information

Project No:  
B1905096\_01

Drawing No:  
Fig8\_BedrockGeol

Drawn By: JPM  
Drawn Drawn: 1/12/2022  
Checked By: MU  
Last Modified: 1/13/2022

Project Information

Brooklyn Center  
Opportunity  
Site Phase #1

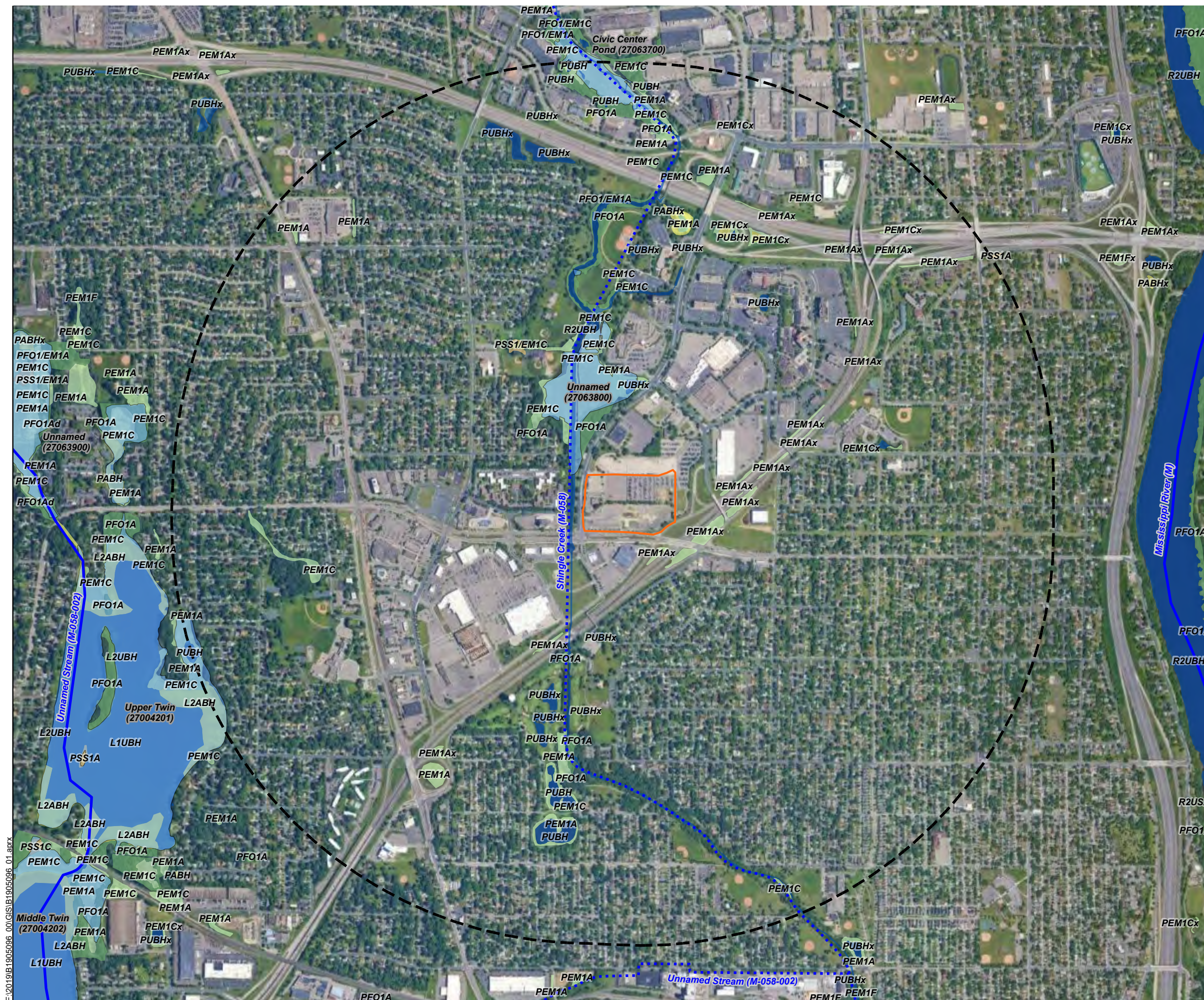
Shingle Creek Parkway  
& Bass Lake Road


Brooklyn  
Center, Hennepin  
County, Minnesota


Bedrock Geology

Figure 8





 Approximate Site Boundary

 1 Mile Radius

Public Waters Delineations

Public Water Watercourse

- Public Ditch/Altered Natural Watercourse

 Public Waters Basins

NWI Cowardin Class

 Aquatic Bed/Nonpersistent Emergent

 Emergent

■ Forested

Scrub-Shrub

Unconsolidated Bottom (Open Water)

Unconsolidated Shore (Banks & Sandbars)

East-Central (2010-13)



11001 Hampshire Avenue S  
Minneapolis, MN 55438  
952.995.2000  
braunintertec.com



### Drawing Information

Project No:  
B1905096\_01

Drawing No:  
Fig9\_WetlandsWaters

Drawn By:	JPM
Drawn Drawn:	1/12/2022
Checked By:	MU
Last Modified:	1/13/2022

Project Information

Brooklyn Center  
Opportunity  
Site Phase #1

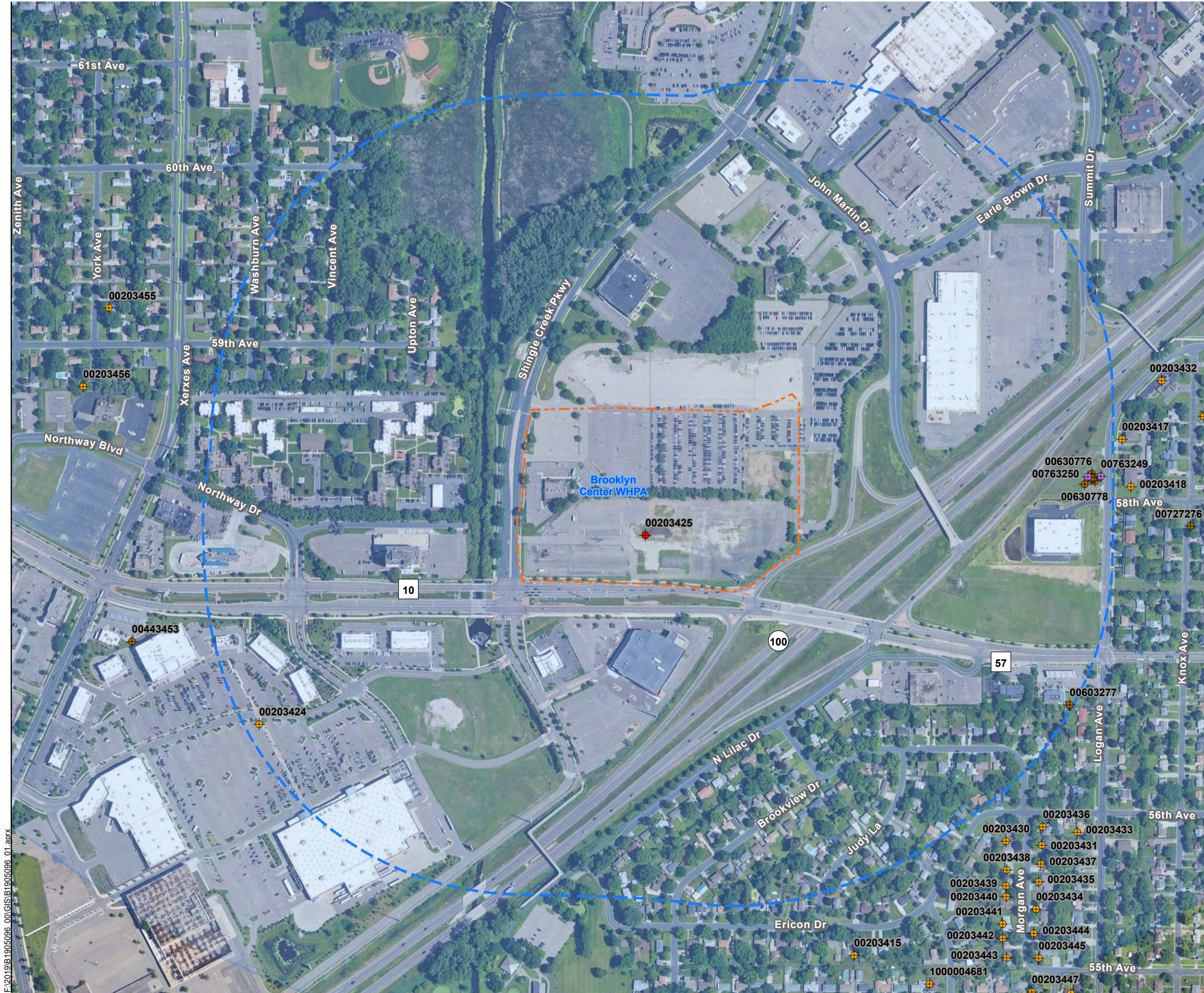
Shingle Creek Parkway  
& Bass Lake Road

Brooklyn  
Center, Hennepin  
County, Minnesota

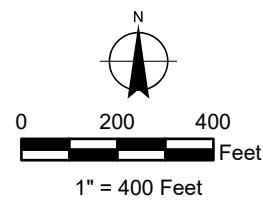
## Area Wetlands & Waterbodies

Figure 9





- Approximate Site Boundary
  - Quarter Mile Radius
  - Wellhead Protection Areas
- Verified Wells
- Commercial
  - Domestic
  - Monitor Well
  - Other (specify in remarks)



Drawing Information

Project No:  
B1905096\_01

Drawing No:  
Fig10\_WellsWHPA

Drawn By: JPM  
Drawn Drawn: 1/12/2022  
Checked By: MU  
Last Modified: 1/13/2022

Project Information

Brooklyn Center  
Opportunity  
Site Phase #1

Shingle Creek Parkway  
& Bass Lake Road

Brooklyn  
Center, Hennepin  
County, Minnesota

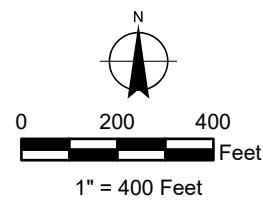
Wells & Wellhead  
Protection Areas

Figure 10





- Approximate Site Boundary
- Quarter Mile Radius
- Program Name
  - Multiple Programs
  - Hazardous Waste
  - Investigation and Cleanup
  - Stormwater
  - SSTS
  - Tanks



Drawing Information	
Project No:	B1905096_01
Drawing No:	Fig11_MPCAwimn
Drawn By:	JPM
Drawn Drawn:	1/12/2022
Checked By:	MU
Last Modified:	1/13/2022
Project Information	
Brooklyn Center Opportunity Site Phase #1	

Shingle Creek Parkway  
& Bass Lake Road

Brooklyn  
Center, Hennepin  
County, Minnesota

**MPCA What's in  
My Neighborhood**

Figure 11



# **Appendix A**

## **Project Plans**



City of Brooklyn Center  
Community Development Director  
Attn: Ms. Meg Beekman  
6301 Shingle Creek Parkway  
Brooklyn Center, MN 55430

**Delivered via Email – Monday, November 8th, 2021**

Ms. Meg Beekman,

Alatus LLC (“Alatus”), Project for Pride in Living (“PPL”), and Resurrecting Faith World Ministries (“RFBW”) are pleased to present the following Concept Site Plan Review application for the proposed redevelopment of the parcels located at 2500 CO and 5900 Shingle Creek Parkway, Brooklyn Center, MN 55430. The proposed project, the “Pilot Site”, will encompass a significant area of the land on the tax parcels PID #0211821240019 and PID #0211821240019, both currently owned by the City of Brooklyn Center Economic Development Authority.

Project goals and public benefits envisioned for the Pilot Site are as follows:

- J Spectrums of Housing & Affordability – Market-rate, mixed-income, and low-income rental opportunities will allow for diverse demographic and socioeconomic populations to live and occupy the same spaces. Development sponsor PPL will be creating phased development of family oriented low-income housing tax credit properties with rent and income thresholds from 30% AMI to 60% AMI and with 2, 3, and 4 BDR offerings. These types of units are tremendously undersupplied in the Twin Cities metropolitan area and will be very valuable to the Brooklyn Center community.
- J Wholistic Community Enhancing Spaces and Places – Development sponsor RFBW is proposing a ~27,500 sqft Gathering and Event Space focused on a campus orientation development proposal that includes the aforementioned housing spectrum and other offerings to wholistically help communities grow and thrive. The Pilot Site will also include the development of a community-based Business Incubator as a focal point for the entire development staging. This Business Incubator will be programmed and owned by the City of Brooklyn Center and will help to advance equitable outcomes for entrepreneurs and business owners in and around the city of Brooklyn Center. The programming of this space will be informed by input sessions crafted by NEOO and the City of Brooklyn Center and the spatial programming will be further enhanced by Design by Melo and their robust engagement initiatives.

IDS Center  
80 South 8th Street  
Suite 4155  
Minneapolis, MN 55402  
Phone 612.455.0700  
Fax 612.455.0740  
[www.alatusllc.com](http://www.alatusllc.com)



- J Environmentally and Fiscally Sustainable – the Pilot Site will be both fiscally and economically sustainable. Residential developments within the Pilot Site will achieve LEED Certifications and/or Well Built Certifications to ensure a high threshold of livability for all resident populations. The Pilot Site’s location next to a strong retail hub with two value oriented grocers and a Metro Transit Bus Rapid Transit Line C facility with direct access to Downtown Minneapolis should help to minimize car dependency and allow for cheaper multi-modal last-mile trips.
- J Future Equitable Development Opportunities – the Pilot Site is an initial opportunity to craft a business plan and scope and ultimately physical programming that touches on many of the development processes that have often been lacking in diverse communities. Inevitably, there will be ideas that cannot be incorporated, missed opportunities, or process breakdowns. As the Pilot Site is just a small portion of the total amount of land owned by the City of Brooklyn Center Economic Development Authority, the engagement, entitlement, and development processes can be refined and modified moving forward for a more complete process with respect to the next phase of development on the larger Opportunity Site.

The nature of the proposed development is concentrated on creating a spectrum of opportunities for community members of all different backgrounds. The proposed housing mix will include the creation of a gateway 4 to 6-story market-rate multi-family rental housing development with shared plaza a public spaces with the Business Incubator, next to a mixed-income multi-family project with shared pedestrian and vehicular infrastructure, phased low-income housing tax credit properties as further defined below, the integration of the Gathering and Event Space and its campus concept, all woven together with permeable pedestrian infrastructure and traffic calming vehicular access points. At this time the Concept Site Plan estimates the following unit types and counts for housing options on the development site:

- J **Area B + D, Building C:** Public Plaza, ~20,000 sqft Community Business Incubator, and Flex Street / Woonerf
- J **Building F:** 4 to 6-story market-rate multi-family rental community with 289 units and 441 parking stalls (below grade, podium, and parallel surface); Building F will also host the shared fitness, remote working facility, training, and locker room facilities that will be accessible to all residents in the Pilot Site
- J **Building E:** ~27,500 sqft Gathering & Event Space with mental health and therapy suites, private event spaces, 24/7 childcare, and barber shop spaces



- J **Building G:** 2 to 6-story mixed-income\* multi-family rental community with 205 units and 286 parking stalls (below grade, podium, and parallel surface)
  - o \* – Note – Mixed-income refers to 51% of the total units, or 103 units, being at or less than 80% AMI rental and income restricted; it should also be noted that a majority of these affordable units will be 2 and 3 BDR units
  
- J **Building(s) H:** 4 phased low-income housing tax credit developments; 3 phases will consist of 4 to 5-story low-income housing tax credit multi-family rental communities with 60 units and ~55 parking stalls (below grade, and parallel surface)\*\*; 4<sup>th</sup> phase will consist of a 4-story low-income housing tax credit multi-family rental community with 70 units and ~55 parking stalls (below grade, and parallel surface)\*\*\*
  - o \*\* – Note – these first three phases will consist of a majority of family unit sizes from 2 to 4 BDR offerings at 30% to 60% AMI rental and income restrictions
  - o \*\*\* – Note – this final phase will consist of workforce housing with smaller unit types

It is very important to note that Area B + D, and Building C, as well as portions of Building E will continue to be investigated and shaped as the respective development sponsors continue engagement with the community of Brooklyn Center. Even at the time of this submission, the development sponsors have been considering other programming additions such as an autonomous EV bus-circulator to and from the Shingle Creek Crossing Retail Center, the inclusion of a commercially scaled community garden or greenhouse, community commercial kitchens for start-up food enterprises, and the ability to create commercial space ownership opportunities for community business proprietors.

There will be numerous engagement opportunities moving forward from this point on in formal and informal settings. The development sponsors will make every effort to make recordings available for viewing and comment or questions for those that cannot physically participate or would prefer to give feedback in a different medium. Materials will be shared at the following URL with re-direction to various other site planning materials and documents:

<https://clients.bolton-menk.com/brooklyncenter2019/opportunitysite/>

Other formal engagement dates will be as follows:

- J Neighborhood Meeting – Preliminary Concept Site Plan – Wednesday, December 8<sup>th</sup>, 2021
- J Open Comments & Questions Period – Environmental Assessment Worksheet – Mid-January to Mid-February
- J Neighborhood Meeting – Final Concept Site Plan – Wednesday, February 9<sup>th</sup>, 2022
- J Neighborhood Meeting – Final Concept Site Plan #2 – Wednesday, February 23<sup>rd</sup>, 2022



These dates are subject to change and advance notice on times, dates, locations, and other opportunities for engagement will be communicated over the website and via various communication channels including social media platforms. The development sponsors will also be facilitating meetings with community organizations, including, but not limited to, ACER, Brooklyn Bridge Alliance for Youth, Empire Smile, Liberian Business Association, MN African Coalition, MN Africans United, Paadio, and MN Zej Zog.

The development sponsors of Alatus LLC, Project for Pride in Living, and Resurrecting Faith World Ministries are looking forward to partnering with the City of Brooklyn Center and other community stakeholders on this tremendous once in a generation redevelopment opportunity in one of the most diverse cities in the state of Minnesota.

*Sincerely,*

A handwritten signature in black ink, appearing to read 'Chris Osmundson', with a long horizontal flourish extending to the right.

**Chris Osmundson**

Director of Development

(O): 612.455.0712 | (C): 612.201.8487

email@alatusllc.com

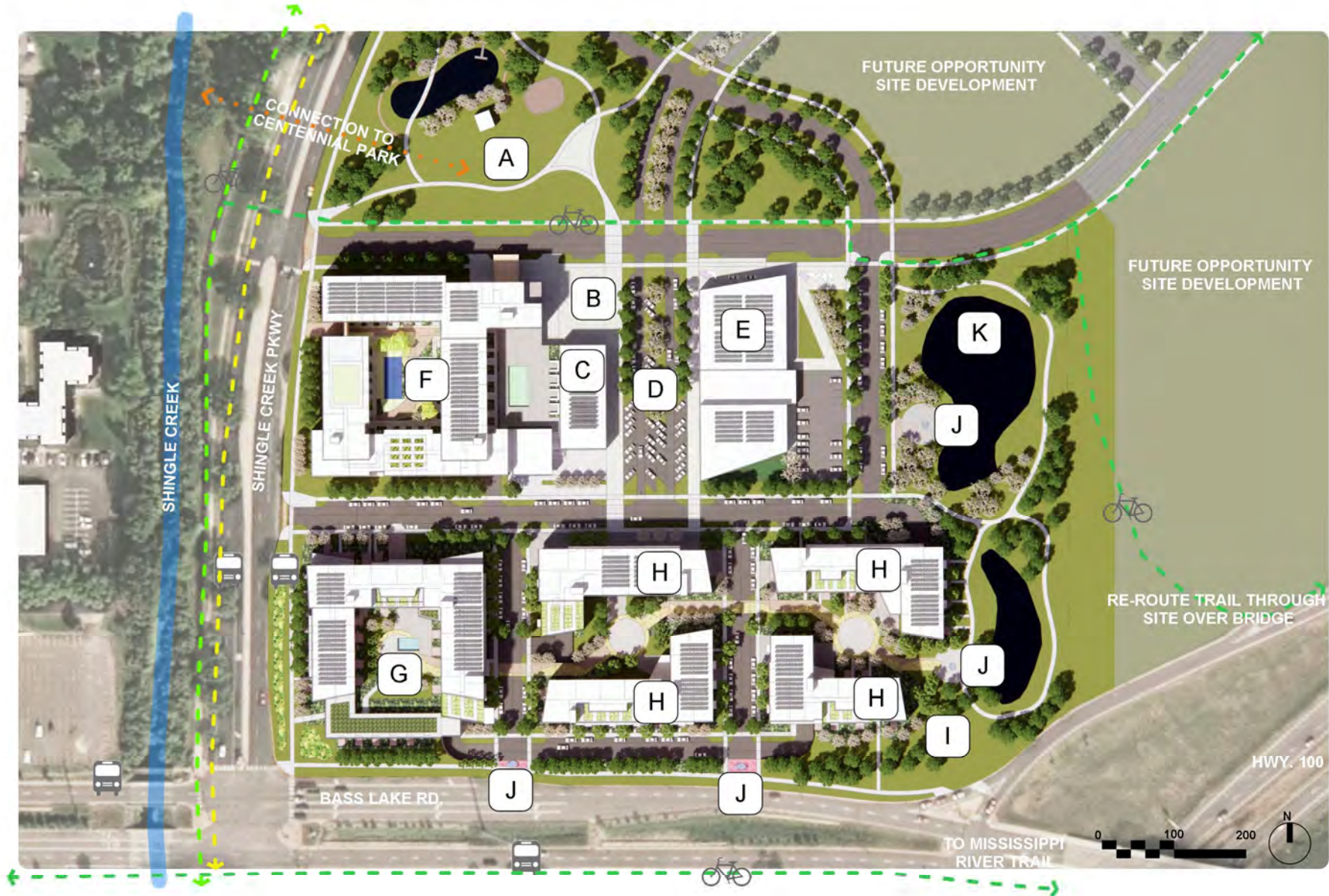
IDS Center  
80 South 8th Street  
Suite 4155  
Minneapolis, MN 55402  
Phone 612.455.0700  
Fax 612.455.0740  
[www.alatusllc.com](http://www.alatusllc.com)



- A THREE RIVERS PARK
- B PUBLIC PLAZA
- C INCUBATOR
- D FLEX STREET
- E EVENT CENTER, CHILDCARE CENTER, THERAPY SUITES, & BARBER SUITES
- F MARKET RATE RESIDENTIAL
- G MIXED INCOME RESIDENTIAL
- H AFFORDABLE RESIDENTIAL
- I COMMUNITY GARDENS
- J PUBLIC ART OPPORTUNITY
- K [STORM WATER PARK]

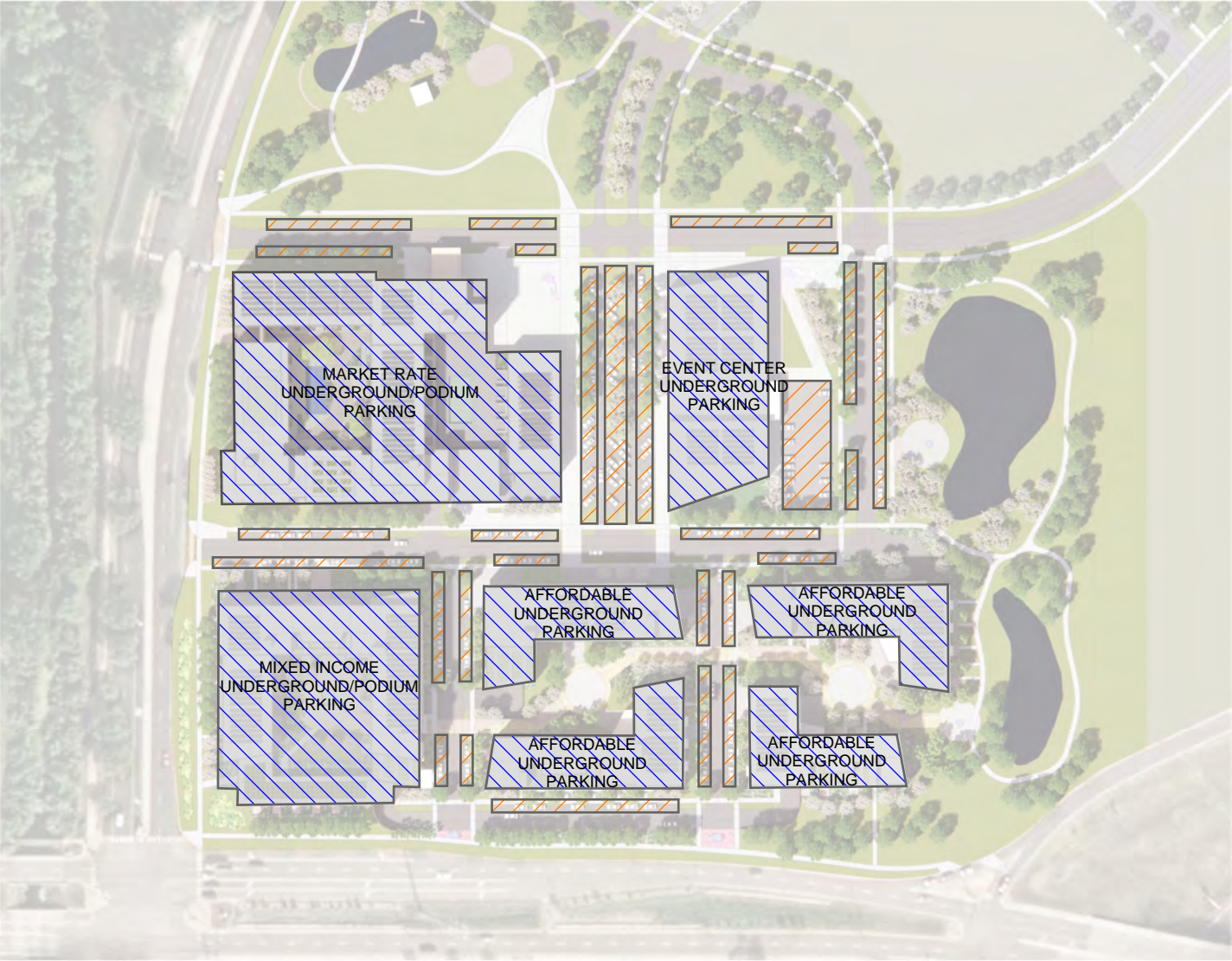
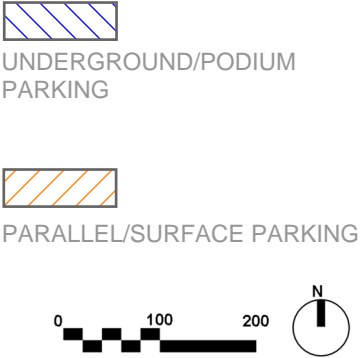
- COMMUTER BIKE LANES
- SHINGLE CREEK TRAIL
- TWIN LAKES TRAIL
- METRO TRANSIT STOP

KEY	BUILDING NAME	STORIES	GROSS AREA (INCLUDES PARKING)	UNITS	AVG. UNIT
C	INCUBATOR	2	19,110		
E	EVENT CENTER, CHILDCARE CENTER, THERAPY SUITES, & BARBER SUITES	1	58,453		
F	MARKET RATE RESIDENTIAL	4 - 6	401,541	289	730
G	MIXED INCOME RESIDENTIAL	2 - 6	314,394	205	777
H	AFFORDABLE RESIDENTIAL				
	FAMILY 1 (NW CORNER)	5	83,432	60	908
	FAMILY 2 (SW CORNER)	4	83,432	60	908
	FAMILY 3 (NE CORNER)	4	83,432	60	908
	WORKFORCE (SE CORNER)	4	76,482	70	713
TOTAL			1,120,276	744	





PARKING COUNT						
	EVENT CENTER, CHILDCARE CENTER, THERAPY SUITES, & BARBER SUITES	FLEX STREET	MARKET RATE	MIXED INCOME	AFFORDABLE	OVERALL SITE
SURFACE (90°-45°)	36	39				
BELOW GRADE	75		280	187	180	
PODIUM			134	83		
PARALLEL	29	8	27	16	41	
TOTAL	140	47	441	286	221	1135
RATIO (STALLS PER UNIT)			1.53	1.40	0.88	







PILOT SITE WITHIN MASTER PLAN



PILOT SITE – COMMUNITY FEATURES

















## **Appendix B**

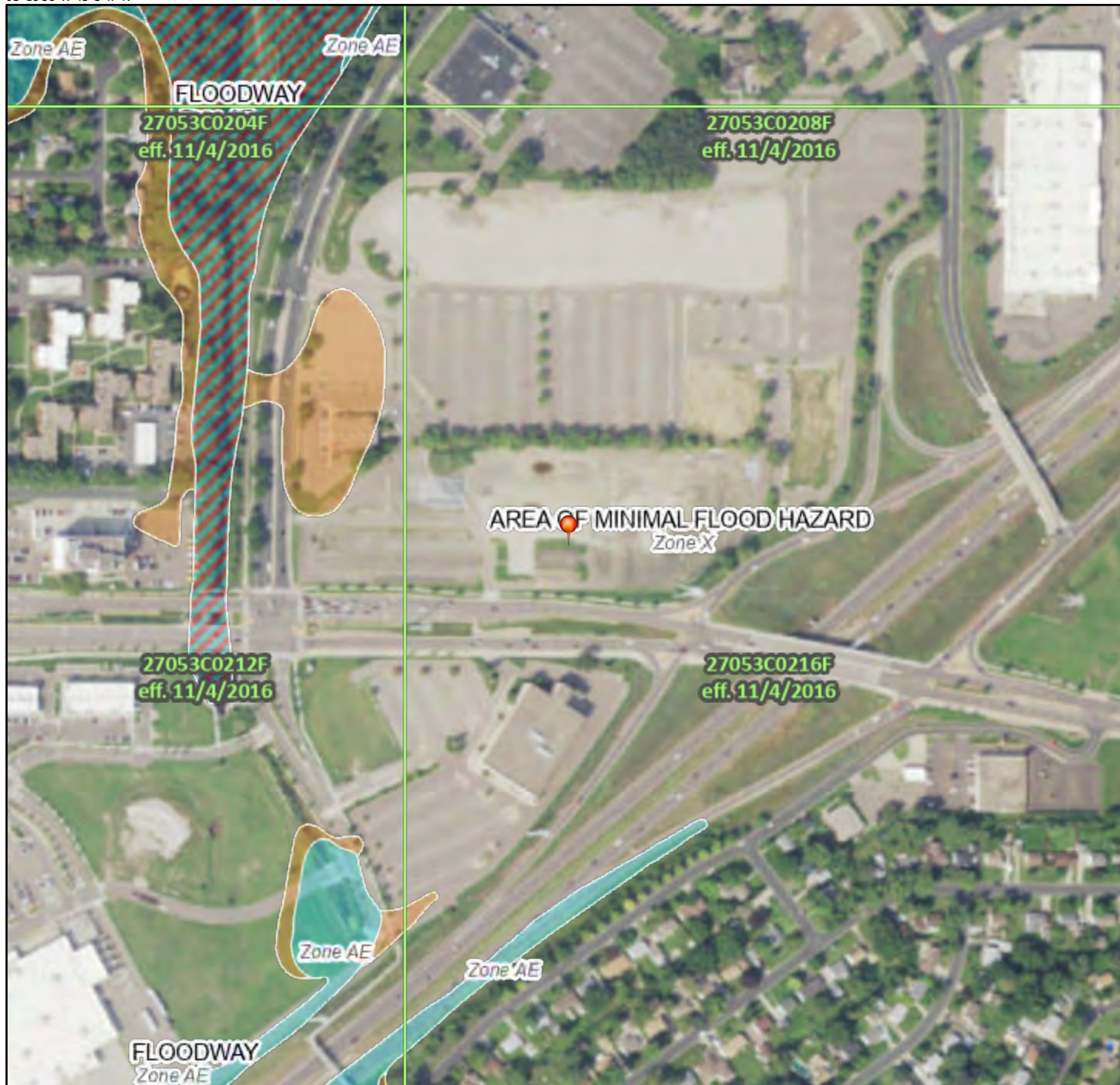
### **FEMA Map**



# National Flood Hazard Layer FIRMette



93°18'58"W 45°3'47"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

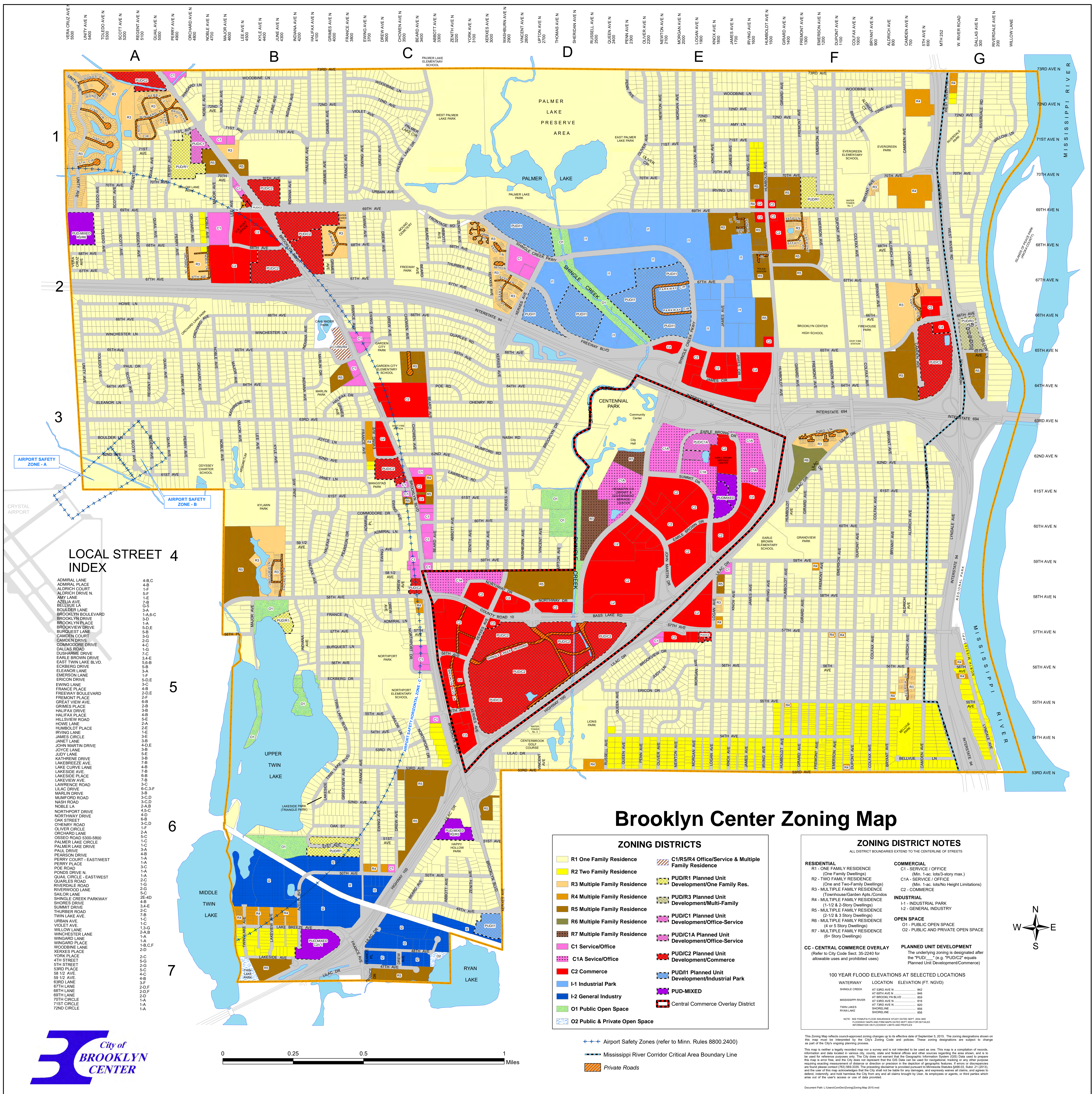
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **1/20/2022 at 9:26 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

## **Appendix C**

### **Zone Map**







## **Appendix D**

### **USFWS IPaC Trust Resources Report**



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Minnesota-Wisconsin Ecological Services Field Office  
4101 American Blvd E  
Bloomington, MN 55425-1665  
Phone: (952) 252-0092 Fax: (952) 646-2873  
<http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html>



In Reply Refer To:

January 05, 2022

Consultation Code: 03E19000-2022-SLI-1194

Event Code: 03E19000-2022-E-04048

Project Name: Shingle Creek Opportunity Site Phase #1

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

This response has been generated by the Information, Planning, and Conservation (IPaC) system to provide information on natural resources that could be affected by your project. The U.S. Fish and Wildlife Service (Service) provides this response under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*).

### Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS IPaC website at regular intervals during project planning and implementation

for updates to species lists and information. An updated list may be requested through the ECOS IPaC system by completing the same process used to receive the enclosed list.

### Consultation Technical Assistance

Please refer to the Midwest Region [S7 Technical Assistance](#) website for step-by-step instructions for making species determinations and for specific guidance on the following types of projects: projects in developed areas, HUD, CDBG, EDA, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

### Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example ["No Effect" document](#) also can be found on the S7 Technical Assistance website.
2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see below) – then project proponents must determine if proposed activities will have **no effect** on or **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain [Life History Information for Listed and Candidate Species](#) through the S7 Technical Assistance website. If no impacts will occur to a species on the IPaC species list (e.g., there is no habitat present in the project area), the appropriate determination is **No Effect**. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example ["No Effect" document](#) also can be found on the S7 Technical Assistance website.
3. Should you determine that project activities **may affect** any federally listed, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

### Northern Long-Eared Bats

---

Northern long-eared bats occur throughout Minnesota and Wisconsin and the information below may help in determining if your project may affect these species.

This species hibernates in caves or mines only during the winter. In Minnesota and Wisconsin, the hibernation season is considered to be November 1 to March 31. During the active season (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags  $\geq 3$  inches dbh for northern long-eared bat that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, northern long-eared bats could be affected.

Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas,
- Trees found in highly developed urban areas (e.g., street trees, downtown areas),
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees, and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

If IPaC returns a result that northern long-eared bats are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** this species **IF** one or more of the following activities are proposed:

- Clearing or disturbing suitable roosting habitat, as defined above, at any time of year,
  - Any activity in or near the entrance to a cave or mine,
  - Mining, deep excavation, or underground work within 0.25 miles of a cave or mine,
  - Construction of one or more wind turbines, or
-

- Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

*If none of the above activities are proposed*, project proponents can conclude the proposed activities will have **no effect** on the northern long-eared bat. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records. An example ["No Effect" document](#) also can be found on the S7 Technical Assistance website.

*If any of the above activities are proposed*, please use the northern long-eared bat determination key in IPaC. This tool streamlines consultation under the 2016 rangewide programmatic biological opinion for the 4(d) rule. The key helps to determine if prohibited take might occur and, if not, will generate an automated verification letter. No further review by us is necessary. Please visit the links below for additional information about "may affect" determinations for the northern long-eared bat.

[NLEB Section 7 consultation](#)

[Key to the NLEB 4\(d\) rule for federal actions that may affect](#)

[Instructions for the NLEB 4\(d\) assisted d-key](#)

[Maternity tree and hibernaculum locations by state](#)

### **Other Trust Resources and Activities**

*Bald and Golden Eagles* - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

*Migratory Birds* - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

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*Communication Towers* - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed [voluntary guidelines for minimizing impacts](#).

*Transmission Lines* - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to [guidelines](#) developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

*Wind Energy* - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's [Wind Energy Guidelines](#). In addition, please refer to the Service's [Eagle Conservation Plan Guidance](#), which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

## **State Department of Natural Resources Coordination**

While it is not required for your Federal section 7 consultation, please note that additional state endangered or threatened species may also have the potential to be impacted. Please contact the Minnesota or Wisconsin Department of Natural Resources for information on state listed species that may be present in your proposed project area.

### *Minnesota*

[Minnesota Department of Natural Resources - Endangered Resources Review Homepage](#)

Email: [Review.NHIS@state.mn.us](mailto:Review.NHIS@state.mn.us)

### *Wisconsin*

[Wisconsin Department of Natural Resources - Endangered Resources Review Homepage](#)

Email: [DNRERReview@wi.gov](mailto:DNRERReview@wi.gov)

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We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

- Official Species List
- Migratory Birds



## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Minnesota-Wisconsin Ecological Services Field Office**

4101 American Blvd E

Bloomington, MN 55425-1665

(952) 252-0092

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## Project Summary

Consultation Code: 03E19000-2022-SLI-1194

Event Code: Some(03E19000-2022-E-04048)

Project Name: Shingle Creek Opportunity Site Phase #1

Project Type: DEVELOPMENT

Project Description: Residential/ Commercial Development

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@45.06034165,-93.31033622704001,14z>



Counties: Hennepin County, Minnesota

## Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

## Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate
Rusty Patched Bumble Bee <i>Bombus affinis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9383">https://ecos.fws.gov/ecp/species/9383</a> General project design guidelines: <a href="https://ecos.fws.gov/ipac/project/7ENFHKWGARGCZDUCYDQUVH5EOE/documents/generated/5967.pdf">https://ecos.fws.gov/ipac/project/7ENFHKWGARGCZDUCYDQUVH5EOE/documents/generated/5967.pdf</a>	Endangered

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

## Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<b>Bald Eagle <i>Haliaeetus leucocephalus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a>	Breeds Dec 1 to Aug 31
<b>Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9399">https://ecos.fws.gov/ecp/species/9399</a>	Breeds May 15 to Oct 10

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NAME	BREEDING SEASON
Canada Warbler <i>Cardellina canadensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Golden-winged Warbler <i>Vermivora chrysoptera</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/8745">https://ecos.fws.gov/ecp/species/8745</a>	Breeds May 1 to Jul 20
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a>	Breeds elsewhere
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9480">https://ecos.fws.gov/ecp/species/9480</a>	Breeds elsewhere
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

## Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see

below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

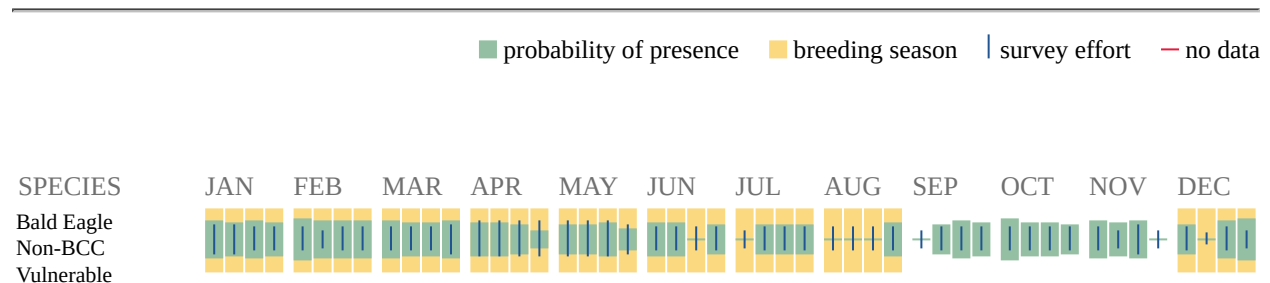
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

**No Data (—)**

A week is marked as having no data if there were no survey events for that week.

## Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

## Migratory Birds FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in



the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

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Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of

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certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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## **Appendix E**

### **Rusty Patched Bumblebee Habitat Evaluation**



The Science You Build On.

## Memo

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**Date:** January 15, 2021

**To:** Alatus, LLC

**From:** Ben Ruhme

**Subject:** Shingle Creek Opportunity Site Phase 1- Rusty Patched Bumble Bee Habitat Evaluation

**Project:** B1905096.00

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A desktop habitat evaluation was completed for the Rusty Patched Bumblebee (RPBB). The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC) tool noted the possible presence of potential habitat for the RPBB at the site. USFWS also places in the site in a high potential zone for the RPBB. A desktop habitat assessment was completed to determine if suitable habitat for the RPBB is present at the site. The desktop habitat utilized historical aerial photographs (1937-2017), Phase I Environmental Site Assessment (ESA) site visit photographs and steps outlined in the USFWS Endangered Species Action Section 7(a)(2) guidance document for the RPBB (April 2019). The Xerces Society RPBB Assessment Form & Guide <https://www.fws.gov/midwest/endangered/insects/rpbb/pdf/HabitatAssessmentFormGuideByXercesForRPBB.pdf> (May 2017) was used to define the specific parameters to evaluate.

The project site was historically used as pasture and cultivated cropland (1937-1957 aerial photographs). Several buildings with surrounding automobile parking (former Brookdale Ford dealership) are apparent on the southern portion of the Site in the 1966-1978 aerial photos. The northern portion of the Site was vegetated, undeveloped land during this time. By the 1984 aerial photograph, the former Brookdale Mall and existing Ocean Buffet restaurant buildings occupied the western and northern portions of the Site. The Brookdale Ford dealership buildings are apparent until the 2010 aerial photograph, when only concrete foundations of the former buildings remain. The dealership buildings foundations and the Brookdale Mall are no longer apparent in the 2017 aerial photograph. The surrounding area also was historically cultivated crop land and farmsteads that was developed over time with residential neighborhoods and commercial properties (1953-2017 aerial photos). The Site currently consists of paved parking lots and the Ocean Buffet restaurant. Vegetation cover at the Site is very limited and confined to landscaped islands within the parking lots. Little to no flowering plants appear to currently exist on the Site but may be present within landscaping in the surrounding area.

The Site has been significantly disturbed from historic development including the former Brookdale Mall and Brookdale Ford dealership. Turf grasses along with weedy and introduced vegetation species

currently occupy the sparsely landscaped areas at the Site. These conditions create an environment with very low plant diversity and provide extremely poor foraging habitat for the RPBB. The Xerxes Society habitat evaluation considers the following factors with associated scoring criteria:

1. Regional and landscape factors (maximum 20 points)
2. Site features (maximum 35 points)
3. Foraging habitat (maximum 50 points)
4. Nesting and overwintering habitat (maximum 30 points)
5. A. Pesticide practices (maximum 40 points)  
B. Management practices (maximum 40 points)

Using aerial photographs, site visit photos, and making assumptions about adjacent land use and pesticide use, the suitability of RPBB habitat was scored as the following:

Parameter	Max Score	Assigned Score	Notes
1	20	3	<5% natural habitat within the surrounding 10 km square area, vegetation present consists of naturalized, and weedy/invasive species
2	35	1	Site is almost entirely paved with limited vegetation present.
3	50	7	< 10% forage cover, 1-4 spring ephemerals, 1-9 summer and no fall flowering species. Assume no RPBB superfood or immune system species.
4	30	2	Of limited vegetation present, minimal areas are undisturbed or not mowed.
5a	40	35	Assume no onsite insecticide/pesticide use.
5b	40	10	Assume no managed bees present on adjacent parcels.
Total	215	58	Overall score 58/215 = 27% of possible points

The habitat assessment score is 58 out of 215. The largest components of the score are based on the assumptions of no onsite insecticide use (Parameter 5A) and that no managed bees are present within the immediate vicinity of the Site (Parameter 5B). Onsite foraging habitat with flowering plants present throughout the active season is almost non-existent. Overwintering and nesting habitat is not present on the Site. For the onsite habitat parameters (2-4), the site score was 10 out of a possible 115, or 9% of the total, from which I conclude, the Site does not provide suitable habitat for the RPBB.

The USFWS *Conservation Management Guidelines for the Rusty Patched Bumble Bee* (February 27, 2018) should be consulted for the complete list of voluntary conservation measures that can be utilized during site development and for landscaping.

Attachments:

U.S. Fish and Wildlife Service. *Conservation Management Guidelines for the Rusty Patched Bumble Bee (Bombus affinis)*. Version 1.6. February 27, 2018.



# Conservation Management Guidelines *for the* Rusty Patched Bumble Bee (*Bombus affinis*)

Version 1.6

February 27, 2018



Photograph by Tamara Smith, UFWWS



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## Background

On January 11, 2017, the U.S. Fish and Wildlife Service (FWS) published the final rule to list the rusty patched bumble bee (*Bombus affinis*) as an endangered species under the Endangered Species Act (ESA) (U.S. Fish and Wildlife Service 2017). The listing became effective on March 21, 2017. For more information about the species, as well as guidance under the Endangered Species Act, visit our website [www.fws.gov/midwest/endangered/insects/rpbb](http://www.fws.gov/midwest/endangered/insects/rpbb).

*The purpose of this document is to provide voluntary management guidance to help FWS, other federal agencies, state agencies, private landowners and land managers manage their land to benefit the rusty patched bumble bee. Much of this guidance is focused on management of natural areas; however, many of the same principles can be applied to urban areas. For actions that may affect the rusty patched bumble bee and that are funded, authorized, or carried out by one or more federal agencies, we recommend that you also review the rusty patched bumble bee section 7 consultation guidance (see <https://www.fws.gov/midwest/endangered/insects/rpbb/ProjectProponent.html>). For non-federal actions that may result in take of the species, see, Incidental Take Permits - - Section 10(a)(1)(B) Guidance, at the same website.*

This conservation guidance will also address the habitat needs of many pollinators, including all bumble bee species. Be sure to include milkweed in your floral resources and habitat for monarch butterflies will also be provided. This guidance document is subject to continual improvement and modification.

## Species Needs and Targets

### Needs

The rusty patched bumble bee needs three things: nesting habitat, floral resources to gather pollen and nectar, and overwintering habitat.

**Nesting Habitat:** Rusty patched bumble bee nests are typically in **abandoned rodent nests or other similar cavities, one to four feet below ground** (Plath 1922, pp. 190-191; Macfarlane et al. 1994, p. 4). Rusty patched bumble bee nests have also been occasionally observed above ground (Plath 1922, p. 190). Nests are thought to be typically within 1 km (0.6 mi) of summer foraging areas. Nests locations are likely to be in open areas or near open areas where it is not heavily forested and not too wet (*i.e.*, not marsh, shrub wetlands, or wetland forest). Rusty patched bumble bee queens search for nesting sites after emerging in the spring and the nests are occupied by the colony throughout the active summer and fall flight period (**Figures 1 and 2**).

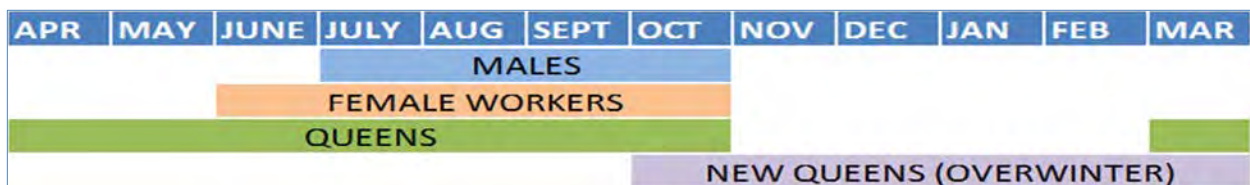
**Overwintering sites:** Bumble bees overwinter in small chambers in **loose soil and/or leaf litter just a few centimeters below the ground** or they use compost or rodent hills/mounds (Goulson 2010, p. 11). Little is known about the specific overwintering habitats of rusty patched bumble bee foundress queens

(the queens that develop in late summer and are the only members of the colony that survive winter). Overwintering habitat is often in or near **woodlands or woodland edges that contain spring blooming herbaceous plants, shrubs, and trees**, which allows proximity to woodland spring blooming flowers, particularly spring ephemeral wildflowers, a critical early spring food source. Solitary queens mate in the fall and overwinter roughly from mid-October through mid-March (**Figure 1**).

**Floral Resources:** Bumble bees gather pollen and nectar from the flowers of a wide variety of plants, typically within 1 km (0.6 mi) of nests (Xerces 2013, pp. 27-28, Knight et al. 2005, p. 1816; Wolf and Moritz 2008, p. 422; Dramstad 1996, pp. 163-182; Osborne et al. 1999, pp. 524-526; Rao and Strange 2012, pp. 909-911). The nectar provides carbohydrates and the pollen provides protein. The species is one of the first bumble bees to emerge early in the spring and the last to go into hibernation. To meet its nutritional needs, therefore, the rusty patched bumble bee requires access to a diverse group of plant species to ensure that there are flowers in bloom throughout the colony's long active flight period, roughly from mid-March through mid-October (**Figure 1**). The number of queens that a colony can produce is directly related to the amount of pollen that is available (Burns 2004, p. 150). The FWS, along with partners, developed a regionally specific plant list that is on our website at ([www.fws.gov/midwest/Endangered/insects/rpbb/plants.html](http://www.fws.gov/midwest/Endangered/insects/rpbb/plants.html)).

**Spring Foraging Habitat:** Rusty patched bumble bees may depend on woodland spring ephemeral flowers because of the species' early emergence; in the spring (roughly, mid-March through May) it is often found in and near woodland habitats (Colla and Dumesht 2010, p. 45-46).

**Summer and Fall Foraging Habitat:** Bumble bees typically forage within 1 km (0.6 mi) of nests. While the rusty patched bumble bee may visit any available flowers within the typical foraging distance of its nest, it is reasonable to assume that core foraging areas are those areas with concentrated resources (*e.g.*, open fields and prairies with large patches of blooming native flowers) where the bee can find pollen and nectar while minimizing energy expenditure.



**Figure 1:** Phenology chart for rusty patched bumble bee. New queens overwinter from roughly mid-October through mid-March, when they then emerge and start to feed and establish colonies. The active foraging and flight period runs from mid-March through mid-October.

## Spring – Early Summer

Include early-blooming plants and maintain a diversity of flowers in your landscape.

To protect overwintering queens, avoid early raking or mowing; raking is best done in April and May.

Keep large patches of land unmowed and untilled to provide secure nesting sites; healthy ground-nesting mammal populations help create future nesting sites.

Because queens are still foraging and colonies are usually very small, avoid the use of pesticides.

## Summer – Fall

Include mid- and late-blooming plants such as goldenrod, milkweed, and aster in your landscape.

Leave leaf litter, downed wood, and uncut bunch grasses to serve as potential overwintering sites.

As colonies are producing new queens at this time of year, avoid using pesticides. If pesticides are necessary, choose products that are less harmful to bumble bees, and do not use them at times when bees are active or when plants are flowering.

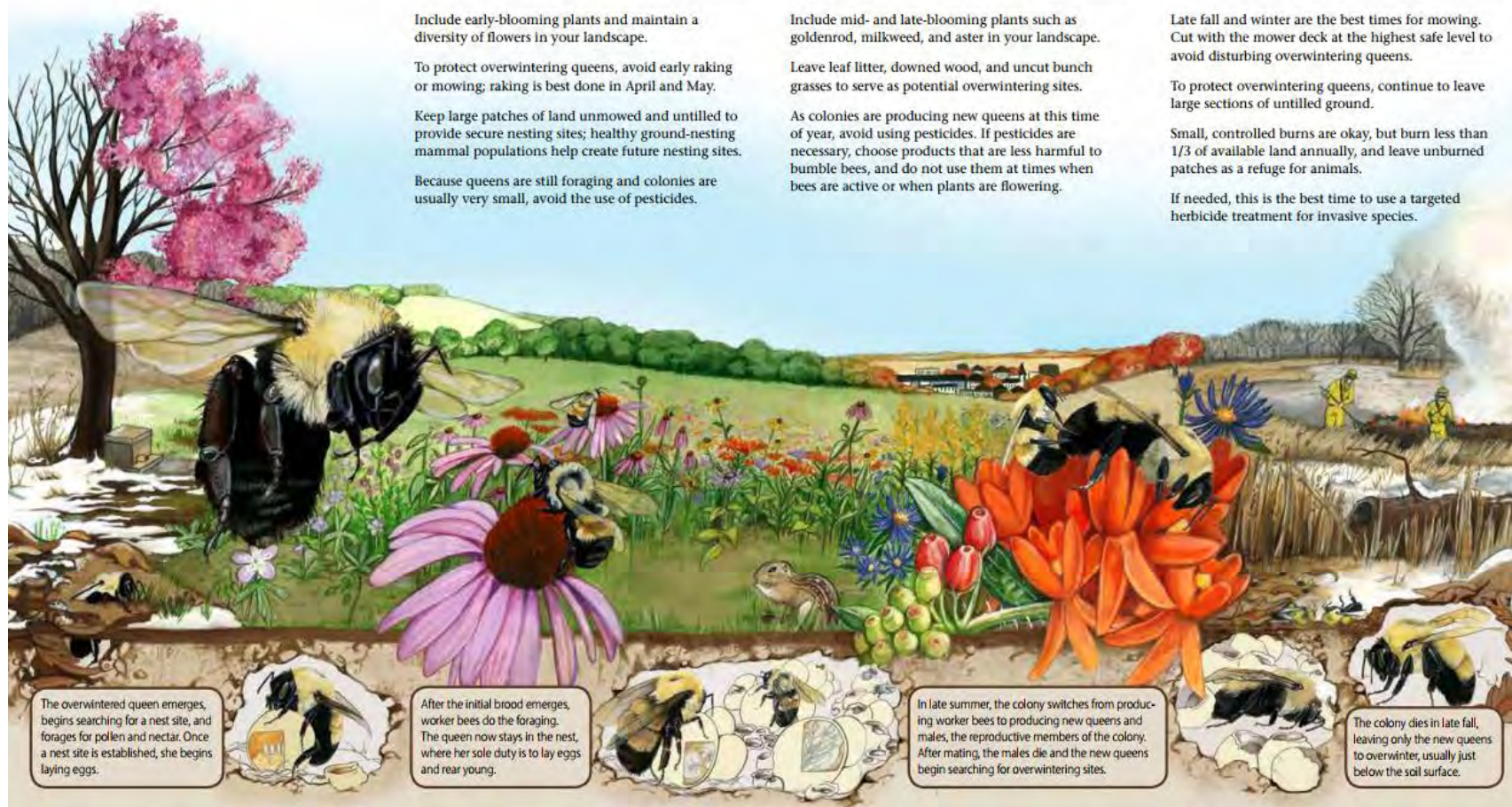
## Winter

Late fall and winter are the best times for mowing. Cut with the mower deck at the highest safe level to avoid disturbing overwintering queens.

To protect overwintering queens, continue to leave large sections of untilled ground.

Small, controlled burns are okay, but burn less than 1/3 of available land annually, and leave unburned patches as a refuge for animals.

If needed, this is the best time to use a targeted herbicide treatment for invasive species.



**Figure 2:** Illustration of the rusty patched bumble bee life cycle by Alix Lucas, courtesy of the Xerces Society, with some general management recommendations for bumble bee conservation by season.



## Management Objectives and Targets for High Quality Rusty Patched Bumble Bee Habitat

Ideally, managed areas would have all three habitat features necessary to maintain one or more colonies of rusty patched bumble bee: nesting habitat, floral resources, and overwintering habitat. We recognize, however, that not every management area will contain all the features necessary for one or more colonies (e.g., small areas of land may only contain one key feature, such as overwintering habitat) and that areas are managed for a variety of purposes. We encourage land managers to consider how the areas under their management can contribute to habitat at the larger landscape level context in order to contribute to the conservation of one or more colonies of rusty patched bumble bee. For example, it is important to provide habitat heterogeneity at the county scale to help buffer from extreme events and climate variability at a broad scale.

Ideally, to sustain a colony or multiple colonies, an area would contain features and habitat characteristics necessary for foraging, nesting and overwintering that are identified in the following management objectives and targets.

### 1. Objective One – Create, enhance, or maintain foraging habitat

#### **Objective One Targets**

**Create or maintain foraging habitat in your management area that meet the following targets:**

- At least an estimated 50% of vegetative cover in the management area (*i.e.*, the area that is being considered for management) is comprised of foraging habitat (plants that provide food);
- Ten or more flowering plant (herbaceous, shrubs, or trees) species blooming during the spring, not including invasive or noxious weeds;
- Ten or more flowering plant (herbaceous, shrubs, or trees) species blooming during the summer, not including invasive or noxious weeds;
- Ten or more flowering plant (herbaceous, shrubs, or trees) species blooming during the fall, not including invasive or noxious weeds;
- Nine or more superfoods<sup>1</sup> present such as wild bergamot (*Monarda fistulosa*), prairie clover (*Dalea* spp.), hyssop (*Agastache* spp.), goldenrod (*Solidago* spp.), asters (*Symphyotrichum* spp.), leadplant (*Amorpha canescens*), joe pye weed (*Eutrochium* spp.), and coneflowers (*Echinacea* spp., *Ratibida pinnata*); and,
- Nine or more immune building<sup>2</sup> plant species present such as wild bergamot, sunflowers

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<sup>1</sup> Superfood plants produce nectar that is rich in amino acids, a secondary source of protein for adult and larval bumble bees.

<sup>2</sup> Immune building plants are known to help build bumble bee immune systems.

(*Helianthus* spp.), white turtlehead (*Chelone glabra*), and native wild blueberries and cranberries (*Vaccinium* spp.).

- To buffer against extreme climate events, include frost and drought hardy plants that bloom throughout the active season, especially in the spring and fall.

## 2. Objective Two – Create, enhance, or maintain nesting habitat

**Objective Two Targets - Create or maintain nesting habitat in your management area that meets the following targets:**

- At least an estimated 20% of the area with undisturbed (that are not dug up/tilled) native bunch grasses;
- At least an estimated 20% of the area with uncompacted, loose soil (one key indicator of loose soil is evidence of rodent activity and rodent holes);
- At least an estimated 20% of the area that is left un-mowed (or mowed at a height of greater than 12 inches in the fall or winter), no/low intensity grazing<sup>3</sup>, and infrequent<sup>4</sup> burns (see prescribed fire and grazing sections below); and,
- Fallen leaves are not raked or otherwise removed.

## 3. Objective Three – Create, enhance, or maintain overwintering habitat

**Objective Three Targets - Create or maintain overwintering habitat within your management area that meet the following targets:**

- Wooded areas that contain highly diverse (10+) spring-time native flowering herbaceous plants, shrubs, and/or spring flowering trees;
- Wooded areas with less than 30% cover comprised of invasive or noxious weeds and woody plants (e.g., buckthorn); and,
- Areas with brush pile, duff layers, and fallen leaves that are not raked or otherwise removed.
- Plant hedgerows to help buffer against extreme events.

## 4. Objective Four – Create, enhance, or maintain target habitat features

**Objective Four Targets – Create or maintain the following features within your management area:**

- Permanent meadows or grasslands with a high diversity (10+ species) of native wildflowers;
- Maintain areas of open understory in woodlands to encourage the growth of native spring flowers;

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<sup>3</sup> No or low intensity grazing depends on the type of animal, the size of the herd, and the size of the grazed site. Grazing is further described in the “Grazing” section, below.

<sup>4</sup> Fires are considered infrequent if *at least* 3 years is allowed to elapse without fire. Prescribed fire is further discussed in the “Prescribed Fire” section, below.

- If land is used for pasture or haying, the land is comprised of at least 30% non-invasive, forage plants;
- At least 60 % of the area under consideration that is within 25 ft (7.6 m) of surface water features has flowering forbs; and,
- Low density 0.5 hive/ac (0.5 hive/0.4 ha), or no domesticated honey bee hives present.

## **Actions that Could Cause Take**

Land management activities can cause take of rusty patched bumble bees. The Section 7 guidance and Section 10(a)(1)(B) Guidance provide (both available online at <https://www.fws.gov/midwest/Endangered/insects/rpbb/ProjectProponent.html>) brief descriptions of some, but not all, of the types of actions that we believe may lead to take. If the following management suggestions are taken, such take may be minimized but not necessarily eliminated.

Threats to the rusty patched bumble bee are discussed in more detail in the species status assessment and the listing documents (USFWS 2016, 2017), which can be found at [www.fws.gov/midwest/endangered/insects/rpbb](http://www.fws.gov/midwest/endangered/insects/rpbb)). Briefly, stressors that should be considered when evaluating the effects of managing land on the rusty patched bumble bee include prescribed fire, haying, grazing, herbicide use, land-clearing, pesticide use; and the use of non-native bees. In addition to direct take resulting from these activities, habitat fragmentation and loss of the diversity of habitat that may result from land management should also be considered and evaluated.

## **Conservation Management Recommendations**

### **Protect, Create, Restore, and Maintain Habitats**

Access to diverse and abundant floral resources is essential for the rusty patched bumble bee during its active season, which is typically long compared to most other bumble bee species. The species is active and reliant on flowers during the entire growing season (mid-March through mid-October). Therefore, any action that will increase the diversity of wildflower resources throughout the growing season will tend to contribute positively to rusty patched bumble bee colony health.

Following these recommendations will provide for most other bumble bees, solitary bees and many butterflies. Including milkweed in floral resources will provide for monarch butterflies.

In general, FWS recommends activities that would strive to meet the rusty patched bumble bee conservation objectives and targets ([identified in the previous section: Management Objectives and Targets for High Quality Rusty Patched Bumble Bee Habitat](#)) and:

- Increase the diversity of native wildflowers by direct seeding to establish a new cover type – for example, conversion of cropland, intensively managed pasture or range, or intensively managed hayland to native floral and grassland habitat;



- Implement or alter grazing practices, prescribed fire, or other land management to increase the diversity of native wildflowers and that maintain or facilitate the development of nesting and overwintering habitat;
- Remove and control invasive plants (e.g., garlic mustard, *Allaria petiolata*) in woodlands, forest edges, prairies, and meadows – in any habitats used for foraging, nesting, or overwintering;
- Increase the diversity of native wildflowers in grasslands and pastures by inter-seeding or similar practices; and,
- Establish native trees and shrubs [e.g., willows, serviceberry (*Amelanchier*)], whose flowers are often good early season pollen and nectar sources.

We recommend assessing habitat within your management unit(s) using the rusty patched bumble bee habitat assessment, available online

([www.fws.gov/midwest/endangered/insects/rpbb/pdf/HabitatAssessmentFormGuideByXercesForRPBB.pdf](http://www.fws.gov/midwest/endangered/insects/rpbb/pdf/HabitatAssessmentFormGuideByXercesForRPBB.pdf)). Ideally, habitat would be assessed prior to management to quantify the baseline quality of the habitat for rusty patched bumble bee and to evaluate any stressors that might be affecting the bee or its habitat. Post management assessments will help to quantify habitat improvements and assess future needs.

## Prescribed Fire

**Prescribed fire is an excellent tool to maintain, restore, and enhance rusty patched bumble bee habitat**, but must be implemented with considerable care and planning. Prescribe fire has the potential for complex effects on the plant communities that are critical to the persistence of local colonies and fire and smoke could harm or kill bees in the burned area. In addition, fire may not be needed to conserve a rusty patched bumble bee colony(ies) unless certain aspects of the plant community (e.g., low density of nectar or pollen plants) are currently limiting colony growth. **When using prescribed fire, we recommend the following measures:**

General recommendations:

- Consider the landscape in which the actions will occur, specifically, the area within 1km (0.6 mi) from your area of interest, to determine if there are nearby floral resources available.
- Consider the timing of the burns and the habitat within the burns will occur, in particular, consider when floral resources will return and be available for foraging.
- **Only burn a specific area once every 3 to 6 years.** Use the maximum length fire return interval that is adequate to maintain or restore meadows and/or high-quality native prairie habitat on each unit. Allow *at least* 3 years to elapse without fire (*i.e.*, minimum 4- year rotations) before re-burning any area. Burning more frequently may be required for establishing new habitat (e.g., burning for 2-3 years in a row).
- **Burn only small sections at a time.** If feasible to achieve your management objectives, allow fires to burn in a patchy ("finger") pattern within units. Do not make a concerted effort to burn

‘every square inch’; leave fire “skips” unburned. Burning under cool or damp conditions may increase survival of insects present in the litter layer within the burned unit (*e.g.*, Panzer 2002).

- **Map the extent of each fire** in rusty patched bumble bee habitat to ensure that future fire planning is based on an accurate understanding of prior fire history.
- **Mow fire breaks that will result in patches of unburned areas**, if possible, to serve as refuge for animals within burn areas. Consider the use of proactive techniques to increase the patchiness of fires, especially if habitats that would serve as sources of recolonizing adults are small or within the foraging distance of the burn unit.
- **Conduct pre-burn bumble bee surveys** and evaluate other applicable information to understand the distribution and relative abundance of rusty patched bumble bees within and among burn units and elsewhere within the area inhabited by the local colony(ies). See the rusty patched bumble bee survey protocols provided on our rusty patched bumble bee ESA guidance website (<https://www.fws.gov/midwest/Endangered/insects/rpbb/surveys.html>) for proper survey conditions, time of year, etc.
- **Avoid high intensity fires.** High fuel levels increase the likelihood that fires may destroy nesting habitat for rusty patched bumble bees. Therefore, consider reducing fuel levels (*e.g.*, by haying the previous late fall) before conducting burns where fuel levels seem to be high – if that would not interfere with the burn objectives.
- If you plan to change the configuration of burn units or make other changes to your prescribed fire plan, **review the location and timing of recent burns.** Evaluate the potential effects of those recent burns on the current abundance and distribution of rusty patched bumble bees within the management area and elsewhere within the presumed extent of the local population (*e.g.*, one or more colonies may be found within the High Potential Zone, see maps on <https://www.fws.gov/midwest/endangered/insects/rpbb/rpbbmap.html>).
- Plan for the contingency that a prescribed fire will escape a burn unit and burn one or more additional units that contain rusty patched bumble bee habitat. If this is reasonably likely, determine how the rusty patched bumble bee colony or group of colonies would persist despite such a scenario.

If burning in foraging habitat (see [habitat definitions identified in the Species Needs and Targets section, above on pp. 3 -4](#)):

- **Only burn from mid-October through mid- March**, if possible, so that floral resources are not reduced when the species is feeding. If feasible to achieve your management objectives, conduct spring burns as early as is feasible or late fall burns. Late spring burns may reduce the nectar and pollen sources for newly emerged queens that are gathering food to establish their colonies.
- **If you cannot burn outside of the active season, burn no more than one-third of the suitable foraging habitat within your management area each year.** Consider the landscape context of the burns and include in your assessment the land within 1km (0.6 mi) of your area.
  - If possible, burn small sections at a time. Divide the rusty patched bumble bee habitat,

where prescribed fire is proposed, into as many burn units as is feasible and burn no more than one unit in any single year. Units should contain approximately equal amounts of rusty patched bumble bee habitat to ensure that the colony that is utilizing the site is not disproportionately affected by any single burn.

- In cases where there are nearby local colonies of rusty patched bumble bee that will provide immigrants from outside of the management area it may also be feasible to conserve a rusty patched bumble bee colony with less than three burn units, but that would require close coordination with neighboring landowners (see [Coordinated Management, below](#)).

If burning in overwintering habitat or early spring foraging habitat (see [habitat definitions identified in the Species Needs and Targets section, above on pp. 3 -4](#)):

- **If burning during the overwintering period (mid-October through mid-March) or in spring, burn no more than one-third of the suitable habitat within your management area each year.** Units should contain approximately equal amounts of rusty patched bumble bee habitat to ensure that the colony that is utilizing the site is not disproportionately affected by any single burn. **Consider the landscape context of the burns and include in your assessment the land within 1km (0.6 mi) of your area.**
- If you need to burn in late spring to address a particular management need (e.g., control of smooth brome, *Bromus inermis*), other precautionary measures will be especially important. These include the division of occupied rusty patched bumble bee habitat into as many burn units as is practicable; ensuring that fires do not escape from burn units; maximizing the number of years between fires; and, reducing fuel loads (e.g., by grazing) in rusty patched bumble bee habitat in units where frequent or intense fire is not necessary.
- If it is not practicable to divide rusty patched bumble bee habitat into separate burn units within a management area, then we recommend carefully implemented grazing or haying, if feasible, instead. Alternatively, consider the landscape context to determine if at least two-thirds of suitable habitat remains unburned within 1 km (0.6mi) of your management area.

## Mowing/Haying

**Mowing and haying can be a useful management tool to control invasive plants and maintain open meadows and prairies.** Meadows and gardens with a variety of structural layers of habitat and bunch grasses have been shown to have a higher diversity of bumble bees than areas without such features (e.g., Mader et al. 2011). However sites under certain mowing regimes (e.g., May and/or July mowing) were found to have significantly fewer nests than non-mowed areas (i.e., Potts 2009), likely due to a loss in floral resources. **When mowing or haying, we recommend the following measures:**

- **Mow outside of the active season** (i.e., mid-October through mid-March), if possible, in areas that provide summer foraging habitat. If mowing must occur during the active flight season

(mid-March through mid- October), attempt to create a mosaic of structurally different habitat patches or ensure that the extent of the area mowed is not likely to affect more than one-third of the foraging habitat that is available on site or within the larger landscape [within 1 km (0.6mi)] of the site boundary.

- **Mow at the highest cutting height possible**, ideally 12-16 inches (30 - 40 cm), or a minimum of 8-10 inches (20 - 25cm) if possible. Mowing at this height will reduce disturbance of established nests or overwintering queens.
- **Mow no more than 1/2 of the open, non-forested foraging habitat within your management area per year**, if possible. Leave patches of unmowed habitat for the entire year. Consider the habitat availability in the larger landscape context [within 1 km (0.6mi) of your area].
- In cases where there are nearby local colony(ies) of rusty patched bumble bee that will provide immigrants from outside of the management area it may also be feasible to conserve a rusty patched bumble bee colony (ies) with less than three mow units, but that would require close coordination with neighboring landowners ([see Coordinated Management, below](#)).
- **Mow at reduced speeds (< 8mph)**, if possible, to allow time for bees to avoid mowing equipment.
- **Map the extent of mowed areas** in rusty patched bumble bee habitat to ensure that future mowing planning is based on an accurate understanding of prior mowing history.

## Grazing

**Grazing can be a useful management tool to encourage the growth of nectar resources, provide structural diversity for nesting habitat, control invasive species and maintain open meadows and prairies by managing succession. When grazing land, we recommend the following measures:**

- **Design and conduct prescribed grazing practices that encourage wildflower diversity and abundance**, such as low intensity grazing and/or short duration grazing with long recovery periods.
- Do not exceed moderate stocking rates (*e.g.*, such that the forage harvested by grazing animals does not exceed one-third of the current available forage).
- Divide the rusty patched bumble bee habitat where grazing is proposed into as many grazing units as is feasible and graze no more than one unit in any single year. Allow the vegetation to recover by rotating grazing areas and establishing ex-closures. Units should contain approximately equal amounts of rusty patched bumble bee habitat to ensure that the colony(ies) is not disproportionately affected by any single graze unit. If it is not practicable to divide rusty patched bumble bee habitat into separate grazing units within a management area, then we recommend carefully implemented prescribed fire or haying, if feasible, instead.
- In cases where there are nearby local colonies [within the estimated dispersal distance of 10km (6mi)] of rusty patched bumble bee that will provide immigrants from outside of the management area it may also be feasible to conserve rusty patched bumble bee with less grazing units, but that would require close coordination with neighboring landowners to ensure

that dispersal of adults is likely to be sufficient to reinforce numbers in the grazed area (see [Coordinated Management, below](#)).

- The timing and frequency of grazing rotations will depend on the type and size of herd and the size of the area to be grazed. In general, grazing should occur for a short period of time and the site should be allowed an extended period for recovery (e.g., 14 days of grazing with 80-90 days of rest).
- We recommend that land managers **complete grazing strategy** according to the site characteristics and the type of grazing animals. We recommend that the grazing plan includes prescribed grazing practices that encourage wildflower diversity and abundance to help reach the rusty patched bumble bee [Management Objectives and Targets](#) described above.
- Limit grazing in high quality habitat during the active season (mid-March through mid - October) to ensure that it continues to meet the [Management Objectives and Targets](#) described above.
- **Map the extent of grazing** in rusty patched bumble bee habitat to ensure that future planning is based on an accurate understanding of prior grazing history.

## Pesticide Use

**Targeted herbicide and insecticide use can be a useful management tool to control pests and invasive plants. Nevertheless, rusty patched bumble bees are unlikely to thrive if they are exposed to insecticides that are used broadly and systemically (e.g., seed coatings) or are foliar sprayed. When pesticides must be used, we recommend the following measures:**

### Insecticide Use

Whenever applicable, in order to prevent insecticide exposure to pollinators, the safest action is to avoid use of insecticides in rusty-patched bumble bee habitat or in areas near habitat. There are a number of resources available to help with decisions on how to reduce pesticide use, how to reduce the potential for drift of pesticide to habitat, and how to keep yards and lawns pollinator friendly. The following is a list (not comprehensive) of resources that are available:

#### **Insecticides Used in Agricultural Production Areas:**

- Use the principles of Integrated Pest Management (IPM) which includes the use of multiple practices to control pests or invasive plant species, which lower pesticide use, including insecticides.
  - Use the services of certified crop advisors such as Natural Resources Conservation Service (NRCS) or your local extension office to help implement an IPM program.
  - NRCS has various programs that offer financial incentives for certain IPM practices, please contact a local NRCS representative for a list of these opportunities.
  - FWS guidelines on protecting pollinators from insecticides:

<https://www.fws.gov/pollinators/PollinatorPages/Threats.html>

- o Please see specific IPM guidance:
  - NRCS IPM Guidance:  
[https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/energy/conservation/?cid=nrcs143\\_023640](https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/energy/conservation/?cid=nrcs143_023640).
  - FWS IPM Guidance:  
[https://www.fws.gov/pollinators/pdfs/Reducing\\_Risks\\_to\\_Pollinators\\_from\\_Pest\\_Control\\_factsheet.pdf](https://www.fws.gov/pollinators/pdfs/Reducing_Risks_to_Pollinators_from_Pest_Control_factsheet.pdf)
  - Environmental Protection Agency (EPA) Reducing Pesticide Drift:  
<https://www.epa.gov/reducing-pesticide-drift>.
- o Read the label on the insecticide container and look for information on use and potential effects on bees and other pollinators. Product labels are legally binding and must be followed exactly, including specific pollinator protection language.

### **Pesticides used in Lawns and Gardens - Backyard Habitat**

- EPA Tips for Reducing Pesticide Impacts on Wildlife:  
<https://www.epa.gov/safepestcontrol/tips-reducing-pesticide-impacts-wildlife>
- FWS guidelines on protecting pollinators from pesticides:  
<https://www.fws.gov/pollinators/PollinatorPages/Threats.html>
- NRCS Tips for Backyard Conservation:  
[https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/home/?cid=nrcs143\\_023552](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/home/?cid=nrcs143_023552)
- Minnesota Pollution Control: Reducing Pesticides in Lawns: Landowners with Yards/Gardens:  
<https://www.pca.state.mn.us/sites/default/files/w-hhw2-21.pdf>

### **Herbicide Use**

- Contact your local extension agents and NRCS to learn about IPM methods and other actions on using herbicides that may limit effects to rusty-patched bumble bee habitat. Some of those suggestions could be:
  - o Apply herbicides as locally and directly as possible (cut-stem application, hand applications, spraying directly on the target plant).
  - o If feasible to ensure effective control of target plant species, apply herbicides pesticides when at times when bumble bees are less active (late at night, or late fall and winter). Bumble bees can fly at relatively cold temperatures and are active in early spring (e.g., mid- March) and in the morning and evening hours.

### **Tree Clearing/Forest Management**

Tree clearing/forest management may lead to increases in foraging habitat or may provide better nesting habitat. Soil disturbance that occurs during timber operations, however, can be harmful to overwintering bumble bees. High quality forested habitats comprised of a diverse array of native plant

species provide important foraging habitat for the rusty patched bumble bee in the spring, provide are the primary overwintering habitat for the species, and also provide nesting habitat along their edges. Forest management during the species' active season (mid-March through mid-October) may be less likely to impact the species directly if conducted after spring ephemerals are no longer flowering and floral resources have drawn the bees out into open foraging and nesting areas. When rusty patched bumble bee overwintering is suspected (see definitions of overwintering habitat above) to be within the management/project area:

- **Implement your state's best management practices (BMPs), especially those that serve to minimize the spread of invasive species and to avoid or minimize soil compaction.** Visit (<https://stateforesters.org/action-issues-and-policy/state-forestry-BMPs-map-o-o>) for up to date information about BMP recommendations by state.
- **Avoid or minimize forest management that may destroy spring blooming flowers during their bloom periods.**
- **Consider thinning or single tree selection and dense invasive shrub removal** that may improve overwintering and spring foraging habitat.

## Commercial Bumble Bees

Currently only one species of bumble bees is being used for commercial operations – the common eastern bumble bee (*B. impatiens*). Commercial bumble bees are used in contained commercial facilities (e.g., tomato greenhouses) or may be used in open environments (e.g., for open-field pollination services). Commercially raised common eastern bumble bees may spread pathogens into wild bee populations and compete with wild bees for resources. **When using commercial bumble bees, care should be taken to minimize exposure of wild bees to managed bees and we recommend the following measures:**

- Limit use of commercial bumble bees to closed-systems (e.g., greenhouses) and try to avoid use in open fields.
- Place screens over openings (e.g., vents, windows, etc.) in greenhouses to minimize escape of the managed bees.
- Properly dispose of commercial bees after their use and do not release them into the wild.
- Do not purchase commercial bumble bees to use outside of the native range of the commercial species (e.g., do not purchase *B. impatiens* to use in western United States, where they are non-native).

## Commercial Honey Bees

European honey bees (*Apis mellifera*) have documented negative effects on the reproductive success of bumble bees (e.g., Goulson and Sparrow 2009, Singh et al. 2010, and Thompson 2004). Additionally, pollen can be a vector for disease transmission between honey bees and bumble bees (e.g., Singh et al. 2010; Fürst et al. 2014, Graystock 2015). We recommend that managers discourage the placement of

domesticated honey bee hives in natural areas with high quality habitat (abundant and diverse floral resources) where rusty patched bumble bees are likely to be present. We are not discouraging the use of honey bees in agricultural fields, but encourage landowners to plant native flowers and to try to keep their honey bee hives disease and pest free.

**We make the following recommendations for natural areas:**

- Discourage placement of domesticated honey bee hives in natural areas with high quality rusty patched bumble bee foraging and nesting habitat.
- Place hives as far away as possible from natural areas (at minimum 1 km [0.6 mi]) and away from potential rusty patched bumble bee nesting sites.
- Keep domesticated hive density below 0.5 hive/ac (0.5 hive/0.4 ha), if possible, particularly in areas that are on or near locations with recent (within the year 2007 or more recent) rusty patched bumble bee observations.

### **Coordinated Management among Nearby Sites**

Conservation of the rusty patched bumble bee will ultimately depend in part on connecting patches of high quality habitat and coordinated management may be one avenue to do so. We make the following recommendations to help facilitate coordinated management:

- Conduct bumble bee surveys or review available data to understand the extent of nearby local rusty patched bumble bees colonies and habitats. This may facilitate coordination and management of colonies that may cross between management units and ownerships. To see where there are known locations of the rusty patched bumble bee, see the Rusty Patched Bumble Bee Interactive Map (<https://www.fws.gov/midwest/endangered/insects/rpbb/rpbbmap.html>).
- Coordinate management activities with property owners and managers of nearby rusty patched bumble bee habitats. For example, plan burns and other temporarily adverse management activities during years when nearby habitats will not be burned.
- Where there are nearby local colony(ies) (within the estimated dispersal distance of 10km [6mi]) of rusty patched bumble bee that will provide immigrants from outside a management area, it may be feasible to conserve a rusty patched bumble bee colony (ies) with less than the recommended number of management units (*e.g.*, mow or burn units). This would require close coordination with neighboring landowners to ensure that dispersal of adults is likely to be sufficient to reinforce numbers in the mowed area. To determine if there are nearby colonies, see the maps on (<https://www.fws.gov/midwest/endangered/insects/rpbb/rpbbmap.html>) – the red “High Potential Zone” polygons are areas with recent records of the species.



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**Appendix F**  
**SHPO Correspondence**

February 4, 2022

Megan Ullery  
Braun Intertec  
11001 Hampshire Ave S  
Minneapolis, MN 55438

RE: Alatus Brooklyn Center – Phase I A, B, C  
Proposed commercial and residential redevelopment (10 acres) at 2500 County Road 10  
T118 R21 S2, Brooklyn Center, Hennepin County  
SHPO Number: 2021-0550

Dear Megan Ullery:

Thank you for consulting with our office during the preparation of an Environmental Assessment Worksheet for the above-referenced project.

We initially provided comments on this project in a letter dated January 6, 2021. Since that time, the project has been enlarged and revised. We have reviewed the revised information included with your January 7, 2022 correspondence and we have determined that there are **no properties** listed in the National or State Registers of Historic Places and no known or suspected archaeological properties located in the area that will be affected by the revised project.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36 CFR § 800. If this project is considered for federal financial assistance, or requires a federal permit or license, then review and consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office for this state-level review may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.

Please contact Kelly Gragg-Johnson in our Environmental Review Program at [kelly.graggjohnson@state.mn.us](mailto:kelly.graggjohnson@state.mn.us) if you have any questions regarding our review of this project.

Sincerely,



Sarah J. Beimers  
Environmental Review Program Manager

## **Appendix G**

### **Noise Evaluation**

## Flat Earth Noise Level Estimating Tool

### Roadway 1

Enter hourly Cars	345
Enter hourly Medium Trucks	15
Enter hourly Heavy Trucks	15

Enter speed of Cars (MPH)	35
Enter speed of Medium Trucks	35
Enter speed of Heavy Trucks	35
Enter distance to Roadway 1	50
Enter distance to Roadway 2	50

### Roadway 2

Enter hourly Cars	686
Enter hourly Medium Trucks	30
Enter hourly Heavy Trucks	30

Enter speed of Cars (MPH)	35
Enter speed of Medium Trucks	35
Enter speed of Heavy Trucks	35

### Code ground cover

H for hard, S for soft	H
------------------------	---

### Result

Leq	67.9	dB
L50	63.7	dB
L10	71.2	dB

### Notes:

Highlight cells are required to be filled out

Calculations based on roadway segments 10\*D in length.

Calculations based on a flat-earth approach.

Calculations done for receiver distances from the roadways that are less than 50 feet, are done at risk.

For information about the tool and assistance in using the tool contact:

Peter Wasko MnDOT Metro District 651-234-7681 Peter.Wasko@state.mn.us

Mel Roseen MnDOT Office of Env. Stewardship 651-366-5808 Melvin.Roseen@state.mn.us

### Braun Intertec Notes:

1) Roadway 1 = Shingle Creek Parkway, Roadway 2 = County Road 10

2) Hourly total vehicles estimated from Annual Average Traffic Data (AATD) for the road segments closest to the project site from MNDOT's Traffic Mapping Application

3) For County Road 10, data show downward trend in AATD, so 2019 values used

4) For Shingle Creek Parkway data show no trend, so highest AATD from the dataset was used

5) 50 feet estimated from Figure 5 as the setback of the proposed residential building at the southwest corner of the site, closest to both roadways

6) source: MNDOT "Flat Earth Noise Level Estimator"

<http://www.dot.state.mn.us/environment/noise/pdf/flat-earth-noise-level-estimator.xlsx>

Sources: (1) Fideral Highway Administration Insulation of Building Against Highway Noise  
https://www.fhwa.dot.gov/environment/noise/noise\_barriers/abatement/insulation/high00.cfm  
(2) MnDOT's "Interior noise workbook actual window sizes"  
http://www.dot.state.mn.us/environment/noise/pdf/guidance/interior-noise-workbook-actual-window-sizes.xlsx

NR = EWNR - 10 logS/A - 6 db

where:  
NR = Noise Reduction from building (dB)  
EWNR = Exterior Wall Noise Rating  
10 log (S/A) = Room Absorption Factor  
NR = 30 - 4 - 6 = 20 db

Proposed Window Type = Pella Impervia fiberglass Sing hung windows  
Proposed Typical Wall Construction = 2x6 framing, 2 layers of interior and exterior gypsum board sheathing, siding TBD  
The EWNR that most closely represent the proposed builing construction are highlighted  
The Composite EWNR value was assumed to be lesser of the window and wall EWNR (wall EWNR = 28+3=31, window EWNR=30)  
The most conservative Room Absorption Factor was chosen

Single Glazed Window	EWNR
1/16", 1/8", 1/4" glass	24
5/16" glass	28
3/8" glass	30
2-ply glass .53" total	38
3-ply glass .82" total	41
Double Glazed Window	EWNR
3/32" glass, 4" airspace, 3/32" glass	30
1/8" glass, 2-1/4" airspace, 1/8" glass	32
1/8" glass, 2-1/4" airspace, 1/4" glass	36
1/4" glass, 2-1/4" airspace, 1/4" glass	38
3/16" glass, 2" airspace, 1/4" glass	39
1/4" glass, 2" airspace, 3/8" glass	40
3/16" glass, 2" airspace, 3/8" glass	41
3/16" glass, 4-3/4" airspace, 1/4" glass	44

Exteriors	Interiors	1/2" to 5/8" Gypsumboard	1/8" to 1/2" Plaster on 3/8" Gypsum Lab.	1/2" Soundboard on 3/8" to 1/2" Gypsumboard	1/2" to 7/8" Plaster	1/2" Plywood	1/4" Plywood Paneling	1/4" Hardboard Paneling	Exposed Solid Wall
Alum/Vinyl Siding on 1/2" wood	28	31	29	32	25	29	31	--	--
7/8" Stucco	36	34	37	30	33	37	38	--	--
7/8" Stucco on 1/2" Wood	37	36	37	32	34	38	39	--	--
Wood Siding	27	29	27	31	24	28	30	--	--
4-1/2" Brick Veneer	44	42	44	39	42	45	46	--	--
9" Brick	47	50	50	45	45	45	45	45	45
4" Concrete	46	47	47	41	40	40	40	40	40
6" Concrete	46	48	48	42	42	42	42	42	42
6" Concrete Block	38	40	40	34	33	33	33	33	33
8" Concrete Block	40	42	42	36	35	35	35	35	35
6" Block w/ 1/2" Stucco	39	41	41	35	34	34	34	34	34
8" Block w/ 1/2" Stucco	41	43	43	37	36	36	36	36	36

Type of Interior Room	10 log (S/A), dB	
	1 Exterior Wall	2 Exterior Walls (Corner Room)
Living Room	-4	-1
Bedroom	-3	0
Kitchen	-2	1

Modification Category 1: Mass Increases	Delta EWNR, dB
Double Mass One Side	3
Double Mass Both Side	4

	Estimated Noise Level from Screening	Residential Daytime Limits	Residential Nighttime Limits	Estimated Noise Reduction from Building	Estimated Interior Noise Level
L10	71.2	65	55	20	51.2
L50	63.7	60	50	20	43.7

\*all values in dB



## **Appendix H**

### **Greenhouse Gas Emissions Calculations**

Shingle Creek Opportunity Site Phase #1 Blocks 11, 12, and 13  
Project: B1905096.01  
Greenhouse Gas Emissions Summary

**Direct Emissions**

Operations - Facility Fuel Combustion Sources					
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Mass Sum	CO <sub>2</sub> e
	TPY	TPY	TPY	TPY	TPY
Facility Natural Gas Use	659	0.012	1.24E-03	659	659
Emergency Generator Engine 1	3,731	1.50E-01	2.99E-02	3,731	3,744
Emergency Generator Engine 2	2,606	1.04E-01	2.09E-02	2,606	2,615
Emergency Generator Engine 3	198	7.93E-03	1.59E-03	198	199
<b>Facility Total</b>	<b>4,390</b>	<b>0.162</b>	<b>3.11E-02</b>	<b>4,390</b>	<b>4,403</b>

Operations - Mobile Source Combustion					
	CO <sub>2</sub> e				
	TPY				
Mobile Sources (Onsite Operations) <sup>1</sup>	0.0				

Construction - Mobile Source Combustion					
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Mass Sum	CO <sub>2</sub> e
	TPY	TPY	TPY	TPY	TPY
Mobile Sources (Construction)	372	7.29E-03	1.71E-02	372	377

Construction - Land-Use					
	CO <sub>2</sub> e				
	TPY				
Land-Use (Construction) <sup>2</sup>	0.0				

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Mass Sum	CO <sub>2</sub> e
	TPY	TPY	TPY	TPY	TPY
<b>Total Direct Emissions</b>	<b>4,762</b>	<b>0.169</b>	<b>0.0483</b>	<b>4,762</b>	<b>4,780</b>

**Indirect Emissions**

Operations - Off-Site Electricity Production					
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Mass Sum	CO <sub>2</sub> e
	TPY	TPY	TPY	TPY	TPY
Off-Site Electricity Production	2,878	0.312	0.0445	2,878	2,899

Operations - Off-Site Waste Management					
	CO <sub>2</sub> e				
	TPY				
Off-Site Waste Management	342				

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Mass Sum	CO <sub>2</sub> e
	TPY	TPY	TPY	TPY	TPY
<b>Total Indirect Emissions</b>	<b>2,878</b>	<b>0.312</b>	<b>0.0445</b>	<b>2,878</b>	<b>3,241</b>

**Atmospheric Removals of GHGs**

Construction/Operations - Land-Use					
	CO <sub>2</sub> e				
	TPY				
Land-Use (Sinks) <sup>2</sup>	0.0				

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Mass Sum	CO <sub>2</sub> e
	TPY	TPY	TPY	TPY	TPY
<b>Total Sinks</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Total Emissions including Sinks = Direct Emissions + Indirect Emissions + Sinks**

	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Mass Sum	CO <sub>2</sub> e
	TPY	TPY	TPY	TPY	TPY
<b>Total</b>	<b>7,640</b>	<b>0.481</b>	<b>0.0928</b>	<b>7,641</b>	<b>8,022</b>

<sup>1</sup> Following the completion of the construction phase, emissions from vehicle traffic associated with onsite operations (deliveries, maintenance, etc.) are expected to be minimal and infrequent, and have not been quantified.

<sup>2</sup> Carbon flux associated with land-use changes is expected to be negligible and has not been quantified. The land-use category for the site prior to construction is "settlement" and will remain categorized as "settlement" after the project is completed.

Shingle Creek Opportunity Site Phase #1 Blocks 11, 12, and 13  
 Project: B1905096.01  
 Source: Mobile Sources - Construction Activities

Estimated Project Life 30 years  
 Project Residential Floorspace: 1,042,713 ft<sup>2</sup>  
 Project Commercial Floorspace: 77,563 ft<sup>2</sup>

Vehicle Types	Fuel type	Estimated Fuel Use Per Square Foot of Building Floorspace (gal/sq. ft) <sup>1</sup>	Estimated Total Fuel Usage During Construction Period (gallons)	CO <sub>2</sub> Emission Factor (kg/gal) <sup>2</sup>	CO <sub>2</sub> Emissions During Construction Period (ton)	CH <sub>4</sub> Emission Factor (g/gal) <sup>2</sup>	CH <sub>4</sub> Emissions During Construction Period (ton)	N <sub>2</sub> O Emission Factor (g/gal) <sup>2</sup>	N <sub>2</sub> O Emissions During Construction Period (ton)	CO <sub>2</sub> e Emissions During Construction Period (ton)
Crawler tractors/dozers	Diesel	0.0555	62,144	10.21	699	0.2	1.37E-02	0.47	3.22E-02	709
Excavators	Diesel	0.650	728,193	10.21	8,196	0.2	1.61E-01	0.47	3.77E-01	8,312
Graders	Diesel	0.0363	40,614	10.21	457	0.2	8.95E-03	0.47	2.10E-02	464
Pavers	Diesel	2.03E-03	2,279	10.21	26	0.2	5.02E-04	0.47	1.18E-03	26
Rollers	Diesel	0.0354	39,699	10.21	447	0.2	8.75E-03	0.47	2.06E-02	453
Rough terrain forklifts	Diesel	0.104	117,008	10.21	1,317	0.2	2.58E-02	0.47	6.06E-02	1,336
Rubber tire loaders	Diesel	1.03E-04	115	10.21	1	0.2	2.54E-05	0.47	5.96E-05	1
Skid steer loaders	Diesel	1.19E-03	1,330	10.21	15	0.2	2.93E-04	0.47	6.89E-04	15
<b>Total (tons)</b>					<b>11,158</b>		<b>0.219</b>		<b>0.514</b>	<b>11,316</b>
<b>Total (tons/year, annualized over project life)</b>					<b>372</b>		<b>7.29E-03</b>		<b>1.71E-02</b>	<b>377</b>

<sup>1</sup> A rough estimate of vehicle types and fuel consumption was made using data from "Oregon Nonroad Diesel Equipment Survey and Emissions Inventory," August 26, 2020 (<https://www.oregon.gov/deq/aq/Documents/orNonroadDieselRep.pdf>). An estimate of gallons of diesel per square foot of floorspace (gal/ft<sup>2</sup>) was estimated by dividing the Table A.18 annual fuel use estimates for each vehicle type by the survey total building square footage of 3,700,000 ft<sup>2</sup>.

<sup>2</sup> CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emission factors taken from Table 2 and Table 5 of EPA's "Emission Factors for Greenhouse Gas Inventories", April 2021 ([https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors\\_apr2021.pdf](https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf)), vehicle type: Construction/Mining Equipment.

**Shingle Creek Opportunity Site Phase #1 Blocks 11, 12, and 13**  
**Project: B1905096.01**  
**Source: Natural Gas Use**

Natural Gas Use	
<b>Assumptions:</b>	
<u>Residential Buildings</u> <sup>5,6</sup>	
Typical annual natural gas usage for water heating per square foot of residential building floorspace <sup>5</sup> , cf/(year*ft <sup>2</sup> )	9.5
Maximum residential building floorspace, ft <sup>2</sup>	1,042,713
Estimated natural gas use for residential water heating, MMcf/year	9.9
<u>Commercial Buildings</u> <sup>5,7</sup>	
Typical annual natural gas usage for water heating per square foot of commercial building floorspace <sup>5</sup> , cf/(year*ft <sup>2</sup> )	9.5
Maximum commercial building floorspace, ft <sup>2</sup>	77,365
Estimated natural gas use for commercial water heating, MMcf/year	0.73
Typical annual natural gas usage for cooking per square foot of commercial building floorspace <sup>5</sup> , cf/(year*ft <sup>2</sup> )	6.9
Assumed commercial building floorspace with natural gas cooking appliances, ft <sup>2</sup> <sup>7</sup>	58,453
Estimated natural gas use for commercial cooking, MMcf/year	0.40
<u>Total Project</u>	
Estimated total annual natural gas use, MMcf/year	11.0
Heating Value of Natural Gas <sup>1</sup> , Btu/scf	1,020
<b>Conversion Factors:</b>	
lb/ton	2,000
lb/kg	2.204
cf/Therm	73.0
CO <sub>2</sub> to CO <sub>2</sub> e	1
CH <sub>4</sub> to CO <sub>2</sub> e	25
N <sub>2</sub> O to CO <sub>2</sub> e	298

Pollutant	EPA Pollutant Type	40 CFR Part 98 <sup>2,3</sup> (lb/MMBtu)	Estimated Annual Emissions From Natural Gas Combustion (TPY)
CO <sub>2</sub> e <sup>4</sup>	GHG	117.07	659
CO <sub>2</sub> <sup>2</sup>	GHG	116.94	659
CH <sub>4</sub> <sup>3</sup>	GHG	0.0022	1.24E-02
N <sub>2</sub> O <sup>3</sup>	GHG	0.0002	1.24E-03

<sup>1</sup> Heating value of natural gas taken from AP-42 Appendix A. Typical Parameters of Various Fuels.

<sup>2</sup> CO<sub>2</sub> emission factor from 40 CFR 98 Subpart C, Table C-1 (natural gas 53.06 kg CO<sub>2</sub>/MMBtu), November 29, 2013.

Shingle Creek Opportunity Site Phase #1 Blocks 11, 12, and 13  
 Project: B1905096.01  
 Source: Emergency Generator 1 (401,541 ft<sup>2</sup> Market Rate Housing)

Emergency Generator	
<b>Assumptions:</b>	
Rated Capacity, Brake Horsepower (BHP) 4	2,750
Diesel Fuel Consumption Rate, gal/hr 4	660.1
Rated Capacity, MMBtu/hr	90.5
Hours of Operation	500
Fuel	Diesel
Density of diesel (lb/gal)	7.1
Heating value of diesel (Btu/lb)	19,300
<b>Conversion Factors:</b>	
lb/ton	2,000
lb/kg	2.204
CO <sub>2</sub> to CO <sub>2</sub> e	1
CH <sub>4</sub> to CO <sub>2</sub> e	25
N <sub>2</sub> O to CO <sub>2</sub> e	298
Btu/MMBtu	1,000,000

Pollutant	EPA Pollutant Type	AP-42 Emission Factors <sup>1</sup> (lb/MMBtu)	40 CFR Part 98 <sup>2,3</sup> (lb/MMBtu)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
CO <sub>2</sub> e	GHG	-	166	14,975	3,744
CO <sub>2</sub> <sup>1</sup>	GHG	165	-	14,925	3,731
CH <sub>4</sub> <sup>2</sup>	GHG	-	0.007	0.5981	1.50E-01
N <sub>2</sub> O <sup>2</sup>	GHG	-	0.0013	1.20E-01	2.99E-02

1 The CO<sub>2</sub> emission factor is based on diesel fuel, AP-42 Chapter 3.4 Large Stationary Diesel And All Stationary Dual-fuel Engines, Table 3.4-1, October 1996.

2 CH<sub>4</sub> and N<sub>2</sub>O emission factors from 40 CFR 98 Subpart C, Table C-2, (CH<sub>4</sub> = 0.003 kg CH<sub>4</sub>/MMBtu and N<sub>2</sub>O = 0.0006 kg N<sub>2</sub>O/MMBtu), November 29, 2013.

Shingle Creek Opportunity Site Phase #1 Blocks 11, 12, and 13  
 Project: B1905096.01  
 Source: Emergency Generator 2 (314,394 ft<sup>2</sup> Mixed Income Housing)

Emergency Generator	
<b>Assumptions:</b>	
Rated Capacity, Brake Horsepower (BHP) 4	2,561
Diesel Fuel Consumption Rate, gal/hr 4	461
Rated Capacity, MMBtu/hr	63.2
Hours of Operation	500
Fuel	Diesel
Density of diesel (lb/gal)	7.1
Heating value of diesel (Btu/lb)	19,300
<b>Conversion Factors:</b>	
lb/ton	2,000
lb/kg	2.204
CO <sub>2</sub> to CO <sub>2</sub> e	1
CH <sub>4</sub> to CO <sub>2</sub> e	25
N <sub>2</sub> O to CO <sub>2</sub> e	298
Btu/MMBtu	1,000,000

Pollutant	EPA Pollutant Type	AP-42 Emission Factors <sup>1</sup> (lb/MMBtu)	40 CFR Part 98 <sup>2,3</sup> (lb/MMBtu)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
CO <sub>2</sub> e	GHG	-	166	10,459	2,615
CO <sub>2</sub> <sup>1</sup>	GHG	165	-	10,423	2,606
CH <sub>4</sub> <sup>2</sup>	GHG	-	0.007	0.4177	1.04E-01
N <sub>2</sub> O <sup>2</sup>	GHG	-	0.0013	8.35E-02	2.09E-02

1 The CO<sub>2</sub> emission factor is based on diesel fuel, AP-42 Chapter 3.4 Large Stationary Diesel And All Stationary Dual-fuel Engines, Table 3.4-1, October 1996.  
 2 CH<sub>4</sub> and N<sub>2</sub>O emission factors from 40 CFR 98 Subpart C, Table C-2, (CH<sub>4</sub> = 0.003 kg CH<sub>4</sub>/MMBtu and N<sub>2</sub>O = 0.0006 kg N<sub>2</sub>O/MMBtu), November 29, 2013.

Shingle Creek Opportunity Site Phase #1 Blocks 11, 12, and 13  
 Project: B1905096.01  
 Source: Emergency Generator 3 (83,432 ft<sup>2</sup> Affordable Housing)

Emergency Generator	
<b>Assumptions:</b>	
Rated Capacity, Brake Horsepower (BHP) <sup>4</sup>	680
Diesel Fuel Consumption Rate, gal/hr <sup>4</sup>	35.0
Rated Capacity, MMBtu/hr	4.8
Hours of Operation	500
Fuel	Diesel
Density of diesel (lb/gal)	7.1
Heating value of diesel (Btu/lb)	19,300
<b>Conversion Factors:</b>	
lb/ton	2,000
lb/kg	2.204
CO <sub>2</sub> to CO <sub>2</sub> e	1
CH <sub>4</sub> to CO <sub>2</sub> e	25
N <sub>2</sub> O to CO <sub>2</sub> e	298
Btu/MMBtu	1,000,000

Pollutant	EPA Pollutant Type	AP-42 Emission Factors <sup>1</sup> (lb/MMBtu)	40 CFR Part 98 <sup>2,3</sup> (lb/MMBtu)	Hourly Emissions (lb/hr)	Annual Emissions (TPY)
CO <sub>2</sub> e	GHG	-	166	794	199
CO <sub>2</sub> <sup>1</sup>	GHG	165	-	791	198
CH <sub>4</sub> <sup>2</sup>	GHG	-	0.007	0.0317	7.93E-03
N <sub>2</sub> O <sup>2</sup>	GHG	-	0.0013	6.34E-03	1.59E-03

1 The CO<sub>2</sub> emission factor is based on diesel fuel, AP-42 Chapter 3.4 Large Stationary Diesel And All Stationary Dual-fuel Engines, Table 3.4-1, October 1996.  
 2 CH<sub>4</sub> and N<sub>2</sub>O emission factors from 40 CFR 98 Subpart C, Table C-2, (CH<sub>4</sub> = 0.003 kg CH<sub>4</sub>/MMBtu and N<sub>2</sub>O = 0.0006 kg N<sub>2</sub>O/MMBtu), November 29, 2013.

**Shingle Creek Opportunity Site Phase #1 Blocks 11, 12, and 13**  
**Project: B1905096.01**  
**Source: Off-Site Emissions from Electricity Generation**

Off-Site Electricity	
<b>Assumptions:</b>	
<u>Residential Buildings</u>	
Typical annual electricity usage per multifamily housing unit <sup>3</sup> , kWh/(year*unit)	5,536
Maximum number of housing units	744
Estimated electricity use for residential buildings, MWh/year	4,119
<u>Commercial Buildings</u>	
Typical annual electricity usage per square foot of commercial building floorspace <sup>4</sup> , kWh/(year*ft <sup>2</sup> )	14.5
Maximum commercial building floorspace, ft <sup>2</sup>	77,365
Estimated electricity use for commercial buildings, MWh/year	1,122
<u>Total Project</u>	
Estimated total project site annual electricity use, MWh/year	5,241
<b>Conversion Factors:</b>	
lb/ton	2,000
lb/kg	2.204
CO <sub>2</sub> to CO <sub>2</sub> e	1
CH <sub>4</sub> to CO <sub>2</sub> e	25
N <sub>2</sub> O to CO <sub>2</sub> e	298

Pollutant	EPA Pollutant Type	Emission Factor <sup>1</sup> (lb/MWh)	Off-Site Emissions From Electricity Generation (TPY)
CO <sub>2</sub> e <sup>2</sup>	GHG	1,106.4	2,899
CO <sub>2</sub>	GHG	1,098.4	2,878
CH <sub>4</sub>	GHG	0.119	0.312
N <sub>2</sub> O	GHG	0.017	4.45E-02

<sup>1</sup> CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emission factors taken from Table 6 of EPA's "Emission Factors for Greenhouse Gas Inventories", April 2021 ([https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors\\_apr2021.pdf](https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf)). "Total Output" emission factors were used as directed in the Table 6 footnote.



Shingle Creek Opportunity Site Phase #1 Blocks 11, 12, and 13  
 Project: B1905096.01  
 Source: Off-Site Waste Management Emissions

Total Residential Units: 744  
 Project Residential Floorspace: 1,042,713 ft<sup>2</sup>  
 Project Commercial Floorspace: 77,563 ft<sup>2</sup>

Waste Material	Estimated Multifamily Waste Generated per Unit <sup>1</sup> (tons per unit)	Estimated Residential Waste Generation (tons per year)	Estimated Commercial Waste Generated per Square Foot of Building Floorspace <sup>8</sup> (tons per sq. ft)	Estimated Commercial Waste Generation (tons per year)	Estimated Total Project Site Waste Generation (tons per year)	CO <sub>2</sub> e Emission Factor (metric tons CO <sub>2</sub> e/ short ton material) <sup>2</sup>	Annual CO <sub>2</sub> e Emissions (TPY) <sup>3</sup>
Trash <sup>4</sup>	469	174	5.50E-04	43	217	0.52	124
Recycling <sup>5</sup>	521	194	6.11E-04	47	241	0.09	23.9
Organics <sup>6</sup>	477	177	5.59E-04	43	221	0.48	117
HHW and Electronics <sup>7</sup>	32	12	3.75E-05	3	15	0.87	14.2
Bulky Waste <sup>4</sup>	127	47	1.49E-04	12	59	0.52	33.7
Textiles <sup>4</sup>	109	41	1.28E-04	10	50	0.52	28.9
<b>Total</b>	<b>1,736</b>	<b>646</b>	<b>2.03E-03</b>	<b>158</b>	<b>804</b>		<b>342</b>

1 Hennepin County Multifamily Waste Study, September 2017 <https://www.hennepin.us/-/media/hennepinus/your-government/projects-initiatives/documents/multifamily-waste-study-2017.pdf>

2 CO<sub>2</sub>e emission factors taken from Table 6 of EPA's "Emission Factors for Greenhouse Gas Inventories", April 2021 ([https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors\\_apr2021.pdf](https://www.epa.gov/sites/default/files/2021-04/documents/emission-factors_apr2021.pdf)).

3 Metric tons of CO<sub>2</sub>e multiplied by 1.102 to convert to US tons of CO<sub>2</sub>e

4 CO<sub>2</sub>e emission factor for mixed MSW, landfilled

5 CO<sub>2</sub>e emission factor for mixed recyclables, recycled

6 CO<sub>2</sub>e emission factor for mixed organics, landfilled

7 CO<sub>2</sub>e emission factor for mixed electronics, combusted

8 In Hennepin County, it is estimated that 55 percent of the total waste is generated by the "commercial" waste sectors, and 45 percent from the residential waste sector. (2016 Minneapolis Residential Solid Waste Composition Analysis and Recycling Program Evaluation <https://www.hennepin.us/-/media/hennepinus/your-government/projects-initiatives/documents/hennepin-county-waste-sort-study-2016.pdf>. Commercial solid waste generation estimated based on residential waste generation per square footage and scaled based on Minnesota total estimate of 55% total waste generation from commercial waste sector and 45% total waste generation from residential waste sector.

Shingle Creek Opportunity Site Phase #1 Blocks 11, 12, and 13

Project: B1905096.01

Source: Mitigation - Electric Heating Systems

Theoretical Emissions from Natural Gas Space Heating	
<b>Assumptions:</b>	
<u>Residential Buildings</u>	
Typical annual natural gas usage for space heating per multifamily housing unit <sup>5</sup> , Therms/(year*unit)	380
Maximum number of housing units	744
Theoretical natural gas use for multifamily housing space heating, MMcf/year	20.6
<u>Commercial Buildings</u>	
Typical annual natural gas usage for space heating per square foot of commercial building floorspace <sup>6</sup> , cf/(year*ft <sup>2</sup> )	37.4
Maximum commercial building floorspace, ft <sup>2</sup>	77,365
Theoretical annual natural gas use for commercial building space heating, MMcf/year	2.89
<u>Total Project</u>	
Theoretical total annual natural gas use for space heating, MMcf/year	23.5
Heating Value of Natural Gas <sup>1</sup> , Btu/scf	1,020
<b>Conversion Factors:</b>	
lb/ton	2,000
lb/kg	2.204
cf/Therm	73.0
CO <sub>2</sub> to CO <sub>2</sub> e	1
CH <sub>4</sub> to CO <sub>2</sub> e	25
N <sub>2</sub> O to CO <sub>2</sub> e	298

Pollutant	EPA Pollutant Type	40 CFR Part 98 <sup>2,3</sup> (lb/MMBtu)	Theoretical Emissions From Natural Gas Space Heating (TPY)
CO <sub>2</sub> e <sup>4</sup>	GHG	117.07	1,405
CO <sub>2</sub> <sup>2</sup>	GHG	116.94	1,403
CH <sub>4</sub> <sup>3</sup>	GHG	0.0022	2.64E-02
N <sub>2</sub> O <sup>3</sup>	GHG	0.0002	2.64E-03

1 Heating value of natural gas taken from AP-42 Appendix A. Typical Parameters of Various Fuels.

2 CO<sub>2</sub> emission factor from 40 CFR 98 Subpart C, Table C-1 (natural gas 53.06 kg CO<sub>2</sub>/MMBtu), November 29, 2013.

3 CH<sub>4</sub> and N<sub>2</sub>O emission factors from 40 CFR 98 Subpart C, Table C-2 (natural gas CH<sub>4</sub> = 0.001 kg CH<sub>4</sub>/MMBtu and N<sub>2</sub>O = 0.0001 kg N<sub>2</sub>O/MMBtu), November 29, 2013.

4 CO<sub>2</sub>e emissions are based on global warming potential from 40 CFR 98 Subpart A, Table A-1 (CO<sub>2</sub>=1, CH<sub>4</sub>=25, and N<sub>2</sub>O=298), November 29, 2013.

## **Appendix I**

### **Braun Intertec Phase II ESA 2019**

# **Phase II Environmental Site Assessment**

Brooklyn Center Opportunity Zone Parcels  
Parcel Identification Numbers: 0211821240019, 0211821240020,  
0211821210014, and 0211821120011  
Brooklyn Center, MN 55430

*Prepared for*

**City of Brooklyn Center**

**Hennepin County**

August 29, 2019

Project B1905096

Mr. Brett Angell  
City of Brooklyn Center  
6301 Shingle Creek Parkway  
Brooklyn Center, MN 55430-2199

Ms. Brianna Boos  
Hennepin County  
Environment and Energy Department  
701 4th Avenue South, Suite 700  
Minneapolis, Minnesota 55415

Re: Phase II Environmental Site Assessment  
Brooklyn Center Opportunity Zone Parcel  
4 Parcels - PIDs: 0211821240019, 0211821240020, 0211821210014, 0211821120011  
Brooklyn Center, MN 55430

Dear Mr. Angell and Ms. Boos:

On behalf of the City of Brooklyn Center and Hennepin County, Braun Intertec Corporation conducted a Phase II Environmental Site Assessment (ESA) of the above-referenced site (Site) in accordance with the authorized scope of services described in our proposal dated April 18, 2019 and Hennepin County purchase order #377299, dated May 16, 2019. The Phase II ESA was prepared in association the redevelopment of the Site. For a complete discussion of our assessment, please refer to the attached Phase II ESA report.

This Phase II ESA was prepared on behalf of and for use by City of Brooklyn Center and Hennepin County. No other party has a right to rely on the contents of this Phase II ESA without the written authorization of Braun Intertec.

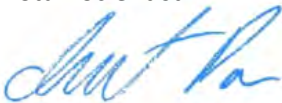
We appreciate the opportunity to provide our professional services to you for this project. If you have any questions or comments regarding this report or the project in general, please contact Christian Forster at 962.995.2261 or Imants Pone at 952.995.2665.

Sincerely,

BRAUN INTERTEC CORPORATION



Christian T. Forster  
Staff Scientist



Imants Pone  
Senior Scientist

Attachment:  
Phase II Environmental Site Assessment Report

AA/EOE

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## **A. Introduction**

### **A.1. Authorization**

Braun Intertec Corporation received authorization from Hennepin County (Hennepin County purchase order #377299) to conduct a Phase II Environmental Site Assessment (ESA) of the Brooklyn Center Opportunity Zone Parcel consisting of 4 parcels (Parcel Identification Numbers: 0211821240019, 0211821240020, 0211821210014, 0211821120011) located in Brooklyn Center, Minnesota (Site). The Phase II ESA was conducted in accordance with the scope of services described in Braun Intertec's proposal dated April 18, 2019 and in association with the anticipated redevelopment of the Site.

This Phase II ESA was prepared on behalf of and for use by the City of Brooklyn Center and Hennepin County in accordance with the contract between Hennepin County and Braun Intertec. No other party has a right to rely on the contents of this Phase II ESA without the written authorization of Braun Intertec.

### **A.2. Project Objective**

The objective of the Phase II ESA was to characterize Site soil, groundwater and soil vapor to identify environmental issues that could potentially affect future land use. The investigation focused on delineating previously identified contamination (see Section B.2.) and investigating previously unassessed areas of the Site.

## **B. Site Background**

### **B.1. Site Location and Description**

The Site consisted of four generally contiguous parcels totaling approximately 34.59 acres. The Site is bounded on the south by County Road 10 (Bass Lake Road), on the west by Shingle Creek Parkway, and to the east by John Martin Drive. There are four parcels within this area that are not part of the Site, but are situated in or around the Site. The Site is currently undeveloped, except for pavements and the Ocean Buffet restaurant located on the west side of the Site. The parcels included in this investigation are depicted in Figure 2.



## **B.2. Previous Site Investigations**

The following reports have been prepared in relation to the Site and were reviewed by Braun Intertec in preparing this Phase II ESA:

- Phase I Environmental Site Assessment, Former Brookdale Ford, 2500 County Road 10, Brooklyn Center, Minnesota. Prepared by Leisch Associates, Inc. January 28, 2008. Leisch Project Number 6202283.01. (2008 Phase I ESA)
- Phase II Environmental Site Assessment, Former Brookdale Ford, 2500 County Road 10, Brooklyn Center, Minnesota. Prepared by Leisch Associates, Inc. January 21, 2008. Leisch Project Number 6202283.01. (2008 Phase II ESA)
- Limited Site Investigation, Former Brookdale Ford, 2500 County Road 10, Brooklyn Center, Minnesota. Prepared by Leisch Associates, Inc. March 24, 2010. Leisch Project Number 6202283.01. (2010 LSI)
- Phase I Environmental Site Assessment, Four Brooklyn Center Parcels, Brooklyn Center, MN. Prepared by Braun Intertec. Dated April 22, 2019. Project number B1902120. (2019 Phase I ESA)

The 2008 Phase I ESA identified several recognized environmental conditions (RECs) associated with the former Brookdale Ford dealership. The 2008 Phase II ESA was conducted to evaluate those RECs, and identified the following impacts:

- Field and laboratory evidence of soil, groundwater, and soil vapor impacts in the vicinity of the former and active in-ground hydraulic hoist systems/former Underground storage tank (UST) basin in the main building and body shop. The soil impacts range in depth from about 3 to 14 feet below ground surface (bgs). Diesel range organics (DRO) concentrations ranged from non-detect to 7,400 mg/kg. Tetrachloroethene (PCE) was detected above its Tier I Soil Leaching Values (SLVs) in one boring (GP-12). DRO concentrations in groundwater ranged from non-detect to 810 micrograms per liter (µg/L). PCE was detected in soil vapor at a maximum concentration of 326 micrograms per cubic meter (µg/m<sup>3</sup>).

The 2010 LSI was conducted to further delineate the vertical and horizontal extents of the petroleum contamination at the Site. The Minnesota Pollution Control Agency (MPCA) closed the file regarding the petroleum release on June 21, 2010. File closure indicates that the MPCA determined that the investigation was completed to their satisfaction; however, this does not indicate that no petroleum contamination remains.

The 2019 Phase I ESA identified the following RECs in association with the Site:

- The south part of the Site was developed by 1964 with an automobile dealership, Brookdale Ford, that consisted of two buildings that were used for vehicle sales and service. Lifts, underground storage tanks, and aboveground storage tanks were associated with this development. Based on previous investigations, contamination remains in association with those activities. A strip mall was formerly located on the north part of the Site. Part of that mall was occupied by a Pep Boys automobile parts and service business. Pep Boys was identified as a licensed hazardous waste generator and it appears likely that vehicle maintenance products were used and stored in regard to those activities; although, no releases were reported. Three small spills, or reports of potential spills, were reported in regard to the strip mall that appear to have been addressed to the satisfaction of the MPCA. Based on the available information, it also appears that a dry cleaner may have been present at the Site. The presence of the documented contamination and the potential for contamination resulting from the past uses of the Site represents a potential that soil, groundwater, and or soil vapor contamination may be present.
- The regulatory information suggests that contamination has been identified or is suspected at facilities located in the vicinity of the Site. Although it appears that some of these surrounding sites have been remediated and/or redeveloped in accordance with the oversight and approval of the MPCA, there is a potential that these sites, or past unreported releases from the historical uses of the surrounding area, may have caused soil, groundwater and/or soil vapor impacts at the Site.

Select data from the 2008 Phase II ESA and the 2010 LSI is provided in Appendix A.

### **B.3. Site Physical Characteristics**

#### **B.3.a. Topography**

According to the United States Geological Survey (USGS) 7.5-minute topographic map series, Minneapolis North, Minnesota quadrangle, the Site is located at an elevation of approximately 850 feet above mean sea level.

#### **B.3.b. Geology**

The unconsolidated sediment in the Site vicinity consist of organic deposits that have largely been drained and filled and upper terrace deposits consisting of sand, gravelly sand, and loamy sand (Meyer and Hobbs, 1989).

The uppermost bedrock unit in the Site vicinity is the Middle Ordovician, St. Peter Sandstone and at the northern part of the Site may be dolostone of the Prairie du Chien Formation (Olsen and Bloomgren, 1989). The St. Peter Sandstone is described as a fine- to medium-grained, friable quartz sandstone in the upper half to two thirds of the unit. The lower part of the St. Peter Sandstone contains multicolored beds of mudstone, siltstone and shale with interbedded, very coarse sandstone.

### **B.3.c. Hydrogeology**

The reported depth to the water table in the Site vicinity is approximately 15 feet below ground surface (Kanivetsky, 1989). According to published geologic information, the regional groundwater flow direction within the unconsolidated deposits in the Site vicinity is generally northeast (Kanivetsky, 1989). Based on available data from this Phase II ESA, the current water table at the Site ranges from 7 to 15 feet bgs.

## **C. Scope of Services**

Braun Intertec conducted the following tasks at the Site:

- Subcontracted Bergerson Caswell Drilling to clear public utilities through Gopher State One Call and private utilities for the investigation locations.
- Subcontracted Bergerson Caswell Drilling to advance soil borings, install temporary groundwater monitoring wells, and advance soil vapor probes.
- Advanced 14 soil borings with direct-push drill rig to an approximate depth of 12 feet bgs for the purpose of collecting soil samples.
- Advanced six (6) soil borings with direct-push drill rig to an approximate depth of 20 feet bgs for the purpose of collecting soil and groundwater samples.
- Advanced ten (10) soil vapor probes to an approximate depth of 5 feet bgs for the purpose of collecting soil vapor samples. Collect a soil vapor sample from each location using a laboratory provided Summa Canister.
- Conducted environmental monitoring during drilling of the 20 soil borings, including organic vapor screening of soil samples using a photoionization detector (PID), and visual/olfactory observations of soil samples for evidence of contamination (i.e. odors, staining, intermixed debris, etc.). Collect representative soil samples and submit for analytical testing as described below.



- Analyzed representative soil samples from the borings using standard Environmental Protection Agency (EPA) methods.
- Analyzed 6 groundwater samples from the temporary wells.
- Analyzed 10 soil vapor samples.
- Evaluated the data and prepared this report.

### **C.1. Deviations from Work Plan/Proposal**

Due to wet field conditions PP-10 was offset approximately 60 feet west of its proposed location to enable safe drill rig accessibility.

## **D. Investigation Methods and Procedures**

The field work relating to the investigation was conducted on July 1<sup>st</sup> and 2<sup>nd</sup>, 2019. Prior to beginning the field investigation, public utilities were cleared through Gopher State One Call and private utilities were cleared by Private Underground.

Field methods and results are discussed in the following sections. Soil boring logs are provided in Appendix B, laboratory analytical reports are provided in Appendix C, and Braun Intertec standard operating procedures used during this investigation are provided in Appendix D.

### **D.1. Soil Evaluation**

#### **D.1.a. Soil borings**

Braun Intertec subcontracted Bergerson Caswell Drilling of Maple Plain, Minnesota, to advance 20 soil borings, designated as PP-1 through PP-20, at the Site to depths ranging from 12 to 20 feet bgs. Boring locations are depicted on Figure 2.

The soil borings were advanced with a hydraulically-driven push-probe sampling rig. To collect the soil samples from the borings, a disposable thin-walled PVC liner was placed inside of a 4-foot long sampling tool. The borehole was then advanced using the sampling tool to a total penetration depth of up to

4 feet. After advancing the tooling, the sampler was removed from the borehole and the soil sample was retrieved from the PVC liner for field screening and classification. The process was then repeated to the termination depths of the borings.

Following collection of all necessary samples, all boreholes were sealed in accordance with MDH regulations and the concrete or asphalt surface at the boring location was patched.

#### **D.1.b. Soil Classification and Monitoring**

Soils samples from the soil borings were visually and manually classified in the field by an environmental technician using ASTM D 2487 "Unified Soils Classification System" and ASTM D 2488 "Recommended Practice for Visual and Manual Description of Soils." Additionally, soils were classified at the Braun Intertec soils laboratory by a geotechnical engineer using ASTM D 2487 and ASTM D 2488.

Soil samples retrieved were examined by the Braun Intertec environmental technician for unusual staining, odors, and other apparent signs of contamination. In addition, the soil samples were screened for the presence of organic vapors using a PID. The PID was equipped with a 10.6-electron-volt lamp and calibrated to an isobutylene standard. The PID was used to perform a headspace method of field analyses.

#### **D.1.c. Soil Analyses**

Selected soil samples were collected from the soil borings for laboratory analysis. Soil samples were generally collected from depths most likely to be encountered during proposed redevelopment activities and from intervals where indications of contamination were observed in the field. If no indications of contamination were observed, the soil samples were collected from the depth most likely to be impacted based on the potential contaminant source.

Samples were submitted to Pace Analytical Services, LLC (Pace) in Minneapolis, Minnesota and analyzed for a combination of the following parameters:

- Volatile organic carbons (VOCs) using United States Environmental Protection Agency (EPA) Method 8260
- Polycyclic aromatic hydrocarbons (PAHs) using EPA Method 8270
- Gasoline range organics (GRO) using the Wisconsin Department of Natural Resources (WDNR) Method

- DRO using the WDNR Method
- Eight Resource Conservation and Recovery Act (RCRA) metals using EPA Methods 6010 and 7471

## **D.2. Groundwater Evaluation**

Bergerson Caswell installed temporary monitoring wells in six of the soil borings (PP-1, PP-8, PP-11, PP-15, PP-18, and PP-19) to evaluate groundwater conditions at the Site.

After the soil borings were advanced at least 5 feet into the water table, temporary monitoring wells were constructed using 1-inch-diameter PVC riser and 5-foot long, 10-slot screens. Prior to sampling, static groundwater levels were measured in each monitoring well to the nearest 0.01 foot and recorded. Observed water levels are included on the soil boring logs and in Table 2.

### **D.2.a. Temporary Monitoring Well Sampling and Analysis**

Prior to sampling, each monitoring well was purged until a minimum of one well volume and fine sediment had been removed. Following monitoring well purging, groundwater samples were collected using a length of new polyethylene tubing equipped with a check ball. Water samples retrieved were examined by the field technician for unusual odors, surface sheen, and other apparent signs of contamination. The groundwater samples were placed directly into laboratory supplied containers, preserved appropriately, and submitted to Pace and analyzed for VOCs and DRO.

## **D.3. Soil Vapor Evaluation**

### **D.3.a. Soil Vapor Probes**

Bergerson Caswell advanced ten temporary soil vapor probes (SV-1 through SV-10) on the Site. Each soil vapor probe was advanced, using a hydraulically-driven push-probe rig, to a depth of 5 feet bgs and then retracted to a depth of 3 feet bgs. New, inert tubing was attached to the top of the downhole sampler, and the sampling point and tubing were purged with a hand pump to remove two volumes of air prior to sample collection. Following purging, organic vapor concentrations were screened with a PID and the value was recorded. The soil vapor samples were then collected using laboratory-supplied negative pressure air-sample collection canisters (6-liter canisters) equipped with 200 milliliter per minute (mL/min) flow restrictors in accordance with the MPCA guidelines. Following sample collection, the temporary sampling point was removed from the borehole, and the borehole was sealed in accordance with MDH guidelines.

The soil vapor samples were submitted to Pace and analyzed for the VOCs using EPA Method TO-15.



## **E. Investigation Results**

### **E.1. Geologic and Hydrogeological Conditions**

Soil boring logs with descriptions of the various soil strata encountered during the soil boring operations and water level information are contained in Appendix A. The depths shown as changes between the soil types are approximate. The actual changes may be transitional, and the transition depths are likely to be horizontally variable.

Fill soils were encountered from the surface to the terminal depths of all the borings, which ranged from 12 to 20 feet. The fill soils generally consisted of poorly graded sand and poorly graded sand with silt, clay, and/or gravel. Cobbles were noted in PP-2, PP-3, Additionally, in PP-4, instances of either a void or extremely soft soils were encountered at a depth of 8 to 12 feet bgs where the sampling tools fell by their own weight.

Groundwater was encountered from 7 to 15 feet bgs across the Site.

### **E.2. Field Screening**

Soil recovered from the soil borings was screened by the field technician for evidence of contamination, including odors, staining, and the presence of debris.

In PP-4, concrete debris was observed from 3-7 feet and wood debris (noted as “fibers” on the boring logs) at 7 feet. Various debris, including concrete, brick, bituminous, and plastic, was observed in the upper 2 to 4 feet of soil in borings PP-10, PP-11, PP-12, PP-15 and PP-16.

Organic vapor/PID readings were recorded for soil samples collected from each boring. Observed organic vapor concentrations ranged from 0.0 to 7.8 parts per million (ppm), which are considered to be general background readings.

### **E.3. Soil Analytical Results**

A summary of the soil analytical results is provided in Table 1. The complete laboratory report with chain-of-custody form is included in Appendix B.

The soil analytical results can be compared with the Soil Reference Values (SRVs) and Screening Soil Leaching Values (SLVs) which are also listed on Table 1. SRVs and SLVs are allowable risk-based contaminant concentrations derived by the MPCA using risk assessment methodology, modeling, and risk management policy to guide investigation and cleanup actions. SRVs relate to direct-contact exposure scenarios and SLVs relate to potential leaching of contaminants to groundwater. Concentrations of contaminants in soil, SRVs, and SLVs are expressed in units of milligrams per kilogram (mg/kg).

The following provides a summary of the soil analytical results.

- No VOCs were detected above laboratory reporting limits (RLs).
- No PAHs were detected at concentrations at or above SRVs or SLVs.
- None of the 8 RCRA metals were detected at concentrations at or greater than SRVs or SLVs.
- DRO and GRO were not detected at concentrations greater than the MPCA unregulated fill criterion of 100 mg/kg for GRO and DRO<sup>1</sup>.

#### **E.4. Groundwater Analytical Results**

A summary of the groundwater analytical results is provided in Table 2. The complete laboratory report with chain-of-custody form is included in Appendix A.

For comparison purposes, Table 2 includes Drinking Water Criteria from the Minnesota Department of Health (MDH) Human Health-Based Water guidance. Drinking Water Criteria include MDH Health Risk Limits (HRLs), MDH Health Based Values (HBVs), MDH Risk Assessment Advice (RAA), and Maximum Contaminant Levels (MCLs) established by the EPA. Concentrations of contaminants in water and Drinking Water Criteria are expressed in units of µg/L.

The following provides a summary of the groundwater analytical results.

- No VOCs were detected above MRLs.
- DRO were not detected above its MDH Drinking Water Criterion of 200 µg/L.

---

<sup>1</sup> Best Management Practices for the Off-Site Reuse of Unregulated Fill, dated February 2012, prepared by the Minnesota Pollution Control Agency.

## **E.5. Soil Vapor Analytical Results**

A summary of the soil vapor analytical results is provided in Table 3. The complete laboratory report with chain-of-custody form is included in Appendix A.

For comparison purposes, Table 3 includes Intrusion Screening Values (ISVs). ISVs were developed by the MPCA in coordination with the MDH as screening values for evaluating vapor intrusion risks from VOCs identified in indoor air. The potential for indoor air to be impacted by soil vapor intrusion can also be assessed using ISVs. Concentrations of VOCs in soil vapor and ISVs are expressed in units of  $\mu\text{g}/\text{m}^3$ .

Per the 2017 MPCA Vapor Investigation Guidance<sup>2</sup>, soil vapor results are compared to 33X ISVs to assess vapor intrusion risk if building conditions are appropriate. According to the guidance, soil vapor concentrations greater than 33X ISVs indicate a vapor source with potential vapor intrusion risk is present. A Site with contaminant concentrations greater than 33X ISVs would typically require either mitigation or additional assessment of potential pathways and receptors to better quantify risks, which might include collection of sub-slab or indoor air samples.

- Benzene, Ethylbenzene, and PCE, were detected at concentrations greater than their respective Residential ISVs, but less than 33x their Residential ISVs.

## **E.6. Quality Assurance/Quality Control**

Samples were placed in clean, laboratory supplied containers, preserved, labeled, and transported to the Pace laboratory under refrigerated conditions using chain-of-custody procedures. Analyses were performed using EPA or other recognized standard procedures.

A quality assessment of field procedures and analytical laboratory reports was performed to evaluate potential effects on data quality used to support project objectives. All applicable Braun Intertec SOPs were followed as prescribed unless otherwise noted in this report.

A trip blank accompanied the soil and groundwater investigative samples and was analyzed for VOCs. No contaminants were detected in the trip blank at concentrations greater than the laboratory method reporting limits. Data were reviewed prior to release, quality-control guidelines were generally met, and the data are considered usable.

---

<sup>2</sup> Best Management Practices for Vapor Investigation and Building Mitigation Decisions, January 2017, c-rem3-06e, prepared by the Minnesota Pollution Control Agency.



In summary, data quality control items identified during the quality review are considered to be minor and all data collected are acceptable for use in this investigation for the intended purpose of identifying impacts within the project area.

## **F. Conclusions**

The following conclusions are based on the results of this Phase II ESA and a review of the previous environmental documents referenced in Section B.2.:

- Previous environmental investigations identified soil, soil vapor, and groundwater contamination associated with the former Brookdale Ford Dealership historically located on the southern portion of the Site. Specifically, selenium, PCE, and DRO were identified in soil at concentrations greater than MPCA unregulated fill criteria; groundwater was impacted by DRO at concentrations greater than Drinking Water Criteria; and soil vapor was impacted by PCE at a concentration greater than 33X current MPCA ISVs. Redevelopment activities in the vicinity of the former Brookdale Ford Dealership may encounter impacted soil, groundwater, and soil vapor which may require special management.
- Fill soils were encountered from the surface to the terminal depths of all the borings completed for this Phase II ESA, which ranged from 12 to 20 feet. Except for debris encountered in the near surface soils in the locations of PP-4, PP-10, PP-11, PP-12, PP-15, and PP-16, no evidence of impacts/contamination were observed in the soil samples retrieved from the borings. Debris-containing soil which is exported for development will need to be properly managed as regulated fill.
- Laboratory analysis of soil samples collected during this Phase II ESA did not identify significant soil impacts (i.e. no concentrations above MPCA action levels). Except for the debris observed in the above-referenced soil borings, the soil characterized by this Phase II ESA meets the MPCA definition of unregulated fill and may be reused on-Site or at off-Site properties.
- This Phase II ESA did not identify groundwater impacts greater than MDH drinking water criteria. However, based on the results of the previous environmental investigations, groundwater impacts are present in the vicinity of the former Brookdale Ford Dealership. If dewatering is necessary in the vicinity of the former Brookdale Ford Dealership, additional groundwater sampling should be conducted and appropriate discharge permits may be required.

- Laboratory analysis of the soil vapor samples collected during this Phase II ESA did not identify VOCs at concentrations greater than the MPCA action level of 33X Residential ISVs which would require mitigation. Based on these results, significant area-wide soil vapor impacts are not present at the Site. However, based on the detection of benzene, ethylbenzene, and PCE at concentrations greater than ISVs, as well as the previously identified soil vapor impacts at the former Brookdale Ford Dealership, additional soil vapor sampling will be necessary specific to the proposed redevelopment. If no VOCs are detected at concentrations greater than 33X ISVs, the MPCA will not require vapor mitigation.
- Based on the results of this Phase II ESA and the previous investigations, significant environmental impacts appear to be limited to the vicinity of the former Brookdale Ford Dealership.

## **G. Recommendations**

The following recommendations are based on the results of this Phase II ESA and a review of the previous environmental documents referenced in Section B.2.:

- Enroll the Site in the MPCA Petroleum Brownfields Program (PBP) and the Voluntary Investigation and Cleanup (VIC) Program to facilitate the redevelopment and expedite MPCA response time if contamination is encountered during redevelopment.
- Prepare a Construction Contingency Plan (CCP) that provides a plan and procedures to evaluate and manage environmental issues that may arise during redevelopment of the Site.
- Submit the CCP document to the MPCA VIC and PB Programs for review and approval prior to the start of construction.
- To obtain MPCA assurances and approvals, soil vapor sampling specific to the proposed redevelopment will be necessary. MPCA guidance prescribes two seasonal soil vapor sampling events to determine if vapor mitigation will be required.

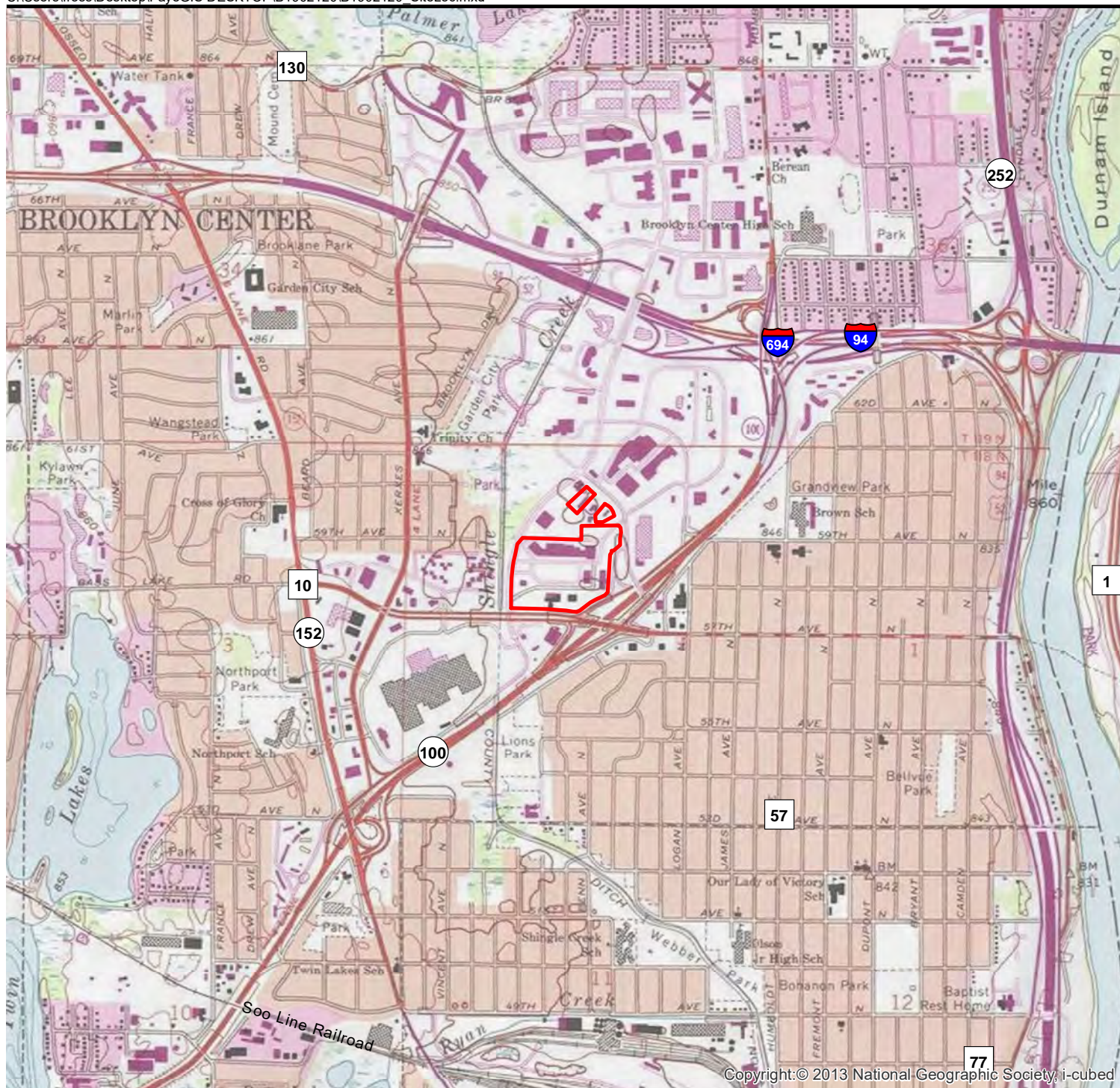
## **H. Assessment Limitations**

The analyses and conclusions submitted in this report are based on field observations and the results of laboratory analyses of soil, groundwater, and soil vapor samples collected from the soil borings and soil vapor probes completed for this project.

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

## Figures





 Approximate Site Boundary

Data Source:  
USGS Quadrangle



0 1,000 2,000  
Feet

**BRAUN  
INTERTEC**  
The Science You Build On.

11001 Hampshire Avenue S  
Minneapolis, MN 55438  
952.995.2000  
braunintertec.com

Project No:  
B1902120

Drawing No:  
B1902120\_SiteLoc

Drawn By: FER  
Date Drawn: 3/21/2019  
Checked By: JES  
Last Modified: 3/21/2019

Four Parcels

5915 & 5939 John Martin Dr, 5900 Shingle Creek Pkwy, 2500 Cty Rd 10

Brooklyn Center, Minnesota

**Site Location Map**

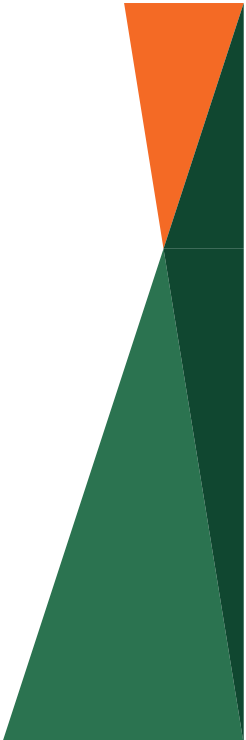
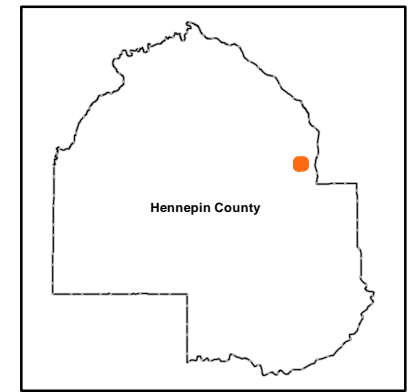
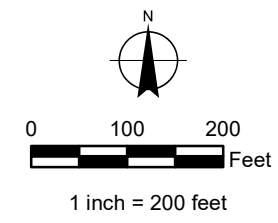
Figure 1





F:\2019\B1905096\GIS\B1905096\_BorLoc.mxd

- Denotes Approximate Location of
- Push Probe Soil Boring
  - Push Probe Soil Boring with Groundwater Sample
  - Soil Vapor Probe
  - Former Buildings
  - Project Parcels
  - Hennepin County Parcels (2018)



Drawing Information	
Project No:	B1905096
Drawing No:	B1905096_BorLoc
Drawn By:	CMF
Date Drawn:	8/27/2019
Checked By:	IP
Last Modified:	8/28/2019
Project Information	
Brooklyn Center Opportunity Zone Parcel	
Parcel IDs: 0211821240019, 0211821240020, 0211821210014, & 0211821120011	
Brooklyn Center, Minnesota	

**July 2019  
Phase II ESA  
Investigation  
Location Sketch**

Figure 2



## Tables

**Table 1**  
**Soil Analytical Results**  
**Brooklyn Center Opportunity Zone Parcels**  
**Brooklyn Center, MN**  
**Project B1905096**

Compound/Parameter	CAS No.	Sample Identifier, Depth, and Date Collected										Residential Soil Reference Value (SRV) (mg/kg)	Industrial Soil Reference Value (SRV) (mg/kg)	Screening Soil Leaching Value (SLV) (mg/kg)
		PP-1 (4-6)	PP-2 (0-4)	PP-3 (0-4)	PP-4 (4-8)	PP-5 (0-2)	PP-6 (2-4)	PP-7 (0-2)	PP-8 (2-4)	PP-9 (2-4)	PP-10 (0-4)			
		07/02/2019	07/02/2019	07/02/2019	07/02/2019	07/02/2019	07/02/2019	07/02/2019	07/01/2019	07/02/2019	07/02/2019			
Volatile Organic Compounds (VOCs) (mg/kg)														
All other reported VOCs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)														
Benz(a)anthracene	56-55-3	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	cPAH	cPAH	cPAH
Benzo(b)fluoranthene	205-99-2	<0.011	0.015	<0.011	0.012	<0.011	<0.011	0.02	<0.011	<0.011	<0.011	cPAH	cPAH	cPAH
Benzo(k)fluoranthene	207-08-9	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	cPAH	cPAH	cPAH
Benzo(a)pyrene	50-32-8	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.015	<0.011	<0.011	<0.011	cPAH	cPAH	cPAH
Benzo(g,h,i)perylene	191-24-2	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.012	<0.011	<0.011	<0.011	NE	NE	NE
Chrysene	218-01-9	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.014	<0.011	<0.011	<0.011	cPAH	cPAH	cPAH
Fluoranthene	206-44-0	<0.011	0.018	0.014	0.015	<0.011	<0.011	0.022	<0.011	<0.011	0.011	1,080	6,800	670
Indeno(1,2,3-cd)pyrene	193-39-5	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	cPAH	cPAH	cPAH
Phenanthrene	85-01-8	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	NE	NE	NE
Pyrene	129-00-0	<0.011	0.015	<0.011	0.012	<0.011	<0.011	0.021	<0.011	<0.011	<0.011	890	5,800	440
All other reported PAHs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
BaP Equivalent <sup>[c]</sup>	---	0.000	0.002	0.000	0.001	0.000	0.000	0.017	0.000	0.000	0.000	2	3	1.4
Metals (mg/kg)														
Arsenic, Total	7440-38-2	2.0	5.7	3.1	3.0	1.9	3.6	3.1	2.2	1.2	4.8	9	20	5.8
Barium, Total	7440-39-3	44.9	58.7	53.2	27.2	26.1	51.7	37.7	61.1	34.6	51.6	1,100	---	---
Cadmium, Total	7440-43-9	<0.16	<0.15	<0.16	<0.16	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	25	200	8.8
Chromium, Total <sup>[e]</sup>	7440-47-3	5.0	6.2	7.6	7.5	6.2	6.2	5.6	8.0	5.0	8.1	44,000/87 <sup>[e]</sup>	100,000/650 <sup>[e]</sup>	1,000,000,000/36 <sup>[e]</sup>
Lead, Total	7439-92-1	3.5	16.7	5.7	5.2	3.9	4.7	5.8	3.6	2.6	6.4	300	700	2,700
Mercury, Total	7439-97-6	<0.019	<0.021	<0.021	<0.020	<0.020	<0.020	0.029	<0.022	<0.020	<0.020	0.5	1.5	3.3
Selenium, Total	7782-49-2	<1.0	<1.0	<1.1	<1.1	<0.99	<1.0	<1.0	<1.0	<1.0	<0.99	160	1,300	2.6
Silver, Total	7440-22-4	<0.52	<0.51	<0.55	<0.55	<0.49	<0.51	<0.50	<0.51	<0.52	<0.50	160	1,300	7.9
Other Parameters (mg/kg)														
Diesel Range Organics (DRO)	---	<9.0	<9.2	<9.1	<8.9	<4.1	<5.4	<8.9	<5.7	<8.8	<8.9	NE	NE	NE
Gasoline Range Organics (GRO)	---	<11.8	<10.9	<11.4	<11.1 <sup>[1]</sup>	<11.4	<10.9	<11.1	<11.5	<12.0	<10.4	NE	NE	NE

**Notes**

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.

<sup>[c]</sup> = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of cPAHs; MPCA, 2009. If no cPAHs were detected above reasonable laboratory reporting limits the BaP equivalent is reported as 0 mg/kg per MPCA Remediation Division Policy; June 2011.

<sup>[e]</sup> = Reported result is total chromium, regulatory limit for chromium III and chromium VI are provided.

<sup>[1]</sup> [G-] Early peaks present outside the GRO window.

<sup>[6]</sup> [T6] High boiling point hydrocarbons are present in the sample.



**Table 1**  
**Soil Analytical Results**  
**Brooklyn Center Opportunity Zone Parcels**  
**Brooklyn Center, MN**  
**Project B1905096**

Compound/Parameter	CAS No.	Sample Identifier, Depth, and Date Collected										Residential Soil Reference Value (SRV) (mg/kg)	Industrial Soil Reference Value (SRV) (mg/kg)	Screening Soil Leaching Value (SLV) (mg/kg)
		PP-11 (2-4)	PP-12 (4-6)	PP-13 (4-6)	PP-14 (0-4)	PP-15 (2-4)	PP-16 (2-4)	PP-17 (0-2)	PP-18 (0-2)	PP-19 (4-6)	PP-20 (6-8)			
		07/01/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019			
Volatile Organic Compounds (VOCs) (mg/kg)														
All other reported VOCs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)														
Benz(a)anthracene	56-55-3	<0.011	<0.010	<0.011	<0.011	<0.011	0.013	<0.011	0.013	<0.011	<0.011	cPAH	cPAH	cPAH
Benzo(b)fluoranthene	205-99-2	<0.011	<0.010	<0.011	<0.011	<0.011	0.023	<0.011	0.028	<0.011	<0.011	cPAH	cPAH	cPAH
Benzo(k)fluoranthene	207-08-9	<0.011	<0.010	<0.011	<0.011	<0.011	<0.011	<0.011	0.011	<0.011	<0.011	cPAH	cPAH	cPAH
Benzo(a)pyrene	50-32-8	<0.011	<0.010	<0.011	<0.011	<0.011	0.017	<0.011	0.02	<0.011	<0.011	cPAH	cPAH	cPAH
Benzo(g,h,i)perylene	191-24-2	<0.011	<0.010	<0.011	<0.011	<0.011	0.016	<0.011	0.019	<0.011	<0.011	NE	NE	NE
Chrysene	218-01-9	<0.011	<0.010	<0.011	<0.011	<0.011	0.016	<0.011	0.019	<0.011	<0.011	cPAH	cPAH	cPAH
Fluoranthene	206-44-0	<0.011	<0.010	<0.011	<0.011	<0.011	0.025	<0.011	0.031	<0.011	<0.011	1,080	6,800	670
Indeno(1,2,3-cd)pyrene	193-39-5	<0.011	<0.010	<0.011	<0.011	<0.011	0.012	<0.011	0.015	<0.011	<0.011	cPAH	cPAH	cPAH
Phenanthrene	85-01-8	<0.011	<0.010	<0.011	<0.011	<0.011	0.012	<0.011	<0.011	<0.011	<0.011	NE	NE	NE
Pyrene	129-00-0	<0.011	<0.010	<0.011	<0.011	<0.011	0.022	<0.011	0.025	<0.011	<0.011	890	5,800	440
All other reported PAHs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---	---
BaP Equivalent <sup>[c]</sup>	---	0.000	0.000	0.000	0.000	0.000	0.022	0.000	0.027	0.000	0.000	2	3	1.4
Metals (mg/kg)														
Arsenic, Total	7440-38-2	2.7	1.9	1.9	2.2	2.3	2.5	1.9	2.7	3.3	1.2	9	20	5.8
Barium, Total	7440-39-3	27.3	68.4	23.2	66.0	36.2	25.2	37.0	42.6	38.6	23.8	1,100	---	---
Cadmium, Total	7440-43-9	<0.15	<0.14	<0.16	<0.16	<0.15	<0.17	<0.15	<0.15	<0.15	<0.15	25	200	8.8
Chromium, Total <sup>[e]</sup>	7440-47-3	7.8	8.5	6.5	10.2	6.7	10.8	6.5	7.3	6.1	7.1	44,000/87 <sup>[e]</sup>	100,000/650 <sup>[e]</sup>	1,000,000,000/36 <sup>[e]</sup>
Lead, Total	7439-92-1	4.2	2.9	3.3	3.9	4.3	5.0	3.9	9.5	3.5	2.9	300	700	2,700
Mercury, Total	7439-97-6	<0.019	<0.020	<0.021	<0.020	<0.020	<0.020	<0.021	<0.021	<0.019	<0.022	0.5	1.5	3.3
Selenium, Total	7782-49-2	<1.0	<0.95	<1.1	<1.1	<1.0	<1.1	<1.0	<1.0	<1.0	<1.0	160	1,300	2.6
Silver, Total	7440-22-4	<0.51	<0.48	<0.54	<0.53	<0.50	<0.56	<0.52	<0.50	<0.50	<0.51	160	1,300	7.9
Other Parameters (mg/kg)														
Diesel Range Organics (DRO)	---	<4.6	<8.7	<4.8	<4.4	95.3 <sup>[6]</sup>	29.0 <sup>[6]</sup>	<4.0	<4.1	<4.3	<4.6	NE	NE	NE
Gasoline Range Organics (GRO)	---	<10.5	<10.9	<11.6	<10.5	<10.9	<11.7	<10.9	<10.6	<10.6	<12.2	NE	NE	NE

**Notes**

Minnesota Pollution Control Agency (MPCA) SRVs updated June 2009 and SLVs updated June 2013.

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.

<sup>[c]</sup> = Benzo(a)pyrene (BaP) equivalent is calculated based on the concentration and weighted toxicity of cPAHs; MPCA; 2009. If no cPAHs were detected above reasonable laboratory reporting limits the BaP equivalent is reported as 0 mg/kg per MPCA Remediation Division Policy; June 2011.

<sup>[e]</sup> = Reported result is total chromium, regulatory limit for chromium III and chromium VI are provided.

<sup>[1]</sup> [G-] Early peaks present outside the GRO window.

<sup>[6]</sup> [T6] High boiling point hydrocarbons are present in the sample.

**Table 2**  
**Groundwater Analytical Results**  
**Brooklyn Center Opportunity Zone Parcels**  
**Brooklyn Center, MN**  
**Project B1905096**

Compound/Parameter	CAS No.	Sample Identifier, Depth to Water, and Date Collected						Drinking Water Criteria (µg/L)	Source-Date
		PP-1	PP-8	PP-11	PP-15	PP-18	PP-19		
		14.49 feet	7.33 feet	10.55 feet	10.18 feet	8.82 feet	10.09 feet		
		7/2/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019	07/01/2019		
Volatile Organic Compounds (VOCs) (µg/L)									
All reported VOCs	---	<RL	<RL	<RL	<RL	<RL	<RL	---	---
Other Parameters (µg/L)									
Diesel Range Organics (DRO)	---	119	<109	157 <sup>[2]</sup>	<104	<104	<96.2	200	HBV <sup>[a]</sup>

**Notes**

Drinking Water Criteria = The most conservative value for chronic or cancer exposures provided from the following sources including the Minnesota Department of Health (MDH) Health Risk Limit (HRL), MDH Health Based Value (HBV), MDH Risk Assessment Advice (RAA) or Maximum Contaminant Level (MCL). The date of promulgation is provided, if available. Values updated April 2019.

µg/L = Micrograms per liter.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

<sup>[a]</sup> = Provisional MDH Health Based Value for total petroleum hydrocarbons (sum of DRO and GRO).

<sup>[2]</sup> [T6] High boiling point hydrocarbons are present in the sample.

**Table 3**  
**Soil Vapor Analytical Results**  
**Brooklyn Center Opportunity Zone Parcels**  
**Brooklyn Center, MN**  
**Project B1905096**

Compound/Parameter	CAS No.	Sample Identifier, Sample Depth, and Date Collected										Residential ISV (µg/m³)	33X Residential ISV (µg/m³)
		SV-1	SV-2	SV-3	SV-4	SV-5	SV-6	SV-7	SV-8	SV-9	SV-10		
		3 to 5 feet	3 to 5 feet	3 to 5 feet	3 to 5 feet	3 to 5 feet	3 to 5 feet	3 to 5 feet	3 to 5 feet	3 to 5 feet	3 to 5 feet		
		07/02/2019	07/02/2019	07/02/2019	07/02/2019	07/02/2019	07/02/2019	07/02/2019	07/01/2019	07/01/2019	07/01/2019		
Volatile Organic Compounds (VOCs) (µg/m³)													
Acetone	67-64-1	189	337	44.6	110	154	157	208	52.4	61.9	45.4	32,000	1,100,000
Benzene	71-43-2	42.1	37.5	18.1	31.2	11.4	22.2	18.0	5.6	11.4	2.0	4.6	150
2-Butanone (Methyl ethyl ketone, MEK)	78-93-3	80.7	321	13.9	44.5	96.8	78.5	88.9	21.0	15.7	15.3	5,200	170,000
Carbon disulfide	75-15-0	16.5	16.7	15.1	20.8	16.1	14.1	11.5	4.1	12.6	7.6	830	28,000
Cyclohexane	110-82-7	14.0	17.3	9.8	11.6	<5.5	8.0	<5.0	<4.7	4.8	<5.4	6,300	210,000
Dichlorodifluoromethane (Freon 12)	75-71-8	7.0	7.1	25.5	232	9.9	<3.0	135	4,170	20.9	149	NE	NE
Ethanol	64-17-5	18.7	50.6	9.4	10.1	17.1	10.0	11.0	6.2	6.3	<6.0	NE	NE
Ethylbenzene	100-41-4	7.5	12.1	8.1	7.1	6.2	11.0	6.9	3.6	4.1	<2.7	4.1	140
4-Ethyltoluene	622-96-8	<8.2	<8.0	4.4	<8.0	<7.9	<7.4	<7.2	<6.7	<4.9	<7.8	NE	NE
n-Heptane	142-82-5	25.4	33.7	12.8	17.5	14.0	15.1	16.5	<2.2	6.4	2.8	420	14,000
Hexachlorobutadiene	87-68-3	<17.8	<17.5	<8.4	<17.5	<17.1	<16.2	<15.6	<14.5	<10.6	<16.8	NE	NE
2-Hexanone (Methyl butyl ketone)	591-78-6	<13.6	23.2	<6.4	<13.4	<13.1	<12.4	<12.0	<11.1	<8.2	<12.9	31	1,000
Methylene chloride (Dichloromethane)	75-09-2	16.1	<11.4	10.3	<11.4	<11.2	<10.5	10.3	14.5	93.8	16.3	630	21,000
2-Propanol (Isopropyl alcohol)	67-63-0	<8.2	<8.0	4.4	<8.0	<7.9	<7.4	<7.2	21.1	<4.9	<7.8	210	7,000
Propylene	115-07-1	426 <sup>[1]</sup>	677 <sup>[1]</sup>	113 <sup>[1]</sup>	456 <sup>[1]</sup>	219 <sup>[1]</sup>	381 <sup>[1]</sup>	342 <sup>[1]</sup>	46.3	108 <sup>[1]</sup>	29.5	3,100	100,000
Styrene	100-42-5	<2.8	4.2	<1.3	<2.8	2.9	<2.6	4.3	<2.3	<1.7	<2.7	940	31,000
Tetrachloroethene (Perchloroethene, PCE)	127-18-4	<2.3	<2.2	1.9	<2.2	<2.2	<2.1	7.0	<1.8	<1.4	<2.1	3.4	110
Tetrahydrofuran	109-99-9	<2.0	3.3	<0.93	<1.9	<1.9	<1.8	<1.7	2.4	<1.2	<1.9	2,100	70,000
Toluene	108-88-3	40.7	41.9	22.8	31.4	29.7	29.5	26.8	10.5	16.8	3.7	4,200	140,000
Trichlorofluoromethane (Freon 11)	75-69-4	<3.7	<3.7	7.3	5.4	3.9	<3.4	89.9	<3.1	<2.2	16.0	1,000	33,000
1,2,4-Trimethylbenzene	95-63-6	4.1	13.2	12.5	7.9	3.2	10.9	10.3	3.3	4.4	3.2	63	2,100
1,3,5-Trimethylbenzene	108-67-8	<3.3	3.8	3.9	<3.2	<3.2	3.2	3.1	<2.7	<2.0	<3.1	63	2,100
Xylenes, m- & p-	179601-23-1	26.0	43.8	24.4	23.0	21.6	18.9	21.4	11.5	15.2	<5.5	100 <sup>[d]</sup>	3,300 <sup>[d]</sup>
Xylene, o-	95-47-6	9.0	18.5	10.2	9.2	7.2	8.9	9.2	3.9	5.9	<2.7	100 <sup>[d]</sup>	3,300 <sup>[d]</sup>
All other reported VOCs	---	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	---	---

**Notes**

Minnesota Pollution Control Agency (MPCA) Intrusion Screening Values (ISVs) were updated 5/29/2019.

µg/m<sup>3</sup> = Micrograms per cubic meter.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

<sup>[d]</sup> = Regulatory limit for combination of m-, p-, and o-xylenes.



**Appendix A**  
**Previous Investigation Data**

**Appendix B**

**Soil Boring Logs**

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-1</b>	
					LOCATION: See attached sketch.	
					NORTHING: 197882	EASTING: 518667
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/02/19	END DATE: 07/02/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Asphalt	WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
8.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, trace Clay, trace Silty Sand, brown and dark brown, moist	5	5.1		Soil sample PP-1 (4-6') @ 12:00 collected for analytical testing     Temporary well installed with screen set from 14 to 19 feet  Water level measured at 14.49 feet in temporary well  Water sample PP-1 @ 12:05 collected for analytical testing  Water observed at 14.5 feet at end of drilling.
				3.8		
				4.1		
				4.0		
12.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, trace Silt, brown, moist	10	3.5		
				5.0		
16.0	FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, trace Organic Silt, light brown with black, moist to wet	15	4.2			
18.0	FILL: POORLY GRADED SAND with SILT and GRAVEL (SP-SM), fine to coarse-grained Sand, trace Gravel, black, wet		3.3			
20.0	FILL: POORLY GRADED SAND with GRAVEL (SP), fine to coarse-grained Sand, trace, trace coal, brown, wet		2.7			
		END OF BORING	20			
		Boring then backfilled with bentonite grout				
			25			
			30			

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-2</b>	
					LOCATION: See attached sketch	
					NORTHING: 197879	EASTING: 518811
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/02/19	END DATE: 07/02/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Asphalt	WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
2.0		SILTY SAND (SM), fine to medium-grained Sand, dark brown, moist (TOPSOIL FILL)		1.8		Soil sample PP-1 (0-2') @ 11:25 collected for analytical testing
		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, trace Silt, light brown, moist		2.2		
8.0			5	2.8		
				2.5		
12.0		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, moist		1.8		
		<i>Cobbles from 10 to 12 feet</i>	10			
		END OF BORING				
		Boring then backfilled with bentonite grout	15			
			20			
			25			
			30			



<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-3</b>				
					LOCATION: See attached sketch				
					NORTHING: 197950	EASTING: 519050			
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/02/19		END DATE: 07/02/19			
SURFACE ELEVATION:		RIG:		METHOD: Direct Push		SURFACING: Asphalt		WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)			Sample	PID ppm	Well Details		Tests or Remarks
4.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, with Lean Clay, brown, moist				2.9			Soil sample PP-3 (0-4') @ 10:45 collected for analytical testing
						3.6			
12.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, brown to light brown, moist			5	3.6			
						3.6			
		With cobbles at 10 feet			10	2.9			
END OF BORING									
Boring then backfilled with auger cuttings									
					15				
					20				
					25				
					30				

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-4</b>	
					LOCATION: See attached sketch	
					NORTHING: 198092	EASTING: 519257
DRILLER: Bergerson Caswell	LOGGED BY: C. Forster & J. Carlson		START DATE: 07/02/19	END DATE: 07/02/19		
SURFACE ELEVATION:	RIG:	METHOD: Direct Push	SURFACING: Vegetation	WEATHER: Cloudy/overcast		
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
8.0		FILL: SILTY SAND (SM), fine to medium-grained Sand, trace Gravel, trace roots, dark brown and brown, moist  <i>With concrete debris from 3 to 7 feet</i>	5	2.4 5.9 3.8		Soil sample PP-4 (4-8') @ 10:20 collected for analytical testing
13.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, brown, moist  <i>With fibers and Organic Silt at 13 feet</i>	10	4.5 5.7		
16.0		FILL: SANDY LEAN CLAY (CL), trace Gravel, trace roots, gray, moist	15	3.8		
		END OF BORING  Boring then backfilled with bentonite grout	20 25 30			

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-5</b>		
					LOCATION: See attached sketch		
					NORTHING: 197998	EASTING: 518905	
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/02/19	END DATE: 07/02/19		
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Gravel	WEATHER: Cloudy/overcast		
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks	
2.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, with Silty Sand, dark brown and brown, moist		4.7		Soil sample PP-5 (0-4') @ 11:10 collected for analytical testing	
6.0		FILL: SILTY SAND (SM), fine to medium-grained Sand, trace Gravel, brown and dark brown, moist	5	5.2			
8.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Silty Sand, light brown, moist		4.6			
12.0		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, light brown, moist	10	2.6			
		END OF BORING					
		Boring then backfilled with bentonite grout	15				
			20				
			25				
			30				

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>						BORING: <b>PP-6</b>			
						LOCATION: See attached sketch			
						NORTHING: 197977	EASTING: 518659		
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/02/19		END DATE: 07/02/19			
SURFACE ELEVATION:		RIG:		METHOD: Direct Push		SURFACING: Gravel		WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details		Tests or Remarks		
2.0		FILL: SILTY SAND with GRAVEL (SM), fine to medium-grained Sand, trace roots, with Lean Clay, brown and dark brown, moist		3.5			Soil sample PP-6 (2-4') @ 14:20 collected for analytical testing		
		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, brown and dark brown, moist <i>With Silty Sand and Silt from 4 to 6 feet</i>	5	2.5					
		<i>Trace Organic Silt at 7 feet</i>		1.9					
8.0				1.8					
		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Silty Sand, trace Organic Silt, light brown, moist	10	2.5					
12.0				3.1					
END OF BORING									
		Boring then backfilled with bentonite grout	15						
			20						
			25						
			30						



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<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-8</b>	
					LOCATION: See attached sketch. Offset 15 feet west.	
					NORTHING: 198384	EASTING: 518661
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19	END DATE: 07/01/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Asphalt	WEATHER: Cloudy/overcast	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
0.4		ASPHALT, 5 inches				
2.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, trace roots, with Silty Sand, with Silt, dark brown and brown, moist		0.4		
4.0		FILL: SILTY SAND (SM), fine to medium-grained Sand, trace Gravel, with Silt, brown, moist		0.3		Soil sample PP-8 (2-4') @ 12:50 collected for analytical testing
		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, with Silt, brown, moist to wet	5	0.5		Temporary well installed with screen set from 7 to 12 feet
8.0	▼			0.5		Water level measured at 7.33 feet in temporary well
		FILL: POORLY GRADED SAND with GRAVEL (SP), fine to coarse-grained Sand, with Silt, brown, wet	10	0.6		Water sample PP-8 @ 13:10 collected for analytical testing
12.0				0.6		Water observed at 7.5 feet at end of drilling.
END OF BORING						
		Boring then backfilled with bentonite grout	15			
			20			
			25			
			30			

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<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-10</b>				
					LOCATION: See attached sketch				
					NORTHING: 198316	EASTING: 519277			
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/02/19		END DATE: 07/02/19			
SURFACE ELEVATION:		RIG:		METHOD: Direct Push		SURFACING: Vegetation		WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details		Tests or Remarks		
4.0		FILL: POORLY GRADED SAND with SILT and GRAVEL (SP-SM), fine to medium-grained Sand, with concrete fragments, with Silty Sand, with Lean Clay, dark brown, moist		2.4			Soil sample PP-10 (0-4') @ 09:50 collected for analytical testing		
8.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Silty Sand, brown and light brown, moist	5	3.2					
				3.4					
10.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, with Lean Clay, brown, moist	10	1.5					
12.0		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, light brown, moist		2.2					
END OF BORING									
		Boring then backfilled with bentonite grout	15						
			20						
			25						
			30						



<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-11</b>	
					LOCATION: See attached sketch. Offset 20 feet north.	
					NORTHING: 198625	EASTING: 519332
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19	END DATE: 07/01/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Asphalt	WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
0.4		ASPHALT, 5 inches				
2.0		FILL: SILTY SAND (SM), fine to medium-grained Sand, with Gravel, with bituminous, black, moist		0.3		
		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Silty Sand, light brown and dark brown, moist		0.7		Soil sample PP-11 (2-4') @ 14:00 collected for analytical testing
6.0			5	0.6		
8.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, light brown, moist		0.3		
10.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Silt, light brown, moist	10	0.6		Temporary well installed with screen set from 10 to 15 feet
		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, light brown, wet		0.4		Water level measured at 10.55 feet in temporary well.
				0.7		Water sample PP-11 @ 14:10 collected for analytical testing
16.0			15	0.5		Water observed at 10.6 feet at end of drilling.
		END OF BORING				
		Boring then backfilled with bentonite grout				
			20			
			25			
			30			

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>						BORING: <b>PP-12</b>			
						LOCATION: See attached sketch. Offset 20 feet west.			
						NORTHING: 198604	EASTING: 519010		
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19		END DATE: 07/01/19			
SURFACE ELEVATION:		RIG:		METHOD: Direct Push		SURFACING: Gravel		WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details		Tests or Remarks		
2.0		FILL: POORLY GRADED SAND with SILT and GRAVEL (SP-SM), fine to coarse-grained Sand, trace concrete fragments, trace brick fragments, trace plastic debris, brown, moist		3.0			Soil sample PP-12 (4-6') @ 15:30 collected for analytical testing		
6.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Silty Sand, brown, moist	5	3.5					
				2.0					
10.0		FILL: POORLY GRADED SAND with GRAVEL (SP), fine to medium-grained Sand, with Lean Clay, brown, moist		3.1					
				3.1					
12.0		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, moist	10	2.3					
END OF BORING									
		Boring then backfilled with bentonite grout							
			15						
			20						
			25						
			30						

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-13</b>	
					LOCATION: See attached sketch	
					NORTHING: 198571	EASTING: 518766
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19	END DATE: 07/01/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Gravel	WEATHER: Cloudy/overcast	

Elev./Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
0.5		AGGREGATE, 6 inches				
		FILL: SILTY SAND (SM), fine to medium-grained Sand, trace Gravel, brown and light brown, moist		5.2		
				5.3		
4.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine-grained Sand, trace Gravel, with Lean Clay, light brown, moist	5	4.6		Soil sample PP-13 (4-6') @ 15:45 collected for analytical testing
6.0		FILL: SILTY SAND (SM), fine to medium-grained Sand, with Lean Clay, grayish brown, moist to wet		4.1		
8.0		FILL: POORLY GRADED SAND with GRAVEL (SP), fine to coarse-grained Sand, brown, wet	10	2.9		
12.0		END OF BORING				Water observed at 7.0 feet while drilling.
		Boring then backfilled with bentonite grout				
			15			
			20			
			25			
			30			

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<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-15</b>	
					LOCATION: See attached sketch	
					NORTHING: 198686	EASTING: 518269
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19	END DATE: 07/01/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Gravel	WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
4.0		FILL: POORLY GRADED SAND with SILT and GRAVEL (SP-SM), fine to medium-grained Sand, trace brick fragments, brown, moist		5.0		Soil sample PP-15 (2-4') @ 17:15 collected for analytical testing  Temporary well installed with screen set from 10 to 15 feet  Water level measured at 10.18 feet in temporary well  Water sample PP-15 @ 17:20 collected for analytical testing  Water observed at 10.2 feet at end of drilling.
8.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Lean Clay, brown and light brown, moist	5	4.9		
10.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, brown, moist	10	4.3		
		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, wet		4.5		
16.0			15	5.9		
		END OF BORING		6.4		
		Boring then backfilled with bentonite grout		7.3		
			20			
			25			
			30			

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-16</b>	
					LOCATION: See attached sketch	
					NORTHING: 198731	EASTING: 518739
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19	END DATE: 07/01/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Gravel	WEATHER: Cloudy/overcast	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
4.0		FILL: POORLY GRADED SAND with SILT and GRAVEL (SP-SM), fine to medium-grained Sand, trace concrete fragments, brown, moist		3.7		Soil sample PP-16 (2-4') @ 16:15 collected for analytical testing
6.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Silty Sand, brown, moist	5	2.6		
8.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, with Silt, brown, moist		2.4		
12.0	Σ	FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, light brown, moist to wet	10	2.6		
END OF BORING						
		Boring then backfilled with bentonite grout	15			Water observed at 9.5 feet while drilling.
			20			
			25			
			30			

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-17</b>	
					LOCATION: See attached sketch	
					NORTHING: 198886	EASTING: 519165
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19	END DATE: 07/01/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Asphalt	WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
6.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, brown and light brown, moist	0.8			Soil sample PP-17 (0-2') @ 14:21 collected for analytical testing
			1.2			
			2.1			
8.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Silty Sand, brown to black, moist to wet	0.9			
		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, wet	2.0			Water observed at 8.0 feet at end of drilling.
12.0			1.9			
	END OF BORING					
	Boring then backfilled with bentonite grout					
			15			
			20			
			25			
			30			

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-18</b>	
					LOCATION: See attached sketch	
					NORTHING: 199109	EASTING: 519338
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19	END DATE: 07/01/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Vegetation	WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
2.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with organic clay, brown and black, moist		0.3		Soil sample PP-18 (0-2') @ 11:35 collected for analytical testing     Temporary well installed with screen set from 7 to 12 feet  Water level measured at 8.82 feet in temporary well  Water sample PP-18 @ 11:40 collected for analytical testing   Water observed at 8.8 feet at end of drilling.
4.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, with Silty Sand, light brown and dark brown, moist		0.3		
		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Gravel, with Silt, light brown to brown, moist to wet	5	0.4		
				0.4		
			10	1.1		
12.0		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, brown, wet, becomes with Gravel		0.4		
16.0			15	0.4		
		END OF BORING				
		Boring then backfilled with bentonite grout				
			20			
			25			
			30			



<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-19</b>	
					LOCATION: See attached sketch	
					NORTHING: 199263	EASTING: 518981
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19	END DATE: 07/01/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Vegetation	WEATHER: Cloudy/overcast	
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
2.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine-grained Sand, with Silty Sand, brown and dark brown, moist		0.6		
		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, with Silty Sand, brown and light brown, moist		0.6		
6.0			5	0.7		Soil sample PP-19 (4-6') @ 10:35 collected for analytical testing
8.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, with Silty Sand, with Silt, brown, moist		0.6		
		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, brown and light brown, moist to wet	10	0.9		Temporary well installed with screen set from 10 to 15 feet
12.0				0.6		Water level measured at 10.09 feet in temporary well
14.0		FILL: POORLY GRADED SAND with GRAVEL (SP), fine to coarse-grained Sand, brown, wet		0.5		
		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, with Poorly Graded Sand with Silt, brown and dark brown, wet	15	0.4		Water sample PP-10 @ 10:40 collected for analytical testing
16.0						Water observed at 10.1 feet at end of drilling.
		END OF BORING				
		Boring then backfilled with bentonite grout				
			20			
			25			
			30			

<b>Project Number B1905096</b> <b>Environmental Investigation</b> <b>Brooklyn Center Opportunity Zone Parcel</b> <b>Brooklyn Center, Minnesota</b>					BORING: <b>PP-20</b>	
					LOCATION: See attached sketch	
					NORTHING: 199352	EASTING: 519076
DRILLER: Bergerson Caswell		LOGGED BY: C. Forster & J. Carlson		START DATE: 07/01/19	END DATE: 07/01/19	
SURFACE ELEVATION:		RIG:	METHOD: Direct Push	SURFACING: Vegetation	WEATHER: Cloudy/overcast	

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
2.0		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, with Silt, brown, moist		0.0		Soil sample PP-20 (6-8') @ 10:15 collected for analytical testing
		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained Sand, trace Gravel, brown and light brown, moist		0.0		
6.0			5	0.0		
8.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, brown, moist, rust staining		0.0		
10.0		FILL: POORLY GRADED SAND (SP), fine to medium-grained Sand, trace Silt, brown and light brown, moist to wet	10	0.0		
12.0		FILL: POORLY GRADED SAND (SP), fine to coarse-grained Sand, trace Gravel, trace Silt, brown, wet		0.0		Water observed at 9.0 feet while drilling.
		END OF BORING				
		Boring then backfilled with bentonite grout				
			15			
			20			
			25			
			30			

**Appendix C**  
**Laboratory Analytical Report**

## **Appendix E**

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