ENVIRONMENTAL ASSESSMENT WORKSHEET

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:** Wayzata Lake Effect

2. **Proposer:** City of Wayzata
   Contact person: Jeff Thomson
   Title: Director of Planning and Building
   Address: 600 Rice Street East
   City, State, ZIP: Wayzata, Minnesota 55391
   Phone: 952.404.5312
   Fax: 952.404.5318
   Email: jthomson@wayzata.org

3. **RGU:** City of Wayzata
   Contact person: Jeff Thomson
   Title: Director of Planning and Building
   Address: 600 Rice Street East
   City, State, ZIP: Wayzata, Minnesota 55391
   Phone: 952.404.5312
   Fax: 952.404.5318
   Email: jthomson@wayzata.org

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

   Required:
   ☐EIS Scoping
   ☒Mandatory EAW

   Discretionary:
   ☐ Citizen petition
   ☐ RGU discretion
   ☐Proposer initiated

   If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):
   MN Rule 4410.4300, subpart 27 wetlands and public waters
   MN Rule 4410.4300, subpart 36a land conversion in shoreland

5. **Project Location:**
   County: Hennepin
   City/Township: City of Wayzata
   PLS Location (¼, ¼, Section, Township, Range):
   - S ½ of Section 6, T 117 N, R 22 W
   - NW ¼ of Section 8, T 117N, R 22W

   Watershed (81 major watershed scale): 20
   GPS Coordinates: 44.97, -93.51
   Tax Parcel Numbers:
   - 0611722420032
   - 0611722440025 (portions)
   - 0611722310001
   - 081172240017 (portions)(Bushaway Road Parcel)
   - 0611722310089
   - 0611722320007 (portions)

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

- County map showing the general location of the project (Figure 1);
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (Figure 2); and

- Site plans showing all significant project and natural features, pre-construction site plan and post-construction site plan (remaining figures).

Tables (embedded in the text)

Figures

Appendices

A-7: Option A5 Lake edge: Continuous Toe-Wood Plan
A-8: Option A6 Lake Edge: Intermittent Toe-Wood Plan
A-9: Options A5 & A6 Lake Edge: Toe-Wood Section

B: Lake Walk/Boardwalk Construction Options
Figures:
B-1: Option B1 Boardwalk Wood Pile Plan – Beach Area
B-2: Option B1 Boardwalk Wood Pile Plan – Lake Walk
B-3: Option B1 Boardwalk Wood Pile Section
B-4: Option B2 Boardwalk Concrete Pile Plan – Beach Area
B-5: Option B2 Boardwalk Concrete Pile Plan – Lake Walk
B-6: Option B2 Boardwalk Concrete Pile Section

C: Linear Reef and Shoreline Marsh Construction Options
Figures:
C-1: Option C1 Linear Reef Riprap Plan
C-2: Option C1 Linear Reef Riprap Section
C-3: Option C2 Linear Reef Sheet Pile Plan
C-4: Option C2 Linear Reef Sheet Pile Section

D: Mitigation Options
Figures:
D-1: Depot Park Terrace Section
D-2: Beach Section
D-3: Boatworks Marina
D-4: East Pond
D-5: Bushaway Road Mitigation

E: FEMA Map
F: Well Logs
G: Aquatic Environment Characterization
H: MN DNR NHIS Response
I: USFWS IPaC Trust Resources Report
J: MnDNR Best Practices for AIS
K: Blanding's Turtle Information
L: SHPO Correspondence

6. Project Description:

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

The Wayzata Lake Effect project (the proposed project) extends from a stormwater basin east of the Section Foreman House to the inland marina on the west. A meandering continuous boardwalk (the Lake Walk) will extend from a new "Eco Park" near the Section Foreman House on the east end, past the Broadway community docks, to the historic Depot. An Eco Park will be on the east side of the project with a restored shoreline marsh, fishing pier, and environmental education center. Lake Street will be redesigned to be more pedestrian and bicycle friendly with revised urban park/plaza replacing the Broadway Municipal parking lot. As part of a potential future phase, the existing swimming beach will be redesigned and enhanced. A City-owned parcel of land located on the east side of Bushaway Road (the Bushaway Parcel) will be modified as necessary to offset impacts to the lake bottom and lake volume displaced due to the construction of the proposed project.

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 proposed project will change the use of the currently underutilized lake shore to include more green space areas with boardwalks and paths for increased pedestrian and bicycle access to the area. The project will also restore portions of the lake shore to a more natural lake edge and restore a marsh area on the east end. The proposed project is shown on Figures 3 – 6.

The goals of the proposed project include: 1) providing people with safe, year-round access to Lake Minnetonka's shoreline; 2) restoring and creating shoreline marsh areas of native plants for wildlife and improved aesthetics, 3) enhancing the water quality of the lake; and 3) providing enhanced passive and active recreation through enhanced swimming and fishing facilities, and educational and interpretive opportunities associated with the environmentally-focused Eco Park.

The project extends from a stormwater basin east of the Section Foreman House (on the east end of the proposed project) to the west past the existing Boat Works building toward the inland marina (on the west end of the proposed project). An Eco Park will be created on the east side of the project with a restored shoreline marsh, fishing pier, and environmental education center. A meandering continuous boardwalk (the Lake Walk) will extend from the new Eco Park near the Section Foreman House, past the Broadway community docks, to the existing Depot building. A terrace area (the Depot Terrace) will be constructed near the Depot building to allow gathering by the lake shore. Shade structures and a restroom building are also planned for this area. Additional boardwalk may be placed in connection with the Broadway community docks.

As part of a potential future phase, the existing beach area on the west end of the proposed project will be redesigned with the addition of a boardwalk, a new shade structure, new restroom, and an expanded food/equipment rental facility. Lake Street will be redesigned to be more pedestrian and bicycle friendly with an urban park/plaza replacing the Broadway Municipal parking lot. Improvements to stormwater management elements will be conducted in the beach area and along Lake Street, including removing the existing storm water facility and replacing it with a new linear water quality device at the south end of the existing parking. The trailhead to the west of the marina will be enhanced to connect it to existing park areas.

The Lake Walk will be a 10' wide, 1,193' long, meandering continuous boardwalk, placed approximately one foot above the ordinary high water level (OHWL), with railings on both sides. The Lake Walk width was established to enable access in accordance with the Americans with Disabilities Act (ADA), enable winter maintenance, and to facilitate gatherings by small groups along the length of the Lake Walk. In addition, a boardwalk will be placed on the west end near the swimming beach, in the central area near the existing Broadway community docks, and on the east end near the Eco Park extending perpendicular from the lake shore. The total boardwalk length of these three segments will be 2,217 lineal feet (lf). As part of this project, the existing lake edge will be restored to be a more vegetated, natural lake edge. At this time, much of the lake edge is riprap with limited vegetation. The existing riprap will be left in place as the lake edge is modified. In order to establish shoreline vegetation, underwater structures (e.g. riprap, sheet pile, or toe-wood) will be needed in the water along the lake edge to create a shallower area for sediment to settle and vegetation to grow.

In order to restore the historical marsh on the east end, as shown on 1937 and 1940 aerial photographs (Figures 7 and 8) that will be part of the Eco Park, an underwater linear reef will be constructed. The purpose of the reef will be to reduce wave energy and to allow marsh vegetation to grow. The reef will also allow sediment contained in existing stormwater flows to settle in the restored shoreline marsh.

As discussed above, part of the proposed project will include construction below the OHWL for Lake Minnetonka, which will affect both the lake bottom as well as lake volume. At this time, different construction methods for restoring the lake edge, constructing the Lake Walk/boardwalks, and constructing the linear reef are being considered and are described below.

The range of options being considered were developed to minimize environmental effects and in response to discussions with regulators regarding the effects on lake bottom and lake volume. All of these options are currently included in the EAW to obtain regulator comments on these issues to help move forward in choosing the preferred alternative. The preferred alternative will be selected based on:

- The amount of mitigation required.
- The constructability of the option, in that some options are easier to construct than others.
- The long-term costs and maintenance required for the options.

The following is a summary of the different construction methods being considered. A more detailed discussion on each of the construction methods being considered is included in appendices. A discussion of their effects on the lake bottom and lake volume displaced is included under Item #11, b, iv, a.

Restored Lake Edge

The proposed project will restore the existing lake edge to be a more vegetated, natural shoreline. At this time, the lake edge is primarily riprap with limited vegetation. The riprap will be left in place. Establishing shoreline vegetation will require construction beneath the OHWL along the lake edge to create a strip of shallower water for establishment of aquatic and emergent shoreline marsh vegetation.

Six different construction methods are under consideration. These methods include:

- Option A1 Lake Edge – Continuous riprap
- Option A2 Lake Edge – Intermittent riprap
- Option A3 Lake Edge – Continuous sheet pile
- Option A4 Lake Edge – Intermittent sheet pile
- Option A5 Lake Edge – Continuous toe-wood
- Option A6 Lake Edge – Intermittent toe-wood
- Option A7 Lake Edge – Floating islands

A description of each of these options and figures showing these options are included as Appendix A.

Lake Walk/Boardwalk

As discussed above, the Lake Walk will be a 10' wide, 1,193' long, meandering continuous boardwalk, placed approximately one foot above the OHWL, with railings on both sides. In addition, a dock/boardwalk will be present on the west end near the swimming beach, in the central area near the existing Broadway community docks, and on the east end near the Eco Park as a fishing pier. The total boardwalk length will be 2,217 lf. The support structure for these boardwalks will affect the lake bottom and lake volume. Two different construction methods were evaluated. These two methods include:

- Option B1 Boardwalk Support – wood piles
- Option B2 Boardwalk Support – concrete piles

A description of each of these options and figures showing these options are included as Appendix B.

Linear Reef and Shoreline Marsh

Restoring the historic shoreline marsh near the Eco Park will entail construction of a linear reef to reduce wave energy and to allow marsh vegetation to grow, and the reef will also allow naturally-occuring lake sediment to settle in the restored marsh. Construction of this reef will alter the lake bottom and reduce lake volume. The underwater linear reef will be constructed approximately 180' to 250' from the existing lake edge, cresting approximately 2' below the OHWL. Two different construction methods are being evaluated. These methods include:

- Option C1 Linear Reef – riprap plan
- Option C2 Linear Reef – sheet pile plan

A description of each of these options and figures showing these options are included as Appendix C.

Lake Bottom and Lake Volume Mitigation

As part of the potential mitigation of the effects to the lake bottom and lake volume displaced for this project, several separate mitigation strategies are being proposed.
These mitigation strategies will be completed only to the amount needed to off-set changes representing actual water resource impacts, the volume of which is yet to be determined. These options include:

- Option M1 Depot Park Terrace
- Option M2 Beach Edge
- Options M3 and M4 Boatworks Marina Dredging
- Options M5 and M6 East Pond Dredging
- Option M7 Bushaway Road Parcel

These options are discussed briefly in Appendix D and a more detailed discussion is included under Item #11, b, iv, a.

Construction Methods and Activities

Construction of the proposed project will take place both on land and in the water. The following is a general discussion on the construction activities. Specific construction measures that will be taken to mitigate impacts to threatened and endangered species are discussed in Item 13d.

General Land Based Construction Activities

All land-based construction areas (Lake Street, Lake Street Plaza, Eco Park, Depot Park, and the Beach Area), will use standard construction means and methods. For buildings and shade structures, traditional concrete piers will be used, while all proposed retaining walls will utilize traditional concrete spread-footing installation methods. All construction activities will meet all local ordinances for hours of operation, timing, noise, and traffic requirements.

General Water Based Construction Activities

All water-based construction activities, such as the Lake Walk, the restored lake edge, and the linear reef will be completed using water-based techniques (barge or similar) and will only occur during times of open water; construction activities will shut down when the lake freezes. For the restored lake edge and linear reef alternatives proposing sheet pile construction, the driven sheet piles will be installed using vibrating hammers, diesel-powered impact hammers and/or hydraulic press-in machines to drive or push the piles into place. For the boardwalk alternatives proposing wood piers, the piers will be installed by water jetting, hammering, or drilling construction methods. For the boardwalk alternatives that propose concrete piers, piers will be installed using traditional drilling techniques. All other proposed alternatives will use traditional installation and construction techniques.

No existing equipment or industrial processes are present in the project area.

No significant demolition or removal of existing structures is planned. The Section Foreman House on the east end of the proposed project will be remodeled to accommodate an environmental education center.

The construction of the improvements to Lake Street and the urban plaza are anticipated to be started and completed in 2019. The other project components will be constructed as funding is available, with the earliest construction beginning in 2019.

c. **Project magnitude:**

Table 1: Project Magnitude

Total Project Acreage	Approximately 15.66 acres (proposed project) 1.22 ac (Bushaway Road Parcel)
Linear project length	3,410 lf (proposed project)
Number and type of residential units	Not applicable
Commercial building area (in square feet)	Not applicable
Industrial building area (in square feet)	Not applicable
Institutional building area (in square feet)	1,037 sf
Other uses – specify (in square feet)	Not applicable
Structure height(s)	One story

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 City of Wayzata desires to redesign the shoreline of and access to Lake Minnetonka in its downtown area. The proposed project will improve lakefront access for the public, provide new community open space, and introduce ecological enhanced areas along the lakefront, benefitting the community as a whole. The proposed project will also help restore a more natural shoreline which will assist with water quality and improve wildlife habitat. Redesigning Lake Street will

make the area more pedestrian and bicycle friendly and create an area for community gathering which will adapt to support a variety of community events.

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.

Not applicable.

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

The existing and proposed land cover for the proposed project is shown on Figures 9 and 10, and the existing and proposed land cover for the Bushaway Road Parcel is shown on Figures 11 and 12. Summaries of the before and after acreages for the proposed project and the Bushaway Road Parcel are presented in Tables 2 and 3. The land cover estimates are based on current aerial photography and the proposed concept plans. The proposed project construction alternatives, discussed above, will result in only minor differences in land cover and so are not presented. Brief descriptions of the land cover types are also provided after the tables.

Table 2. Proposed Project Land Cover

Land Cover Type	Before	After
Littoral (lakeshore) wetlands	5.11	3.56
Shoreline marsh	0	1.64
Invasive cattail marsh	0.34	0.34
Deep water/streams	0	0
Wooded/forest	0	0
Brush/Grassland	1.64	1.29
Cropland	0	0
Lawn/landscaping	2.68	2.87
Impervious surface	4.80	5.27
Stormwater basin	0.57	0.42
Sand beach	0.52	0.27
Other	0	0
TOTAL	**15.66**	**15.66**

Table 3. Bushaway Road Parcel Land Cover

Land Cover Type	Before	After
Littoral (lakeshore) wetlands	0	0.23
Deep water/streams	0	0
Wooded/forest	0.62	0.60
Brush/Grassland	0.40	0.19
Cropland	0	0
Lawn/landscaping	0.15	0.15
Impervious surface	0.02	0.02
Stormwater basin	0.03	0.03
Other	0	0
TOTAL	**1.22**	**1.22**

Descriptions of land cover types:

- Littoral (lakeshore) wetland – Circular 39 Wetland Type 5, shallow (<2m depth) lake and shoreline wetland area, with patches of submergent vegetation (mostly invasive Eurasian water milfoil, *Myriophyllum spicatum*).
- Shoreline marsh – Circular 39 Wetland Type 4/5, proposed native littoral wetland, including native shoreline, emergent, submergent, and floating-leaved aquatic vegetation and habitats.
- Invasive cattail marsh – Circular 39 Wetland Type 3, existing wetlands (located around marina) heavily dominated by invasive cattails (*Typha angustifolia, T. x glauca*).
- Wooded/forest – relatively undisturbed wooded areas
- Brush/grassland – areas of herbaceous and sparse woody vegetation that are not regularly maintained.
- Lawn/landscaping – turf and other designed/maintained landscape areas
- Impervious surface – buildings, roads, parking lots, and other hard surfaces
- Stormwater basin – a basin designed to receive and treat collected stormwater runoff
- Sand beach – man-made beach, consisting of imported sand

8. 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 4. Permits and Approvals Required

Unit of Government	Type of Application	Status
Federal		
U.S. Army Corps of Engineers (USACE)	Section 404 Wetland Permit	To be submitted

Unit of Government	Type of Application	Status
State		
Minnesota Department of Natural Resources (DNR)	Work in Public Waters	To be submitted
	Aquatic Plant Management Permit	To be submitted, if needed
	Aquatic Transplant Permit	To be submitted, if needed
	Water Appropriations – Temporary Construction Dewatering	To be submitted, if needed
Minnesota Pollution Control Agency (MPCA)	National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Stormwater Construction Permit	To be submitted
	Section 401 Water Quality Certification	To be submitted, if needed
County/Regional		
Lake Minnetonka Conservation District	Dock permit/License	To be submitted
Minnehaha Creek Watershed District	Water Resource Permit	To be submitted
Local		
City of Wayzata	Shore Land Conditional Use Permit	To be submitted
	Grading Permit	To be submitted
	Erosion control	To be submitted
	Rezoning	To be submitted, if needed
	Vacation of Easements	To be submitted, if needed
	Preliminary and Final Plat Subdivisions	To be submitted, if needed
	Conditional Use Permit	To be submitted
	Tax Increment Financing	To be submitted, if needed
	Demolition Permit	To be submitted, if needed
	Building Permits	To be submitted
	Wetland Conservation Act (WCA) Authorizations	To be submitted
Burlington Northern Inc.	Railroad crossing	To be submitted

9. Land use:

a. Describe:

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

The proposed project is located along Lake Minnetonka and Lake Street in downtown Wayzata. The eastern portion of the proposed project area is currently occupied by a building, the Section Foreman House, and a constructed stormwater basin. The central portion of the proposed project area is occupied by Lake Minnetonka with rip-rap along the shore, a few docks with boat slips, and the Depot building. The western portion of the proposed project area is occupied by a stormwater basin area, a beach, an inland marina (Boatworks Marina), docks with boat slips, and the parking area for a bike trail head. Lake Street, which is along the northern portion of the proposed project, is located in a commercial district with retail stores, offices, restaurants, and multi-family residential units. The existing land use is shown on Figure 3.

A bike trail enters the proposed project area from the west. The western and central portions of the proposed project area are considered a City Park. No prime or unique farmlands are located within or adjacent to the proposed project area.

The Bushaway Road Parcel is undeveloped and located between a lagoon and County Road 101, in a residential area of the City of Wayzata. A paved trail was recently constructed along the east side of County Road 101, just west of the City-owned parcel. Approximately 11.5% of the Bushaway Road Parcel is designated as farmland of statewide importance, although no currently-farmed areas are located within or adjacent to the Bushaway Road Parcel. The existing land cover of the Bushaway Road Parcel is shown on Figure 5.

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

The City of Wayzata 2030 Comprehensive Plan, Proposed Land Use Map 3.2, indicates the area of the proposed project as park, institutional, public, and central business district uses. This map is provided as Figure 13.

The proposed project is located within the Lake Minnetonka Conservation District (LMCD), which assists in coordinating the planning and development of properties in the immediate vicinity of Lake Minnetonka. The LMCD has ordinances and permit requirements for uses of the lake area but does not have a separate comprehensive plan.

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

The City of Wayzata zoning districts within the proposed project area include residential, commercial, and right of way districts, as shown in Figure 14. Public parks are allowed uses (either permitted, accessory, or conditional) within all of the zoning districts.

Lake Minnetonka is classified as a General Development Lake. In accordance with City of Wayzata zoning regulations, lake classifications have minimum lot sizes and set back requirements, a maximum building/structure height, maximum impervious surface

coverage, residential density requirements, design criteria for structures, and restrictions on altering vegetation and topography within the shoreland areas. Developments that do not comply with the regulations would require approval through a City of Wayzata Shoreland Impact Plan and Conditional Use Permit.

The proposed project is located within a City of Wayzata shoreland district, which is defined as an area within 1,000 feet from the ordinary high water level (OHWL). The proposed project will need to comply with the City of Wayzata Shoreland Overlay District Ordinance, Section 91 of the Zoning Ordinance. The City of Wayzata has regulations and requirements imposed by the Shoreland District in addition to those established for base zoning districts that jointly apply. The proposed project will need to comply with these regulations and requirements, such as sizes and set back requirements, a maximum building/structure height, maximum impervious surface coverage, design criteria for structures, and restrictions on altering vegetation and topography within the shoreland areas, as applicable

Floodplain regulations are outlined in Section 93 of the Zoning Ordinance. The City has divided floodplain areas into three districts that include a Floodway District, Flood Fringe District, and the General Floodplain District. The Floodway District includes those areas which are within Zone AE and within a delineated floodway and those areas that are at or below the OHWL. The Flood Fringe District are those areas within Zone AE that are not within the delineated floodway and those areas below the 1% annual change (100-year) flood elevation but above the OHWL. The General Floodplain District are those areas within Zone A that do not have a delineated floodway.

All wetlands and their flood envelopes within the City of Wayzata are designated as part of the Wayzata Wetlands Overlay District, and are governed by Section 92 of the Zoning Ordinance. The regulations and requirements imposed under the Wetlands Overlay District are in addition to those established for zoning districts that jointly apply; the more restrictive requirements apply. Section 92 provisions include requirements for the placement of structures, fill, or other obstructions within wetlands and their flood envelopes.

The Bushaway Road Parcel is located within a Planned Unit Development (PUD) District (Figure 14). A PUD District is used to provide for the integration and coordination of land parcels with a varying type of residential, commercial, and industrial uses.

The Bushaway Road Parcel is also located within a Shoreland district, and includes areas that are within the Floodway District and the Flood Fringe District.

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

One of the vision statements in the City of Wayzata 2030 Comprehensive Plan (the 2030 Comprehensive Plan) is "We value parks, open spaces, other public areas, and public art to help

broaden our perspective." The proposed project will enhance the public area along Lake Minnetonka.

The 2030 Comprehensive Plan, Proposed Land Use Map 3.2, indicates the area of the proposed project is park, institutional, public, and central business district uses. This map is provided as Figure 13. The proposed project is consistent with the 2030 proposed land uses. The park land use category is for recreational facilities and lands owned by the City or other governmental bodies, intended for the general public's use and enjoyment. The institutional/public land use category is for land for schools, churches, government buildings and other institutions.

The 2030 Comprehensive Plan includes the following 1st Tier Priority for the Central Business District and Downtown Mixed Use District Policies:

> "Continue to provide a safe, comfortable, and attractive pedestrian scale environment through the enhancement of the pedestrian circulation system by improving sidewalks, walkways and street furniture; mitigating conflicts with traffic and street intersections, and by providing proper demarcation and sign control."

The proposed project will enhance the pedestrian areas along the shore of Lake Minnetonka and along Lake Street.

The proposed project is located within a shoreland district, which extends 1,000 feet from the ordinary high water level (OHWL). The proposed project was reviewed for consistency with the City of Wayzata Shoreland Overlay District Ordinance, Section 91 of the Zoning Ordinance.

Part of the proposed project, particularly the areas on and adjacent to the Lake, is within the Floodway District and the Flood Fringe District. A copy of the floodplain map is attached in Appendix E. The proposed project was reviewed for consistency with the City of Wayzata Floodplain Overlay District, Section 93 of the Zoning Ordinance.

The proposed project is in general conformance with the current City zoning and re-zoning will not be required. The central portion of the proposed project is within residentially-zoned area. A Conditional Use Permit will be required for the public parks located on residentially-zoned these areas.

The proposed project will require a Conditional Use Permit for the new structures, both above the water and below the water. This will include the boardwalks, linear reef, and lake edge structures.

The following table assesses the compliance of the proposed project with the existing zoning requirements:

Table 5. Zoning Requirements

Ordinance	Requirement	Proposed Project
Setback	75 feet	Will need variance for restrooms
Maximum building height	35 feet	Meets
Impervious surface coverage	25% of the lot area	Meets
High water elevations	3 ft above OHWL or constructed of flood-resistant materials	Meets
Vegetation alterations	No steep slopes	Meets
Vegetation alterations	Limited clearing of trees and shrubs	Meets
Grading or filling	Individually evaluated	Meets general requirements, will require permits

The variance requirements for the proposed project for setback would be for the restrooms, which is a unique circumstance and would not set a precedent which is contrary to the intent of the zoning ordinance.

Except for minor construction along the shore, no filling, grading, or excavation will occur below the regional flood elevation and above the ordinary high water level, within the floodplain for the proposed project. Construction work along Lake Street is not part of the General Floodplain District.

A portion of proposed work on the Bushaway Road Parcel is within the Floodway District and the Flood Fringe District. However, work in this area will enhance floodplain storage. The proposed work on the Bushaway Road Parcel will conform with the City of Wayzata Floodplain Overlay District.

Existing wetlands along the proposed project and the Bushaway Road Parcel will be protected or enhanced as part of the proposed project.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

No potential incompatibility was identified for the proposed project or the Bushaway Road Parcel.

10. Geology, soils and topography/land forms:

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

According to published geologic information, the uppermost bedrock unit in the eastern and western portions of the proposed project and at the Bushaway Road Parcel is the Middle Ordovician, St. Peter Sandstone. 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.

The uppermost bedrock unit in the center portion of the proposed project is the Lower Ordovician, Prairie du Chien Group. The Prairie du Chien Group is described as Dolostone that varies greatly within Hennepin County in thickness because its top is a major erosional surface. The formation is sandy with minor amounts of shale in the upper third to half of the formation. The lower part of the formation is less sandy except within 10 to 15 feet of the base. The bedrock geology is shown on Figure 15. The depth to bedrock in the proposed project area is approximately 190 feet to 240 feet below land surface.

According to published geologic information, the unconsolidated sediment in the majority of the proposed project area is postglacial organic deposits. The organic deposits have largely been drained and filled over the last 100 years. The unconsolidated sediment in the easternmost portion of the proposed project is Pleistocene age loamy till deposits, which are loam in texture with a few beds and lenses of stratified sediment. The loamy till deposits are underlain by Superior lobe stratified sediment or till and are generally at a depth of more than 50 feet. This deposit includes small areas of thick, fine, loamy colluvium sediment. The surficial geology is shown on Figure 16.

No geologic features such as sinkholes, shallow limestone formations, or karst conditions were identified for the proposed project area or the Bushaway Road Parcel.

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 11.b.ii.

According to the USDA-NRCS Web Soil Survey, the soil at the proposed project area consists of the following classifications (Figure 17):

Table 6: USDA NRCS Web Soil Survey Proposed Project

Map Unit Symbol	Map Unit Name	% of Project Area
L2D	Malardi-Hawick complex, 12 to 18 percent slopes	0.2

Map Unit Symbol	Map Unit Name	% of Project Area
L64A	Tadkee-Tadkee, depressional, complex, 0 to 2 percent slopes	7.6
U1A	Urban land-Udorthents, wet substratum, complex, 0 to 2 percent slopes	38.2
U2A	Udorthents, wet substratum, 0 to 2 percent slopes	18.9
W	Water	35.1

The proposed project area is located at an elevation of approximately 940 feet above mean sea level. The topography is relatively level.

According to the USDA-NRCS Web Soil Survey, the soil at the Bushaway Road Parcel consists of the following classifications (Figure 18):

Table 7: USDA NRCS Web Soil Survey Bushaway Road Parcel

Map Unit Symbol	Map Unit Name	% of Project Area
L2B	Malardi-Hawick complex, 1 to 6 percent slopes	11.5
U2A	Udorthents, wet substratum, 0 to 2 percent slopes	83.2
W	Water	5.3

The Bushaway Road Parcel is located at an elevation of approximately 932 feet above mean sea level, and its topography slopes gently toward the lagoon and sedimentation basin.

11. Water resources:

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

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

The proposed project is on the shore of Wayzata Bay, located in the northeast portion of Lake Minnetonka (part of the Lower Lake, MnDNR Public Water ID: 27-0133-02). The Bushaway Road Parcel is located on a previously excavated backwater lagoon of the Lower Lake. A formal delineation of wetlands and waters of the U.S. has not been conducted for the two areas; however, data review and field investigations indicate that the only wetlands/surface waters in the proposed project area are the littoral (lakeshore) wetlands of Lake Minnetonka, three small areas of Invasive Cattail Marsh (around the existing marina on the west end of the proposed project), and the immediate shoreline (Figure 9). The ordinary high water level (OHWL) of Lake Minnetonka is 929.4 ft above mean sea level. Based on field observations by Applied Ecological Services, Inc. (AES) ecologists, the Bushaway Road Parcel

was mis-identified by the "National Wetlands Inventory (NWI) Update for the East-Central Region of Minnesota" as containing Shallow Marsh wetland.

Both the MPCA's Final 2012 Impaired Waters List and the Draft 2016 list identify Lake Minnetonka (Lower Lake, including Wayzata Bay and the Bushaway Road lagoon), as impaired for aquatic consumption (specifically, mercury in fish tissue). While the proposed project will extend into Lake Minnetonka, alterations are proposed primarily within the shallower lakeshore portions of the lake (<2m depth), which is classified as littoral wetland, shallow open water community, or Circular 39 Wetland Type 5.

Entering at the east edge of the proposed project is an historical drainageway (Gleason Creek). This creek was depicted on 1855 and 1898 historical maps, but it has since been piped underground. The 1937 and 1940 historical aerial photographs of this area (Figures 7 and 8) show what appears to be a shoreline marsh where Gleason Creek discharged into Lake Minnetonka. In subsequent years, this wetland was reduced in size and eventually eliminated for unascertained reasons. It is a goal of the proposed project to restore shoreline marsh in this area. Currently, the flow from the apparently perennial historical drainageway surfaces here and is routed around the constructed stormwater basin in this area (Figure 3). The constructed stormwater basin receives runoff from the nearby downtown area.

Nearby impaired waters (within one mile of the proposed project) are Lake Minnetonka (Grays Bay, ID: 27-0133-01, impaired for aquatic consumption, specifically, mercury in fish tissue) and Gleason Lake (ID: 27-0095-00, impaired for aquatic recreation, specifically nutrient/eutrophication biological indicators). Minnehaha Creek (located less than one mile southeast of the Bushaway Road Parcel) is impaired for aquatic life (based on fish bioassessments, chloride and dissolved oxygen levels) and aquatic recreation (due to fecal coliform).

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.

Seeps or springs have not been identified at either the proposed project or the Bushaway Road Parcel. In both areas, the surficial groundwater is likely expressed by the level of Lake Minnetonka, which has an average water level of approximately 929.1 ft above mean sea level (AMSL). Therefore, depth to surficial groundwater would be 0 ft along the lakeshore and is estimated to be 7 to 10 ft in the highest portion of the proposed project area and about 5 ft in the highest portion of the Bushaway Road Parcel.

Based on review of the Minnesota Department of Health's (MDH's) Minnesota County Well Index (MCWI) and the MnDNR's Cooperative Groundwater Monitoring (CGM) database, three wells were identified in the vicinity of the proposed project. A now-abandoned municipal supply well (Unique Well ID: 242144) was located on the edge, possibly on or off

the proposed project in the north-central portion of the proposed project. This well was installed into a bedrock aquifer in 1929. Depth to groundwater in this well during the period of record (1945 to 1958) was documented as approximately 32 ft below grade. Just east of the proposed project, an existing Senior Housing Partners well (Unique Well ID: 793702) was installed in 2012 to a depth of 60 feet. This well reportedly has a groundwater elevation of 2 ft below grade. Another well, nearby to the east (Borkland Regette, LLC, Unique Well ID: 793731), was installed in 2014, but no groundwater data were available.

Based on review of the MDH's MCWI and the MnDNR's CGM database, two wells were identified in the vicinity of the Bushaway Road Parcel. The Locust Hill Farm well (Unique Well ID: 249098) is located northeast of the Bushaway Road Parcel, across the lagoon. This domestic well was installed 486 ft into the bedrock aquifer with a groundwater depth of 115 ft below grade (measured in 2006). Southwest of the Bushaway Road Parcel, on the west side of Bushaway Road, is another domestic well (Unique Well ID: 251285). This bedrock well was constructed to a depth of 318 ft had a groundwater depth of 46 ft below grade (measured in 1997).

The logs for these nearby wells are included as Appendix F.

According to Minnesota Department of Health (MDH) data, the western portion of the proposed project lies within the City of Wayzata Wellhead Protection Area. In late 2015, the MDH approved the City of Wayzata's Wellhead Protection Plan. Based on the project design and communication with the City, the proposed project is not anticipated to pose threats to, or otherwise affect, municipal water supplies.

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

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

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

Wastewater from the new restrooms will be discharged to the City of Wayzata wastewater collection system. Due to the small amount of wastewater that will be generated by these restrooms, no significant impacts to wastewater treatment facility or expansion of municipal infrastructure is anticipated.

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.

No wastewater discharge to a SSTS is 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.**

No wastewater discharge to surface water is planned for the proposed project.

ii. **Stormwater - Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.**

At the present, the majority of the stormwater flows from downtown Wayzata discharges directly into Lake Minnetonka or into one of two stormwater basins (one on the west end near the current beach, one on the east end near the Section Foreman House) prior to discharging into Lake Minnetonka. All of the stormwater from Lake Street (between Broadway Ave. and Barry Ave.) flows into pipes that directly discharge into Lake Minnetonka without treatment. The Boatworks' parking lot currently drains to a NURP pond that overflows into Lake Minnetonka once the pond fills up to a certain elevation. Another portion of the site drains to the stormwater basins on the Bushaway Road Parcel prior to discharging into Lake Minnetonka.

The proposed project will enhance water quality by improving upon the existing stormwater features with a combination of stormwater BMPs including temporary and permanent erosion control features. An enhanced vegetative buffer (along the shoreline) will reduce sediment and nutrient loading to the Lake. In addition, it is expected that water quality will be improved by restoring the shoreline marsh near the Eco Park (by Section Foreman House) with aquatic/marsh type plants. The stormwater management improvements being considered for the Lake Street and the beach area reconstruction are expected to reduce the volume of runoff and improve the quality of the stormwater discharge into Lake Minnetonka – these stormwater features may include tree trenches, permeable pavement, sand filters and underground storage.

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. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

No new appropriation of groundwater or surface water will occur. New restrooms may be constructed near the existing Depot Building on the proposed project and these restrooms will be connected to the existing City of Wayzata municipal water. Due to the small amount of water needed for these restrooms, no significant impacts to the current water source or expansion of the municipal water infrastructure is anticipated.

Temporary dewatering may be necessary during construction.

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.**

The only wetlands/surface waters in the proposed project area are the littoral (lakeshore) wetlands of Lake Minnetonka, three small areas of Invasive Cattail Marsh (around the marina), and the immediate shoreline (Figure 9). Therefore, effects or alterations to surface waters are addressed under this section ("Wetlands"), rather than 11.b.iv.b ("Other surface waters").

As discussed in Item #6, the goals of the proposed project include, 1) providing people with safe, year-round access to Lake Minnetonka's shoreline; 2) restoring and creating shoreline marsh areas of native plants for wildlife and improved aesthetics, and 3) providing enhanced passive and active recreation through enhanced swimming and fishing facilities, and educational and interpretive opportunities associated with the environmentally-focused Eco Park. The proposed project will physically affect surface waters by installation of structures (e.g. supports for boardwalk), placing riprap and lake bottom sediment (fill) below the OHWL in the littoral fringe of the lake (for restoration of the former shoreline marsh and shoreline wetlands), and minor modifications to the shoreline. The majority of the proposed lake and shoreline alterations are associated with grading/filling necessary to create shallow, protected, shoreline marsh areas that will be revegetated with native vegetation. As discussed under Item #6, several design/construction options have been evaluated. The following is a discussion of each of the options as it relates to the lake bottom and lake volume impacts.

Restored Lake Edge

Part of the proposed project will restore lake edge to be a more vegetated, natural shoreline. At this time, the shoreline is primarily riprap with limited vegetation. Different options relating to construction of continuous versus intermittent shoreline marsh areas, and use of a variety of materials to support the underwater bench for the shoreline marsh (i.e., riprap, sheet pile, or toe wood) have been considered. A brief description of each option is provided in this section. A more detailed description is provided in Appendix A. Length, cross-section area, and volume calculations are provided in Table 8 after the descriptions.

Option A1 Lake edge – continuous riprap plan. Under this plan, the riprap would be placed continuously along the shoreline to create a linear ridge 2' below the OHWL. Lake bottom sediment (fill) would be placed on the land side of the riprap, creating an aquatic shelf for establishment of aquatic and emergent shoreline marsh vegetation (Figures A-1 and A-3).

Option A2 Lake edge – intermittent riprap plan. Similar to Option A1 above, this option would use several smaller areas of riprap and lake bottom sediment, which would create discrete areas of shoreline marsh (Figure A-2 and A-3).

Option A3 Lake edge – continuous sheet pile plan. Similar to Option A1 above, but this continuous treatment would use steel sheet pile as a vertical wall to contain the riprap and lake bottom sediments along the shoreline, reducing areal alteration to the lake bottom and volumetric displacement of aquatic habitat (Figures A-4 and A-6).

Option A4 Lake edge – intermittent sheet pile plan. Similar to Option A2, but using steel sheet pile to reduce alterations and displacement (Figures A-5 and A-6).

Option A5 Lake edge – continuous toe wood plan. Similar to Option A3, but using toe wood instead of steel sheet pile (Figures A-7 and A-9).

Option A6 Lake edge – intermittent toe wood plan. Similar to Option A4, but using toe wood instead of steel sheet pile (Figures A-8 and A-9).

Option A7 Lake edge – floating islands. Under this plan, synthetic-based mesh floating islands would be planted with living wetland plants. Floating islands would enable the introduction of wetland vegetation to the lake walk without impacts to the lake bottom or aquatic habitat displacement.

Table 8: Revised Lake Edge Options Details									
Option	Material	Length (lf)	Cross-section Area (sf)	Volume (cf)	Fill			Lake Bottom Alteration (sf)	Total Volume Displacement (cf)
					Length (lf)	Cross-section Area (sf)	Volume (cf)		
A1 Lake edge – continuous riprap	Riprap & lake bottom sediment	1,637	9	14,733	1,637	2.4	3,929	23,426	18,662
A2 Lake edge – intermittent riprap	Riprap & lake bottom sediment	585	9	5,265	585	2.4	1,404	8,371	6,669
A3 Lake edge – continuous sheet pile	Sheet pile & lake bottom sediment	1,637	0.125	205	1,637	4.1	6,712	8,185	6,917
A4 Lake edge – intermittent sheet pile	Sheet pile & lake bottom sediment	585	0.125	73	585	4.1	2,399	2,925	2,472
A5 Lake edge – continuous toe wood	Toe wood & lake bottom sediment	1,637	1	1.637	1,637	3.3	5,402	8,185	7,039
A6 Lake edge – intermittent toe wood	Toe wood & lake bottom sediment	585	1	585	585	3.3	1,930	2,925	2,515
A7 Lake edge – floating islands	synthetic-based mesh	1,637	0	0	0	0	0	0	0

Of these lake edge options, the continuous treatments result in alteration of a significant area of lake bottom and volumetric displacement of aquatic habitat, but create the largest area of restored lake edge as the end result. Of the intermittent treatments, riprap and toe wood are more natural materials than steel sheet pile; however, sheet pile results in the smallest footprint. Assuming the existing riprap used to construct the railroad bed extends lakeward to the location of the proposed toe wood or sheet pile, the installation of toe wood or sheet pile into the existing riprap may be challenging. If it does not extend to the proposed location of these structures, the challenge would be reduced. While floating islands can be attractive, provide habitat for native wetland plants and wildlife, and would not directly impact water resources, they are artificial structures that require routine maintenance, and they would need to be removed each fall and reinstalled each spring due to the destructive forces of ice on Lake Minnetonka.

Lake Walk/Boardwalks

Part of the proposed project will be a Lake Walk and other boardwalks. The Lake Walk will be a meandering continuous boardwalk. In addition, a boardwalk will be present on the west end near the swimming beach, in the central area near the existing Broadway

community docks, and on the east end near the Eco Park (fishing pier). The total boardwalk length will be 2,217 lf. The support structure for these boardwalks will impact the lake bottom and lake volume.

Two different construction methods were evaluated for the support structure: wood pile supports and concrete piles. A brief description of each option is provided in this section. A more detailed description is provided in Appendix B. Length, cross-section area, and volume calculations are provided in Table 9 after the descriptions.

Option B1. Boardwalk support – wood piles. Under this scenario, wood piles would be placed along the outside edges of the boardwalk (Figures B-1 and B-2).

Option B2. Boardwalk support – concrete pile. Under this scenario, concrete piers would be placed periodically along the boardwalk (Figures B-3 and B-4).

Table 9: Lake Walk/Boardwalks Options Details

Option	Number of Wood Piles	Length (lf)	Average Area (sf)	Average Length (ft)	Volume (cf)	Lake Bottom Alteration (sf)	Total Volume Displacement (cf)
B1 Boardwalk support – wood piles	512	2,217	0.35	3	14.35	180	986
B2 Boardwalk support – concrete piles	19	2,217	40	4.42	177	760	3,363

Wood pile supports for the boardwalks would necessitate bubbling throughout the winter to prevent freezing and ice damage to these structures. Winter bubbling currently occurs along the existing docks near the Boatworks in the western portion of the proposed project area.

Linear Reef and Shoreline Marsh

Restoring the historical shoreline marsh near the Eco Park will entail construction of a linear reef to reduce wave energy to allow marsh vegetation to grow, and the reef will also allow naturally-occurring lake sediment sediment to settle in the restored marsh. Construction of this reef would alter the lake bottom and reduce lake volume. The underwater reef will be placed as an arc, approximately 180’ to 250’ from the shore. Two options relating to the materials used to construct the reef are being considered. A brief description of each option is provided in this section and a more detailed description is provided in Appendix C. Length, cross-section area, and volume calculations are provided in Table 10 after the descriptions.

Option C1 Linear Reef – riprap plan. Under this plan, the reef would be constructed of riprap (Figures C-1 and C-2).

Option C2 Linear Reef – sheet pile plan. This option is similar to Option C1, but would entail installing sheet pile as an underwater wave break (Figures C-3 and C-4).

Table 10: Linear Reef Options Details				
Option	**Length (lf)**	**Cross Section Area (sf)**	**Lake Bottom Alteration (sf)**	**Total Volume Displacement (cf)**
Option C1 Linear Reef – Riprap	395	39	8,608	15,405
Option C2 Linear Reef – Sheet pile	395	0.11	13	43

While riprap is a more natural material than steel sheet pile, the lake bottom area altered and volumetric displacement of aquatic habitat is much greater than if sheet pile is used.

Aquatic Vegetation Management

The majority of aquatic vegetation in the proposed project area (i.e., littoral wetland fringe of the lake) is invasive Eurasian water milfoil (*Myriophyllum spicatum*). The project proposes to remove this invasive species (through mechanical mowing and possibly localized chemical treatments) in the protected bay created by the proposed linear reef. Once removed, live herbaceous native aquatic plants will be installed, including species such as: lake sedge (*Carex lacustris*), river bulrush (*Bolboschoenus fluviatilis*), and bur reed (*Sparganium eurycarpum*) near the shore; hardstem bulrush (*Schoenoplectus acutus*) extending out to a water depth of 2-3 ft; and possibly submerged and/or floating-leaved aquatic plants such as white water lily (*Nymphaea odorata*) and native pondweeds (*Potamogeton* spp) in deeper areas. A MnDNR Aquatic Plant Management Permit and Aquatic Transplant Permit will be acquired prior to implementing these restoration treatments.

Impact Avoidance, Minimization and Mitigation

An overarching goal of the proposed project is to improve environmental conditions along this highly altered, but important, stretch of shoreline. The design team has been in discussions with the MnDNR, Minnehaha Creek Watershed District, and Lake Minnetonka Conservation District throughout the Wayzata Lake Effect design project. Potential impacts to water resources have been assessed by "sequencing," whereby impacts are first avoided (through design considerations), then minimized, and then mitigated. The proposed lake walk, its associated shoreline marsh, and the linear reef and associated marsh are included in the proposed project in order to achieve project goals. Impacts to water resources will be minimized by considering the design options presented above as well as design sustainability/durability, safety, and life-cycle costs. A Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared to minimize impacts associated with the proposed project during construction. In addition, best practices during construction will also be followed to minimize impacts associated with the proposed project. Best practices that will be followed include, but are not limited to:

- No work in the aquatic environments from March through May (spawning season for fish, such as the state-listed pugnose shiner)

- Use of a floating silt curtain during soil/substrate disturbance along the lakeshore
- Standard erosion and sediment control techniques (associated with upland construction), such as silt fence, sediment socks, wildlife-friendly erosion control mesh, etc.
- Species- and habitat-specific protection strategies, outlined in greater detail under Item 13.d

Mitigation is typically required for impacts to floodplain storage, wetlands/Waters of the U.S., and public waters. While the proposed project will entail minor grading along the Wayzata Bay lakeshore within the 100-year floodplain (the area between the OHWL of 929.4 ft and the 100-year high water elevation of 931.5 ft), it is anticipated that these activities will result in a small net gain in floodplain storage. Wetlands/Waters of the U.S. and public waters will be altered by the proposed project and quantified as area of altered lake bottom and displaced volume of aquatic habitat. Due to existing aquatic conditions (e.g., a considerable portion of the shoreline currently consists of riprap and patches of invasive Eurasian water milfoil) and proposed conditions (modified primarily to restore and create shoreline marsh), it is felt that some project "impacts" will be self-mitigating (e.g., replacing one habitat type with another, but not eliminating lake bottom habitat).

Preferred alternatives have not been selected for the proposed project; therefore, the anticipated alterations and impacts cannot be finalized at this time. Required compensatory mitigation will be accomplished through a combination of potential mitigation measures, described in Appendix D and again below. Cross-section area and volume calculations are provided in Table 11 after the descriptions.

Option M1 Depot Park Terrace – the area near the existing Depot Park building would be shaped into four tiers, one of which would continue to the Lake Walk. As part of this terrace, and as a mitigation measure, approximately 285 lf of lakeshore would be excavated at or just below the OHWL (Figure D-1). This would create an additional 2,346 sf of lake bottom and 1,345 cf of aquatic habitat.

Option M2 Beach Edge –the existing beach edge would be excavated, moving the shoreline approximately 14' inland (Figure D-2). This shallow excavation would create an additional 2,934 sf of lake bottom and 322 cf of aquatic habitat.

Option M3 Boatworks Marina Dredging (1 ft) – The existing marina on the west end of the proposed project could be dredged to create deeper aquatic habitats. Dredging this marina 1 ft deeper would alter approximately 81,276 sf of lake bottom and create 76,887 cf of aquatic habitat (Figure D-3).

Option M4 Boatworks Marina Dredging (2 ft) – If the existing marina were dredged 2 ft deeper, it would alter the same lake bottom area as Option M3 (approximately 81,276 sf) and create 130,149 cf of aquatic habitat (Figure D-4).

Option M5 East Pond Dredging (1 ft) – If the existing stormwater basin on the east end of the proposed project were dredged 1 ft deeper, it would alter approximately 18,746 sf of lake bottom and create 2,508 cf of aquatic habitat (Figure D-5).

Option M6 East Pond Dredging (2 ft) – If the existing stormwater basin on the east end of the proposed project were dredged 2 ft deeper, it would alter the same lake bottom area as Option M5 (approximately 18,746 sf) and create 3,846 cf of aquatic habitat (Figure D-6).

Option M7 Bushaway Road Parcel – this is a separate parcel of land owned by the City of Wayzata, on the east side of Bushaway Road. This parcel contains an upland area that could be excavated to enlarge the adjacent lagoon of Lake Minnetonka (Figure D-7). This mitigation project proposes to shift a small existing stormwater basin to the south. This project would create approximately 10,121 sf of lake bottom and approximately 34,411 cf of aquatic habitat.

Table 11: Mitigation Options Details

Option	Altered or Created Lake Bottom (sf)	Created Aquatic Habitat (cf)
M1 Depot Park Terrace	2,346	1,345
M2 Beach Edge	2,934	322
M3 Boatworks Marina Dredging (1ft)	81,276	76,887
M4 Boatworks Marina Dredging (2 ft)	81,276	130,149
M5 East Pond Dredging (1 ft)	18,746	2,508
M6 East Pond Dredging (2 ft)	18,746	3,846
M7 Bushaway Road Parcel	10,121	34,411

Implementing projects that create new lake bottom (Options M1, M2, and M7) would result in approximately 15,401 sf of new lake bottom.

Implementing the most aggressive projects for mitigating displaced aquatic habitat (M1, M2, M4, M6, and M7) would result in approximately 170,073 cf of new aquatic habitat.

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 other physical alterations to surface waters are anticipated by the proposed project.

The proposed project is not anticipated to significantly affect the number or type of watercraft use in Lake Minnetonka, and no new boat slips or docks are planned for the proposed project. While the proposed project does include new boat docks, these docks replace temporary docks that are installed each year.

12. Contamination/Hazardous Materials/Wastes:

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

A Phase I Environmental Site Assessment (ESA) has been completed for the project area. Contaminated sites were identified near the proposed project but are not thought to pose any significant threat to the proposed project. There is a potential for contaminated soil to be present in the area of Lake Street, given the historic uses in and around that area. A Contingency Plan will be prepared for the construction to ensure that contaminated soil, if encountered, will be handled appropriately.

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.

With the exception of small amounts of household solid waste, no significant solid wastes will be generated at the site during construction and/or operation of the proposed project. Solid wastes will be disposed of off-site according to applicable regulations.

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 above or below ground tanks to store petroleum or other materials. 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.

No hazardous materials or petroleum products will be stored on the site during construction and/or after the project is complete. Hazardous materials and petroleum products, such as gasoline, lubricants, and solvents, will be brought to the site as needed for fueling and

equipment maintenance purposes only and will be used within a designated fueling and maintenance area. The hazardous materials and petroleum products (including wastes generated) will be removed from the site once the equipment maintenance task has been completed. The fueling and maintenance area will be chosen so that if a spill occurred, pollutants would be contained and allow for final cleanup. All required spill kit and containment materials will be on site and will be properly stored.

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.

No hazardous wastes are expected to be generated or stored at the site during construction or operation of the proposed project.

The Section Foreman House, which will be used for community spaces, is anticipated to generate small quantities of universal wastes, such as spent bulbs. These materials will be labeled, stored, and disposed of in accordance with applicable regulations.

Asbestos-containing materials, lead-based paint, and other hazardous materials were identified in the Section Foreman House in a Pre-Renovation Hazardous Building Materials Inspection Report completed in 2016. These materials will be properly abated, removed as necessary as part of building renovations, and disposed of off-site at a permitted facility.

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

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

The primary fish and wildlife resources on or near the proposed project are associated with Lake Minnetonka and its shoreline. According to MnDNR LakeFinder records, the most recent fish survey, conducted in 2012, suggests that Lake Minnetonka contains a diverse fish community (14 species), and based on pounds per gillnet, the lake is dominated by northern pike (32.3 lbs/net), walleye (11.4 lbs/net), and bluegill (6.1 lbs/net). Regarding aquatic vegetation and habitats, the MnDNR reports that invasive Eurasian water milfoil (*Myriophyllum spicatum*) and curly-leaf pondweed (*Potamogeton crispus*) are found in high abundance throughout the lake, and in 2010, invasive zebra mussels (*Dreissena polymorpha*) and flowering rush (*Butomus umbellatus*) were first found to be present. The MnDNR describes the shoreline of Lake Minnetonka as highly developed, which puts stress on the lake's aquatic habitat and ecosystem integrity.

<u>Proposed Project Area</u>

Several field reviews of the proposed project area have been conducted from 2015 through 2016. On September 20, 2016, the proposed project shoreline and near-shore portions of the lake were assessed by two Applied Ecological Services, Inc. (AES) ecologists. Field data collected included vegetation (shoreline and aquatic), lake bottom substrates, and fish and wildlife observations. In brief, the western shoreline along the proposed project was dominated by riprap, extensive docks,

landscaped areas, and a constructed sand beach. The eastern shoreline was somewhat natural; however, evidence of historical riprap was observed, and the eastern end of the project shoreline contained a constructed stormwater basin. Shoreline vegetation consisted of planted/maintained vegetation and volunteer species (mostly herbaceous, but a few areas of trees and shrubs). Numerous native plant species (presumably seeded/planted) were observed along the eastern shoreline (near the constructed stormwater basin). Invasive shoreline vegetation included common buckthorn (*Rhamnus cathartica*), reed canary grass (*Phalaris arundinacea*), cocklebur (*Xanthium strumarium*), Canada thistle (*Cirsium arvense*), narrow-leaved cattail (*Typha angustifolia*), and black locust (*Robinia pseudoacacia*).

The near-shore aquatic zone was characterized by relatively gentle underwater slopes on the west and east portions of the proposed project shoreline, with very steep underwater slopes in the central portion (especially where the Burlington Northern railroad is closest to the lake). Areas of sandy substrate were observed mostly on the east and west portions of the aquatic zone, with the steep-sloped central substrates dominated by riprap boulders and cobbles. The aquatic zone (with the exception of the presumably cleared beach and dock areas, and some riprap areas) contained a significant amount of submerged aquatic vegetation. Native water celery (*Vallisneria americana*) and native pondweeds (*Potamogeton* spp) were observed (mostly in the west), but the majority of the aquatic zone was dominated by invasive Eurasian water milfoil. A few white water lilies (a native, floating-leaved, aquatic species) were observed in the east aquatic zone. Field data characterizing the near-shore aquatic environment is summarized in Appendix G.

<u>Bushaway Road Parcel</u>
On September 20 and October 5, 2016, the Bushaway Road Parcel was assessed by two AES ecologists. Field data collected focused on vegetation in the non-wooded portions of the site, deemed most appropriate for excavation should this parcel be needed for water volume mitigation purposes. In brief, the non-wooded portions of the parcel were upland, dominated by Canada goldenrod (*Solidago canadensis*) and Kentucky bluegrass (*Poa pratensis*). A recently-constructed wet detention basin (associated with recent road and trail improvements along Bushaway Road) exists on the parcel (Figure 11). Riprap was used to line the overflow from this basin into the lagoon of Lake Minnetonka, and several native wetland species (presumably planted during construction) were observed around the basin. What appeared to be a compacted construction access drive led from the stormwater basin to the north, then curved to the west to join the trail along Bushaway Road. A row of planted evergreens runs north-south near the western edge of the parcel. Invasive common buckthorn and other aggressive or volunteer species were observed on the parcel. Several large basswood (*Tilia americana*) trees and a constructed ring of large stones were observed in the southern portion of the parcel.

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-_) 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.

No Minnesota County Biological Survey Sites of Biodiversity Significance, native plant communities, or other sensitive ecological resources were identified on or within one mile of the project areas.

A Natural Heritage Information System (NHIS) data request was submitted to the MnDNR. The MnDNR response, LA-728 and ERDB 20170194, Appendix H, identified two rare natural features that could be adversely affected by the proposed project:

- Pugnose shiner (*Notropis anogenus*). This state-listed threatened species has been documented in Lake Minnetonka (most recently in 2009).

- Blanding's turtle (*Emydoidea blandingii*). This state-listed threatened species has been documented in the vicinity of the proposed project (over 2.5 miles away) and may be encountered on site.

The U.S. Fish and Wildlife Service (USFWS) was also contacted regarding the proposed project (Consultation Code: 03E19000-2017-SLI-0029, Event Code: 03E19000-2017-E-00028). The USFWS response (Appendix I) identified four threatened or endangered species that might be affected (either locally and/or downstream) by the proposed project. *Endangered* species are animals and plants that are in danger of becoming extinct. *Threatened* species are animals and plants that are likely to become endangered in the foreseeable future. The threatened or endangered species identified were:

- Higgins eye (*Lampsilis higginsii*). This federally-endangered clam is a freshwater mussel, up to 4 inches long, typically found in large rivers.

- Snuffbox mussel (*Epioblasma triquetra*). This federally-endangered clam is a small- to medium-sized freshwater mussel, typically found in small- to medium-sized creeks.

- Rusty patched bumble bee (*Bombus affinis*). This federally-endangered insect historically occupied grasslands and tallgrass prairies.

- Northern long-eared bat (*Myotis septentrionalis*). This federally-threatened mammal is a medium-sized bat with long ears, which uses forested areas for summer roosting and overwinters in caves and similar places.

No critical habitats for these species were identified within the proposed project area. In addition, the USFWS identified 21 migratory birds (protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act) that have potential to be affected by the proposed project. See Appendix I for this bird species list and additional details.

A USFWS Information for Planning and Conservation (IPaC) Trust Resources Report was created for the Bushaway Road Parcel (Appendix I). This report identified the same protected wildlife resources identified in the formal consultation associated with the proposed project.

While formal wildlife surveys were not conducted for this project, animals observed by AES ecologists during the September 20, 2016, field assessment of the proposed project included a large muskellunge (*Esox masquinongy*, observed under the west dock, by the beach), bluegills (*Lepomis macrochirus*, mostly under/near docks), and unidentified small fish (also near the existing docks). No fish or notable wildlife were observed at the Bushaway Road Parcel.

b. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

The proposed project may adversely affect some plant and animal species; however, effects are anticipated to be minor and/or temporary, with the proposed project resulting in a net benefit for native plant communities, fish, and wildlife. Plants, animals, and their habitats may be temporarily affected by placement of riprap and lake bottom sediments in the vicinity of the proposed lake walk, construction of a submerged linear reef in the east portion of the project area, minor grading along the shoreline, and construction of boardwalks. However, the net benefit of placement of riprap and lake bottom sediments along the proposed lake walk will enable establishment of shoreline marsh, and the proposed linear reef will provide protection to this relatively shallow bay and facilitate restoration of an historical shoreline marsh in this area.

Introduction and spread of invasive terrestrial vegetation during project construction and operation will be avoided or minimized by following the MnDNR's "Identification and Description of Practices to Avoid the Introduction or Movement of Invasive Species" guidance document. Lake Minnetonka is already known to have aquatic invasive species (AIS), including Eurasian water milfoil, curly-leaf pondweed, zebra mussels, and flowering rush. However, further introductions and spread of AIS will be avoided or minimized by the construction contractor following best practices. Watercraft and equipment used in project construction will be properly cleaned, drained, and inspected prior to entering the lake and also upon leaving Lake Minnetonka so as not to infest other waterbodies. The MnDNR's best practices for preventing the spread of AIS are provided in Appendix J.

<u>Pugnose shiner</u>
The preferred habitat of pugnose shiner is clear, glacial lakes and streams with an abundance of aquatic vegetation. While most of the near-shore aquatic habitats in the vicinity of the proposed project are altered (e.g., riprap, docks, and maintained sand along the beach), this species may use the proposed project area. It is unlikely that pugnose shiner uses the lagoon along the Bushaway Road Parcel due to its turbidity. Pugnose shiner are vulnerable to:

- The removal of aquatic vegetation from lakes
- Increases in eutrophication from nutrient enrichment

- Increases in water turbidity or siltation that can be caused from pollution, pesticides, and runoff

Section 13.d, below, lists conservation practices that will be followed for this species and other listed species.

Blanding's turtle

Blanding's turtle requires both wetland (pond, marsh, shrub swamp, bog, slow-moving ditch/stream) and upland (open, grassy or brushy, sandy) habitats to complete their life cycle. The proposed project area does not provide preferred wetland habitat for this species, since this portion of Lake Minnetonka contains only littoral open water wetlands, degraded cattail marshes, and constructed stormwater basins. The Bushaway Road Parcel may be more suitable habitat, but the distribution and age of local records of this species suggest its presence is unlikely. Impacts and threats to Blanding's turtle are:

- Loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- Loss of upland habitat through development or conversion to agriculture
- Human disturbance, including collection for the pet trade and road kills during seasonal movements
- Increase in predator populations (skunks, raccoons, etc.) which prey on nests and young

Higgins eye

Higgins eye is endangered due to habitat loss and degradation, as well as exotic species. It is unlikely that this species uses the proposed project area or Bushaway Road Parcel given its habitat requirements. Impacts and threats to Higgins eye are:

- Impoundment of rivers and subsequent changes in flow, substrates, and host fish
- Municipal, industrial, and farm runoff that degrade water quality
- Dredging and waterway traffic that produce siltation

Snuffbox mussel

Snuffbox mussel is endangered for reasons similar to Higgins eye. It is unlikely that this species uses the proposed project area or Bushaway Road Parcel given its habitat requirements. Impacts and threats to snuffbox mussel are:

- Dams which alter aquatic habitats and host fish populations as well as prevent migration
- Pollution as this species is easily harmed by toxins and poor water quality
- Sedimentation which can suffocate mussels or reduce feeding and respiration
- Non-native species, especially zebra mussel and round goby

Rusty patched bumble bee

Rusty patched bumble bees' habitat requirements include food (nectar and pollen from flowers), nesting sites (underground and abandoned rodent cavities or clumps of grasses above ground), and overwintering sites for queens (undisturbed soil). It is unlikely that this species uses the

proposed project area or Bushaway Road Parcel given its habitat requirements. Impacts and threats to rusty patched bumble bees are:

- Habitat loss and degradation, e.g. loss of native prairie
- Intensive farming and associated loss of crop diversity, hedgerows, and pastures
- Disease and pesticides
- Global climate change, which can lead to increased disease and loss of habitat elements at the critical time

Northern long-eared bat

Northern long-eared bat has winter (hibernating) and summer (roosting/nesting and foraging) habitat requirements. While possible, it is unlikely that this species uses the proposed project area due to the limited number of trees and their relatively young age (younger trees are less likely to have peeling bark and cavities used by roosting bats). The Bushaway Road Parcel may contain more suitable habitat, but local records of this species suggest its presence is unlikely. Impacts and threats to northern long-eared bat are:

- White-nose syndrome, which is a severe and immediate threat to this and other bat species
- Impacts to hibernacula, such as access changes, microclimate changes, and human disturbances
- Loss or degradation to summer habitat (loss of forests/trees)
- Wind farm operation (turbines can kill bats)

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

Measures are discussed below by the species that will be protected.

Pugnose shiner

Pugnose shiner will be protected during the construction and operation of the proposed project as follows:

- The proposed project will reduce the use of pesticides and fertilizers along the lakeshore.
- The proposed project will improve shoreline vegetation through control of invasive species and extensive seeding/planting of diverse native plants.
- The proposed project will remove invasive aquatic vegetation (primarily Eurasian water milfoil) in select areas (namely the restored shoreline marsh near the Eco Park) and re-introduce native vegetation.
- The proposed project will follow best practices for erosion and sediment control.
- The proposed project will protect spawning fish by avoiding work within the water in March through May.

Blanding's turtle

Blanding's turtle will be protected during the construction of the proposed project by the following MnDNR recommendations:

General

- A flyer with an illustration of a Blanding's turtle shall be given to all contractors working in the area (Appendix K).
- Turtles which are in imminent danger shall be moved, by hand, out of harm's way. Turtles which are not in imminent danger shall be left undisturbed.
- If a Blanding's turtle nest is in the proposed project, the nest shall not be disturbed.
- Silt fencing shall be set up to keep turtles out of construction areas. Silt fencing shall be removed after the area has been revegetated.

Wetlands

- The proposed project's three small Type 3 wetlands (Invasive Cattail Marshes, Figure 9) shall not be dredged, deepened, filled, or converted to storm water retention basins as this wetland type can provide important habitat during spring and summer.
- Wetlands (including littoral/lakeshore wetlands) shall be protected from pollution; use of fertilizers and pesticides shall be avoided, and run-off from lawns and streets shall be controlled. Erosion shall be prevented to keep sediment from reaching wetlands and Lake Minnetonka.

Utilities

- Utility access and maintenance roads shall be kept to a minimum to reduce road-kill potential.
- Because trenches can trap turtles, trenches shall be checked for turtles prior to being backfilled, and the areas will be returned to original grade where possible.

Landscaping and Vegetative Management

- Terrain shall be left with as much natural contour as possible.
- Graded areas shall be revegetated with native grasses and forbs where it complies with the project goals (some non-natives form dense patches through which it is difficult for turtles to travel).
- Vegetation management in infrequently mowed areas - such as in ditches, along utility access roads, and under power lines - shall be done mechanically when feasible (chemicals should be avoided). When feasible, vegetation management shall occur fall through spring (after October 1st and before June 1st).
- Erosion control mesh shall be made of wildlife-friendly materials so as not to endanger turtles or other wildlife susceptible to entanglement (see MnDNR recommendations in Appendix K).

Higgins eye and snuffbox mussel

Higgins eye and snuffbox mussel will be protected during the construction of the proposed project by following best practices:

- Erosion and sediment control best practices will be followed to protect water quality.
- Water quality will also be protected by minimizing the use of lawn chemicals and proper handling and disposal of oil, paint, batteries, or other toxic products.
- Lake dredging, filling or other substrate disturbance will be conducted only after proper installation of floating silt curtains and/or other techniques to minimize siltation.

Rusty patched bumble bee

Rusty patched bumble bees will be protected during the construction of the proposed project by following best practices:

- Installation of diverse native flowering plants and removal/control of invasive vegetation.
- Preservation of native landscapes areas, where lack of mowing and soil disturbance will provide potential habitat.
- Avoidance of use of pesticides and chemical fertilizers.

Northern long-eared bat

Northern long-eared bat will be protected during the construction of the proposed project by following best practices:

- Few, if any, trees (which bats could use for roosting) will be removed as part of the proposed project.
- Known roost trees and trees within 150 feet of a known roost will not be cut when young bats are with mothers at the roost. This "non-volant pup" phase is June 1 through July 31.

14. Historic properties:

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

A letter was sent to the State Historic Preservation Office (SHPO) for consultation with that office. A response was received on December 8, 2016 (Appendix L). The SHPO office indicated the presence of both recorded archaeological sites and a historic/architectural property within the project area. Due to the location of these sites, the SHPO recommended that a Phase I archaeological survey be completed unless the project area or more detailed plans indicate that the project areas have been previously surveyed or disturbed.

In addition, the letter noted that the Section Foreman House has been determined to be eligible for listing in the National Register of Historic Places (NRHP). Based on information at the SHPO office, a draft Historic Structures Report was completed in 2015. The SHPO noted that for work that will be done on this area of the proposed project, consideration should be given to appropriate preservation or rehabilitation treatment in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Places*.

A Phase I Archaeological Survey for the proposed project was completed in November 2017 (the Phase I Survey). The Phase I Survey included conducting a literature review and historical research at the Office of the State Archaeologist (OSA) and the Minnesota Historic Preservation Office; online research to locate historical map and aerial photographs; an on-site visual assessment; and a Phase I archaeological field survey to identify any archaeological sites within the proposed project.

The Phase I Survey did not result in the identification of any archaeological sites. Several locations within the proposed project were paved but could contain archaeological deposits given their proximity to previously identified precontact burial mounds. For these areas, the City of Wayzata will engage in consultation with the OSA to determine what additional steps may be necessary prior to ground disturbance.

Shovel testing was not conducted in some high-potential locations with the project area due to the proximity of the railroad. The City will have an archaeological monitor present during any project-related ground disturbance within those areas.

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

The views of Lake Minnetonka from the City of Wayzata are considered to be scenic and are important to the owners and users of property in the City. The proposed project's goals include naturalizing and restoring the Lake Minnetonka shoreline, which will have the added benefit of improving the look of the shoreline. Lights from the Lake Walk will be visible from the City and the Lake. Lighting will use the "dark sky" concept where feasible to reduce light impacts. Lighting will meet applicable requirements of the City of Wayzata ordinances.

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

       The proposed project is not anticipated to generate additional stationary source emissions. The existing Section Foreman House is currently heated with natural gas and is not anticipated to change once the project is complete.

    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.

The proposed project will create a small amount of fugitive emissions from construction equipment during the construction phase. However, these temporary emissions are expected to be small and intermittent and are not expected to be a significant threat to air quality in the project area.

Over the long term, the proposed project is not anticipated to generate significant additional air pollutant emissions. The project area is not in any non-attainment area for any air quality standards.

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.

During construction, the proposed project will generate temporary dust and odors. Construction equipment will have gasoline and diesel engine emissions and will create temporary fugitive dust emissions, especially in the areas where fill or lake bottom will be excavated, transported, and placed. The fugitive dust emissions will be controlled by watering, sprinkling, and/or calcium products as necessary and appropriate. Dust mitigation measures will include preparing and implementing a dust control plan.

Temporary odors may be generated from operation of facility equipment engines and excavation of lake bottom sediments. Odor mitigation measures will include minimizing equipment used on-site, minimize idling, keep engines in good repair, and minimize idling truck traffic through scheduling.

Once construction is complete, the proposed project is not anticipated to produce any ongoing odors or dust.

17. 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.

1) Existing noise in the area is from traffic along Lake Street and other streets in the area, railcar traffic from the Burlington Northern railroad that crosses the proposed project, and from boating traffic on Lake Minnetonka. Boat traffic is driven in part by an existing boat dock in the central portion of the proposed project, docks on the west end near the Boatworks, and in the two Boatworks marina lagoons on the west end of the project.

2) Residences and senior living complexes are present just to the north-northeast of the proposed project area. No other known sensitive receptors are located nearby.
3) The proposed project is expected to generate noise during the construction phase. This noise will be temporary in nature. Daily hours of construction will follow regulatory and construction permit regulated times. Noise will primarily be produced by the construction machinery on-site and potentially placement of piling during construction. All machinery is equipped with back-up alarms for safety purposes, which would likely be the producers of the loudest noise on the construction site (97-112 decibels), outside of the potential pile driving. Ongoing operations will conform to state and local noise standards.
4) Excessive noise is not expected once the construction phase is complete. Noise generated once the project is complete will be primarily noise from automobiles, railcars, and recreational boats in the area. Noise would be expected seasonally from use of the beach area.

18. 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 proposed project includes removing the existing municipal parking lot along Lake Street and revisions to parking along Lake Street to accommodate the parking that will be eliminated. The proposed project does not include other additions or modifications of parking areas. The proposed project is not anticipated to generate additional daily traffic, other than what is already present in this heavily used area. Public transportation is available to the north and east of the proposed project, but does not currently serve the proposed project area. No revisions to public transit are planned for the proposed project or are anticipated to be necessary once the proposed project has been completed.

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

The proposed project is not expected to negatively impact traffic congestion in the area. Traffic flow is expected to improve after the changes to Lake Street have been completed. The proposed project is not expected to have an impact on the regional transportation system.

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

No mitigation measures are proposed.

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

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

The proposed project will occur within the limits of work (LOW) shown on Figures 5 and 6. Environmental effects are anticipated to be localized to within the LOW or in nearby adjacent areas. The timeframe of the proposed project is spring 2018 to fall 2018.

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.

The City is aware of three other development projects that are located in close proximity to the project area. They are: the Wayzata Blu, which is 18 residential condos and 3,000 square feet of commercial space; 253 Lake St E, which is a 16-residential unit condo project; and 235 Lake St E, which is a 40,000 square foot office project. The City is not aware of other future projects that may interact with the environmental effects of the proposed project.

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

Because cumulative potential effects have not been identified in association with the proposed project, cumulative effects are not believed to increase the potential for significant environmental effects as a result of the proposed project.

20. 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 additional impacts from this project other than those discussed above are anticipated.

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

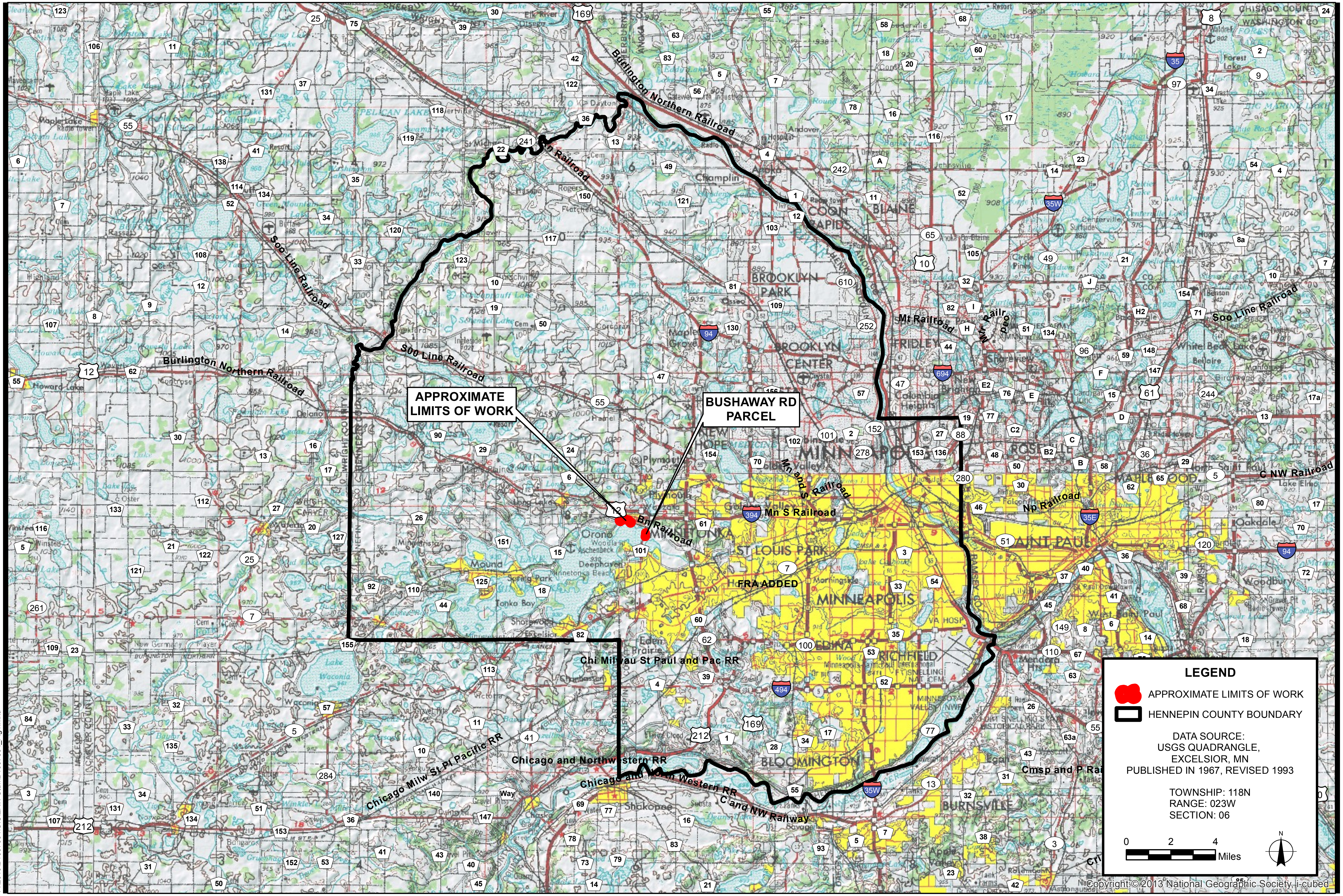
I hereby certify that:

- 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 2/23/2018

Title Director of Planning and Building

Figures


APPROXIMATE LIMITS OF WORK
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FRA ADDED
Burlington Northern Railroad
Soo Line Railroad
Chi Milwau St Paul and Pac RR
Chicago and Northwestern RR
Chicago Milw St Pl Pacific RR
C and NW Railway
Mn S Railroad
Np Railroad
C NW Railroad
MINNEAPOLIS
SAINT PAUL
ST LOUIS PARK
BROOKLYN PARK
BROOKLYN CENTER
COON RAPIDS
BLOOMINGTON
BURNSVILLE
LEGEND
APPROXIMATE LIMITS OF WORK
HENNEPIN COUNTY BOUNDARY
DATA SOURCE:
USGS QUADRANGLE,
EXCELSIOR, MN
PUBLISHED IN 1967, REVISED 1993
TOWNSHIP: 118N
RANGE: 023W
SECTION: 06
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BRAUN INTERTEC
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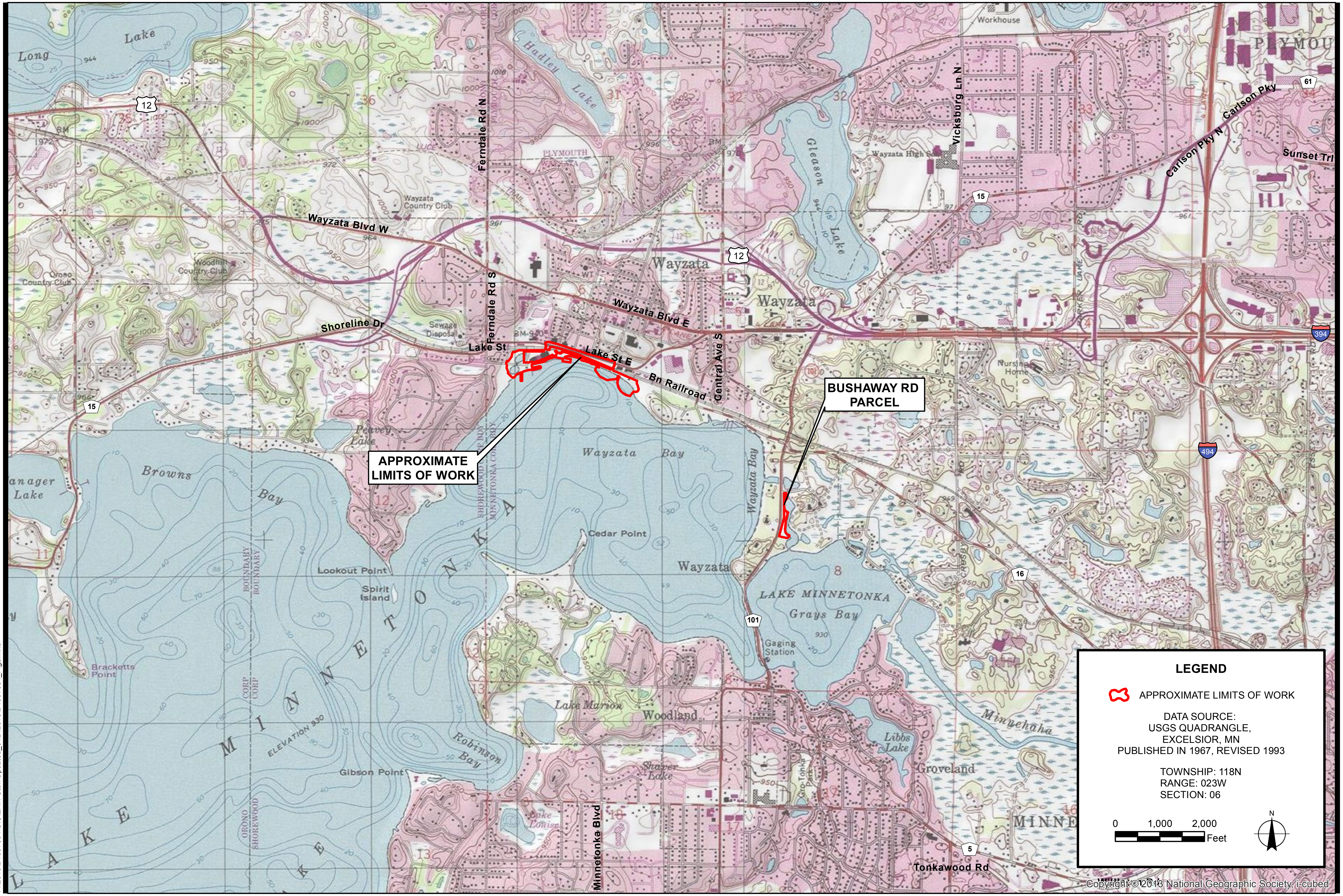
COUNTY LOCATION MAP
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig1
Scale:	1 in = 4 miles
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet: 1 of 1	Fig. 1


APPROXIMATE LIMITS OF WORK
BUSHAWAY RD PARCEL
Lake St
Lake St E
Bn Railroad
Central Ave S
Wayzata Blvd E
Wayzata Blvd W
Shoreline Dr
Ferndale Rd N
Ferndale Rd S
Vicksburg Ln N
Carlson Pky N
Carlson Pky
Sunset Trl
Wayzata Bay
Minnetonka Blvd
Tonkawood Rd
Wayzata
Wayzata Bay
Browns Bay
Cedar Point
Lookout Point
Spirit Island
Gibson Point
Robinson Bay
Brackets Point
Long Lake
Gleason Lake
Hadley Lake
Peavey Lake
Lake Marion
Woodland
Libbs Lake
Groveland
Shaver Lake
Lake Louise
LAKE MINNETONKA
Grays Bay
Gaging Station
Minnehaha
Wayzata Country Club
Orono Country Club
Woodhill Country Club
Sewage Disposal
Nursing Home
Workhouse
Wayzata High Sch
ELEVATION 930
LEGEND
APPROXIMATE LIMITS OF WORK
DATA SOURCE:
USGS QUADRANGLE,
EXCELSIOR, MN
PUBLISHED IN 1967, REVISED 1993
TOWNSHIP: 118N
RANGE: 023W
SECTION: 06
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Feet
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SITE LOCATION MAP
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig2
Scale:	1 in = 2,000 ft
Drawn By:	CMF
Date Drawn:	01/20/2016
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Sheet: 1 of 1	Fig. 2

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Edgewood Ct

LAKE ST E

BIKE TRAIL

Grove Ln E

DEPOT

BOATWORKS

BEACH

BOATWORKS MARINA

SECTION FOREMAN HOUSE

LAKE MINNETONKA
WAYZATA BAY

LEGEND

APPROXIMATE LIMITS OF WORK

0 125 250 Feet

N

Google

EXISTING CONDITIONS

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig3
Scale:	1 in = 250 ft
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	1/24/18
Sheet:	1 of 1
Fig.	3

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PROPOSED PROJECT POST-CONSTRUCTION

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Edgewood Ct
LAKE ST
LAKE ST E
BIKE TRAIL
Grove Ln E
DEPOT
DEPOT PARK TERRACE
LAKE WALK
BOATWORKS
BEACH
BOATWORKS MARINA
BOARDWALK
SECTION FOREMAN HOUSE
UNDERWATER LINEAR REEF
FISHING PEER BOARDWALK
LAKE MINNETONKA
WAYZATA BAY

LEGEND

LIMITS OF DISTURBANCE

PROPOSED PROJECT

0 125 250 Feet

N

Google

Project No:	B1607634
Drawing No.	B1607634_Fig4
Scale:	1 in = 250 ft
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	1/24/18
Sheet:	1 of 1
Fig.	4

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EXISTING CONDITIONS- BUSHAWAY ROAD PARCEL

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig5
Scale:	1 in = 200 ft
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	5

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POST-CONSTRUCTION CONDITIONS - BUSHAWAY ROAD PARCEL

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig6
Scale:	1 in = 50 ft
Drawn By:	CMF
Date Drawn:	01/25/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	6

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Wayzata Lake Effect EAW

Park Project Area - 1937 Aerial Photograph

Limits of Work

Data Sources:
- Civitas site plan
- 1937 aerial photograph

AES Project Number: 16-0549
Date: 4/11/17
File Name: Wayzata EAW_1937 aerial_2017-04-11

APPLIED ECOLOGICAL SERVICES

Applied Ecological Services, Inc.
21938 Mushtown Road
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952-447-1919
www.appliedeco.com

N

0 150 300 600 Feet

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PROPOSED PROJECT - 1937 AERIAL PHOTOGRAPH
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig7
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	1/24/18
Sheet:	1 of 1
Fig.	7

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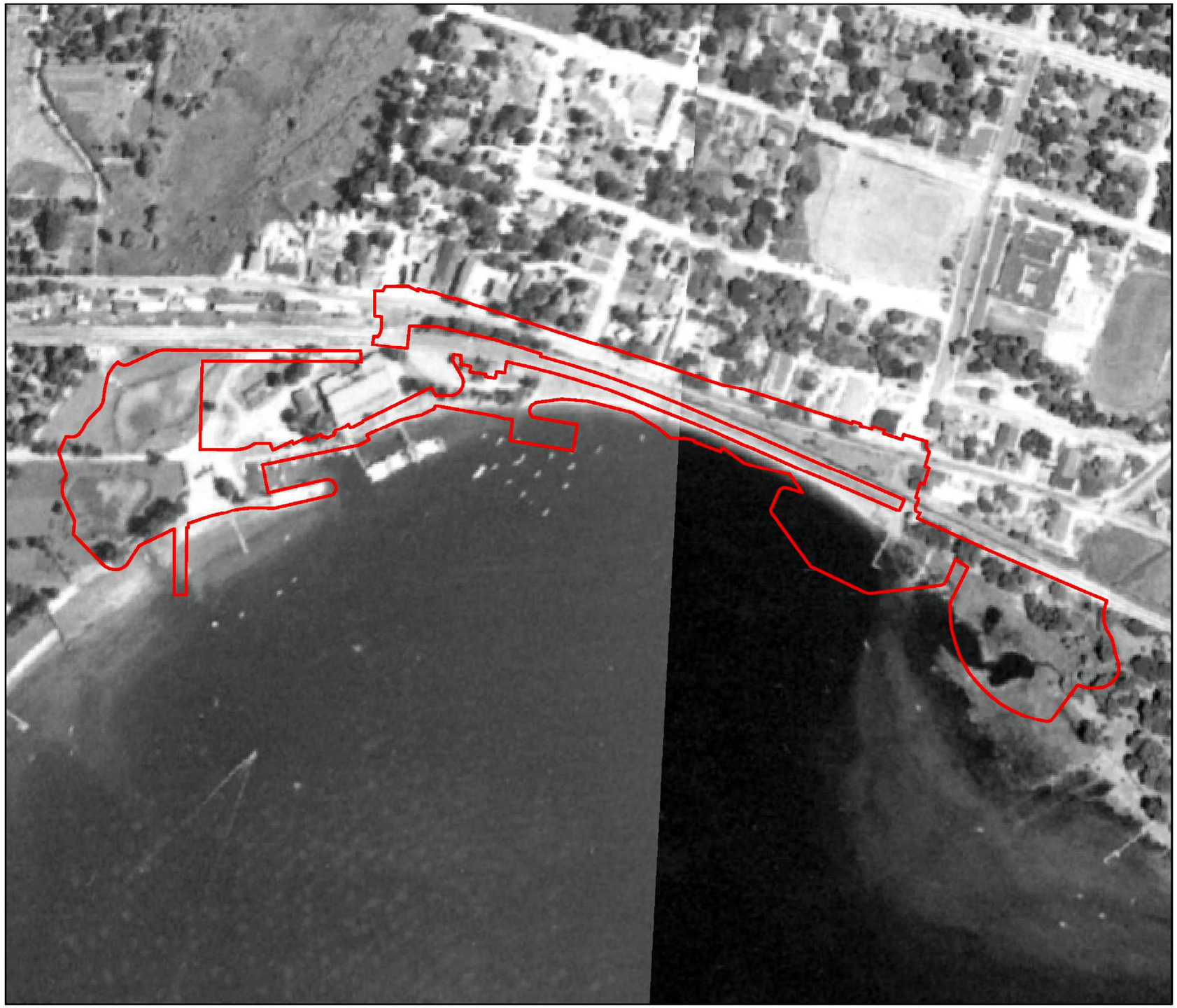

Wayzata Lake Effect EAW

Park Project Area - 1940 Aerial Photograph

Limits of Work

Data Sources:
- Civitas site plan
- 1940 aerial photograph

AES Project Number: 16-0549
Date: 4/11/17
File Name: Wayzata EAW_1940 aerial_2017-04-11

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PROPOSED PROJECT - 1940 AERIAL PHOTOGRAPH
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig8
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	1/24/18
Sheet:	1 of 1
Fig.	8

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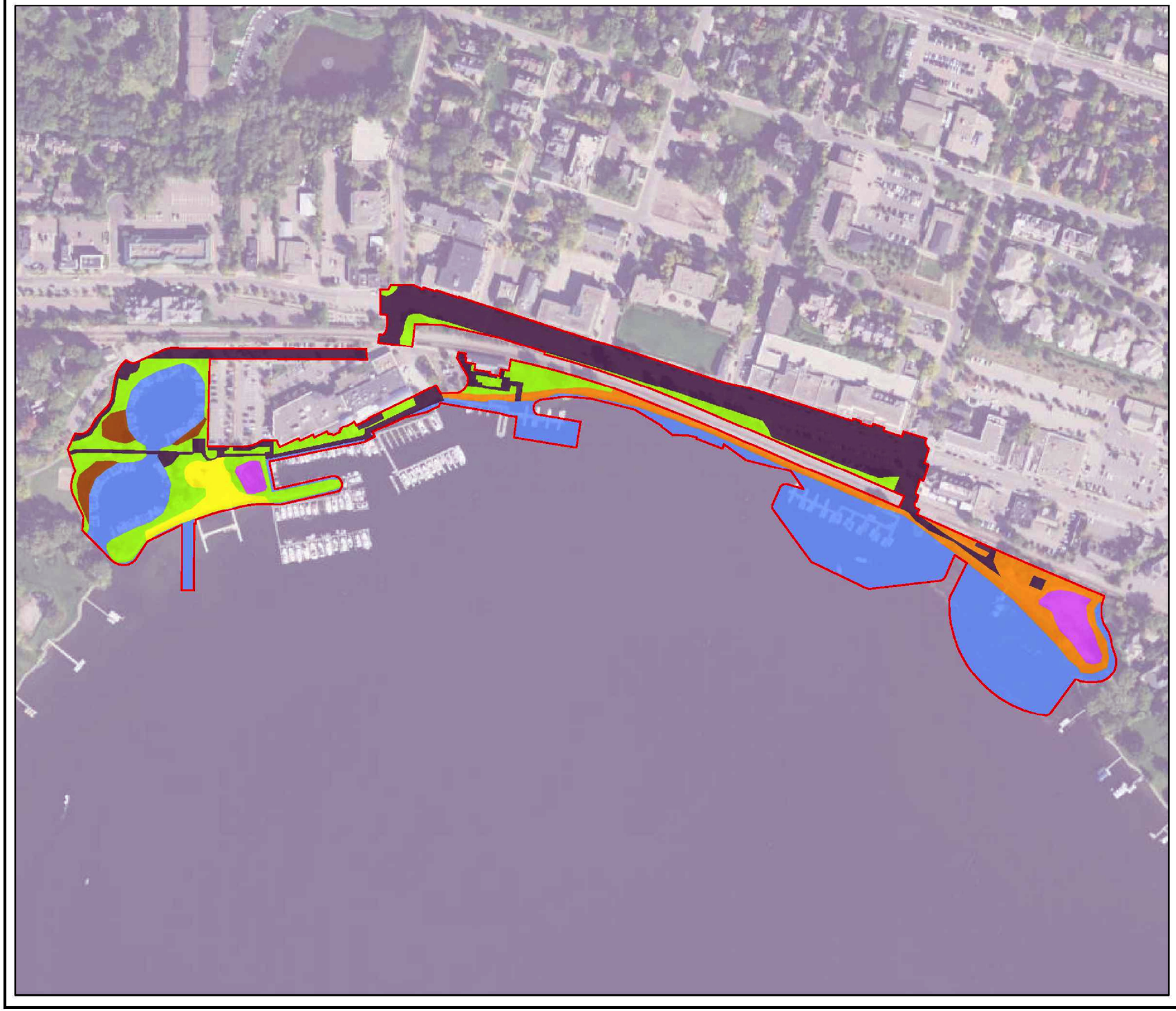

Wayzata Lake Effect EAW

Park Project Area - Existing Land Cover

Limits of Work

Existing Land Cover

- Littoral (Lakeshore) Wetland
- Invasive Cattail Marsh
- Brush/Grassland
- Lawn/Landscaping
- Impervious Surface
- Stormwater Pond
- Sand Beach

Data Sources:
- Civitas site plan
- LMIC WMS server (2015 aerial)

AES Project Number: 16-0549
Date: 4/11/17
File Name: Wayzata EAW_exist lc_2017-04-11

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0 150 300 600 Feet

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PROPOSED PROJECT AREA - EXISITING LAND COVER
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig9
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	1/24/18
Sheet:	1 of 1
Fig.	9

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Wayzata Lake Effect EAW

Park Project Area - Proposed Land Cover

- Limits of Work

Proposed Land Cover

- Littoral (Lakeshore) Wetland
- Shoreline Marsh
- Invasive Cattail Marsh
- Brush/Grassland
- Lawn/Landscaping
- Impervious Surface
- Stormwater Pond
- Sand Beach

Data Sources:
- Civitas site plan
- LMIC WMS server (2015 aerial)

AES Project Number: 16-0549
Date: 4/11/17
File Name: Wayzata EAW_prop lc_2017-04-11

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N

0 150 300 600 Feet

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PROPOSED PROJECT AREA - PROPOSED LAND COVER
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig10
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	1/24/18
Sheet:	1 of 1
Fig.	10

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Wayzata Lake Effect EAW

Bushaway Road Parcel - Existing Land Cover

Data Sources:
- LMIC WMS server (2012 aerial)

AES Project Number: 16-0549
Date: 1/4/17
File Name: Wayzata EAW_bush_exist lc_2017-01-04

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0 25 50 100 Feet

N

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BUSHAWAY ROAD PARCEL EXISTING LAND COVER
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig11
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	11

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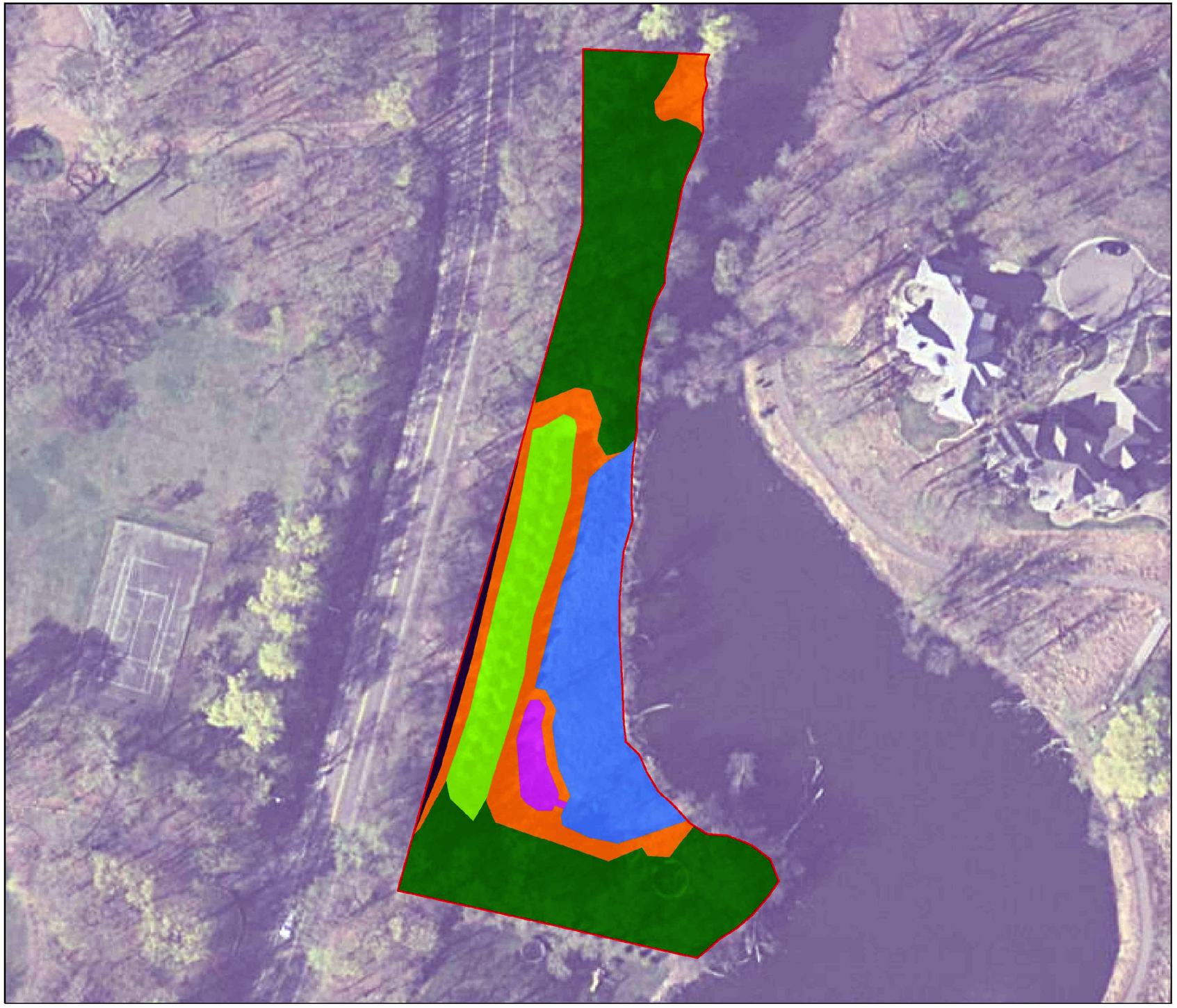
Wayzata Lake Effect EAW

Bushaway Road Parcel - Proposed Land Cover



Limits of Work

Proposed Land Cover

- Wooded/Forest
- Littoral (Lakeshore) Wetland
- Brush/Grassland
- Lawn/Landscaping
- Impervious Surface
- Stormwater Pond

Data Sources:
- LMIC WMS server (2012 aerial)

AES Project Number: 16-0549
Date: 1/4/17
File Name: Wayzata EAW_bush_prop lc_2017-01-04

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0 25 50 100 Feet

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BUSHAWAY ROAD PARCEL PROPOSED LAND COVER
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig12
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	12

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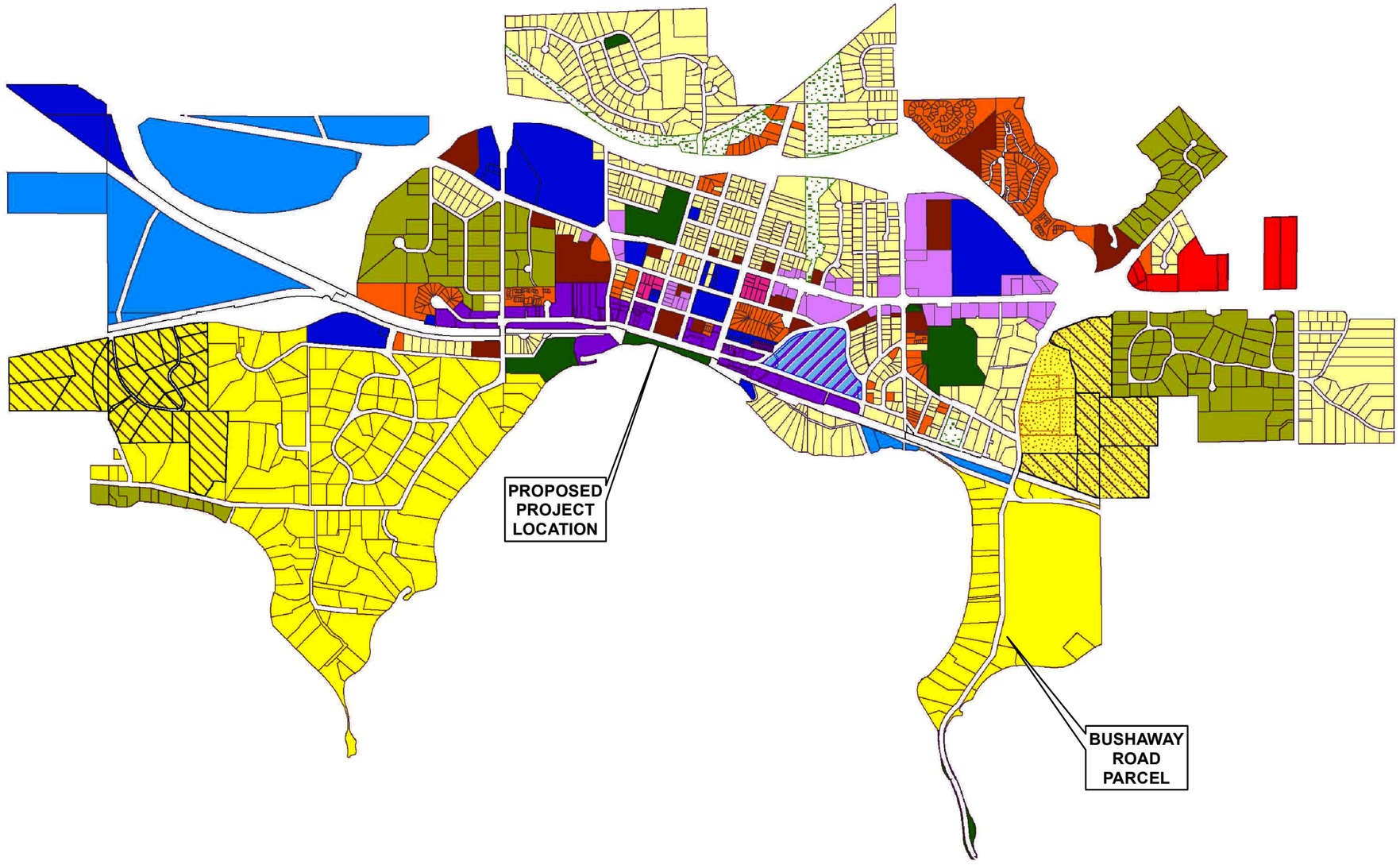

Proposed Land Use Map

Map 3.2

N
W E
S

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2030 COMPREHENSIVE PLAN, REDEVELOPMENT SITES MAP 3.5
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig13
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	13

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Orono

Plymouth

Minnetonka

PROPOSED PROJECT LOCATION

Legend

- C-1 Office and Limited Commercial District
- C-1A Neighborhood Office & Limited Commercial District
- C-1B Mixed Use Residential
- C-2 Shopping Center Business District
- C-3 Service District
- C-4 Central Business District
- C-4A Limited Central Business District
- C-4B Central Business District
- INS Institutional
- PUD Planned Unit Development
- R-1 Low Density Single Family Residential District
- R-1A Low Density Single Family Estate District
- R-2 Medium Density Single Family Residential District
- R-2A Single Family Residential District
- R-3 Single and Two Family Residential District
- R-3A Single and Two Family Residential District
- R-4 Medium Density Multiple Residential District
- R-5 Average Density Multiple Residential District

Browns Bay

Minnetonka

Grays Bay

BUSHAWAY ROAD PARCEL

Source: City of Wayzata

Last Amended: 04/28/2015

N
W E
S

Wayzata Zoning Map

Map 9.1

City of Wayzata

ZONING MAP
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig14
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	34

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Osp
Opc
Osp
Osp
Opc
Osp
Opc
Osp

LEGEND

- LIMITS OF DISTURBANCE
- PROPOSED PROJECT
- OSP - ST PETER SANDSTONE
- OPC - PRAIRIE DU CHIEN GROUP

0 250 500 Feet

N

Google

BEDROCK GEOLOGY

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig15
Scale:	
Drawn By:	CMF
Date Drawn:	01/24/2017
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Last Modified:	1/24/18
Sheet:	1 of 1
Fig.	15

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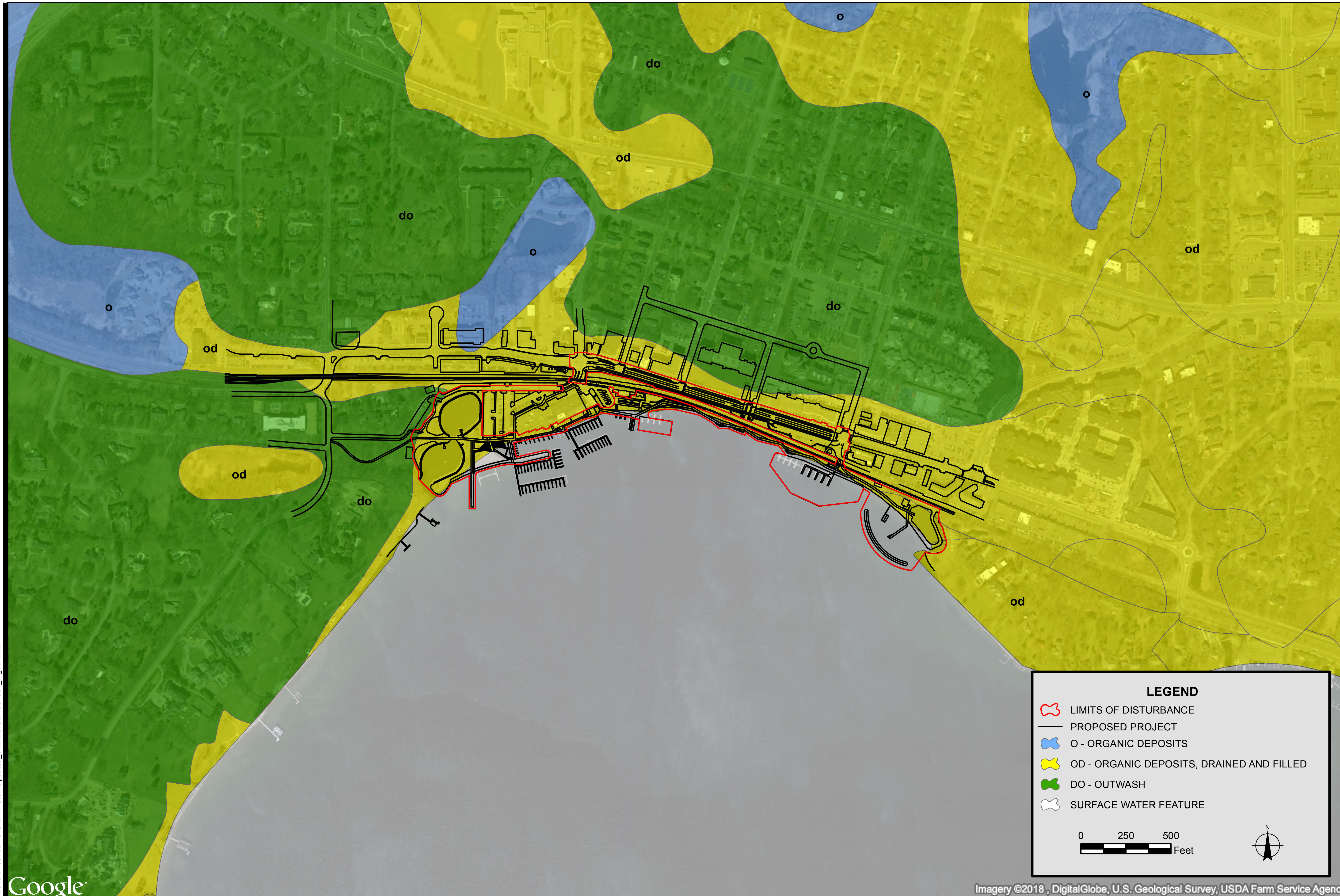

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SURFICIAL GEOLOGY
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig16
Scale:	1 in = 500 ft
Drawn By:	CMF
Date Drawn:	01/24/2017
Checked By:	JBW
Last Modified:	1/24/18
Sheet: 1 of 1	Fig. 16

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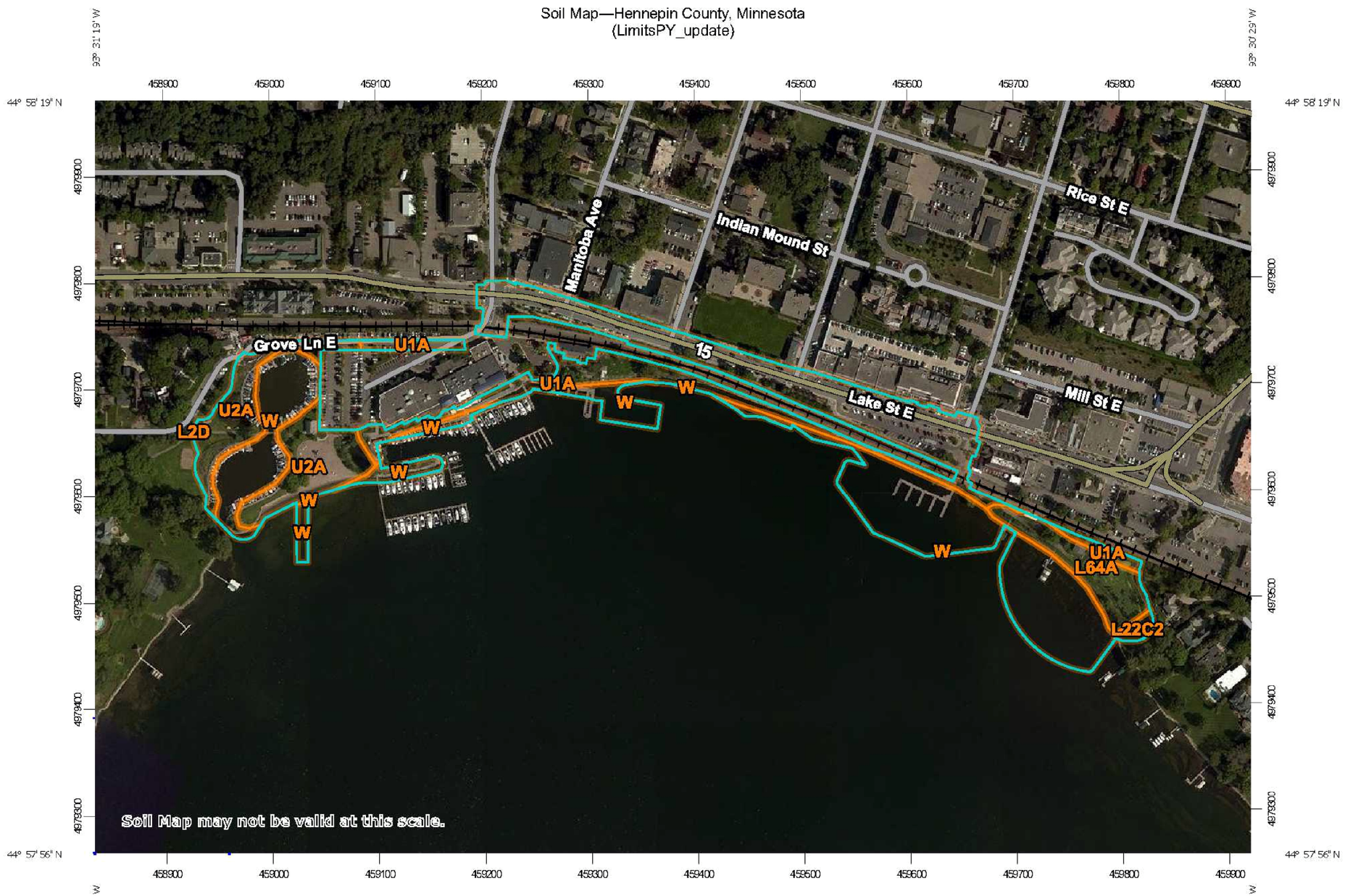
Soil Map—Hennepin County, Minnesota
(LimitsPY_update)



Map Scale: 1:4,970 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

1/24/2018
Page 1 of 3

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SOIL SURVEY - PROPOSED PROJECT
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_Fig17
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	1/24/18
Sheet:	1 of 1
Fig.	17

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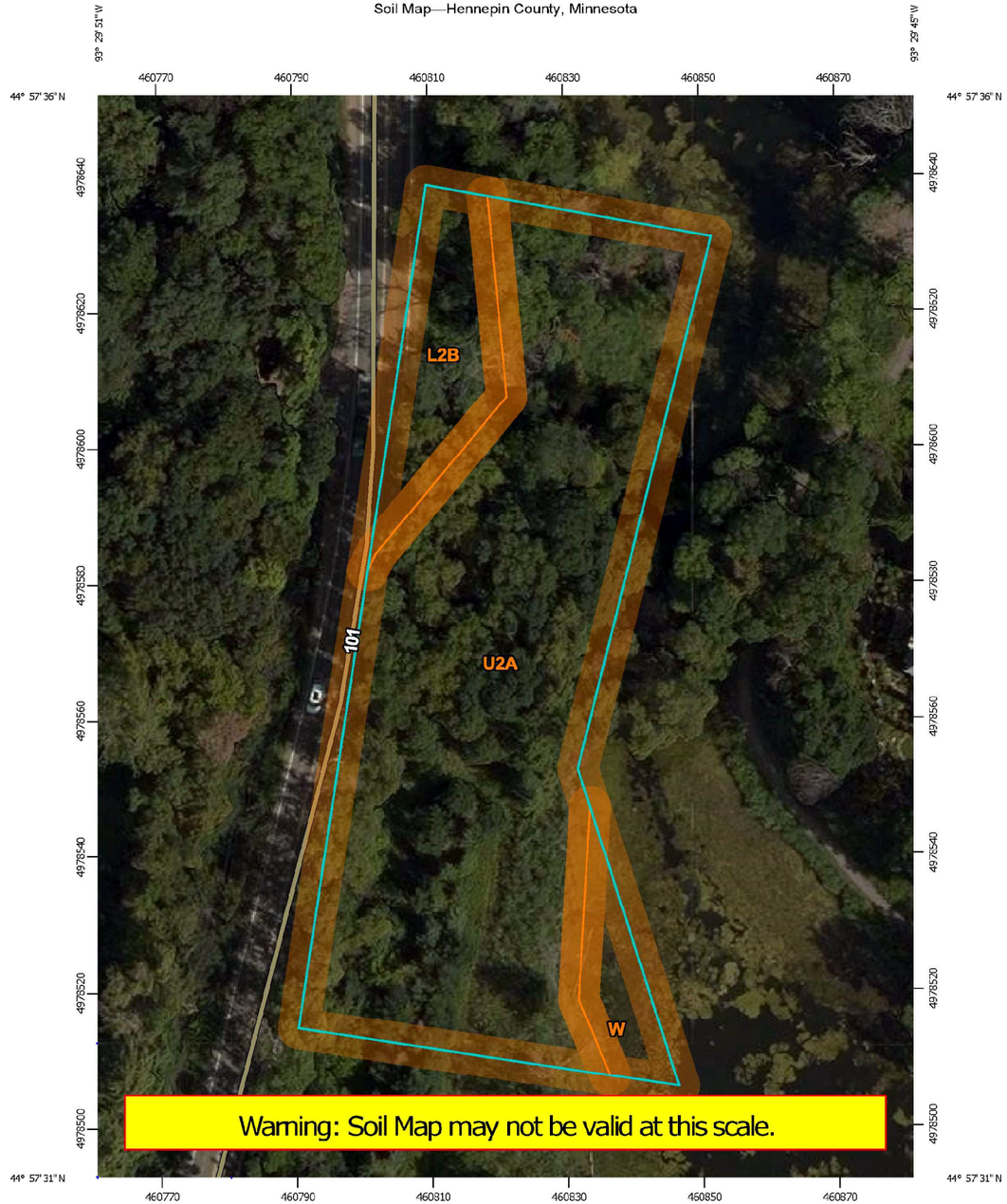
SOIL SURVEY - BUSHAWAY ROAD PARCEL

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Soil Map—Hennepin County, Minnesota



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N

Meters: 0 10 20 40 60

Feet: 0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Project No:	B1607634
Drawing No.	B1607634_Fig18
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	18

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Appendix A

Restored Lake Edge Construction Options

Figures:

Appendix A: Restored Lake Edge Construction Options

Option A1 Lake Edge – continuous riprap plan. Under this plan, riprap would be placed continuously along the shoreline to create a linear ridge 2' below the OHWL (Figures A-1 and A-3). Lake bottom sediment (fill) would be placed on the land side of the riprap, creating an aquatic shelf for establishment of aquatic and emergent shoreline marsh vegetation. Please note, for illustration purposes only, the diagram presented as Figure A-3 shows a single support for the Lake Walk. However, as will be discussed below, several options are being considered for the Lake Walk support. The riprap and fill would be placed along 1,637 lf of the lake shore, at a width of approximately 14.31'.

Option A2 Lake Edge – intermittent riprap plan. Similar to Option A1, however under this plan, the riprap would be placed in four discrete areas along the lake edge, rather than continuously as discussed in Option A1 (Figures A-2 and A-3). This would create smaller areas of discrete shoreline marsh.

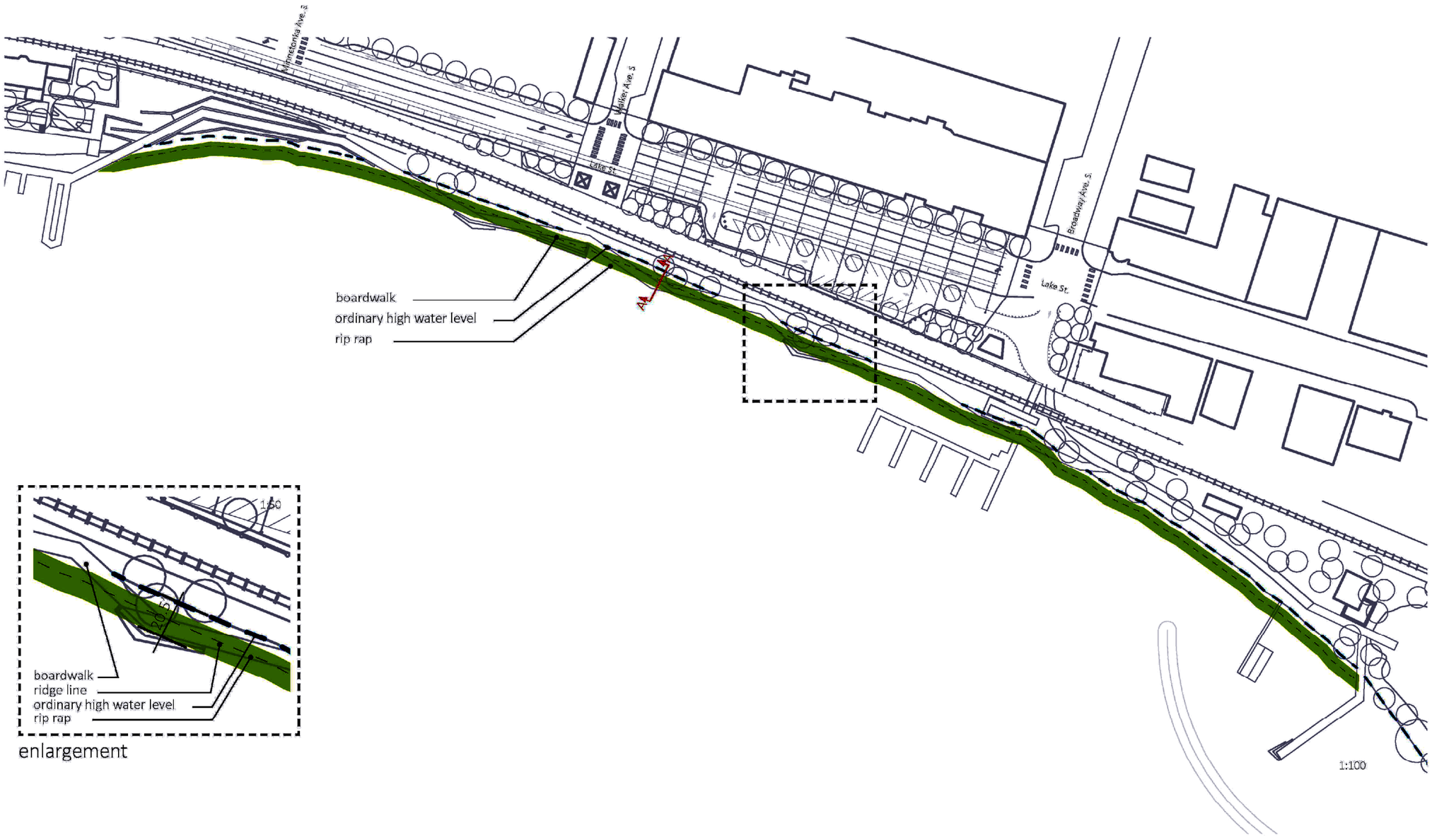
Option A3 Lake Edge – continuous sheet pile plan. Under this plan, 1, 637 lf of sheet pile would be placed along the lake shore approximately 11' from the shoreline (Figure A-4). The top of the sheet pile would be at a depth of 2' below the OHWL. Fill would be placed on the land side of the sheet pile for a width of approximately 5' (Figure A-6), creating an aquatic shelf for establishment of aquatic and emergent shoreline marsh vegetation.

Option A4 Lake Edge – intermittent sheet pile. Under this plan, 585 lf of sheet pile would be placed in four areas along the lake shore, just inside the land edge of the Lake Walk (Figure A-5). The top of the sheet pile would be at a depth of 2' below the OHWL. Fill would be placed on the land side of the sheet pile (Figure A-6). This would result in discrete areas of shoreline marsh.

Option A5 Lake Edge – continuous toe-wood plan. Under this plan, 1,637 lf of toe-wood would be placed along the lake shore approximately 11' from the shoreline (Figure A-7). The toe-wood create a ridge approximately 2' in height and fill would be placed on the landward side of the toe-wood (Figure A-9). The fill would create an aquatic shelf for establishment of aquatic and emergent shoreline marsh vegetation.

Option A6 Lake Edge – intermittent toe-wood plan. Under this plan, the toe-wood would be placed at four discrete locations (Figure A-8). The placement of the toe-wood and fill would be similar to Option A4 (Figure A-9), and would result in discrete areas of shoreline marsh.

Option A7 Lake Edge – floating islands. Under this plan, a synthetic mesh or other similar floating substrate would be installed along the lake edge. Living wetland plants are installed on the mesh, creating a floating structure that rises and falls with fluctuating water levels. Floating islands would not disturb lake bottom or displace lake volume, but would need to be removed each fall and reinstalled each spring due to the destructive forces of ice on Lake Minnetonka.



enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Continuous Riprap Plan Diagram

CIVITAS

1

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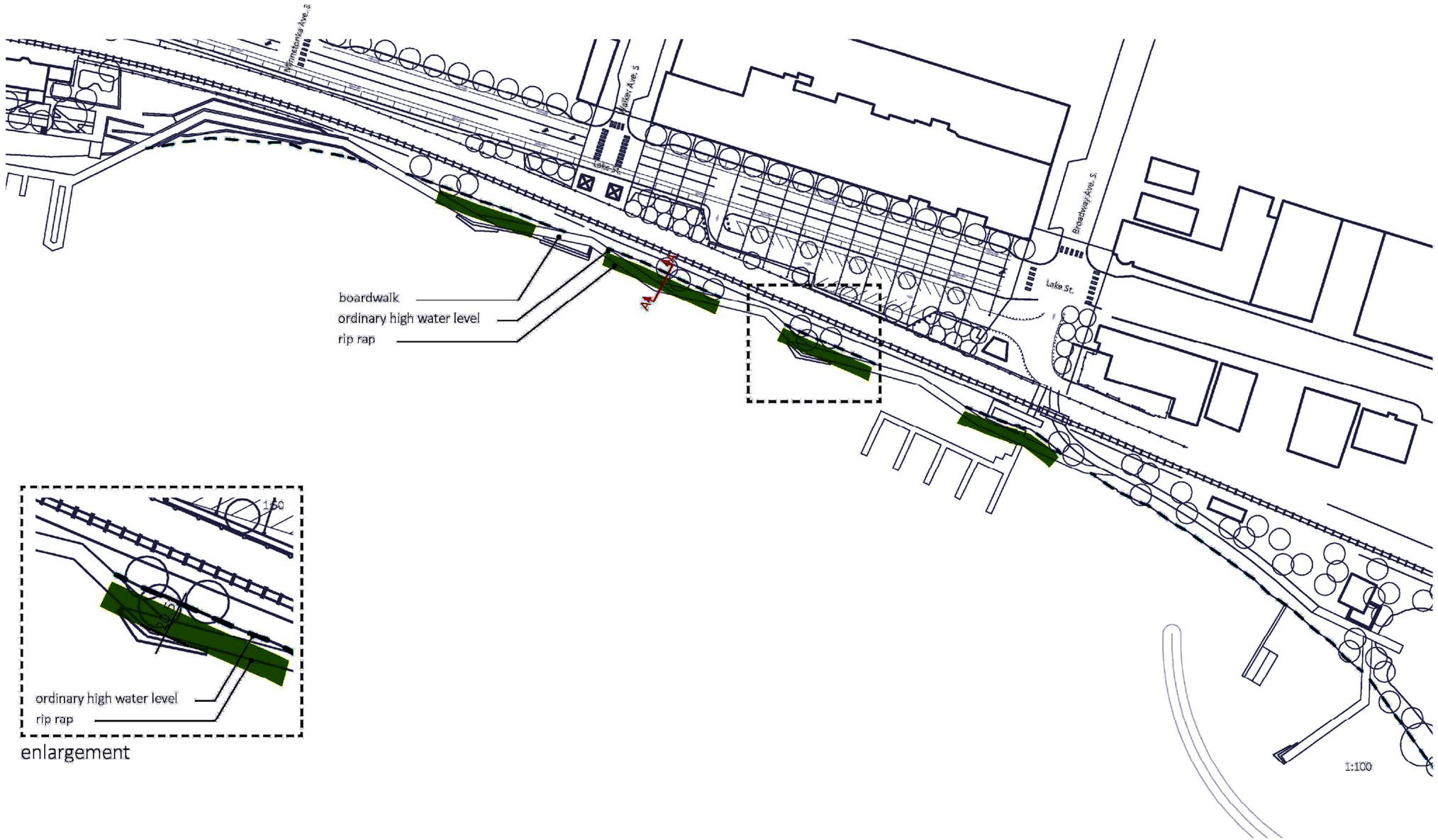
OPTION A1 LAKE EDGE: CONTINUOUS RIPRAP PLAN
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_FigA1
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	A-1



enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Intermittent Riprap Plan Diagram

CIVITAS

2

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OPTION A2 LAKE EDGE: INTERMITTENT RIPRAP
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_FigA2
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	A-2

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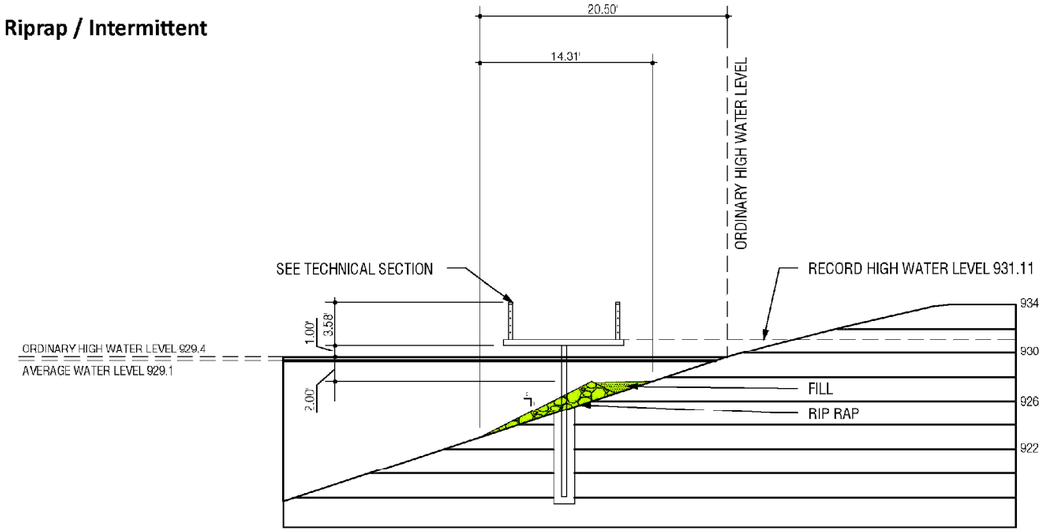
Continuous Riprap / Intermittent
Section A-A



1:10

1:10

1:10

VOLUME CALCULATIONS

1. Continuous Riprap

Rip Rap
length = 1,637 lf
Area = 9 sf
Volume =14,733 cf

Lake Bottom Disturbance
23,426 s.f

Fill
length = 1,637 lf
Area = 2.4 sf
Volume = 3,929 cf

Total Volume = 18,662 cf

2. Intermittent Riprap

Rip Rap
length = 585 lf
Area = 9 sf
Volume = 5,265 cf

Lake Bottom Disturbance
8,371 s.f

Fill
length = 585 lf
Area = 2.4 sf
Volume = 1,404 cf

Total Volume = 6,669 cf

WAYZATA LAKE EFFECT
Lake Edge Diagrams : Riprap Section

CIVITAS
3

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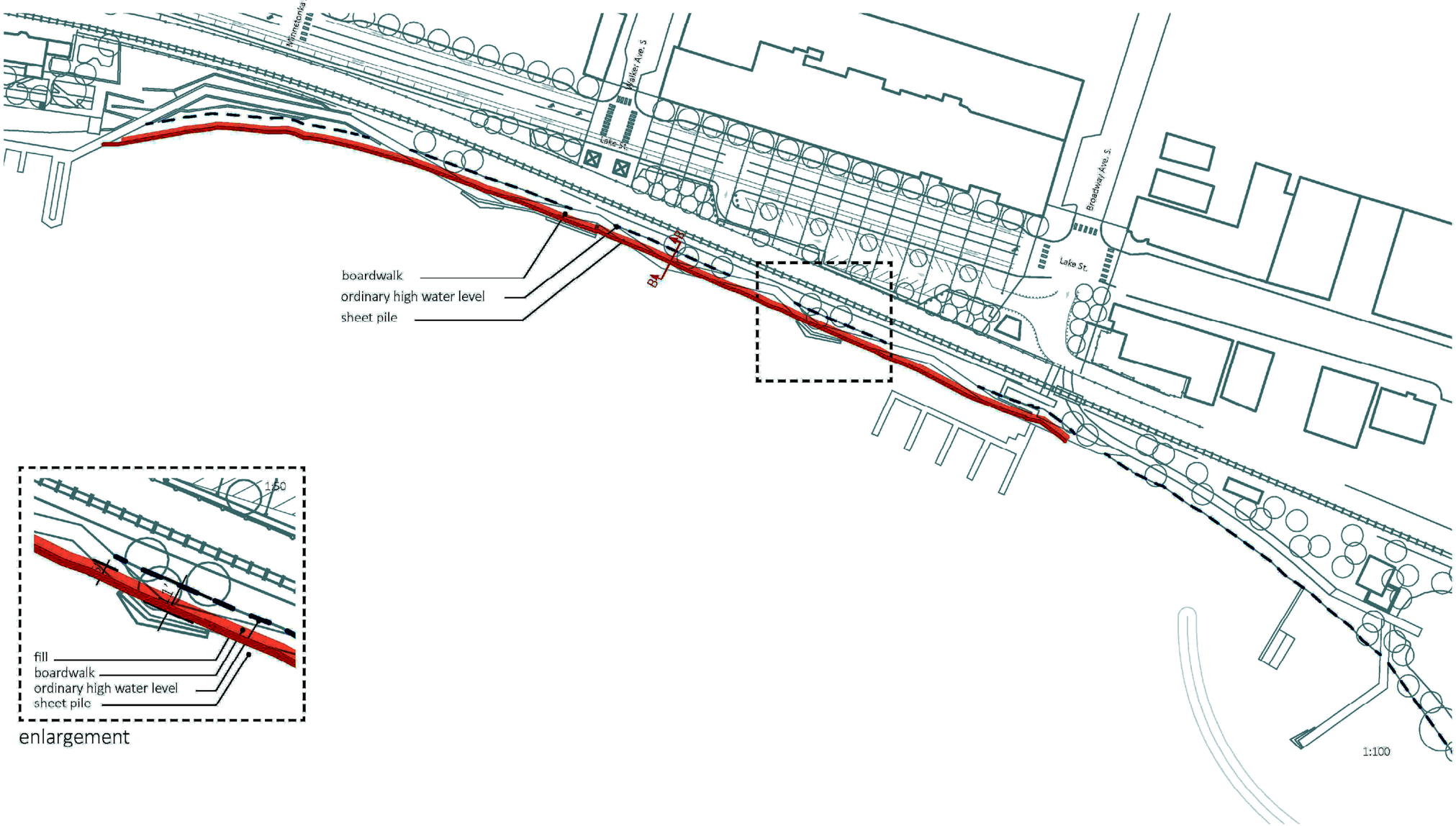
OPTIONS A1 AND A2 LAKE EDGE: RIPRAP SECTION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_FigA3
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	A-3



enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Continuous Sheet Pile Plan Diagram

CIVITAS

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OPTION A3 LAKE EDGE: CONTINUOUS SHEET PILE PLAN

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Fig.	A-4

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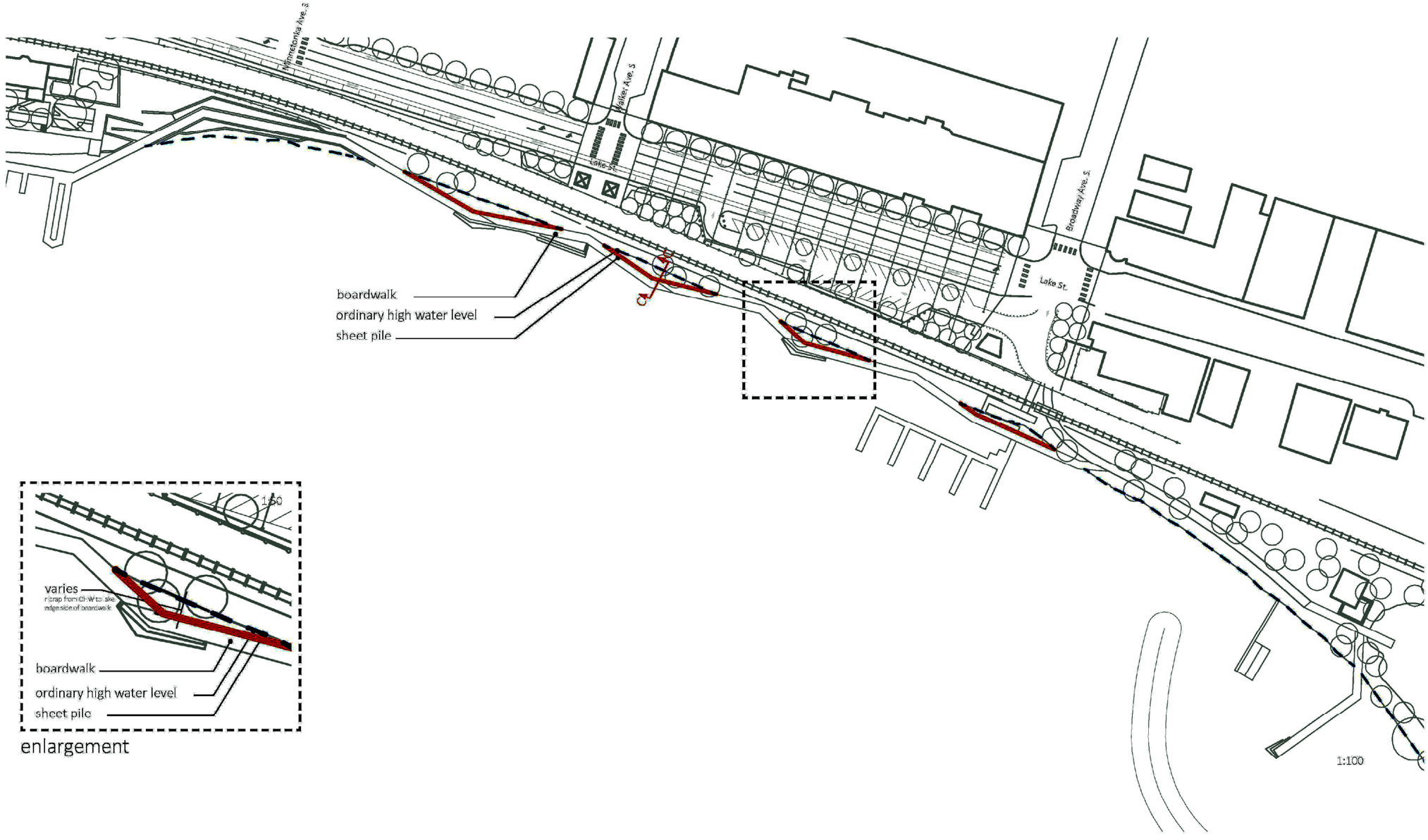

enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Intermittent Sheet Pile Plan Diagram

CIVITAS

5

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OPTION A4 LAKE EDGE: INTERMITTENT SHEET PILE PLAN
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Fig.	A-5

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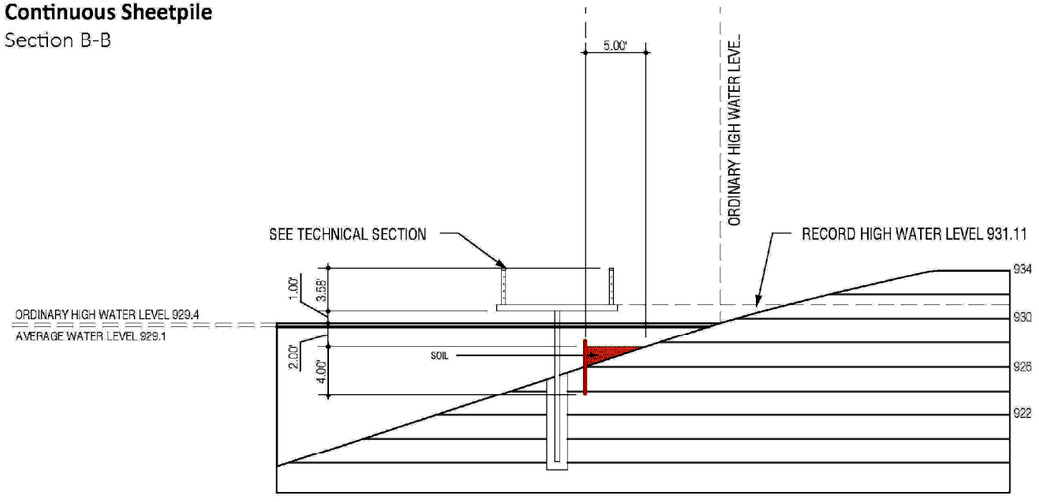
Continuous Sheetpile
Section B-B



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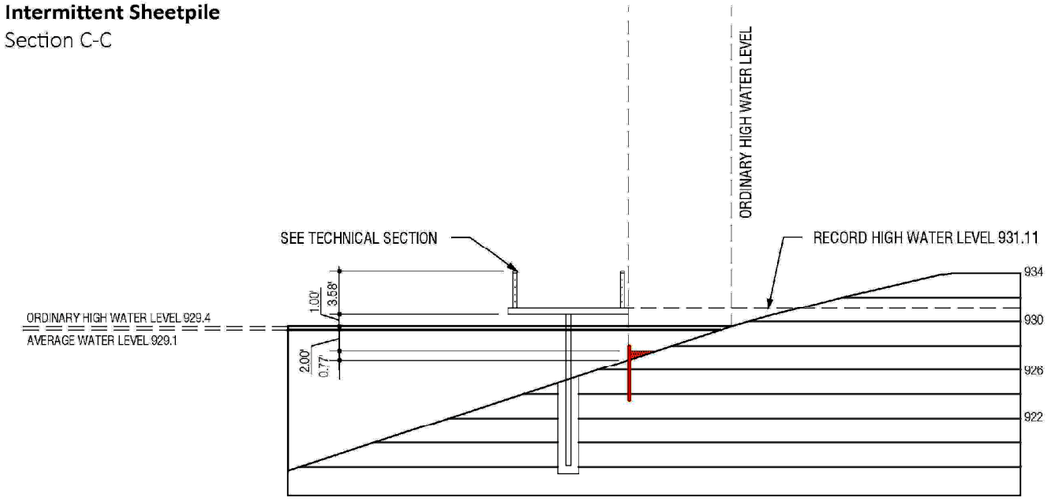
Intermittent Sheetpile
Section C-C



1:10

VOLUME CALCULATIONS

1. Continuous Sheetpile with fill

Sheet Pile
length = 1,637 lf
sheetpile area = .125 sf (.03125' x4')
volume = 205 cf

Fill
fill area = 4.1 sf.
length = 1,637 lf
volume = 6,712 cf

Total Volume = 6,917 cf

Lake Bottom Disturbance
8,185 s.f

2. Intermittent Sheetpile

Sheet Pile
length = 585 lf
sheetpile area = .125 sf (.03125' x4')
volume= 73 cf

Fill
average fill area = 4.1 sf
length = 585 lf
volume= 2,399 cf

Total Volume = 2,472 cf

Lake Bottom Disturbance
2,925 s.f

WAYZATA LAKE EFFECT
Lake Edge Diagrams : Sheet Pile Section

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OPTIONS A3 AND A4 LAKE EDGE: SHEET PILE SECTION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Fig.	A-6

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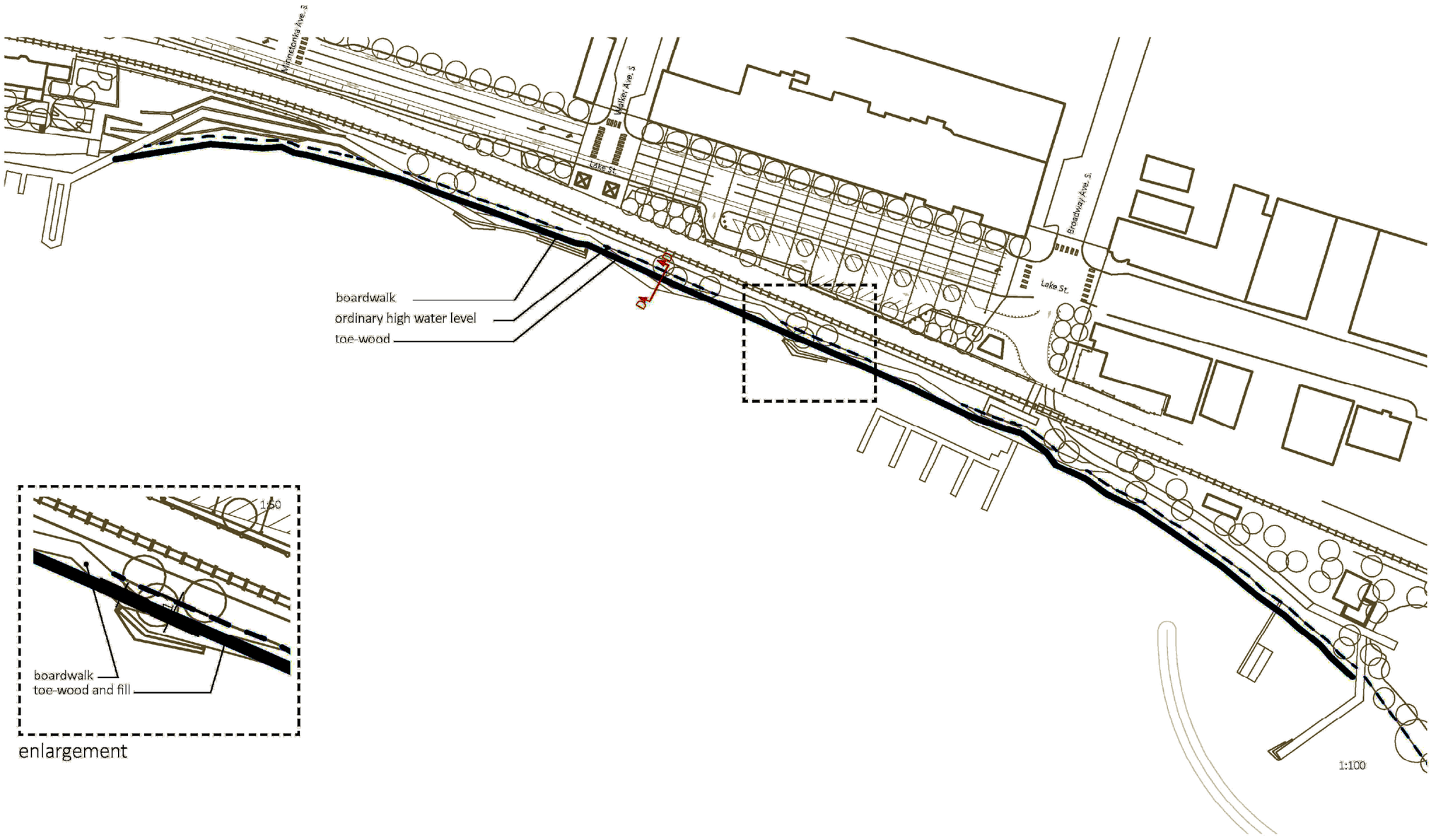
OPTION A5 LAKE EDGE:CONTINUOUS TOE-WOOD PLAN

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA



enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Continuous Toe-Wood Plan Diagram

CIVITAS

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Project No:	B1607634
Drawing No.	B1607634_FigA7
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Fig.	A-7

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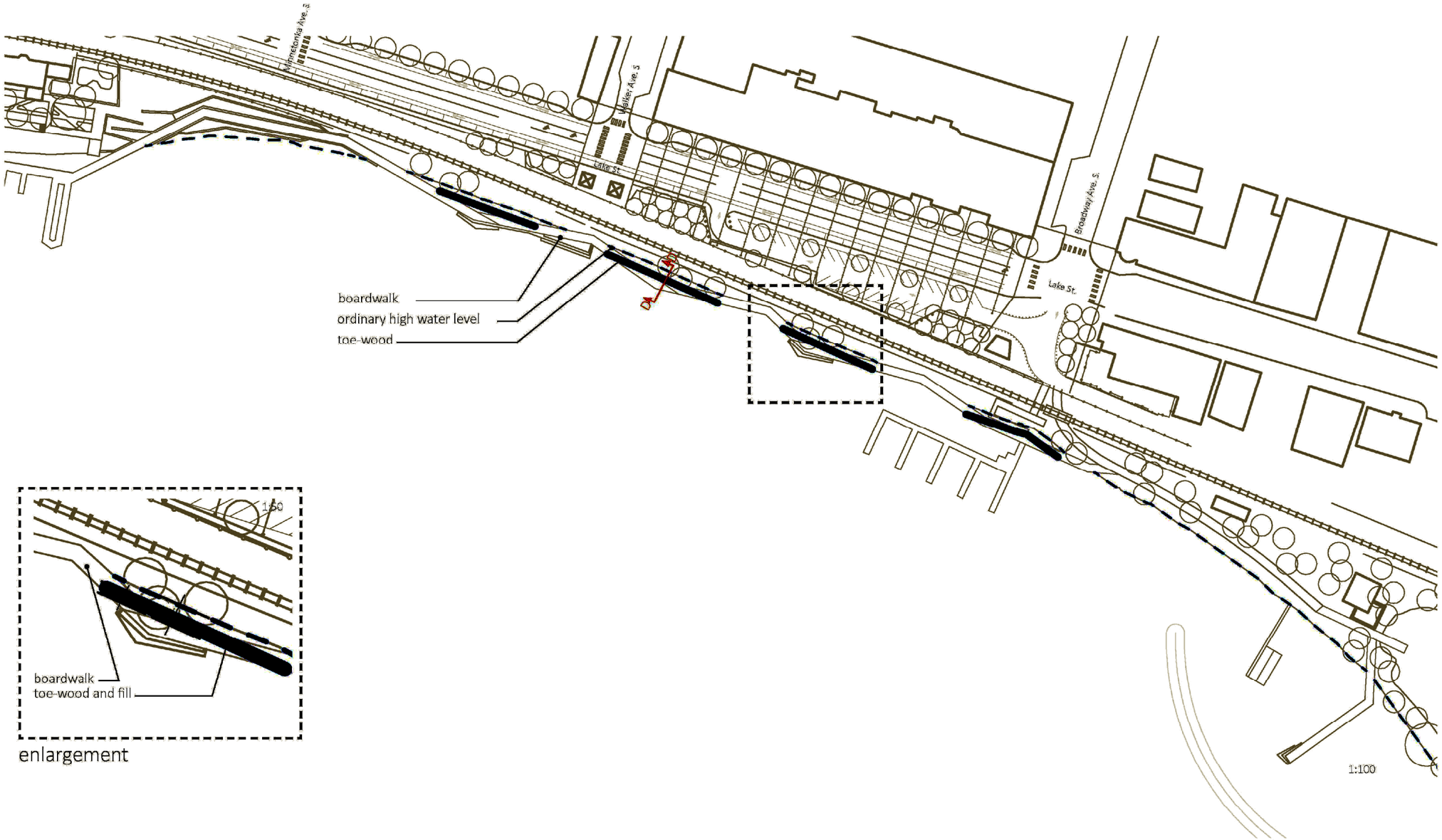
OPTION A6 LAKE EDGE: INTERMITTENT TOE-WOOD PLAN

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA



enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Intermittent Toe-Wood Plan Diagram

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Project No:	B1607634
Drawing No.	B1607634_FigA8
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Sheet:	1 of 1
Fig.	A-8

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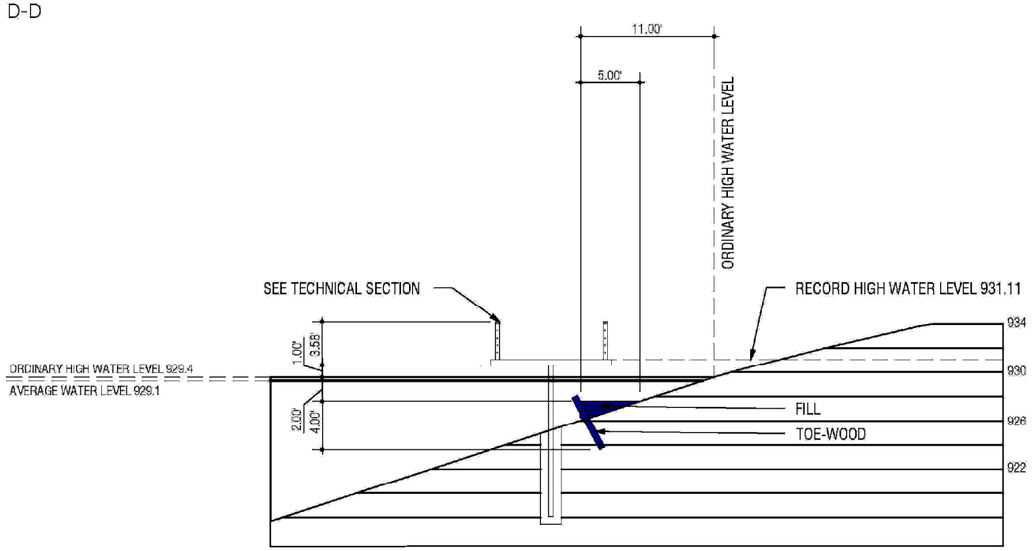
Toe-Wood Section

Section D-D



*Exact configuration / construction of toe-wood undetermined at this time.

1:10

VOLUME CALCULATIONS

1. Continuous Toe-Wood

Toe-Wood
length of lake edge = 1 ,637 lf
Toe-wood volume =1 cf (.2 x 3.84)
Volume = 1,637 cf

Lake Bottom Disturbance
8,185 s.f

Fill
length of lake edge = 1,637 lf
Area = 3.3 s f
Volume = 5,402 cf

Total Volume = 7,039 cf

2. Intermittent Toe-Wood

Toe-Wood
length of lake edge = 585 lf
Toe-wood volume =1 cf (.2 x 3.84)
Volume = 585 cf

Lake Bottom Disturbance
2,925 s.f

Fill
length = 585 lf
Area = 3.3 s f
Volume = 1,930 cf

Total Volume = 2,515 cf

WAYZATA LAKE EFFECT

Lake Edge Diagrams :

CIVITAS

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OPTIONS A5 AND A6 LAKE EDGE: TOE-WOOD SECTION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Fig.	A-9

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Appendix B

Lake Walk/Boardwalk Construction Options

Figures

Appendix B Lake Walk/Boardwalk Construction Options

Option B1. Boardwalk support – wood piles. Under this scenario, 8’ wood piles would be placed along the outside edges of the boardwalks, spaced 5.5’ apart, for the entire 2,217 lf, for a total of 512 wood piles (Figures B-1 and B-2). These piles would be driven into the lake bottom (Figure B-3).

Option B2. Boardwalk support – concrete pile. Under this scenario, concrete piers would be placed periodically along the boardwalk (Figures B-4 and B-5), for total of 19 piers. Each concrete pier would span the width of the boardwalk and extend into the lake bottom (Figure B-6).

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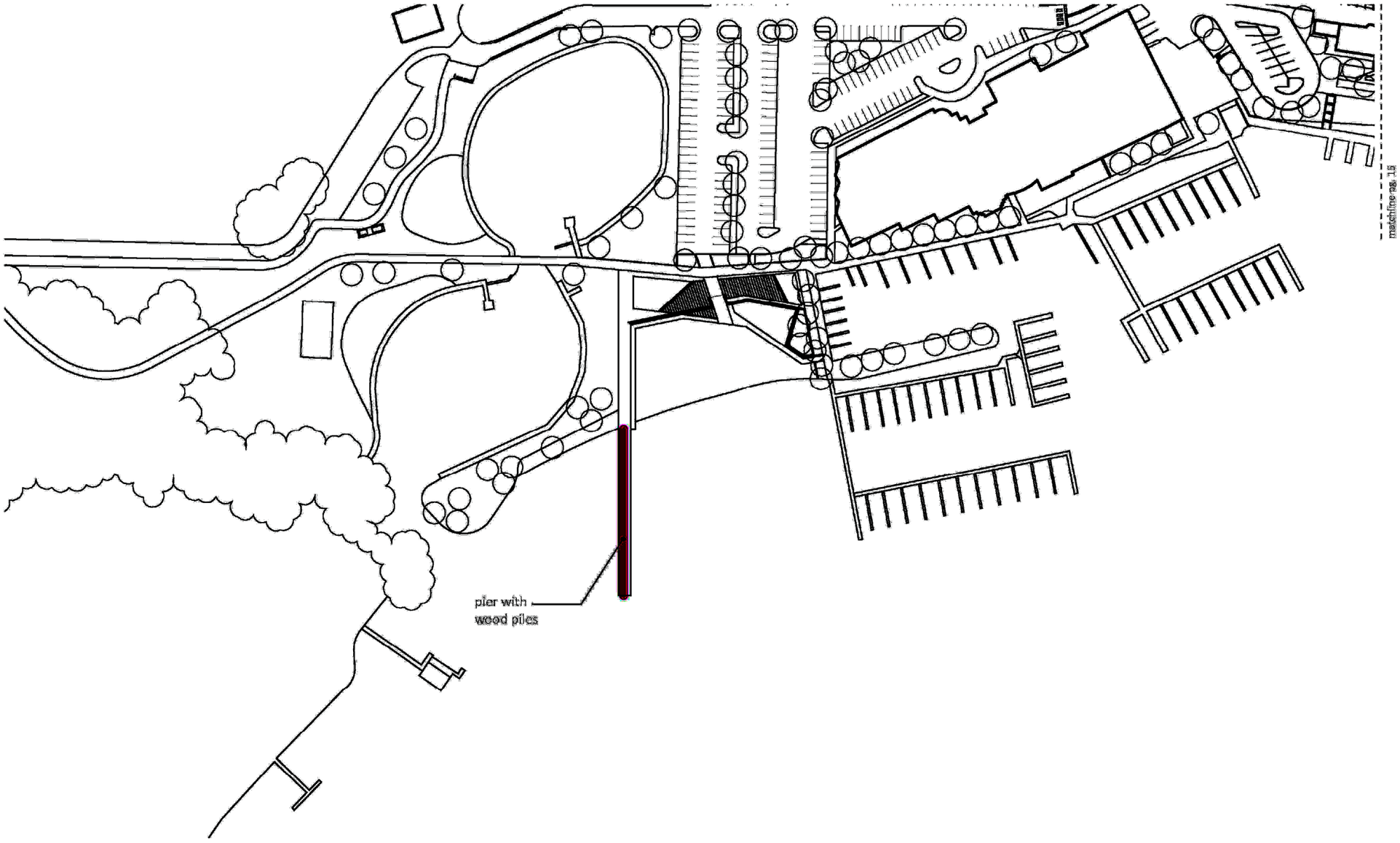

OPTION B1 BOARDWALK WOOD PILE PLAN

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

WAYZATA LAKE EFFECT
Lake Edge Diagrams : Boardwalk Wood Pile Plan Diagram

CIVITAS

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Fig.	B-1

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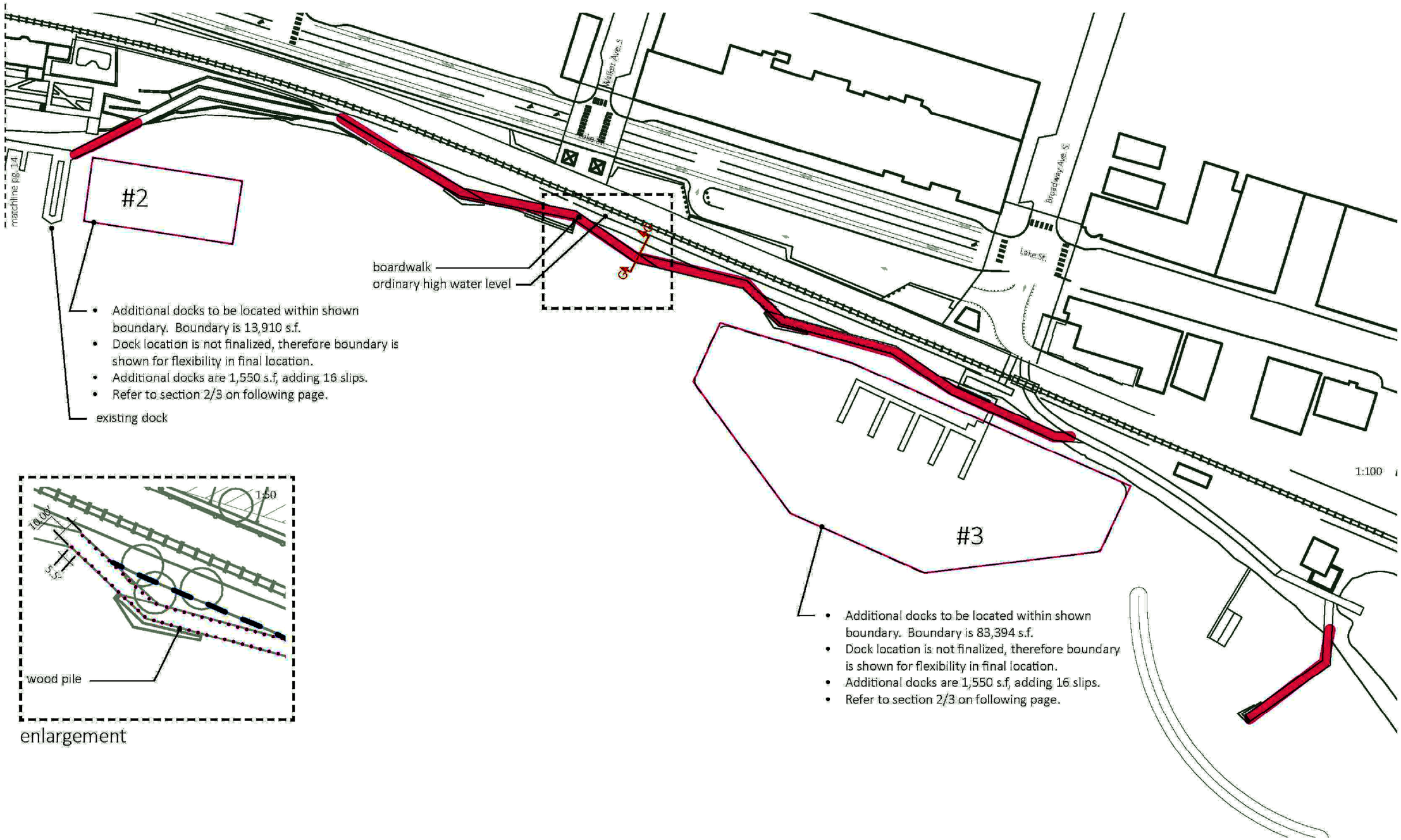

- Additional docks to be located within shown boundary. Boundary is 13,910 s.f.
- Dock location is not finalized, therefore boundary is shown for flexibility in final location.
- Additional docks are 1,550 s.f, adding 16 slips.
- Refer to section 2/3 on following page.

existing dock

- Additional docks to be located within shown boundary. Boundary is 83,394 s.f.
- Dock location is not finalized, therefore boundary is shown for flexibility in final location.
- Additional docks are 1,550 s.f, adding 16 slips.
- Refer to section 2/3 on following page.

enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Boardwalk Wood Pile Plan Diagram

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OPTION B1 BOARDWALK WOOD PILE PLAN
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Sheet:	1 of 1
Fig.	B-2

CIVITAS

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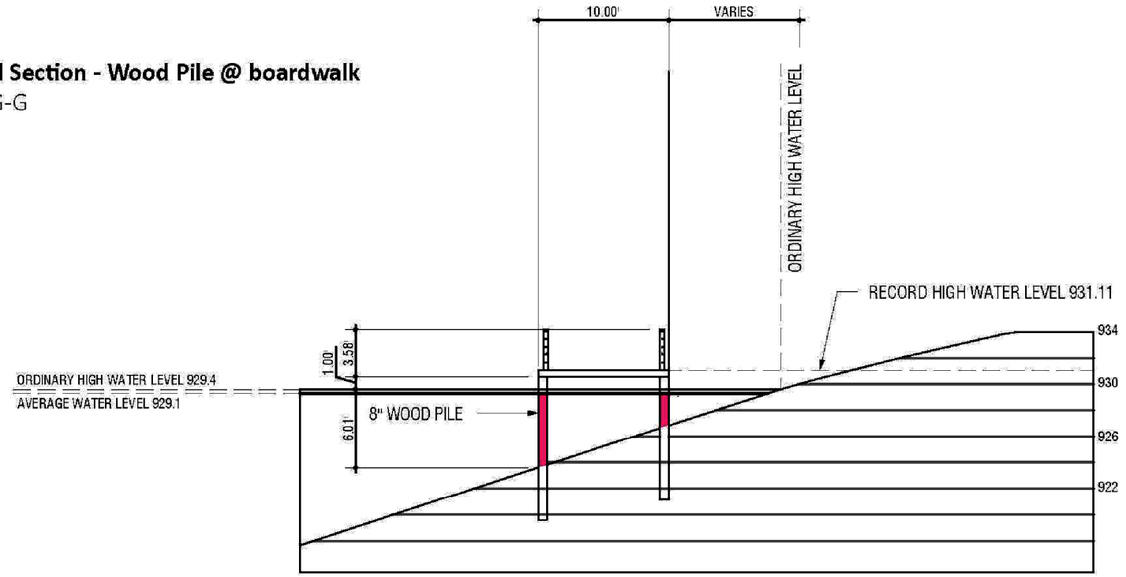
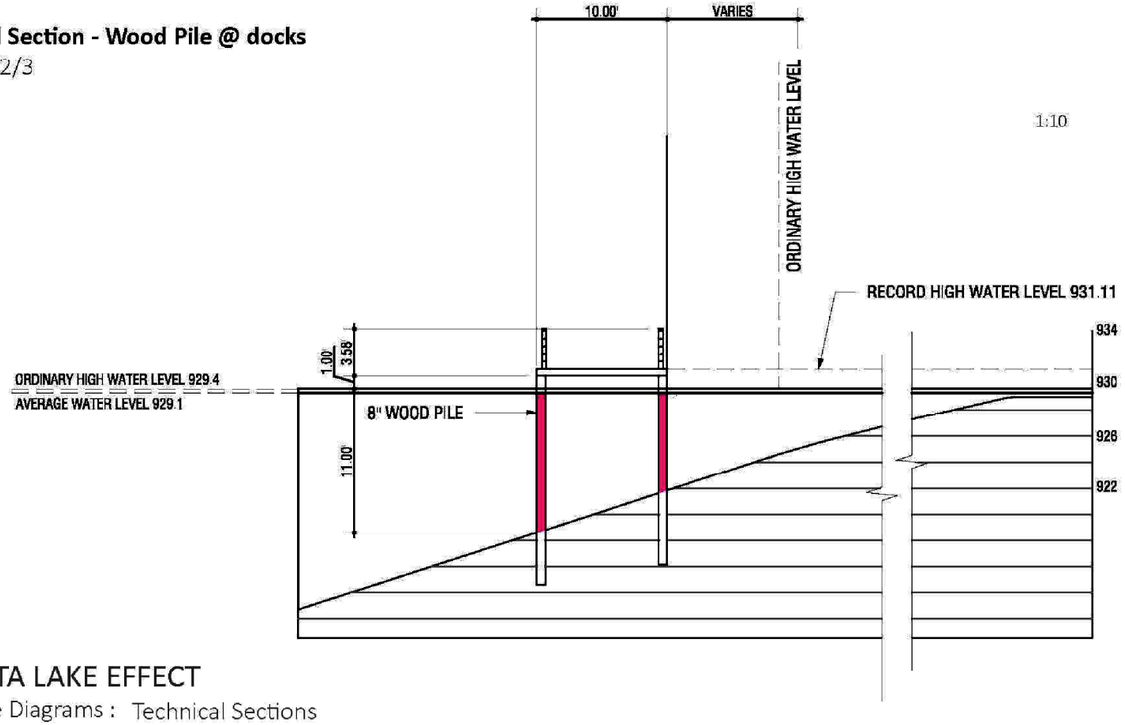
Technical Section - Wood Pile @ boardwalk
Section G-G



Technical Section - Wood Pile @ docks
Section #2/3



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VOLUME CALCULATIONS

1. Wood Pile @ boardwalk

length of boardwalk = 1,405 lf
wood pile radius. = .34 ft
average area = .35 sf
average length = 3'
volume = 1.05 (.35 x3')

Lake Bottom Disturbance
180 sf

1,405 (length of boardwalk) ÷ 5.5' (pile spacing) = 256 wood piles
2 piles every 5.5' = 256x2 = 512

Volume = 538 cf (512x 1.05)

2. Wood Pile @ proposed docks

length of dock = 406 lf
wood pile radius. = .34 ft
average area = .35 sf
average length = 19' (includes both piles)
volume = 6.65cf (.35 x19')

406 (length of dock) ÷ 5.5' (pile spacing) = 74 wood piles

Volume = 493 cf (6.65x 74)

3. Wood Pile @ proposed docks

length of dock = 406 lf
wood pile radius. = .34 ft
average area = .35 sf
average length = 19' (includes both piles)
volume = 6.65cf (.35 x19')

406 (length of dock) ÷ 5.5' (pile spacing) = 74 wood piles

Volume = 493 cf (6.65x 74)

Volume (2/3 combined) = 986 cf

WAYZATA LAKE EFFECT
Lake Edge Diagrams : Technical Sections

CIVITAS
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OPTION B1 BOARDWALK WOOD PILE SECTION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Fig.	B-3

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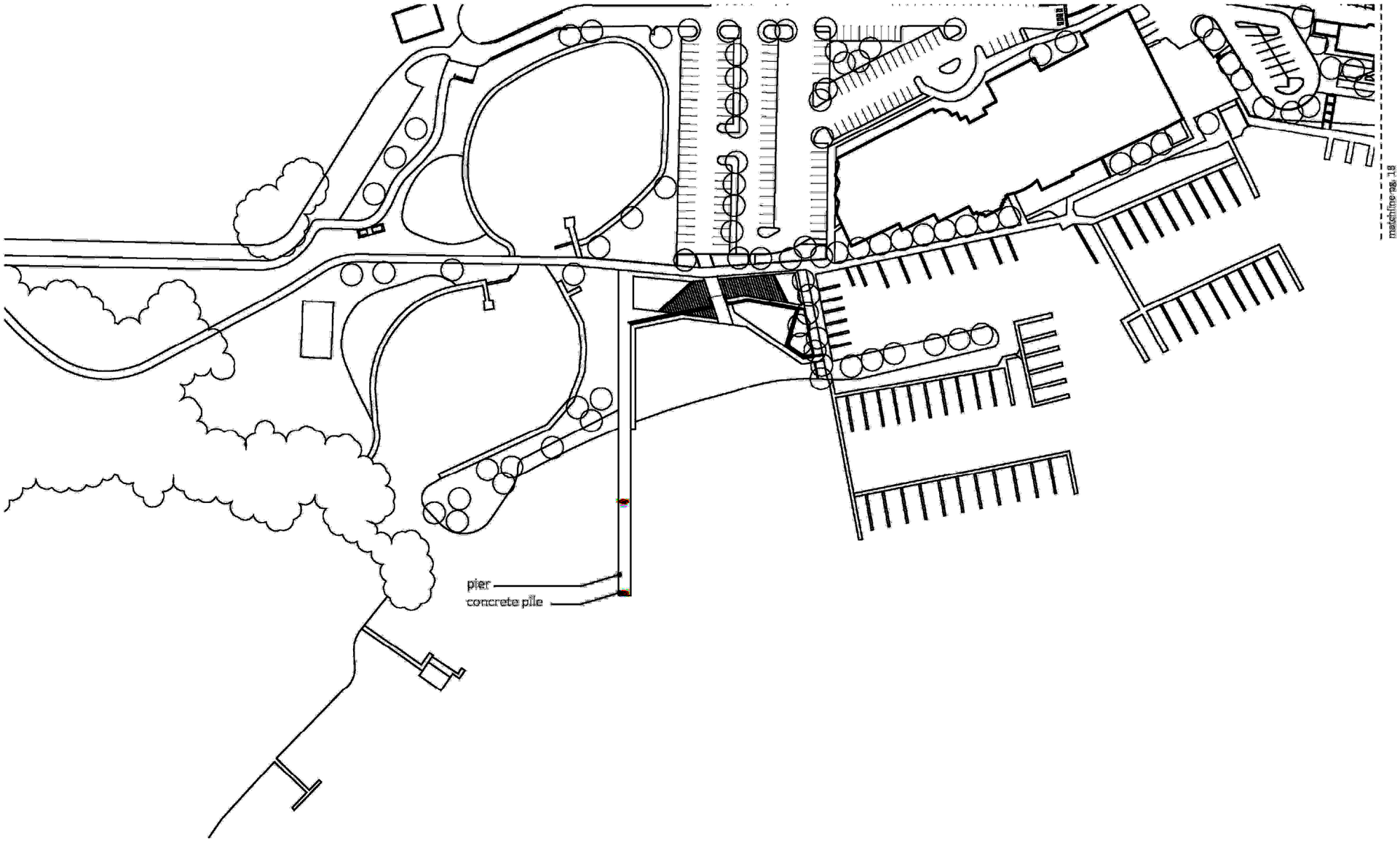

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Boardwalk Wood Pile Plan Diagram

CIVITAS

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OPTION B2 BOARDWALK CONCRETE PILE PLAN
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_FigB4
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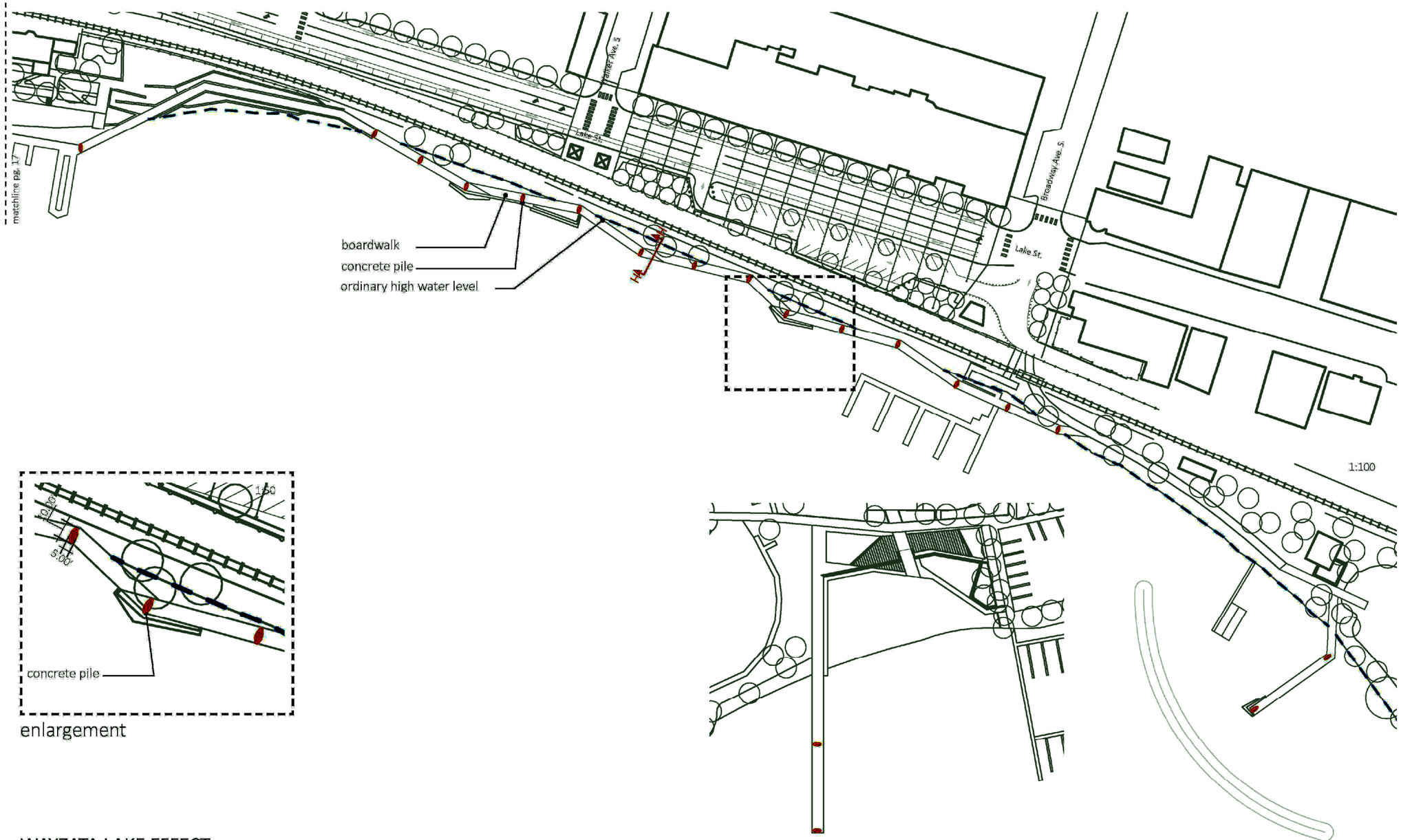
Sheet:	1 of 1
Fig.	B-4



enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Boardwalk Concrete Pile Plan Diagram

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OPTION B2 BOARDWALK CONCRETE PILE PLAN
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Fig.	B-5

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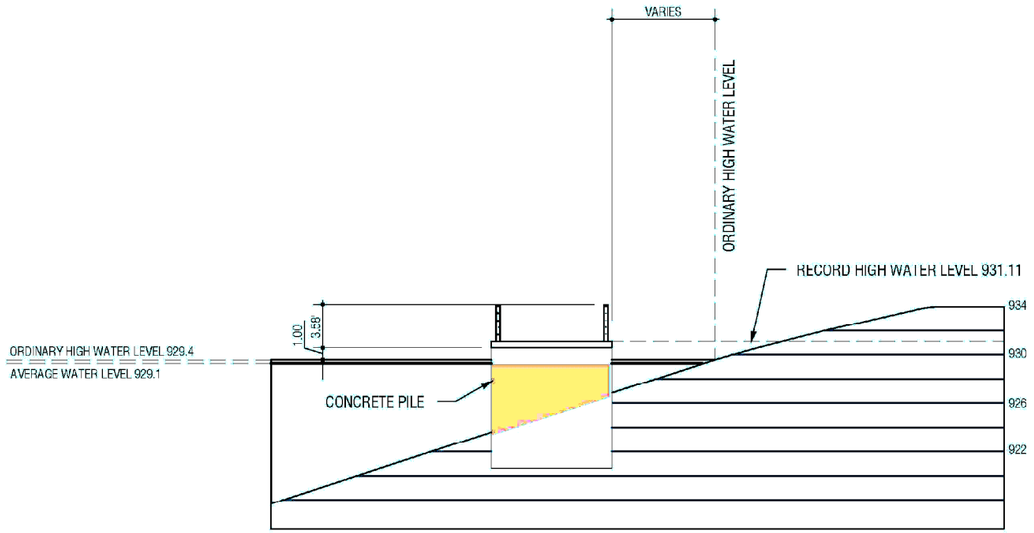
Technical Section - Concrete Pile

Section H-H



1:10

VOLUME CALCULATIONS

1. Concrete Pile

number of piers = 19
area of pier = 40 sf
average depth = 4.42'
volume = 177 cf

Lake Bottom Disturbance
760 sf

Volume = 3,363 cf (19 x 177)

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Technical Sections

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OPTION B2 BOARDWALK CONCRETE PILE SECTION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
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Sheet:	1 of 1
Fig.	B-6

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Appendix C

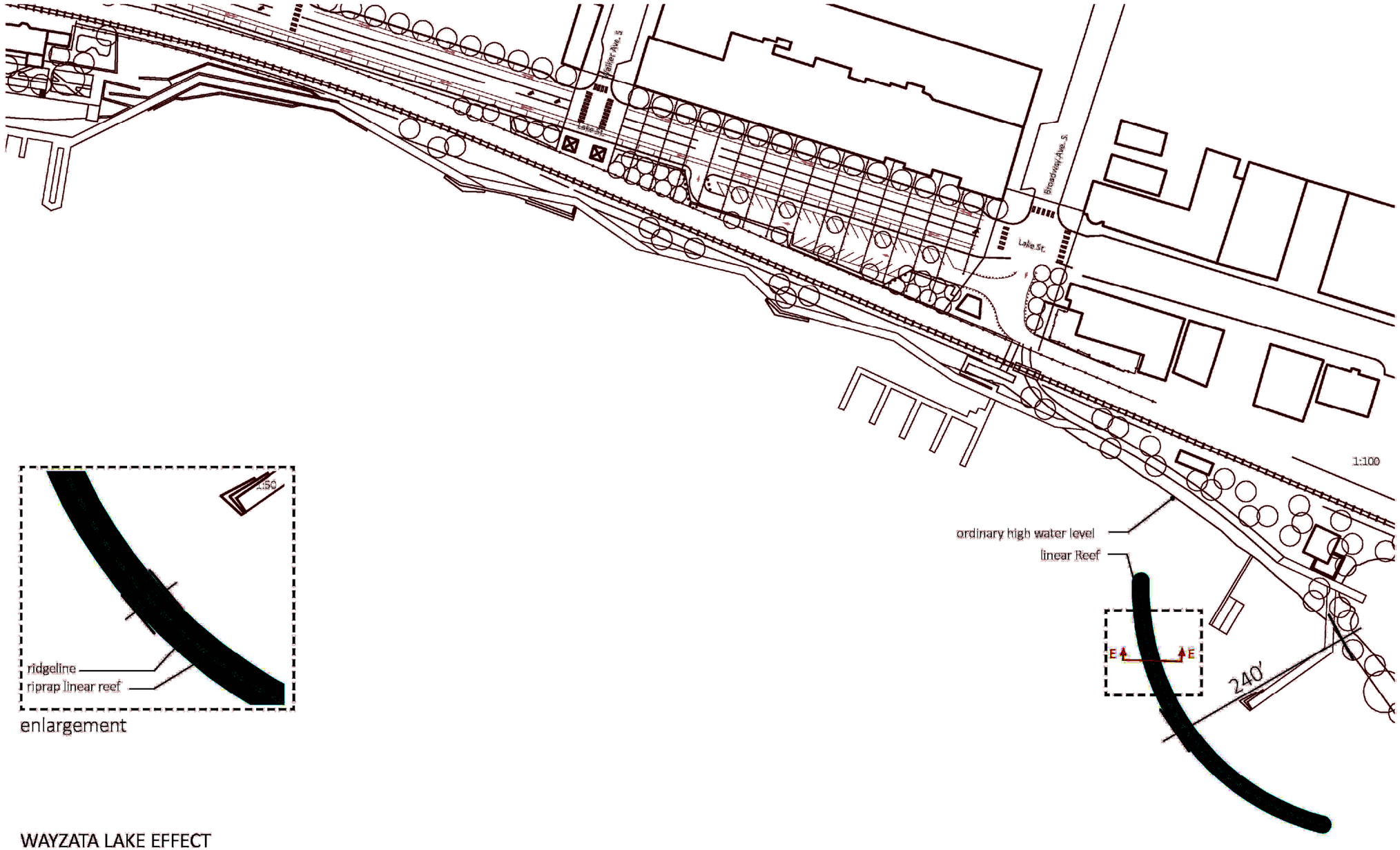
Linear Reef and Shoreline Marsh Construction Options

Figures:

Appendix C Linear Reef and Shoreline Marsh Construction Options

Option C1 Linear Reef – riprap plan. Under this plan, a 394 lf arc of riprap would be placed to depth of approximately 2’ below the OHWL (Figure C-1). The riprap would be placed at a width of 21’ and to a maximum height of 3.5’ (Figure C-2).

Option C2 Linear Reef – sheet pile plan. Under this plan, 394 lf of sheet pile would be placed in an arc to a depth of approximately 2’ below the OHWL (Figure C-3). The maximum height of the sheet pile would be approximately 3.5’ (Figure C-4).



enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Linear Reef- Rip Rap Plan Diagram

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OPTION C1 LINEAR REEF RIPRAP PLAN

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Fig.	C-1

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Linear Reef - Rip Rap
Section E-E

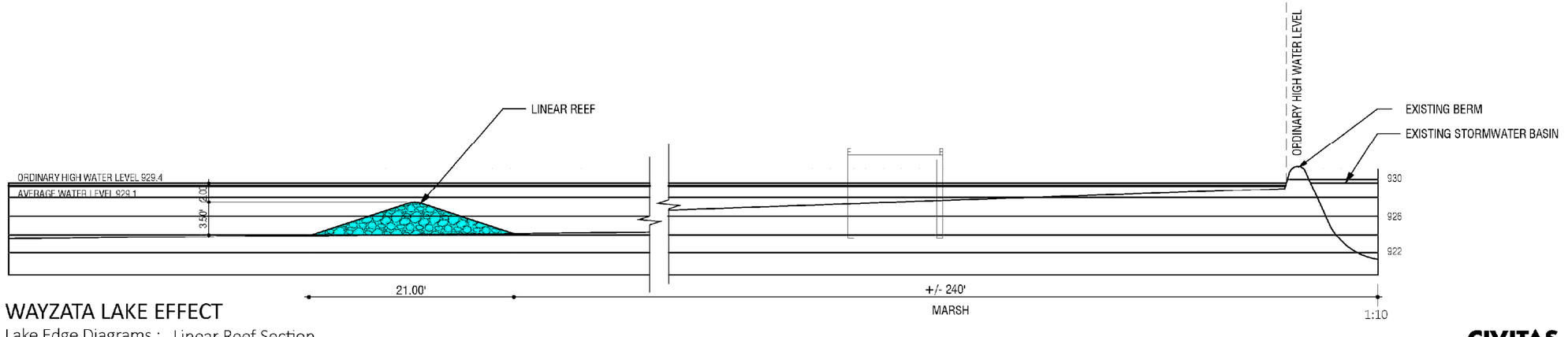
VOLUME CALCULATIONS

Linear Reef - Rip Rap

length of linear reef = 395 lf
Area of section = 39 sf

Volume = 15,405 cf

Lake Bottom Disturbance
8,608 s.f



WAYZATA LAKE EFFECT
Lake Edge Diagrams : Linear Reef Section

CIVITAS

OPTION C1 LINEAR REEF RIPRAP SECTION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Sheet:	1 of 1
Fig.	C-2

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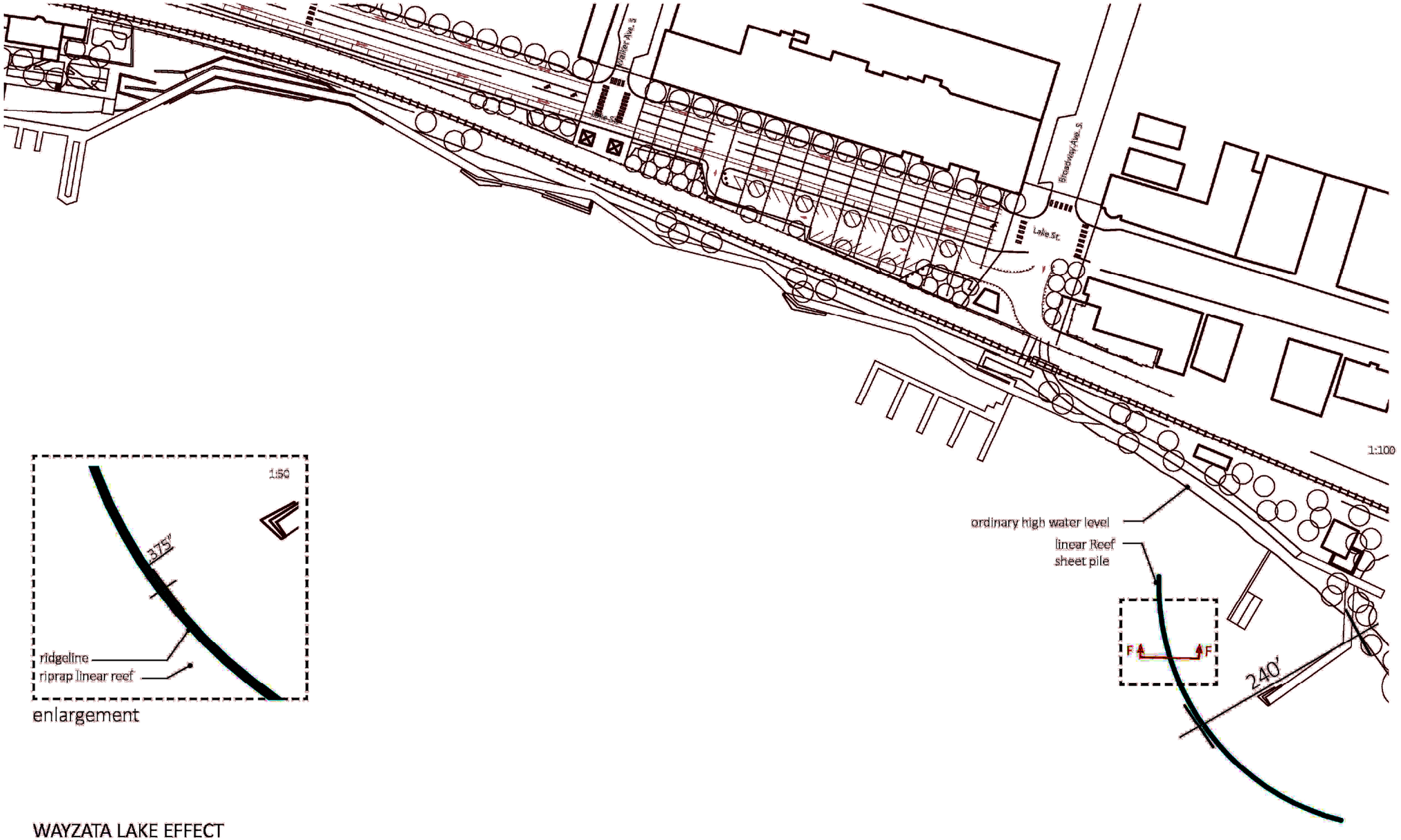

enlargement

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Linear Reef- Sheet Pile Plan Diagram

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OPTION C2 LINEAR REEF SHEET PILE PLAN

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Drawing No.	B1607634_FigC3
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Sheet:	1 of 1
Fig.	C-3

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Linear Reef - Sheet Pile
Section Γ-Γ

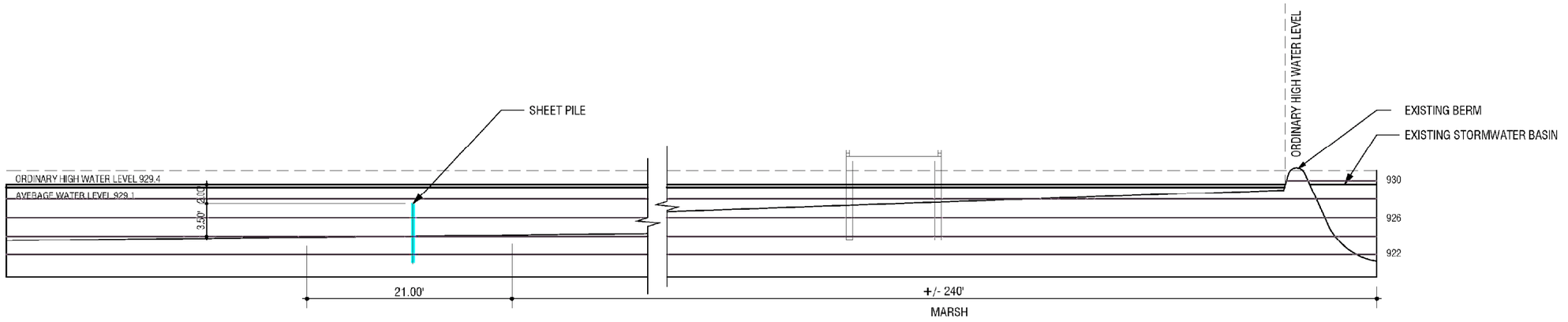
VOLUME CALCULATIONS

Linear Reef - Sheet Pile

length of linear reef = 394 lf
Area of section = .11 sf
(width of sheet pile .03125' x 3.5' = .11)

Volume = 43 cf

Lake Bottom Disturbance
13 s.f



WAYZATA LAKE EFFECT
Lake Edge Diagrams : Linear Reef Section

1:10

CIVITAS

OPTION C2 LINEAR REEF SHEET PILE SECTION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Sheet:	1 of 1
Fig.	C-4

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Appendix D

Mitigation Options

Figures:

Appendix D Mitigation Options

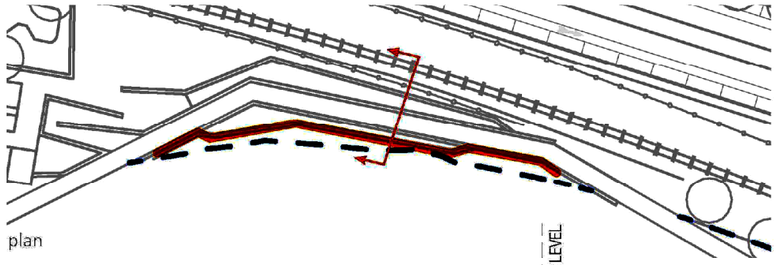
Option M1 – Depot Park Terrace - At the eastern side of the Depot, between the Lake Walk and the shoreline, the area would be landscaped to provide terraces for people to gather. Presently, the area is protected behind a wrought iron fence and gently slopes to the water. The area on the lake side of the fence would be shaped into four terraces, one of which would continue to the Lake Walk. As part of this terrace, and as a mitigation measure for lake bottom and volume displaced by the proposed project, the lake bottom at or just below the OHWL would be expanded by excavation (Figure D-1).

Option M2 – Beach Edge – A beach area is currently present on the west side of the proposed project, to the west of the Boatworks building. As a mitigation measure for lake bottom and volume displaced by the proposed project, the existing beach edge would be excavated, moving the shoreline approximately 14' inland (Figure D-2).

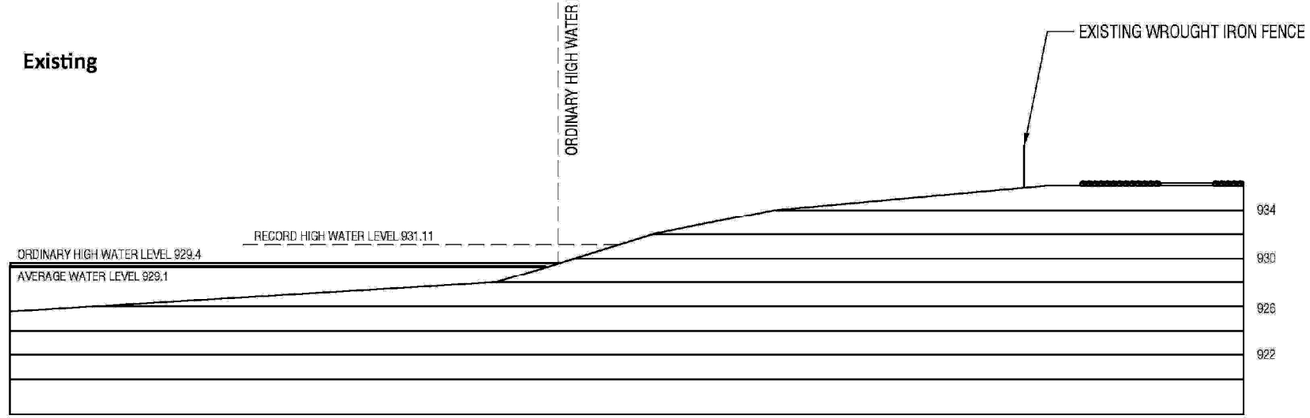
Options M3 and M4 - Boatworks Marina Dredging – currently there are two inland bays in the western portion of the project used as the Boatworks Marina. As a mitigation measure for lake volume displaced by the proposed project, the marina would be dredged either one foot or two feet (Figure D-3).

Options M5 and M6 – East Pond Dredging – currently there is a man-made stormwater basin on the east end of the proposed project, near the Section Forman House. As a mitigation measure for lake volume displaced by the proposed project, the basin would be dredged either one foot or two feet (Figure D-4).

Option M7 – Bushaway Road Parcel – this is a separate parcel of land owned by the City of Wayzata, on the east side of Bushaway Road. The parcel is located adjacent to a previously excavated backwater lagoon of the Lower Lake of Lake Minnetonka. As a mitigation measure for lake bottom and volume displaced by the proposed project, an area of this parcel that is currently dominated by volunteer herbaceous plants, would be excavated an average depth of 3.4' to expand the adjacent lagoon (Figure D-5).



Existing



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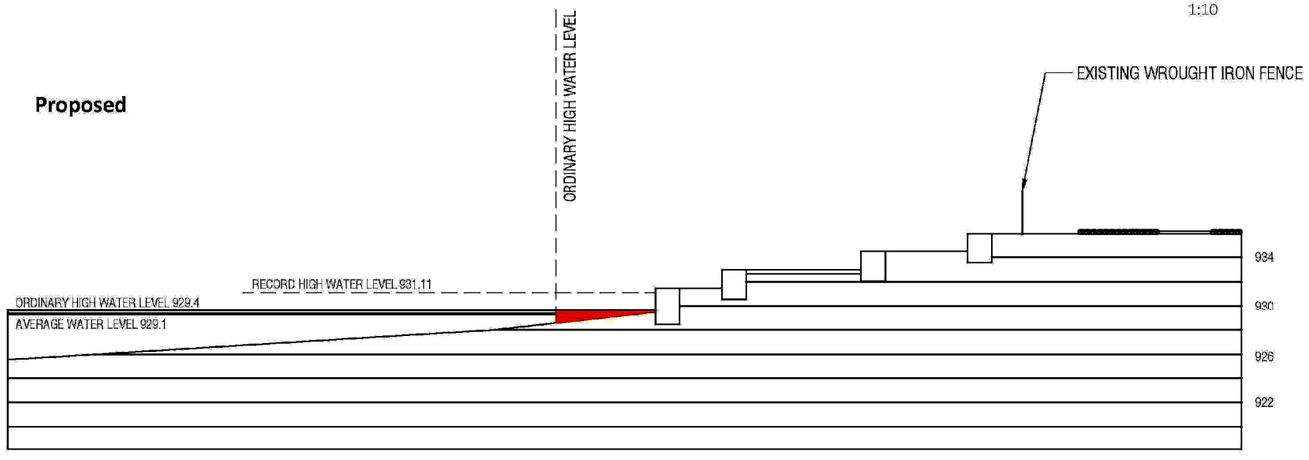
Proposed



1:10

VOLUME CALCULATIONS

length of terrace = 285 lf
Area of section = 4.72 sf

Volume = 1,345 cf

Lake Bottom Disturbance
2,346 sf

Approximate Volume Gain = 1,345 cf

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Depot Park Terrace Section

CIVITAS

BRAUN INTERTEC
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

DEPOT PARK TERRACE SECTION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_FigD1
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	D-1

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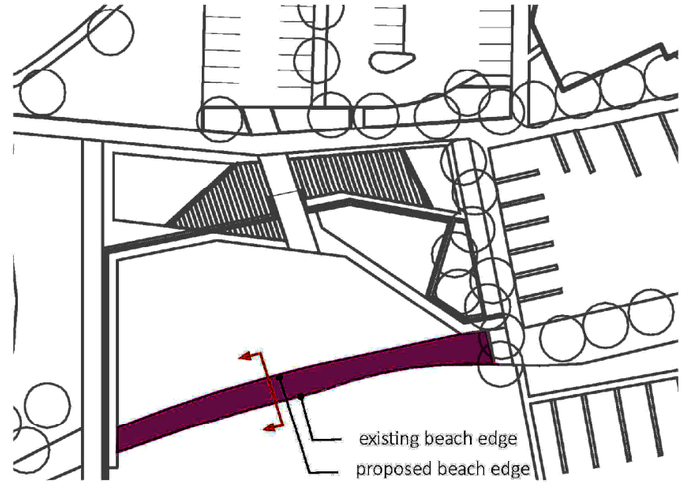
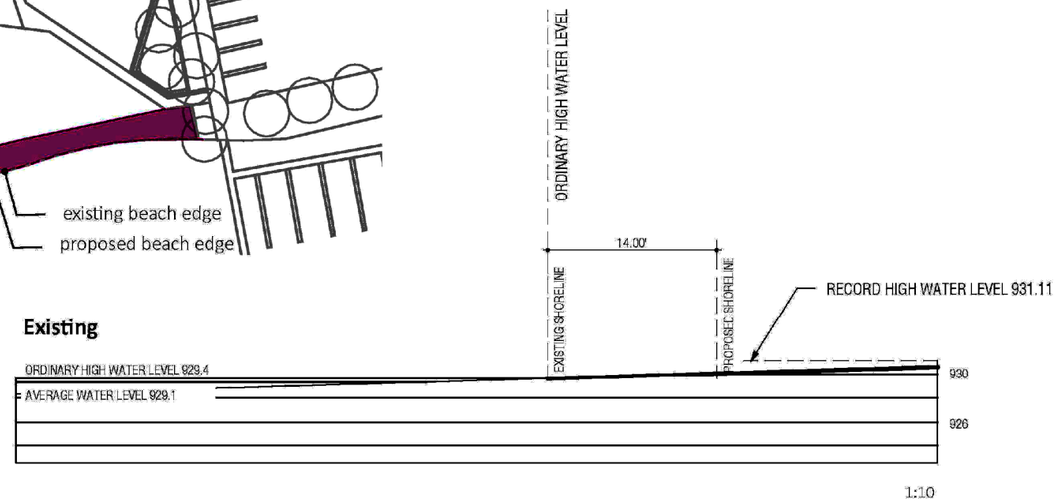
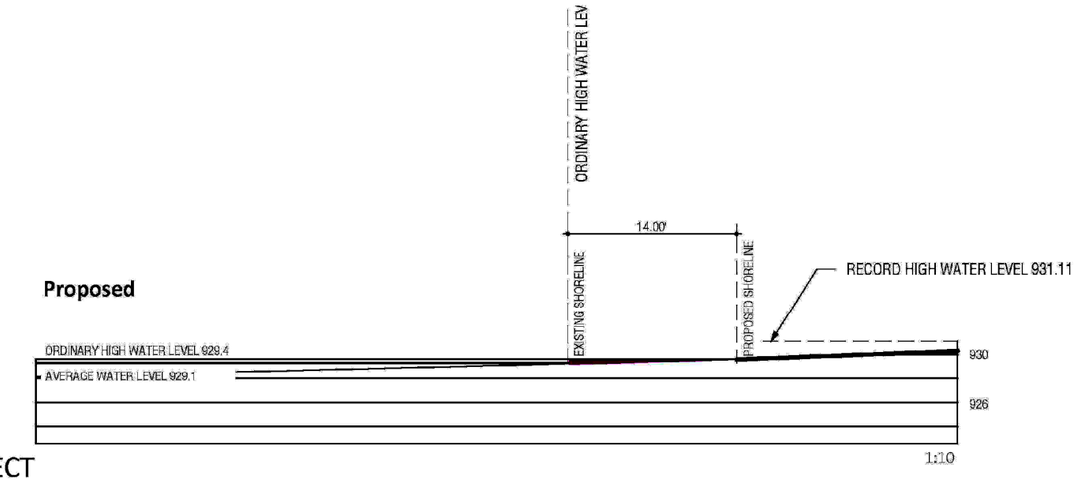
BRAUN
INTERTEC
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020



plan





VOLUME CALCULATIONS

Proposed

length = 215 lf
Area = 1.5 sf
Volume = 322 cf

Lake Bottom Disturbance
2,934 sf

Approximate Volume Gain = 322 cf

WAYZATA LAKE EFFECT

Lake Edge Diagrams : Beach Section

BEACH SECTION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

CIVITAS

Project No:	B1607634
Drawing No.	B1607634_FigD2
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	D-2

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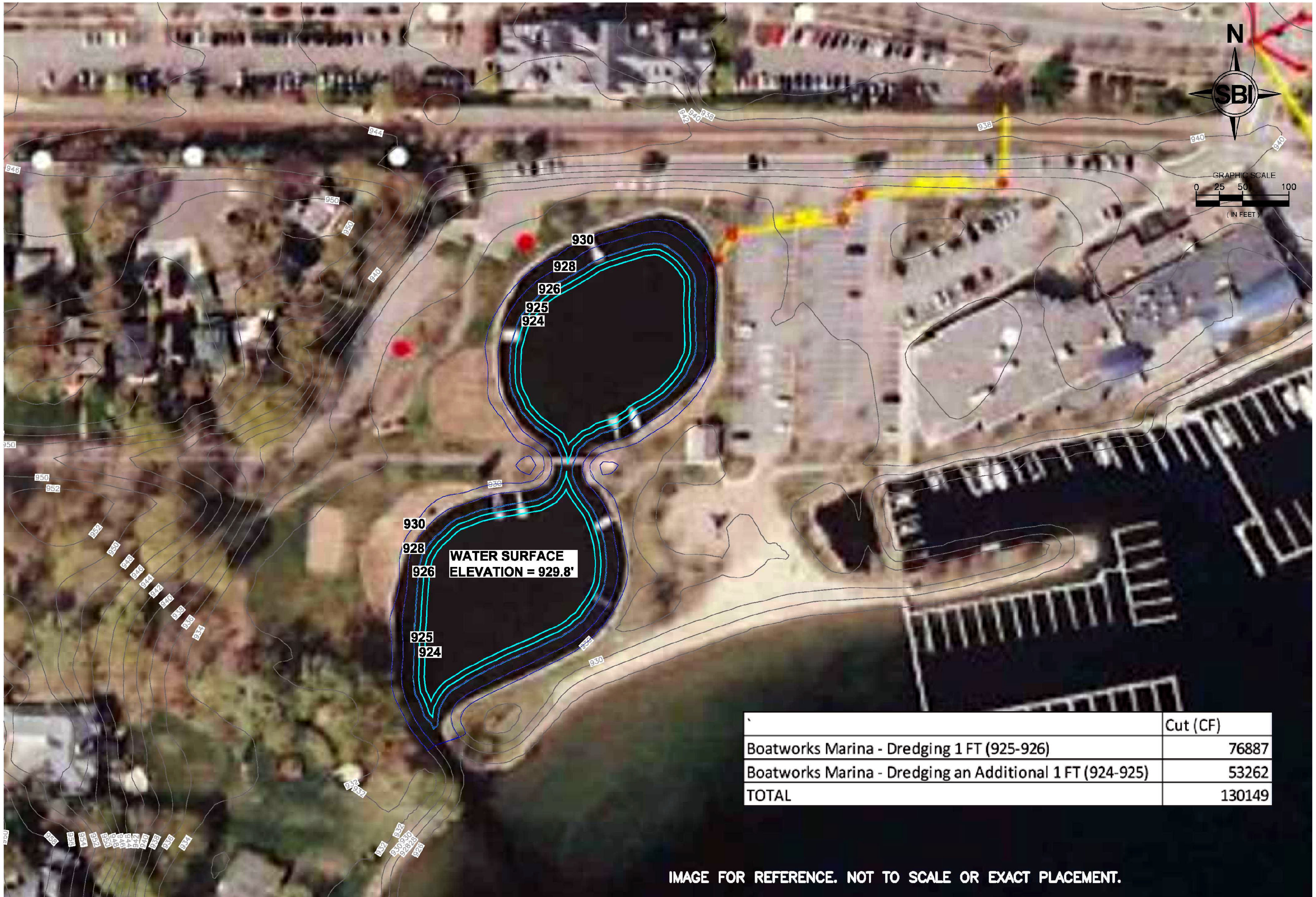

`	Cut (CF)
Boatworks Marina - Dredging 1 FT (925-926)	76887
Boatworks Marina - Dredging an Additional 1 FT (924-925)	53262
TOTAL	130149

REVISIONS BY

I HEREBY CERTIFY THAT THIS PLAN OR SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED CIVIL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

CIVIL ENGINEER

DATE: ______ REG. NO. ______

Solution Blue water matters®

BOATWORKS

WAYZATA LAKE EFFECT

CIVITAS

WAYZATA, MN

DRAWN BY

CHECKED BY

DATE

JOB NO.

SHEET

EX-1

BRAUN INTERTEC

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Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

BOATWORKS MARINA
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No: B1607634

Drawing No. B1607634_FigD3

Drawn By: CMF

Date Drawn: 01/20/2017

Checked By: JBW

Last Modified: 2/9/17

Sheet: 1 of 1

Fig. D-3

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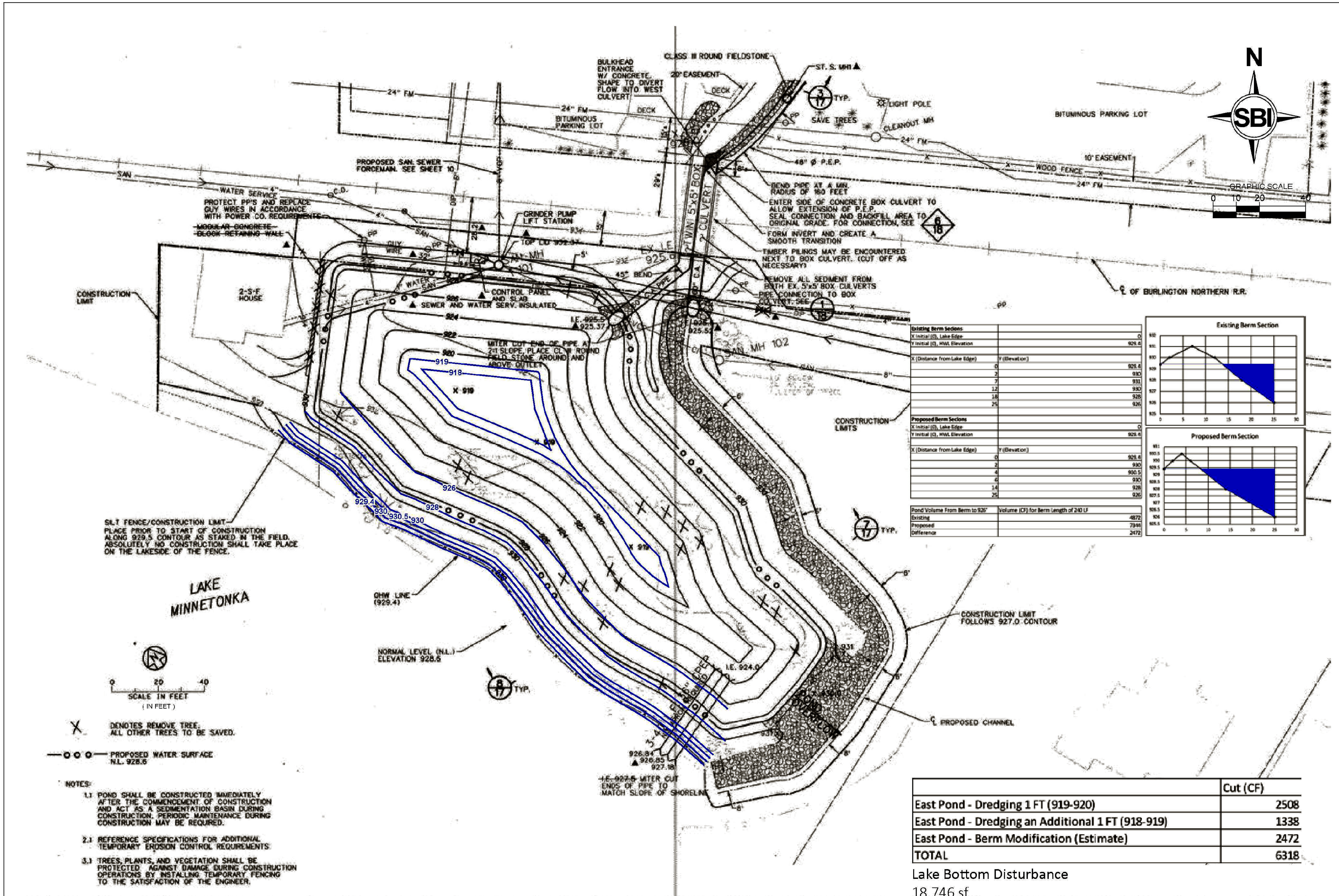

NOTES:

1.) POND SHALL BE CONSTRUCTED IMMEDIATELY AFTER THE COMMENCEMENT OF CONSTRUCTION AND ACT AS A SEDIMENTATION BASIN DURING CONSTRUCTION. PERIODIC MAINTENANCE DURING CONSTRUCTION MAY BE REQUIRED.

2.) REFERENCE SPECIFICATIONS FOR ADDITIONAL TEMPORARY EROSION CONTROL REQUIREMENTS.

3.) TREES, PLANTS, AND VEGETATION SHALL BE PROTECTED AGAINST DAMAGE DURING CONSTRUCTION OPERATIONS BY INSTALLING TEMPORARY FENCING TO THE SATISFACTION OF THE ENGINEER.

Existing Berm Sections	
X Initial (0), Lake Edge	0
Y Initial (0), HWL Elevation	929.4
X (Distance from Lake Edge)	Y (Elevation)
0	929.4
2	930
7	931
12	930
18	928
25	926
Proposed Berm Sections	
X Initial (0), Lake Edge	0
Y Initial (0), HWL Elevation	929.4
X (Distance from Lake Edge)	Y (Elevation)
0	929.4
2	930
4	930.5
6	930
14	928
25	926

Pond Volume From Berm to 926'	Volume (CF) for Berm Length of 240 LF
Existing	4872
Proposed	7344
Difference	2472

	Cut (CF)
East Pond - Dredging 1 FT (919-920)	2508
East Pond - Dredging an Additional 1 FT (918-919)	1338
East Pond - Berm Modification (Estimate)	2472
TOTAL	6318

Lake Bottom Disturbance
18,746 sf

BRAUN INTERTEC
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

EAST POND
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

Project No:	B1607634
Drawing No.	B1607634_FigD4
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet: 1 of 1	Fig. D-4

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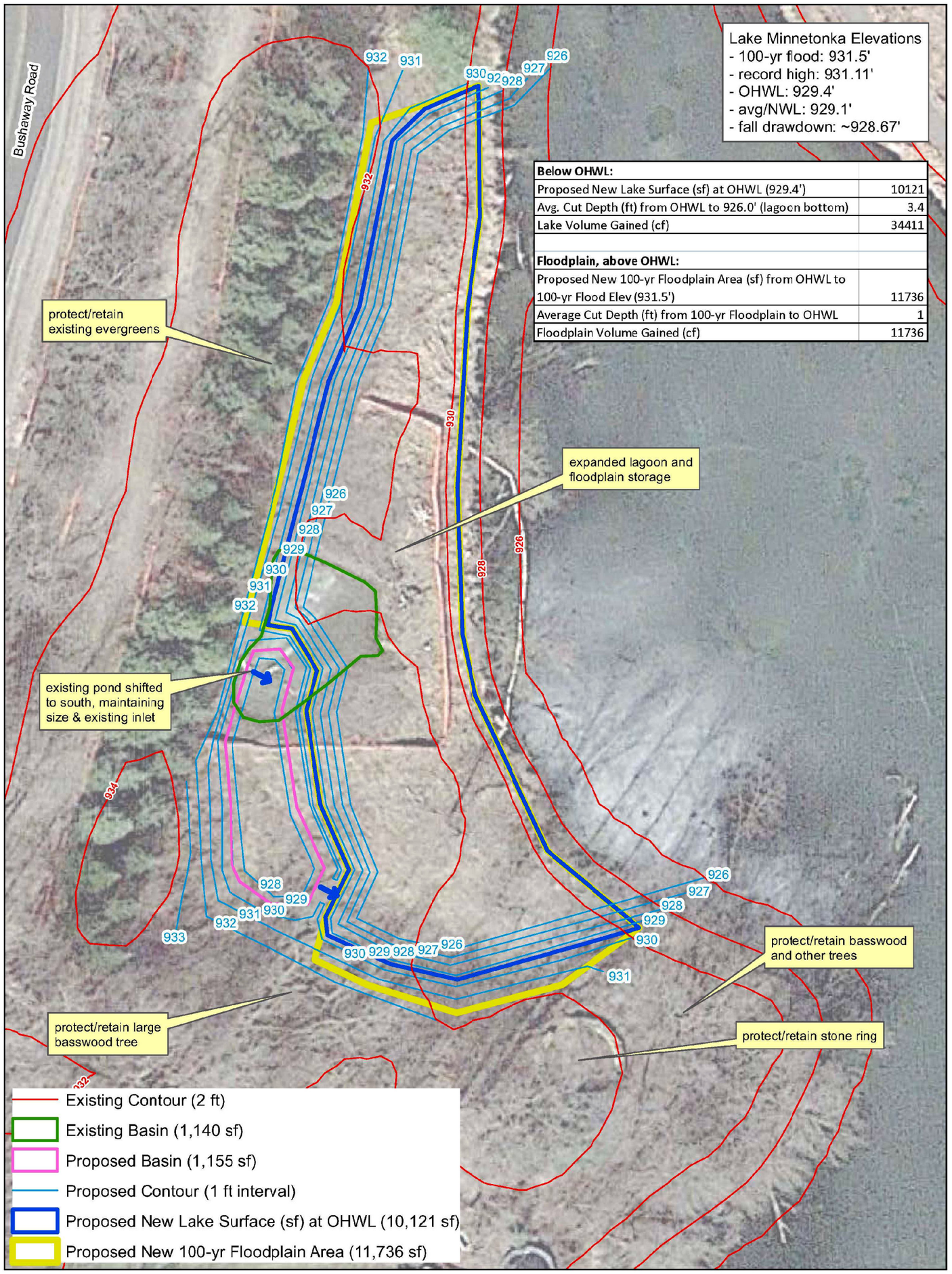


Below OHWL:	
Proposed New Lake Surface (sf) at OHWL (929.4')	10121
Avg. Cut Depth (ft) from OHWL to 926.0' (lagoon bottom)	3.4
Lake Volume Gained (cf)	34411
Floodplain, above OHWL:	
Proposed New 100-yr Floodplain Area (sf) from OHWL to 100-yr Flood Elev (931.5')	11736
Average Cut Depth (ft) from 100-yr Floodplain to OHWL	1
Floodplain Volume Gained (cf)	11736

Wayzata Lake Effect EAW

Bushaway Road Floodplain Mitigation Concept

Data Sources:
- MNDNR (Contours)
- GoogleEarth image (3/11/2016)

AES Project Number: 16-0549
Date: 11/17/16
File Name: Wayzata EAW_BushawayRd_2016-11-17

APPLIED ECOLOGICAL SERVICES

Applied Ecological Services, Inc.
21938 Mushtown Road
Prior Lake, MN 55372
952-447-1919
www.appliedeco.com

N

0 10 20 40 Feet

Sheet: 1 of 1 | Fig. D-5
Last Modified: 2/9/17 | Checked By: JBW
Date Drawn: 01/20/2017 | Drawn By: CMF
Drawing No.: B1607634_FigD5 | Project No: B1607634

BUSHAWAY ROAD MITIGATION
WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

BRAUN INTERTEC
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH: (952) 995-2000
FAX (952) 995-2020

Appendix E

FEMA Map

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0307F

FIRM

FLOOD INSURANCE RATE MAP

HENNEPIN COUNTY, MINNESOTA

(ALL JURISDICTIONS)

PANEL 307 OF 500

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MEDINA, CITY OF	270171	0307	F
MINNETONKA, CITY OF	270173	0307	F
ORONO, CITY OF	270178	0307	F
PLYMOUTH, CITY OF	270179	0307	F
WAYZATA, CITY OF	270188	0307	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
27053C0307F

MAP REVISED
NOVEMBER 4, 2016

Federal Emergency Management Agency

Appendix F

Well Logs

Minnesota Unique Well Number

242144

County Hennepin
Quad Excelsior
Quad ID 105A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 08/24/1991
Update Date 07/28/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
WAYZATA OLD	117	22	W	6	CABBDB

Elevation 938 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Contact 600 RICE ST WAYZATA MN 55391
Well WAYZATA MN 55391

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
CLAY	0	30		
SAND	30	55		
SANDY CLAY	55	62		
SAND	62	68		
SAND AND CLAY	68	90		
SAND AND GRAVEL	90	190		
CLAY	190	214		
CLAY	214	222		
CLAY	222	224		
SANDROCK (ST.	224	241		
LIMEROCK	241	370		
SANDROCK (JORDAN)	370	384		
SANDROCK (JORDAN)	384	450		
SANDROCK AND	450	465		
SANDROCK AND	465	469		
SANDROCK AND	469	475		
SANDROCK AND	475	510		
SANDY GREEN SHALE	510	513		
SANDY GREEN SHALE	513	660		
WHITE SANDROCK	660	662		
WHITE SANDROCK	662	708		
WHITE SANDROCK	708	715		
BROWN SHALE	715	735		
GREEN SHALE	735	780		
SANDY SHALE	780	796		
SANDY SHALE	796	840		
CLEAN COARSE WHITE	840	900		
PINK SANDROCK	900	972		
BASIC IGNEOUS ROCK	972	1001		

Remarks

GAMMA LOGGED 5-3-1996 AND 5-6-1996.
WELL BACK FILLED TO 725 FT. BULL. NO.27 P.160.
WELL SEALED 05-08-1996 BY 27058
ORIGINAL USE PC - COMMUNITY SUPPLY

Well Depth 1001 ft. **Depth Completed** 1001 ft. **Date Well Completed** 07/13/1929

Drill Method Cable Tool **Drill Fluid**

Use community supply(municipal) **Status** Sealed

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

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

Casing Diameter	Weight	Hole Diameter
16 in. To 245 ft.	lbs./ft.	16 in. To 443 ft.
		10 in. To 962 ft.
		8 in. To 100 ft.

Open Hole From 245 ft. To 1001 ft.

Screen? ☐ **Type** **Make**

Static Water Level
170 ft. land surface Measure 07/13/1929

Pumping Level (below land surface)

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

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

Nearest Known Source of Contamination
feet Direction Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

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

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

Miscellaneous
First Bedrock St.Peter Sandstone Aquifer Multiple
Last Strat Mid. Proterozoic rocks Depth to Bedrock 224 ft
Located by Minnesota Geological Survey
Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table)
System UTM - Mad83, Zone 15, Meters X 459268 Y 4979794
Unique Number Verification Information from Inpute Date 01/01/1990

Angled Drill Hole

Well Contractor
Mccarthy Well Co. 27022
Licensee Business Lic. or Reg. No. Name of Driller

Minnesota Unique Well Number

249098

County Hennepin
Quad Hopkins
Quad ID 104B

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 10/26/2006
Update Date 07/29/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
LOCUST HILL	117	22	W	8	BACDDC

Elevation 955 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W 500 BUSHAWAY RD WAYZATA MN 55391

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	110		
GLENWOOD SHALE	110	116		
ST. PETER	116	225		
ST. PETER	225	278		
PRAIRIE DU CHIEN	278	411		
JORDAN SANDSTONE	411	486		

Remarks

CALIPER, MULTI TOOL, & GAMMA LOGGED 10-26-2006. LOGGED FOR MDH.

Well Depth 486 ft. **Depth Completed** 486 ft. **Date Well Completed**

Drill Method Cable Tool **Drill Fluid**

Use domestic **Status** Inactive

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

Casing Type Single casing **Joint**

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

Casing Diameter	Weight	Hole Diameter
8 in. To 245 ft.	lbs./ft.	8 in. To 486 ft.

Open Hole From 245 ft. To 486 ft.

Screen? ☐ **Type** **Make**

Static Water Level

115 ft. land surface Measure 10/26/2006

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

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

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

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

Variance

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

Miscellaneous

First Bedrock Glenwood Formation Aquifer St.Peter-Jordan

Last Strat Jordan Sandstone Depth to Bedrock 110 ft

Located by Minnesota Geological Survey

Locate Method Digitization (Screen) - Map (1:24,000)

System UTM - Mad83, Zone 15, Meters X 460966 Y 4978644

Unique Number Verification Information from Inpute Date

Angled Drill Hole

Well Contractor

Minnesota Geological Survey MGS

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

Minnesota Unique Well Number

251285

County Hennepin
Quad Excelsior
Quad ID 105A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 04/30/1997
Update Date 07/29/2015
Received Date

Well Name	Township	Range	Dir	Section	Subsection
	117	22	W	8	CBBABC

Elevation 965 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

C/W 655 BUSHAWAY RD WAYZATA MN

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
GLACIAL DRIFT	0	134		
ST. PETER	134	287		
PRAIRIE DU CHIEN	287	318		

Remarks

GAMMA LOGGED 4-28-1997.

Well Depth 318 ft. **Depth Completed** 318 ft. **Date Well Completed**

Drill Method **Drill Fluid**

Use domestic **Status** Unknow

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

Casing Type Single casing **Joint**

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

Casing Diameter		Weight
6	in. To 308 ft.	lbs./ft.

Open Hole From 308 ft. To 318 ft.

Screen? ☐ **Type** **Make**

Static Water Level

46 ft. land surface Measure 04/28/1997

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

☐ Casing Protection ☐ 12 in. above grade

☐ At-grade (Environmental Wells and Borings ONLY)

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

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP 0 Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

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

Variance

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

Miscellaneous

First Bedrock St.Peter Sandstone Aquifer Prairie Du Chien

Last Strat Prairie Du Chien Group Depth to Bedrock 134 ft

Located by Minnesota Geological Survey

Locate Method Digitization (Screen) - Map (1:24,000)

System UTM - Mad83, Zone 15, Meters X 460538 Y 4978186

Unique Number Verification Information from Inpute Date 06/02/2000

Angled Drill Hole

Well Contractor

Minnesota Geological Survey MGS

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

Minnesota Unique Well Number

793702

County Hennepin
Quad Excelsior
Quad ID 105A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 12/17/2012
Update Date 07/27/2015
Received Date 11/09/2012

Well Name	Township	Range	Dir	Section	Subsection
SENIOR	117	22	W	6	DBDABB

Elevation 935 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 831 LAKE ST E WAYZATA MN 55391

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SILTY CLAY	0	10	GRAY	SOFT
SAND & GRAVEL	10	30	BROWN	MEDIUM
HARDPAN	30	40	GRAY	MEDIUM
SAND & GRAVEL	40	60	BROWN	MEDIUM

Remarks

STATIC WATER LEVEL MEASURED FROM PIT FLOOR.

Well Depth 60 ft. **Depth Completed** 60 ft. **Date Well Completed** 08/28/2012

Drill Method Auger (non-specified) **Drill Fluid**

Use elevator **Status** Active

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

Casing Type Step down **Joint** Welded

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

Casing Diameter	Weight	Hole Diameter
18 in. To 60 ft.	70.5 lbs./ft.	24 in. To 60 ft.
24 in. To 57 ft.	63.4 lbs./ft.	

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

2 ft. land surface Measure 08/28/2012

Pumping Level (below land surface)

Wellhead Completion

Pitless adapter manufacturer Model

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

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

Material	Amount	From	To
neat cement	3 Cubic yards	ft.	60 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

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

Variance

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

Miscellaneous

First Bedrock Aquifer

Last Strat sand +larger-brown Depth to Bedrock ft

Located by Minnesota Department of Health

Locate Method GPS SA Off (averaged)

System UTM - Mad83, Zone 15, Meters X 459928 Y 4979632

Unique Number Verification Info/GPS from data Inpute Date 02/12/2014

Angled Drill Hole

Well Contractor

United Drilling, Inc. 1832 LANGSDORF, A.

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

Minnesota Unique Well Number

793731

County Hennepin
Quad Excelsior
Quad ID 105A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/31/2014
Update Date 07/27/2015
Received Date 02/24/2014

Well Name	Township	Range	Dir	Section	Subsection
BORKLAND	117	22	W	6	DACABB

Elevation 936 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 875 LAKE ST E WAYZATA MN 55391

Stratigraphy Information

Geological Material	From	To (ft.)	Color	Hardness
SANDY LOAM	0	30	GRAY	SOFT
SAND & GRAVEL	30	35	RED	MEDIUM
CLAY & ROCK	35	60	GRAY	MEDIUM
SAND & GRAVEL	60	70	BROWN	MEDIUM

Remarks

Well Depth 70 ft. **Depth Completed** 60 ft. **Date Well Completed** 02/06/2014

Drill Method Multiple methods used **Drill Fluid**

Use elevator **Status** Active

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

Casing Type Step down **Joint** Welded

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

Casing Diameter	Weight	Hole Diameter
18 in. To 58 ft.	lbs./ft.	18 in. To 60 ft.
24 in. To 60 ft.	lbs./ft.	24 in. To 70 ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

ft. hrs. Pumping at g.p.m.

Wellhead Completion

Pitless adapter manufacturer Model

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

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

Material	Amount	From	To
neat cement	4.2 Cubic yards	ft.	70 ft.

Nearest Known Source of Contamination

feet Direction Type

Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed

Manufacturer's name

Model Number HP Volt

Length of drop pipe ft Capacity g.p. Typ

Abandoned

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

Variance

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

Miscellaneous

First Bedrock Aquifer

Last Strat sand +larger-brown Depth to Bedrock ft

Located by Minnesota Department of Health

Locate Method GPS SA Off (averaged)

System UTM - Mad83, Zone 15, Meters X 460120 Y 4979622

Unique Number Verification Info/GPS from data Inpute Date 02/03/2014

Angled Drill Hole

Well Contractor

United Drilling, Inc. 1832 LANGSDORFA
Licensee Business Lic. or Reg. No. Name of Driller

Appendix G

Aquatic Environment Characterization

Appendix G. Wayzata Lake Effect Aquatic Environment Characterization

Distance from Shoreline (ft)	Transect Location																	
	Swimming Beach (west dock)			Depot Dock			Walker Ave. S			Broadway Ave. S			Ecopark (west side)			Ecopark (east side)		
	Depth (ft)	Cover	%	Depth (ft)	Cover	%	Depth (ft)	Cover	%	Depth (ft)	Cover	%	Depth (ft)	Cover	%	Depth (ft)	Cover	%
1	0.1	Sand	100	0.2	Boulder/sand Algae/detritus	95 <5	0.4	Boulder Algae/detritus	80 20	0.2	Boulder/sand Algae/detritus	95 <5	0.1	Sand/gravel Algae/detritus	95 5	0.2	Boulder Algae/detritus	95 <5
25	2.6	Sand EW WC Algae/detritus	90 <3 <3 <3	-	-	-	8.4	EW WC	60 <5	2.8	Sand/gravel Algae/detritus EW Boulder	83 15 <1 <1	-	-	-	-	-	-
50	3.3	Sand WC Algae/detritus	90 <5 <5	7.3	Sand WC EW P	70 15 <10 <5	-	-	-	4.4	Sand/gravel P WC EW Algae/detritus	55 35 10 <5 <1	3.5	Sand EW P WW Algae/detritus	50 40 <10 <1 <1	2.2	Sand	100
75	4.2	Sand WC Algae/detritus	80 <5 15	8.7	Sand EW P WC Algae/detritus	30 30 35 <5 1	-	-	-	6.0	EW P Sand/gravel WC Algae/detritus	35 30 30 5 <1	-	-	-	-	-	-
100	4.7	Sand WC Algae/detritus	60 20 20	10	EW WC	>95 1	-	-	-	7.5	EW Sand/gravel WC P Algae/detritus	60 30 5 <5 <3	4.8	EW Sand	70 30	3.4	Sand/silt	100
150	-	-	-	-	-	-	-	-	-	-	-	-	5.3	EW Sand P	90 10 <1	4.4	Sand	100
200	-	-	-	-	-	-	-	-	-	-	-	-	5.5	EW Sand WC C Algae/detritus	80 20 <1 <1 <1	4.8	Sand	100
250	-	-	-	-	-	-	-	-	-	-	-	-	5.5	EW Sand Algae/detritus	80 20 <1	5.3	Sand	100
300	-	-	-	-	-	-	-	-	-	-	-	-	6.0	EW Sand WC Algae/detritus	80 20 <1 <1	5.5	Sand	100

Note: Turbidity inhibited observations deep into water column.
- = not assessed
EW = Eurasian watermilfoil (*Myriophyllum spicatum*); invasive species
WC = wild celery (*Vallisneria americana*)
P = pondweeds (*Potamogeton* spp); multiple species observed, but not invasive *P. crispus*
C = coontail (*Ceratophyllum demersum*)
WW = white waterlily (*Nymphaea odorata*)

Appendix H

NHIS Response

Minnesota Department of Natural Resources

Division of Ecological and Water Resources, Box 25

500 Lafayette Road

St. Paul, Minnesota 55155-4025

Phone: (651) 259-5091 E-mail: samantha.bump@state.mn.us

December 7, 2016 **Correspondence # ERDB 20170194**

Ms. Jennifer Wolff
Braun Intertec Corportation
11001 Hampshire Avenue South
Minneapolis, MN 55438

RE: Natural Heritage Review of the proposed Wayzata Lake Effect Park,
T117N R22W Sections 6 & 8; Hennepin County

Dear Ms. Wolff,

As requested, the Minnesota Natural Heritage Information System has been queried to determine if any rare species or other significant natural features are known to occur within an approximate one-mile radius of the proposed project. Based on this query, rare features have been documented within the search area (for details, please visit the Rare Species Guide at http://www.dnr.state.mn.us/rsg/index.html for more information on the biology, habitat use, and conservation measures of these rare species). Please note that the following **rare features *may* be adversely affected** by the proposed project:

- The pugnose shiner (*Notropis anogenus*), a state-listed threatened fish species, has been documented in Lake Minnetonka. Pugnose shiners prefer clear, glacial lakes and streams with an abundance of submerged vegetation such as eelgrass, elodea, pondweed, and muskgrass. This species is vulnerable to the removal of aquatic vegetation from lakes, increases in eutrophication from nutrient enrichment, and increases in water turbidity or siltation that can be caused from pollution, pesticides, and runoff. Actions to minimize impacts include, but are not limited to, the following recommendations:

  - minimize the use of pesticides and fertilizers,
  - maintain or restore lakeshore vegetation,
  - avoid removal of native aquatic vegetation,
  - require stringent erosion and sediment control practices during construction, and
  - incorporate erosion and sediment control practices into any stormwater management plan.
  - To protect spawning fish, work within the water should be avoided from March through May.

- Blanding's turtles (*Emydoidea blandingii*), a state-listed threatened species, have been reported in the vicinity of the proposed project and may be encountered on site. For your information, I have attached a Blanding's turtle fact sheet that describes the habitat use and life history of this species. The fact sheet also provides two lists of recommendations for

avoiding and minimizing impacts to this rare turtle. Please refer to the first list of recommendations for your project. In addition, if erosion control mesh will be used, the DNR recommends that the mesh be limited to wildlife-friendly materials (see enclosed fact sheet). If greater protection for turtles is desired, the second list of additional recommendations can also be implemented.

The attached flyer should be given to all contractors working in the area. If Blanding's turtles are found on the site, please remember that state law and rules prohibit the destruction of threatened or endangered species, except under certain prescribed conditions. If turtles are in imminent danger they should be moved by hand out of harm's way, otherwise they should be left undisturbed.

- The Environmental Assessment Worksheet should address whether the proposed project has the potential to adversely affect the above rare features and, if so, it should identify specific measures that will be taken to avoid or minimize disturbance. Sufficient information should be provided so the DNR can determine whether a takings permit will be needed for any of the above protected species.

- Please include a copy of this letter in any state or local license or permit application. **Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.**

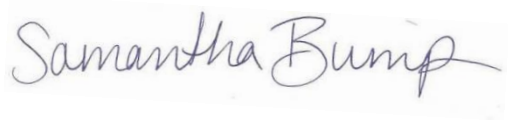
The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available,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

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location (noted above) and the project description provided on the NHIS Data Request Form. Please contact me if project details change or for an updated review if construction has not occurred within one year.

The Natural Heritage Review does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. To determine whether there are other natural resource concerns associated with the proposed project, please contact your DNR Regional Environmental Assessment Ecologist (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,



Samantha Bump
Natural Heritage Review Specialist

Enc. Blanding's Turtle Fact Sheet & Flyer
Wildlife Friendly Erosion Control

Cc: Becky Horton
Leslie Parris

Preventing Entanglement by Erosion Control Blanket

Plastic mesh netting is a common component in erosion control blanket. It is utilized to hold loose fibrous materials in place (EG straw) until vegetation is established. Erosion control blanket is being utilized extensively and is effective for reducing soil erosion, benefitting both soil health and water quality. Unfortunately there is a negative aspect of the plastic mesh component: It is increasingly being documented that its interaction with reptiles and amphibians can be fatal (Barton and Kinkead, 2005; Kapfer and Paloski, 2011). Mowing machinery is also susceptible to damage due to the long lasting plastic mesh.

Potential Problems:

- Plastic netting remains a hazard long after other components have decomposed.
- Plastic mesh netting can result in entanglement and death of a variety of small animals. The most vulnerable group of animals are the reptiles and amphibians (snakes, frogs, toads, salamanders, turtles). Ducklings, small mammals, and fish have also been observed entangled in the netting.
- Road maintenance machinery can snag the plastic mesh and pull up long lengths into machinery, thus binding up machinery and causing damage and/or loss of time cleaning it out.

Suggested Alternatives:

- Do not use in known locations of reptiles or amphibians that are listed as Threatened or Endangered species.
- Limit use of blanket containing welded plastic mesh to areas away from where reptiles or amphibians are likely (near wetlands, lakes, watercourses, or rock outcrops) or habitat transition zones (prairie – woodland edges, rocky outcrop – woodland edges, steep rocky slopes, etc.)
- Select products with biodegradable netting (preferably made from natural fibers, though varieties of biodegradable polyesters also exist on the market). Biodegradable products will degrade under a variety of moisture and light conditions.
- DO NOT use products that require UV-light to degrade (also called “photodegradable”) as they do not degrade properly when shaded by vegetation.

Solution: Most categories of erosion control blanket and sediment control logs are available in natural net options.

- Specify ‘Natural Netting’ for rolled erosion control products, per MnDOT Spec 3885. See Table 3885-1.
- Specify ‘Natural Netting’ for sediment control logs, per MnDOT Spec 3897

The plastic mesh component of erosion control blanket becomes a net for entrapment.

Literature Referenced

Barton, C. and K. Kinkead. 2005. Do erosion control and snakes mesh? Soil and Water Conservation Society 60:33A-35A.
Kapfer, J.M., and R.A. Paloski. 2011. On the threat to snakes of mesh deployed for erosion control and wildlife exclusion. Herpetological Conservation and Biology 6:1-9.

Environmental Review Fact Sheet Series

Endangered, Threatened, and Special Concern Species of Minnesota

Blanding's Turtle

(*Emydoidea blandingii*)

Minnesota Status:	Threatened	State Rank[1]:	S2
Federal Status:	none	Global Rank[1]:	G4

HABITAT USE

Blanding's turtles need both wetland and upland habitats to complete their life cycle. The types of wetlands used include ponds, marshes, shrub swamps, bogs, and ditches and streams with slow-moving water. In Minnesota, Blanding's turtles are primarily marsh and pond inhabitants. Calm, shallow water bodies (Type 1-3 wetlands) with mud bottoms and abundant aquatic vegetation (e.g., cattails, water lilies) are preferred, and extensive marshes bordering rivers provide excellent habitat. Small temporary wetlands (those that dry up in the late summer or fall) are frequently used in spring and summer -- these fishless pools are amphibian and invertebrate breeding habitat, which provides an important food source for Blanding's turtles. Also, the warmer water of these shallower areas probably aids in the development of eggs within the female turtle. Nesting occurs in open (grassy or brushy) sandy uplands, often some distance from water bodies. Frequently, nesting occurs in traditional nesting grounds on undeveloped land. Blanding's turtles have also been known to nest successfully on residential property (especially in low density housing situations), and to utilize disturbed areas such as farm fields, gardens, under power lines, and road shoulders (especially of dirt roads). Although Blanding's turtles may travel through woodlots during their seasonal movements, shady areas (including forests and lawns with shade trees) are not used for nesting. Wetlands with deeper water are needed in times of drought, and during the winter. Blanding's turtles overwinter in the muddy bottoms of deeper marshes and ponds, or other water bodies where they are protected from freezing.

LIFE HISTORY

Individuals emerge from overwintering and begin basking in late March or early April on warm, sunny days. The increase in body temperature which occurs during basking is necessary for egg development within the female turtle. Nesting in Minnesota typically occurs during June, and females are most active in late afternoon and at dusk. Nesting can occur as much as a mile from wetlands. The nest is dug by the female in an open sandy area and 6-15 eggs are laid. The female turtle returns to the marsh within 24 hours of laying eggs. After a development period of approximately two months, hatchlings leave the nest from mid-August through early-October. Nesting females and hatchlings are often at risk of being killed while crossing roads between wetlands and nesting areas. In addition to movements associated with nesting, all ages and both sexes move between wetlands from April through November. These movements peak in June and July and again in September and October as turtles move to and from overwintering sites. In late autumn (typically November), Blanding's turtles bury themselves in the substrate (the mud at the bottom) of deeper wetlands to overwinter.

IMPACTS / THREATS / CAUSES OF DECLINE

- loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- loss of upland habitat through development or conversion to agriculture
- human disturbance, including collection for the pet trade* and road kills during seasonal movements
- increase in predator populations (skunks, raccoons, etc.) which prey on nests and young

*It is illegal to possess this threatened species.

RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS

These recommendations apply to typical construction projects and general land use within Blanding's turtle habitat, and are provided to help local governments, developers, contractors, and homeowners minimize or avoid detrimental impacts to Blanding's turtle populations. **List 1** describes minimum measures which we recommend to prevent harm to Blanding's turtles during construction or other work within Blanding's turtle habitat. **List 2** contains recommendations which offer even greater protection for Blanding's turtles populations; this list should be used *in addition to the first list* in areas which are known to be of state-wide importance to Blanding's turtles (contact the DNR's Natural Heritage and Nongame Research Program if you wish to determine if your project or home is in one of these areas), or in any other area where greater protection for Blanding's turtles is desired.

List 1. Recommendations for all areas inhabited by Blanding's turtles.	**List 2. *Additional* recommendations for areas known to be of state-wide importance to Blanding's turtles.**
GENERAL	
A flyer with an illustration of a Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.	Turtle crossing signs can be installed adjacent to road-crossing areas used by Blanding's turtles to increase public awareness and reduce road kills.
Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed.	Workers in the area should be aware that Blanding's turtles nest in June, generally after 4pm, and should be advised to minimize disturbance if turtles are seen.
If a Blanding's turtle nests in your yard, do not disturb the nest.	If you would like to provide more protection for a Blanding's turtle nest on your property, see "Protecting Blanding's Turtle Nests" on page 3 of this fact sheet.
Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.	Construction in potential nesting areas should be limited to the period between September 15 and June 1 (this is the time when activity of adults and hatchlings in upland areas is at a minimum).
WETLANDS	
Small, vegetated temporary wetlands (Types 2 & 3) should not be dredged, deepened, filled, or converted to storm water retention basins (these wetlands provide important habitat during spring and summer).	Shallow portions of wetlands should not be disturbed during prime basking time (mid morning to mid- afternoon in May and June). A wide buffer should be left along the shore to minimize human activity near wetlands (basking Blanding's turtles are more easily disturbed than other turtle species).
Wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.	Wetlands should be protected from road, lawn, and other chemical run-off by a vegetated buffer strip at least 50' wide. This area should be left unmowed and in a natural condition.
ROADS	
Roads should be kept to minimum standards on widths and lanes (this reduces road kills by slowing traffic and reducing the distance turtles need to cross).	Tunnels should be considered in areas with concentrations of turtle crossings (more than 10 turtles per year per 100 meters of road), and in areas of lower density if the level of road use would make a safe crossing impossible for turtles. Contact your DNR Regional Nongame Specialist for further information on wildlife tunnels.
Roads should be ditched, not curbed or below grade. If curbs must be used, 4 inch high curbs at a 3:1 slope are preferred (Blanding's turtles have great difficulty climbing traditional curbs; curbs and below grade roads trap turtles on the road and can cause road kills).	Roads should be ditched, not curbed or below grade.

ROADS cont.	
Culverts between wetland areas, or between wetland areas and nesting areas, should be 36 inches or greater in diameter, and elliptical or flat-bottomed.	Road placement should avoid separating wetlands from adjacent upland nesting sites, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details).
Wetland crossings should be bridged, or include raised roadways with culverts which are 36 in or greater in diameter and flat-bottomed or elliptical (raised roadways discourage turtles from leaving the wetland to bask on roads).	Road placement should avoid bisecting wetlands, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details). This is especially important for roads with more than 2 lanes.
Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.	Roads crossing streams should be bridged.
UTILITIES	
Utility access and maintenance roads should be kept to a minimum (this reduces road-kill potential).	
Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.	
LANDSCAPING AND VEGETATION MANAGEMENT	
Terrain should be left with as much natural contour as possible.	As much natural landscape as possible should be preserved (installation of sod or wood chips, paving, and planting of trees within nesting habitat can make that habitat unusable to nesting Blanding's turtles).
Graded areas should be revegetated with native grasses and forbs (some non-natives form dense patches through which it is difficult for turtles to travel).	Open space should include some areas at higher elevations for nesting. These areas should be retained in native vegetation, and should be connected to wetlands by a wide corridor of native vegetation.
Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).	Ditches and utility access roads should not be mowed or managed through use of chemicals. If vegetation management is required, it should be done mechanically, as infrequently as possible, and fall through spring (mowing can kill turtles present during mowing, and makes it easier for predators to locate turtles crossing roads).

Protecting Blanding's Turtle Nests: Most predation on turtle nests occurs within 48 hours after the eggs are laid. After this time, the scent is gone from the nest and it is more difficult for predators to locate the nest. Nests more than a week old probably do not need additional protection, unless they are in a particularly vulnerable spot, such as a yard where pets may disturb the nest. Turtle nests can be protected from predators and other disturbance by covering them with a piece of wire fencing (such as chicken wire), secured to the ground with stakes or rocks. The piece of fencing should measure at least 2 ft. x 2 ft., and should be of medium sized mesh (openings should be about 2 in. x 2 in.). It is ***very important*** that the fencing be **removed <u>before August 1st</u>** so the young turtles can escape from the nest when they hatch!

REFERENCES

[1]Association for Biodiversity Information. "Heritage Status: Global, National, and Subnational Conservation Status Ranks." NatureServe. Version 1.3 (9 April 2001). http://www.natureserve.org/ranking.htm (15 April 2001).

Coffin, B., and L. Pfannmuller. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press, Minneapolis, 473 pp.

REFERENCES (cont.)

Moriarty, J. J., and M. Linck. 1994. Suggested guidelines for projects occurring in Blanding's turtle habitat. Unpublished report to the Minnesota DNR. 8 pp.

Oldfield, B., and J. J. Moriarty. 1994. Amphibians and Reptiles Native to Minnesota. University of Minnesota Press, Minneapolis, 237 pp.

Sajwaj, T. D., and J. W. Lang. 2000. Thermal ecology of Blanding's turtle in central Minnesota. Chelonian Conservation and Biology 3(4):626-636.

CAUTION

BLANDING'S TURTLES

MAY BE ENCOUNTERED IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are state-listed as Threatened and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2641); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-206-2820); or St. Paul (651-259-5772).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

BLANDING'S TURTLES DO NOT MAKE GOOD PETS
IT IS ILLEGAL TO KEEP THIS THREATENED SPECIES IN CAPTIVITY

SUMMARY OF RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS TO BLANDING'S TURTLE POPULATIONS

(see Blanding's Turtle Fact Sheet for full recommendations)

- This flyer should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles that are in imminent danger should be moved, by hand, out of harm's way. Turtles that are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest and do not allow pets near the nest.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).

Compiled by the Minnesota Department of Natural Resources Division of Ecological and Water Resources, Updated August 2012
Endangered Species Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-259-5109

Appendix I

USFWS IPaC Trust Resources Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Twin Cities Ecological Services Field Office
4101 AMERICAN BLVD E, -
BLOOMINGTON, MN 55425
PHONE: (952)252-0092 FAX: (612)725-3609
URL: www.fws.gov/midwest/Endangered/section7/s7process/step1.html

Consultation Code: 03E19000-2017-SLI-0029 November 12, 2016
Event Code: 03E19000-2017-E-00028
Project Name: Wayzata Lake Effect

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

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the action area the area that is likely to be affected by your proposed project. The list also includes designated and proposed critical habitat that overlaps with the action area. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representatives) must consult with the Service if they determine their project may affect listed species or critical habitat.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website http://ecos.fws.gov/ipac/ at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website at - http://www.fws.gov/midwest/endangered/section7/s7process/index.html. This website contains step-by-step instructions that will help you determine if your project will have an adverse effect on listed species and will help lead you through the Section 7 process.

For all **wind energy projects** and **projects that include installing towers that use guy wires or are over 200 feet in height**, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within the action area.

Although no longer protected under the Endangered Species Act, be aware that bald eagles (*Haliaeetus leucocephalus*) are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*) and Migratory Bird Treaty Act *(*16 U.S.C. 703 *et seq*), as are golden eagles (*Aquila chrysaetos*). Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near a bald eagle nest or winter roost area, see our Eagle Permits website at http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html. The information available at this website will help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Wayzata Lake Effect

Official Species List

Provided by:

Twin Cities Ecological Services Field Office
4101 AMERICAN BLVD E
BLOOMINGTON, MN 55425
(952) 252-0092
http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

Consultation Code: 03E19000-2017-SLI-0029
Event Code: 03E19000-2017-E-00028

Project Type: ** OTHER **

Project Name: Wayzata Lake Effect
Project Description: Upgrades to Lake Street, additional railroad crossing, create boardwalk along river, create ecopark

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:

Project Coordinates: MULTIPOLYGON (((-93.51726073495229 44.96986271714896, -93.51979769213358 44.97000167998613, -93.52108515246073 44.968950691309765, -93.52032588038128 44.96796975166434, -93.51933552708942 44.968670424286714, -93.51879743378957 44.96800361734016, -93.51847721889499 44.96804682584938, -93.5188007367833 44.96875800822598, -93.51818011316936 44.9690441136553, -93.51553916931152 44.96955793151949, -93.51012523256941 44.96787632756894, -93.51088450464886 44.967315781654236, -93.51058739761356 44.96677858745126, -93.50893680966692 44.96722235742029, -93.50817753758747 44.96780626009246, -93.50847464462277 44.968600357780275, -93.5173218062846 44.97049213453086, -93.51726073495229 44.96986271714896)))

Project Counties: Hennepin, MN

Endangered Species Act Species List

There are a total of 4 threatened or endangered species on your 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. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Clams	**Status**	**Has Critical Habitat**	**Condition(s)**
Higgins eye *(Lampsilis higginsii)* Population: Wherever found	Endangered		
Snuffbox mussel *(Epioblasma triquetra)* Population: Wherever found	Endangered		
Insects			
rusty patched bumble bee *(Bombus affinis)* Population: Wherever found	Proposed Endangered		
Mammals			
Northern long-eared Bat *(Myotis septentrionalis)* Population: Wherever found	Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Appendix A: FWS Migratory Birds

The protection of birds is regulated by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). The MBTA has no otherwise lawful activities. For more information regarding these Acts see:
http://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php
http://www.fws.gov/birds/policies-and-regulations/laws-legislations/bald-and-golden-eagle-protection-act.php

All project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. To meet these conservation obligations, proponents should identify potential or existing project-related impacts to migratory birds and their habitat and develop and implement conservation measures that avoid, minimize, or compensate for these impacts. The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

For information about Birds of Conservation Concern, go to:
http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

For information about conservation measures that help avoid or minimize impacts to birds, please visit:
http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php

To search and view summaries of year-round bird occurrence data within your project area, go to the Avian Knowledge Network Histogram Tools at:
http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/akn-histogram-tools.php

Migratory birds that may be affected by your project:

There are 21 birds on your migratory bird list. The list may include birds occurring outside this FWS office jurisdiction.

Species Name	Bird of Conservation Concern (BCC)	Seasonal Occurrence in Project Area
American bittern *(Botaurus lentiginosus)*	Yes	Breeding
Bald eagle *(Haliaeetus leucocephalus)*	Yes	Year-round
Black tern *(Chlidonias niger)*	Yes	Breeding
Black-billed Cuckoo *(Coccyzus erythropthalmus)*	Yes	Breeding
Blue-winged Warbler *(Vermivora pinus)*	Yes	Breeding
Bobolink *(Dolichonyx oryzivorus)*	Yes	Breeding
Brown Thrasher *(Toxostoma rufum)*	Yes	Breeding
cerulean warbler *(Dendroica cerulea)*	Yes	Breeding
Dickcissel *(Spiza americana)*	Yes	Breeding
Least bittern *(Ixobrychus exilis hesperis)*	No	Breeding
Loggerhead Shrike *(Lanius ludovicianus)*	Yes	Breeding
Marsh wren *(Cistothorus palustris)*	Yes	Breeding
Peregrine Falcon *(Falco peregrinus)*	Yes	Breeding
Pied-billed Grebe *(Podilymbus podiceps)*	Yes	Breeding
Red-headed Woodpecker *(Melanerpes erythrocephalus)*	Yes	Breeding
Short-eared Owl *(Asio flammeus)*	Yes	Wintering

Swainson's hawk *(Buteo swainsoni)*	Yes	Breeding
Upland Sandpiper *(Bartramia longicauda)*	Yes	Breeding
Western grebe *(aechmophorus occidentalis)*	Yes	Breeding
Willow Flycatcher *(Empidonax traillii)*	Yes	Breeding
Wood Thrush *(Hylocichla mustelina)*	Yes	Breeding

Appendix J

MnDNR Best Practices for AIS

Best Practices for Preventing the Spread of Aquatic Invasive Species

All equipment[1] being transported on roads or placed in Waters of the State shall be free of prohibited and regulated invasive species and unlisted non-native species (any other species not native to Minnesota)

1. **Project plans or documents should identify Designated Infested Waters**[2] located in or near the project area.

2. **Prior to transportation along roads into or out of any worksite, or between water bodies within a project area, all equipment** must be free of any aquatic plants, water, and prohibited invasive species.
   A. **Drain** all water from equipment where water may be trapped, such as tanks, pumps, hoses, silt curtains, and water-retaining components of boats/barges (see Figures 5 & 6) **AND**
   B. **Remove** all visible aquatic remnants (plants, seeds and animals). Removal of mud & soil is not required at all sites, though is encouraged as a Best Practice. Removal of mud and soil may be required on sites designated as infested (see #4).

3. **Prior to placing equipment <u>into any waters</u>,** all equipment must be free of aquatic plants and non-native animals.

4. **Additional measures are required on *Designated Infested Waters* to remove and kill prohibited species such as zebra mussels, quagga mussels, New Zealand mudsnails, faucet snails, or spiny waterfleas.**
   Note: The DNR is available to train site inspectors and/or assist in these inspections. Contact the appropriate Regional Invasive Species Specialist: www.mndnr.gov/invasives/ais/contacts.html
   A. For day use equipment (in contact with the water for 24 hours or less); Perform #2 above or,
   B. For in-water exposure greater than 24 hours: Perform #2 above, and inspect all equipment for the prohibited invasive species present (see Figure 1).

   Then choose one of the following three: **on-site treatment**, **off-site treatment**, or **customized alternative**.

Figure 1. Invasive species may not be readily visible on equipment. Some species are less than 1/4 inch in size.
Photo credit: Brent Wilber, Lunda Construction

On-Site Treatment

Remove by handscraping or powerwashing (minimum 3000 psi) all accessible areas (Figures 1 and 2) **AND**
Kill Prohibited Aquatic Invasive Species in non-accessible areas using one or more of the following four techniques:

- **Hot Water (minimum 140°F) for ten seconds** (Figure 2) for zebra mussels, quagga mussels, New Zealand mudsnails, faucet snails **OR**
- **Air Dry** (Figures 3 & 4)
  Spiny waterfleas – air dry for a minimum of 2 days
  New Zealand mudsnails – air dry for a minimum of 7 days
  zebra or quagga mussels, faucet snails – air dry for a minimum of 21 days **OR**
- **Freezing Temperatures**
  zebra mussels - expose to continuous temperature below 32°F for 2 days **OR**
- **Crush**
  Crush rock, concrete, or other debris by running it through a crushing plant to kill prohibited species

Figure 2. Removal of aquatic remnants is required before transporting.
Photo credit: Peter Leete, DNR

Off-Site Treatment

Under certain conditions, the DNR will allow transportation of equipment off-site after partial removal of prohibited species (for example, after "removal" has been done and equipment will be taken to a facility to complete final treatment [i.e., "kill"]) This is a 'one-way pass' to allow transport to a storage area or disposal facility. This option can only be utilized if the receiving site is at least 300 feet from riparian areas, wetlands, ditches, stormwater inlets or treatment facilities, seasonally-flooded areas, or other waters of the state. To be allowed to use the off-site treatment option you must do the following:

- Read, complete, and comply with the appropriate authorization form for transportation of Prohibited Invasive Species at www.mndnr.gov/invasives/ais_transport.html (Note that a completed form is required to be in every vehicle that is transporting equipment containing infested species) **AND**
- Complete on-site treatment described in 4B above prior to re-use in or adjacent to water.

Best Practices for Preventing the Spread of Aquatic Invasive Species

Contact a DNR Invasive Species Specialist for authorization of a customized alternative

There may be situations due to time of year, length of exposure, type of equipment, or site conditions that a DNR Invasive Species Specialist could approve alternative methods or requirements for treatment. Contact the appropriate Regional Invasive Species Specialist: www.mndnr.gov/invasives/contacts.html

5. **Temporary appropriations of water from Designated Invested Waters to utilize elsewhere (such as for dust control, landscaping, bridge washing, etc.) is not allowed except by permit, thus should be avoided.**

   If use of Designated Infested Waters is unavoidable, permit information is located at www.mndnr.gov/waters/watermgmt_section/appropriations/permits.html

Figure 3. Drying will also kill aquatic organisms. Lay out materials to dry in the proper time. Drying times vary by species. Inspect after drying period is over.
Photo credit: Dwayne Stenlund, MnDOT

Figure 4. Drying techniques must not trap water. This equipment will not dry adequately.
Photo credit: Peter Leete, DNR

Figure 5. Pumping from designated infested waters for use elsewhere on the project is prohibited without a permit.
Photo credit: Peter Leete, DNR

Figure 6. Drain all water from equipment where water may be trapped. Remove drain plugs and drain hoses prior to transport.
Photo Credit: Peter Leete, DNR

Document Information

www.mndnr.gov/waters/watermgmt_section/pwpermits/gp_2004_0001_manual.html
Best Practices for Meeting DNR GP 2004-0001 (published 5/11, updated 12/12) – Chapter 1/Page 8

More on the DNR Invasives Species Program can be found at: www.mndnr.gov/AIS

[1] **'Equipment'** is defined as any implement utilized in construction. This includes boats, barges, heavy machinery, light machinery, or other material that may be moved on-site or off-site, including but not limited to rock (riprap) or timber for temporary workpads, backhoes, pumps, hoses, worksite isolation materials (eg, sheet pile or jersey barriers), boats, barges, temporary staging materials, erosion prevention products, sediment control products (eg, silt curtain), water trucks that take water from open bodies of water (eg, dust control), or dewatering components.

[2] **List of Designated Infested Waters**: http://files.dnr.state.mn.us/eco/invasives/infested_waters.pdf

DNR Contact Information

DNR Ecological and Water Resources lists area office staff at www.mndnr.gov/waters

DNR Ecological and Water Resources
500 Lafayette Road, Box 32, St. Paul, MN
55155-4032, (651)259-5700 or 5100

DNR Ecological and Water Resources website provides information at www.mndnr.gov or by calling (651) 259-5700 or 5100.

DNR Information Center

This information is available in an alternative format on request

Twin Cities: (651) 296-6157
Minnesota toll free: 1-888-646-6367
Telecommunication device for the deaf (TDD): (651) 296-5484
TDD toll free: 1-800-657-3929

Appendix K

Blanding's Turtle Information

Environmental Review Fact Sheet Series

Endangered, Threatened, and Special Concern Species of Minnesota

Blanding's Turtle

(*Emydoidea blandingii*)

Minnesota Status:	Threatened	State Rank[1]:	S2
Federal Status:	none	Global Rank[1]:	G4

HABITAT USE

Blanding's turtles need both wetland and upland habitats to complete their life cycle. The types of wetlands used include ponds, marshes, shrub swamps, bogs, and ditches and streams with slow-moving water. In Minnesota, Blanding's turtles are primarily marsh and pond inhabitants. Calm, shallow water bodies (Type 1-3 wetlands) with mud bottoms and abundant aquatic vegetation (e.g., cattails, water lilies) are preferred, and extensive marshes bordering rivers provide excellent habitat. Small temporary wetlands (those that dry up in the late summer or fall) are frequently used in spring and summer -- these fishless pools are amphibian and invertebrate breeding habitat, which provides an important food source for Blanding's turtles. Also, the warmer water of these shallower areas probably aids in the development of eggs within the female turtle. Nesting occurs in open (grassy or brushy) sandy uplands, often some distance from water bodies. Frequently, nesting occurs in traditional nesting grounds on undeveloped land. Blanding's turtles have also been known to nest successfully on residential property (especially in low density housing situations), and to utilize disturbed areas such as farm fields, gardens, under power lines, and road shoulders (especially of dirt roads). Although Blanding's turtles may travel through woodlots during their seasonal movements, shady areas (including forests and lawns with shade trees) are not used for nesting. Wetlands with deeper water are needed in times of drought, and during the winter. Blanding's turtles overwinter in the muddy bottoms of deeper marshes and ponds, or other water bodies where they are protected from freezing.

LIFE HISTORY

Individuals emerge from overwintering and begin basking in late March or early April on warm, sunny days. The increase in body temperature which occurs during basking is necessary for egg development within the female turtle. Nesting in Minnesota typically occurs during June, and females are most active in late afternoon and at dusk. Nesting can occur as much as a mile from wetlands. The nest is dug by the female in an open sandy area and 6-15 eggs are laid. The female turtle returns to the marsh within 24 hours of laying eggs. After a development period of approximately two months, hatchlings leave the nest from mid-August through early-October. Nesting females and hatchlings are often at risk of being killed while crossing roads between wetlands and nesting areas. In addition to movements associated with nesting, all ages and both sexes move between wetlands from April through November. These movements peak in June and July and again in September and October as turtles move to and from overwintering sites. In late autumn (typically November), Blanding's turtles bury themselves in the substrate (the mud at the bottom) of deeper wetlands to overwinter.

IMPACTS / THREATS / CAUSES OF DECLINE

- loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- loss of upland habitat through development or conversion to agriculture
- human disturbance, including collection for the pet trade* and road kills during seasonal movements
- increase in predator populations (skunks, raccoons, etc.) which prey on nests and young

*It is illegal to possess this threatened species.

RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS

These recommendations apply to typical construction projects and general land use within Blanding's turtle habitat, and are provided to help local governments, developers, contractors, and homeowners minimize or avoid detrimental impacts to Blanding's turtle populations. **List 1** describes minimum measures which we recommend to prevent harm to Blanding's turtles during construction or other work within Blanding's turtle habitat. **List 2** contains recommendations which offer even greater protection for Blanding's turtles populations; this list should be used *in addition to the first list* in areas which are known to be of state-wide importance to Blanding's turtles (contact the DNR's Natural Heritage and Nongame Research Program if you wish to determine if your project or home is in one of these areas), or in any other area where greater protection for Blanding's turtles is desired.

List 1. Recommendations for all areas inhabited by Blanding's turtles.	**List 2. *Additional* recommendations for areas known to be of state-wide importance to Blanding's turtles.**
GENERAL	
A flyer with an illustration of a Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.	Turtle crossing signs can be installed adjacent to road-crossing areas used by Blanding's turtles to increase public awareness and reduce road kills.
Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed.	Workers in the area should be aware that Blanding's turtles nest in June, generally after 4pm, and should be advised to minimize disturbance if turtles are seen.
If a Blanding's turtle nests in your yard, do not disturb the nest.	If you would like to provide more protection for a Blanding's turtle nest on your property, see "Protecting Blanding's Turtle Nests" on page 3 of this fact sheet.
Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.	Construction in potential nesting areas should be limited to the period between September 15 and June 1 (this is the time when activity of adults and hatchlings in upland areas is at a minimum).
WETLANDS	
Small, vegetated temporary wetlands (Types 2 & 3) should not be dredged, deepened, filled, or converted to storm water retention basins (these wetlands provide important habitat during spring and summer).	Shallow portions of wetlands should not be disturbed during prime basking time (mid morning to mid- afternoon in May and June). A wide buffer should be left along the shore to minimize human activity near wetlands (basking Blanding's turtles are more easily disturbed than other turtle species).
Wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.	Wetlands should be protected from road, lawn, and other chemical run-off by a vegetated buffer strip at least 50' wide. This area should be left unmowed and in a natural condition.
ROADS	
Roads should be kept to minimum standards on widths and lanes (this reduces road kills by slowing traffic and reducing the distance turtles need to cross).	Tunnels should be considered in areas with concentrations of turtle crossings (more than 10 turtles per year per 100 meters of road), and in areas of lower density if the level of road use would make a safe crossing impossible for turtles. Contact your DNR Regional Nongame Specialist for further information on wildlife tunnels.
Roads should be ditched, not curbed or below grade. If curbs must be used, 4 inch high curbs at a 3:1 slope are preferred (Blanding's turtles have great difficulty climbing traditional curbs; curbs and below grade roads trap turtles on the road and can cause road kills).	Roads should be ditched, not curbed or below grade.

ROADS cont.	
Culverts between wetland areas, or between wetland areas and nesting areas, should be 36 inches or greater in diameter, and elliptical or flat-bottomed.	Road placement should avoid separating wetlands from adjacent upland nesting sites, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details).
Wetland crossings should be bridged, or include raised roadways with culverts which are 36 in or greater in diameter and flat-bottomed or elliptical (raised roadways discourage turtles from leaving the wetland to bask on roads).	Road placement should avoid bisecting wetlands, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details). This is especially important for roads with more than 2 lanes.
Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.	Roads crossing streams should be bridged.
UTILITIES	
Utility access and maintenance roads should be kept to a minimum (this reduces road-kill potential).	
Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.	
LANDSCAPING AND VEGETATION MANAGEMENT	
Terrain should be left with as much natural contour as possible.	As much natural landscape as possible should be preserved (installation of sod or wood chips, paving, and planting of trees within nesting habitat can make that habitat unusable to nesting Blanding's turtles).
Graded areas should be revegetated with native grasses and forbs (some non-natives form dense patches through which it is difficult for turtles to travel).	Open space should include some areas at higher elevations for nesting. These areas should be retained in native vegetation, and should be connected to wetlands by a wide corridor of native vegetation.
Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).	Ditches and utility access roads should not be mowed or managed through use of chemicals. If vegetation management is required, it should be done mechanically, as infrequently as possible, and fall through spring (mowing can kill turtles present during mowing, and makes it easier for predators to locate turtles crossing roads).

Protecting Blanding's Turtle Nests: Most predation on turtle nests occurs within 48 hours after the eggs are laid. After this time, the scent is gone from the nest and it is more difficult for predators to locate the nest. Nests more than a week old probably do not need additional protection, unless they are in a particularly vulnerable spot, such as a yard where pets may disturb the nest. Turtle nests can be protected from predators and other disturbance by covering them with a piece of wire fencing (such as chicken wire), secured to the ground with stakes or rocks. The piece of fencing should measure at least 2 ft. x 2 ft., and should be of medium sized mesh (openings should be about 2 in. x 2 in.). It is ***very important*** that the fencing be **removed <u>before August 1st</u>** so the young turtles can escape from the nest when they hatch!

REFERENCES

[1]Association for Biodiversity Information. "Heritage Status: Global, National, and Subnational Conservation Status Ranks." NatureServe. Version 1.3 (9 April 2001). http://www.natureserve.org/ranking.htm (15 April 2001).

Coffin, B., and L. Pfannmuller. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press, Minneapolis, 473 pp.

REFERENCES (cont.)

Moriarty, J. J., and M. Linck. 1994. Suggested guidelines for projects occurring in Blanding's turtle habitat. Unpublished report to the Minnesota DNR. 8 pp.

Oldfield, B., and J. J. Moriarty. 1994. Amphibians and Reptiles Native to Minnesota. University of Minnesota Press, Minneapolis, 237 pp.

Sajwaj, T. D., and J. W. Lang. 2000. Thermal ecology of Blanding's turtle in central Minnesota. Chelonian Conservation and Biology 3(4):626-636.

CAUTION

BLANDING'S TURTLES

MAY BE ENCOUNTERED IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are state-listed as Threatened and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2641); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-206-2820); or St. Paul (651-259-5772).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

BLANDING'S TURTLES DO NOT MAKE GOOD PETS
IT IS ILLEGAL TO KEEP THIS THREATENED SPECIES IN CAPTIVITY

SUMMARY OF RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS TO BLANDING'S TURTLE POPULATIONS

(see Blanding's Turtle Fact Sheet for full recommendations)

- This flyer should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles that are in imminent danger should be moved, by hand, out of harm's way. Turtles that are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest and do not allow pets near the nest.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).

Compiled by the Minnesota Department of Natural Resources Division of Ecological and Water Resources, Updated August 2012
Endangered Species Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-259-5109

Appendix L

SHPO Correspondence

City of Wayzata
600 Rice Street
Wayzata, MN 55391-1734

November 1, 2016

Ms. Sarah Beimers
Government Programs and Compliance
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. W.
St. Paul, Minnesota 55102-1903

RE: Request for Historic and Cultural Resources Database Review
Wayzata Lake Effect Project
Wayzata, Minnesota

Dear Ms. Biemers:

The City of Wayzata is proposing revisions to the park area along the shore of Lake Minnetonka in Wayzata, Minnesota (the property). Please refer to the attached map to clarify the property location and areas of expected direct impacts.

The project will include improvements to the beach area, bike trail head, and parking areas around Lake Minnetonka in downtown Wayzata. The existing building off Barry Street will not be changed. The project also proposes a boardwalk connecting the park area on the west side of the project to a new nature preserve to the east. The new nature preserve area will include docks and additional wetland/vegetated areas. One building is within the area of the proposed project – the Section Foreman House. This building would remain in place but may be renovated.

The Section Foreman House is located at 738 Lake Street East, Wayzata, Minnesota. The building was originally constructed in 1913. The house is constructed of wood, concrete block, with concrete foundation walls. The typical interior finished included sheetrock/joint compound, ceiling tile, wood flooring, and vinyl sheet flooring. The exterior of the house has wood siding with an asphalt shingle roof system. The building is currently vacant. A photograph of the building is provided below.

In addition to the lake property, an additional parcel located along Bushaway Road, may be excavated to offset the change in floodplain storage due to the construction of the boardwalk.

We are requesting that you please review the project area to determine whether there are known or likely cultural resources at the property. The information received from you will be used as part of the preparation of an Environmental Assessment Worksheet for the project. If you have any questions or require additional information, please contact me at 952-404-5312 or Jennifer Wolff at 952-995-2454.

Regards,

Jeffrey R. Thomson
Director of Planning and Building

Attachments

- Site location topographic map
- Parcel outline map
- Limits of disturbance map

F:\2016\B1607634\GIS\B1607634_DataSktch.mxd

BRAUN INTERTEC
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

Base files provided by:

WAYZATA LAKE EFFECT EA BASE DATA SKETCH

PROJECT NAME
ADDRESS
LOCATION

Project No:	B1607634
Drawing No.	B1607634_DataSktch
Scale:	1 in = 250 ft
Drawn By:	CMF
Date Drawn:	09/01/2016
Checked By:	JW
Last Modified:	9/23/16
Sheet:	1 of 1
Fig.	X


Wayzata Lake Effect
Legend
Limits of Disturbance
Wayzata
Barry Ave S
Manitoba Ave
Minnetonka Ave S
Walker Ave S
Wayzata Blvd E
Benton Ave
E Ln
15
Grove Ln E
S Lake St E
Mill St
S Circle A Dr
E Circle Dr
Central Ave S
Shady Ln
La Salle St
101
16
Wayzata Bay
Rushaway Rd
N
2000 ft
Google earth

BRAUN INTERTEC
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH. (952) 995-2000
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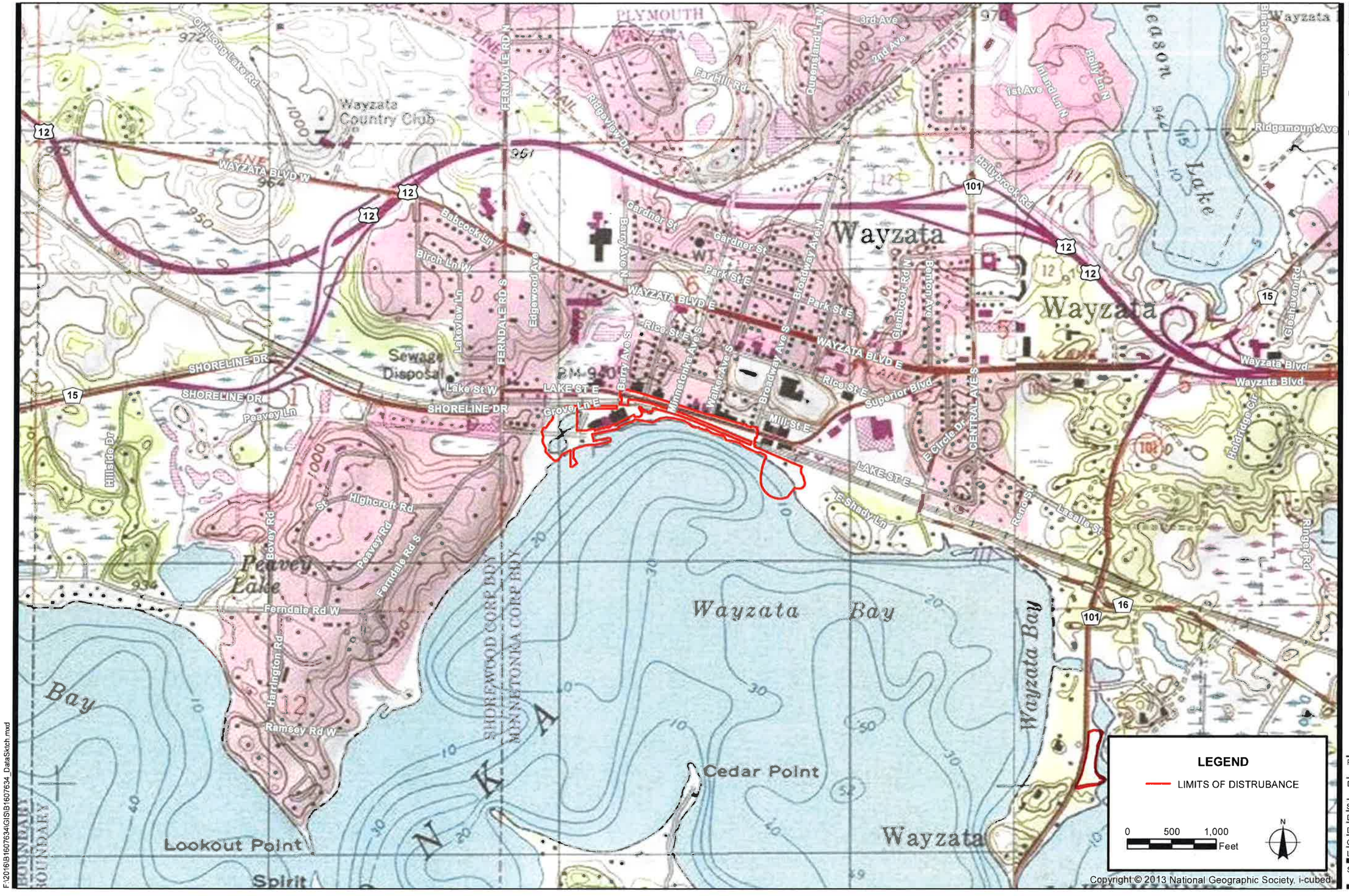
Base files provided by:

WAYZATA LAKE EFFECT EA BASE DATA SKETCH
PROJECT NAME
ADDRESS
LOCATION



Project No:	B1607634
Drawing No.	B1607634_DataSktch
Scale:	1 in = 1,000 ft
Drawn By:	CMF
Date Drawn:	09/01/2016
Checked By:	JW
Last Modified:	9/23/16
Sheet:	1 of 1
Fig.	X

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Minnesota
Historical Society

MINNESOTA HISTORIC PRESERVATION OFFICE

December 8, 2016

Jeffrey Thomson
Director of Planning and Building
City of Wayzata
600 Rice Street
Wayzata, MN 55391-1734

RE: Wayzata Lake Effect Project
Improvements to Parkland along Lake Minnetonka
Wayzata, Hennepin County
MnHPO Number: 2017-0399

Dear Mr. Thomson:

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

We have completed our review of your letter dated 1 November 2016 which included baseline information regarding the City of Wayzata's proposed park improvement project along the shore of Lake Minnetonka.

Our records indicate the presence of both recorded archaeological sites and a historic/architectural property within the project area. Due to the location of the proposed project and proximity of known archaeological sites, we recommend that a Phase I archaeological survey be completed. The survey must meet the requirements of the Secretary of the Interior's *Standards for Identification and Evaluation* as well as our guidelines for completing archaeological surveys in Minnesota. The survey should include an evaluation of National Register eligibility for any properties that are identified. For a list of consultants who have expressed an interest in undertaking such surveys, please visit the website **preservationdirectory.mnhs.org**, and select "Archaeologists" in the "Search by Specialties" box.

We will reconsider the need for survey if the project area or more detailed park improvement plans indicate that project areas have been previously surveyed or disturbed. Any previous survey work must meet contemporary standards. **Note:** plowed areas and right-of-way are not automatically considered disturbed. Archaeological sites can remain intact beneath the plow zone and in undisturbed portions of the right-of-way.

The **Great Northern Railroad, Wayzata Section House**, referred to in your letter as the "Section Foreman House", was previously determined by our office to be eligible for listing in the National Register of Historic Places (NRHP). Based on information included in the historic property file, it appears as though the City has been pursuing NRHP listing and has even completed a Historic Structures Report for the property (draft dated 2015). As you move forward with the park improvement project it will be

important for the City to either avoid direct impacts to this property (building and site) or, if any work on the property is proposed to be integrated into the park improvement project, then consideration should be given to appropriate preservation or rehabilitation treatment in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36CFR800, procedures of the Advisory Council on Historic Preservation for the protection of historic properties. If this project is considered for federal assistance, or requires a federal license or permit, it should be submitted to our office by the responsible federal agency.

Please contact me at 651-259-3456 or sarah.beimers@mnhs.org if you have any questions regarding our comments on this project.

Sincerely,

Sarah J. Beimers

Sarah J. Beimers, Manager
Government Programs and Compliance

City of Wayzata
600 Rice Street
Wayzata, MN 55391-1734

March 7, 2017

Ms. Sarah Beimers
Government Programs and Compliance
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. W.
St. Paul, Minnesota 55102-1903

RE: Wayzata Lake Effect Project
Improvements to Parkland along Lake Minnetonka
Wayzata, Minnesota
MnHPO Number: 2017-0399

Ms. Biemers:

Thank you for your letter dated December 8, 2016, on the above-referenced project. In your letter, you made two recommendations:

1. Complete a Phase I archaeological survey
2. Appropriate preservation of the Section Foreman House

The purpose of this letter is to provide responses to these two recommendations, and to provide additional information regarding the project.

SHPO recommendation: complete a Phase I archaeological survey

In your letter, you indicated that you will reconsider the need for a Phase I archaeological survey if the project area or more detailed park improvement plans indicate that project areas have been previously surveyed or disturbed. The City of Wayzata believes that the Lake Effect project would be located within previously disturbed areas. I have enclosed the map that was provided in my previous letter, which shows the project area, and two additional maps that show the proposed project. The following provides additional information about the extent of impacts for the proposed project, and a more detailed description of the work:

- Wayzata Beach: On the west end of the proposed project area, the proposed project will make modifications to the existing man-made beach by adding a dock/pier and potentially a floating platform. This activity may impact some existing beach area as well as areas below the ordinary high water level (OHWL) of Lake Minnetonka. In the existing beach area, the

shoreline may be modified by removing some of the existing sand and moving the beach edge 14 feet further upland. The maximum depth of the excavation is expected to be one foot.

- Wayzata Depot: In the area to the east of the Wayzata Depot, which is currently grass park land and shoreland rip-rap, a series of terraces would be constructed, leading down to the lake edge. The terraces will include excavation of up to two feet of the lake bottom along the lake edge.

- Lake Boardwalk: The terraces would connect to a new lake boardwalk that would be constructed on the lake, between the Depot and the existing community docks located at Broadway Avenue. The lake boardwalk will be 10 feet wide, 1,193 feet in length, and will be located within the lake, but above the OHWL. At the community docks at Broadway, the lake boardwalk would connect to the existing upland sidewalk/driveway. From the Broadway docks to the Section Foreman House, the lake walk would be located entirely within the footprint of the existing driveway/sidewalk.

- Lake Street: In the central area of the project, the project includes reconstruction of the existing Lake Street, including modifications to parking, drive lanes, sidewalks, and pavement. The Lake Street area has been previously disturbed with many City of Wayzata utilities located beneath the street.

- Shoreline Restoration: The central shoreline from the Depot to the Broadway docks consists of a constructed rip-rap lake edge. The proposed plans include restoration of the shoreline with aquatic vegetation. However, the shoreline restoration would not impact or disturb the existing rip-rap, which provides structural stability for the lake edge and adjacent railroad tracks.

- Broadway Docks: The City currently owns and operates public docks at the end of Broadway Avenue, which includes permanent docks and transient seasonal docks. The proposed project will include adding additional permanent docks and boardwalk/pier at this location, in place of the current transient docks.

- Railroad Crossings: There are two existing railroad crossings located at Barry Aveneu and Broadway Avenue. The proposed project includes safety improvements to these existing crossings.

- Eco Park: On the east end of the proposed project the area around the Section Foreman House, the improvements would include improved ADA access to the renovated and restored house, and construction of a fishing pier out into the lake. In addition, an underwater linear reef would be constructed, allowing the shoreline in this area to return to a more natural vegetative state.

- Floodplain and Shoreland Mitigation: Finally, as part of potential mitigation for the impacts to the lake bottom and lake volume, a parcel along Bushaway Road would be impacted by

construction activities. The existing man-made stormwater pond would be deepened to create new lake volume to compensate for fill in other areas of the project. I have included two land cover maps to show you the area that would be disturbed. Portions of this area have previously been disturbed by road construction and the installation of the man-made stormwater pond.

In summary, the expected impacts for this project are primarily within the lake itself, with minor impacts in areas that have been previously disturbed (existing beach, park land, railroad crossings, and public street.) Based on this additional information, the City is requesting clarification on which areas of the project you feel a Phase I archaeological survey is warranted.

Please keep in mind that for the entire project, if buried artifacts, human remains, cultural sites, or ground features are unexpectedly unearthed during ground-disturbing activities, all construction in that area will immediately cease and the resources will be examined by a professional archaeologist. Additionally, appropriate authorities, including the State Historic Preservation Office will be notified.

SHPO Recommendation: Appropriate preservation of the Section Foreman House

As you noted in your letter, consideration should be given to appropriate preservation or rehabilitation treatment for the building or surrounding area, in accordance with the Secretary of the Interior's "Standards for the Treatment of Historic Properties". The proposed project is still in the planning stages, so exact details of the proposed project, other than the general description provided above, are not available at this time. The City agrees with this recommendation and consideration will be given to these standards.

If you have any questions or require additional information, please contact me at (952) 404-5312.

Regards,

Jeffrey R. Thomson
Director of Planning and Building

Enclosures

CC: Jennifer Wolff, Braun Intertec

PROPOSED LAKE EFFECT SIGNATURE PARK


Minnetonka Ave
Walker Ave
Broadway Ave
Lake Terraces
Enhanced Intersection
Enhanced Lake Street
On-street Bike Lane
Expanded Sidewalk
On-street Bike Lane
Lake Street Plaza
Viewing Platform
Lake Walk
Enhanced Intersection
Broadway Plaza
Enhanced
Community Docks
Community Pier with Terraces
Section Foreman House
Eco Park
Restored Marshland
Fishing Pier

BRAUN
INTERTEC
11001 Hampshire Avenue S
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

PROPOSED PROJECT POST-CONSTRUCTION

WAYZATA LAKE EFFECT
WAYZATA, MINNESOTA

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Project No:	B1607634
Drawing No.	B1607634_Fig4
Scale:	1 in = 250 ft
Drawn By:	CMF
Date Drawn:	01/20/2017
Checked By:	JBW
Last Modified:	2/9/17
Sheet:	1 of 1
Fig.	4

Wayzata Lake Effect EAW

Bushaway Road Parcel - Existing Land Cover

Limits of Work

Existing Land Cover

- Wooded/Forest
- Brush/Grassland
- Lawn/Landscaping
- Impervious Surface
- Stormwater Pond

Data Sources:
- LMIC WMS server (2012 aerial)

AES Project Number: 16-0549
Date: 1/4/17
File Name: Wayzata EAW_bush_exist lc_2017-01-04

APPLIED ECOLOGICAL SERVICES

Applied Ecological Services, Inc.
21938 Mushtown Road
Prior Lake, MN 55372
952-447-1919
www.appliedeco.com

N

Feet
0 25 50 100

Wayzata Lake Effect EAW

Bushaway Road Parcel - Proposed Land Cover

Limits of Work

Proposed Land Cover

- Wooded/Forest
- Littoral (Lakeshore) Wetland
- Brush/Grassland
- Lawn/Landscaping
- Impervious Surface
- Stormwater Pond

Data Sources:
- LMIC WMS server (2012 aerial)

AES Project Number: 16-0549
Date: 1/4/17
File Name: Wayzata EAW_bush_prop lc_2017-01-04

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Applied Ecological Services, Inc.
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N

Feet
0 25 50 100

MINNESOTA HISTORIC PRESERVATION OFFICE

April 7, 2017

Jeffrey Thomson
Director of Planning and Building
City of Wayzata
600 Rice Street
Wayzata, MN 55391-1734

RE: Wayzata Lake Effect Project
Improvements to Parkland along Lake Minnetonka
Wayzata, Hennepin County
MnHPO Number: 2017-0399

Dear Mr. Thomson:

Thank you for continuing consulting with our office during the preparation of an Environmental Assessment Worksheet for the above referenced project. It has been reviewed pursuant to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act (M.S. 138.665-138.666) and the Minnesota Field Archaeology Act (M.S. 138.40).

We last wrote to you on 8 December 2016 in response to your request that we review and provide comments as it pertains to the City of Wayzata's environmental review for a proposed Wayzata Lake Effect park improvement project (Project). Due to the presence of recorded archaeological sites, including sites on land and several in Wayzata Bay including the Wayzata Bay Wreck (21HE401), a historic property which is listed in the National Register of Historic Places (NRHP), our December 8th letter recommended that the City contract for the completion of a Phase I archaeological survey for the Project. Alternatively, the City could present to our office more detailed Project information and information as it pertains to previously disturbed areas within the Project. Your letter dated 7 March 2017 provides more detailed Project information and a statement that the City believes the Project would be located within previously disturbed areas. We have completed our review of your recent letter and supporting Project documents. Our comments are provided below.

Archaeology
The Minnesota Historic Preservation Office's National Register Archaeologist David Mather has reviewed your recent letter and additional Project documentation. His comments and recommendations are summarized below:

> Because it is surrounded by recorded archaeological sites, this Project is located in an area of high archaeological potential and cultural sensitivity. Recorded sites on land include mounds or other burial sites and there are several recorded sites in the water, including one that is listed in the NRHP (as noted above). There is no indication, either in our records or made by the City, that an archaeological survey has ever been completed for the park.

The new information submitted is helpful, but does not change our earlier recommendation that an archaeological survey of the park will need to be conducted for the Project. The consulting archaeologist should review Project plans, and determine the Area of Potential Effect, including areas needed for construction staging. They should then survey those locations where archaeological survey is appropriate, based upon research and field review. Since this is a small park, it may be most effective to simply have an archaeological survey done for the entire park. A comprehensive survey would ensure avoidance or appropriate treatment of any archaeological sites for the currently proposed Project as well as documentation the City could utilize for planning any future park improvements as well.

You mention in your letter that the City is committed to stop work, consult with our office and others, to address and appropriately treat any unexpected archaeological discoveries during project construction. We agree that an unexpected discoveries plan is beneficial for a Project such as this, but we caution the City that a plan for addressing unexpected archaeological discoveries does not substitute for completion of an archaeological survey during project planning. It has been our experience that the survey would meet the regulatory requirements in that it would identify any archaeological sites so that provisions in the Project design could be made in order to avoid effects to any archaeological sites prior to construction.

If you have not done so already, we recommend that the City initiate consultation with the Office of the State Archeologist as it pertains to their review role under both M.S. 138.40 and, as it pertains to human burials, M.S. 307.08.

Historic Structures

As you are aware, the **Great Northern Railroad, Wayzata Section House**, referred to in your letter as the "Section Foreman House", was previously determined by our office to be eligible for listing in the National Register of Historic Places (NRHP). Your March 6th letter indicates that, although the proposed work to, and adjacent to, the historic property is still in planning stages, the City agrees with our previous recommendation that any work proposed on this historic property as part of the Project should be developed in conformance with the Standards. We look forward to additional consultation on this matter as Project plans are further developed.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36CFR800, procedures of the Advisory Council on Historic Preservation for the protection of historic properties. If this Project is considered for federal assistance, or requires a federal license or permit, including a U.S. Army Corps of Engineers permit for impacts to Waters of the U.S., it should be submitted to our office by the responsible 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 me at 651-259-3456 or sarah.beimers@mnhs.org if you have any questions regarding our comments on this project.

Sincerely,

Sarah J. Beimers

Sarah J. Beimers, Manager
Government Programs and Compliance