Phase I Archaeological Survey for Bridge Replacement along CSAH 72 in Otter Tail County, Minnesota

S. P. 56-672-04
Federal Project Number SPR 0001(050)
Mn/DOT Contract No. 96550
OSA License No. 10-40

Authorized and Sponsored by:
Minnesota Department of Transportation
and the Federal Highway Administration

Prepared by:
Constance Arzigian, Principal Investigator
Mississippi Valley Archaeology Center
University of Wisconsin-La Crosse
1725 State Street
La Crosse WI 54601

MVAC Reports of Investigations Number 841

Final
August 2010

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16. Abstract (Limit: 200 words)

Phase I archaeological survey was conducted to replace bridge 56502 along CSAH 72 over the Otter Tail River, in Otter Tail County, Minnesota; T133N, R40W, W ½ Section 4. Most of the area to be impacted is either wetlands, or has already been disturbed through additions of fill to raise the level of the road. Six shovel tests were excavated, but no cultural material was recovered. Only one site is immediately adjacent to the project area (21OT99), and the site is protected by several feet of fill and a paved boat access ramp and parking lot. However, no work will occur within the parking lot or boat access area, and if that area is avoided, there will be no effect on 21OT99.

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MANAGEMENT SUMMARY

Phase I archaeological investigation was conducted in preparation for replacement of Bridge 56502 along CSAH 72 over the Otter Tail River at Otter Tail Lake, Otter Tail County, Minnesota. The proposed bridge alignment will shift eastward from the existing alignment 2.5 feet to allow for a sidewalk on the bridge. Along with the bridge replacement, approximately 1100 feet of highway will be reconstructed from approximately 600 feet south of the north end of Segar Road north to Lumberjack Road, for a total length of approximately 0.25 miles. The work will include minor grading, aggregate base, and bituminous paving as needed to provide connections to the new bridge, and widening shoulders and reconstructing ditches as needed. The area of potential effect (APE) has been defined for the area south of the river as extending to 75 feet on each side of the centerline of the highway. To the north of the river, it extends 43 feet on each side of the centerline. The whole APE is approximately 3 acres extending along CSAH 72.

The project is located within T133N, R40W, W ½ Section 4. It is in SHPO Archaeological Region 4w, Central Lakes Deciduous West. One previously reported habitation site is located in the immediate vicinity of the project area (21OT99), and three mound sites are known from within a mile of the project area.

Fieldwork was conducted on May 24 and 25, 2010 by Principal Investigator Constance Arzigian, Mississippi Valley Archaeology Center, La Crosse WI. Much of the existing roadway is elevated over wetlands. Fieldwork consisted of visual inspection of the whole APE to determine areas with a potential for intact non-wetland soils, and then shovel testing in those areas. A total of six shovel tests were excavated, but no cultural material was recovered. Most areas within the APE have already been disturbed by road, bridge, and boat landing construction or were within wetlands. At the southern end of the project was an area of intact soil on a small colluvial fan that was tested, but there was no cultural material.

No additional archaeological investigations are recommended. Only one site is immediately adjacent to the project area (21OT99), and the site is protected by several feet of fill and a paved boat access ramp and parking lot. However, no work will occur within the parking lot or boat access area, and if that area is avoided, there will be no effect on 21OT99.

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Phase I archaeological investigation was conducted for replacement of Bridge 56502, along CSAH 72 over the Otter Tail River at Otter Tail Lake, Otter Tail County, Minnesota (figure 1). The proposed bridge alignment will shift eastward from the existing alignment 2.5 feet to allow for a sidewalk on the bridge. As discussed further in the Methods section, the APE extends on both sides of the road from approximately 600 feet south of the north end of Segar Road north to Lumberjack Road, for a total length of approximately 0.25 miles, with an area of approximately 3 acres.

The project is located within T133N, R40W, W ½ Section 4. It is in SHPO Archaeological Region 4w, Central Lakes Deciduous West.

Approximate UTM coordinates at the four corners of the APE are as follows (All are Zone 15, NAD 83 coordinates, taken with a GPS device with approximately 3-5 meter accuracy and confirmed by heads-up digitizing from USGS 7.5 minute DRG map):

NW corner:	Northing	5137699
	Easting	289643
NE corner:	Northing	5137708
	Easting	289664
SW corner	Northing	5137358
	Easting	289949
SE corner	Northing	5137370
	Easting	289954

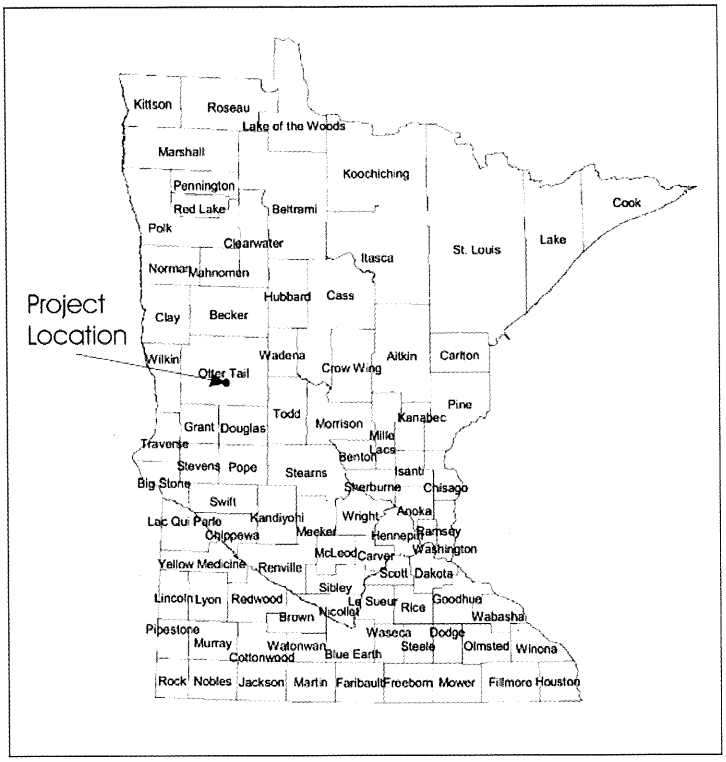

Figure 1: Project area within Minnesota.

Most areas within the APE have already been disturbed by road, utility, bridge, and boat landing construction or were within wetlands. Much of the existing roadway is elevated over wetlands. Figure 2 shows the Area of Potential Effect (APE) on a topographic map, and figure 3 shows a closer view. Figure 4 shows the project plans and APE. There is a boat ramp and associated parking lot immediately to the east of the APE, southeast of the bridge. A previously reported site, 21OT99, is located beneath the parking lot and boat access area, however no work will occur within in that paved area or within the area of the site.

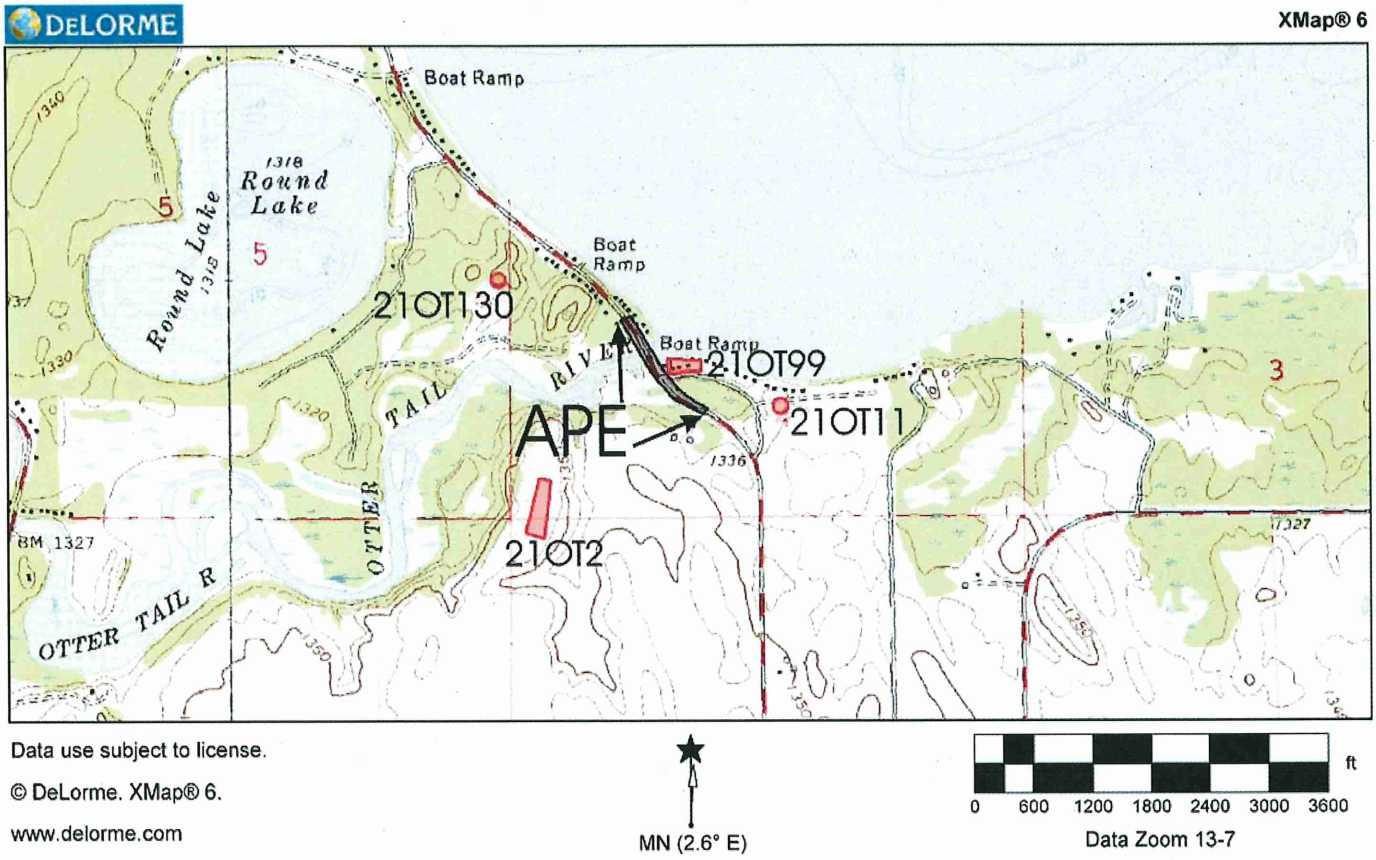

Figure 2: Topographic map with APE and nearby archaeological sites. Base map is Battle Lake 7.5 minute quadrangle.

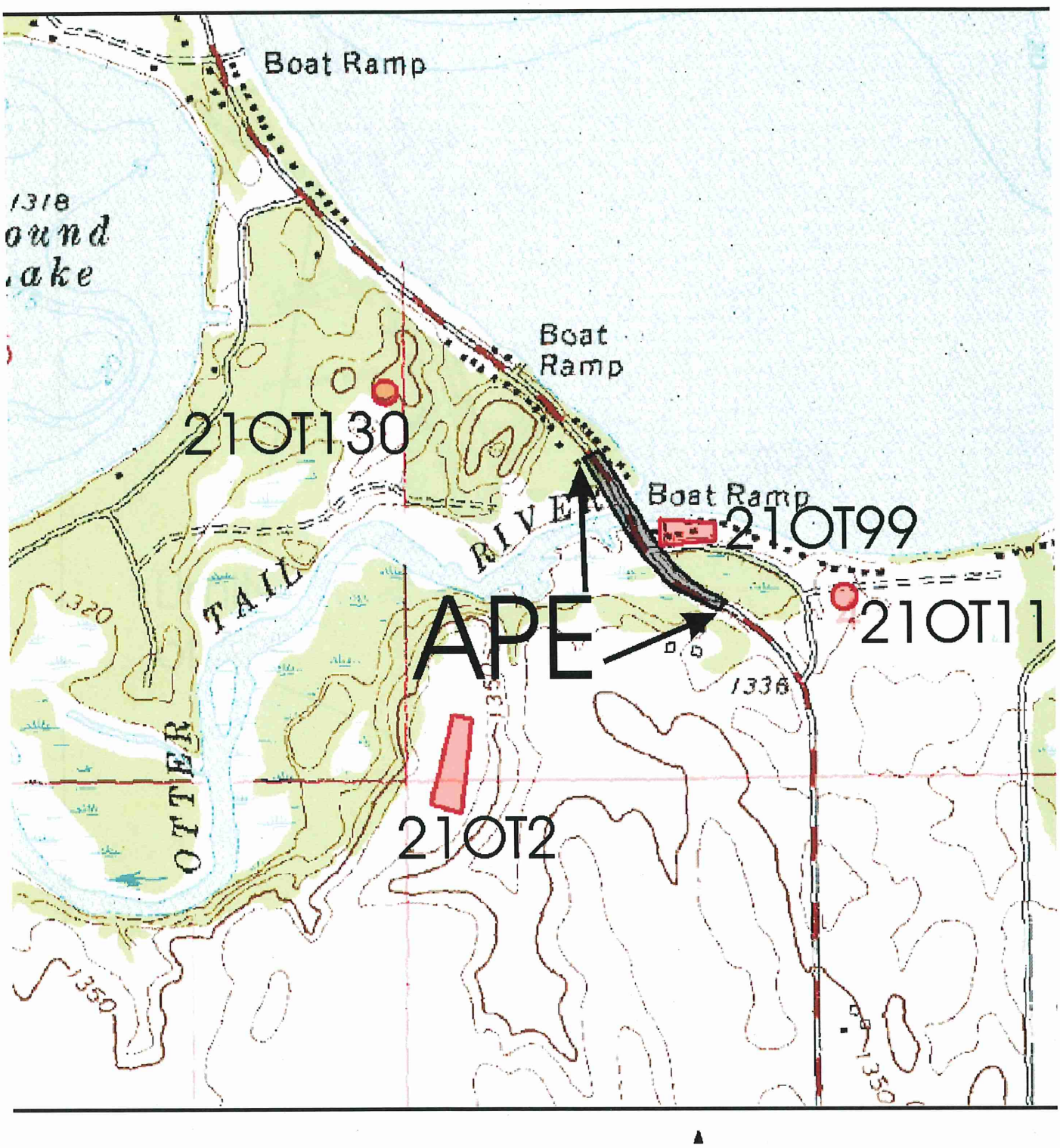

Figure 3: Close-up view of APE and adjacent archaeological sites. Base map is Battle Lake, MN, 7.5 quadrangle.

METHODS

The proposed bridge alignment will shift eastward from the existing alignment 2.5 feet to allow for a sidewalk on the bridge. Along with the bridge replacement, approximately 1100 feet of highway will be reconstructed from approximately 600 feet south of the north end of Segar Road to Lumberjack Road, for a total length of approximately 0.25 miles. The work will include minor grading, aggregate base, and bituminous paving as needed to provide connections to the new bridge, and widening shoulders and reconstructing ditches as needed. The area of potential effect (APE) has been defined for the area south of the river as extending to 75 feet on each side of the centerline of the highway. To the north of the river, it extends 43 feet on each side of the centerline. The whole APE is approximately 3 acres extending along CSAH 72.

Much of the area had been previously disturbed through road construction, parking lot construction for a boat ramp and fishing dock, and utilities for houses along the road, particularly north of the bridge. Field investigations consisted of visual inspection of the whole project area to determine potential areas of intact soils that were not in wetlands. These areas were then shovel tested with excavations approximately 50 cm diameter, and taken down to either subsoil or into fill deposits, with all soil screened through ¼ inch mesh screens.

LITERATURE SEARCH

Search of the SHPO site database indicated that one previously reported habitation site is located in the immediate vicinity of the project area (21OT0099), and three mound sites are known from within a mile of the project. According to the SHPO site files, the Riverside site (21OT0099) is a habitation site located southeast of the bridge at the north end of Segar Road, and was reported by the DNR Water Access Survey as a 3-acre artifact scatter with a possible Havana-related component. Cultural material was found down to about 50 cm. The site is now covered with a boat ramp and associated parking lot.

Otter Tail Lake Outlet (21OT0130) is a mound group located northwest of the north end of the project area. It is reported to have 15 mounds and a habitation area. In 1984 a bundle burial was found and reburied in the original position in the easternmost mound. The third reported site in the immediate vicinity, 21OT0011, is a group of 5 mounds on a higher elevation over the lake southeast of the project area. The fourth site, the Morrison Mounds (21OT0002) is on the National Register of Historic Places and consists of a group of 22 mounds on a ridge at the outlet of Otter Tail Lake, south and west of the project area. T. H. Lewis initially mapped the site in 1883 (Winchell 1911:311) and reported one elongated, one flat-topped circular, and 20 circular mounds. Excavation in four of the circular mounds by University of Minnesota archaeologists Wilford and Jenks in 1937 found burials in all four mounds, including shallow burial pits near the center of the mounds with multiple secondary and primary burials, evidence for cremation, logs placed over burials and burned. There were very few artifacts associated with the burials, and none diagnostic. A radiocarbon date of 690 BC, obtained from one of the logs overlying a

burial in Mound 13, should date the site to the Early Woodland period, although it is usually discussed with Malmo and other Middle Woodland complexes (Arzigian and Stevenson 2003:449-450).

Soils in the area are a mixture of well-drained sandy soils north of the bridge and very poorly drained to ponded soils south of the bridge. Rushlake sand along the road north of the bridge is a very deep, moderately well drained soil formed in sandy and gravelly deposits on lake beaches. To the south, Haslie and Nidaros soils, ponded, are southwest of the bridge, deep to very deep, poorly drained soils forming in loamy sediments over sand and gravel. Forada and Leafriver soils, depressional, are southeast of the bridge, deep to very deep poorly drained soils forming in organic material over glacial deposits (USDA-NRCS 2010).

RESULTS

Fieldwork was conducted on May 24 and 25, 2010 by Principal Investigator Constance Arzigian, Mississippi Valley Archaeology Center, La Crosse WI. Fieldwork consisted of visual inspection of the whole APE and the known site locations to determine areas with a potential for intact non-wetland soils, and then shovel testing in those areas. The project area consists mainly of road right-of-way with deep ditches and extensive utilities causing significant disturbance. The APE south of the bridge and south of the boat ramp consists of wetland marshes with the road bed built up over the wetlands.

Southeast of the bridge: One site, 21OT0099, is adjacent to the APE, southeast of the bridge. This habitation site at the Otter Tail Lake Riverside Public Water Access point, owned by the DNR, was found during construction of the boat access area, and 1.5 feet of fill were added to the surface to protect the site. The current bridge work will extend 75 feet from the centerline south of the bridge. This puts the edge of the bridge APE within the paved parking lot and boat access ramp. However, no work will take place within the parking lot or boat access area, and if that paved area is avoided, there will be no effect on 21OT0099.

CSAH 72 is also built up one to two feet with fill, with edges sloping down to a dip within the right-of-way. At least two utility lines run within the right-of-way. Other disturbances to the southeast of the bridge include the DNR sign and a patch of brush between the sign and the ramp that is underlain by black filtration paper. Shovel test 1 was excavated in the only area of clear land that was potentially undisturbed to the southeast of the bridge between the boat ramp and CSAH 72. The shovel test was located 5.5 meters west of the paved parking lot/ramp, and 3.5 meters south of the pole for the DNR sign (figure 5). It showed a profile of 20 cm of topsoil over coarse sandy clay with abundant rocks and gravel that appears to be fill (Figure 6). No cultural material was recovered.

Southwest of the bridge: Southwest of the bridge is the Otter Tail River Fishing Platform access area and parking lot. The parking lot and drive are heavily compacted gravel. The bank is

Figure 5: View of area southeast of bridge; equipment is by shovel test 1.

Figure 6: Shovel test 4-topsoil over fill deposits.

cattails and riprap, suggesting that the whole area has been elevated with fill deposits. There were two patches of ground left as medians within the area. Shovel test 2 was placed in the southernmost patch, which was wider (figure 7). This showed 30 cm of 10YR2/1 sandy clay with patches of coarse sand; this all appeared to be fill deposits. Below 30 cm, the soil was too compact to penetrate with a spade. No cultural material was recovered.

Further south, the road is elevated over wetlands with cattails, marsh grass and some woody vegetation on the east, and a deep wet ditch on the west with gradually rising slopes. Only one area on the west side of the road had a place where there was dry land within the APE. This was a small colluvial fan at the base of the slope. This was shovel tested (Shovel test #3) and showed 30 cm of 10YR2/1 topsoil over 10YR 4/3 soils down to at least 50 cm, suggesting an intact soil deposit, but no cultural material. The fan itself was less than 10 meters diameter, so it was unlikely to be a site location.

To the north of the bridge, the APE is largely within the existing road right-of-way, which is both elevated with fill and has several utility lines on both sides of the road (figure 8). Three shovel tests (#4-6) were placed off the end of the roadway fill in the narrow strip of land within the APE and avoiding the utilities within the right-of-way. Shovel test 4 had a typical profile, with 28 cm of topsoil mixed with much coarse sand and gravel over coarse sand and gravel.

Other areas surrounding the bridge itself are covered with large boulders as riprap and do not have intact soil deposits. The stream bank and other possible exposed areas were also examined for cultural material.

Beyond the immediate vicinity of the bridge, there are three burial or mound sites, but all are well outside the APE and will not be impacted by the project. The five mounds that make up 21OT0011 lie 500 feet to the east of the south end of the APE, in a cultivated field to the east of Segar road. The 22 mounds in Morrison Mounds, 21OT0002, are within a cultivated field 1500 feet to the southwest of the project area. The final mound group, Otter Tail Lake Outlet, 21OT0130, is 450 feet from the road, but 1200 feet northwest of the northern end of the APE.

No cultural materials were identified during the survey, either on the surface or in shovel testing.

SUMMARY AND RECOMMENDATIONS

In preparation for reconstruction of a bridge along CSAH 72 over the Otter Tail River, Phase I archaeological investigations were undertaken. Visual inspection and shovel testing was conducted in all areas that might have potentially intact soils but no cultural materials were identified. Only one site is immediately adjacent to the project area (21OT0099), and the site is protected by several feet of fill and a paved boat access ramp and parking lot. However, no work will occur within the parking lot or boat access area, and if that area is avoided, there will be no effect on 21OT0099. No additional archaeological investigations are recommended.

Figure 7: Fishing platform parking lot southwest of bridge; shovel test was in center of grassy median.

Figure 8: APE north of the bridge, with elevated road, and many utility lines.

REFERENCES CITED

Arzigian, Constance, and Katherine Stevenson
2003 *Minnesota's Indian Mounds and Burial Sites: A Synthesis of Prehistoric and Early Historic Archaeological Data.* Publication 1. Office of the State Archaeologist, St. Paul.

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2010 Web Soil Survey. Accessed online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Winchell, Newton H.
1911 *Aborigines of Minnesota.* Minnesota Historical Society, St. Paul.

APPENDIX: OSA archaeology license

APPLICATION FOR MINNESOTA ANNUAL ARCHAEOLOGICAL SURVEY LICENSE

This license only applies to reconnaissance (Phase I) and evaluation (Phase II) surveys conducted under Minnesota Statutes 138.31-.42 during calendar year ___2010__. Separate licenses must be obtained for major investigation/ Phase III work, for burial site work under Minnesota statutes 307.08, and for survey work that will continue into another calendar year. Only the below listed individual is licensed as a principal investigator, not the institution/ agency/company or others who work for that entity. The licensed individual is required to comply with all the conditions attached to this license form. Permission to enter land for the purposes of archaeological investigation must be obtained from the landowner or land manager.

Name: ____Constance Arzigian _____

Institution/Agency/Company Affiliation: _Mississippi Valley Archaeology Center _____

Title/Position: __Laboratory Director _____ _____

Address: __ University of Wisconsin-La Crosse, 1725 State Street, La Crosse, WI 54601 ___

Work Phone: _608-785-8452 _____ E-Mail:___arzigian.cons@uwlax.edu_____

Name of Advanced Degree Institution: University of Wisconsin-Madison _ Year:_1993_____

Name of Department: ____Anthropology_____ Degree: __MA __MS X_PhD

Purpose: (check all that may apply)
CRM X Academic Research __X__ Institutional Field School _X__
Type of Land: (check all that may apply)
State Owned X_ County Owned X_ Township/City Owned X
Other ___ List: _Private _____

MHS Repository Agreement # __475__ Other Approved Curation Facility:_____

Most recent previous license year: __2009_ Type: X_Annual __Major _ Project

Signed (applicant): Constance Arzigian Date: 4/7/2010

Required Attachments: *Curriculum Vita* ___ and Documentation of Appropriate Experience ___
for previously unlicensed individuals. previously Submitted

Submit one copy of this form and attachments to:
Office of the State Archaeologist, Ft. Snelling History Center, St. Paul, MN 55111
612-725-2411 612-725-2729 FAX 612-725-2427 email: mnosa@state.mn.us

Minnesota Historical Society Approval: _____ Date: 4.13.10
State Archaeologist Approval: _____ Date: 4/12/10

License Number: 10-40

Form Date: 4/20/06

CONDITIONS OF ANNUAL ARCHAEOLOGICAL SURVEY LICENSE UNDER THE PROVISIONS OF MINNESOTA STATUTES 138.31-138.42