Environmental Assessment Worksheet (EAW)

Essentia Health Vision Northland Project

Prepared for
City of Duluth

February 2019

325 S. Lake Ave., Suite 700
Duluth, MN 55802
www.barr.com

Environmental Assessment Worksheet (EAW)

Essentia Health Vision Northland

February 2019

Contents

List of Tables

List of Figures

List of Appendices

July 2013 version

ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board's website at: http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm. The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addresses collectively under EAW Item 19. **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

Essentia Health Vision Northland

2. Proposer

Essentia Health
Contact person: Scot Ramsey
Title: Vice President Facilities
Address: East Region Administration MDMC 130
502 East Second St.
City, State, ZIP: Duluth, MN 55805
Phone: 218-786-2645
Email: Scot.Ramsey@EssentiaHealth.org

3. RGU

City of Duluth
Contact person: Keith Hamre
Title: Director of Planning and Economic Development
Address: 411 W. 1st St.
City, State, ZIP: Duluth, MN 55802
Phone: 218-730-5580
Email: khamre@duluthmn.gov; planning@duluthmn.gov

4. Reason for EAW Preparation

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

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):
Subpart 14 – Industrial, commercial, and institutional facilities

5. Project Location

- County: St. Louis County
- City/Township: Duluth
- PLS Location (¼, ¼, Section, Township, Range): NE ½ NE ¼ of Section 27, T50W, R14N
  SE ½ SE ¼ of Section 22, T50W, R14N
- Watershed (81 major watershed scale): Major Watershed 2 — Lake Superior – South
- GPS Coordinates: 46.791715° N and -92.094342° W (Coordinates apply to location of new proposed building)
- Tax Parcel Numbers:

Table 1 includes the tax parcels within the proposed project footprint. **Figure 1** shows the tax parcels associated with the proposed project footprint. **Table 1** and **Figure 1** identify the larger downtown medical campus that is related to the project site; however, construction and demolition work as described in Item 6 would focus only on a subset of the overall identified proposed project area (refer to Item 6 for a description of the subset of the overall proposed project area).

Table 1 Tax parcels within the proposed project footprint

Parcel Number	Owner	Acres
010-3830-06360	SMDC MEDICAL CENTER	4.90
010-3830-03412	ST MARYS/POLINSKY CNTR PERSNL FTNS	3.37 (SAME LOCATION/BUILDING AS 010-3830-03415)
010-3830-03415	DULUTH CLINIC LTD	3.37 (SAME LOCATION/BUILDING AS 010-3830-03412)
010-0970-00930	DULUTH CLINIC LTD	2.24

010-3830-02940	DULUTH CLINIC LTD	1.52
010-0970-00520	BENEDICTINE SISTERS BENEVOLENT ASSN	1.38
010-0990-01310	BENEDICTINE SISTERS BENEVOLENT ASSN	1.38
010-1010-01830	SMDC HEALTH SYSTEM	1.29
010-3830-06800	BENEDICTINE SISTERS BENEVOLENT ASSN	1.01
010-3830-10420	BENEDICTINE SISTERS BENEVOLENT ASSN	0.80
010-3830-02750	DULUTH CLINIC LTD	0.73
010-0990-00620	SMDC HEALTH SYSTEM	0.64
010-3830-03700	DUL REHAB CENTER INC	0.56
010-3830-06760	DULUTH CLINIC LTD	0.52
010-3830-06930	ESSENTIA HEALTH	0.49
010-3830-00290	AMENDOLA BUILDING LLP	0.48
010-3830-10110	ESSENTIA HEALTH	0.48
010-0990-01320	JAS DULUTH LLC	0.48
010-3830-10380	ST MARY'S MEDICAL CENTER	0.48
010-3830-06400	DUL REHAB CENTER INC	0.47
010-3830-10060	DULUTH CLINIC LTD	0.40
010-3830-00420	STATE OF MINNESOTA	0.32
010-3830-00421	STATE OF MINNESOTA	0.32
010-0990-00540	BENEDICTINE SISTERS BENEVOLENT ASSN	0.32
010-3830-10160	SWEDISH EV LUTH CH	0.32
010-3830-07030	NAT G POLINSKY MEM REHAB	0.32
010-0990-00440	ST MARY'S MEDICAL CENTER	0.32
010-3830-02860	ST MARYS DULUTH CLINIC HEALTH SYSTM	0.24
010-0990-00460	LOISELLE INC	0.24
010-0990-00585	SMDC HEALTH SYSTEM	0.24
010-3830-14140	BENEDICTINE SISTERS BENEVOLENT ASSN	0.24
010-3830-00580	CITY OF DULUTH	0.21
010-3830-06900	ST MARYS DULUTH CLINIC HEALTH SYSTM	0.20
010-3830-00570	STATE OF MINNESOTA	0.16
010-3830-00550	STATE OF MINNESOTA	0.16

010-3830-02870	DULUTH CLINIC LTD	0.16
010-3830-00390	STATE OF MINNESOTA	0.16
010-0990-00520	GREGORICH PROPERTIES LLC	0.16
010-3830-07020	DUL REHAB CENTER INC	0.16
010-0990-00610	HADDAD BASHARA G	0.16
010-0990-00570	LEMON CHARLES H & MARY JEAN	0.16
010-3830-14070	SLOTNESS RICHARD A	0.16
010-3830-14100	SLOTNESS RICHARD A	0.16
010-3830-02900	ST MARYS DULUTH CLINIC HEALTH SYSTM	0.15
010-3830-06801	DULUTH CLINIC LTD	0.15
010-3830-07000	ST MARYS DULUTH CLINIC HEALTH SYS	0.11
010-3830-00410	STATE OF MINNESOTA	0.11
010-3830-00411	STATE OF MINNESOTA	0.11
010-3830-00401	STATE OF MINNESOTA	0.11
010-3830-00400	STATE OF MINNESOTA	0.11
010-3830-00510	STATE OF MINNESOTA	0.09
010-3830-00530	STATE OF MINNESOTA	0.08
010-3830-00300	413 COMPANY LLC	0.08
010-3830-00310	STATE OF MINNESOTA	0.08
010-3830-00520	STATE OF MINNESOTA	0.08
010-3830-00320	STATE OF MINNESOTA	0.08
010-3830-00500	STATE OF MINNESOTA	0.08
010-3830-00350	STATE OF MINNESOTA	0.08
010-3830-00490	STATE OF MINNESOTA	0.08
010-3830-00360	STATE OF MINNESOTA	0.08
010-3830-00370	STATE OF MINNESOTA	0.08
010-3830-00330	STATE OF MINNESOTA	0.08
010-3830-00480	STATE OF MINNESOTA	0.08
010-3830-00470	STATE OF MINNESOTA	0.08
010-3830-00460	STATE OF MINNESOTA	0.08
010-0990-00500	POST TERRENCE A	0.08

010-0990-00510	ST MARY'S MEDICAL CENTER	0.08
010-3830-10155	EVNGELCAL LUTH GLORIA DEI	0.08
010-0990-00490	RONNING MICHAEL J	0.08
010-0990-00580	LEMON CHARLES H ETUX	0.08
010-0990-01350	ST MARY'S MEDICAL CENTER	0.08
010-3830-14110	ST MARY'S MEDICAL CENTER	0.08
010-0990-01360	SLOTNESS RICHARD A & SHIRLEY	0.08
010-3830-00340	STATE OF MINNESOTA	0.07
010-3830-06290	CITY OF DULUTH	0.06
010-3830-03595	CITY OF DULUTH	0.06
010-3830-00332	KRENZEN JACK G	0.02

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

- County map showing the general location of the project (**Figure 2**). The county boundary is shown in the inset map.
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable) (**Figure 3**)
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.

Appendix A includes post-construction and design plans. **Figure 4** shows the proposed site layout. Figures are included in the "Figures" section at the end of the document text.

6. Project Description

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

Essentia Health is proposing a redevelopment project for its downtown Duluth campus that will result in a replacement hospital bed tower, new surgical suites, and outpatient space and renovations to the existing facilities. The proposed project includes a 920,000 square foot multi-story tower, which would reduce Essentia Health's overall footprint while providing state-of-the-art medical facilities.

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

Project Overview

The proposed development of the medical district, called Vision Northland (proposed project), consolidates Essentia Health's medical campus through the building of a new structure with two multi-story towers and renovation of existing buildings, including Miller Dwan, DC-1, and DC-2. The two towers would be connected via a multi-story plinth that bridges over 1st Street and the service alley. The building exterior would primarily consist of steel and glass, including fritted glass. The project would include the demolition of the Amendola Building and the parking garage that is currently located south of DC-2. The proposed project would consolidate the existing Essentia Health downtown Duluth campus and shift it towards the waterfront by moving the campus to the blocks in between 4th and 6th Aves. East and Superior Street and 2nd Street (**Figure 4** and **Appendix A**).

Proposed Construction Methods and Sequencing

The proposed project is planned to begin construction in 2019 and extend for approximately 36 months with the opening of the new structure planned for 2022. The following details the proposed construction methods and sequencing:

- The first stage of the project would require site preparation and grading, including the blasting of bedrock to the extent necessary required for the foundation and utility improvements. Where bedrock is required to be removed, drilling and drill-hole charge explosive blasting would be implemented in conjunction with air blast and vibration monitoring. Ground disturbing activities would be phased to the

extent practicable and conducted in accordance with construction stormwater best management practices (BMPs). Site preparations would also include the partial removal of existing DC-1 and DC-2 buildings, as well as demolition of the Amendola Building located on Superior Street and the 413 East Superior Street building immediately adjacent.

- Following site preparation, building foundations would be constructed through the second half of 2019. The structural frame of the new Essentia Health medical complex would be constructed beginning at the end of 2019 and continuing through third quarter 2020. Reconstruction of the public roadways adjacent to the project site is included in the proposed scope of the project with some public roadways requiring full-width reconstruction.

- Enclosure of the structure would follow with a timeline extending into mid-2021. Interior finishes including renovations would occur through the first quarter of 2022. Substantial completion of the new medical center would occur in mid-2022 when operations within the new structure would begin. Phasing of building operations would be coordinated to prevent any interruptions in patient care.

c. Project magnitude:

The project is proposed to be constructed and operated in an urban, developed setting. Error! Reference source not found. provides a summary of the proposed project's magnitude.

Component	Size
Total project acreage	34.06(1)
Linear project length	Not applicable
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)	920,736 (new gross floor space)
Other uses—specify (in square feet)	Not applicable
Structure height(s)	Not applicable

(1) Less than 10 acres of the total project acreage will result in land use changes. The total project acreage includes the current boundaries of the Essentia Health downtown medical campus.

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

The purpose of Essentia Health's proposed project is to continue to provide state-of-the-art medical facilities through the consolidation of the Essentia Health campus. This would be achieved by building vertically, thereby reducing Essentia Health's overall footprint in downtown Duluth. Benefits from this proposed project would be realized by patients, staff/employees, and physicians/providers of Essentia Health, as well as the broader community. While the following list identifies the purposes of the proposed project, it also identifies the benefits resulting from the proposed project:

- Provide the highest level of healthcare with patient and staff safety as the imperative
- Build state-of-the-art medical facilities with advanced technologies to meet patients' needs
- Boost the local economy through the creation of short term construction jobs
- Enhance the patient and staff experience
- Gain energy efficiencies and lessen energy consumption through building vertically and the use of energy efficient building materials.

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

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

Although no other plans are currently proposed for future development/proposed project stages, potential future development, such as the removal of existing surface parking lots and the construction of new parking ramps, may be evaluated at a future time.

f. Is this project a subsequent stage of an earlier project? • Yes **X** No

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

7. Cover Types

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

Table 2 includes acreage of land cover types, which were estimated using GIS**.** Note that the acreage in **Table 2** considers the entire building footprint as impervious even though Essentia Health may choose to implement green roofs on the proposed new construction. These calculations, therefore, present a conservative approach for calculating cover type. **Figure 5** shows current cover types at the proposed project location.

Table 2 Summary of cover types (in acres)

Cover Type	Before	After
Wetlands	0	0
Deep water/streams	0	0
Wooded/forest	0	0
Brush/grassland	0	0
Cropland	0	0
Lawn/landscaping	2.85	2.44
Impervious Surface	31.21	31.62
Stormwater Pond	0	0
Other – Vacant lot/sparse vegetation	0	0
Total Area	**34.06**	**34.06**

(1) Less than 10 acres of the total project acreage will result in land use changes. The total project acreage includes the current boundaries of the Essentia Health downtown medical campus.

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 3 lists the required permits and approvals for the proposed project.

Table 3 Permits and approvals required

Agency	Type of Application	Status
Minnesota Pollution Control Agency	• NPDES/SDS Construction Stormwater General Permit • Air Quality Permit • Pre-Renovation/Demolition Checklist and Notification	• To be obtained • To be obtained • To be submitted
Minnesota Department of Transportation	• Right to occupy agreement for entrance and landscaping adjacent to Superior Street	• To be obtained
City of Duluth	• Foundation Permit • Demolition Permit Application • Erosion Control Permit • Checklists: Asbestos Inspection; Utilities Disconnection; Release of Liability • Excavation/Sewer/Backfill/Utility Connection Permit • Utility Service Cut-Off/Abandonments Permit • Rezoning, Concurrent Use, and District Plan Permits • Obstruction permit	• To be submitted • To be obtained • To be obtained • To be obtained • To be obtained • To be obtained • To be obtained • To be obtained

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 9-18, or the RGU can address all cumulative potential effects in response to EAW Item No. 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 19

All potential cumulative impacts are discussed in Item 19, Cumulative Potential Effects.

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 existing land use of the proposed project area and adjacent areas is a well-developed, urbanized area in downtown Duluth. The proposed project area for the footprint of the new Essentia Health medical complex currently consists of Essentia Health-Duluth buildings, including Miller-Dwan Building, Rehabilitation Services Hospital, Polinsky Medical Rehabilitation Center (DC2), Duluth Clinic 1st Street Building and Pharmacy (DC1); a commercial building (Amendola Building and the adjacent 413 East Superior Street Building); and vacant lots owned by the City of Duluth. Located to the northwest are additional Essentia Health facilities, including the Essentia Health Urgent Care, Essentia Health-St. Mary's Children's Hospital, and additional parking.

Located east-southeast of the project site, the Interstate 35 routes through a tunnel, of which Superior Street lies above. Superior Street provides access to downtown Duluth, the Historic Fitger's on Lake Superior, and the Lakewalk shared use path along Lake Superior. The project site is located approximately one block northwest of Lake Superior.

Located south-southwest of the proposed project are residential buildings, hotels, and additional parking. The immediate location and site layout of the proposed project area is shown on **Figure 4.**

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 Duluth adopted a Comprehensive Land Use Plan in 2006 (Comprehensive Plan 2006) and more recently adopted the update to, titled Imagine Duluth 2035 (City of Duluth, 2018). The comprehensive plans describe the 20-year vision for growth and development in the City and provides the basis for policy decisions, including the zoning ordinance and Duluth's capital improvement program.

In the Imagine Duluth 2035 Comprehensive Plan, Economic Development Policies and Strategies section describes the City's policy to *build on existing economic strengths and competitive advantages by coordinating with major institutions, including hospital campuses, to plan for their growth, minimize development impacts, and provide for*

stability and livability for the campuses, their employees, and surrounding neighborhoods.

The proposed future land use designation of "institutional" would provide for the unique development needs and impacts of the new Essentia Health medical complex, as well as meet the City's polices and strategies, which are applicable to medical, university/college, public school, religious, or governmental uses.

According to the City's Unified Development Code (UDC), the intent of the Mixed-Use Institutional (MU-I) zoning district designation is to give institutional landowners the flexibility to plan and develop their facilities while ensuring that surrounding neighborhoods are protected from adverse impacts, such as traffic, overshadowing buildings, noise and unexpected expansion of institutional uses into residential areas. Specifically, the institutional master plan of the proposed project would guide potential future expansion and ancillary land uses in adjacent areas, promote increased development density and pedestrian-oriented design, and increase transit facilities and parking.

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

The City of Duluth UDC contains the rules and regulations to guide land use and development in the City. The proposed project area is zoned as MU-I, MU-C (Mixed Use Commercial) and F-8 (Downtown Mix) (**Figure 6**). The existing Essentia Health buildings that would be renovated are located within the MU-I and MU-C zones, while the new proposed building would be located in the MU-I and F-8 zones. While MU-I is consistent with the proposed uses for the district, the MU-C and F-8 use would be requested to be re-zoned to MU-I to accommodate the proposed project.

The proposed project is within the City of Duluth's Shoreland Management Zone. The Shoreland Ordinance applies to lands within 1,000 feet of Lake Superior or within 300 feet of rivers, creeks, streams and tributaries and floodplains (**Figure 7**). The proposed project is also adjacent to the Duluth Commercial Historic District, listed on the National Register of Historic Places. The Commercial Historic District is located southwest of the project area (**Figure 8**).

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

As previously discussed in Item 9.a.i., the proposed project area would be located in an urban, well-developed area within the City of Duluth. Nearby land uses include other multi-story buildings within or adjacent to the existing Essentia Health downtown Duluth medical campus. The proposed project would also provide closer access to Lake Superior with access via the multi-use Lakewalk shared use path. Essentia Health has emphasized that one of the benefits of the proposed project would be to bring the downtown Duluth medical campus closer to the waterfront. The Lakewalk shared use path travels through urban downtown Duluth; therefore, the proposed project vicinity to the Lakewalk shared use path would be consistent with the compatibility with and use of the shared use path and adjacent areas/land uses. Similarly, the proposed project would also be compatible with the Imagine Duluth 2035 Comprehensive Plan previously described in Item 9a.ii.

As previously discussed in Item 9.a.iii., part of the proposed project area is zoned as MU-C and F-8, which is generally incompatible with the zoning necessary to accommodate the proposed project (**Figure 6**). However, these zones would be requested to be re-zoned MU-I.

MU-C zones are established to provide for community and regional commercial development along commercial corridors and nodal centers. Uses may include: retail, lodging, service, and recreational facilities needed to support the community and region. Development in MU-C districts should facilitate pedestrian connections between residential and non-residential uses.

F-8 zones are regulated through form-based coding which regulates the types of buildings, development and rezoning. The form district permits both Main Street Building III and Corridor Building III for office and residential uses, which provides greater flexibility than the other form districts.

The requested change would expand the current MU-I zone, which would then be contiguous with the existing MU-I zone that currently houses the Essentia Health downtown Duluth medical campus. Other aspects of the proposed project would be compatible with current land uses. The overall footprint of Essentia Health medical facilities would be decreased thus potentially opening space in downtown Duluth for other development options in the future. In addition, the proposed project would promote connectivity within the downtown medical campus and pedestrian connections because of consolidation of campus and shifting of the campus towards the waterfront near the Lakewalk shared use path and other Skywalk connections. The rezoning of the MU-C and F-8 zones within the proposed project footprint to MU-I would provide an overall benefit to downtown Duluth.

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

The MU-C and F-8 zones would be requested to be re-zoned MU-I (**Figure 6**). The requested change would expand the current MU-I zone, making it contiguous with the existing MU-I zone that currently houses the Essentia Health downtown Duluth medical campus. Other aspects of the proposed project would be compatible with current land uses, including designing around the steep hillside topography and connecting with the streetscape of downtown Duluth.

One mitigation measure incorporated into the design of the proposed project would be reducing the overall footprint of the Essentia Health medical campus, opening space for other development and land uses in Duluth's Central Hillside. Additionally, the Superior Street entrance would provide an active and dynamic presence on one of Duluth's most vibrant streets, contributing to the expanding urban vitality of downtown Duluth.

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.

The typical geologic profile that would be encountered would generally consist of bedrock overlain by varying depths of glacial till soils and non-native fill soils. Depth to bedrock at the proposed project location varies from zero to twenty feet. Bedrock at the proposed project location belongs to the Keweenawan Supergroup that is comprised of Mesoproterozoic North Shore Volcanics, (e.g., basalt, and basaltic andesite). Depth to bedrock is estimated at 0 to 20 feet below ground surface; soils and bedrock removal would occur as part of the project.

A layer of weathered and/or fractured rock of varying thickness could be encountered where, previously, the upper layers of bedrock were not removed, or in some cases where it may have been over-blasted. This weathered upper layer is removable in some locations without the use of more extensive means, such as explosive blasting.

Where competent bedrock is encountered, smaller regions would be removed by traditional hammering removal, however due to rock quality and hardness, removal of large sections

through traditional hammering would typically be infeasible by means other than blasting or extensive drilling and splitting.

An additional feature which would entail monitoring, and mitigation if found to exist, would be the presence of clay seams within the bedrock strata. At locations where clay seams are found, and deemed to be unacceptable, the bedrock removal and ensuing foundation depths will be required to be lowered to a depth beneath the clay seam level, or foundations will be drilled to a depth below the clay seam layers.

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.

The NRCS Web Soil Survey indicates that the soils within the proposed project area consist of urban land and Mesaba rock outcrop complex with 1 to 18 percent slopes (**Figure 9**). This soil unit contains a mix of urban fill (disturbed land) and bedrock soil series. The specific type of overlying soil that would be encountered is dependent on the extent of development/previous excavation at the project location.

There is significant topographic relief across the proposed project area beginning at Superior Street and sloping up to East 2nd Street. Elevations vary from 645 feet above sea level at Superior Street up to 745 feet above sea level at East 2nd Street.

Approximately 1.32 acres of soil that is not currently impervious surface would be disturbed during demolition and construction. Within the overall building footprint disturbance area, approximately 33,635 cubic yards of soils and 25,612 cubic yards of bedrock will be removed. Measures during and after construction will be implemented to limit erosion and sedimentation related to land disturbances. Erosion and sediment control BMPs would be implemented during construction and maintenance to provide stabilization and minimization of soil erosion. BMPs may include, but are not limited to, erosion control blankets, stormwater inlet control structures, biologs, mulch, and silt fencing. Many of these BMPs would be implemented as part of the stormwater pollution prevention (SWPPP)

measures in accordance with the NPDES/SDS Construction Stormwater General Permit (MNR100001) discussed in Item 11.b.ii.

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.

A number of waterbodies are located within 1 mile of the proposed project **(Figure 5)**. The waterbodies located within 1 mile of the proposed project and their associated public waters inventory (PWI) identifications are included in **Table 4**.

Table 4 Waterbodies within one mile of the proposed project

Waterbody Name	PWI ID	Distance from project
Grey's Creek	--	1,480 feet
Clarkhouse Creek	--	2,360 feet
Chester Creek	S-003	3,329 feet
St. Louis River Estuary	--	3,532 feet
Brewery Creek	--	716 feet
Lake Superior	16000100	450 feet

Lake Superior is listed in the Minnesota 303(d) Impaired Waters list for fish consumption for mercury and PCBs. Neither of these constituents are applicable to the proposed project activities. Lake Superior is also listed as an outstanding resource value water under Minnesota Rules part 7050.0250 to 7050.0335. As such, certain requirements during construction would apply. These requirements would be included in a construction SWPPP and followed in accordance with the City of Duluth Erosion Control Permit and the NPDES/SDS Construction Stormwater General Permit (refer also to 11.b.ii.).

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.

Due to the shallow bedrock in the area of the proposed project, groundwater is often observed at the soil/rock interface. Where present, groundwater would need to be managed both temporarily during construction and in a permanent fashion to divert from building foundation walls. To prevent the infiltration of groundwater, basement walls would need to be positively waterproofed up to the exterior grade in order to prevent water infiltration. Additionally, in order to control groundwater flow around the basement perimeter, a perimeter drainage system consisting of a vertical in-plane drainage mat and a six inch diameter perforated pipe would be installed around the wall exterior. The pipes would be set and surrounded by six inches of coarse aggregate material. A needle punched, non-woven filter fabric would also be installed between the existing subgrade and the coarse base to prevent the fines entering into the drainage system. An underslab drainage system would be required as well to direct the flow of ground water on the surface of rock below the slab on grade (EwingCole, 2018).

The proposed project location is not within a MDH wellhead protection area. The location of nearby wells was identified by the MDH Minnesota Well Index (**Figure 7**).

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

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

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

The proposed project would continue to discharge to the Western Lake Superior Sanitary District (WLSSD) wastewater facility located less than three miles to the southwest. WLSSD has additional capacity available; however since the project replaces in-place active Essentia facilities, the anticipated increase in wastewater flows from the proposed project would be negligible and not require an expansion of existing infrastructure. The proposed project would connect to the existing sanitary sewer system using existing infrastructure via multiple connection points.

The current medical campus does not pretreat wastewater prior to sending it to WLSSD and the proposed project is also not anticipated to require pretreatment.

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.

The proposed project would not discharge to a subsurface sewage treatment system.

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.

The proposed project would not discharge directly to a surface water. Refer to 11.b.i.1.

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.

During Construction

Demolition and construction activities would require a City of Duluth Erosion Control Permit and a NPDES/SDS Construction Stormwater General Permit (MNR100001). Development of a SWPPP by a certified individual, installation of erosion and sedimentation BMPs prior to ground disturbing activities, and regular inspections of the project area would be employed to contain materials onsite and minimize sedimentation offsite. During demolition and construction activities, BMP's will be implemented to prevent sediment from entering existing storm drains.

During Operation

It is anticipated that stormwater runoff flow volumes from the proposed project would not increase significantly from current conditions since impervious surface areas will not be significantly changed. Discharge rates, however, could increase due to anticipated efficiency improvements of the new building roof drainage systems. The exact stormwater quantities from the proposed project are not yet known at this time. Proposed stormwater infrastructure would be typical of urban developments, relying on curb and gutter to direct stormwater to an existing network of catch basin inlets

that connect to a central pipe that discharges to Lake Superior. The proposed project would require moderate modifications to the existing stormwater system due to road geometric changes, new vehicular entrances from existing roads, and other utility conflicts.

Permanent stormwater infrastructure would also include the use of water quality manholes. The stormwater runoff from each of the existing and proposed drive up and drop off areas will be collected in catch basins and routed in storm piping that will be connected to the City of Duluth existing storm piping system. Water quality manholes will be installed in the piping system prior to each point of connection to the city owned storm drainage system. The water quality manholes contain a sump area for collection of sediment and a tee-baffle or down-turned elbow fitted on the outlet piping to prevent floatable materials from entering the city owned storm system. The use of water quality manholes will reduce the amount of suspended solids and floatable materials being routed offsite with stormwater discharges from the project site.

Green roofs are being considered for potential incorporation into four areas of the new building. If included in the project, they could be planted with native and regionally appropriate plant species as an option. Green roofs, if incorporated, would reduce the total impervious surface of the proposed project, helping to reduce and slow the amount of stormwater generated from the building site.

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.

Where present, groundwater would need to be managed temporarily during construction. Groundwater dewatering would likely need to occur during bedrock removal and foundation construction. Dewatering water would be pumped to riprap, sandbags, or another energy dissipation device to prevent erosion and sedimentation. Dewatering is not anticipated to be greater than the volume necessary to obtain a MDNR water appropriations permit. Water draw on the municipal water system for the

new facility is anticipated to be similar to the in place facility draw which will be removed.

iv. Surface Waters

a) Wetlands – Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

No wetlands are present within the proposed project area.

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 surface waters are present within the proposed project area.

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) was completed by Braun-Intertec (**Appendix B**) for 413 East Superior Street. This property is presently occupied and has been since 1924 by the Amendola Building, which would be demolished as part of the proposed project. The Phase I ESA identified that an automotive repair facility was present at the location from at least 1951 through at least 1963 and also in the mid-1980s. Although the past use of the property for auto repair is considered a recognized environmental condition, no historical or significant releases were identified. Essentia Health and the contractor plan to develop and implement a Construction Contingency Plan to address actions in the event that contamination would be identified during construction activities.

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

During Construction

During construction solid wastes would be generated from both excavation and grading during site preparations and demolition of existing buildings/structures. Standard construction recycling processes, such as separation of steel and concrete to allow for crushing and recycling re-use, will be utilized. Upon completion of the proposed project geotechnical exploration program and preparation of the foundation drawings, the rough grading drawings detailing bedrock removal limits would be prepared. The actual excavated quantity of overburden and bedrock would also be tracked during construction by surveying overburden depth and using a grid pattern during rock drilling for blasting to create a bedrock surface profile. The depths would then be compared to the rough grading plan removal/ pay limits and to surveyed removal limits. Overburden would be retained

onsite for use in establishing vegetation and final stabilization of the proposed project area. It is anticipated that bedrock could be reused by or resold to interested parties.

The demolition of the Amendola Building and partial removal of DC-1 and DC-2 would generate solid waste/demolition debris. Demolition activities would adhere to Minnesota Rules 7035.0805, which requires removal and proper disposal or recycling of certain items before beginning a renovation or demolition project. As appropriate, demolition debris would be hauled offsite and disposed in a properly licensed landfill. Demolition debris would be hauled by a licensed transporter along haul routes based on the City of Duluth's *Duluth Truck Routing* document (City of Duluth, 1995) as shown in **Figure 10**. Waste haul routes will be identified in the construction plans and coordinated with City of Duluth engineering department. For example, the demolition debris could be transported and disposed at the Vonco facility on West Gary Street.

During Operation

During operations of the new proposed Essentia Health building, waste generation and disposal would be similar to existing conditions. Essentia Health generates medical wastes, laboratory wastes, hazardous wastes, universal wastes, and other solid wastes. Some waste streams, such as lab waste, would drain to a continuous flow neutralizing system. Grease waste would be collected in the kitchen area and will drain through an interior grease interceptor. Discharge of the lab waste and grease waste after treatment will be directed to the sanitary sewer (refer also to Item 11.b.i.). Dedicated storage of medical wastes would be located within the new loading dock/waste management space within the lower level of the Duluth Clinic 1st Street building. Other wastes would be generated, appropriately stored, transported by an appropriately licensed waste hauler, and disposed in accordance to applicable rules and regulations. No significant changes would be anticipated from current conditions.

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.

During Construction

Hazardous materials would be stored onsite during construction and operation of the proposed project. Fuels, oils, lubricants and other materials typical for use by construction

equipment would be used during construction. No other chemicals or hazardous materials would be needed for or generated by the proposed project. Hazardous material storage would include secondary containment of fuels during the construction phase of the proposed project. Refueling spills and equipment breakdowns, such as a broken hydraulic line, could introduce contaminants into the soil during construction. A spill could result in potentially adverse effects to onsite soils. However, the amounts of fuel and other lubricants and oils would be limited to that needed by the equipment onsite. Supplies and equipment needed to quickly limit any contamination would be located on site. If the contractor is storing onsite a cumulative amount of petroleum products in 55 gallon drums or larger of greater than 1,320 gallons, a Spill Prevention, Control, and Countermeasure (SPCC) Plan would be developed and implemented to prevent the discharge of petroleum products and to address accidental spills or the release of any hazardous material or petroleum products.

To minimize the likelihood of potential spills and leaks of petroleum and hydraulic fluids during project construction, equipment and petroleum storage would be inspected by the contactor for leaks and petroleum contamination, fuels for construction would be stored at staging areas that are not near open stormwater sewer drains. In addition, the contractor would use double-walled tanks or secondary containment for single-walled tanks used for on-site storage of petroleum products consistent with Minnesota Rules 7151. Any bulk lubricants would also be stored with secondary containment protection. All petroleum and lubricant storage containers would be inspected on a weekly basis and the inspections would be documented. During operations, hazardous materials would be stored onsite. There would not be a significant difference in the hazardous materials stored onsite with the exception of a new 25,000 gallon underground storage tank (UST) with No. 2 fuel oil would be installed within the Level 2 boiler plant (EwingCole, 2018).

During Operation

In the Duluth Clinic, there currently is a 1,500 gallon aboveground storage tank (AST) containing fuel oil, which serves the boilers. It is anticipated that this AST would remain in place. Other hazardous materials related to medical supplies, equipment, and operations would not change substantially as a result of the project.

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.

During Construction

Excavated soils, overburden, and bedrock on site are not considered to be hazardous wastes. Typical construction supplies such as, aerosol cans and solvents may be generated as part of the construction of the proposed project and may be classified as hazardous wastes. Should these materials or other materials that have the potential to become hazardous wastes once used or deemed a waste be brought onsite, the contractor would obtain a hazardous waste license. Generation, storage, and disposal of any hazardous wastes would be conducted in accordance with applicable federal and state rules and regulations. The contractor for the project has developed a Hazardous Waste Contingency Plan that outlines practices related to hazardous wastes that could be generated as part of the proposed project.

During Operation

During proposed project operations, it is anticipated that hazardous waste generation will remain similar to current conditions. Essentia Health currently generates hazardous wastes under hazardous waste licenses for its 1st Street pharmacy (MNS000306664) and 3rd Street pharmacy (MND071777718) locations as very small quantity generators. Relocation of these pharmacies would require modifying the physical addresses for both respective hazardous waste licenses; however, no new hazardous wastes are anticipated to be generated as a result of the proposed project.

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 near the site.

As previously described, the location of the proposed project is urban and well-developed with negligible habitat. Almost all activities associated with the proposed project would occur in already impervious areas. The nearest adjacent habitats are surface waters; however, as described in Item 11, there would not be any direct discharges to these waterbodies or other impacts.

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.

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) online tool identifies 4 federally threatened species and 1 federally endangered species as occurring in St. Louis County. The Minnesota DNR's Natural Heritage Information System (NHIS) database (Barr License Agreement LA-722) was reviewed in January 2019. Federal and state-listed threatened and endangered species are summarized in **Table 5**.

There are no Minnesota Biological Survey Sites (MBS) with high or outstanding biodiversity or other sensitive ecological resources located within the project site or close proximity.

Table 5 Federal- and State-listed species recorded near the proposed project

Common Name	*Scientific Name*	Federal ESA Status	State Status	Decision/Justification
Bald Eagle	*Haliaeetus leucocephalus*	Protected by BGA and MBTA	Watchlist	The project site is located within a well-developed area with high human disturbance and would not provide suitable nesting habitat for the species.
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	Threatened	No suitable roosting tree habitat or winter hibernacula will be impacted. Based on known NHI roost tree and hibernacula data, no known maternity roost trees or hibernacula are within 150 feet or 1/4 mile of the site, respectively.
Gray Wolf	*Canis lupus*	Threatened and Critical Habitat	N/A	Gray wolves are mobile, medium-large mammals with a large range. Gray wolves tend to avoid human activities and would likely not be found within the developed project site.
Rufa Red Knot	*Calidris canutus rufa*	Threatened	N/A	The project site is not located within suitable open, sandy beach habitat and would not provide suitable nesting habitat for the species.
Canada Lynx	*Lynx canadensis*	Threatened	Special Concern	Lynx are mobile, medium-large mammals with a large range. Lynx prefer forested habitats and would not be found within the well-developed project area.
Canada Lynx Critical Habitat	N/A	N/A	N/A	According to the USFWS IPaC, the project site is not located within the federally designated Critical Habitat.
Piping Plover (Great Lakes Breeding Population)	*Charadrius melodus*	Endangered	Endangered	There are no open, sandy beach habitat located within the project site. No suitable nesting habitat for the species.
Rusty Patched Bumble Bee (RPBB)	*Bombus affinis*	Endangered	Watchlist	The project site is located within a well-developed area and would not provide suitable open-grassy, or prairie habitat. According to the USFWS IPaC, the project site is not located within the RPBB high potential area.
Soapberry	*Shepherdia canadensis*	N/A	Special Concern	Species is found in coniferous forest or hardwood habitats with steep rocky bluffs. The project site is located within a well-developed highly disturbed area. No suitable habitat for the species.
Lake Sturgeon	*Acipenser fulvescens*	N/A	Special Concern	The project site is located approximately 1,000 ft. from Lake Superior. There will be no impact to the species or its habitat. Special concern species are not protected.
Peregrine Falcon	*Falco peregrinus*	N/A	Special Concern	Species is known to nest on buildings and bridges. Suitable nesting habitat may be present; however, special concern species are not protected. No peregrine falcon nests are located within construction or demolition areas.
Shortjaw Cisco	*Coregonus zenithicus*	N/A	Special Concern	The species is located within Lake Superior. The project site is located approximately 1,000 ft. from Lake Superior. There will be no impact to the species or its habitat. Special concern species are not protected.

c. 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 is located within a well-developed, urban area. The proposed project would not impact rare plant communities or ecosystems, as these rare features are not present within the proposed project vicinity. According to the Minnesota DNR NHIS and MBS databases, there are no native plant communities or sensitive ecological resources located within the project site.

Invasive species are not anticipated to be a concern as there are negligible habitat or pervious areas within the current location or under the proposed project. Any areas that are impervious or lawns would be landscaped, including roof gardens that would be planted with regionally-appropriate vegetation.

There would be no impact to threatened or endangered species as no suitable habitats currently are or would be available (**Table 5)**.

Peregrine falcons historically nested on cliff ledges along rivers or lakes, but commonly nest on buildings and bridges in Minnesota. The NHIS query results indicate a nest box is located within 950 feet of the project site and therefore peregrine falcons may use the area around the project site for hunting. However, no known peregrine falcon nests are located within the proposed project area.

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

Although the proposed project location does not currently and would not contain suitable habitat, mitigation measures would be implemented to avoid, minimize, or mitigate adverse effects to nearby aquatic life and migratory bird populations:

During Construction

The proposed project is located less than a quarter mile from Lake Superior and less than a mile from a number of other streams. To mitigate offsite transportation of total suspended solids in stormwater during construction, storm sewer drains would be disconnected prior to beginning construction activities. Other stormwater BMPs would also be implemented to prevent erosion and sedimentation.

During Operation

The proposed new Vision Northland Building is designed with glass along much of the exterior of the building, including the towers and plinth. While building glass can create an illusion of clear airspace to birds, the Vision Northland Building would mitigate this illusion by installing fritted glass. The installation of fritted glass would limit the clarity and reflectivity of the glass, which is a factor that results in bird/glass collisions. Fritted glass is a recommended mitigation measure by the USFWS to mitigate bird strikes from migratory bird populations (USFWS, 2016). The project's glass is fritted to some extent, but the degree to which the window glass is fritted, or contain other bird safe options, has not been determined as of this time.

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 data request was sent to SHPO to identify known historic properties and archaeological sites in the vicinity of the proposed project area. No recorded historic structures or archaeological sites are located within the proposed project boundaries. There are 220 historic structures and three archaeological sites located within 0.5 miles of the proposed project area (**Figure 8**). Additionally, the proposed project area would be located near the Duluth Commercial Historic District.

The proposed project would relocate and consolidate operations of the medical campus, resulting in a temporary vacancy of the historic St. Mary's building located one city block to the northwest. At this time there are no plans for this historic building and any future use, demolition, or redevelopment would be outside of the scope of the proposed project.

No known historic properties exist within the proposed project area. It is anticipated that no historic properties would be adversely affected by the proposed project.

Aerial photographs in **Figure 11** show the evolution of the downtown medical campus and land usage since 1961.

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.

During Construction

No environmental effects associated with visual glare or equipment vapor plumes are expected during construction activities.

During Operation

The proposed multi-story towers were designed to consolidate the existing facilities that would be renovated with an emphasis on building vertically rather than sprawling horizontally. As a result, the proposed project would be part of the viewshed of the surrounding properties as shown in **Appendix C**. The proposed building design aims to take advantage of the expansive views of Lake Superior and the steep hillside topography while connecting with the streetscape of downtown Duluth at multiple points. Building materials have been selected to be visually appealing, with the use of glass and metal panels intended to resemble water and fog that can be periodically seen on Lake Superior. The proposed design would conceal permanent equipment to minimize visual exterior impacts.

Exterior lighting would minimize sky-glow and visibility glare. All exterior lights would also operate at reduced light output during non-peak time periods (midnight hours) to minimize night-time effects and minimize energy consumption.

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.

Proposed stationary source emissions are discussed during project operations and construction.

During Construction

Dust and air-borne debris will be controlled during demolition and other construction work utilizing water, controlled operations during winding conditions, and other measures. Further Construction impacts have also been considered as part of the EwingCole design package (EwingCole, 2018). This includes specific details for the control of fly-rock. Fly-rock results when the blast charge escapes through the surface and results in rock and dirt being thrown airborne. Fly-rock is not permitted and must be controlled through the placement of overburden (dirt) and blasting mats (typically wired tire mats) of proper depth, over the blast area.

During Operation

Essentia Health has existing diesel generators, cooling towers, kitchen exhausts, and fume hoods, which are operated under an existing Minnesota State Registration Permit. The scope of the proposed project would include the installation of new air emissions units, which would require air permitting to be evaluated and completed separate from this EAW.

Under the proposed project, the steam and hot water building heating service would be supplied by two Essentia Health plants, the existing DC-1 steam plant and the new proposed Level A Mechanical Room steam plant. Additional capacity would be added to the existing DC-1 steam plant to serve new construction south of 1st Street and a new steam plant located in the Level A Mechanical Room would serve new construction North of 1st Street. Both plants would be cross connected for efficiency when operating at low load conditions as well as for redundancy.

Emissions of the proposed system would be quantified as part of the air quality permitting effort. The emission units would be installed in compliance with the applicable state and federal air quality programs. The following proposed project description provides an overview of the systems that include the proposed primary stationary sources of air pollutants:

- **DC-1 Boiler Plant Upgrade**
  Based on preliminary calculations, two new 250 BHP Low Pressure (15 PSI), dual fuel (Gas/Oil) Steam Boilers would be installed. The low pressure steam would serve two new 7,500 MBH Steam to Hot water converters. Two new 375 GPM variable speed pumps would supply hot water to the various heating coils in the building. New hot water, low pressure steam and condensate piping mains would be routed from the DC-1 boiler room to the new building. Low Pressure steam would provide humidification for the portions of the new building located to the south of 1st Street.

- **Level 2 Boiler Plant**
  Based on preliminary calculations, three new 400 BHP Low Pressure (15 psi), dual fuel (gas/oil) steam boilers would be installed. The low pressure steam would serve three new steam to hot water converters. Three new variable speed pumps would supply hot water to the various heating coils in the building. Low pressure steam would provide humidification for the new building. A new 25,000 gallon No. 2 fuel oil UST would be installed to serve the boilers.

  Two high pressure (75 PSI), 100 BHP (approximate capacity) steam boilers and piping would also be installed in the Level 2 Mechanical Room to serve sterilizers and cart washers in the Central Sterile Processing Department. Boiler flue stack economizers will be installed on the new boilers in the Level 2 Mechanical Room.

  The chilled water service to the new building would be supplied by two plants. Additional capacity would be added to the existing DC-1 chiller plant to serve new construction south of 1st Street and a new chiller plant located in the Level A Mechanical Room would serve new construction north of 1st Street. Both plants would be cross connected for efficiency when operating at low load conditions as well as redundancy.

- **DC-1 Chiller Plant Upgrade – Serves new construction south of 1st Street**
  Based on preliminary calculations, a new 1,000 ton high efficiency electric centrifugal variable speed chiller would be installed. The condenser water would be provided by a new 1,000 ton crossflow cooling tower with variable speed fans located in the service yard between DC-1 and Peerless. New variable speed condenser and chilled water pumps would also be installed in the DC-1 Mechanical Room. New chilled water supply and return piping mains would be routed from the DC-1 chiller plant to serve the new building.

- **Level 4 (previously Level D) Chiller Plant – Serves new construction north of 1st Street**
  Based on preliminary calculations, three new 1,000 ton high efficiency variable speed electric centrifugal chillers would be installed. The condenser water would be provided by a three new 1,000 ton crossflow cooling towers with variable speed fans located on the roof. A plate and frame heat exchanger and glycol dry cooler will be installed to provide waterside economizer operation when the outdoor temperature is conducive (approximately 350˚ F or below).

Table 6 below summarizes the proposed new emission units associated with the proposed project.

Table 6 Proposed emission units

Emission Unit Name	Description	Capacity/Size	Emissions[1,2,3]
LP Steam Boiler – 1	Low pressure (15 PSI), dual fuel (Gas/Oil) steam boiler	250 Boiler HP	Criteria, HAPs, GHG
LP Steam Boiler – 2	Low pressure (15 PSI), dual fuel (Gas/Oil) steam boiler	250 Boiler HP	Criteria, HAPs, GHG
Fuel Tank – 1	Distillate fuel tank	10,000 gallons	Criteria, HAPs
LP Steam Boiler – 3	Low pressure (15 PSI), dual fuel (Gas/Oil) steam boiler	400 Boiler HP	Criteria, HAPs, GHG
LP Steam Boiler – 4	Low pressure (15 PSI), dual fuel (Gas/Oil) steam boiler	400 Boiler HP	Criteria, HAPs, GHG
Fuel Tank – 2	Distillate fuel tank	25,000 gallons	Criteria, HAPs
HP Steam Boiler – 1	High pressure (75 PSI) steam boiler	100 Boiler HP	Criteria, HAPs, GHG
HP Steam Boiler – 2	High pressure (75 PSI) steam boiler	100 Boiler HP	Criteria, HAPs, GHG
Cooling Tower – 1	Crossflow cooling tower	1,000 Ton	Criteria, HAPs
Cooling Tower – 2	Crossflow cooling tower	1,000 Ton	Criteria, HAPs
Cooling Tower – 3	Crossflow cooling tower	1,000 Ton	Criteria, HAPs
Cooling Tower – 4	Crossflow cooling tower	1,000 Ton	Criteria, HAPs

1. Criteria pollutants include: volatile organic compounds (VOC), particulate matter emissions (PM), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb)
2. Greenhouse Gas (GHG) emissions include: carbon dioxide (CO_2), methane (CH_4), and nitrogen dioxide (N_2O), and carbon dioxide equivalents (CO_2e)
3. Hazardous air pollutants (HAPs): the Environmental Protection Agency (EPA) has specifically defined a list of 187 HAPs which include pollutants such as benzene, hexane, and toluene. HAP emissions are dependent on equipment configuration and fuel combusted in various emission units.

Other miscellaneous emission sources may be included as part of the project, such as laboratory fume hoods, small heaters, and other potentially insignificant sources, which will be included in the air quality permitting assessment once the final design has been confirmed. Additionally, some of the emission units in **Table 6** may be classified as insignificant activities once further air quality permit application development has been completed.

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.

During Construction

A diesel truck idling plan will be implemented/utilized during on site operations. Construction traffic related to the delivery of project materials and the hauling off-site of excess soil and bedrock would temporarily increase traffic during construction. For efficiency, safety, the mitigation of vehicle emissions, and minimization of disruptions, construction traffic would follow planned construction haul routes. The planned construction haul routes are shown in **Figure 10** and are based on City of Duluth's *Duluth Truck Routing* document (City of Duluth, 1995). Truck routes have been planned to be efficient, safe, and minimize disruptions.

During Operation

The proposed project is anticipated to yield similar travel characteristics with the exception of the potential for a 10% increase in patients/visitors, physicians/providers, and staff/employees. Based on a future intersection analysis study conducted by Kimley-Horn (**Appendix D**), (refer to Item 16), intersections within and near the proposed project area are anticipated to continue to operate at an acceptable level of service (LOS) during the weekday peak hours. From this perspective, mitigation measures for vehicle-related emissions would be unnecessary.

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.

Dust would be temporarily generated during construction activities from demolition, blasting, and ground work. To mitigate duration of impacts, construction hours would be limited to those indicated in the City of Duluth construction standards current addition, or as otherwise limited by the City. Dust would be mitigated through erosion and sediment control as outlined in the project's construction SWPPP. The contractor would also implement frequent street sweeping of impacted areas as required throughout the duration of the project, as well as watering as necessary during demolition activities. Additional considerations related to dust from blasting and fly rock are discussed in Item 16.a.

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.

During Construction

Existing noise levels in the proposed project area are typical of an urban setting. Surrounding properties are largely a mix of institutional, commercial, and residential uses. Noise is generated primarily by vehicular traffic and periodic railroad traffic. In addition to noise from the city streets, the proposed project is located less than one block north of Interstate 35 and just over a tenth of a mile from an existing railroad track that runs along the Lake Superior shoreline (**Figure 4**).

The nearest sensitive receptors are residential land uses located immediately adjacent to the northeast across 6th Ave. East and southwest across 4th Ave. East. The nearest residences are less than 60 feet from the proposed project area.

Construction noise is expected to be generated by bedrock removal, construction equipment, and workers accessing the proposed project area. Noise monitoring and mitigation related to bedrock removal would occur.

Bedrock removal would be completed by drilling and drill-hole charge explosive blasting. Noise levels from blasting would produce short spikes above normal background noise levels depending on the distance and size of the blasting. To ensure adjacent buildings and structures are not damaged, tight constraints are required on strength of blasting charges to control percussion air blast and ground blast vibration levels. Air blast and ground vibration levels would be monitored with every blast through the duration of the production blasting. If at any time the limiting thresholds for air blast or ground vibrations are exceeded, blasting would be halted and the test blast program reinitiated to determine the proper course of action. Removal of bedrock adjacent to existing structures or foundations would be removed through drilling and splitting and hammering to prevent damage to other structures.

The equipment associated with the proposed project is expected to be limited to general earthmoving equipment (dozers, loaders, excavators, cranes, etc.) and trucks used to haul construction, building, and demolition materials to and from the proposed project area.

As described in Proposed Construction Methods and Sequencing, Item 6.b., site preparation is expected to begin in 2019, with exterior construction activities continuing through 2020. The total construction phase is estimated to take 36 months, with the start of operations projected in 2022.

Noise generated from construction activities would be limited to daytime hours. The contractor would coordinate construction activities and their related noise impacts with the City of Duluth and adjacent properties on a frequent basis. Noise pollution controls and best practices would be utilized during construction and may include the use of mufflers on equipment, avoiding engine idling to the greatest extent practicable, and the strategic placement of stationary machinery away from sensitive receptors.

During Operation

The location of the proposed rooftop heliport was evaluated for noise impacts on the proposed structure and community. Noise mitigation strategies for building occupants would be achieved through the selection of exterior building shell and glazing materials to comply with noise regulations and/or guidelines. Additional mitigation strategies to minimize potential noise effects on nearby residential buildings include raising the elevation of the proposed helipad from its current location.

The primary helipad will be located on the roof of the new Vision Northland project at elevation 970' +/-, or approximately 219' feet above 2nd street elevation. The existing helipad located on the roof of Support Services Building is at approximately elevation 852', or approximately 63 feet above 4th street elevation. The new helipad will be at a higher elevation than the existing, and significantly higher than the adjacent land elevation. The difference in elevation may assist in lessening noise impacts.

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.

Peak hour traffic is not anticipated to exceed 250 vehicles and total daily trips is not anticipated to exceed 2,500; therefore, a traffic impact study is neither necessary nor required to be prepared. Traffic and parking analyses of the proposed project were performed by Kimley-Horn and Associates, Inc. (**Appendix D**). A future conditions analysis was also conducted to gain a better understanding of any improvements required to accommodate a theoretical 10% traffic growth or increase parking demand as a result of the proposed project.

Traffic Analysis

An analysis of existing intersection operating conditions was performed at surrounding major intersections. Weekday AM and PM peak period turning movement counts were conducted at 13 intersections during the week of August 20, 2018. The AM peak hour counts were collected from 6 to 9 am and the PM peak hour counts from 3 to 6 pm. The counts included vehicles, pedestrians, and bicycles.

As shown in **Table 7**, all intersections are operating at acceptable level of service (LOS) under existing conditions, including during the weekday AM and PM peak hours. All individual movements are operating at LOS D or better during the weekday AM and PM peak hours.

Table 7 Existing capacity analysis summary

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
4th Street & 6th Ave.	Signalized	13.5	B	23.1	C
4th Street & 5th Ave.	Signalized	11.9	B	14.2	B
4th Street & 4th Ave.	Stop-Control	2.5 / 9.3	A / A	2.2 / 11.3	A / B
3rd Street & 6th Ave.	Signalized	16.9	B	19.5	B
3rd Street & 5th Ave.	Signalized	14.6	B	14.3	B
3rd Street & 4th Ave.	Stop-Control	2.9 / 9.8	A / A	2.5 / 8.8	A / A
3rd Street & 3rd Ave.	Signalized	6.5	A	8.0	A
2nd Street & 6th Ave.	Signalized	7.7	A	7.7	A
2nd Street & 5th Ave.	Signalized	8.1	A	10.6	B
2nd Street & 4th Ave.	Stop-Control	2.7 / 9.8	A / A	2.5 / 11.1	A / B
2nd Street & 3rd Ave.	Signalized	3.5	A	4.3	A
1stStreet & 4th Ave.	Stop-Control	2.2 / 8.1	A / A	2.7 / 9.0	A / A
Superior Street & 4th Ave.	Stop-Control	1.1 / 8.9	A / A	1.6 / 13.5	A / B

1. Overall intersection delay and LOS is reported for signalized intersections, while overall intersection/worst movement delay and LOS is reported for stop-control intersections.

Based on the traffic analysis along with the understanding that the hospital bed count will not increase, the proposed project is not anticipated to add significant additional vehicular traffic to the roadway network. However, small changes in travel patterns are anticipated in the area as a result of the new and modified parking conditions, including a decrease in campus parking.

A future conditions capacity analysis was performed to determine intersection operating conditions (delay and LOS) if traffic volumes were to increase as a result of the proposed project. This analysis assumed a ten percent increase in traffic growth as a conservative estimate based on the proposed changes to the medical campus as well as potential changes from nearby developments not controlled by Essentia Health. Based on the future intersection analysis, all 13 intersections are anticipated to continue to operate at an acceptable LOS during the weekday peak hours.

Parking Analysis

A parking occupancy count was conducted on September 5 and 6, 2018 at the Essentia Health campus. Occupied spaces were counted in all Essentia Health-owned parking

facilities at 8 am, 11 am, 2 pm, and 5 pm to capture typical fluctuations in parking demand throughout the day. Existing parking locations used by Essentia Health campus are shown in **Figure 12**.

Based on existing parking demand data, it was estimated that more than 3,500 parking spaces are currently available for the three Essentia Health user groups: physicians, staff, and patients/visitors. Based on parking count data collected for each user group, the current peak parking demand was determined to be slightly less than 3,000 parking spaces. As a result, slightly more than 600 parking spaces were estimated to be unoccupied under current peak parking conditions for each user group.

This represents an overall utilization of approximately 82% of available parking spaces currently occupied under peak conditions, which is slightly below the recommended effective capacity of 85% (typical for patient and visitor parking), and 95% (typical for physician and staff parking).

Based on this analysis it was determined that there may be a limit in excess parking in the overall system due to proposed reduction in existing surface parking lots. It was recommended that the proposed project evaluate ways to increase the consolidation and efficiency of existing parking resources.

Alternative Modes of Transportation

The proposed project would be accessible by alternative modes of transportation and actively promotes safe and convenient connections with the transit system for visitors and employees. The project area is currently served by an existing network of city sidewalks, an on-street bike route along East Superior Street, and the Duluth Lakewalk shared use path with an entrance less than one block southeast towards Lake Superior.

The Duluth Transportation Authority (DTA) bus service offers six routes that currently serve the proposed project area, including Routes 6/7, 10, 11, 12, 13, and 22. Bus stops are primarily located on 2nd Street and 3rd Street between 3rd Ave. East and 6th Ave. East. DTA Routes 6/7 and 22 offer bus stops on 1st Street and Superior Street, respectively, between 3rd Ave. East and 10th Ave. East. All DTA buses are equipped with bicycle racks and no additional fare is charged for transporting bicycles.

This project provides the opportunity to improve mass transit amenities for staff and customers, such as transit shelters within or adjacent to the proposed new structure. During the permitting process, the proposed project proposer will collaborate with the DTA to evaluate methods to increase efficiencies and options for mass transit riders.

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,

During Construction

Some public roadways will require full-width reconstruction. All work in the right-of-way will conform to the City of Duluth Construction Standards and Specifications. The site utility design will provide the new and existing buildings with storm sewer, sanitary sewer, electric, steam, hot water, gas, and fire and domestic water service lines.

A haul route for construction material would be developed by the contractor that conforms to the City of Duluth's truck routing guidance (**Figure 10**).

During Operation

The proposed project would cover multiple city blocks and would be able to be accessed by multiple intersections. The proposed project would also include a drive approach from Superior Street and an ambulance entrance from 1st Street in addition to the existing approaches from 2nd Street. The future medical campus headcount is not anticipated to change significantly as a result of the proposed project. However, to test the sensitivity for potential change, the traffic and parking analyses examined conditions at both the existing patient/visitor count and at an increase of 10%.

Based on existing and future intersection capacity analyses, all intersections are currently and are anticipated to continue to operate at an acceptable LOS during the weekday peak hours, with all intersections operating at LOS C or better. All individual movements currently and are anticipated to operate at LOS D or better. The one exception was found in the future intersection analysis with the eastbound left-turn movement at the intersection of 4th Street and 6th Ave., which would be anticipated to operate at LOS E for such potential growth (10%).

The planned enhancements to the medical campus would serve patients from Duluth and the broader region. The proposed project is anticipated to reallocate rather than add

parking and bed count. Therefore, new trips on the public roadway system are not anticipated and a traffic impact study would not be required.

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 is anticipated to correspond with timing of another proposed project on Superior Street across 4th Ave. East (333 East Superior Street). The developers, Titanium Partners in partnership with Landmark and Gerald Fogelson, are planning a 15-story residential tower with ground floor retail to replace the Voyageur Lakewalk Inn with approximately 200 rental units and 18,000 square feet of retail space (Minneapolis/St. Paul Business Journal, December 2018). The project is currently estimated for completion in 2021. In addition, the downtown Superior Street reconstruction will continue in 2019 and 2020. In 2019, Superior Street will be reconstructed from east of Lake Ave. to approximately 120 feet east of 4th Ave East.

To alleviate transportation and traffic impacts, temporary road and alley closures will be coordinated among the projects. For example, the 4th Ave. East intersection will not be closed until after late-June. In addition, the 3rd Ave. East and 1st Ave. East intersections with Superior Street will not be closed concurrently.

Completion of the residential tower and completion of outside construction of the proposed project is anticipated to occur within the same timeframe; therefore, limiting the timeframe in which construction is occurring within downtown. Noise associated with construction from both projects would be occurring within the same timeframes, thus limiting impacts to sensitive receptors.

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.

Essentia Health will consider consolidating parking as part of future projects, if new parking ramps become available in the future. Currently Essentia Health- owned and -leased parking lots are interspersed throughout the downtown Duluth medical campus. Consolidation of

parking could result in additional available parking spaces in downtown Duluth and allow for further development in areas currently occupied by inefficient and land consumptive off-street parking lots.

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

The proposed project is not anticipated to cause any additional cumulative environmental effects beyond those addressed/discussed in Item 19.a.

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 other potential environmental effects 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:

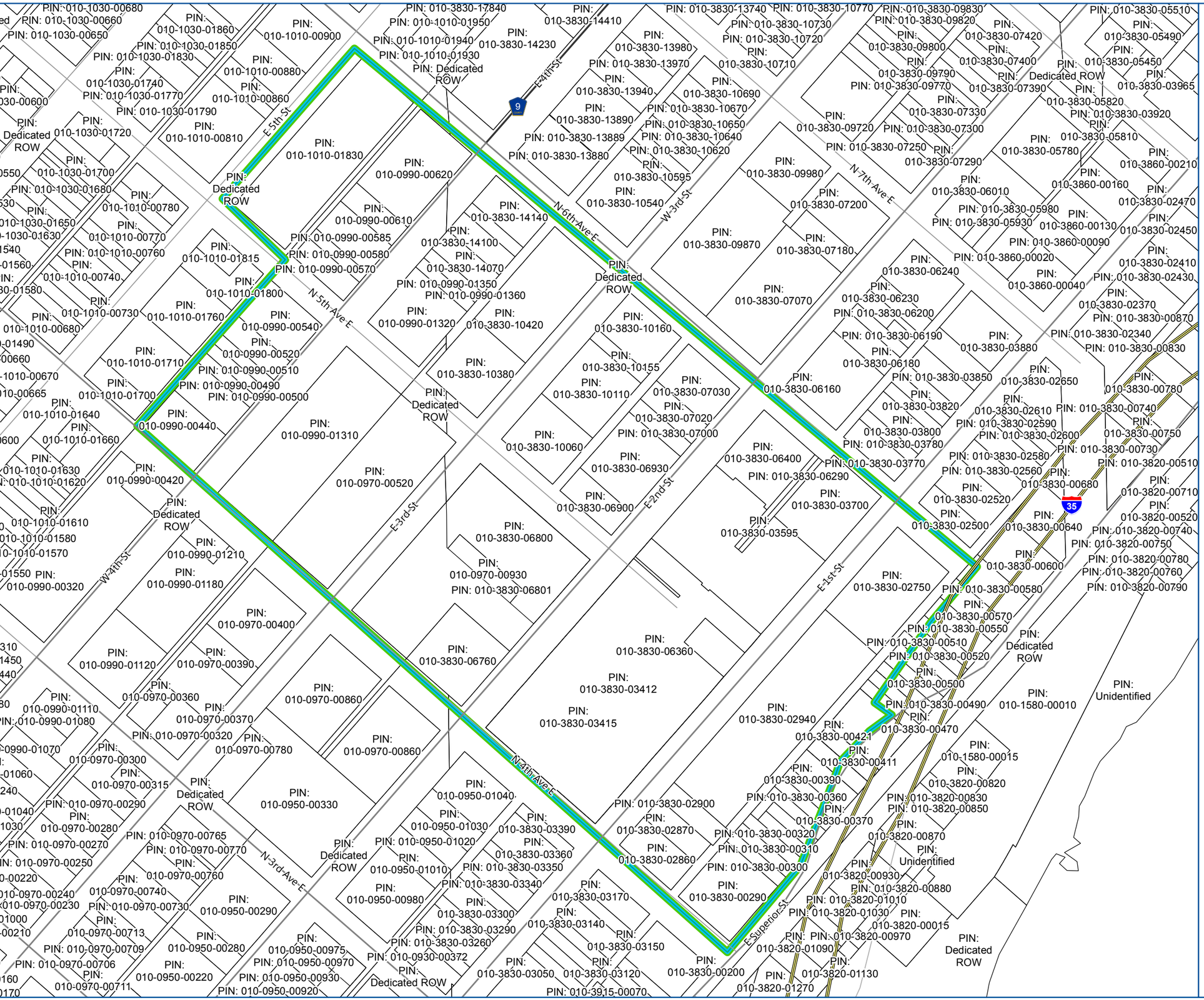
- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, 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:** 2/4/2019

Keith Hamre

Title: Director of Planning and Economic Development

Figures



Approximate Project Boundary

Parcel Boundary

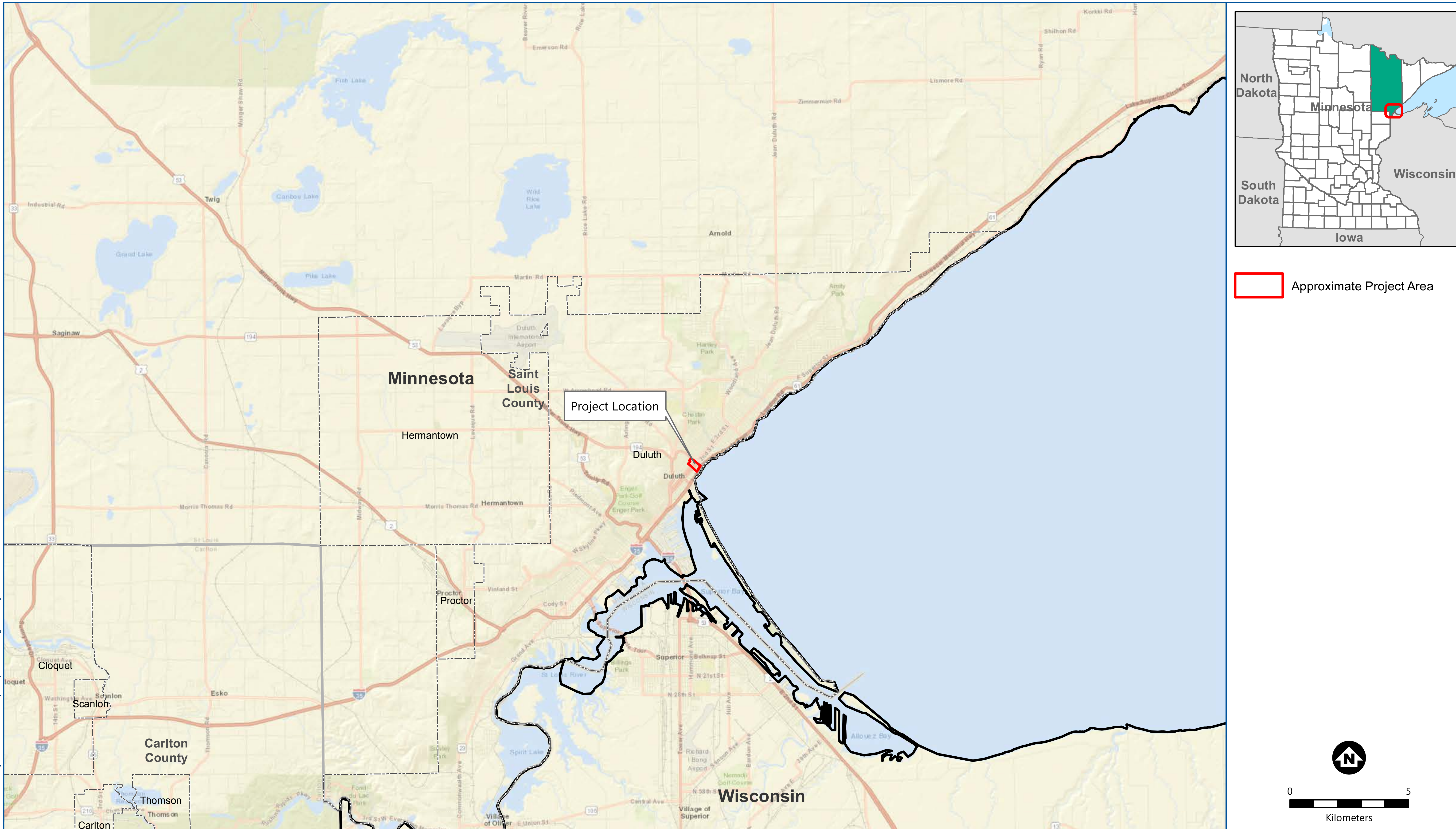
0 100 200

Feet

PARCELS
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

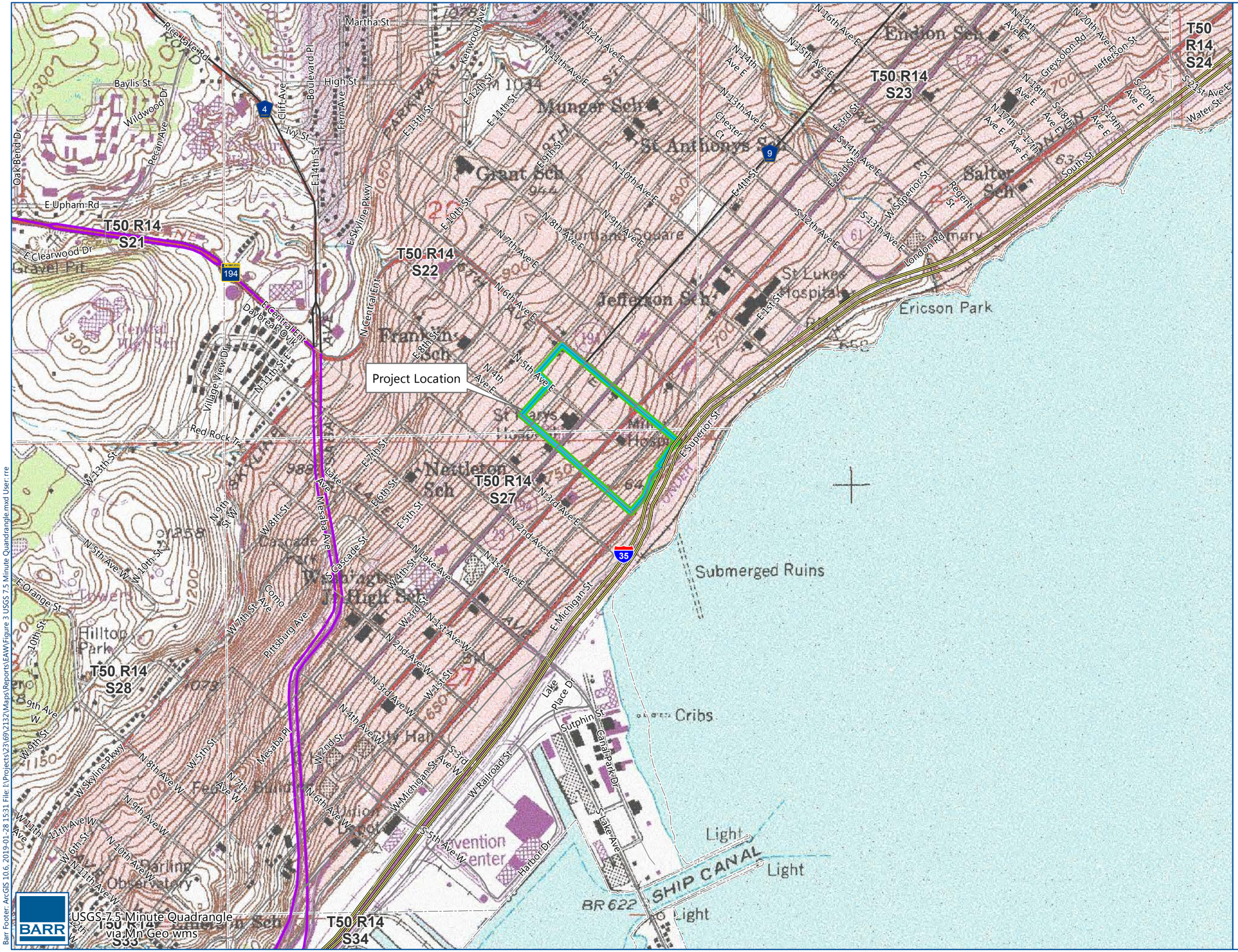
FIGURE 1

BARR



PROJECT LOCATION
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 2



Approximate Project Boundary

0 1,000 2,000

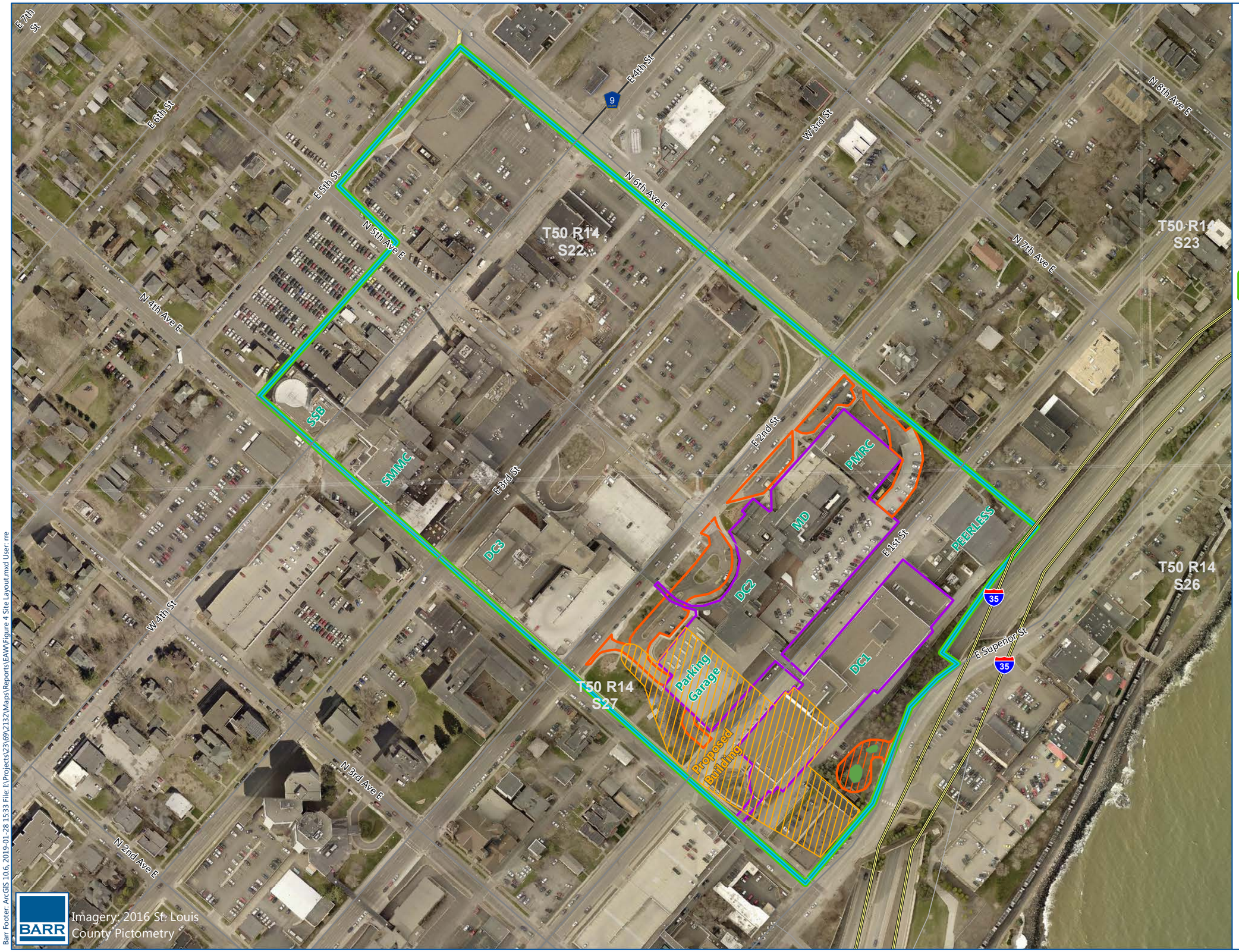
Feet

USGS 7.5 MINUTE QUADRANGLE
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 3

BARR

USGS 7.5 Minute Quadrangle
via Mn Geo wms



- Approximate Project Boundary
- Current Building
- Driveway Approaches
- Green Space
- Proposed Building
- Proposed Driveway Approaches

0 150 300
Feet

SITE LAYOUT
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 4

Approximate Project Boundary

Land Cover

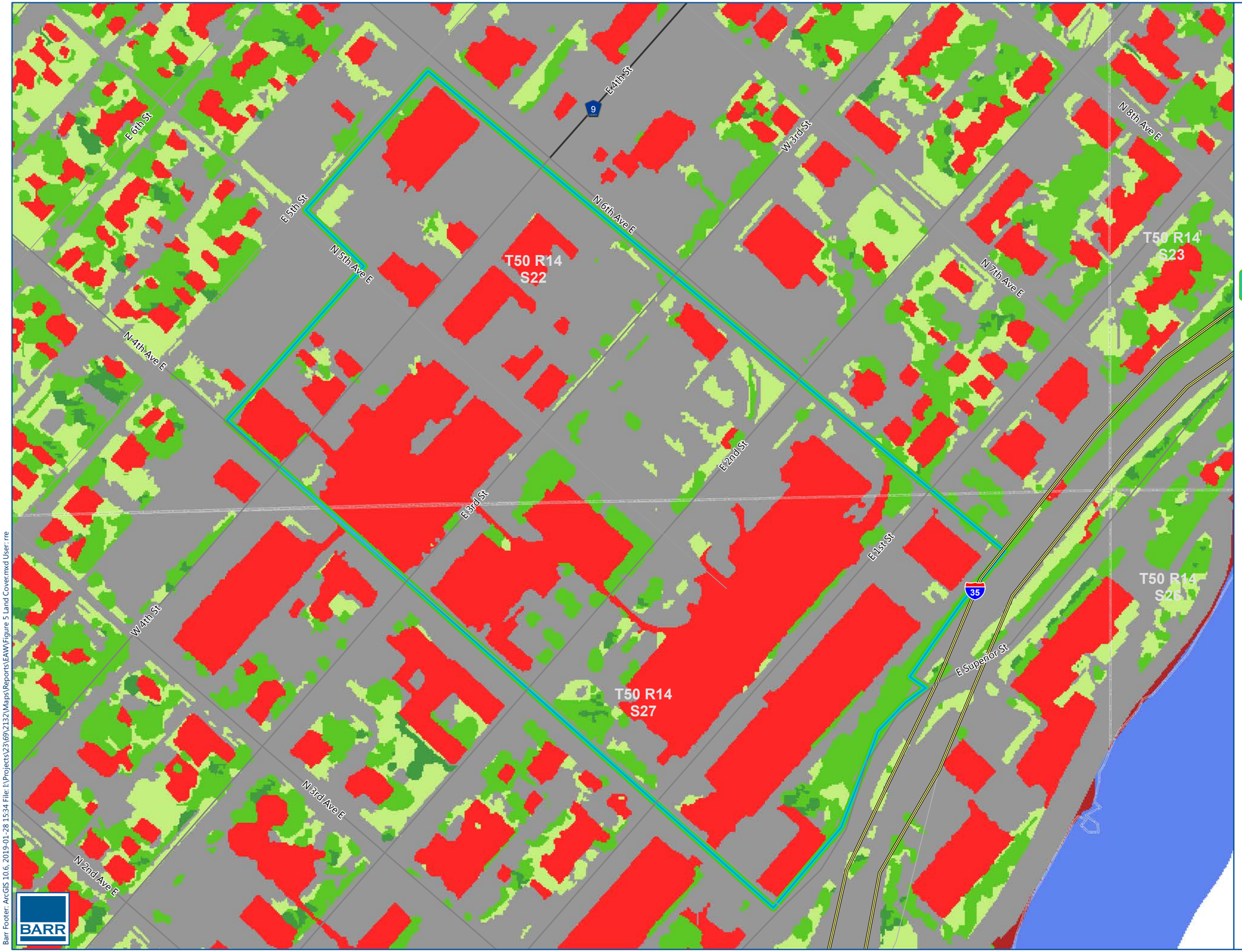
- Grass/Shrub
- Bare Soil
- Buildings
- Roads/Paved Surfaces
- Lakes/Ponds
- Deciduous Tree Canopy
- Coniferous Tree Canopy

0 150 300
Feet

LAND COVER MAP
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 5

Barr Footer: ArcGIS 10.6, 2019-01-16 13:07 File: I:\Projects\23\69\2132\Maps\Reports\EAW\Figure 5 Land Cover.mxd User: VAW



Approximate Project Boundary

Land Cover

- Grass/Shrub
- Bare Soil
- Buildings
- Roads/Paved Surfaces
- Lakes/Ponds
- Deciduous Tree Canopy
- Coniferous Tree Canopy

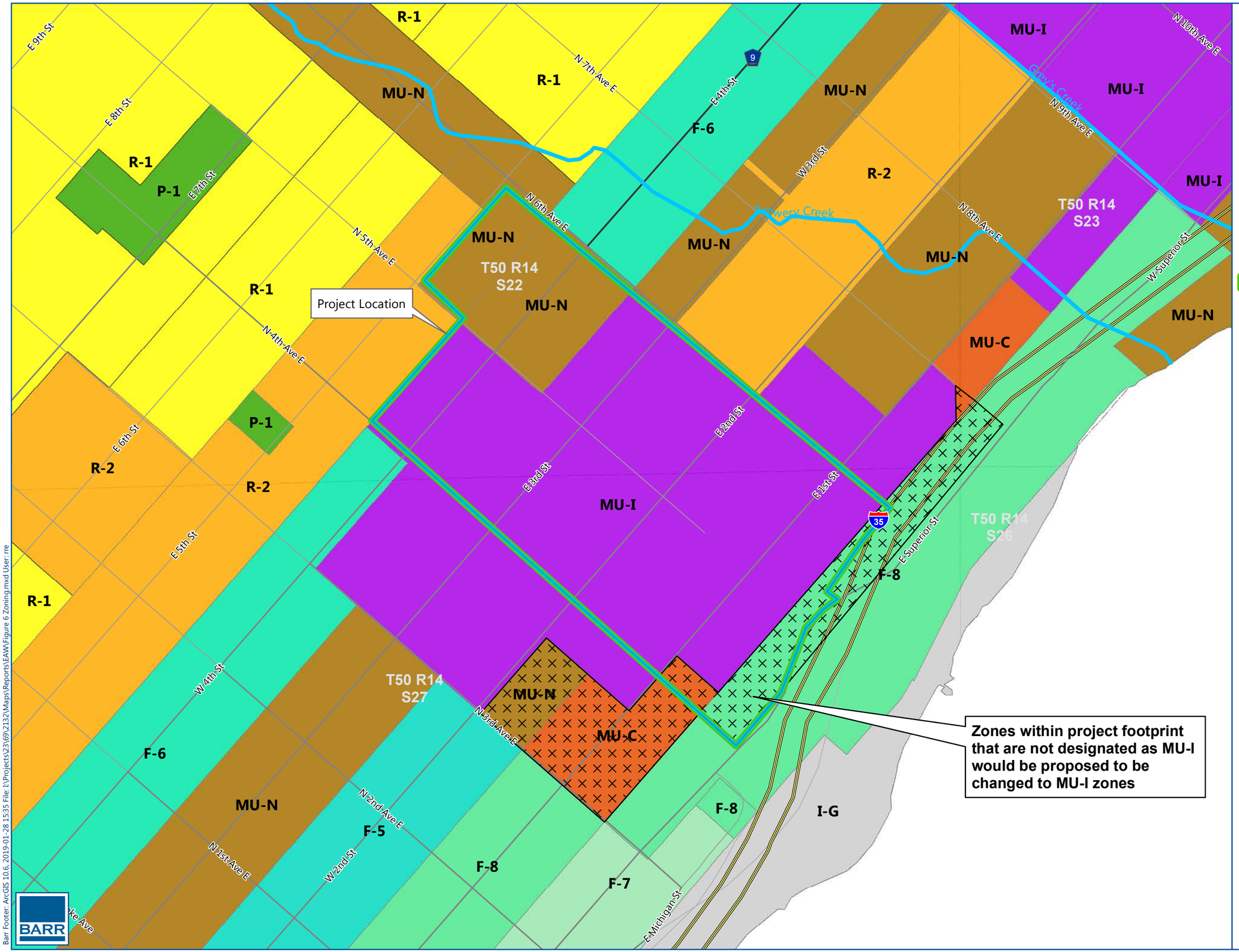
0 150 300
Feet

LAND COVER MAP
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 5

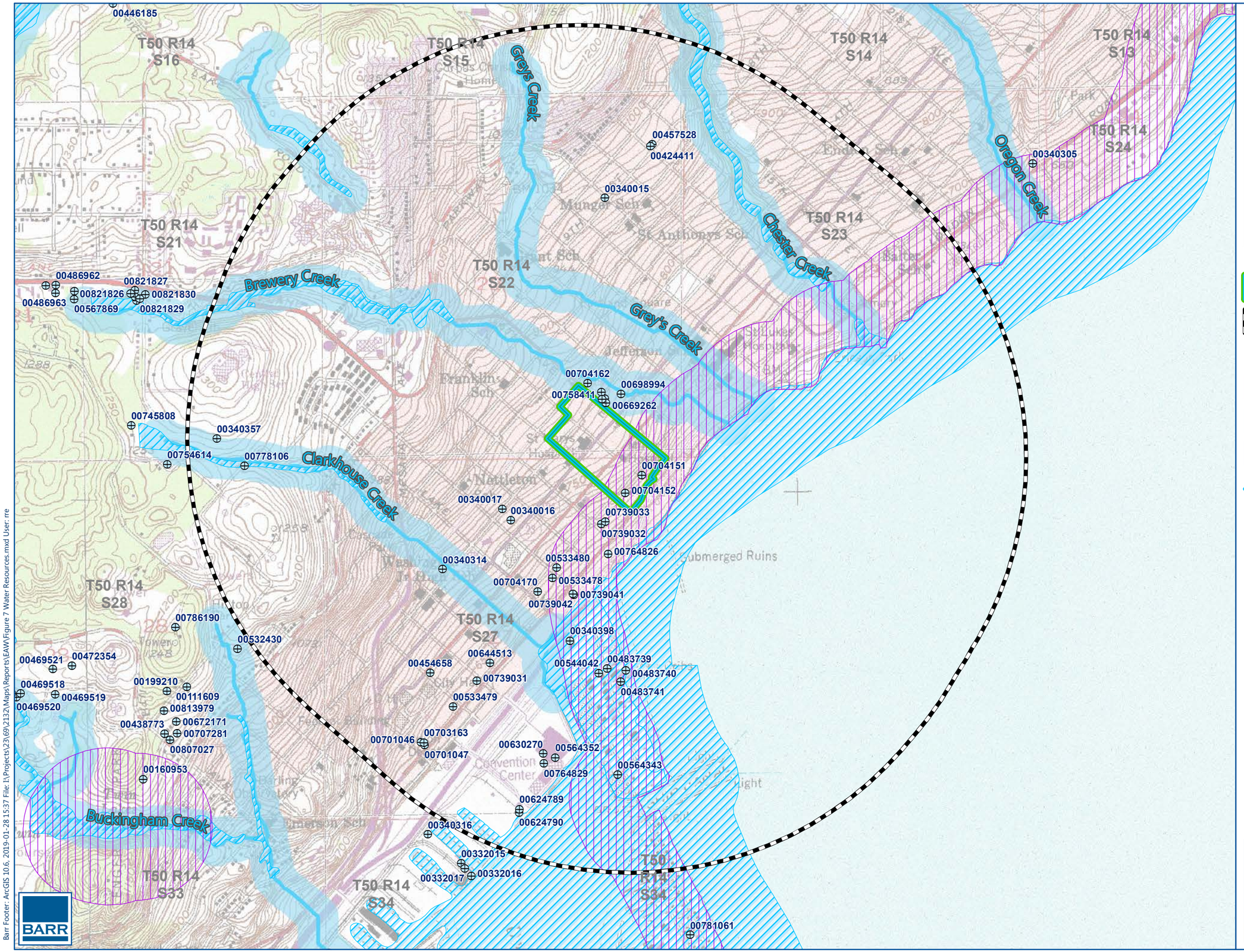
BARR

Bar Footer: ArcGIS 10.6, 2019-01-28 15:34 File: I:\Projects\23\69\2132\Maps\Reports\EAW\Figure 5 Land Cover.mxd User: rre



ZONING
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 6



Approximate Project Boundary

1 Mile Radius

Well - County Well Index

General Development Shoreland Management Zone

Floodplain

Shoreland Buffer

Duluth Rivers and Streams

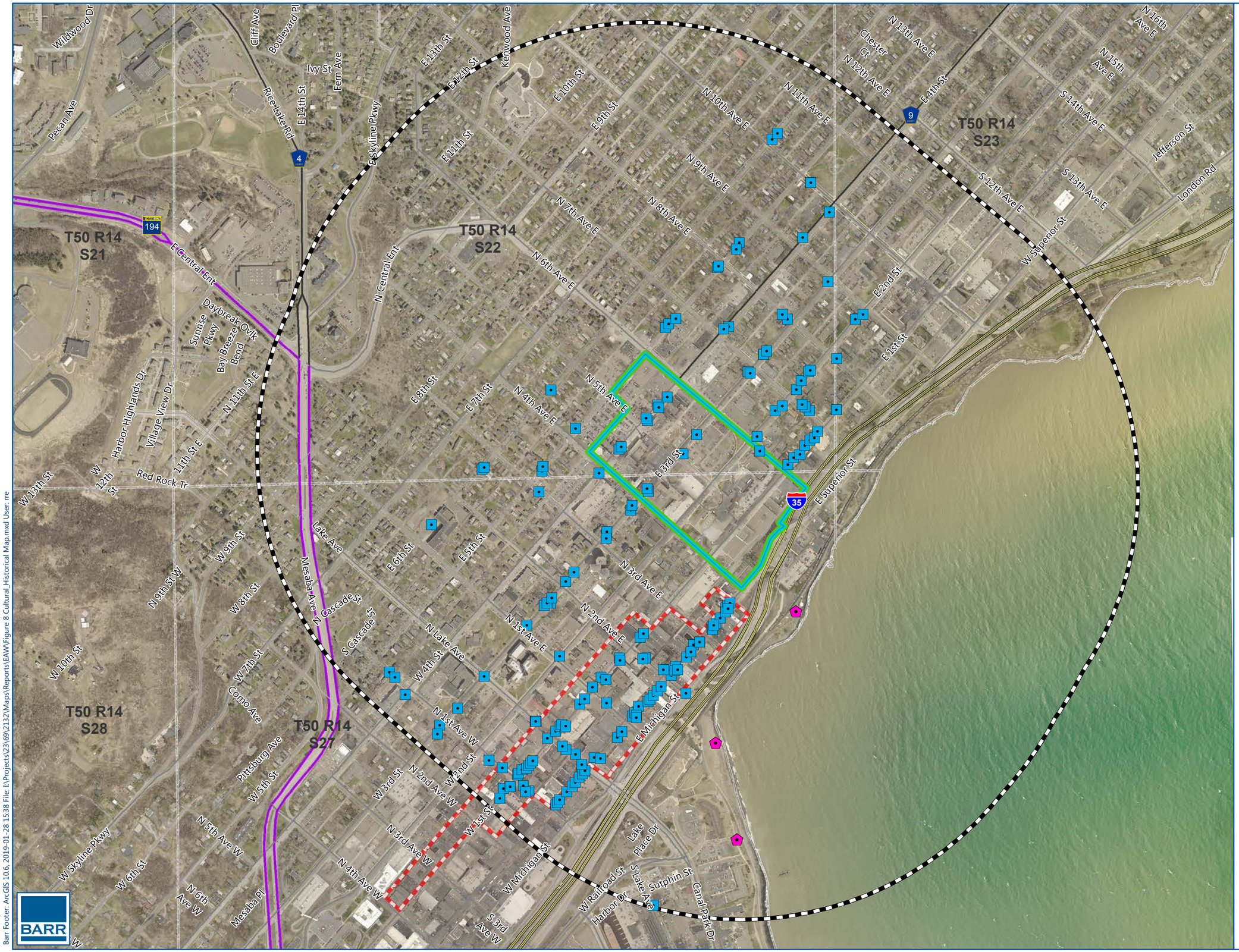
0 0.25 0.5

Miles

WATER RESOURCES
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 7

BARR



Approximate Project Boundary

Duluth Commercial Historic District

Half Mile Radius

Archaeology Sites

Historical Sites

0 600 1,200

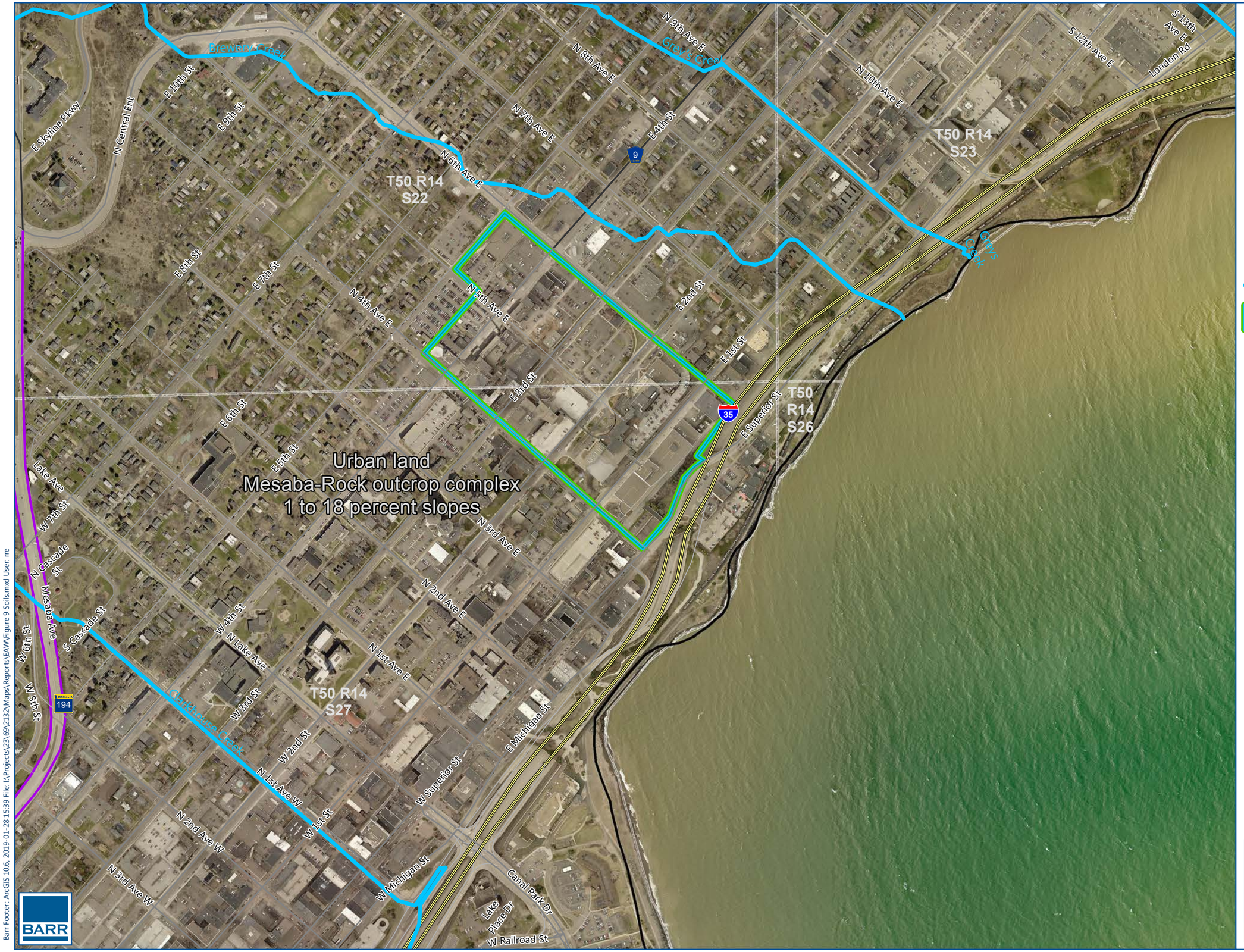
Feet

Cultural/Historical Map
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 8

BARR

Barr Footer: ArcGIS 10.6, 2019-01-28 15:38 File: I:\Projects\23\69\2132\Maps\Reports\EAW\Figure 8 Cultural_Historical Map.mxd User: rre



Duluth Rivers and Streams

Approximate Project Boundary

Statewide SSURGO Data

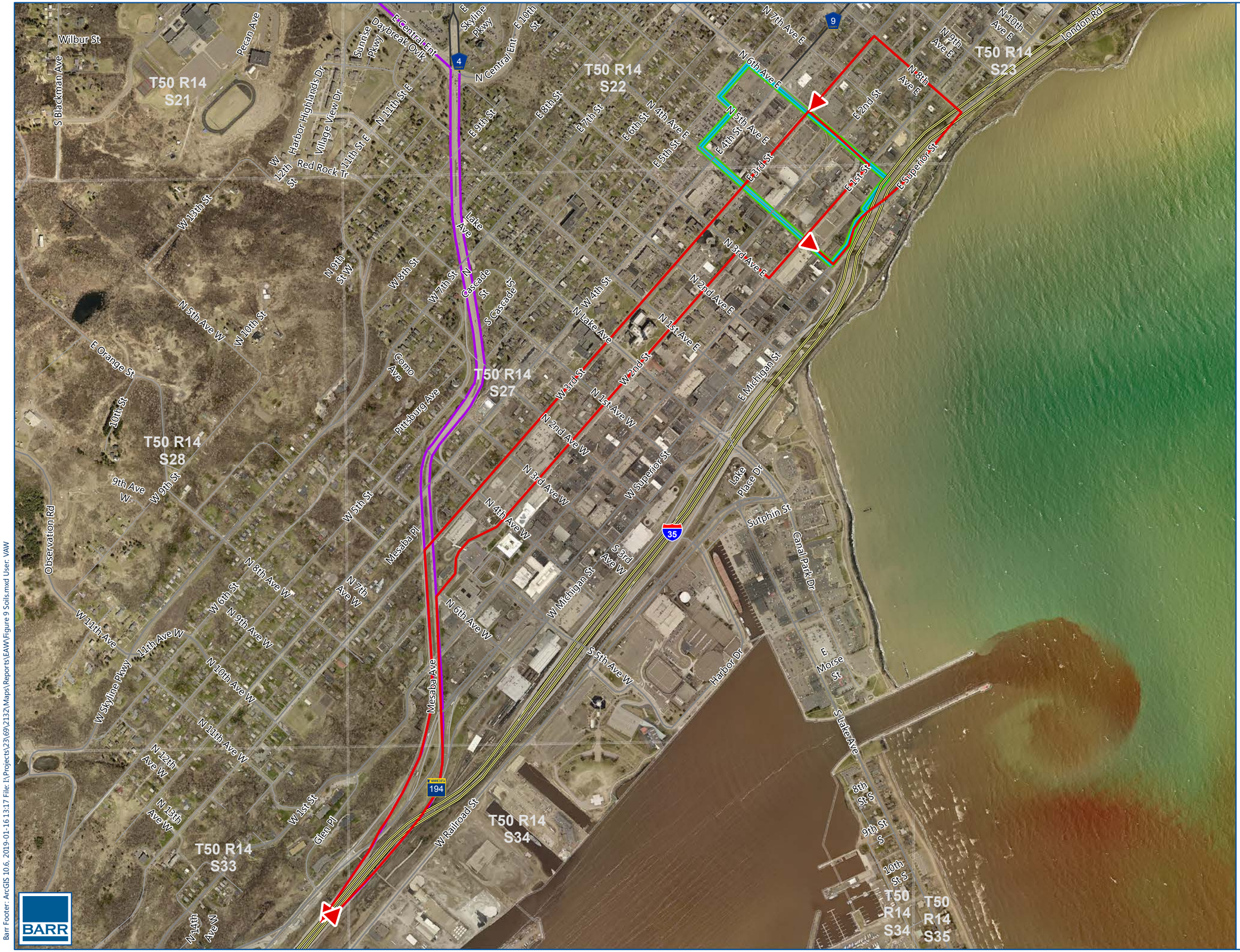
0 500 1,000

Feet

SOILS
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 9

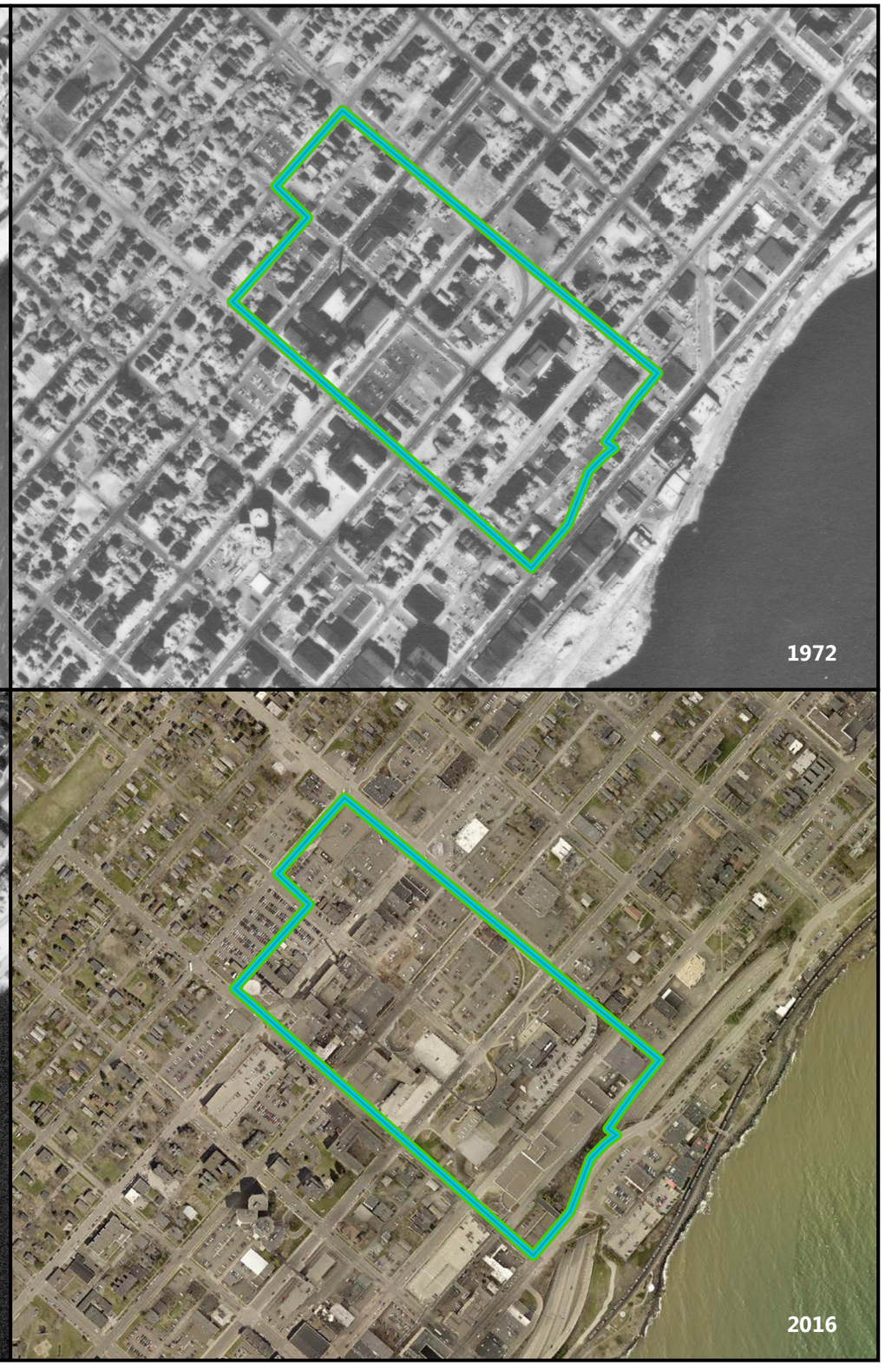
BARR



HAUL ROUTE
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 10

BARR



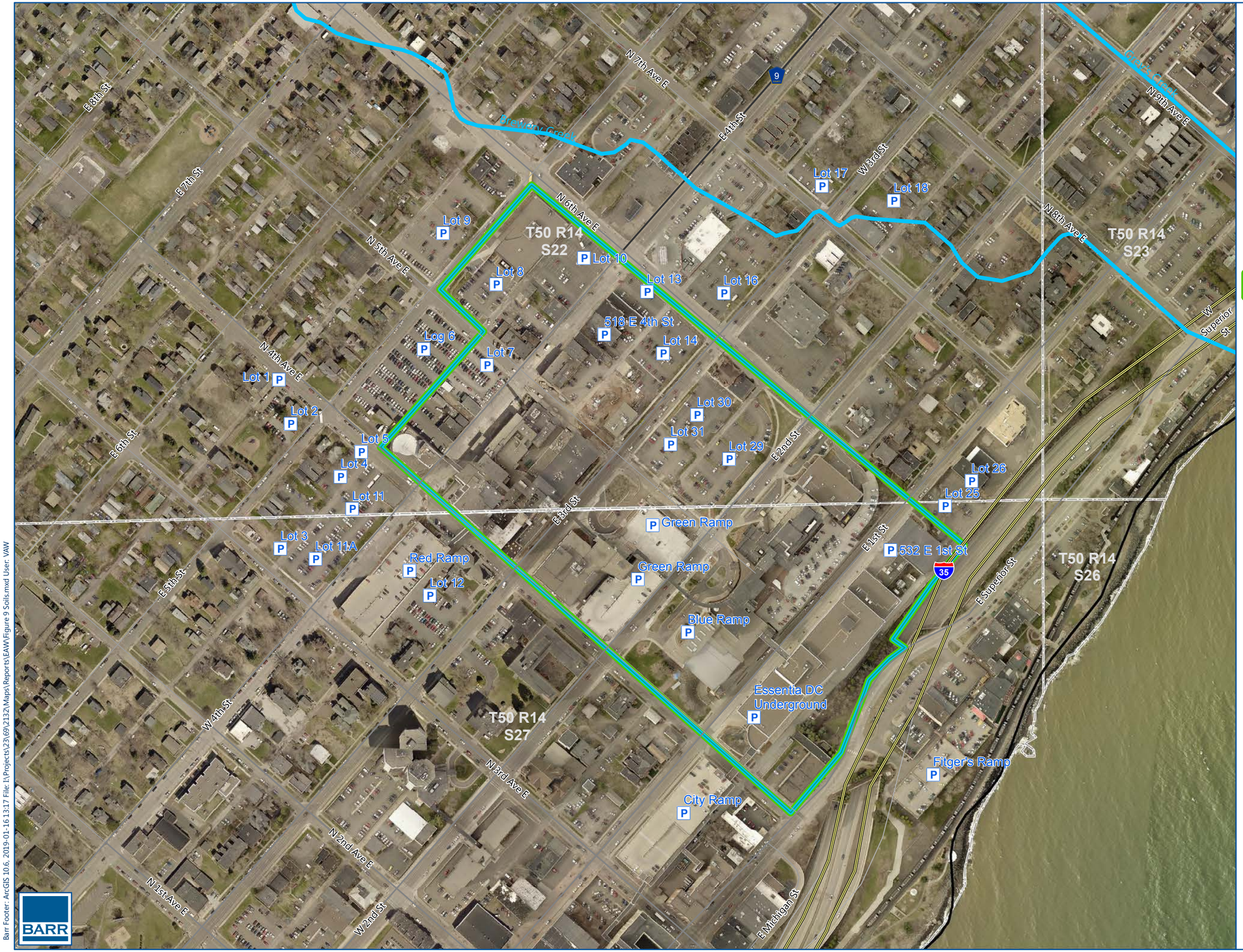
Approximate Project Boundary

0 500 1,000
Feet

HISTORICAL AERIAL PHOTOS
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 11

BARR



Approximate Project Boundary

Duluth Rivers and Streams

P Parking Facilities

0 250 500

Feet

EXISTING ESSENTIA PARKING FACILITIES
Essentia Health
Vision Northland Project
City of Duluth, Minnesota

FIGURE 12

Appendix A

Post-Construction and Design Plans

Essentia Health

Essentia Health's
Vision Northland
Environmental Assessment Worksheet

Appendix A

Project Description

Essentia Health is proposing a redevelopment project for its downtown Duluth campus that will result in a replacement hospital bed tower, new surgical suites and outpatient space and renovations to existing facilities. The proposed project includes a multi-story tower, which would reduce Essentia Health's overall footprint while providing state-of-the-art medical facilities.

Future Project Plans

There are no plans currently proposed for future development or proposed project stages. Any potential future development, such as the removal of existing parking lots and construction of new parking ramps, may be evaluated at a future time.

Appendix B

Phase I Environmental Site Assessment (Executive Summary)

Phase I Environmental Site Assessment

Commercial Property
413 East Superior Street
Duluth, Minnesota

Prepared For

Essentia Health

Project B1807446
September 24, 2018

Braun Intertec Corporation

BRAUN INTERTEC
The Science You Build On.

Executive Summary

Braun Intertec Corporation conducted a Phase I Environmental Site Assessment (ESA) of the commercial property located at 413 East Superior Street in Duluth, Minnesota (Site) in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Practice E1527-13 and 40 Code of Federal Regulations (CFR) Part 312.

Our research has revealed that the Site has historically been vacant from at least 1884 to 1924 when the current Site building was originally constructed. According to fire insurance maps, city directory information, and the current Site owner, the Site has since been used for commercial purposes including the following: battery and electric, tent and awning, auto repair, television tube manufacturing, engineering services, and architectural purposes. Adjoining property land use has historically been for residential and commercial purposes.

At the time of the reconnaissance, the Site consisted of a parcel totaling approximately 0.08 acres. The Site was developed with a commercial building occupied by two businesses, Fern & Associates and Swim Creative. A small garage was attached to the northwest side of the Site building. The area topography sloped downward toward Lake Superior to the southeast.

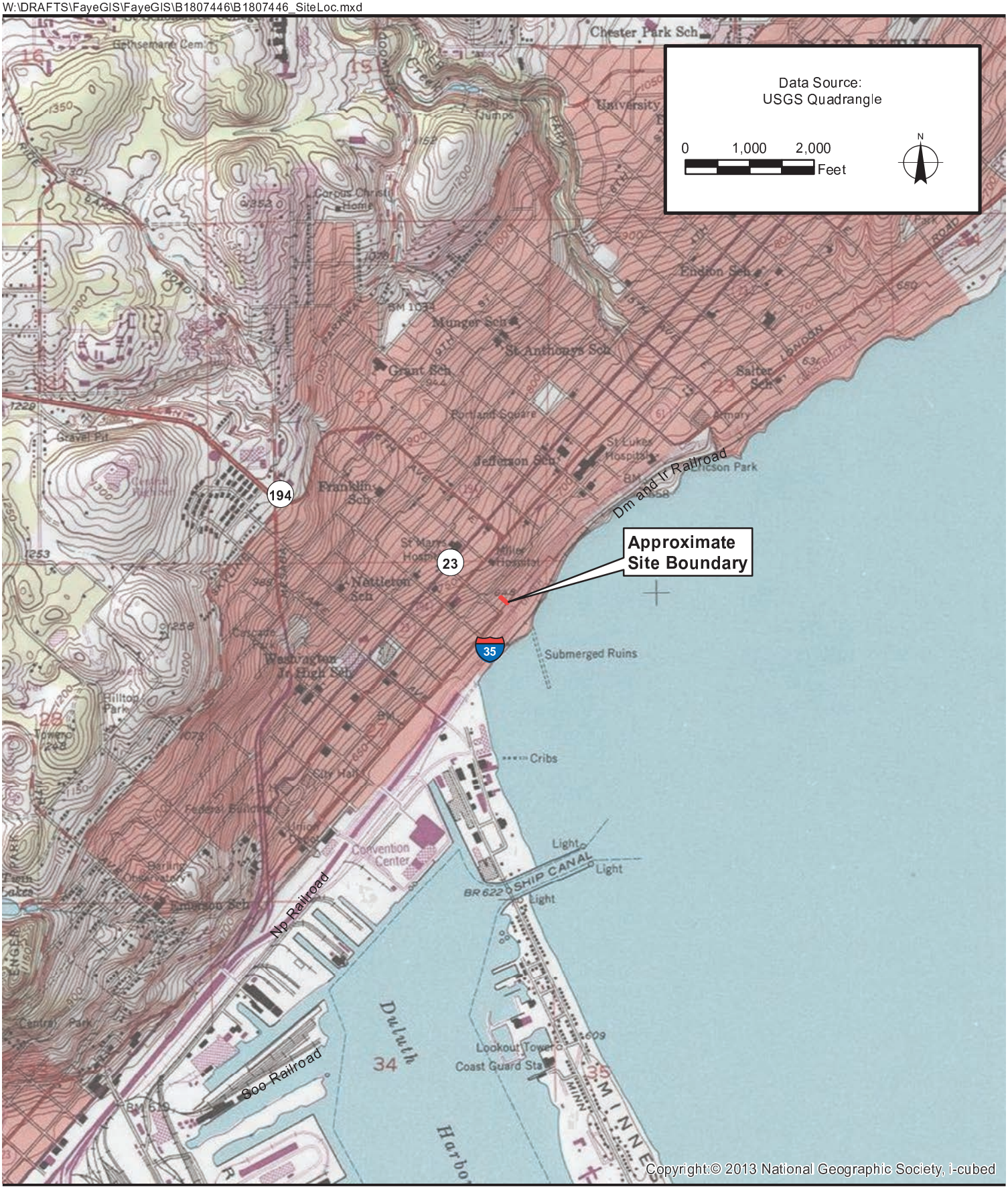
The Site was bordered on the north by Essentia Health with Essentia Health located beyond; on the east by a utility building, a greenspace area, and East Superior Street with Pickwick Restaurant parking lots located beyond; on the south by Twin Ports Insurance with commercial buildings located beyond; and on the west by a back parking lot with North 4th Avenue East and a parking ramp located beyond. The Site was located in a commercial area within the City of Duluth.

This assessment identified no recognized environmental conditions in connection with the Site, with the exception of the following:

- Based on our historical research, an automotive repair facility was present at the Site from at least 1951 until at least 1963 and also in the mid-1980s. No details regarding storage, use or disposal of hazardous materials or petroleum products at this facility were available. Although this assessment did not reveal any historical or significant releases, based on the use and storage of hazardous substances and petroleum products associated with the past use of the Site building for auto repair, there is a potential for unknown releases or numerous *de minimis* releases over time to impact soil and/or groundwater at the Site. Therefore, it is our opinion the past use of the Site for auto repair is considered a recognized environmental condition.

This assessment identified no controlled recognized environmental conditions in connection with the Site.

W:\DRAFTS\FayeGIS\FayeGIS\B1807446\B1807446_SiteLoc.mxd



BRAUN INTERTEC
The Science You Build On.

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

Project No:
B1807446

Drawing No:
B1807446_SiteLoc

Drawn By:	CMF
Date Drawn:	7/23/2018
Checked By:	KJH
Last Modified:	7/23/2018

Commercial Property

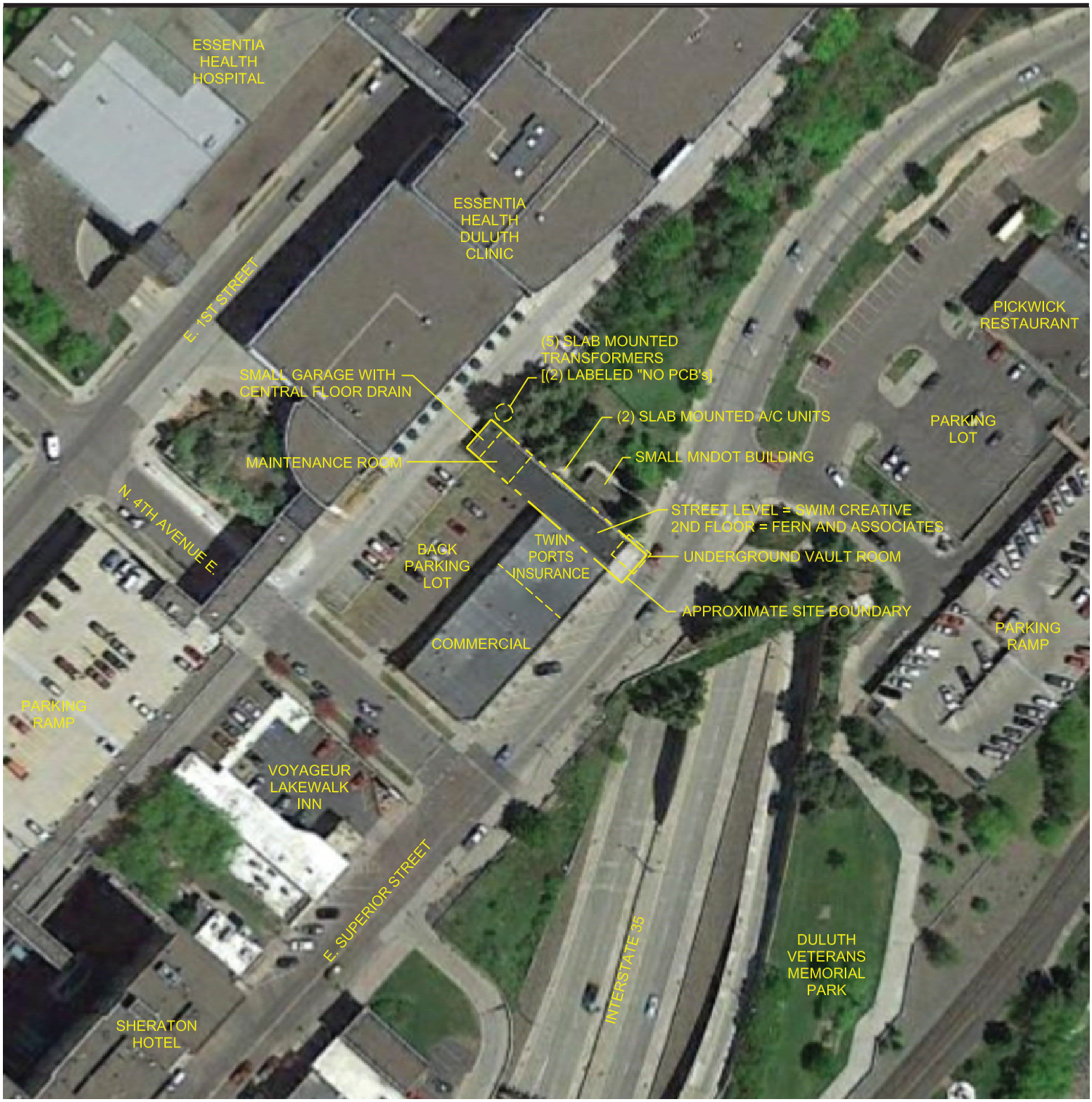
413 East Superior Street

Duluth, Minnesota

Site Location Map

Figure 1

F:\2018\B1807446.dwg,Phase I,8/8/2018 10:27:19 AM



50' 0 100'

SCALE: 1"= 100'

BRAUN INTERTEC
The Science You Build On.
11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Project No: B1807446

Drawing No: B1807446

Drawn By:	JAG
Date Drawn:	8/2/18
Checked By:	KJH
Last Modified:	8/8/18

Commercial Property

413 E. Superior Street

Duluth, Minnesota

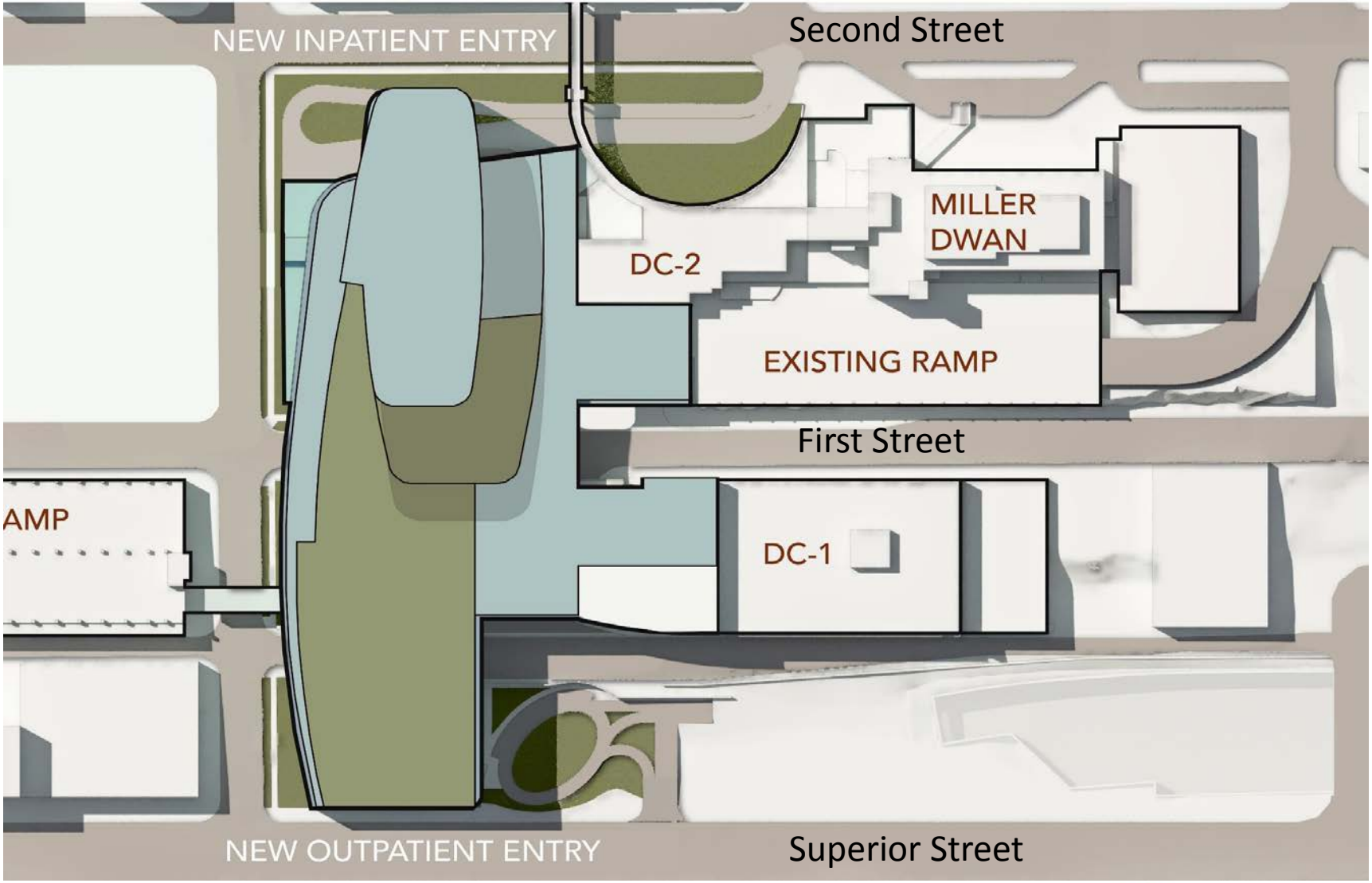
Site Sketch

Figure 2

Appendix C

Viewshed Analysis

Site Plan



Essentia Health

Exterior Design Concepts

Essentia Health

Exterior Design Concepts

Essentia Health

Exterior Design Concepts

Essentia Health

Exterior Design Concepts

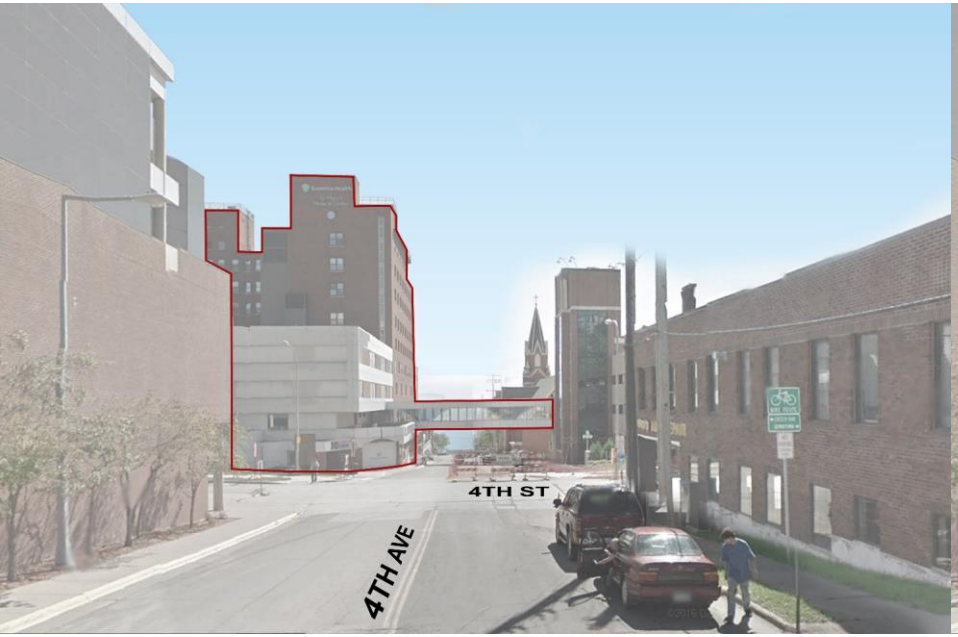
Essentia Health

Exterior Design Concepts

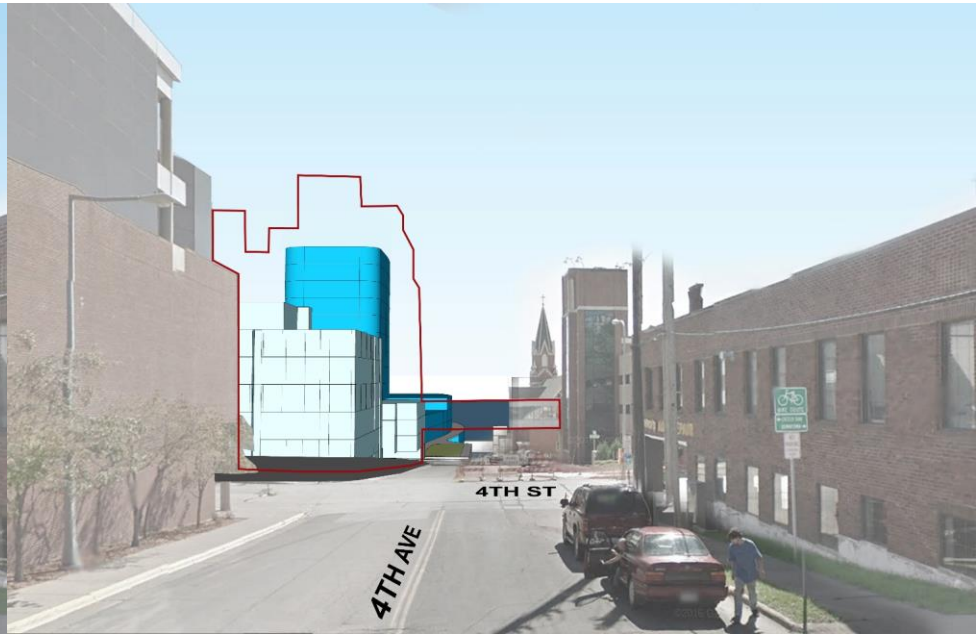
Essentia Health

Sight Lines for VNL Project

4th Avenue East & 4th Street



Current building



New building

Essentia Health

Sight Lines for VNL Project

4th Avenue East & 6th Street

Current building

New building

Essentia Health

Sight Lines for VNL Project

6th Avenue East & 5th Street

With current building

New building

Essentia Health

Appendix D

Traffic and Parking Studies and Traffic Control Plan

DRAFT MEMORANDUM

To: Scot Ramsey
Essentia Health

From: Douglas Arnold, P.E.

Date: January 18, 2019

Re: Traffic Analysis – Vision Northland
Duluth, Minnesota

INTRODUCTION

Kimley-Horn and Associates, Inc. (Kimley-Horn) was retained by EwingCole to review and evaluate existing operating conditions of the surrounding intersections. Additionally, the traffic analysis evaluated future operating of these intersections to ensure to that sufficient capacity planned program changes as part of Vision Northland master planning efforts at Essentia Health in Duluth, Minnesota.

Following provides a memorandum that summarized existing and future conditions of intersection adjacent to Essentia Health.

DATA COLLECTION

Based on discussion with the project team, City of Duluth staff, and MnDOT staff, the following intersections were included in the traffic analysis (intersection control also provided):

- 4th Street and 6th Avenue (*Signalized)*
- 4th Street and 5th Avenue (*Signalized)*
- 4th Street and 4th Avenue (*Unsignalized)*
- 3rd Street and 6th Avenue (*Signalized)*
- 3rd Street and 5th Avenue (*Signalized)*
- 3rd Street and 4th Avenue (*Unsignalized)*
- 3rd Street and 3rd Avenue (*Signalized)*
- 2nd Street and 6th Avenue (*Signalized)*
- 2nd Street and 5th Avenue (*Signalized)*
- 2nd Street and 4th Avenue (*Unsignalized)*
- 2nd Street and 3rd Avenue (*Signalized)*
- 1st Street and 4th Avenue (*Unsignalized)*
- Superior Street and 4th Avenue (*Unsignalized)*

Kimley-Horn conducted weekday AM and PM Peak period turning movement counts at the study locations during the week of August 20, 2018. The counts were collected from 6:00 AM to 9:00 AM to determine the AM peak hour and from 3:00 PM to 6:00 PM to determine the PM peak hour. The counts included vehicles, pedestrians, and bicycles.

Exhibit 1 provides the weekday AM and PM peak hour vehicle traffic volumes at the study intersections. **Exhibit 2** provides the weekday AM and PM peak period (three-hour totals for the AM and PM peak periods) pedestrian volumes at the study intersections.

EXISTING ROADWAY CHARACTERISITCS

The existing hospital campus covers multiple city blocks, generally bounded by 4th Avenue to 6th Avenue, and from 4th Street to 1st Street. Following provides a general description of the roadway surrounding the hospital campus:

- **6th Avenue** is an east-west, undivided roadway with two lanes in each direction. East of 3rd Street, 6th Avenue provides one eastbound lane and two westbound lanes. East of 2nd Street, 6th Avenue has one lane in each direction and terminates into a private alley. The speed limit is 30 miles per hour within the study area. Duluth Transit stops are located on both the north and south sides of 6th Avenue. The existing Average Daily Traffic (ADT) on 6th Avenue is 12,000 vehicles per day west of 4th Street, 6,600 vehicles per day between 4th Street and 3rd Street, and 4,150 vehicles per day east of 3rd Street.
- **5th Avenue** is an east-west, undivided roadway with one lane in each direction. From west of 4th Street to 3rd Street, front-in angled parking and parallel parking is provided on either side of 5th Avenue. At 2nd Street, the westbound approach is a two-way access to the Miller-Dwan Building drop-off loop and provides a shared through/right-turn lane. The speed limit is 30 miles per hour within the study area.
- **4th Avenue** is an east-west, undivided roadway with one lane in each direction. Parallel parking is provided along most of the south side of 4th Avenue from just west of 3rd Street until Superior Street where 4th Avenue terminates. Front-in parking is proved just east of 4th Street. Parking is prohibited along the north side of 4th Avenue except from 2nd Street to just west of 3rd Street. Just west of 4th Street, a Duluth Transit stop is located on the south side of 4th Avenue. The speed limit is 30 miles per hour and the existing ADT is 1,350 vehicles per day on 4th Avenue.
- **3rd Avenue** is an east-west, undivided roadway with one lane in each direction. Parallel parking is permitted along the south side of 3rd Avenue except where a Duluth Transit stop is located at the midblock between 2nd Street and 3rd Street. The speed limit is 30 miles per hour and the existing ADT is 2,100 vehicles per day on 3rd Avenue.

- **4th Street** is a north-south, undivided roadway with one lane in each direction. Parallel parking is permitted along the west side of 4th Street from 4th Avenue to just north of 5th Avenue and briefly along the east side of 4th street north of 5th Avenue. The speed limit is 30 miles per hour and the existing ADT is 11,200 vehicles per day on 4th Street north of 6th Avenue. Between 6th Avenue and 4th Avenue, ADT counts are 6,200 vehicles per day. South of 4th Avenue, 4th Street has 5,700 vehicles per day.
- **3rd Street** is a southbound, one-way roadway with two travel lanes throughout the study area. Along the west side of 3rd Street, parallel parking is permitted throughout the study area except where Duluth Transit stops are located. No parking or Transit stops are located along the east side of 3rd Street. The speed limit is 30 miles per hour and the existing ADT is 6,300 vehicles per day on 3rd Street south of 6th Avenue. North of 6th Avenue, ADT is 5,300 vehicles per day.
- **2nd Street** is a northbound, one-way roadway with three travel lanes from 3rd Avenue until 6th Avenue. Parallel parking is provided along the east side of 2nd Street except where Duluth Transit stops are located. The speed limit is 30 miles per hour within the study area. The existing ADT is 9,100 vehicles per day on 2nd Street south of 6th Avenue. North of 6th Avenue, ADT is 5,700 vehicles per day.
- **1st Street** is a north-south roadway with one lane in each direction. A Duluth Transit stop is located on the south of the 4th Avenue intersection. Parallel parking is provided along both sides of 1st Street south of 4th Avenue. The speed limit is 30 miles per hour and the existing ADT is 3,800 vehicles per day on 1st Street.
- **Superior Street** is a north-south roadway with one lane in each direction. Front-in parking is provided along the west side of Superior Street and parallel parking is provided on the east side of Superior Street, south of its intersection with 4th Avenue. The speed limit is 30 miles per hour and the existing ADT is 10,300 vehicles per day on Superior Street south of 4th Avenue. North of 4th Avenue, ADT is 9,900 vehicles per day.

Exhibit 3 provides the location of the study intersections, in addition to the existing lane geometry and intersection control.

EXISTING CONDITIONS ANALYSIS

INTERSECITON CAPACITY ANALYSIS

A capacity analysis was performed at the study intersections to quantify Existing (2018) operating conditions. The analysis was performed for weekday AM peak hour and PM peak hour conditions. The analysis focused on level of service (LOS) and delay (reported in seconds per vehicle). The analysis was performed using Synchro/SimTraffic which is based on the Highway Capacity Manual.

LOS is a quantitative measure used by traffic engineers to describe the operations of an intersection. It ranges from A to F, with A being the best and F being the worst level of operation. LOS A conditions are characterized by minimal vehicle delay and free-flow conditions, while LOS F is characterized by long vehicle delay – usually when demand exceeds available roadway capacity. LOS D or better is generally considered acceptable operating conditions. **Table 1** provides level of service information for both unsignalized and signalized intersections.

TABLE 1: LEVEL OF SERVICE INFORMATION

Level of Service	Average Control Delay (seconds/vehicle)	Parking Inventory Available for Essentia
A	0.0 to 10.0 (Unsignalized) 0.0 to 10.0 (Signalized)	Minimal control delay; traffic operates at primarily free-flow conditions; unimpeded movement within traffic stream.
B	> 10.0 to 15.0 (Unsignalized) > 10.0 to 20.0 (Signalized)	Minor control delay at signalized intersections; traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream.
C	> 15.0 to 25.0 (Unsignalized) > 20.0 to 35.0 (Signalized)	Moderate control delay; movement within traffic stream more restricted than at LOS B; formation of queues contributes to lower average travel speeds.
D	> 25.0 to 35.0 (Unsignalized) > 35.0 to 55.0 (Signalized)	Considerable control delay that may be substantially increased by small increases in flow; average travel speeds continue to decrease.
E	> 35.0 to 50.0 (Unsignalized) > 55.0 to 80.0 (Signalized)	High control delay; average travel speed no more than 33 percent of free flow speed.
F	> 50.0 (Unsignalized) > 80.0 (Signalized)	Extremely high control delay; extensive queuing and high volumes create exceedingly restricted traffic flow.

Capacity analysis was performed to quantify existing operating conditions during the AM peak hour and PM peak hour at the study intersections. The analyses were based on signal timings provided by the City of Duluth and the existing lane geometry. Synchro/SimTraffic were used to perform the analyses. The SimTraffic reports are attached in the **Appendix**.

Table 2 provides a summary of the weekday AM and PM peak hour capacity analysis. Overall intersection delay and LOS is reported for signalized intersections, while overall intersection and worst movement delay and LOS is reported for unsignalized intersections. Based on the analysis, all intersections are currently operating at an acceptable LOS during the weekday peak hours. In addition, all individual movements are operating at LOS D or better.

TABLE 2: EXISTING CAPACITY ANALYSIS SUMMARY

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
4th Street & 6th Avenue	Signalized	13.5	B	23.1	C
4th Street & 5th Avenue	Signalized	11.9	B	14.2	B
4th Street & 4th Avenue	Stop-Control	2.5 / 9.3	A / A	2.2 / 11.3	A / B
3rd Street & 6th Avenue	Signalized	16.9	B	19.5	B
3rd Street & 5th Avenue	Signalized	14.6	B	14.3	B
3rd Street & 4th Avenue	Stop-Control	2.9 / 9.8	A / A	2.5 / 8.8	A / A
3rd Street & 3rd Avenue	Signalized	6.5	A	8.0	A
2nd Street & 6th Avenue	Signalized	7.7	A	7.7	A
2nd Street & 5th Avenue	Signalized	8.1	A	10.6	B
2nd Street & 4th Avenue	Stop-Control	2.7 / 9.8	A / A	2.5 / 11.1	A / B
2nd Street & 3rd Avenue	Signalized	3.5	A	4.3	A
1st Street & 4th Avenue	Stop-Control	2.2 / 8.1	A / A	2.7 / 9.0	A / A
Superior Street & 4th Avenue	Stop-Control	1.1 / 8.9	A / A	1.6 / 13.5	A / B

PEDESTRIAN ROUTING

Based on a review of pedestrian volumes (provided in **Exhibit 3**), there was a generally a greater volume of pedestrian activity during the weekday PM peak period as compared to the AM peak period. The intersections of 4th Street & 4th Avenue and 3rd Street & 5th Avenue experienced the highest levels of pedestrians, with close to 500 to 600 pedestrians crossing all legs of the intersections during the PM peak period (3:00 PM to 6:00 PM).

The pedestrian volumes were grouped into categories: low (0 to 50 pedestrians in peak period), moderate (50 to 100 pedestrians in peak period), and high (over 100 pedestrians in peak period). Following provides a list of intersections that experienced high levels of pedestrian activity: 4th Street & 4th Avenue, 4th Street & 5th Avenue, 4th Street & 6th Avenue, 3rd Street & 5th Avenue, 3rd Street & 3rd Avenue, and 2nd Street & 5th Avenue.

FUTURE CONDITIONS ANALYSIS

INTERSECITON CAPACITY ANALYSIS

Based on previous discussion in the report, the future development needs as part of the Vision Northland master planning efforts is not finalized. However, the development is not anticipated to add much vehicular traffic to the roadway network, rather changes travel patterns in the area with new and modified parking options. With that said, a future conditions analysis was performed to determine intersection operating conditions (delay and LOS) if traffic volumes were to grow with the implementation of the Vision Northland master plan. A capacity analysis was performed at the study intersections with an assumption that all traffic volumes would grow by 10% to estimate near-term conservative growth with the changes to the hospital campus.

Table 3 provides a summary of the weekday AM and PM peak hour capacity analysis for future conditions. Overall intersection delay and LOS is reported for signalized intersections, while overall intersection and worst movement delay and LOS is reported for unsignalized intersections. Based on the analysis, all intersections are anticipated to continue to operate at an acceptable LOS during the weekday peak hours, with all intersections anticipated to operate at LOS C or better. In addition, all individual movements are anticipated to operate at LOS D or better, with the exception of the eastbound left-turn movement at the intersection of 4th Street & 6ht Avenue, which is anticipated to operate at LOS E. The SimTraffic reports, which include delay for individual movements, are attached in the **Appendix**.

TABLE 3: FUTURE CAPACITY ANALYSIS SUMMARY

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
4th Street & 6th Avenue	Signalized	14.9	B	28.7	C
4th Street & 5th Avenue	Signalized	11.9	B	14.8	B
4th Street & 4th Avenue	Stop-Control	2.7 / 10.7	A / B	2.6 / 11.1	A / B
3rd Street & 6th Avenue	Signalized	17.9	B	19.7	B
3rd Street & 5th Avenue	Signalized	15.0	B	14.6	B
3rd Street & 4th Avenue	Stop-Control	3.2 / 11.7	A / B	2.6 / 9.4	A / A
3rd Street & 3rd Avenue	Signalized	6.6	A	8.9	A
2nd Street & 6th Avenue	Signalized	7.6	A	7.8	A
2nd Street & 5th Avenue	Signalized	8.1	A	10.2	B
2nd Street & 4th Avenue	Stop-Control	2.8 / 10.5	A / B	2.7 / 10.7	A / B
2nd Street & 3rd Avenue	Signalized	4.1	A	4.4	A
1st Street & 4th Avenue	Stop-Control	2.5 / 8.6	A / A	2.9 / 9.3	A / A
Superior Street & 4th Avenue	Stop-Control	1.0 / 7.4	A / A	1.8 / 15.1	A / C

Conclusions

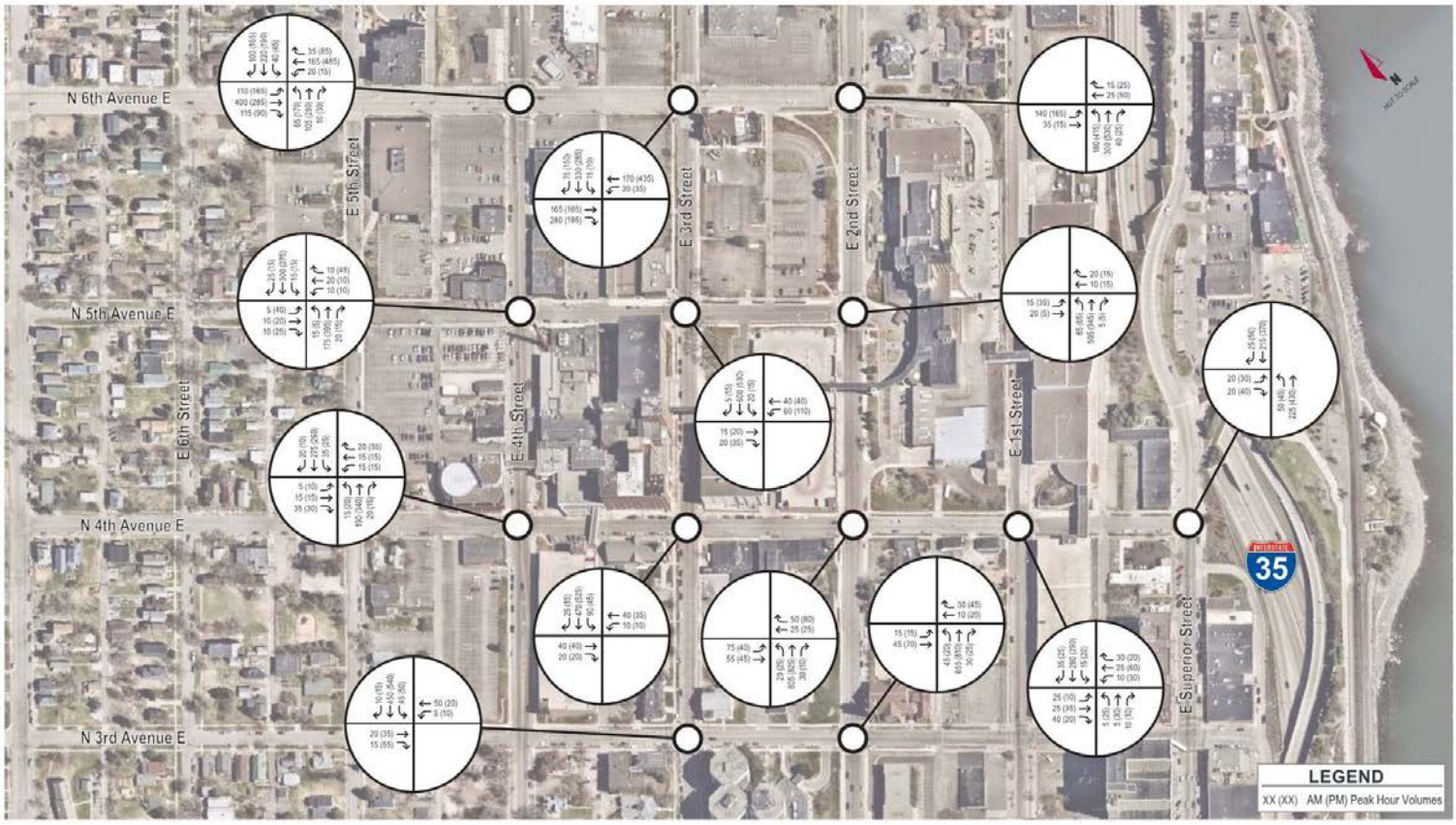
Kimley-Horn and Associates, Inc. (Kimley-Horn) was retained by EwingCole to review and evaluate existing operating conditions of the surrounding intersections. Additionally, the traffic analysis evaluated future operating of these intersections to ensure to that sufficient capacity planned program changes as part of Vision Northland master planning efforts at Essentia Health in Duluth, Minnesota.

Based on the analysis, all intersections adjacent to Essentia Health campus are anticipated to operate at an acceptable LOS.

ATTACHMENTS

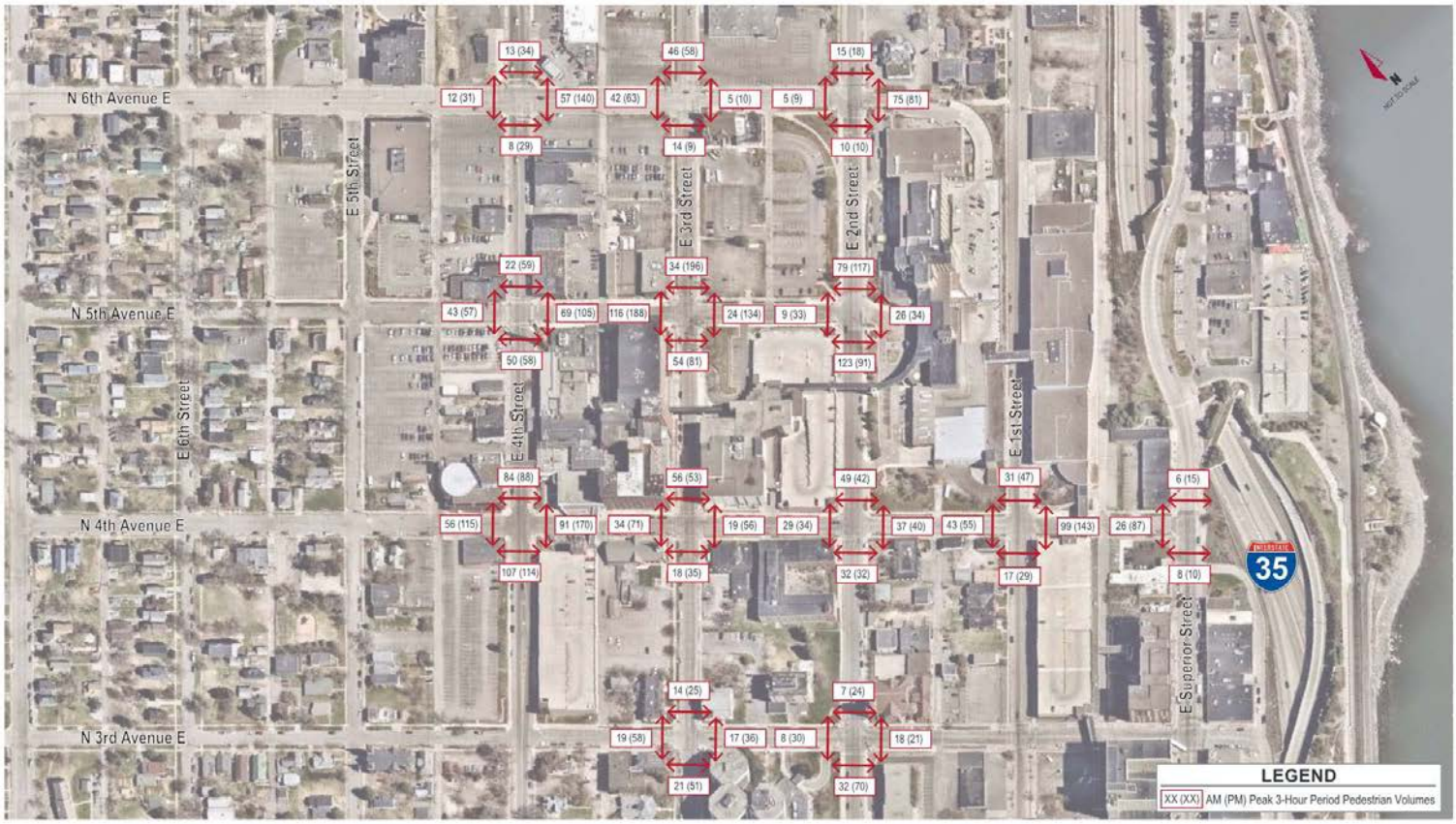
1. TRAFFIC EXHIBITS

2. SIMTRAFFIC REPORTS



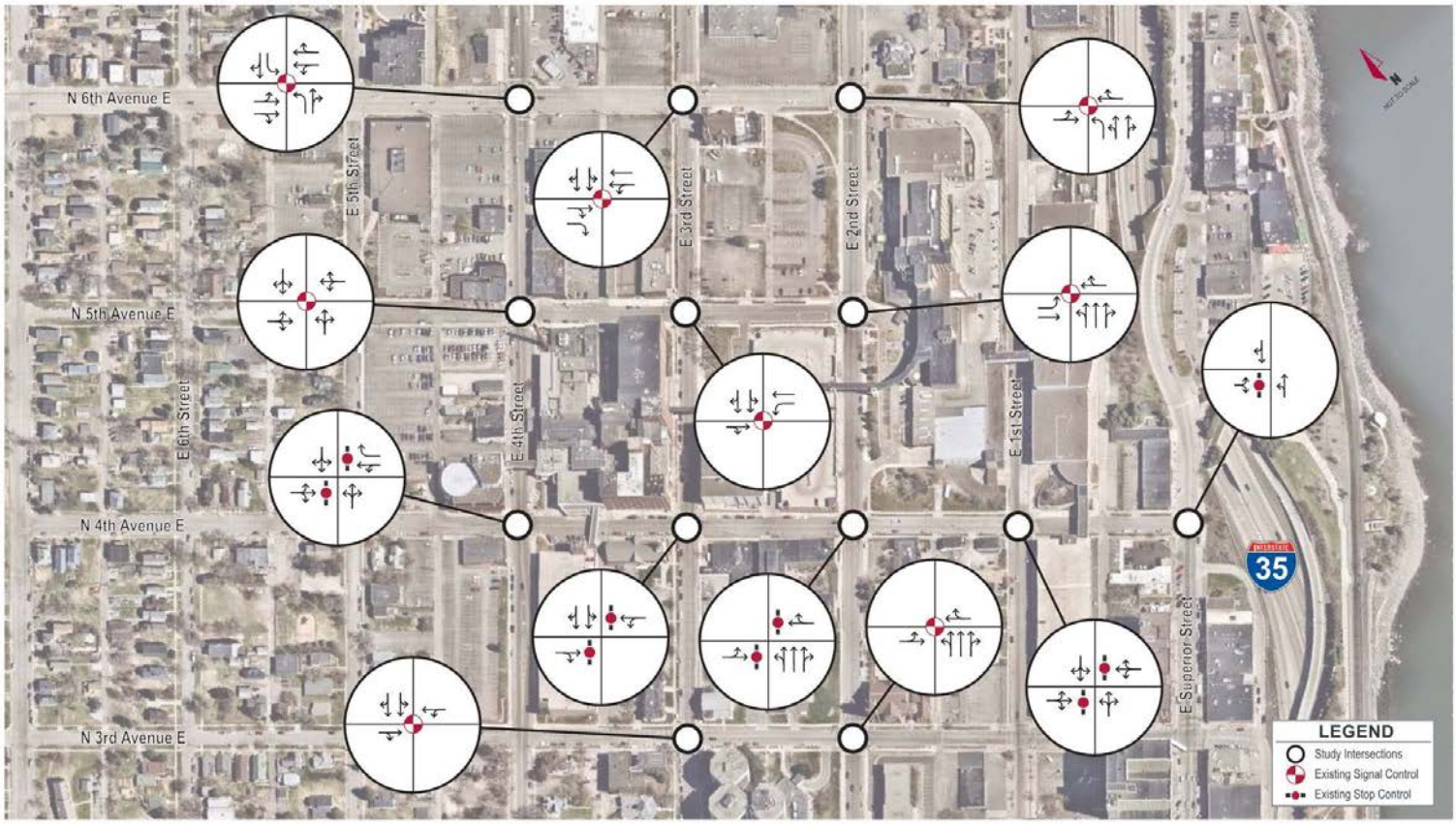
Kimley»Horn

EXHIBIT 1
EXISTING PEAK HOUR TRAFFIC VOLUMES
DULUTH ESSENTIA



Kimley»Horn

EXHIBIT 2
EXISTING PEAK HOUR PEDESTRIAN VOLUMES
DULUTH ESSENTIA



Kimley»Horn

EXHIBIT 3
EXISTING INTERSECTION CONTROL AND GEOMETRY
DULUTH ESSENTIA

1: 4th Street & 6th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.6	0.5
Total Del/Veh (s)	16.2	13.0	4.6	20.6	10.9	6.1	17.4	12.5	9.0	19.7	19.5	12.1

1: 4th Street & 6th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	13.5

2: 4th Street & 5th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	13.4	15.4	4.1	6.1	5.7	2.5	19.8	11.7	6.2	14.5	13.2	9.6

2: 4th Street & 5th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	11.9

3: 4th Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.3	0.0	0.0	0.0
Total Del/Veh (s)	7.7	9.2	4.4	9.3	6.0	4.7	3.1	0.4	0.2	3.7	2.4	1.5

3: 4th Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	2.5

4: 3rd Street & 6th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.3	0.1	0.2	0.1
Total Del/Veh (s)	44.8	15.9	37.1	22.6	5.7	4.4	1.9	16.9

5: 3rd Street & 5th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	12.4	5.0	28.4	29.5	16.6	12.7	6.4	14.6

6: 3rd Street & 4th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	6.9	4.7	7.7	9.8	3.5	2.0	1.3	2.9

7: 3rd Street & 3rd Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	16.7	4.8	21.0	20.8	6.2	4.7	1.9	6.5

8: 2nd Street & 6th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	15.7	13.8	22.0	7.9	6.6	3.6	2.1	7.7

9: 2nd Street & 5th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	19.3	19.1	23.1	4.7	10.6	7.0	3.6	8.1

10: 2nd Street & 4th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.8	9.8	9.5	5.0	2.6	1.0	0.8	2.7

11: 2nd Street & 3rd Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.3	0.1	0.2	0.1
Total Del/Veh (s)	7.5	7.8	7.6	3.1	3.1	3.2	1.3	3.5

12: 1st Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Total Del/Veh (s)	7.5	8.1	5.5	5.6	5.0	3.2	2.5	0.3	0.1	1.9	0.6	0.3

12: 1st Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	2.2

13: Superior Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2
Total Del/Veh (s)	8.9	0.9	4.4	2.7	0.5	0.4	0.2	1.1

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	24.1

1: 4th Street & 6th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.2	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	6.0	3.2	4.0
Total Del/Veh (s)	42.9	31.8	6.1	18.8	15.6	12.7	22.6	18.5	14.5	32.0	30.9	22.1

1: 4th Street & 6th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	1.0
Total Del/Veh (s)	23.1

2: 4th Street & 5th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	19.0	15.9	7.6	12.8	13.7	4.7	14.6	14.8	7.8	23.3	15.1	7.7

2: 4th Street & 5th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	14.2

3: 4th Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	1.1	0.3	0.3	0.3	0.0	0.0	0.0
Total Del/Veh (s)	11.3	9.5	4.7	10.6	9.0	6.2	2.6	0.6	0.2	4.3	2.0	1.5

3: 4th Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	2.2

4: 3rd Street & 6th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.3	0.1	0.2	0.1
Total Del/Veh (s)	38.3	10.2	40.8	30.1	4.8	4.6	3.6	19.5

5: 3rd Street & 5th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	18.1	5.2	25.7	22.6	15.8	12.0	8.3	14.3

6: 3rd Street & 4th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.8	4.9	8.0	8.6	3.1	1.6	1.6	2.5

7: 3rd Street & 3rd Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	20.9	7.7	21.0	15.3	7.6	6.8	3.8	8.0

8: 2nd Street & 6th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	17.3	18.9	19.4	7.9	6.7	4.4	2.4	7.7

9: 2nd Street & 5th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	19.7	24.3	22.2	5.1	9.6	10.2	3.9	10.6

10: 2nd Street & 4th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.9	11.1	10.0	5.3	2.8	1.2	0.7	2.5

11: 2nd Street & 3rd Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.3	0.1	0.1	0.1
Total Del/Veh (s)	9.2	9.2	8.1	3.6	3.3	3.8	1.4	4.3

12: 1st Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.3	0.3	0.3
Total Del/Veh (s)	8.9	9.0	6.2	7.0	8.0	3.8	3.0	0.5	0.3	1.9	0.6	0.2

12: 1st Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	2.7

13: Superior Street & 4th Avenue Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.4	0.4	0.4	0.3	0.4
Total Del/Veh (s)	13.3	6.3	4.0	0.9	0.9	0.5	1.6

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	29.2

1: 4th Street & 6th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.2	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	6.0	3.2	4.0
Total Del/Veh (s)	42.9	31.8	6.1	18.8	15.6	12.7	22.6	18.5	14.5	32.0	30.9	22.1

1: 4th Street & 6th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	1.0
Total Del/Veh (s)	23.1

2: 4th Street & 5th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	19.0	15.9	7.6	12.8	13.7	4.7	14.6	14.8	7.8	23.3	15.1	7.7

2: 4th Street & 5th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	14.2

3: 4th Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	1.1	0.3	0.3	0.3	0.0	0.0	0.0
Total Del/Veh (s)	11.3	9.5	4.7	10.6	9.0	6.2	2.6	0.6	0.2	4.3	2.0	1.5

3: 4th Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	2.2

4: 3rd Street & 6th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.3	0.1	0.2	0.1
Total Del/Veh (s)	38.3	10.2	40.8	30.1	4.8	4.6	3.6	19.5

5: 3rd Street & 5th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	18.1	5.2	25.7	22.6	15.8	12.0	8.3	14.3

6: 3rd Street & 4th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.8	4.9	8.0	8.6	3.1	1.6	1.6	2.5

7: 3rd Street & 3rd Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	20.9	7.7	21.0	15.3	7.6	6.8	3.8	8.0

8: 2nd Street & 6th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	17.3	18.9	19.4	7.9	6.7	4.4	2.4	7.7

9: 2nd Street & 5th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	19.7	24.3	22.2	5.1	9.6	10.2	3.9	10.6

10: 2nd Street & 4th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.9	11.1	10.0	5.3	2.8	1.2	0.7	2.5

11: 2nd Street & 3rd Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.3	0.1	0.1	0.1
Total Del/Veh (s)	9.2	9.2	8.1	3.6	3.3	3.8	1.4	4.3

12: 1st Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.3	0.3	0.3
Total Del/Veh (s)	8.9	9.0	6.2	7.0	8.0	3.8	3.0	0.5	0.3	1.9	0.6	0.2

12: 1st Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	2.7

13: Superior Street & 4th Avenue Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.4	0.4	0.4	0.3	0.4
Total Del/Veh (s)	13.3	6.3	4.0	0.9	0.9	0.5	1.6

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	29.2

1: 4th Street & 6th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.4	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.7	0.6
Total Del/Veh (s)	18.5	15.9	5.7	20.0	10.7	8.4	17.7	13.6	7.0	20.5	20.7	13.0

1: 4th Street & 6th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	14.9

2: 4th Street & 5th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	19.4	14.2	5.7	7.7	4.1	2.4	13.4	12.1	7.6	14.7	13.1	10.1

2: 4th Street & 5th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	11.9

3: 4th Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.0	0.0	0.0	0.3	0.2	0.2	0.0	0.0	0.0
Total Del/Veh (s)	7.2	9.8	4.5	10.7	5.4	4.9	3.2	0.5	0.2	4.2	2.7	1.9

3: 4th Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	2.7

4: 3rd Street & 6th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.1
Total Del/Veh (s)	46.4	15.5	42.3	23.5	5.8	5.3	2.8	17.9

5: 3rd Street & 5th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	12.3	6.0	30.9	30.7	18.7	12.7	7.2	15.0

6: 3rd Street & 4th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.1	4.8	9.5	11.7	3.6	2.1	1.4	3.2

7: 3rd Street & 3rd Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	16.3	5.0	28.9	17.7	5.6	5.0	2.4	6.6

8: 2nd Street & 6th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	16.2	14.1	21.3	7.0	5.6	3.4	2.0	7.6

9: 2nd Street & 5th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	18.7	23.8	21.4	5.1	10.7	7.0	2.7	8.1

10: 2nd Street & 4th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.7	10.5	9.6	5.0	3.1	1.2	0.9	2.8

11: 2nd Street & 3rd Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.4	0.1	0.2	0.1
Total Del/Veh (s)	8.7	9.0	8.0	3.3	3.7	3.6	1.5	4.1

12: 1st Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Total Del/Veh (s)	8.4	8.6	5.9	5.8	4.7	3.4	3.8	0.1	0.3	2.2	0.7	0.3

12: 1st Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	2.5

13: Superior Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.3	0.2	0.2	0.2	0.2
Total Del/Veh (s)	7.4	1.6	4.4	2.5	0.5	0.4	0.4	1.0

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	25.6

1: 4th Street & 6th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	9.6	8.8	11.2	0.0	0.0	0.0	0.0	0.0	0.0	8.5	9.5	7.8
Total Del/Veh (s)	62.9	43.0	10.3	20.9	17.5	14.4	26.6	21.2	15.1	38.3	37.2	27.9

1: 4th Street & 6th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	4.2
Total Del/Veh (s)	28.7

2: 4th Street & 5th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	20.7	21.3	9.5	12.4	9.5	4.5	16.8	14.3	10.3	26.5	16.2	12.7

2: 4th Street & 5th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	14.8

3: 4th Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.8	0.3	0.3	0.3	0.0	0.0	0.0
Total Del/Veh (s)	9.6	9.9	5.3	10.8	11.1	5.7	3.7	0.7	0.3	4.6	2.4	2.1

3: 4th Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	2.6

4: 3rd Street & 6th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1
Total Del/Veh (s)	35.2	9.6	42.4	30.8	6.1	5.1	4.1	19.7

5: 3rd Street & 5th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	17.5	5.9	28.4	21.5	17.1	11.3	7.6	14.6

6: 3rd Street & 4th Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.8	5.1	8.4	9.4	3.3	1.6	1.3	2.6

7: 3rd Street & 3rd Avenue Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	18.1	7.5	21.6	16.3	8.0	8.0	6.2	8.9

8: 2nd Street & 6th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	17.3	19.7	23.1	6.5	6.7	4.4	2.4	7.8

9: 2nd Street & 5th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0
Total Del/Veh (s)	19.8	18.9	19.7	5.2	10.5	9.7	5.1	10.2

10: 2nd Street & 4th Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	9.5	10.7	10.0	6.1	2.9	1.4	0.9	2.7

11: 2nd Street & 3rd Avenue Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.2	0.4	0.1	0.2	0.1
Total Del/Veh (s)	8.5	8.7	8.3	3.4	4.1	4.1	1.5	4.4

12: 1st Street & 4th Avenue Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.3	0.3
Total Del/Veh (s)	8.8	9.3	5.8	7.1	8.6	3.9	3.1	0.5	0.2	2.0	0.6	0.2

12: 1st Street & 4th Avenue Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	2.9

13: Superior Street & 4th Avenue Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.1	0.4	0.4	0.4	0.3	0.4
Total Del/Veh (s)	15.1	7.2	4.0	0.9	1.0	0.5	1.8

Total Network Performance

Denied Del/Veh (s)	2.0
Total Del/Veh (s)	32.5

DRAFT MEMORANDUM

To: Scot Ramsey
Essentia Health

From: Kevin White, AICP

Date: January 17, 2019

Re: Parking Analysis – Vision Northland
Duluth, Minnesota

INTRODUCTION

Kimley-Horn and Associates, Inc. (Kimley-Horn) was retained by EwingCole to review and evaluate current parking conditions and evaluate future parking needs relative to planned program changes as part of the Vision Northland master planning efforts at Essentia Health in Duluth, Minnesota.

This memorandum documents the study methodology, including collection of existing parking demand information, and key findings.

METHODOLOGY

On Wednesday, September 5, 2018, and Thursday, September 6, 2018, Kimley-Horn conducted parking occupancy counts at the Essentia Health campus. Occupied parking spaces were counted in all accessible Essentia-owned parking facilities at 8:00 AM, 11:00 AM, 2:00 PM, and 5:00 PM on each count day. These count times were chosen to capture typical fluctuations in parking demand throughout the day.

USER GROUPS AND PERMISSIONS

From a parking demand perspective, this study assumed three types of users on the Essentia Health campus:

1. Physicians: Medical practitioners or doctors providing medical diagnosis or treatments for patients/visitors
2. Staff: Non-Physician employees of Essentia Health, such as nurses, medical assistants, administrative staff, clerical staff, etc.
3. Patients and visitors: Those coming to campus for medical treatment and/or those visiting current patients.

CONSIDERATIONS

Comingled parking facilities, relaxed parking enforcement at parking facility entrances and with sticker decal designation, and off-site parking necessitated several assumptions to determine parking demand among specific user groups. The are several factors to consider relative to site conditions that may influence overall parking demand, but which were not able to be specifically quantified as part of this study. These include, but are not limited to:

- Vehicles may be parking in the colored Ramp facilities that are not associated with Essentia;
- There is no capped limited to the number of Essentia personnel that can park at the DECC parking facility;
- Essentia physicians and staff/employees may be parking with vehicles that have the wrong decal, or no decal at all;
- Essentia patients/visitors, physicians, and staff may be parking in off-site facilities and were not counted;
- Essentia employees from other parts of the state parking on the days of data collection.

The assumptions below were made after discussions with Essentia personnel, and were determined to be the most reasonable and appropriate in estimating current parking demand among the different user groups.

Parking availability, permissions, and facility types vary by user group. Parking decals placed on the rear windshield of each vehicle identify Essentia staff designation and parking permissions of each vehicle. In collaboration with Essentia parking operations personnel, the following was developed as the base methodology, and implemented to identify the parking demand of each user type in each parking facility counted, unless otherwise indicated in assumptions 1-3 that follow:

- Vehicles with green Essentia decals were deemed Physicians;
- Vehicles with all other color Essentia decals were deemed Staff;
- Vehicles with no decal were deemed patients/visitors.

1. Essentia-owned Red, Green, and Blue Ramp parking facilities are comingled parking facilities where physicians, staff, and patients/visitors are permitted to park side-by-side. Counting vehicle parking decals yielded the most accurate account of parking demand by each user group in these facilities. For the Blue, Green, and Red parking ramps, the parking demand by user group was based solely on the observed vehicle parking decals (or lack thereof, in the case of patients/visitors). Therefore, all unmarked vehicles in the ramps were deemed patients/visitors. The Red, Green, and Blue Ramps were the only parking facilities where patients/visitor parked vehicles were counted.

2. Essentia surface parking lot facilities are not comingled. Surface lots are designated with signage as physician-only, staff-only, or with restricted parking spaces. However, many of the parking decals of the vehicles in these surface lots were not consistent with the policy and/or posted signage. Specifically, there were many vehicles without decals in staff-only facilities. The data collection process counted the presence and color of vehicle decal by facility in surface lots as well. To correct for staff simply not placing a decal on their vehicle, during post-processing, 100% of vehicles counted without decals in surface parking lots were assumed to be staff/employees.

3. In addition to on-site Essentia-owned parking, Essentia Health leases parking spaces from third-party off-site owners to supplement overall parking supply. It is important to include the demand for these spaces in the overall existing Essentia user parking demand numbers. Essentia parking demand for these off-site spaces was unable to be counted directly because off-site facilities are comingled with non-Essentia uses. For these reason, there was no practical way to count Essentia users in these locations.

4. In collaboration with Essentia parking operations personnel, third-party parking operators were contacted for information about how many spaces in these facilities are allocated to Essentia users.

   To conservatively estimate Essentia demand in these facilities, the average peak occupancy from the observed Essentia-owned parking garages (80%) was applied to the total number of known Essentia-leased spaces by facility for these off-site facilities, for all time periods:

   - City Ramp: 65 physician spaces and 260 staff spaces are leased in this parking garage, yielding a peak occupancy of 52 physicians and 208 staff
   - Tech Village: 84 physician spaces and 2 staff spaces are leased in this parking garage, yielding a peak occupancy of 67 physicians and 2 staff
   - Fitger's Ramp: 1 physician space and 124 staff spaces are leased in this parking garage, yielding a peak occupancy of 1 physician and 99 staff

   Essentia Health shuttles employees from the DECC parking facility to campus. According to Essentia personnel, there is no limit on the number of employees than can use this service. The highest average daily shuttle volume was 37 staff, recorded in January 2018.

The August 2018 average shuttle volume was 30 staff. DECC parking personnel reported 56 Essentia staff vehicles parked at the DECC on September 5, and 44 Essentia vehicles parked on September 6, during the same period as campus parking data collection. Therefore, this analysis assumes a peak Essentia staff parking demand of 56 at the DECC for all time periods.

TOTAL CAPACITY

As shown in **Table 1**, there are over 3,500 existing parking spaces available for Essentia Health physicians, staff, and patients/visitors, either at Essentia-owned or off-site third-party parking facilities. Many surface parking facilities are small, fragmented, and disjointed overall. Future master plan goals include consolidating and simplifying parking facilities for all users.

Table 1 represents the current supply of parking supporting existing Essentia operations.

TABLE 1: EXISTING ESSENTIA HEALTH PARKING CAPACITY

Lot Number or Name	Facility Type	Parking Inventory Available for Essentia
1	Surface	14
2	Surface	16
3	Surface	17
4	Surface	10
5	Surface	20
6	Surface	188
7	Surface	43
8	Surface	48
9	Surface	127
10	Surface	77
11	Surface	142
12	Surface	30
13	Surface	29
14	Surface	19
15	Surface	84
16	Surface	56
17	Surface	32
18	Surface	12
19	Surface	24
20	Surface	7
25	Surface	16
26	Surface	28
28	Surface	15
29	Surface	112
30	Surface	43
31	Surface	43
115 E 1st St	Surface	64
518 E 4th St	Surface	4
532 E 1st St	Surface	8
DC1- Underground	Surface	38
DECC-Shuttle	Leased	unlimited
BLUE	Ramp	483
GREEN	Ramp	456
RED	Ramp	737
City Ramp	Leased	325
Fitger's Ramp	Leased	125
Tech Village	Leased	86
TOTAL		**3,578**

OBSERVED PARKING OCCUPANCY

Figure 1 and Figure 2 below depict total observed cars parked in on and off-site parking facilities, based on collected data, and the assumptions stated above. Note that some of the "No Decal" vehicles indicated in blue were assumed to be patient/visitor vehicles (if in the Red, Green, or Blue Ramp) and the other "No Decal" vehicles were assumed to be staff/employee vehicles (if counted in the surface parking lots).

On Wednesday, September 5th, the maximum overall parking occupancy occurred at 8am with nearly 2,820 vehicles parked in the various facilities (**Figure 1**).

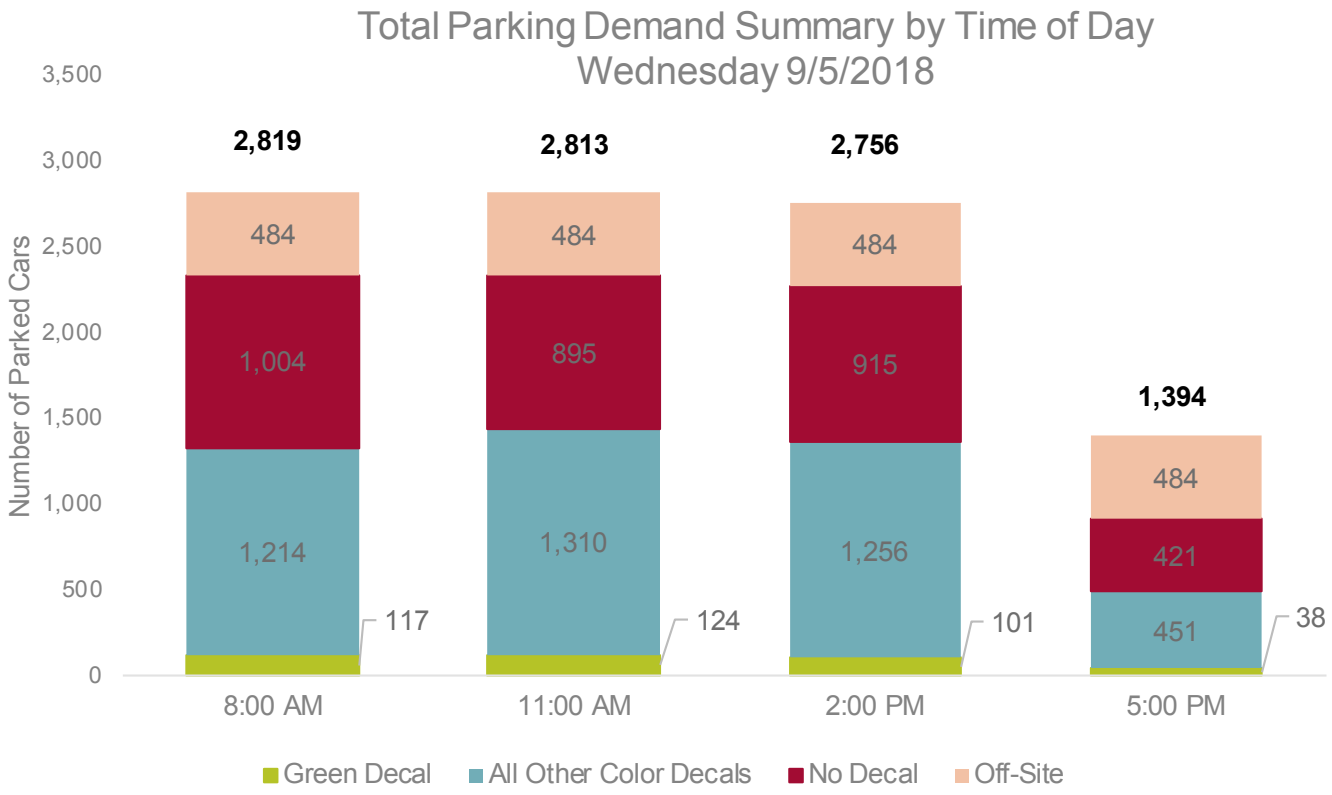


FIGURE 1: VEHICLE COUNT SUMMARY FOR WEDNESDAY, SEPTEMBER 5TH, 2018

On Thursday, September 6th, the maximum overall parking occupancy occurred at 11am with just over 2,930 vehicles parked in the various facilities (**Figure 2**).

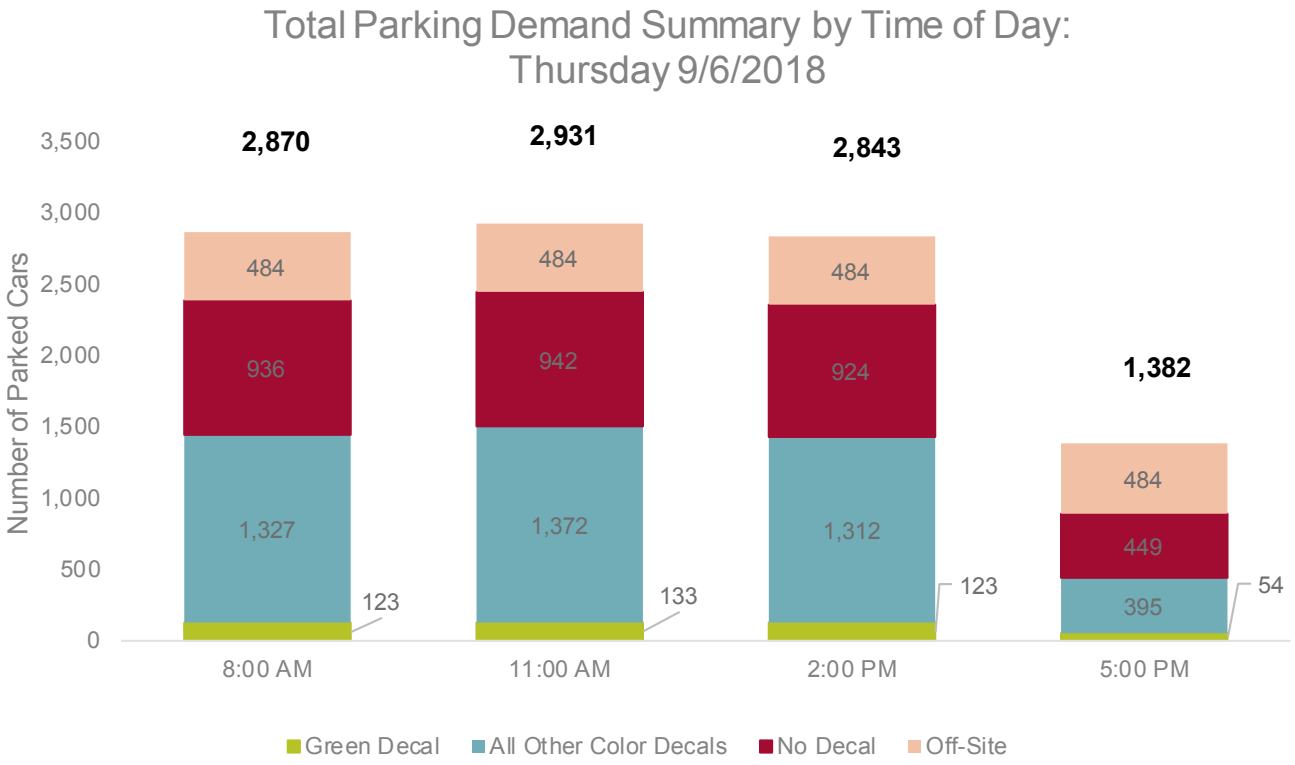


FIGURE 2: VEHICLE COUNT SUMMARY FOR THURSDAY, SEPTEMBER 6TH, 2018

EXISTING PEAK PARKING DEMAND

Peak parking demand for each user group was identified to be *the single highest parking count collected for each user group*, based on the post-processing of count data under the assumptions stated above. **Table 2** below summarizes the existing parking supply and observed individual peak parking demand per user group, based on the parking facilities assessed. This information includes demand in off-site leased spaces.

TABLE 2: CURRENT ON AND OFF-CAMPUS PEAK PARKING DEMAND OVERALL SUMMARY

User Type	Peak Parking Demand	Peak Hour
Patients/Visitors	781	8:00 AM Wednesday
Physicians[1]	253	11:00 AM Thursday
Staff/Employees[1]	1,911	11:00 AM Thursday
Total	2,945	-

1 Includes on-site spaces and off-site leased spaces.

As summarized in Table 2, **a total of 633 parking spaces are unoccupied under peak parking conditions for each user group**. Note that this represents an overall utilization of 82.3% of available parking spaces occupied currently under peak conditions, just below the

recommended effective capacity of 85% (typical for patient and visitor parking), and 95% (typical for physician and staff parking). Based on analysis, there is excess available parking in the current parking system.

Current Essentia headcount and patient volumes are depicted in **Table 3**, according to Essentia personnel. This data represents what was available and provided by Essentia.

TABLE 3: CURRENT CAMPUS HEADCOUNT AND DAILY PATIENT VOLUME

User Type	Total (Inpatient and Outpatient)
Daily Patient Visits	3,103 (3,017 outpatient visits, average 60 discharges per day in August 2018, and average 26 surgical cases per day in October 2017)
Total Physicians	457 (227 outpatient and 230 inpatient)
Total Staff/Employees/Students	5,586 (1,527 outpatient, 3,168 inpatient, and 891 students)

Based on data collection and these total hospital populations, current parking demand rates can be assumed as follows:

- Patient/Visitor = 0.25 per daily patient/visitor (781 parking demand/3,103)
- Physician = 0.55 per total physician
- Staff/Employee/Student = 0.34 per staff/employee/student

Note that not all individuals are on campus during the main shift or on a given day, and not all physicians and staff/employees are on campus on a daily basis. For these reasons, actual parking demand ratios across different shifts and times of the day/days of the week will likely be less than those stated above.

ASSESSING FUTURE PEAK PARKING DEMAND

Assuming any future changes to physicians or staff yield similar travel characteristics throughout the day and distribution across the shifts throughout the day, and that future travel mode share (the proportion of people driving alone and parking vs. taking other modes) remains constant, then these existing parking demand rates can be used to assess future parking needs. Note that strategies that reduce single-occupant vehicle travel and parking on-site will reduce parking demand ratios.

To offer a benchmark for discussion on potential parking needs under a campus population and patient visit growth scenario, a 10% increase in patients/visitors, physicians/providers, and staff/employees across the board, was used. When applying the parking demand rates from above, this growth yields a nearly 300-space increase in peak parking demand, less than the number of parking spaces that are currently empty under current peak conditions (633). A 300-space increase in peak parking demand would yield overall parking system utilization of 90%.

This analysis suggests that the system has enough raw number of parking spaces to accommodate future 10% growth across the board, especially if existing parking is consolidated, and re-allocated/re-programmed to separate user groups and operate more efficiently at 95%

effective capacity for physician and staff parking, and 85% effective capacity for patient/visitor parking. **However, no change in the number of patients, visitors, and/or the headcount of Essentia physicians, staff, or employees is expected to change because of Vision Northland.**

CONCLUSION

Several conclusions can be drawn from this parking study. According to data collection, just under 3,000 vehicles park under the peak conditions, both in on-site parking facilities and off-site leased locations. Based on analysis, there is excess parking capacity (633 spaces) in the system at peak demand. Peak parking demand for patients/visitors is at 8:00 a.m. on Wednesday, and peak parking demand for physicians and staff/employees was at 11:00 a.m. on Thursday. Overall peak demand was identified during this 11:00 a.m. Thursday period.

Future campus headcount is not expected to change. **However, even with an across-the-board 10% increase in patient/visitor numbers, physicians, and staff, there is enough existing parking to absorb net new parking demand.** Strategies such as consolidating parking assets into fewer, larger parking facilities, re-distributing/consolidating specific parking user groups together, improving shuttling, and improving parking enforcement will increase the efficiency of how parking assets are utilized.

SHEET NOTES

1. THE TRAFFIC CONTROL SHOWN IN THIS DRAWING SHALL BE IN EFFECT AFTER JUNE 23, 2019 UNTIL THE COMPLETION OF SUPERIOR ST. PHASE II (STREET RE-OPENING).
2. THIS TRAFFIC CONTROL PLAN SHOWS THE MINIMUM TRAFFIC CONTROL NECESSARY. THE CONTRACTOR SHALL MODIFY THE PLAN AS NECESSARY TO COMPLETE MINOR OR SHORTER DURATION TASKS. THE CONTRACTOR SHALL SUBMIT ANY MODIFICATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY PLANNED MODIFICATIONS.

1 SCHEMATIC TRAFFIC CONTROL – JUNE 24, 2019 THROUGH COMPLETION OF CITY PHASE II SUPERIOR STREET WORK (LATE FALL 2019)

EWING COLE

Federal Reserve Bank Building
100 North 6th Street
Philadelphia, PA 19106-1590
Tel: 215-923-2020 Fax: 215-574-0952

LHB PERFORMANCE DRIVEN DESIGN.

CIVIL, RENOVATION ARCHITECTURE, INTERIORS, STRUCTURAL & MEP ENGINEERS

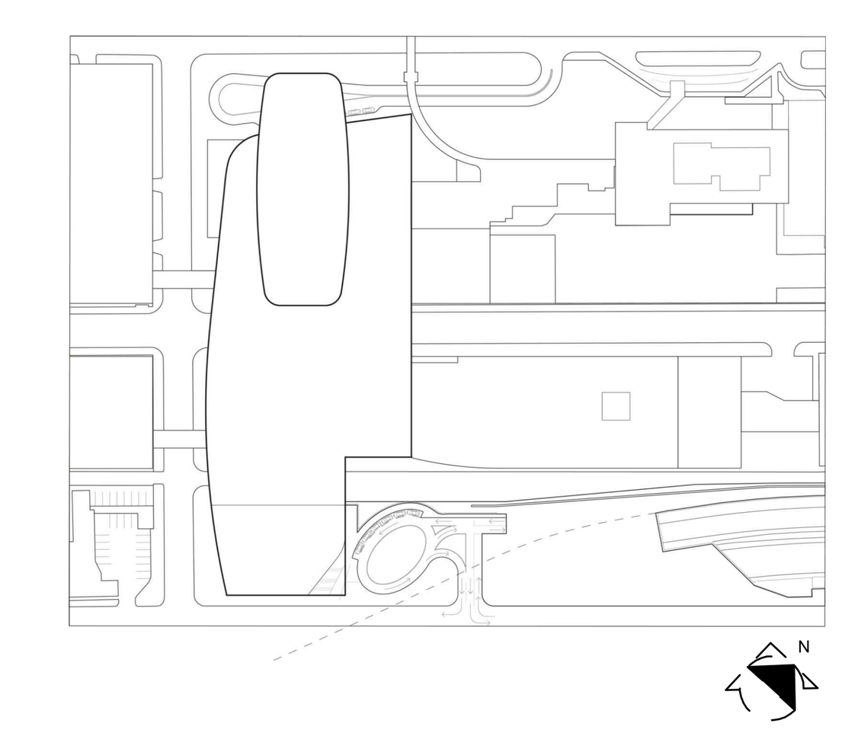
LHB
21 W. Superior Street, Suite 500
Duluth, MN 55802
Tel: 612-338-2029

Essentia Health

OWNER
ST. MARY'S MEDICAL CENTER &
ESSENTIA HEALTH DULUTH
502 East 2nd Street
Duluth, MN 55805

GENERAL NOTES

KEY PLAN



PRINCIPAL
ROBERT McCONNELL, AIA
PROJECT MANAGER
OSCAR GOMES, PE
PROJECT ARCHITECTS
EDWARD RENDLE, AIA
ROB ANASTES, AIA

REVISIONS

NO.	BY	DESCRIPTION	DATE
		SCHEMATIC DESIGN	09/28/18

ESSENTIA HEALTH VISION NORTHLAND

502 East Second Street
Duluth, MN 55805

DRAWN BY	AFB	DATE	02/01/2019
PROJECT NO.	20180361	SCALE	1:80

DRAWING NAME

PHASE 1 TRAFFIC CONTROL

FLOOR/SECTION PHASE: SD

DRAWING NO.: C1

SHEET NOTES

1. THE TRAFFIC CONTROL SHOWN IN THIS DRAWING SHALL BE IN EFFECT UPON RE-OPENING OF SUPERIOR STREET (COMPLETION OF CITY'S PHASE II WORK).
2. THIS TRAFFIC CONTROL PLAN SHOWS THE MINIMUM TRAFFIC CONTROL NECESSARY. THE CONTRACTOR SHALL MODIFY THE PLAN AS NECESSARY TO COMPLETE MINOR OR SHORTER DURATION TASKS. THE CONTRACTOR SHALL SUBMIT ANY MODIFICATIONS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY PLANNED MODIFICATIONS.

3RD AVENUE EAST
4TH AVENUE EAST
5TH AVENUE EAST
6TH AVENUE EAST
4TH STREET
3RD STREET
SECOND STREET
FIRST STREET
SUPERIOR STREET
SERVICE ALLEY
EXISTING DTA BUS STOP
DTA BUS STOP
TEMPORARY TURN AROUND
LOADING/DROP OFF AREA
PROVIDE TEMP BITUMINOUS PAVEMENT
ROAD WORK AHEAD
ROAD CLOSED AHEAD
ROAD CLOSED
ROAD CLOSED THRU TRAFFIC
ROAD CLOSED TO THRU TRAFFIC
RIGHT LANE CLOSED
MERGE
STOP
TURN LANE
ONLY
BEGIN ONE WAY
END ROAD WORK

2 SCHEMATIC TRAFFIC CONTROL – LATE FALL 2019 THROUGH PRIMARY PROJECT COMPLETION

0 40' 80' 160'

EWING COLE

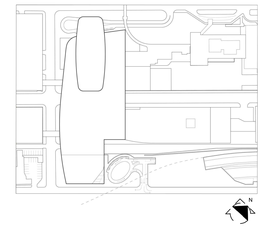
Federal Reserve Bank Building
100 North 6th Street
Philadelphia, PA 19106-1590
Tel: 215-923-2020 Fax: 215-574-0952

LHB PERFORMANCE DRIVEN DESIGN.
CIVIL, RENOVATION ARCHITECTURE, INTERIORS, STRUCTURAL & MEP ENGINEERS
LHB
21 W. Superior Street, Suite 500
Duluth, MN 55802
Tel: 612-338-2029

Essentia Health
OWNER
ST. MARY'S MEDICAL CENTER &
ESSENTIA HEALTH DULUTH
502 East 2nd Street
Duluth, MN 55805

GENERAL NOTES

KEY PLAN



PRINCIPAL
ROBERT McCONNELL, AIA
PROJECT MANAGER
OSCAR GOMES, PE
PROJECT ARCHITECTS
EDWARD RENDLE, AIA
ROB ANASTES, AIA

REVISIONS

NO.	BY	DESCRIPTION	DATE
		SCHEMATIC DESIGN	09/28/18

ESSENTIA HEALTH VISION NORTHLAND

502 East Second Street
Duluth, MN 55805

DRAWN BY	AFB	DATE	02/01/2019
PROJECT NO.	20180361	SCALE	1:80

DRAWING NAME
PHASE 2 TRAFFIC CONTROL

FLOOR/SECTION	PHASE	DRAWING NO.
	SD	C2

2/1/2019 10:19 AM J:\18Proj\180203\600 Drawings\CIE\Exhibits\Traffic Control\180203_Traffic Control Exhibit.dwg

Appendix E

Vision Northland Fact Sheet

Architect's preliminary drawing

Vision Northland

Essentia Health is making the largest private investment in Duluth's history as it transforms its downtown medical campus over the next four years.

The $800 million project, called Vision Northland, will match Essentia's facilities with how medicine is practiced in the 21st century, bringing the highest quality health care to patients.

Vision Northland represents a major investment in Essentia Health's mission as well as the future of Duluth and surrounding areas. The project demonstrates Essentia Health's commitment to the health of its patients, the economic vitality of the community and the work environment of its staff.

Essentia Health will invest approximately $675 million to construct a new hospital tower, clinic and outpatient surgery center on its downtown Duluth campus. It will spend another $125 million on related infrastructure and financing.

The project will build 815,000 square feet of new space and renovate approximately 115,000 square feet in existing facilities. By building up instead of out, Essentia Health's overall footprint will be reduced, opening space for other development in Duluth's Central Hillside neighborhood. Essentia Health wants its investment to serve as a catalyst for other investments and development in downtown Duluth and the Northland.

Vision Northland is much more than a building project. It's about how Essentia Health cares for its patients and matching its facilities to how medicine is practiced now and in the future. Health care has changed since St. Mary's Medical Center was founded in 1888.

The construction project is expected to be completed in 2022.

For updates and more information go to EssentiaHealth.org/VisionNorthland.

Vision Northland will benefit Duluth and the region by:

- Providing the highest level of health care with patient and staff safety as the imperative
- Building state-of-the-art medical facilities with advanced technologies to meet patients' needs
- Improving the availability, affordability and quality of care for Duluth and the region
- Boosting the Northland's economy
- Enhancing the patient and staff experience
- Creating an environment that retains and attracts top talent as well as helps address future workforce needs
- Serving as a catalyst for other investments and economic development

BY THE NUMBERS

Cost

- Total cost: $800 million
- Construction: $675 million to build a new hospital tower, clinic and outpatient surgery center
- Other costs: $125 million for related infrastructure and financing

Size

- About 815,000 square feet of new construction
- About 115,000 square feet of renovated space in existing facilities

TIMELINE

2018	Design and construction master plan
2019-2022	Construction
2022	New hospital tower, clinic and outpatient surgery center open

Essentia Health

References

City of Duluth (April 18, 1995). *Duluth Truck Routing*. Available at: http://www.duluthmn.gov/media/139549/Duluth-Truck-Routing-Map.pdf. [Accessed: January 24, 2019].

City of Duluth (March 6, 2018). *Imagine Duluth 2035: An Update to the 2006 Comprehensive Land Use Plan*. Available at: http://www.imagineduluth.com/. [Accessed: January 7, 2019].

EwingCole (September 28, 2018). *Fundamental Design Report*. Prepared for: Essentia Health: Vision Northland Duluth, MN.

Minnesota Department of Health. *Minnesota Well Index*. Available at: http://www.health.state.mn.us/divs/eh/cwi/. [Accessed: January 2019].

Minnesota Department of Natural Resources. *Natural Heritage Information System*. Available at: https://www.dnr.state.mn.us/nhnrp/nhis.html. [Accessed: January 2019].

Reilly, Mark (December 4, 2018). Duluth gets plans for 'skyline changer' apartment building. *Minneapolis/St. Paul Business Journal*. Available at: https://www.bizjournals.com/twincities/news/2018/12/04/duluth-gets-plans-for-skyline-changer-apartment.html. [Accessed: January 7, 2019].

U.S. Environmental Protection Agency (Last updated December 22, 2018). *Enforcement and History Compliance History Online*. Available at: https://echo.epa.gov/. [Accessed: January 6, 2019].

U.S. Fish and Wildlife Service (January 2016). *Division of Migratory Bird Management. Reducing Bird Collisions with Buildings and Building Glass Best Practices*. Available at: https://www.fws.gov/southeast/pdf/guidelines/reducing-bird-collisions-with-buildings-and-building-glass-best-practices.pdf. [Accessed: January 10, 2019].

U.S. Fish and Wildlife Service. *Information for Planning and Consultation*. Available at: https://ecos.fws.gov/ipac/. [Accessed: January 2019].