



STATUS REPORT
EAST RANGE WATER PROJECT
TASK 2 & TASK 3
EAST RANGE WATER BOARD
CITY OF AURORA & TOWN OF WHITE
SEH Project No. 159723

DATE: Monday, November 14, 2022

ATTACHMENTS

1. **Draft Archaeology Environmental Review as required by SHPO.**

DISCUSSION ITEMS

The following provides a brief discussion of the items that remain to being able to bid the project.

- 1) Final Design
 - a) Awaiting MDH approval of the P&S for the raw water pump station and intake.
 - b) Update P&S for the whole project with MDH comments once MDH approval is received.
- 2) Appropriations Permit
 - a) SEH follow-up with final response to DNR questions will be completed once IRRRB-ERWB Contingency Plan is signed.
 - b) Need final raw water intake property agreement
- 3) Environmental Review:
 - a) Minnesota State Historic Preservation Office (SHPO):
 1. Draft of follow-up on-site Phase I archaeological investigation is attached.
 2. Findings are that there will be no archaeological impacts caused by the proposed construction.
 3. Subsequent approval by SHPO
- 4) MDH Project Certification
 - a) SEH/ERWB prepare notice of, and holds public hearing for, completed environmental review.
 - b) MDH certifies project.
- 5) Pineville and Scenic Acres Water Main
 - a) Final Rosa easement.
- 6) Biwabik-East Range Water Supply Contineny Plan
 - a) Proposed meeting with Biwabik staff, yet to be scheduled
 - b) Agreement to be drafted and executed.

END.

**PHASE I ARCHAEOLOGICAL SURVEY
AND
ARCHITECTURAL/HISTORY REVIEW OF THE
EAST RANGE JOINT WATER TREATMENT SYSTEM,
CITY OF AURORA AND TOWN OF WHITE,
ST. LOUIS COUNTY, MINNESOTA**

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and

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TO:

East Range Water Board

SHPO NUMBER 2022-0457

Duluth Archaeology Center Report No. 22-040

November 2022

ABSTRACT

The East Range Joint Water Treatment System project is to construct a water treatment system for the City of Aurora and Town of White in St. Louis County. New water mains will be placed along existing roads; two structures (water treatment plant, pumping station) will be constructed. Underground utilities will be placed adjacent to existing roads throughout the specified project areas, including in Pineville. The new water treatment plant will be located adjacent to the existing City municipal facility and water tower. The proposed pumping station will be on the north shore of Embarrass Mine Lake.

Phase I archaeological survey consisted of pedestrian walkover survey of the entire project with shovel testing at areas of suitable terrain. No indications of archaeological materials were observed on either the ground surface or in the few shovel tests placed at the structure locations. No further archaeological investigations are recommended in advance of any components of the East Range Joint Water Treatment System.

The architecture/history review of buildings with a visual line of sight from the new construction locations included the Pineville locality, which is recorded as an unverified archaeological site (21SLlt). No adverse impacts to the viewshed of the buildings in Pineville and all other water main routes are anticipated as a result of the placement of the lines under the ground surface. The pumping station and the water treatment plant also will not cause any viewshed impacts in the immediate vicinity of the construction locations. No further architectural/historic investigations are recommended in advance of construction on the East Range Joint Water Treatment System.

ACKNOWLEDGMENTS

Miles Jensen (SEH) provided maps and coordinated with the field investigations for archaeology and structure review. Amanda Gronhovd processed the State archaeology license for the archaeological field survey.

PROJECT PERSONNEL

Susan Mulholland, Principal Investigator
Lawrence J. Sommer, architectural historian
Elizabeth Yordy, field technician

REPORT SENT TO:

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DRAFT

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INTRODUCTION

BACKGROUND

This report is on Phase I archaeological survey and architecture/history review of historic properties for the East Range Joint Water Treatment System (ERJWTS) Project in the City of Aurora and the Town of White, St. Louis County, Minnesota (Figure 1). The State Historic Preservation Office (SHPO) requested the studies in advance of construction (SHPO number 2022-0457). The project includes 1200 feet of water lines in linear right-of-way (ROW) corridors along existing roads as well as two small block areas (total 3.75 acres) for the water treatment plant and the pumping station (Figures 2, 3, Appendix I). All of the land in the project is public land under public jurisdiction: roads for water mains (State, County, Township), City land, State tax-forfeit land.

The objective was to determine if impacts from the project could adversely affect historic properties within the Area of Potential Effects (APE). Phase I archaeological survey was conducted for evidence of unrecorded archaeological sites within the specific parcel boundaries; standard survey methods were used as per the State Historic Preservation Office (SHPO)/Office of the State Archaeologist (OSA) guidelines (Anfinson 2011). The architecture/history review focused on effects of the project on the viewshed of visible structures that have the potential to be eligible to the National Register of Historic Places (NRHP).

The APE differs between the two types of investigations as the effects from the proposed construction differ. The archaeological investigation was restricted to areas where direct effects of project construction would cause impacts to areas of previously undisturbed ground. The APE for archaeological survey was specific to the corridors of the proposed water mains and the block areas for the two proposed facilities. The architecture/history review of structures in contrast focused on indirect effects of the project, specifically on the viewshed from the proposed construction of both structures (pumping station, water treatment plant) and the water mains along roads. The APE for the structure review was defined for the investigation based on the viewshed of proposed structures (1 story tall) and the water mains (underground). Portions of Pineville (a town) and the City of Aurora were within the viewshed. The two APEs of the project area occur in T58N R15W section 4, 5, 6, 7 and T58N R16W section 12 (Table 1).

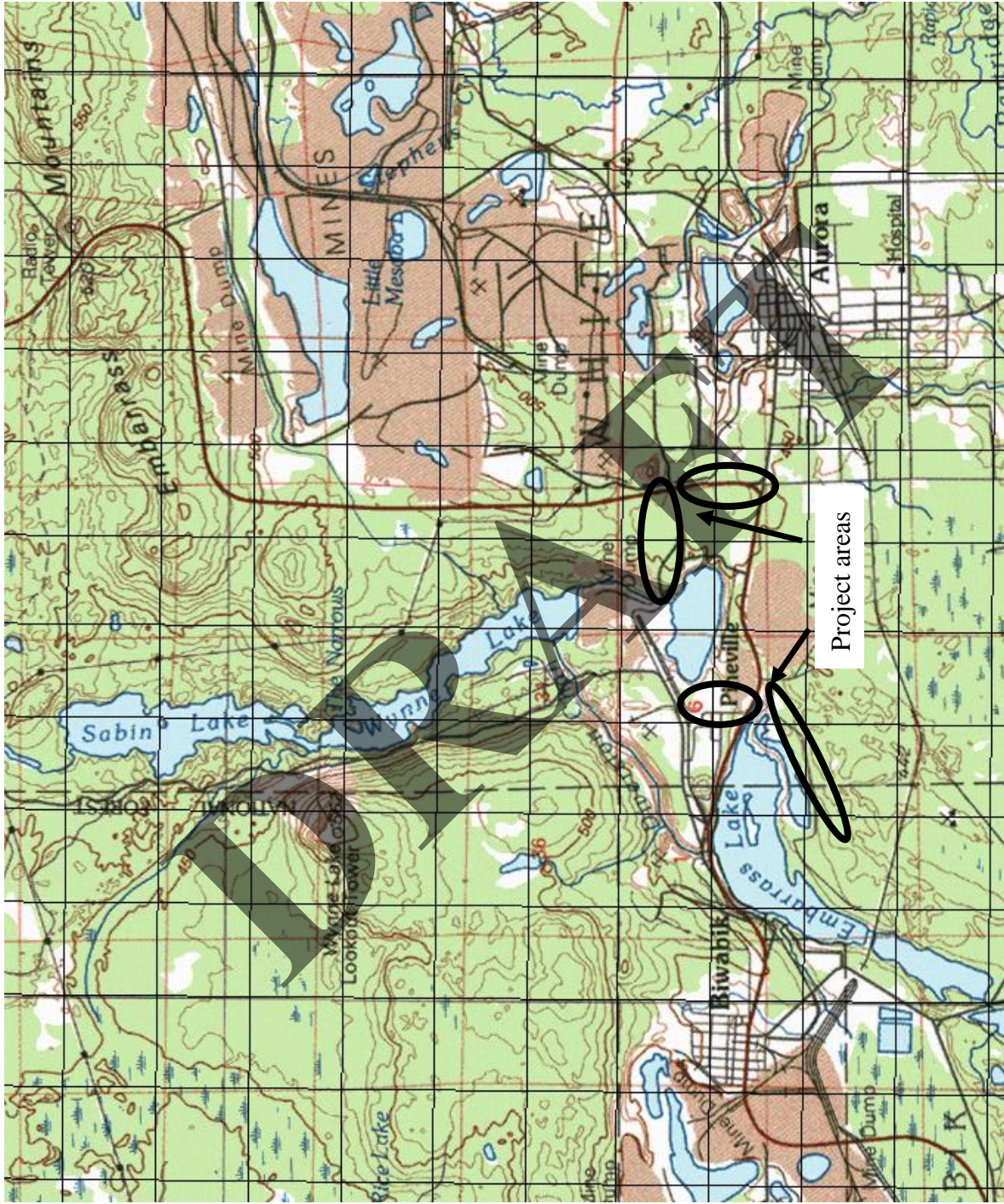


Figure 1. ERJWTS project location, Vermillion Lake quadrangle (1994), 1:100,000 USGS topographic map.

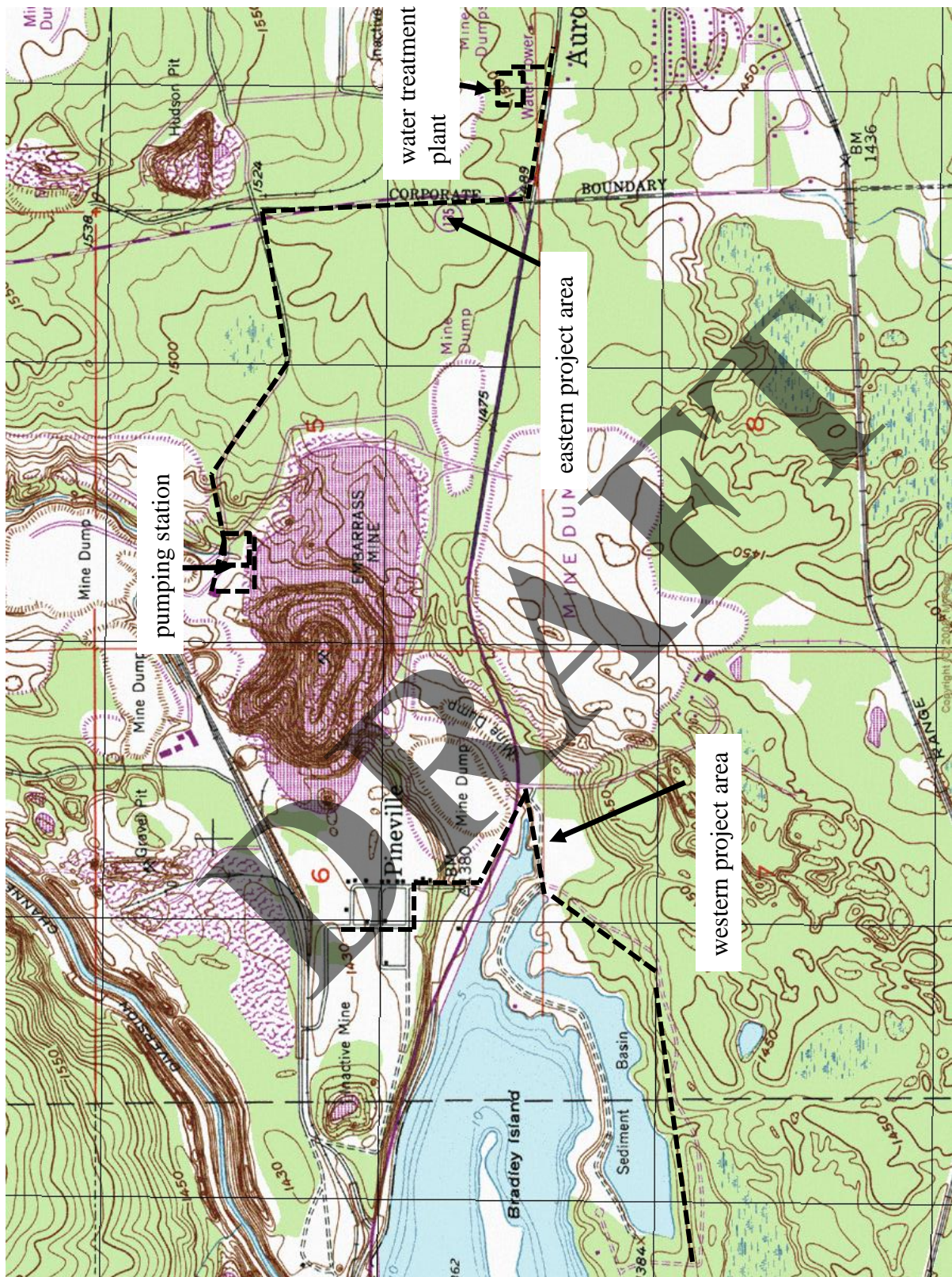
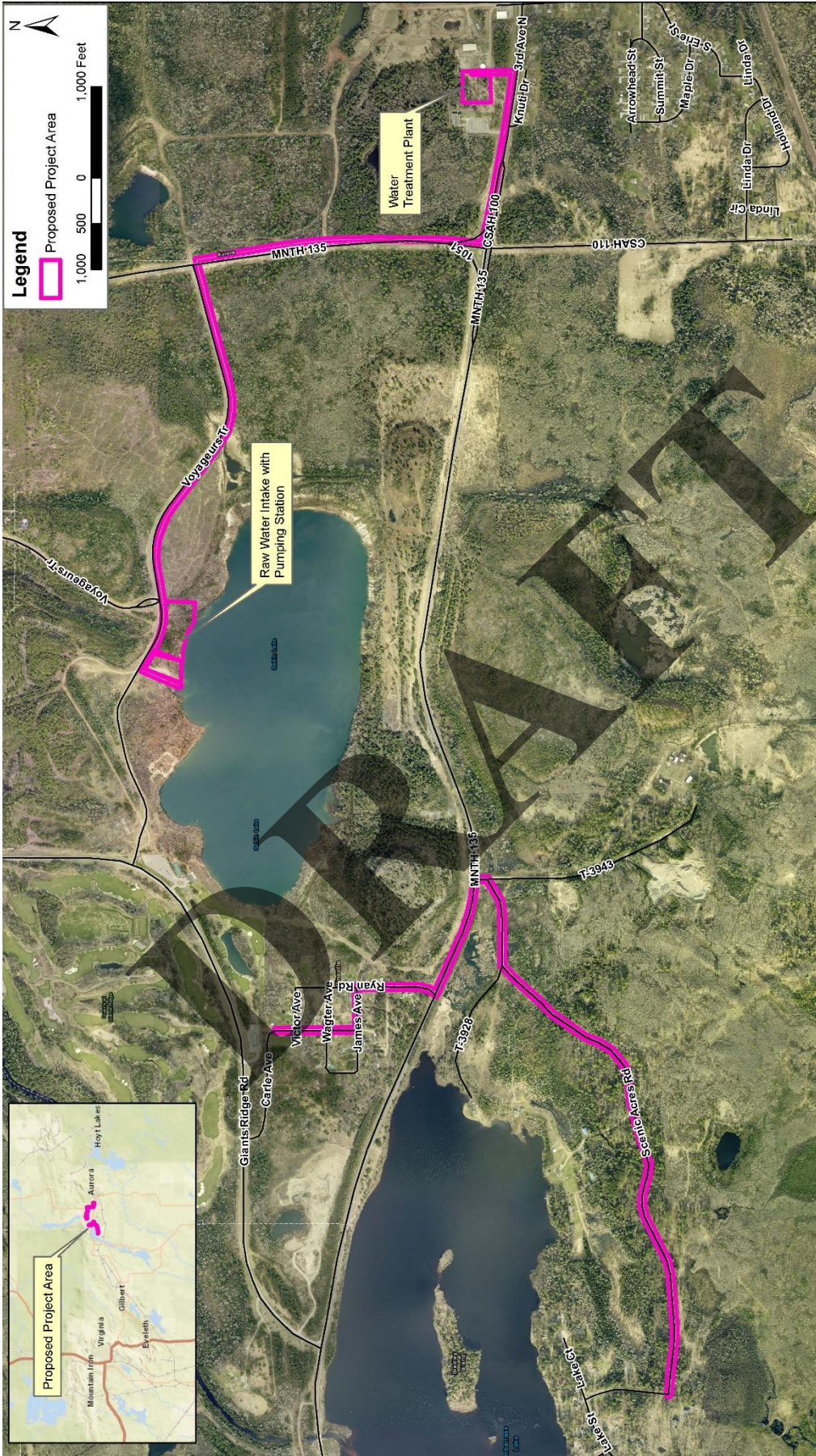


Figure 2. ERJWTS project components, Biwabik quadrangle (1950/ 1985), 1:24,000 USGS topographic map.





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Project: XXXXX 000000
 Print Date: 5/9/2022
 Map By:
 Prepared by: St. Louis Co. Trans. Mgrs.
 Units: US Survey Feet
 Source: ESRI, SEH, DMR

PROPOSED PROJECT LOCATION
 EAST RANGE WATER BOARD
 Aurora, St. Louis County, Minn.

Figure X

Figure 3. ERJWTS project areas (pink lines). From SEH.

Table 1. ERJWTS Project Investigations

<u>Area</u>	<u>Location</u>	<u>UTM*</u>
pumping station	north side, Embarrass Mine Lake	0554321E / 5265512N
water treatment plant	1 Industrial Drive	0556186E / 5264470N
water mains/East	Voyageurs Trail/Lake Mine Rd, T.H. 135, CSAH 100	
water mains/West	Scenic Acres Rd, T.H. 135, Ryan Rd, James St, Geary St, Carl Ave	

*Universal Transverse Mercator coordinates, North American Datum 1987, Zone 15

PROJECT LOCATION

The ERJWTS project is in the eastern part of the Central Coniferous Lake Region (5e) of the SHPO system (Anfinson 1990). This region is defined as central and northeastern Minnesota where lakes are common within the generally coniferous vegetation across the region. The project is located in the Mesabi Range geomorphic area with the Aurora till Plain immediately south (University of Minnesota 1971). The area is rugged terrain comprising the Giants Range and Mesabi Iron range; numerous iron ore mines and dumps are present. This area is also mapped as the Giants Range physiographic area (Wright 1972:566-567). The project is within the St. Louis River drainage, with Embarrass Lake and other lakes draining by the Embarrass River (Waters 1977:28). Original vegetation was mostly the white and Norway (red) pines (Marschner 1974). An area of mixed hardwood and pines is present to the north along the higher terrain; conifer bogs and swamps occur in patches throughout the area.

The project area is also within the Northeastern Minnesota (4) Archaeological District (Dobbs 1988a:20). This system is also based on topography and glacial history but follows county lines to a greater degree. The pre-Contact cultural contexts expected in this region range from Paleoindian to Woodland (or Late Prehistoric) periods, with the very earliest contexts following the Cloquet River drainage between ice lobes. Sites tend to focus on waterways, especially where junctions of streams and lakes occur (Minnesota Historical Society 1981:32). Recorded sites are few in the vicinity of the project area.

The major stages of pre-Contact historic contexts are most commonly considered to be Paleoindian, Archaic, and Woodland although later and more complex contexts are recognized as well (Minnesota Historical Society 1999:24). Dobbs (1988a) splits the Paleoindian into Fluted (Early) and Lanceolate (Late) segments, as well as dividing the Woodland into Ceramic/Mound and Late Prehistoric. Individual historic contexts are considered in relation to the regional differences

in the archaeological record. District 4 contains evidence of the three major stages but not all historic contexts within those stages. However, no sites are listed for any pre-Contact historic context within the project area.

Only scattered projectile points indicative of Early Paleoindian (Fluted) occupation have been reported in Minnesota (Higgenbottom 1996; Buhta et al. 2011); Late Paleoindian (or Lanceolate) is better documented throughout Minnesota (Florin 1996). The Archaic Tradition is represented by Lake-Forest Archaic with Prairie Archaic to the west, Eastern Archaic to the south, and Shield Archaic to the north (Buhta et al. 2017). The Woodland Tradition (Ceramic/Mound) is well-represented in the general area with Laurel and Brainerd throughout northern/north central Minnesota respectively (Anfinson 1979). The Late Prehistoric includes Blackduck, Sandy Lake and possibly Selkirk phases.

Most or all of the Contact period contexts are possibly represented in the project area (Dobbs 1988b). Various Dakota/Siouan groups were in northern and central Minnesota during early Contact times and Ojibwe in later times. Euro-American contexts could include French, British, and Initial United States as the St. Louis River was a favored travel route connecting to the Mississippi and the Rainy River drainages.

Post-Contact contexts include both period and thematic contexts (Minnesota Historical Society 1999). Traffic up the St. Louis River continued through Contact times. Early Agriculture and River Settlement (1870-1940) and Railroads and Agricultural Development (1870-1940) are directly applicable to this portion of Minnesota. Various thematic contexts relating to development of roads and homesteads/farmsteads may also be applicable.

LITERATURE REVIEW

Survey of St. Louis County has not been fully conducted under the OSA Statewide Archaeological Survey funded by Legacy grants; only the Lake Superior Shore (District 9) has been surveyed partially (Mulholland et al. 2011). Twenty sites were confirmed from informants and another 13 site leads documented; 6 new sites were found during field survey (Mulholland and Mulholland 2013). In addition, survey in the Cloquet River drainage identified several new sites within the drainage, which is inland from the District 9 area in the previous study (Mulholland et al.

2013). Most sites correlated with current or previous areas of water resources, as was indicated by previous studies of larger areas (Hudak et al. 2002).

Few archaeological sites are recorded in the OSA site database for the townships T58N R15W and T58N R16W. Pre-Contact archaeological sites recorded within the general vicinity are located on the shores of Esquagama Lake to the south (Table 2). All three sites are Native American mortuary sites with either human remains or surface mound features. Site 21SL0168 consists of remains from a single individual accidentally uncovered next to a house at the south side of the lake; the materials were reburied. Site 21SL0393 is a single burial mound maintained next to CSAH 4 on the east side of the lake. Site 21SL0456 consists of two burial mounds about 1/8 mile apart, between the south side of Esquagama and Little Esquagama Lakes.

Table 2. Recorded Archaeological Sites in General Area

SITE # / NAME	TYPE	LOCATION
21SL0168 / Esquagama Lake	single burial	58 / 16 / 34
21SL0393 / Esquagama Lake II	burial mound (1)	58 / 16 / 35
21SL0456 / Esquagama Lake III	burial mounds (2)	58 / 16 / 34

The general area topography is a mining landscape associated with the Embarrass Mine and includes the townsite (Pineville) associated with the Bangor and Embarrass Mines. No verified archaeological sites were previously recorded within the project boundaries, although the project is partially within one unverified site (Figure 4). Site 21SLIt is the “ghost town” of Pineville located in T58N R15W section 6. The site was not field verified, although the current streets within Pineville are assumed to be original locations in the historic townsite. The townsite lies between the Bangor and Embarrass Mines and was originally called Cotton (Lamppa 1962:78-109). It was platted in the early twentieth century; a few people still lived there in 1962. Early settlement was associated with development of the Bangor Mine to the west (1910-1918), as well as the short-lived Syracuse Mine (with very deep deposits). In the 1940s the Embarrass River was diverted to the west and the Embarrass Mine (now Embarrass Mine Lake) excavated for the World War II effort (Lamppa 2004:224). The Embarrass Mine appears to be located on or near the earlier Syracuse Mine, incorporating those workings.

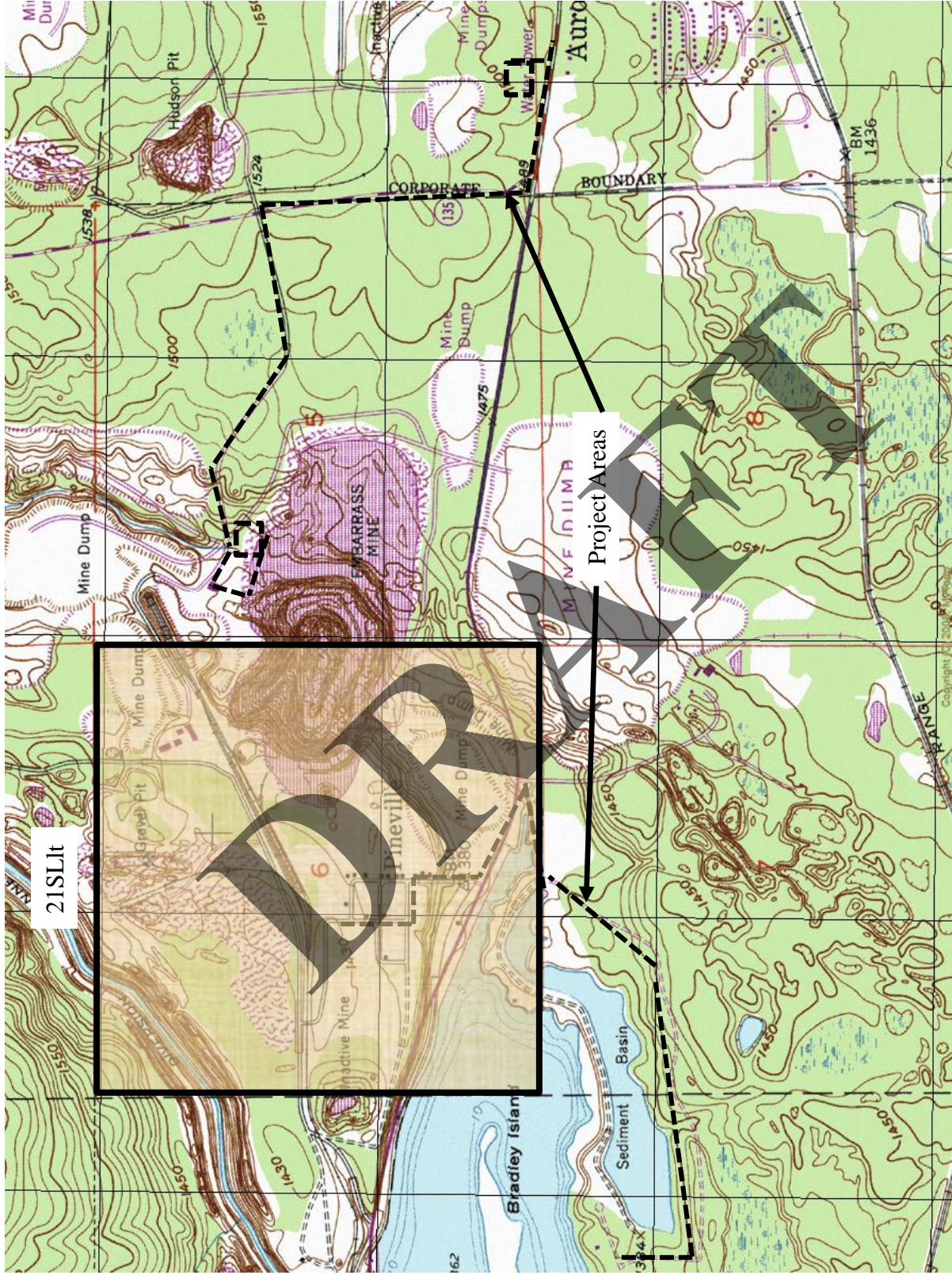


Figure 4. Pineville archaeological site (21SLlt) in ERJWTS project. Biwabik quadrangle (1950/ 1985), 1:24,000 USGS topographic map.



The mid-1800s General Land Office (GLO) survey notes (www.glorerecords.blm.gov) were compiled into a series of maps that show trails/roads as well as structures/villages/homesteads at the time of the survey. The project area is in the vicinity of a major trail route (Trygg 1966:sheets 17, 18). The Duluth-Vermilion Trail is a travel/transportation route through the area, passing near the major lakes in this chain on the Embarrass River: Esquagama, Embarrass, Wynne-Sabin (Figures 5, 6). The trail crossed the Embarrass River between Embarrass and Wynne Lakes, in the vicinity of the current Embarrass Mine Lake (the former Embarrass Mine pit). An early dam is also reported on the river, possibly for logging activities (Lamppa 1962:86). A bridge on the dam was “part of the old road to Aurora.” It is not know if the Duluth-Vermilion Trail crossed on the same spot or elsewhere on this portion of the river.

Historic accounts of early water transportation routes indicate that the Embarrass River in the Wynne/Sabin Lake area had a portage route to the Pike River to the west/northwest. The Embarrass River is part of the St. Louis River drainage, connecting to Lake Superior at the east and via the Savannah Portage to the Mississippi River through Big Sandy Lake (Luukkonen 2007). The Pike River drains north into the Vermilion Lake complex and ultimately Crane Lake on the Border Route through the Vermilion River. The connection between three major water drainages is at the Height of Land Portage (21SLal) north of Sabin Lake. The potential for unrecorded archaeological sites along the Embarrass River and the lakes is very high as a consequence of the Duluth-Vermilion Trail as well as the older river transportation route.

The oldest historic aerial photographs on the MnDNR webpage are the 1940/1941 set (www.dnr.state.mn.us/maps/landview/index.html). Pineville is shown as settled in place by July 4, 1940; the Embarrass River is within its original channel (Figure 7). The original stream route is still present in 1941 but by 1948, the river has been rerouted through a diversion channel to the northwest (Figure 8). The Embarrass Mine is then well developed and visible in the area between Embarrass and Wynne Lakes, completely removing any remnants of a logging dam/road bridge across the original Embarrass River (or the earlier Duluth-Vermilion Trail) as well as the earlier Syracuse Mine workings.

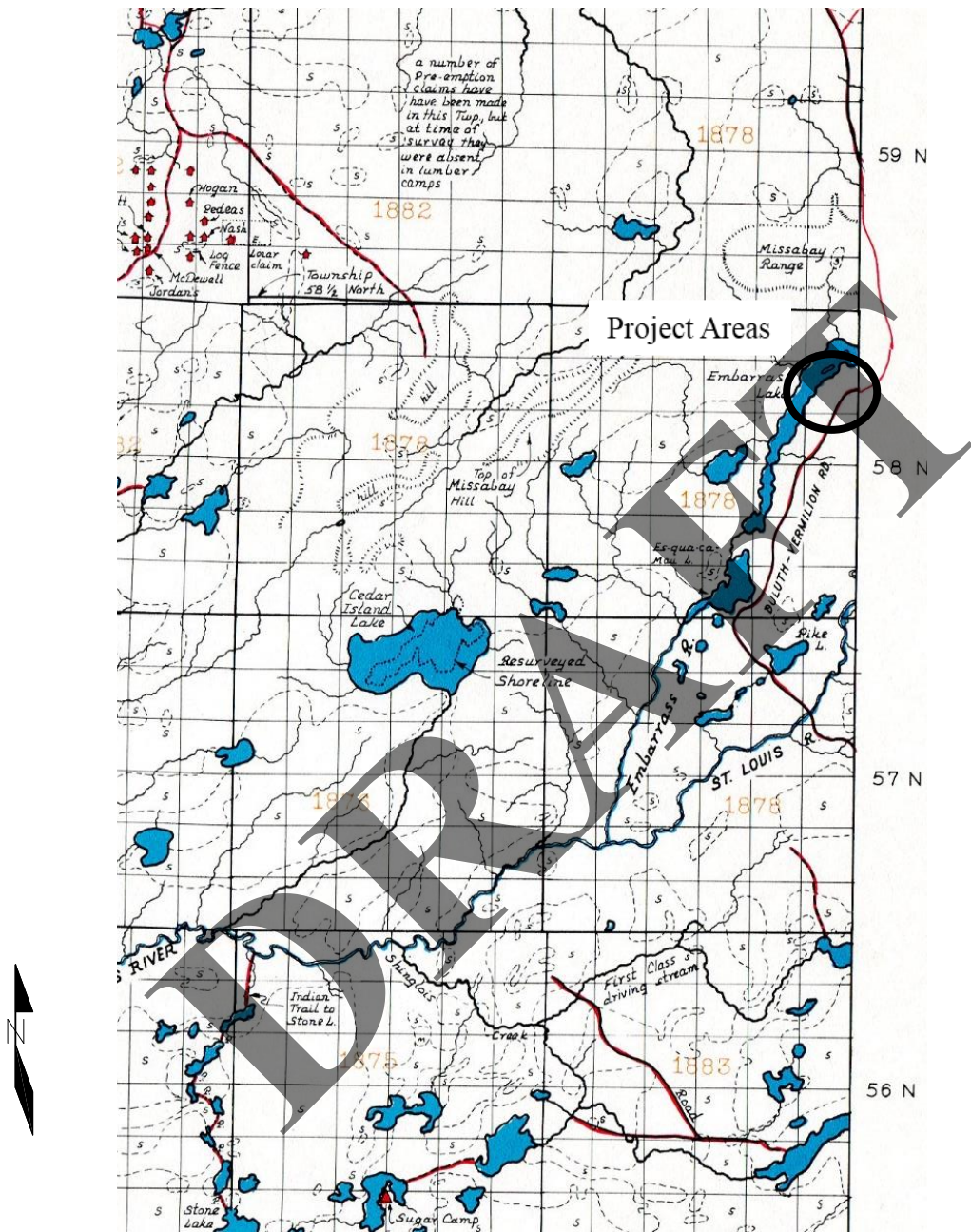


Figure 5. GLO cultural features in vicinity of project (Trygg 1966: sheet 18).

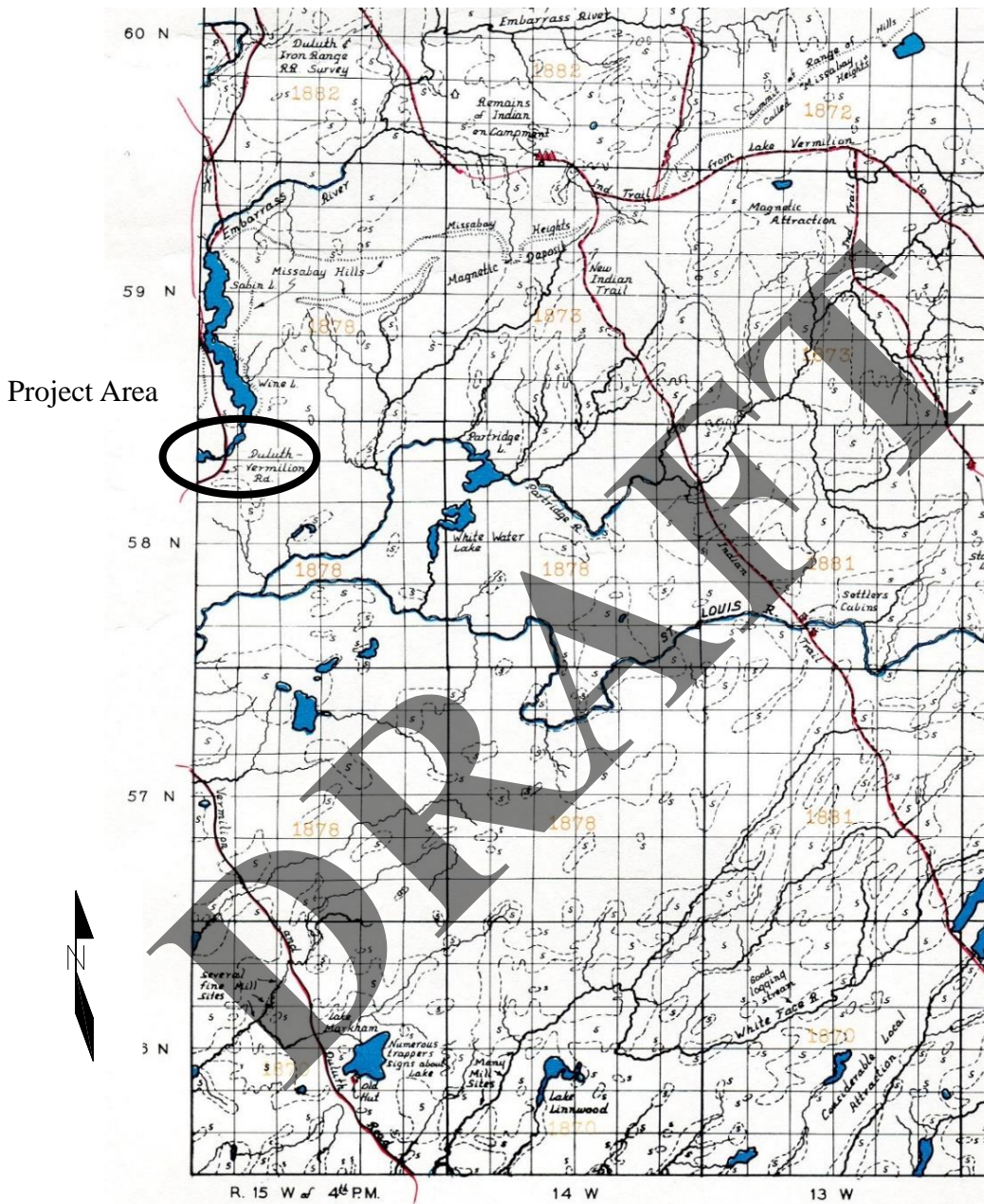


Figure 6. GLO cultural features in vicinity of project (Trygg 1966: sheet 17).

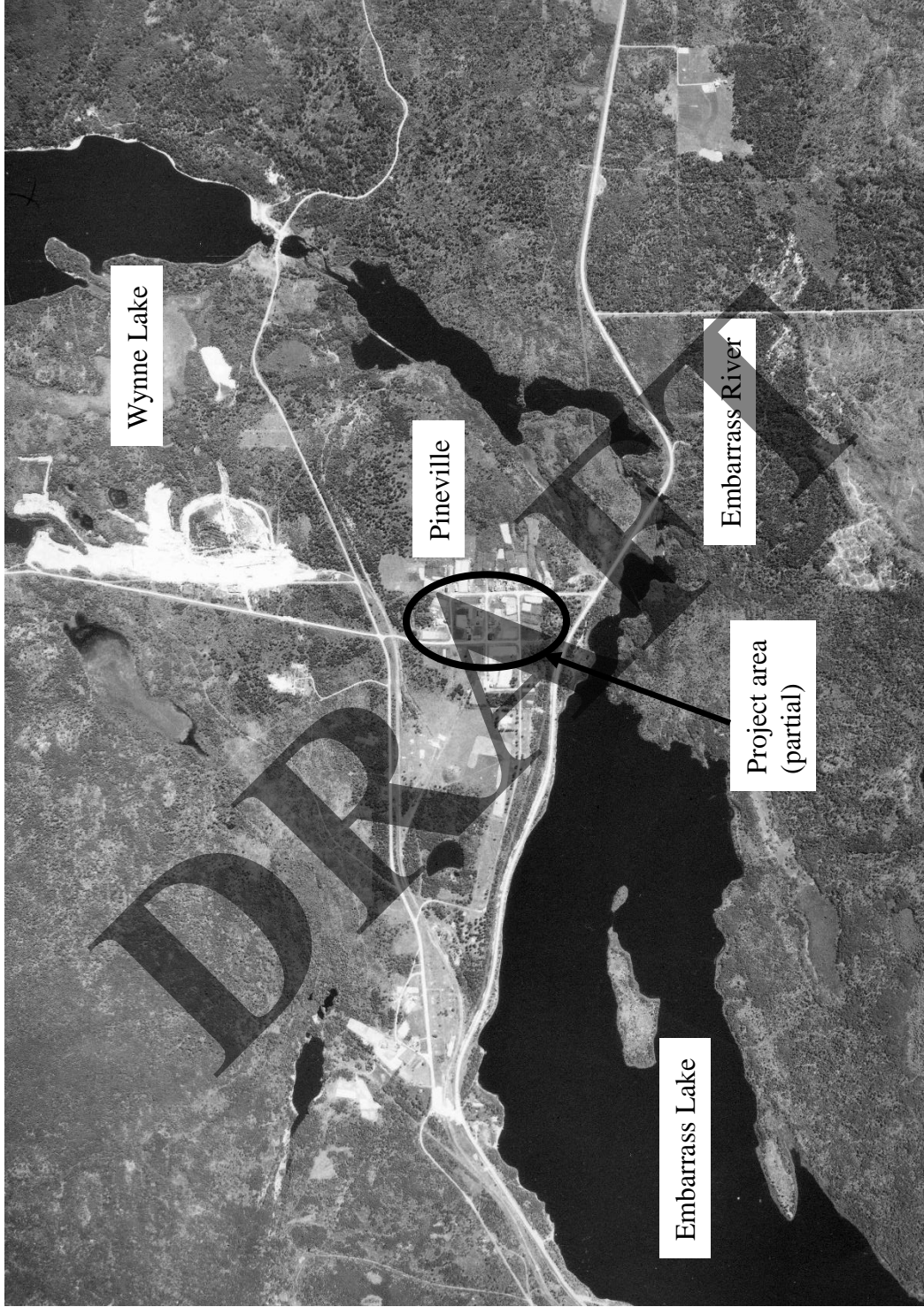


Figure 7. Historic aerial photograph CIR-18-51, July 4, 1940.
From www.dnr.state.mn.us/maps/landview/index.html.

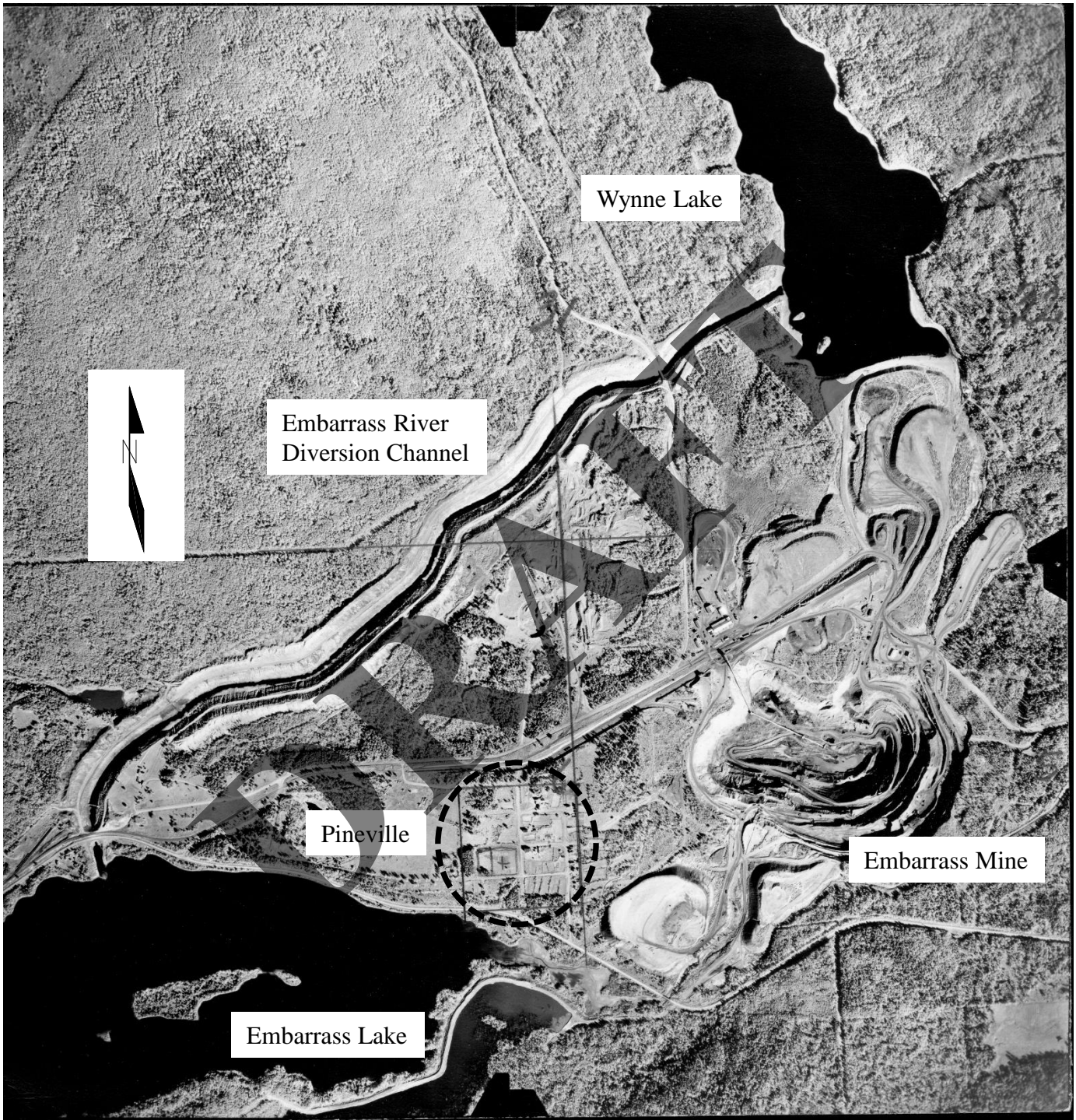


Figure 8. Historic aerial photograph SLC-40-44, September 22, 1948.
From www.dnr.state.mn.us/maps/landview/index.html.

PHASE I ARCHAEOLOGICAL SURVEY

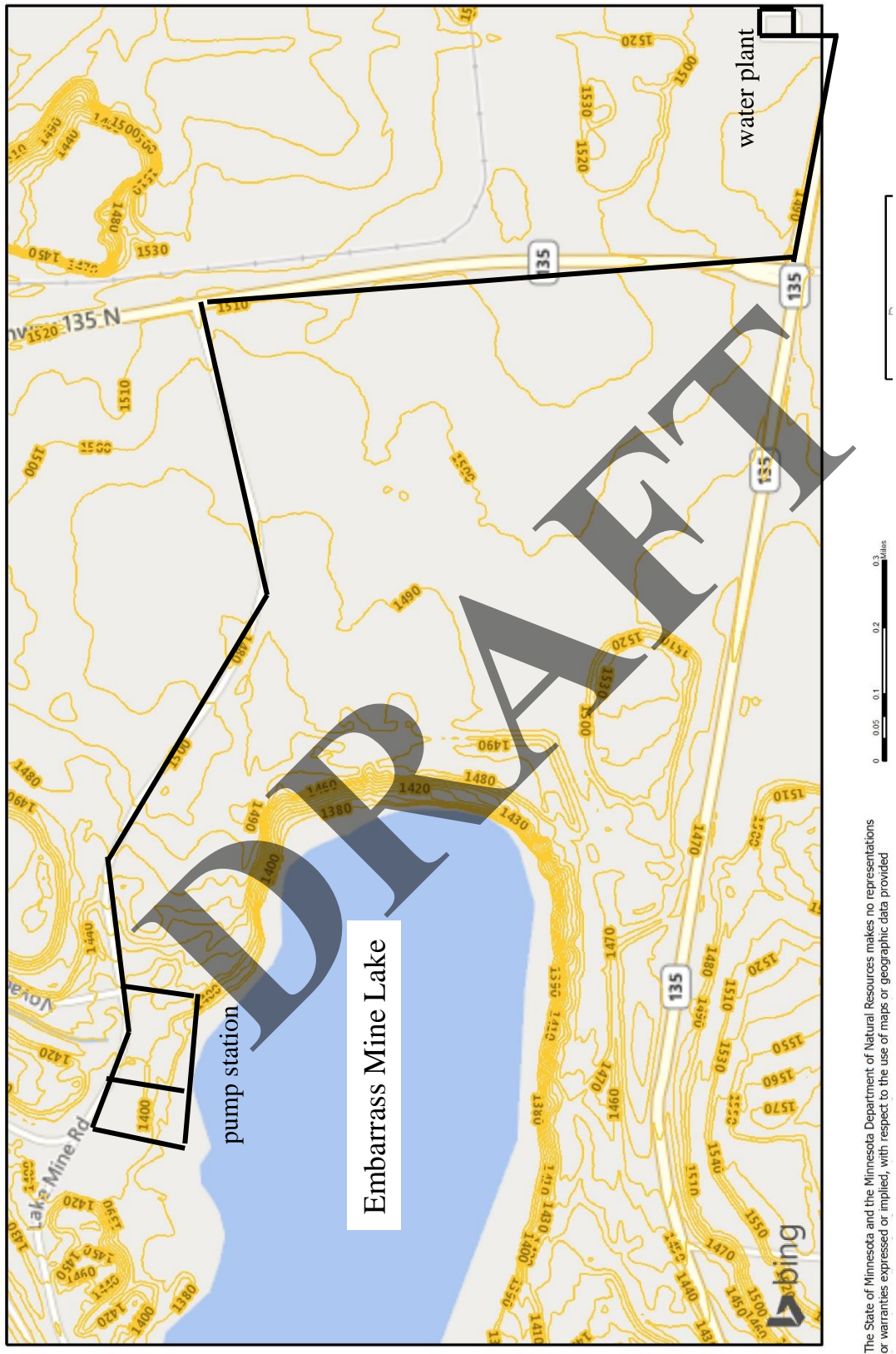
METHODS

Phase I survey usually is conducted by one or both of two methods (Anfinson 2011). Pedestrian walkover consists of walking over the area for two types of evidence. Surface expressions such as pits, mounds, berms, foundations, or other structural elements can be recorded. In addition, areas of exposed sediments (especially if disturbed so a sample of subsurface materials is exposed) can be reviewed for less obvious indications such as stone artifacts, ceramics, and other artifacts. This method works well for exposed beaches and plowed fields. However, areas that are densely vegetated or not previously disturbed require shovel testing survey. Shovel tests expose a sample of the subsurface deposits, usually on a predetermined transect interval or grid; the sediment from each test is screened through 1/4 inch mesh to concentrate any artifacts for recovery. Tests are about 30-40 cm in diameter and as deep as possible to reach subsoil sediments. All tests are refilled after completion. No artifacts were recovered in this study so no laboratory methods were employed.

The APE of this survey was defined by the client as the area of the proposed water main lines along existing roads as well as two small parcels for the structures (Figure 3). The APE of the water mains are narrow corridors within the ROW areas of existing roads (T.H. 135, CSAH 100, Voyageurs Trail/Mine Lake Road, Scenic Acres Road, several streets in Pineville). The two structures (pumping station, water treatment plant) are proposed on two separate parcels at either end of the eastern portion of the project. The LiDAR contours of the project areas indicate relatively flat land for the treatment plant but some topographic relief at the pumping station while the water main corridors are relatively flat (Figures 9, 10).

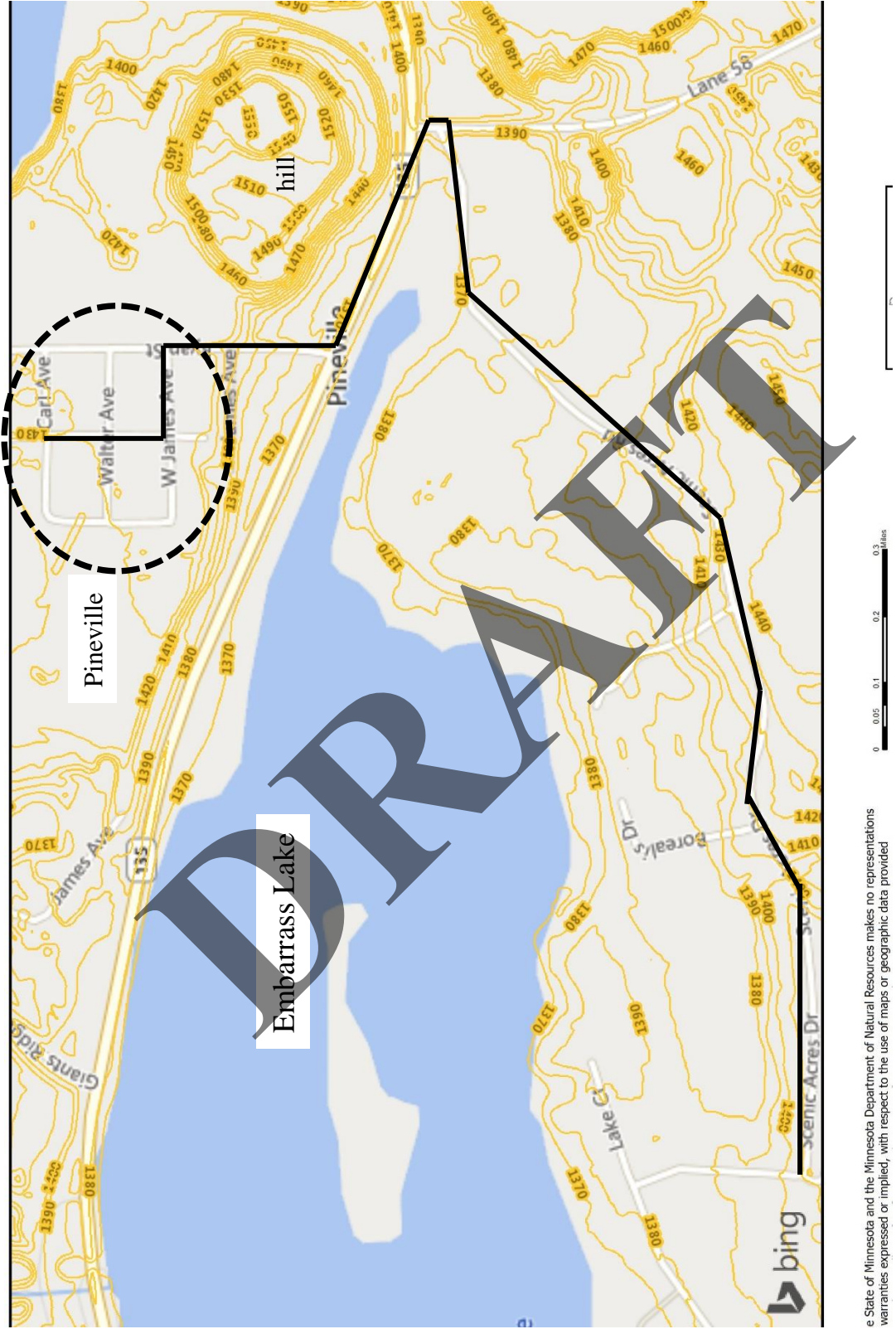
RESULTS

Survey was conducted on September 27, 2022, under State archeology license (Appendix II). The water main corridors (about 1200 feet) were surveyed to observe the ROW areas on the sides of the roads. No surface features were observed in any of the road ROWs or immediately adjacent to the ROW corridors. Most areas outside Pineville and Aurora were wooded, especially on Scenic Acres Road and T.H. 135. Portions of Voyageurs Trail/Mine Lake Road have a developed trail (hiking or ATV) within and adjacent to the ROW corridor. The only surface feature associated with



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Figure 9. LiDAR topographic contours of ERJWTS project, eastern portion. From www.dnr.state.mn.us/maps/mntopo/index.html.



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Figure 10. LiDAR topographic contours of ERJWTS project, western portion. From www.dnr.state.mn.us/maps/mntopo/index.html.

mining was an extensive dump at the junction of Scenic Acres Road and T.H. 135 (Figure 11). The large topographic hill is comprised of red tailings, most probably from the Embarrass Mine.

The water main corridors in Pineville follow existing streets except for a short segment between James Street and Geary Street. James Street ends at a dead end at the base of a steep slope; a private residence is located at the top of the slope and was not surveyed as a result of lack of permission. However, a driveway extends between Walter Avenue in the line of Geary Street south to the slope break above the end of James Street. The driveway appears to be in the line of the proposed water main.

The water treatment plant parcel is located at 1 Industrial Drive, immediately west of and adjacent to the City municipal yard and water tower. The parcel is covered by trees and brush vegetation with a wetland located in the north central part of the parcel. Pedestrian walkover of the parcel was conducted to survey for any surface features and areas suitable for shovel tests. A gravel road extends west from the fenced yard of the municipal facility, with several apparent push-piles from construction. No cultural surface features were observed; no areas suitable for shovel testing were found. Several large tree tipovers were viewed for artifacts in the root ball and the sediment below (Table 3). None contained any evidence for archaeological sites. The new facility will be located east of the wetland area, overlapping and immediately adjacent to the existing City municipal facility (Figure 12).

Table 3. Tree Tipover Locations at Water Treatment Plant

TREE	EASTING*	NORTHING*	LOCATION
1	0556132E	5264499N	3 trees near wetland
2	0556118E	5264482N	large tree south of wetland
3	0556152E	5264477N	small tree in south portion of parcel

*Universal Transverse Mercator coordinates, North American Datum 1987, Zone 15

The pumping station area is located at 5658 Lake Mine Road on the north side of Embarrass Mine Lake, between the Biwabik pumping station on the east and a boat launch/parking area for the Township of White on the west. The area between these two facilities is wooded with a dirt/gravel track parallel to the lake. One shovel test was placed with negative results (Table 4); the sediment



Figure 11. Large hill of tailings at junction of Scenic Acres Road and T.H. 135.

lacked an A horizon and contained much gravel and cobbles. The area has nine feet of mine spoils (as shown in borings), which is consistent with the test contents.

Table 4. Shovel Test and Features at Water Pumping Station

ITEM	GPS COORDINATES*	COMMENT
shovel test	0554278E / 5265493N	negative; angular rock from mine spoils
surface items	0554176E / 5265503N	metal bucket, cable, crushed sheet
“trench”	0554279E / 5265499N	0554212E / 5265496N (west end)

*Universal Transverse Mercator coordinates, North American Datum 1987, Zone 15

The area was surveyed again on November 3 to record the topographic features after additional plans for the pumping station were received (Figure 13). The area was flagged during the second visit as well, making the survey more accurate. The parcel contains a lower elevation area parallel to the lake shore and a higher elevation adjacent to Lake Mine Road, separated by a slope with several topographic features (Figure 14). The existing gravel/dirt track extends west to a central open area with an access to the lake. Immediately north of the track is a linear trench at a lower level with the slope on the north side and the built up road track on the south. Both linear features end at the central open area immediately below the slope between the upper and lower elevations.

The slope appears to have an intermediate relatively flat “terrace” between the base (with the two tracks) and the top of the slope (at the upper elevation). The terrace area above the trench is relatively wide and flat, rising to the west where two pits are excavated into the slope. The terrace becomes narrower above the pits, which are separated by a more gentle slope to the south. Some cans and other historic materials were noted on the surface of this slope. The western pit is truncated by sediment placed to support the parking lot for the White boat launch. The area below the pits is lower and not smooth; a foot path from the boat launch area extends east to the central open area.

The upper elevation is flatter and lacks topographic features, although the vegetation does differ. The eastern portion is a fir/spruce plantation of mature trees in rows. To the west is a more open area without large trees but with brush of varying densities. The corridors for pipelines cross this area to connect to the water mains on Mine Lake Road.



PREPARED BY: SEH
 PROJECT NO.: 2020-001
 DATE: 08/10/2020
 DRAWING NO.: C200
 SHEET NO.: 01 OF 02
 PROJECT: EAST RANGE RAW WATER INTAKE AND PUMP STATION
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

EAST RANGE RAW WATER INTAKE AND PUMP STATION

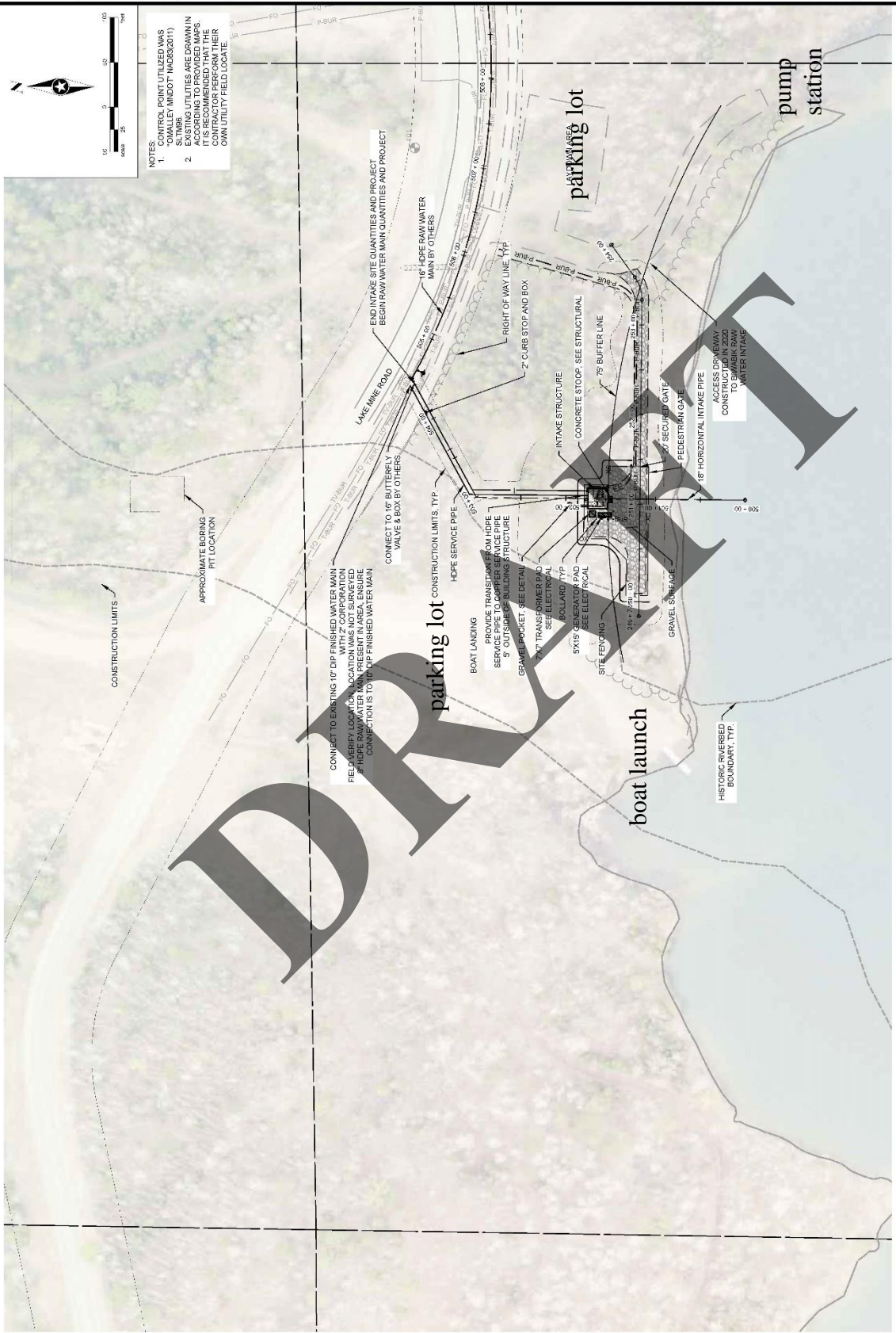
ALFORDA, MINNESOTA

PROJECT NO.: 2020-001
 DATE: 08/10/2020
 DRAWING NO.: C200
 SHEET NO.: 01 OF 02
 PROJECT: EAST RANGE RAW WATER INTAKE AND PUMP STATION

DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

PROPOSED SITE LAYOUT

C200



NOTES:
 1. CONTROL POINT UTILIZED WAS SLT.MR (WADOT, INACCESSIBLE)
 2. EXISTING UTILITIES ARE DRAWN IN RED. CONTRACTOR TO VERIFY AND LOCATE ALL UTILITIES. IT IS RECOMMENDED THAT THE CONTRACTOR PERFORM THEIR OWN UTILITY FIELD LOCATE.

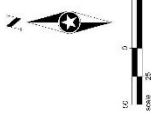


Figure 13. Proposed water pumping station at 5658 Mine Lake Road, White Township.

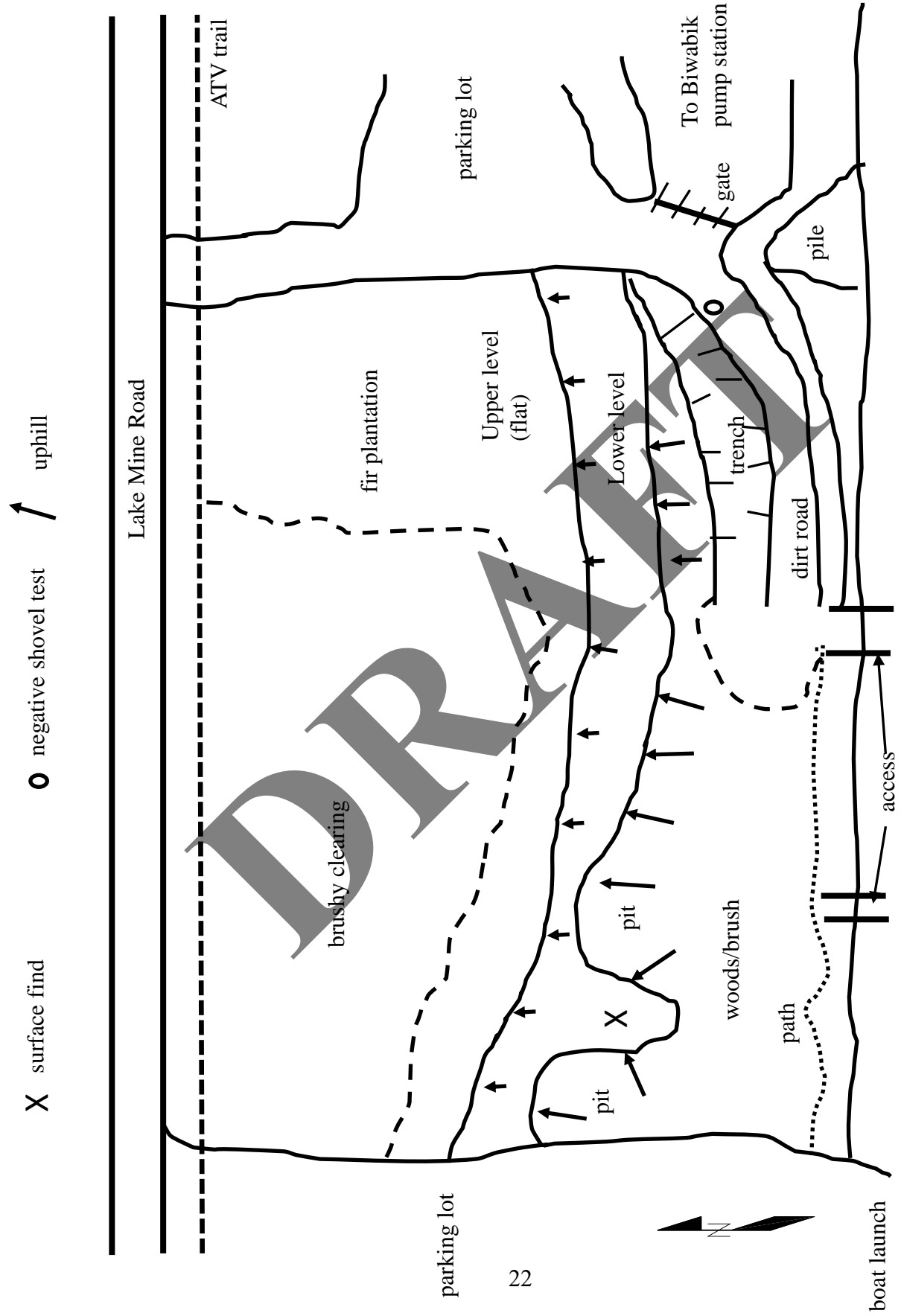


Figure 14. Sketch of topographic features at pumping station at 5658 Mine Lake Road, White Township.

ARCHITECTURE/HISTORY REVIEW

INTRODUCTION

The study is to conduct an architecture/history review of the East Range Joint Water Treatment System in Aurora and White, St. Louis County, Minnesota for potential impacts from construction of a water treatment facility and pumping station (two buildings) and water main lines (1200 feet length). The study was recommended by the SHPO after review of the project. The new structures are proposed to be constructed at the City municipal facility at 1 Industrial Road and on Embarrass Mine Lake at 5658 Mine Lake Road, respectively. In addition, the 1200 feet of water main pipelines will be placed underground within the previously disturbed ROW along existing roads. The review focuses on the project viewshed to determine possible visual impacts from the project on nearby structures that might be eligible to the NRHP.

The objective of this study is to review the proposed structures (water pumping station, water treatment building) and water main pipeline corridors for impacts associated with construction of the new facilities on any potential historic properties in the immediate vicinity. No direct effects are associated with the construction of the structures or the pipelines; visual effects on the viewshed from/of the new structures are the focus of this portion of the study.

The study area is the same as for the Phase I archaeological survey (Figure 3) but the APE is considered to be the viewshed from and to the proposed structures; the pipelines will be underground so do not pose any impacts to the viewshed along those corridors. The proposed water treatment plant is in an area of existing City municipal facilities, including a water storage tank and other structures. The proposed water pumping station is on a lakeshore between another water pumping station to the east and a public boat launch to the west. Parking lots for both existing facilities connect to Mine Lake Road.

Methodology

Two general methodologies were utilized to conduct the review of the two proposed structures to SHPO standards (Minnesota Historical Society 2017). Historical research identified that no recorded historic properties exist within the study area. Research materials were obtained from the State Historic Preservation Office (SHPO) files in St. Paul, the St. Louis County Historical

Society in Duluth, and the City of Aurora. A field visit was conducted to observe the project area and viewshed as well as any existing structures within the study area. The reconnaissance level field survey (“windshield survey”) did not include photography or documentation (property inventory forms) along the water main corridors and the structure locations but only visual observation for potential visual impacts.

SURVEY RESULTS

The proposed East Range Joint Water Treatment System includes construction of a water treatment plant in Aurora, a pumping station on Embarrass Mine Lake, and water main pipelines connecting the two facilities as well as areas in the western portion of the project (Scenic Acres Road, Pineville). It is important to note that the water mains will be located underground within existing road right-of-way (ROW) corridors where utilities already are present.

The project is within and adjacent to the Embarrass River valley including Embarrass Mine Lake on the south and Wynne Lake on the north. This location is described as a mining landscape associated with the Embarrass Mine (Iron Range Resources and Rehabilitation Board 1979). The City of Aurora and the Pineville ghost town are associated with the project (Mulholland 2022).

The East Range Joint Water Treatment System project is designed to primarily serve the City of Aurora and adjoining areas of the White Township. The eastern portion of the project includes the two proposed structures and a connecting water main. The western portion of the project includes water mains connecting the Pineville locality and structures on Scenic Acres Road to the existing system.

Aurora originally was a mine location established in 1898 to serve the Stephens, Meadow, St. James, Miller, and Mohawk mines (Aguar 1971:27-28). In 1905 the location was moved about two miles to be closer to the new Duluth and Iron Range Railroad line. Business blocks, a bank, a newspaper, and a school were constructed along with a water and sewer system, paved streets and a park. Aurora’s population in 1910 was 1,919; it increased to 2,809 in 1920 but declined to 1,371 by 1950. The community remains an important economic center for the eastern Mesabi iron range.

Pineville was platted around 1900 and was initially called Cotton (Lamppa 1962, Aguar 1971). The first settlers came in 1908. Two blocks of lots were offered free to people who would come and build within a reasonable time. Within a short time, Pineville had twenty houses and a

main street with five businesses. Soon another fifteen houses were added. Pineville, along with nearby Bangor location boomed between about 1910 and the close of World War I. The Bangor mine closed then and most of the houses were moved to Aurora and other locations on the range.

Pineville survives today as a “ghost town” location (21SLlt) with a small permanent population. The proposed East Range Joint Water Treatment System will serve Pineville with water mains on Ryan Road, James Avenue, Geary Road, and Carl Avenue.

The Embarrass Mine, located between Biwabik and Aurora, played an important role as a source of iron ore for a United States steel industry that was recovering from the Great Depression (Lamppa 2004, United States Steel Co. 1978). The mine’s body of high-grade direct shipping ore lay directly beneath the Embarrass River system. The mine was known as a wet mine because of the need to continuously pump large volumes of water from the pit. The mine pit was deep and also known for its very steep road grades. Trucks were the only vehicles able to climb the steep grades and navigate the sharp turns.

The Embarrass Mine operated from 1943 until 1964 and shipped a total of 18.6 million tons of direct shipping iron ore during that period. Between 1975 and 1977 additional iron ore from old lean ore stockpiles were processed and shipped.

Embarrass Mine Lake is a man-made water body created by the flooding of the Embarrass Mine after mining operations ended. It is located adjacent to a portion of the East Range Joint Water Treatment System project. The proposed raw water pumping station will be constructed on the north shore of the lake.

The entire Mesabi iron range can be described as a mining landscape characterized by rugged topography, with large and deep open pit mines and huge overburden and tailings dumps covering hundreds of acres (Zellie 2005, Roberts and Roberts 1987). It is a rugged man-made landscape that has its own unique beauty. In recent decades the rugged beauty of the mining landscape has been softened somewhat by reclamation and reforestation. Many old mine pits also have filled with water becoming man-made lakes.

FINDINGS

There are no recorded National Register of Historic Places or eligible properties located within the project Area of Potential Effect (Nord 2003). The consultant’s reconnaissance level field

survey did not identify any existing or potential National Register eligible properties within the proposed project Area of Potential Effect (APE).

The Pineville locality (21SLIt) was reviewed during the survey, where multiple residential structures are still present (St. Louis County Historical Society 1963). Very few appear to be potentially related to the original settlement of the locality, consisting of a few shed-like structures along the APE. Most residential structures are obviously younger in age, either from extensive modification or new construction.

The City of Aurora municipal facility (at the proposed water treatment plant location) is a collection of utilitarian buildings within a fence yard. The water storage tower/tank is a modern structure.

The Embarrass Mine has not been evaluated for NRHP eligibility or documented by a Property Inventory form in SHPO records (Jim Krumrie, personal communication, 2022). The Embarrass Mine Lake (originally the Embarrass Mine pit) is located within or adjacent to the project APE. The existing water pumping station for the City of Biwabik is a similar structure to the proposed facility in this project.

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SUMMARY

ARCHAEOLOGICAL SURVEY

No artifacts or surface indications of pre-Contact Native American or Contact/post-Contact archaeological sites were found during the archaeological survey. The corridors of the water main pipelines do not contain any surface features and none are adjacent; the pipelines will be placed underground in previously disturbed ground. The locations of the two proposed structures do not have any indications of archaeological sites. No further archaeological investigations are recommended in advance of the ERJWTS Project.

If any evidence of human remains is uncovered during construction or any other project activities, the provisions of the Private Cemeteries Act (MnSt 307.08) must be followed. All work in the vicinity of the possible burial must cease and the proper authorities notified, including local law enforcement and the Office of the State Archaeologist. This is required in order to determine the affiliation of the burial. The OSA recommends avoidance of any indications of burials by a buffer of at least 50 feet diameter.

ARCHITECTURE/HISTORY REVIEW

The two proposed new structures will not cause any impacts to the viewsheds around the locations. The pumping station on the north shore of Embarrass Mine Lake is an industrial structure similar to the Biwabik pumping station to the west. The other shores of the lake within view do not have any structures. The water treatment plant in Aurora will be consistent with the existing municipal facilities in the proposed location.

The proposed locations of the water mains will not have adverse impacts on any existing or potential historic and/or architecturally significant properties. The roadside ditches in the road right-of-way corridors where utility lines already exist are previously disturbed. Even if any structures potentially eligible to the NRHP were present along the corridors, the underground location would remove any possible impacts to the viewshed. No further architectural/history investigations are recommended in advance of the ERJWTS Project.

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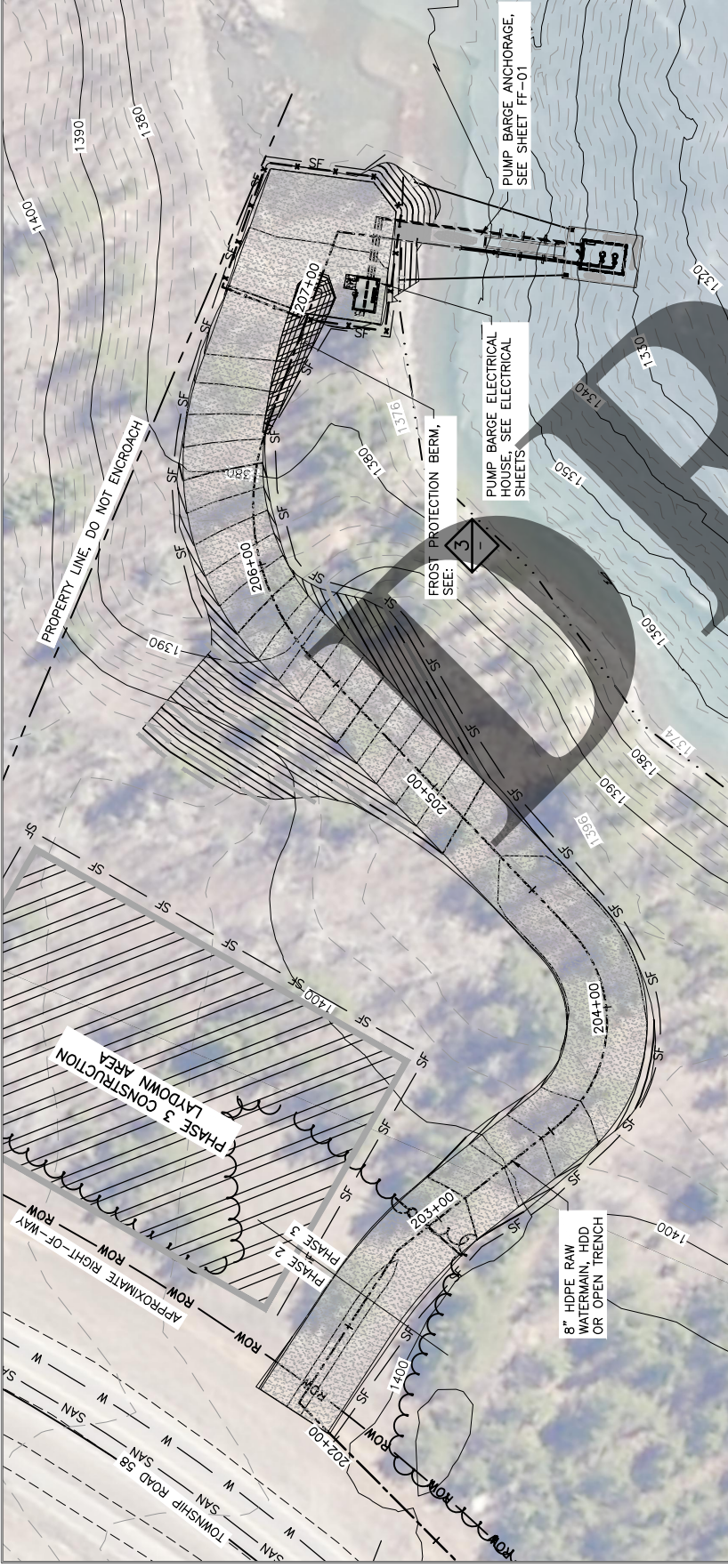
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APPENDIX I: Project Area Maps

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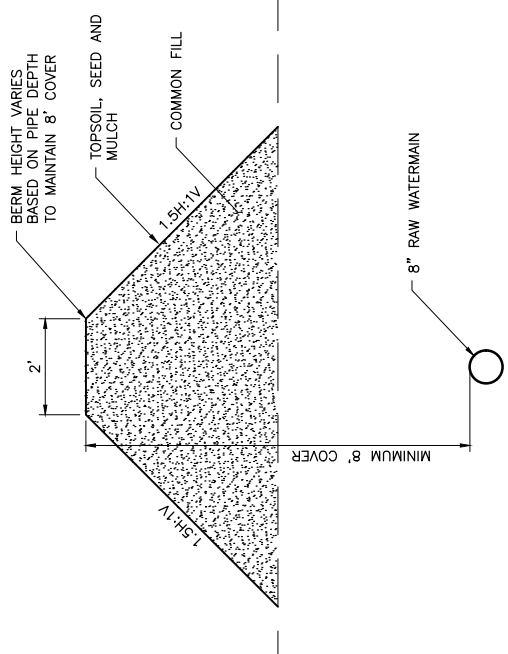
1 PLAN: RAW WATERMAIN
 SCALE IN FEET: 0, 30, 60

CONSTRUCTION NOTES:
 1. LOCATION OF THE PROPOSED WATERMAIN IS BASED ON AVAILABLE UTILITY INFORMATION. LOCATION MAY NEED TO BE ADJUSTED DURING CONSTRUCTION BASED ON ONE-CALL FIELD MARKS TO MAINTAIN SEPARATION DISTANCES.
 2. THE PROPOSED WATERMAIN SHALL BE INSTALLED WITH NO SAGS BETWEEN PROFILE HIGH AND LOW POINTS.

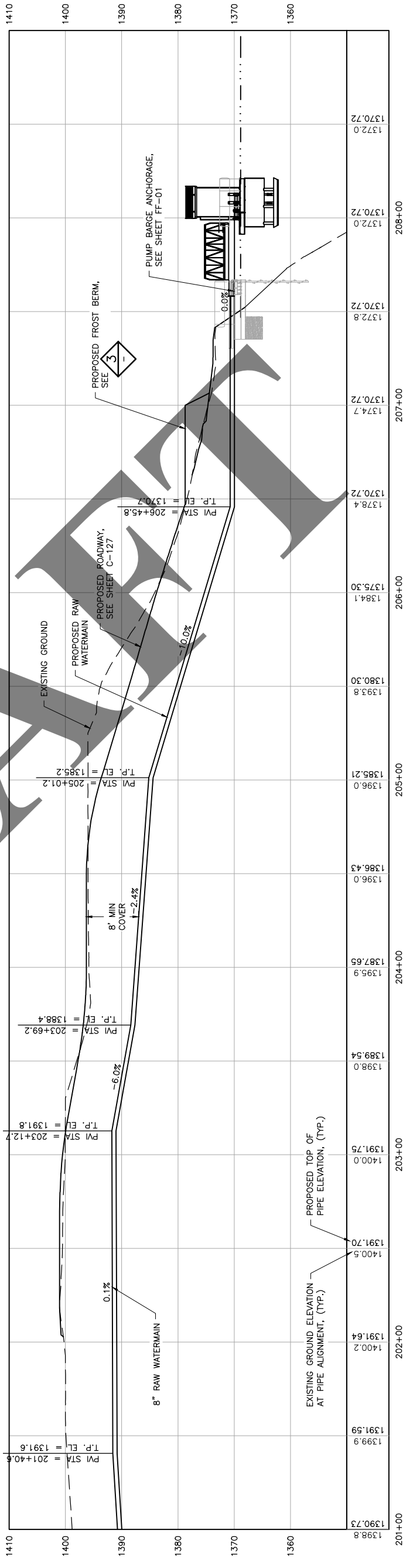
NOTE:
 UTILITY INFORMATION SHOWN ON THIS PLAN IS UTILITY QUALITY LEVEL D. UTILITIES SHOWN ARE BASED ON GOPHER STATE ONE-CALL LOCATE FOR DESIGN. FIELD VERIFY LOCATION AND PRESENCE OF ALL UTILITIES PRIOR TO CONSTRUCTION.

LEGEND

- PROPOSED RAW WATERMAIN
- PROPOSED GATE VALVE
- PROPOSED FLUSHING HYDRANT
- PROPOSED AIR RELEASE MANHOLE
- PROPOSED AIR RELEASE MANHOLE WITH PROTECTION
- PROPOSED SILT FACE
- EXISTING WATERLINE
- EXISTING SANITARY SEWER
- EXISTING STORM
- GAS
- EXISTING GAS
- EXISTING OVERHEAD TELEPHONE
- EXISTING STORM MANHOLE
- EXISTING UNDERGROUND TELEPHONE
- EXISTING POWER POLE
- EXISTING FIRE BOX
- EXISTING FIRE VALVE
- EXISTING GATE VALVE
- EXISTING CURB STOP
- EXISTING SIGN



3 DETAIL: FROST PROTECTION BERM
 N.T.S.



2 PROFILE: RAW WATERMAIN
 HORIZONTAL SCALE: 0, 30, 60 SCALE IN FEET
 VERTICAL SCALE: 0, 10, 20 SCALE IN FEET

ISSUED FOR REVIEW

NO.	BY	CHK APP.	DATE	REVISION DESCRIPTION	RELEASED TO/FOR	A	B	C	O	1	2	3	DATE	REG. NO. 49064	PRINTED NAME GREGORY S. JOHNSON	SIGNATURE	HEBERRY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	CLIENT CONSTRUCTION HEALTH DEPT.	AS SHOWN 03/11/2020 GSJ	Scale Date Drawn Checked Designed Approved	Project Office: BARR ENGINEERING CO. 3128 14TH AVENUE EAST HIBBING, MN 55746 Ph: 1-800-225-1968 www.barr.com	ARCELORMITTAL - MINORCA VIRGINIA, MINNESOTA	CITY OF BIWABIK RAW WATER SUPPLY PHASE 3	BARR PROJECT NO. 23/69-1313.03	REV. No. A
																								DWG. No. C-126	REV. No. A



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATIONS AND NOTES WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel R. Minzmann
 DANIEL R. MINZMANN, P.E.
 DATE: 01/12/22 LICENSE NO. 48874
 Project: C200

EAST RANGE WATER BOARD
 EAST RANGE RAW WATER INTAKE AND PUMP STATION

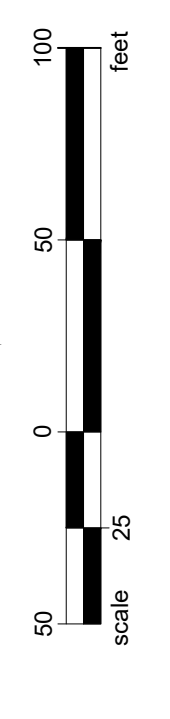
AURORA, MINNESOTA

SEH Project: AURORA159723
 Checked By: AP
 Drawn By: EL
 Issue Date: 01/12/22
 Project Status: 100% MSH SUBMITTAL

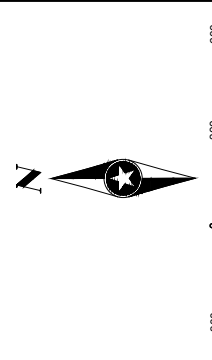
REV. #	DESCRIPTION	DATE

PROPOSED SITE LAYOUT

C200



NOTES:
 1. CONTROL POINT UTILIZED WAS "OMALLEY MNDOT" NAD83(2011) SLTM96.
 2. EXISTING UTILITIES ARE DRAWN IN ACCORDING TO PROVIDED MAPS. IT IS RECOMMENDED THAT THE CONTRACTOR PERFORM THEIR OWN UTILITY FIELD LOCATE.



ORIENTATION OF THIS BEARING SYSTEM IS TRANSVERSE MERCATOR COORDINATE SYSTEM NAD83 (1983 ADJ)

COUNTY ROAD 138/GIANTS RIDGE ROAD

PINEVILLE

HIGHWAY 135

EMBARRASS LAKE

SCENIC ACRES ROAD

STRUCTURE	ALIGNMENT	STATION	OFFSET
1	Pineville to Scenic Acres	100+53.30	8.00
2	Pineville to Scenic Acres	110+50.15	-8.00
3	Pineville to Scenic Acres	120+49.86	-8.00
4	Pineville to Scenic Acres	133+00.24	-8.00
5	Pineville to Scenic Acres	143+00.28	-10.06
6	Pineville to Scenic Acres	153+77.82	-8.00
7	Pineville to Scenic Acres	164+43.98	7.97
8	Pineville to Scenic Acres	180+83.19	-7.95
9	Pineville to Scenic Acres	181+65.92	8.03
10	Pineville to Scenic Acres	191+91.25	-10.00

PINEVILLE TO SCENIC ACRES											
POINT ID	POINT	STATION	DELTA	RADIUS	TANGENT	LENGTH	NORTHING	EASTING	BEARING	REVISION	DATE
L1		100+00.00				600.32	3612511.8141	4791231.6423	S 87° 10' 28" E		
C1		106+00.32	012° 07' 27"	1146.36	121.74	242.58	3612482.2203	4791831.2305			
L2		108+42.89				514.24	3612489.2437	4792073.2530	N 85° 10' 44" E		
C2		113+57.13	015° 10' 31"	760.90	101.36	201.53	3612532.4626	4792585.6717			
C3		115+58.67	007° 15' 45"	2955.73	187.58	374.65	3612587.5506	4792778.9172			
C4		119+33.32	044° 18' 18"	450.50	183.41	348.36	3612764.4313	4793108.8990			
L3		122+81.67				177.82	3612827.9940	4793442.6434	S 76° 37' 22" E		
C5		124+59.50	031° 42' 31"	496.78	141.08	274.93	3612786.8522	4793615.6432			
L4		127+34.43				468.74	3612786.8398	4793887.0781	N 73° 05' 36" E		
C6		132+03.17	008° 26' 35"	938.60	69.28	138.31	3612923.1561	4794335.5572			
C7		133+41.48	005° 04' 17"	3035.99	134.45	268.73	3612954.5273	4794470.1369			
C8		136+10.21	025° 43' 06"	360.08	82.20	161.63	3612986.9594	4794736.8114			
C9		137+71.83	022° 15' 55"	664.39	130.74	258.18	3613056.0897	4794881.4103			
L5		140+30.02				309.97	3613247.9876	4795051.7017	N 27° 15' 24" E		
C10		143+39.99	009° 06' 34"	1710.60	136.27	271.97	3613523.5388	4795193.6602			
C11		146+11.96	003° 55' 20"	4234.16	144.98	289.85	3613746.2810	4795349.2158			
C12		149+01.80	007° 38' 33"	1052.13	70.27	140.34	3613955.9277	4795549.2836			
C13		150+42.14	002° 19' 00"	2126.44	43.00	85.98	3614057.8442	4795645.6138			
C14		151+28.12	010° 03' 29"	1007.40	88.65	176.84	3614125.9182	4795698.1230			
C15		153+04.97	016° 29' 16"	408.66	59.21	117.60	3614257.7146	4795815.6936			
L6		154+22.56				601.59	3614325.1259	4795911.5584	N 88° 40' 24" E		
C16		160+24.15	027° 15' 58"	435.31	105.58	207.16	3614339.0537	4796512.9855			
L7		162+31.31				9.58	3614396.5020	4796709.9877	N 60° 06' 35" E		
C17		162+40.89	004° 41' 44"	1614.40	66.19	132.30	3614401.2770	4796718.2948			
L8		163+73.19				71.51	3614457.7490	4796837.8990	N 84° 49' 35" E		
L9		164+44.71				251.28	3614464.1976	4796909.1194	N 00° 00' 00" E		
C18		166+95.99	005° 19' 11"	1590.56	73.89	147.68	3614715.4772	4796909.1194			
C19		168+43.66	017° 34' 47"	750.00	115.97	230.12	3614717.3186	4796761.5045			
C20		170+73.78	009° 07' 09"	4700.67	374.87	748.15	3614765.6193	4796537.4334			
L10		178+21.93				163.67	3615087.5306	4795862.9556	N 00° 08' 33" E		
L11		179+85.61				130.30	3615251.2041	4795863.3627	S 89° 36' 33" W		
L12		181+15.90				350.12	3615250.3153	4795733.0705	N 00° 23' 27" W		
L13		184+66.02				18.55	3615600.4265	4795730.6820	S 89° 36' 33" W		
L14		184+84.57				269.79	3615600.3000	4795712.1330	N 02° 00' 04" E		
L15		187+54.36				34.02	3615869.9207	4795721.5541	N 88° 24' 06" W		
L16		187+88.38				702.71	3615870.8697	4795687.5442	N 00° 23' 27" W		

BP: 100+00.00

PC: 106+00.32

PT: 108+42.89

PC: 113+57.13

PCC: 115+58.67

PT: 119+33.32

PC: 124+59.50

PT: 127+34.43

PC: 132+03.17

PCC: 133+41.48

PC: 136+10.21

PCC: 140+30.02

PT: 143+39.99

PCC: 146+11.96

PCC: 149+01.80

PCC: 150+42.14

PCC: 153+04.97

PCC: 154+22.56

PCC: 160+24.15

PCC: 162+31.31

PCC: 162+40.89

PCC: 163+73.19

PCC: 164+44.71

PCC: 166+95.99

PCC: 168+43.66

PCC: 170+73.78

PCC: 178+21.93

PCC: 179+85.61

PCC: 181+15.90

PCC: 184+66.02

PCC: 184+84.57

PCC: 187+54.36

PCC: 187+88.38

PCC: 191+91.25

PCC: 199+54.46

EP: 198+87.39

PT: 198+43.66

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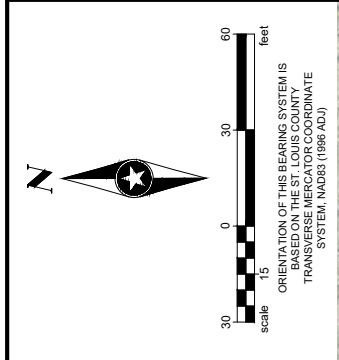
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RAW WATER MAIN

POINT ID	POINT	STATION	DELTA	RADIUS	TANGENT	LENGTH	NORTHING	EASTING	BEARING
L18		500+00.00				175.67	3617769.9864	4799303.3134	N 00° 35' 46" E
L19		501+75.67				123.92	3617945.6501	4799305.1414	N 00° 35' 46" E
L20		502+99.59				150.81	3618069.5592	4799306.4309	N 61° 29' 13" E
C21		504+50.40	038° 01' 32"	718.90	247.72	477.11	3618141.5518	4799438.9529	N 80° 24' 31" E
L21		509+27.52				400.44	3618062.3847	4799900.6186	
C22		513+27.95	027° 13' 29"	793.86	192.24	377.21	3618129.1067	4800295.4596	
C23		517+05.17	021° 51' 16"	887.68	171.38	338.59	3618115.5112	4800668.8868	
L22		520+43.76				770.28	3617964.0939	4800969.4405	S 52° 47' 54" E
C24		528+14.04	051° 28' 51"	817.26	394.03	734.31	3617498.3633	4801582.9793	N 75° 00' 13" E
L23		535+48.35				1426.93	3617338.8927	4802274.6950	N 75° 00' 13" E
L24		549+75.28				905.80	3617708.1218	4803653.0282	S 09° 34' 03" E
L25		558+81.09				371.35	3616884.9172	4803803.5807	S 08° 02' 02" E
C25		562+52.44	007° 28' 45"	10188.52	665.92	1329.95	3616447.2082	4803855.4800	
C26		575+82.40	002° 10' 45"	6223.51	118.37	236.71	3615118.5280	4803885.1226	
C27		578+19.11	080° 49' 00"	350.00	297.96	493.68	3614882.2210	4803871.5091	
C28		583+12.79	003° 28' 27"	15810.13	479.46	958.62	3614515.2209	4804138.3611	
C29		592+71.41	004° 26' 05"	7335.81	284.05	567.81	3614318.6730	4805076.4696	
L26		598+39.23				294.76	3614226.2555	4805636.5671	N 00° 03' 07" W
L27		601+33.99				207.69	3614521.0192	4805636.2991	N 01° 16' 11" W
L28		603+41.68				59.08	3614728.6551	4805631.6965	N 88° 43' 49" E

HYDRANT SCHEDULE

STRUCTURE	ALIGNMENT	STATION	OFFSET
11	Raw Water Main	504+61.89	7.99
12	Raw Water Main	523+33.46	8.00
13	Raw Water Main	550+04.70	-8.00
14	Raw Water Main	567+50.36	-7.98
15	Raw Water Main	598+22.04	-8.00
16	Raw Water Main	603+90.71	-8.00

SEH Project: AUROR 159723
 Drawn By: EML
 Designed By: AP
 Checked By: DRH

Revision Issue Description: 100% MDH SUBMITAL
 Date: 01/12/2022
 Rev.#:

Revision Issue Description:
 Date:

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME, OR UNDER MY DIRECT SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 Daniel R. Hinzmann, PE
 DATE: 01/12/2022
 LICENSE NO.: 49874

SEH

EAST RANGE RAW AND FINISHED TRANSMISSION MAINS
 AURORA, MINNESOTA

RAW WATER ALIGNMENT EAST RANGE RAW AND FINISHED TRANSMISSION MAINS

10 of 29

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MINNESOTA ARCHAEOLOGICAL SURVEY LICENSE APPLICATION

This license only applies to **Phase I survey fieldwork**¹ conducted under **Minnesota Statute 138.31-.42**² at the location listed below and during the **2022** calendar year³. Any archaeological investigation performed on publicly owned or managed (non-federal) land must have a licensed archaeologist associated with the project. Archaeological investigations include, but are not limited to, the following methodologies: assessing archaeological potential, mapping, geophysical studies, drone surveys, surface survey, shovel testing, coring, soil, chemical and biological sampling, augering, and excavation⁴.

The Principal Investigator must have a separate license for each Phase I survey project. Each Phase II evaluation, Phase III major investigation, and burial site work must also be individually licensed. Only the individual indicated below is licensed as the principal investigator⁵. The principal investigator is responsible for all work conducted by their employees, contractors, and subcontractors⁶. The licensed individual (principal investigator) is responsible for reading, understanding, and complying with all Conditions attached to this license. Future licenses may be denied or revoked for failure to comply with this license, its conditions, professional ethics, or professional work standards.

Applicant Information

Name: _____
Institution/Agency/Company Affiliation: _____
Title/Position: _____ E-Mail: _____
Address: _____
Work Phone: _____ Cell Phone: _____

Education/Qualifications

Name of Advanced Degree Institution: _____ Degree: _____
Department Name: _____ Year of Completion: _____

Required documentation:

- Curriculum Vita and documentation of appropriate experience attached (*submit an updated CV annually*)
- Up-to-date CV and documentation on file at the OSA

¹ The study of the traces of human culture at any land or water site by means of surveying, digging, sampling, excavating, or removing objects, or going on a site with that intent (MS 138.31 [Subd. 7])

² State archaeological licenses are required on publicly owned and managed (non-federal) land.

³ January 1st through December 31st of a given year

⁴ As technologies change, survey options increase. This list is not intended to be nor can it be comprehensive.

⁵ The individual named on this license. The Principal Investigator is responsible for the methods, implementation, standards, results, and recommendations of all work conducted under this license.

⁶ Any person or entity working for or under the Principal Investigator's direction or contract as part of this license.

License History

Year of most recent license: _____

Type of License (survey, evaluation, etc.): _____ License #: _____

Have you ever been denied an archaeological license? If not, check "NO" and leave this section blank.)

No Yes; If yes, when: _____ Where: _____

Explain: _____

Contact Name: _____ Phone: _____

Email: _____

Curation

Minnesota Historical Society #: _____

Other Approved Curation Facility Name: _____ #: _____

By signing this license application, I consent to the sharing of information submitted as part of the licensing process among the Office of the State Archaeologist (OSA), the Minnesota Historical Society (MHS), and the Minnesota Indian Affairs Council (MIAC). As the primary licensing agencies, OSA and MHS may share license application information with MIAC and Tribal Historic Preservation Offices (THPOs) as part of the tribal consultation process. I understand that the information shared with MIAC includes only the information I submit as part of the license application process. This consent expires upon completion of the above-stated purpose.

Signatures

Applicant: _____ Date: _____

Minnesota Historical Society Approval: *J. CRT* _____ Date: 08/29/2022

Minnesota State Archaeologist Approval: *Miranda Denmark* _____ Date: _____

LICENSE NUMBER: 22-205



MINNESOTA ARCHAEOLOGICAL PROJECT INFORMATION

LICENSE #: 22-205

** IMPORTANT -This information will be shared with MIAC and tribal officials as part of the tribal consultation process.*

Applicant Information

Name: _____

Institution/Agency/Company Affiliation: _____

Land Management

Type of Land: (check all that apply)

- State-Owned or Managed
- County-Owned or Managed
- Township/City Owned or Managed
- Other non-federal public (describe): _____

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Dates

Dates of proposed fieldwork: _____

Is the project within a recorded archaeological site? Yes No

If so, what are the site number(s)? _____

Survey:

Location (attach a detailed map, and provide an address or Property ID #, and PLSS location):

Name and purpose of the project, and proposed survey methods (attach pages if necessary) (400 word limit - attach additional pages if more space is needed.)

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CONDITIONS OF MINNESOTA ARCHAEOLOGICAL SURVEY LICENSE

1. The licensed individual and the sponsoring institution/agency/company must comply with all the conditions attached to the license. If the licensee does not comply with these conditions, the license could be revoked and impact one's ability to obtain future licenses.
2. All information given on this license application is accurate and up to date.
3. The individual listed on this license is responsible for all work of their employees, contractors, and subcontractors.
4. A license can be denied for any of the following reasons: a) failure to meet the required professional qualifications standards, b) failure to possess the necessary regional, topical, or managerial experience, c) failure to fulfill the conditions of a previous license, or d) exhibiting unethical professional behavior, including, but not limited to falsifying field notes or reports, plagiarism, intentionally misrepresenting professional qualifications or experience, mishandling archaeological and site information or materials owned by the state per MS 138.37 (Subd. 1).
5. This license can be revoked or suspended by the State Archaeologist or the director of the MHS, or their agent, at any time for failure to fulfill the license conditions or for exhibiting unethical behavior such as listed above (4). Appeals of license denial, suspension, or revocation must follow procedures outlined in Minnesota Statutes 138.36, Subd. 6
6. As part of this license and in support of Executive Order 19-24, licensing information will be submitted to MIAC and tribal officials as part of the tribal consultation process. The licensee is strongly encouraged to continue consultation with MIAC and appropriate THPOs.
7. If the project area is within the boundaries of a reservation or Dakota community, archaeologists should directly communicate with the appropriate THPO or tribal cultural resource specialist regarding the proposed work.
8. If the project area is on Federal land, archaeologists should directly communicate with the federal agency regarding proposed work.
9. Under the provisions of Minnesota Statutes 138.31-138.42, the license applicant must be a Qualified Professional Archaeologist as specified in Minnesota Statutes (MS) 138.31, Subd. 10, and meet the Secretary of the Interior's Professional Qualifications Standards for Archaeology. The applicant must also possess the appropriate regional, topical, and managerial experience to undertake reconnaissance surveys.
10. This license only applies to Reconnaissance/Phase I archaeological surveys conducted on non-federal public lands in Minnesota. If more than two square meters of formal unit excavation or procedures that involve terrain disturbance (e.g., machine excavation) at a known site are planned, the principal investigator must consult with the Office of the State Archaeologist (OSA) before implementation.
11. This license does not authorize activities within cemeteries, per Minnesota Statutes 307.08. No ground disturbance within 50 feet of recorded cemeteries is allowed, without the prior approval of the State Archaeologist and the Minnesota Indian Affairs Council, in the case of American Indian cemeteries. If human remains or suspected burial-related items are encountered, all work must immediately cease, the remains or items left in situ, and law enforcement contacted (e.g., county sheriff). If the remains are not deemed a crime scene, the licensee must immediately contact the State Archaeologist.
12. This license only applies to fieldwork conducted between the dates specified on this license application.
15. This license applies only to the location specified on this license application.
16. If the licensee ceases association with the institution/agency/company before completing the project, immediately notify the OSA. The OSA and licensee or institution/agency/company

will develop a plan to fulfill reporting and curation obligations.

17. The license is non-transferable and applies only to work conducted under the direct supervision of the licensee.
18. The licensee must comply with the field, laboratory, and reporting guidelines in the *OSA Manual for Archaeological Projects in Minnesota*. Any exceptions must be discussed with the OSA before work occurs.
19. The licensee must obtain permission from the landowner or land manager to enter the land for archaeological investigations.
20. All archaeological materials and data recovered from non-federal public property in Minnesota are the state's property and should be curated with the MHS (<http://www.mnhs.org/collections/archaeology/curation.htm>), or other OSA approved facility.
21. If materials, samples, or data are being processed or analyzed by an entity other than that with which the principal investigator is associated, the principal investigator must notify the OSA and MHS.
22. If materials or samples are to leave the state of Minnesota, the OSA and MHS must approve the transport before materials, samples, or data leave the state.
23. Official OSA Minnesota site inventory forms must be completed for all archaeological sites identified during surveys (previously recorded and known sites). The site forms must be submitted to the OSA within three months of site discovery. Professional archaeologists are also ethically obligated to inform the OSA if previously unrecorded archaeological sites located outside their project boundaries are identified during their project survey.
24. One copy of the report (see *OSA Manual for Archaeological Projects in Minnesota*) must be submitted to the OSA for each project within six months of completing the fieldwork. The licensee may submit a written application requesting an extension of this deadline. Digital copies of reports are accepted as .pdf files.
25. If presentations or publications develop from this project, the OSA and MHS must be notified, and the following information submitted for inclusion in the archaeological site files:
 - a. Location of presentation or publication,
 - b. Date
 - c. Title
 - d. Abstract
 - e. The final and complete version of the presentation, publication, etc.
26. The licensee must submit a summary report of all licensed activity to the OSA by the end of January of the following year. Summaries should include:
 - a. project name and description (e.g., road construction),
 - b. sponsor/review agency,
 - c. location,
 - d. type of work (Phase I, Phase II) and field methods (e.g., shovel testing),
 - e. results (number of sites located/type of sites or official site numbers) and recommendations
27. Upon completing the project, the licensee must submit .shp files to the OSA. These files should show the project's Area of Potential Effect and archaeological survey areas, including the type of survey conducted in each survey area. Templates for submitting .shp files are at <https://mn.gov/admin/archaeologist/professional-archaeologists/manuals-licenses/apply/>. Please do not alter these templates.
28. Additional conditions may be added, as appropriate. If this occurs, the applicant will be notified of the update and asked to submit a response accepting the Condition.

29. Minnesota Department of Health and the Center for Disease Control recommendations regarding COVID-19 and limiting its spread. These recommendations include, but are not limited to, social distancing, appropriate personal protective equipment (e.g., masking), and sanitation. This Condition does not supersede stricter landowner, agency, or employer restrictions. This Condition will remain in effect until state health officials determine that social distancing is no longer necessary.

I have read, understand, and agree to all Conditions attached to this license. _____(Initial)

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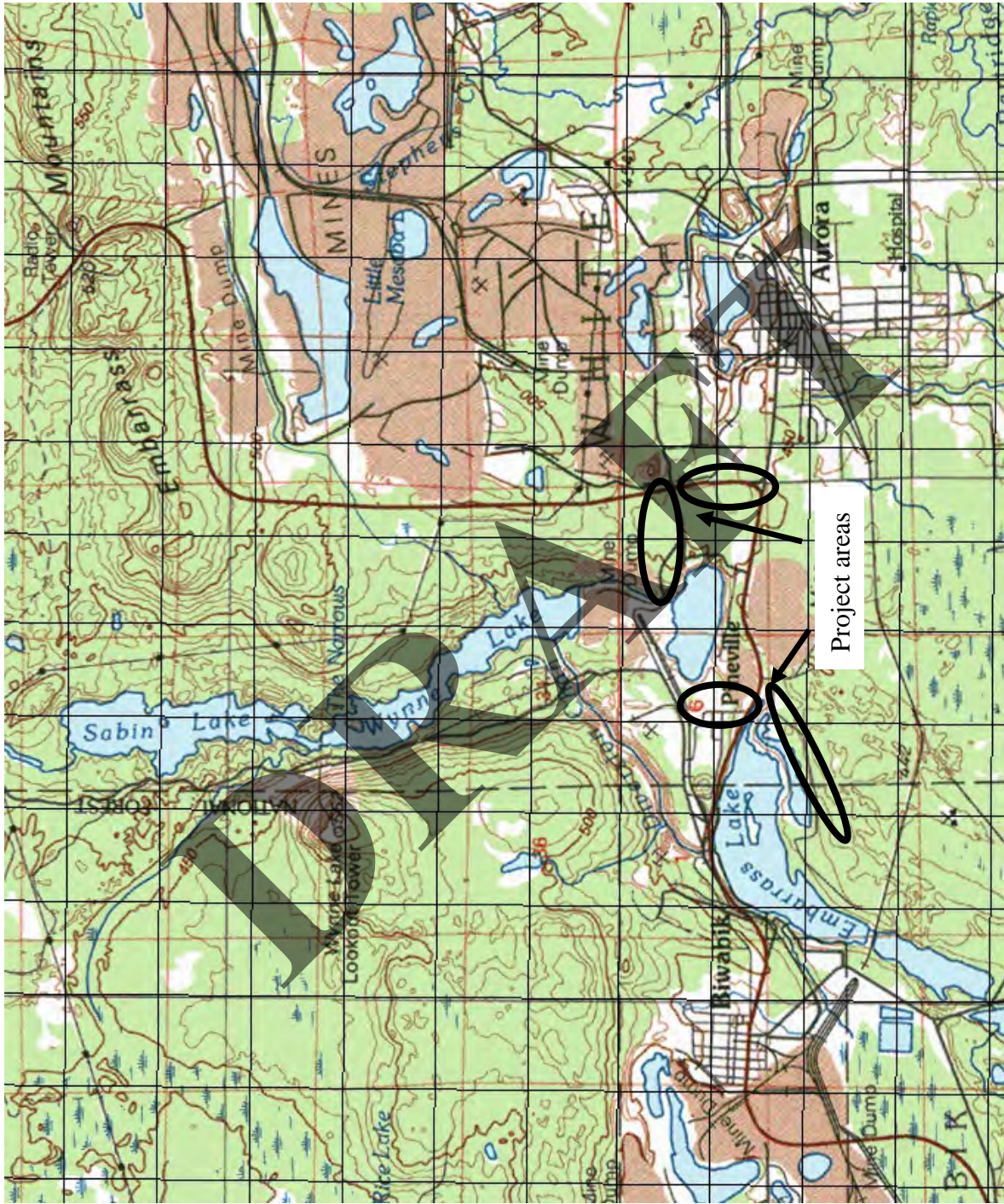


Figure 1. ERJWTS project location, Vermillion Lake quadrangle (1994), 1:100,000 USGS topographic map.

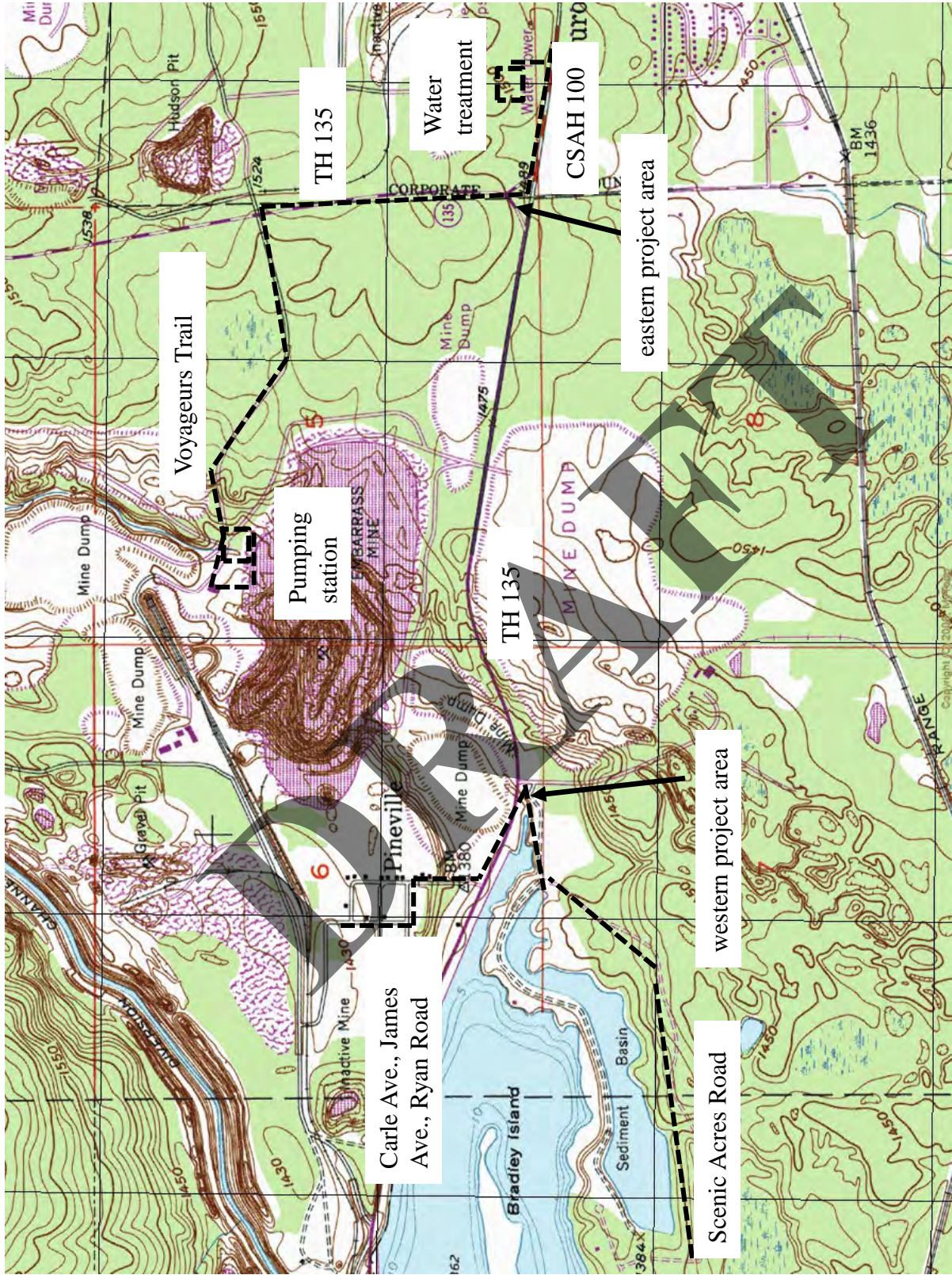
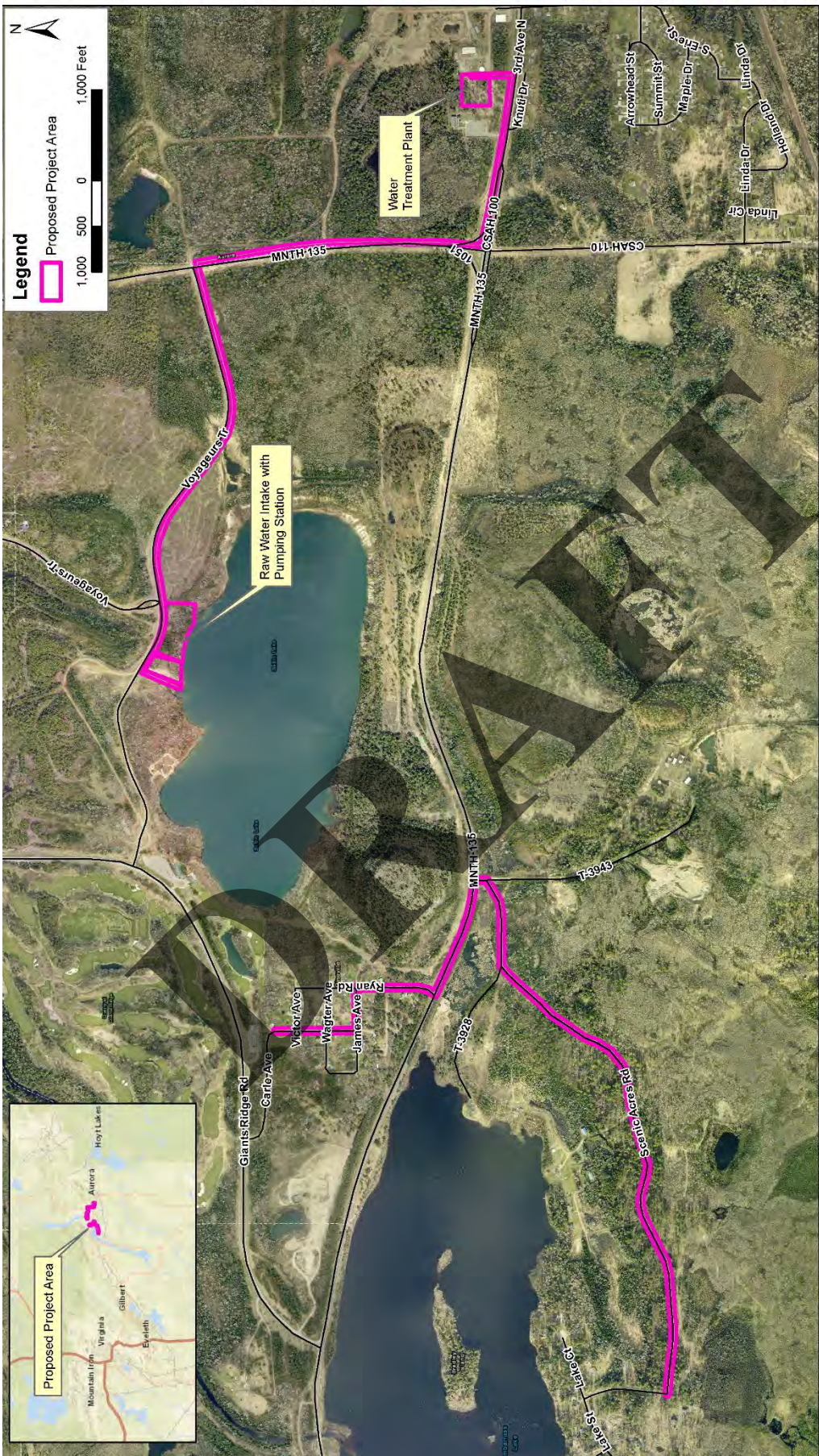


Figure 2. ERJWTS project areas, Biwabik quadrangle (1950/ 1985), 1:24,000 USGS topographic map.





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Project: XXXXX 000000
 Print Date: 5/9/2022
 Map by: St. Louis Co. Trans. Mgrs.
 Units: US Survey Feet
 Source: ESRI, SEI, DNR

PROPOSED PROJECT LOCATION
 EAST RANGE WATER BOARD
 Aurora, St. Louis County, Minn.

Figure X

Figure 3. ERJWTS project areas (pink lines). From SEH.