



Western Michigan University
ScholarWorks at WMU

Archaeological Reports

Anthropology

1984

15-An Archaeological Survey in Pavilion and Schoolcraft Townships, Kalamazoo County, Michigan

William M. Cremin

Western Michigan University

David G. de Fant

Western Michigan University

Diane L. Adams

Western Michigan University

Follow this and additional works at: https://scholarworks.wmich.edu/archaeological_reports

 Part of the [Archaeological Anthropology Commons](#)

Report Number: 15

WMU ScholarWorks Citation

Cremin, William M.; de Fant, David G.; and Adams, Diane L., "15-An Archaeological Survey in Pavilion and Schoolcraft Townships, Kalamazoo County, Michigan" (1984). *Archaeological Reports*. 11.
https://scholarworks.wmich.edu/archaeological_reports/11

This Report is brought to you for free and open access by the Anthropology at ScholarWorks at WMU. It has been accepted for inclusion in Archaeological Reports by an authorized administrator of ScholarWorks at WMU. For more information, please contact maira.bundza@wmich.edu.



DEPARTMENT OF ANTHROPOLOGY
WESTERN MICHIGAN UNIVERSITY

ARCHAEOLOGICAL REPORT NO. 15

1984

AN ARCHAEOLOGICAL SURVEY IN PAVILION AND
SCHOOLCRAFT TOWNSHIPS, KALAMAZOO COUNTY, MICHIGAN

WILLIAM M. CREMIN

DAVID G. DE FANT

DIANE L. ADAMS

ACKNOWLEDGEMENTS

The authors of this report gratefully acknowledge the cooperation of the numerous landowners in the study area who permitted survey teams to evaluate their property. We would especially like to thank Mr. and Mrs. Clinton Fleck, Mr. and Mrs. Raymond Vliek, Mr. and Mrs. Henry Vliek, and the Simpson Paper Company of Vicksburg, Michigan for allowing the WMU archaeological field school to test excavate several of the sites that were found on their land. Brief reference to test excavations undertaken in 1984 is to be found together with the appropriate site description and catalog of the surface collection made by surveyors.

Finally, we offer our thanks to the 18 members of the 1984 field school. Without their very considerable efforts, the data assembled and presented herein could not have been collected.

W. M. C.
D. G. D.
D. L. A.

TABLE OF CONTENTS

	Page
Introduction.....	1
Description of the Study Area.....	1
Research Program.....	6
Site Descriptions and Catalog of Surface Collections.....	8
Previously Recorded and/or Referenced Sites.....	8
New Archaeological Sites.....	14
Summary.....	27
References Cited.....	32
Appendix I.....	34

MAPS

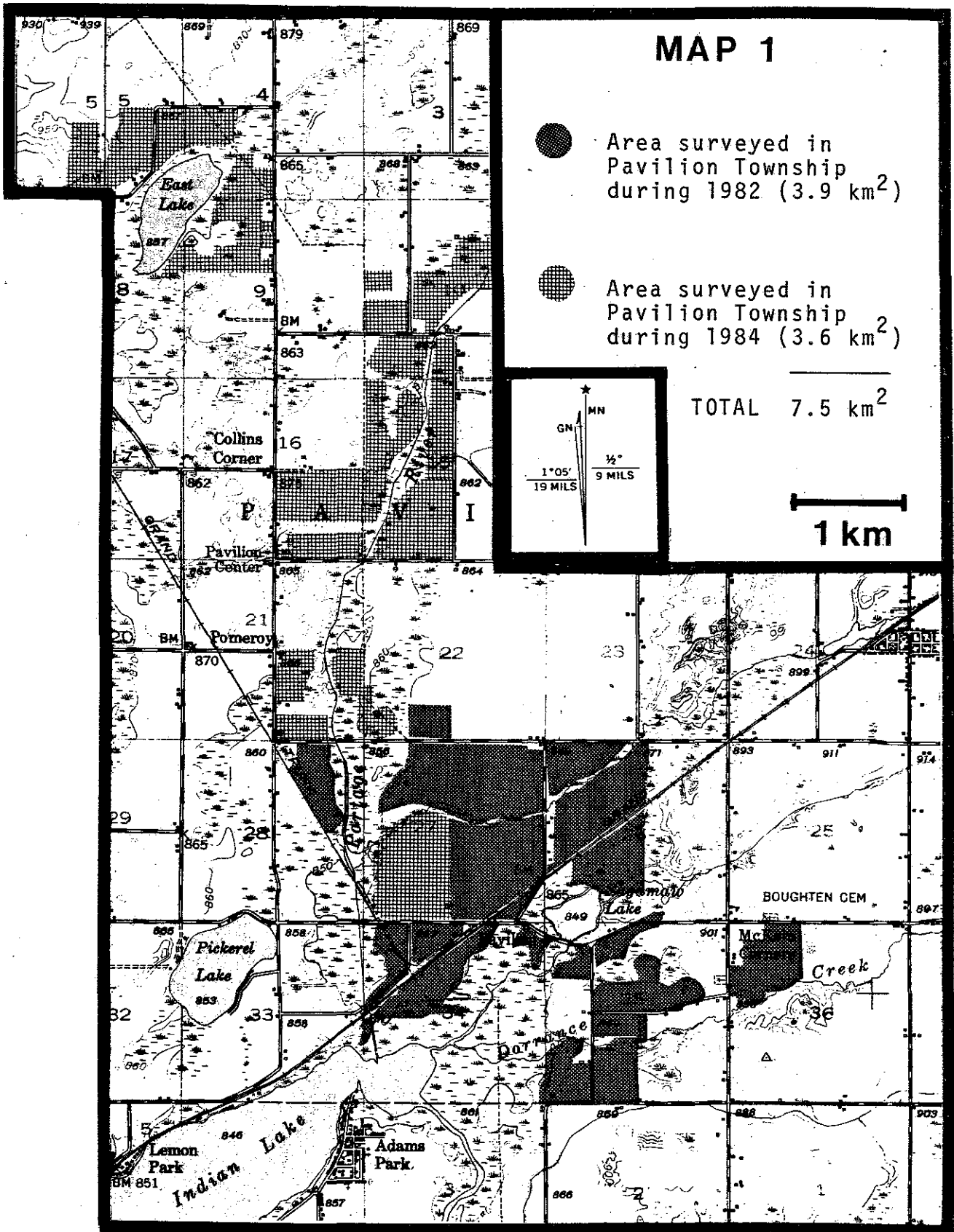
	Page
Map 1: Area surveyed in Payilion Township during 1982 (3.9 km ²) and 1984 (3.6 km ²).....	2
Map 2: Area surveyed along Portage Creek above Barton Lake in Schoolcraft Township during 1984 (33 ha).....	3
Map 3: Sites in the Pavilion Township area.....	9
Map 4: Sites in the Barton Lake area.....	10

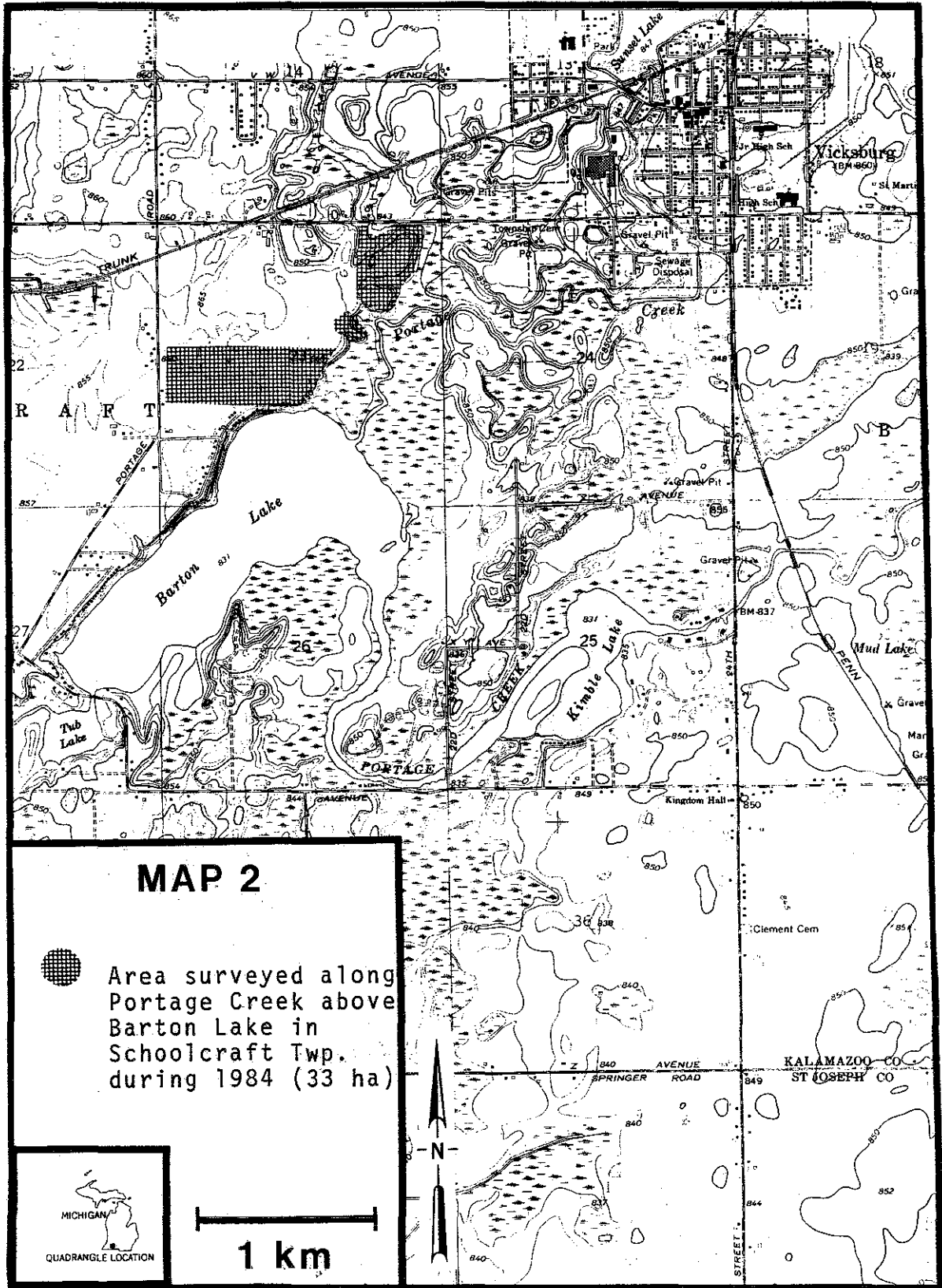
INTRODUCTION:

During the 1984 field season, Dr. William Cremin and the Western Michigan University archaeological field school continued the program of site location survey that had been initiated two years earlier in Pavilion Township (T3S R10W), Kalamazoo County, Michigan. In addition, a small area flanking the north end of Barton Lake in nearby Schoolcraft Township (T4S R11W) was similarly evaluated. With the cooperation of numerous area landowners and local artifact collectors, almost 40 parcels of land aggregating 361 ha in Pavilion and 33 ha in Schoolcraft townships were surveyed by means of surface reconnaissance procedures. There follows a report of our survey activity, including descriptions of the archaeological sites that were recorded and collected and recommendations regarding the proper disposition of several "problem" sites; the latter reflect in one instance disagreement among the documentary sources as to the location of a burial mound and in a second the erroneous recording of a natural feature on the landscape as a cultural phenomenon (i.e. burial mound).

DESCRIPTION OF THE STUDY AREA:

The research area of this study comprises farmland flanking East Lake on three sides and paralleling Portage River from its headwaters to that point near Indian Lake where our 1982 survey concluded (Cremin, Stout, and Murphy 1982) (Map 1) and bordering Portage Creek above Barton Lake just west of Vicksburg, Michigan (Map 2). First, with respect to the Pavilion Township portion of our study area, East Lake, a body of water covering about





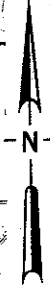
MAP 2



Area surveyed along
 Portage Creek above
 Barton Lake in
 Schoolcraft Twp.
 during 1984 (33 ha)



1 km



KALAMAZOO CO
 ST JOSEPH CO

4

40 ha in Sections 4, 5, 8, and 9, is drained by Davis Creek, a small stream which empties into the Kalamazoo River some 7 km NNW of the lake in Section 24 of Kalamazoo Township (T2S R11W). Portage River originates as two branches north and east of East Lake, one branch rising in Section 2 of Pavilion Township and the second draining Long Lake and Portage Lake in Charleston Township (T2S R9W) and entering Pavilion in Section 12. The two branches join in the center of Section 10 and flow in a southerly direction to eventually enter Indian Lake in the SW 1/4 of Section 34.

The soils dominating this portion of Pavilion Township are assigned to the Kalamazoo-Schoolcraft and Kalamazoo-Oshtemo Associations (Austin 1979). They may be characterized as nearly level to rolling, well drained, and moderately to rapidly permeable soils that have a loamy and sandy subsoil. Both are typically formed in glacial outwash, with the latter also found on moraines in the township.

Based upon the fieldnotes and plats of the original land survey, the soils of this portion of the study area formerly supported several distinctive plant associations. Low lying areas surrounding East Lake and flanking portions of Portage River supported marsh vegetation typified by cat-tails and bulrushes, with some areas of open bog and wetter sedge meadows. Uplands were occupied principally by oak savanna and oak forest. The former, with a density of between one and 15 trees per acre, was dominated by white oak. Small numbers of yellow oak, black oak, bur oak, pignut hickory, and shagbark hickory also occurred throughout. Small restricted areas of prairie grasses and forbs

comprised the understory. Oak forest differed from oak savanna in that this community was characterized by more than 15 trees/acre and the red oak was much more common and the bur oak quite rare.

Several areas between East Lake and Portage River and near the river just above Indian Lake supported tamarack swamp at the time of Euro-American settlement. Dominated by the tamarack, this plant association represents an early stage in the succession from open bog to forest in the township.

Finally, southern swamp forest and beech-sugar maple forest were also present in the study area at the time of the original land survey. The former featured American or slippery elm and red maple as dominants, with small numbers of black gum, swamp white oak, butternut, black walnut, and green ash occurring throughout. Mesic uplands supported beech-sugar maple forest, a community dominated by the aforementioned species but with some basswood, ironwood, white ash, tulip tree, bitternut hickory, and shagbark hickory (Hodler et al. 1981).

Although the Barton Lake area in neighboring Schoolcraft Township featured the same soils and vegetation types, several differences may be noteworthy. First, the area immediately adjacent to Portage Creek on the north and east sides of the lake supported a much more extensive tamarack swamp than was noted for Pavilion Township. Secondly, uplands flanking the lake and creek bottom, while supporting both oak savanna and oak forest, also featured some bur oak openings at the time of Euro-American settlement. This community differed from oak

savanna only in that the bur oak rather than the white oak was dominant and that the bur oak tended to occur in pure stands. Presumably, the herbaceous understory was similar to that of adjacent Prairie Ronde, consisting of grasses, such as bluestem, and forbs (Hodler et al. 1981).

RESEARCH PROGRAM:

Survey work aggregating 392 person-hours was undertaken over a period of 13 days in May and June, with the team of researchers usually consisting of one graduate assistant (and on a number of occasions, the field school director) and five or six field school students on a rotational basis.

Field procedures emphasized surface reconnaissance, with the survey team evaluating those parcels of cultivated land to which they gained access that afforded good to excellent surface visibility. Coverage of a field was accomplished by having team members walk with the furrows at intervals of 5-10 m. When the end of the field was reached, the team shifted over and commenced movement in the opposite direction. This pattern of movement across the field was repeated until the entire parcel selected for evaluation had been carefully searched for cultural material. Importantly, our survey efforts benefitted from absolutely excellent field conditions throughout the duration of the survey program.

As a rule, field school personnel did not participate in the survey program until each person had acquired considerable experience recognizing prehistoric cultural material collected from sifting screens while excavating sites. And, furthermore,

opportunities to recollect the surface of the sites where we were conducting test excavations afforded an ideal laboratory to instruct field school students in surface reconnaissance or walk-over survey procedures.

With the commencement of field survey, team members were instructed to carefully scan the surface of the field for any sorts of debris that might signal the presence of a former occupation or activity area. In the event that one surveyor observed an object or a scatter of debris, the graduate student supervisor examined the locale. In the case that more intensive examination appeared warranted, the entire team assembled in the area in order to delineate the extent of the site and to recover any diagnostic pieces.

Archaeological sites were defined on the basis of the presence of lithic debris, stone tools or tool fragments, prehistoric ceramics, or exposed features. A scatter of fire-cracked rock, in and of itself, was not regarded as being sufficient for the recording of a site unless accompanied by supportive demonstrable cultural material. And, in the case of historic sites, collections of typical household debris and/or structural elements (e.g. foundation stones, bricks) provided the basis for the recognition of sites.

Daily records, principally in the form of prepared survey data collection sheets, were kept by the graduate supervisor. Throughout the day, parcels of land were discussed by team members, and all observations of potential significance were recorded. The data collection sheets, themselves, were adopted

from the Kalamazoo Basin Survey program, and site locations were also plotted on U.S.G.S. quadrangle sheets, plat sheets, and a series of aerial photographs (see Appendix 1). The cultural material collected from sites was placed in labeled bags and submitted to the field school laboratory for processing and analysis at the end of each field day.

Finally, with respect to the curation of cultural material, all items were cleaned, labeled with state site numbers, examined, and accessioned into the collections housed in the Department of Anthropology. The inventory of cultural material is included together with the site descriptions in the following section of the report.

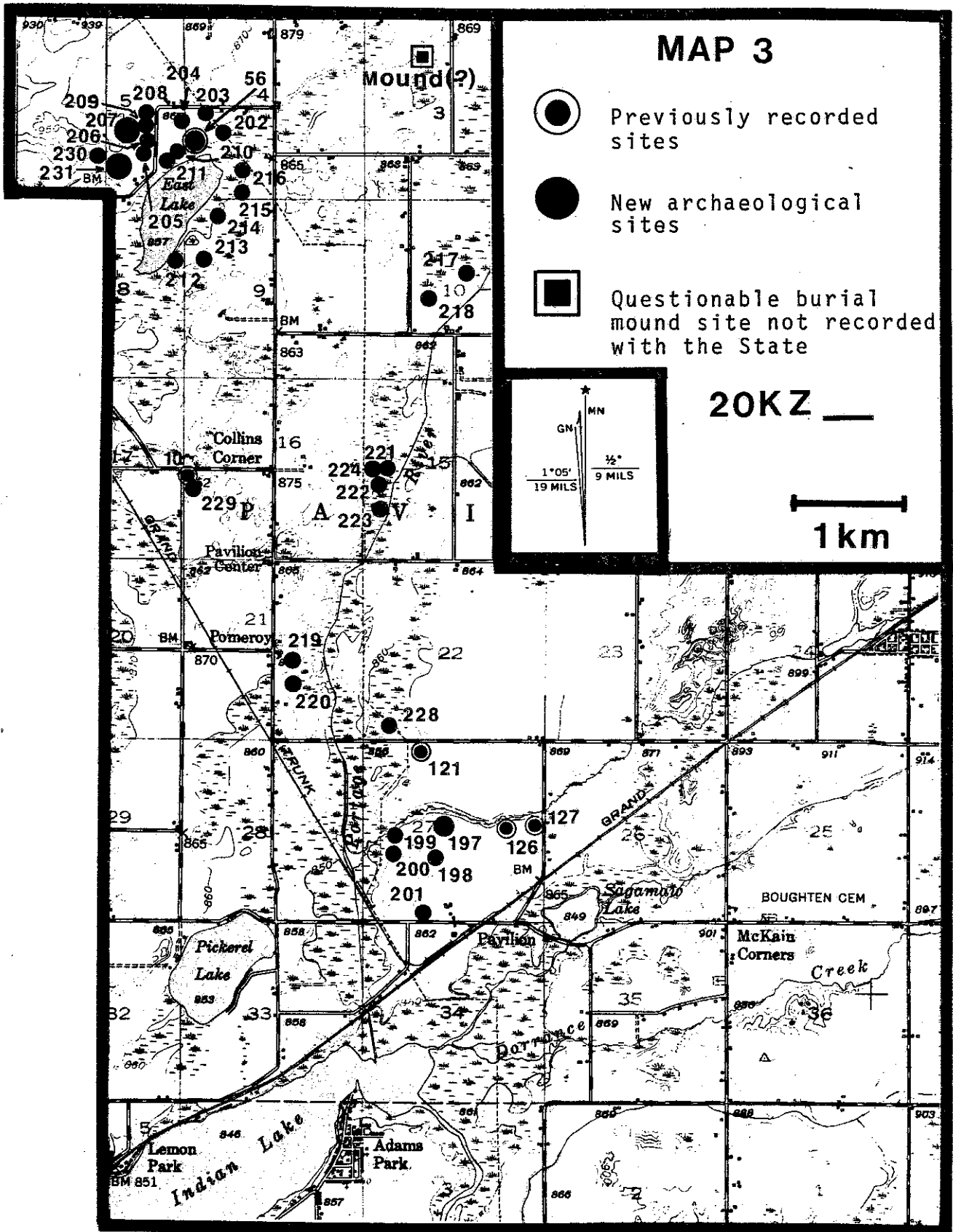
SITE DESCRIPTIONS AND CATALOG OF SURFACE COLLECTIONS:

Previously Recorded and/or Referenced Sites:




A number of the sites located on Maps 3 and 4 were recorded prior to the 1984 field season. These are briefly summarized as follows (together with a catalog of cultural items if the site was recollected):

20KZ10 This reported burial mound in the NW 1/4, NW 1/4, NW 1/4, SW 1/4 of Section 16, Pavilion Township, T3S R10W, Kalamazoo County, Michigan was revisited by the survey team in an attempt to confirm its existence. Measuring approximately 20 m long by 8 m wide and rising 1.2 m above the floor of the depression in which it is located, our evaluation by means of 15 probes to a depth of 1.5 m with a soil tester revealed that this feature is natural rather than cultural in origin. Consequently, it is recommended that this "site" be removed from the state files.

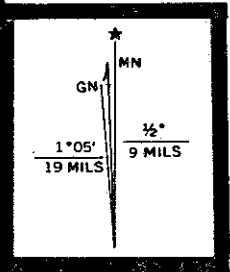
Parenthetically, while surveyors were examining this location they did recover some cultural material from the rolling land above this depression and to the south of the "mound". The reader is referred to



MAP 3

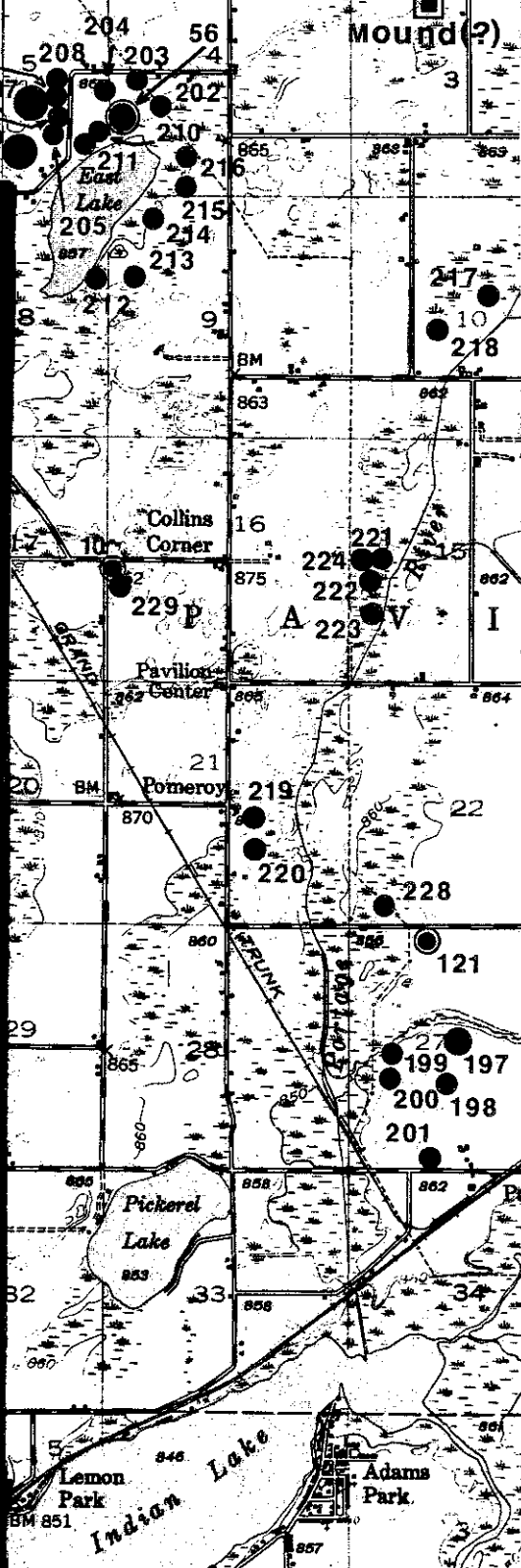
-  Previously recorded sites
-  New archaeological sites
-  Questionable burial mound site not recorded with the State

20KZ —



1 km

Mound(?)



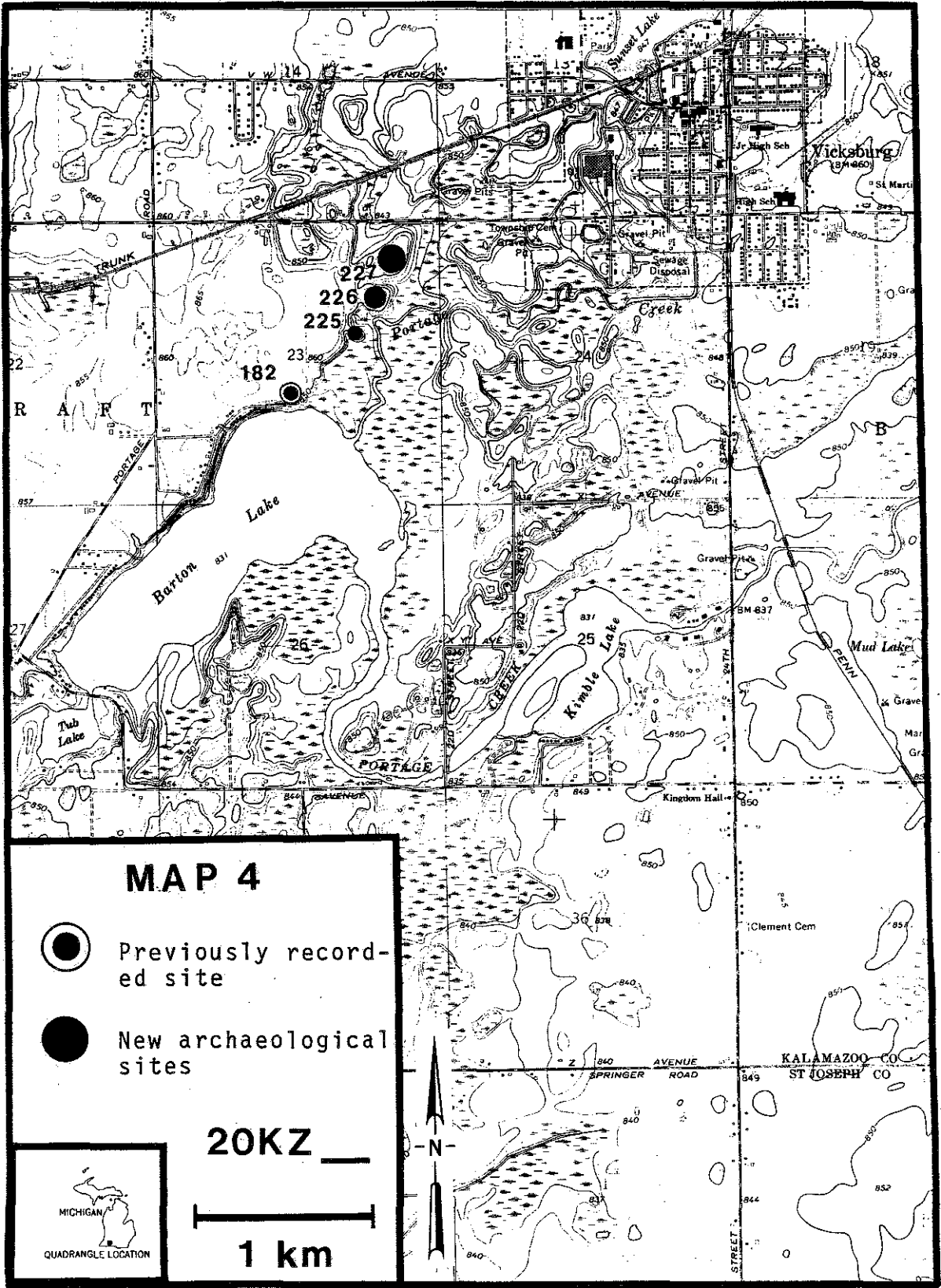
BOUGHTEN CEM.

McKain
Corners

Creek

Lemon
Park

Adams
Park



the discussion of the Cagney site (20KZ229) in the following section of this report.

20KZ47

The Long Lake Mound site lies outside the study area in the E 1/2, NW 1/4 of Section 30, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. It is included in this report because of an interesting discrepancy in the documents. The site's inclusion in the state site files is based upon a reference in Durant (1880). However, while examining other documents having a bearing upon the whereabouts of archaeological sites in the county, it was observed that this reported location in Section 30 had been overlooked. Rather, both Stevens' (1923) Archaeological Map of Kalamazoo County, Michigan and Hinsdale's (1931) Archaeological Atlas of Michigan, generally regarded as being quite reputable sources, place a burial mound in the E 1/2, NW 1/4 of Section 3, Pavilion Township (Map 3). An examination of this parcel and E.J. Stevens' research files in the Kalamazoo Public Museum lead to the conclusion that Stevens simply blundered in transcribing Durant's reference to the mound as being in Section 30 and that Hinsdale followed suit.

20KZ56

The Schilling site is based on a private collection formerly in the hands of Mr. Martin Schilling and now in the possession of the Department of Anthropology at WMU. It was originally provenienced as being located in the SW 1/4 of Section 4 and the SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. The collection was reported by the investigator recording the site as being strongly Late Archaic. High priority.

- 105 probable projectile points (four are of Upper Mercer, two are of Burlington, and three are of Bayport chert)
- 11 bifacial knives (two of Bayport chert)
- 2 bifacial hafted scrapers
- 31 biface fragments (one of heat treated Burlington, one of Bayport chert)
- 5 blanks/preforms
- 2 unifaces
- 4 utilized flakes
- 2 perforated shells
- 5 axes
- 1 adze
- 2 mauls (one is 3/4 grooved and the second is a full grooved specimen)
- 2 pieces of obsidian

With the concurrence of the Clinton Fleck Family, the 1984 field school investigated the Schilling site.

It occupies a slight ridge overlooking East Lake to the south and covers approximately 2.3 ha in the S 1/2, NW 1/4, SW 1/4 of Section 4 and extends somewhat into the SE 1/4, SE 1/4, NE 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Of the many objects recovered from the surface of this site, three of the projectiles are side notched forms not unlike points attributed to the Middle or Late Archaic; one small expanding stem specimen is analogous to the Late Archaic Feeheley point; one is like the Late Archaic/Early Woodland Kramer point; an argillite specimen resembles a Middle Woodland Snyders point and a second temporally similar point is like the Gibson form; and the Late Woodland period is represented by two Madison points and a "bird" point. The presence of a single potsherd on the surface further supports the argument for the presence of a Woodland component.

- 12 projectile points
- 6 bifaces (one of Upper Mercer chert)
- 2 bifacial blanks/preforms
- 3 unifaces
- 8 utilized flakes
- 295 flakes (eight of Upper Mercer, one of Flint Ridge, and two of heat treated Burlington chert)
- 3 core fragments
- 2 probable "nutting" stones
- 1 grit tempered body sherd

Following the surface pickup, the field school commenced test excavations. Sixty test squares, aggregating 88 m² of excavated area, yielded three cultural features and additional lithic and ceramic data. Tentatively, the data recovered through excavation confirm the cultural affiliation and temporal placement of the Schilling site suggested by the aforementioned surface collections.

20KZ121 Henry Vliek 1 is a multicomponent site encompassing about a hectare in the NW 1/4, NE 1/4, NW 1/4 of Section 27, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Extensive surface collection and test excavation were undertaken in 1982, and the site yielded evidence spanning nearly the entire period of human occupation of southwestern Michigan. Our recollection of this site in 1984 did not result in the recovery of diagnostic items. Observations of footprints in the freshly plowed field indicate that local collectors continue to frequent this site.

- 1 biface fragment
- 12 flakes (one of argillite)

20KZ126 Henry Vliek 6 covers about 3750 m² in the SW 1/4, SE 1/4, NE 1/4 of Section 27, Pavilion Township,

T3S R10W, Kalamazoo County, Michigan. Based upon a surface collection made in 1982, this multicomponent site was observed to have both a Late Archaic/Early Woodland and Middle Woodland/Early Late Woodland affiliation. The 1984 collection from this site contains a large corner notched projectile point with serrated edges; the specimen appears to be analogous to the Early Archaic Charleston point.

- 1 projectile point
- 1 biface fragment
- 1 uniface
- 28 flakes

20KZ127

Henry Vlieg 7, when originally collected in 1982, appeared as a dense scatter of mainly 20th century debris near the south bank of an unnamed tributary of the Portage River in the SE 1/4, SE 1/4, NE 1/4 of Section 27, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Covering an estimated 900 m², and lacking any evidence in the form of material remains for the former presence of a structure, it can be suggested on the basis of recollection of this site that 20KZ127 might more properly be interpreted to represent long term trash disposal. Of the 95 pieces of historic ceramics, 63 fragments of glass, and four objects of metal, the following warrant enumeration:

- 4 fragments of whiteware, including a pot rim transfer printed in black ("--EDAL OF M--"), a plate rim with gold edge and overglaze painted band of multicolored flowers, a plate rim with gold edge, all post 1810 (Demeter and Lowery 1977), and a plate bottom green transfer printed with the word "vitreous" enclosed by a vase and below it the word "Knowles", that postdates 1901 (Barber 1904)
- 7 bottle or other glass container tops, including two clear tops made with a lip-ping tool, a screw top milk glass jar rim, and a clear drinking glass or vase rim fragment of pressed glass, all postdating 1850, a canning jar rim fragment produced after 1858, and 20th century cobalt blue and brown bottle tops produced by automatic bottle making machines (Lorrain 1968)
- 11 bottle or jar bases, including two small square and clear bases probably representing medicine bottles manufactured since 1861 (Switzer 1974), an amethyst base from a container produced after 1880, with the remainder automatic machine-made and post-dating 1903 (Lorrain 1968; Newman 1970)

Adams' assessment of the collection suggests a trash

disposal function for this site dating from the mid 19th century into the early 20th century. While test excavation might reveal evidence for the former presence of a structure, this appears very doubtful in light of the absence of structural debris in the collection and the relatively large amount of broken glass recovered.

20KZ182 The Barton Lake site is located in the center, E 1/2, NE 1/4, SW 1/4 of Section 23, Schoolcraft Township, T4S R11W, Kalamazoo County, Michigan. The approximate size of the site is not known, but it occupies the immediate edge of the bluff overlooking the north end of Barton Lake and is reported to exhibit a substantial Middle Woodland component. Unfortunately, this possibly very important site was virtually destroyed in the spring of 1983 in an effort to curb erosion of the bluff into the lake. Individuals who were present when bulldozing of the drainage basin and excavation of standpipe wells was undertaken reported the discovery of numerous artifacts and the exposure of cultural features; all of which are now gone! Our examination of the margins of the drainage basin resulted in the discovery of a few nondiagnostic items.

7 flakes of chert
1 historic ceramic piece

New Archaeological Sites:

Surveyor coverage of almost 4 km² in 1984 resulted in the recording of 35 new archaeological sites. Coverage by township and section is shown on Maps 1 and 2 and may be summarized as follows:

Pavilion Township

Section 4 -25.7 ha

Section 5 -39.9 ha

Section 8 - 2.8 ha

Section 9 -22.6 ha

Section 10 -46.2 ha

Section 15 -83.5 ha

Section 16 -53.6 ha

Section 21 -24.1 ha

Section 22 - 5.0 ha

Section 27 -57.9 ha

361.3 ha

Schoolcraft Township

Section 23 -33.1 ha

394.4 ha

In this section each of the 35 sites is briefly described. Cultural affiliation and temporal placement are derived from typological assessment of the diagnostic artifacts in surface collections. The statement of relative significance, whereby a site is accorded "low, moderate or high priority", reflects our tentative interpretation of each site's potential for further study (i.e. test excavation) and for erecting a cultural chronology and interpreting past land use patterns in the area under study. Maps 3 and 4 show the locations of the 35 sites in question.

20KZ197 Henry Vliek 12 consists of a light scatter of lithic debris and fire-cracked rock in the S 1/2, SE 1/4, SE 1/4, NW 1/4 of Section 27, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Covering an estimated 2.3 ha, this site occupies level terrain immediately south of a small unnamed tributary of the Portage River crossing the section from east to west. The site's cultural affiliation and temporal placement are unknown. Low priority.

1 projectile point fragment
7 flakes

20KZ198 Henry Vliek 13 is an isolated find of a projectile point about 200 m south of 20KZ197 in the NW 1/4, SE 1/4, NE 1/4, SW 1/4 of Section 27, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. This small point with an expanding stem strongly suggests

a Woodland period temporal placement. Low priority.

1 projectile point

20KZ199

Henry Vlieg 14 encompasses about 8000 m² in the N 1/2, NE 1/4, NW 1/4, SW 1/4 of Section 27, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. The principal focus of occupation appears to have been a small sandy knoll flanking the aforementioned small stream on the south. The density of debris over the surface was observed to be moderate to heavy, and included in the collection are one Kramer point indicative of the Late Archaic/ Early Woodland transition; a point that appears analogous to the Middle Woodland Gibson point; and three Madison points of Late Woodland affiliation. Moreover, the presence of Upper Mercer chert in the collection points to the Middle Woodland/Late Woodland transition, and five body sherds are Late Woodland and Upper Mississippian in cultural affiliation. Finally, this site also evidences a substantial historic period component. Given the composition of the historic material and the total absence from the collection of structural elements (e.g. foundation stone, brick, etc.), it is most likely that this component reflects trash disposal rather than household occupation. High priority.

7 projectile points
 6 bifaces
 1 blank or preform
 1 drill
 1 bipolar tool
 4 unifaces
 6 utilized flakes
 3 hammerstones
 1 slate gorget
 3 core fragments
 1 nutting stone
 209 flakes (two of argillite and two of Upper Mercer chert)
 5 potsherds (four are grit tempered and one is shell tempered)

In addition to the prehistoric material inventoried above, the surface collection from 20KZ199 contained 26 fragments of glass, 16 pieces of historic ceramics, and one iron object from a farm implement. Of these, the following suggest a date of from the mid 19th to the early 20th century:

6 pieces of amethyst, including a medicine bottle base embossed "3 vi" and three other fragments dating from 1880-1935, and two that were produced after 1903 by an automatic bottle making machine (Newman 1970)

- 2 clear bottle glass fragments with mold seams produced by a two-piece hinged mold after 1840 and embossed "--SPEC--" in one case and "--NE--" in the other (Lorrain 1968)
- 1 piece of clear pressed glass from a large serving dish postdating 1850 (Lorrain 1968)
- 3 sherds of thick whiteware dating after 1810 and probably from a serving dish or utility vessel (Demeter and Lowery 1977)
- 2 fragments of straight rim, unpainted edgware postdating 1840 (Demeter and Lowery 1977)
- 1 brown transfer printed sherd postdating 1810 (Demeter and Lowery 1977) or 1828 (Brose 1967)

On the basis of the very informative surface collection, the WMU field school selected 20KZ199 for test excavation in 1984. A total of 140 m² of site area was carefully excavated, revealing tools, debitage, and FCR, but only a single prehistoric feature. Very little historic material was recovered through excavation. Judging from information provided by the landowner, together with the collection recovered through our excavations, it appears quite likely that a large part of this site has been destroyed through the removal of topsoil for fill dirt beneath an outbuilding on the current farmstead.

20KZ200 Henry Vliek 15 represents a relatively light scatter of prehistoric debris in the SE 1/4, NE 1/4, NW 1/4, SW 1/4 of Section 27, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Confined to a small depression approximately 100 m south of 20KZ199, this site may well be associated with Henry Vliek 14. The single fragmentary projectile point did not permit cultural or temporal placement of this site. Low priority.

- 1 projectile point fragment
- 2 flakes

20KZ201 Henry Vliek 16 is an historic site located in the S 1/2, SW 1/4, SE 1/4, SW 1/4 of Section 27, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Based upon the limited sample of ceramics on the site surface it would appear that the site does not predate 1830. While no evidence of a structure was observed in the field, a faint structural outline is visible on aerial photographs precisely where the cultural debris was encountered. Consequently, it is very possible that a 19th and/or early 20th century homestead was located here. Low to moderate priority.

- 10 fragments of whiteware postdating 1810 (Demeter and Lowery 1977)

1 fragment of undatable salt-glazed stoneware
 1 blue transfer print sherd produced since
 1840 (Demeter and Lowery 1977)
 1 edgeware fragment with a straight rim. This
 blue wheat edgeware postdates 1840 (Demeter
 and Lowery 1977)

20KZ202 Clinton Fleck 1 lies in the NE 1/4, SE 1/4, NW 1/4,
 SW 1/4 of Section 4, Pavilion Township, T3S R10W,
 Kalamazoo County, Michigan. This site produced a
 light scatter of prehistoric debris over an area of
 about 1200 m² along a ridge overlooking the marsh
 bordering the north end of East Lake. Cultural affilia-
 tion and temporal placement have not been determined.
 Low priority.

2 worked pieces of argillite
 3 utilized flakes
 9 flakes (two are of quartzite)

Note:

It is interesting that the composition of this small
 lithic assemblage is so unlike any other in the study
 area. Just what significance should be attached to
 the high percentage of nonchert raw material recovered
 from this site is uncertain, but it may be noteworthy
 that fluted points have been reported in collections
 from near this site (Mr. Melvin Woolf, personal com-
 munication).

20KZ203 Clinton Fleck 2 is a findspot in the NE 1/4, NW 1/4,
 NW 1/4, SW 1/4 of Section 4, Pavilion Township, T3S
 R10W, Kalamazoo County, Michigan. Here, surveyors
 found the distal portion of a projectile point fabricated
 from Bayport chert. The locus is approximately 350 m
 north of East Lake and 200 m north of the Schilling
 site (20KZ56) on level farm land. Cultural affiliation
 and temporal placement are undetermined. Low priority.

1 projectile point fragment

20KZ204 Clinton Fleck 3 also represents the isolated occurrence
 of a projectile point on level land north of the lake
 and the Schilling site. Located in the SE 1/4, NE 1/4,
 NE 1/4, SE 1/4 of Section 5, Pavilion Township, T3S
 R10W, Kalamazoo County, Michigan, this corner notched
 projectile point find more than likely identifies a
 Late Woodland presence in the East Lake area. Low
 priority.

1 projectile point

20KZ205 Clinton Fleck 4 is a findspot in the NW 1/4, NW 1/4, SE 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Located on level terrain some 200 m NW of East Lake, this locus revealed a projectile point very similar to the Kramer type, dating generally to the Late Archaic/Early Woodland transition in the Midwest. Low priority.

1 projectile point

20KZ206 Clinton Fleck 5 represents the isolated occurrence of a blank or preform in the center, SW 1/4, NE 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Again, this findspot occupies level terrain, but at a slightly greater distance (ca. 250 m) NW of East Lake. Cultural affiliation and temporal placement of this site are unknown. Low priority.

1 bifacial blank or preform

20KZ207 Clinton Fleck 6 takes the form of a light scatter of lithic debris associated with frequently heavy concentrations of FCR over a ridge occupying four hectares of area in the center, E 1/2, NW 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. This sandy ridge occurs at a distance of about 450 m NW of East Lake. The single biface recovered from the surface exhibits a small expanding stem not unlike the hafting element typical of the Middle Woodland Gibson point. The remainder of the material in the collection from 20KZ207 is not diagnostic. Moderate priority.

1 projectile point
1 uniface
12 flakes

20KZ208 Clinton Fleck 7 is a biface findspot in the NW 1/4, NW 1/4, NE 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. This unidentified projectile point fragment of Burlington chert was recovered about 500 m NNW of East Lake and in the same field producing the previously mentioned sites 20KZ205-207. The cultural affiliation and temporal placement of the site have not been determined. Low priority.

1 projectile point fragment

20KZ209 Clinton Fleck 8 is another findspot of a biface in this same field located in the SE 1/4, NW 1/4, NE 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Located some 400 m NW

of East Lake on level land fronting 20KZ207; this find of a side notched projectile point of Norwood chert suggests by its morphology an Archaic period temporal placement. Low priority.

1 projectile point

20KZ210 Clinton Fleck 9 records the presence of a moderate lithic and FRC scatter that is spatially distinct from the larger nearby Schilling site (20KZ56) in the SE 1/4, SE 1/4, NE 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Occupying about 900 m² of a ridge overlooking East Lake approximately 20 m to the SE, the margin of this cultural scatter is but 30 m W of the well delineated periphery of 20KZ56. That this small site is perhaps related to its larger neighbor is suggested by the presence of a corner notched projectile point of probable Late Archaic affiliation. Low to moderate priority.

1 projectile point
1 biface fragment
8 flakes

20KZ211 The Fleck Historic Homestead site is situated on the ridge overlooking East Lake to the SE in the NW 1/4, NE 1/4, SE 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. The ceramics recovered from the surface of this one hectare site suggest occupation between approximately A.D. 1825 and the 1860s or 1870s. The presence of structural material (bricks) and Mr. Fleck's statement that this was the location of the family's homestead suggest that a domicile once stood here. Given the great variety evident in the ceramic assemblage, the very good possibility that structural evidence still lies in the ground, and the fact that this site appears to be a "pure" 19th century component without the admixture of 20th century material, it is appropriate that this site be assigned a high priority.

Of the seven fragments of brick, 32 pieces of glass, 134 ceramic fragments, and an iron chain link that constitute the collection, the following items clearly warrant listing:

1 fragment of mirror glass postdating 1835
(Academic American Encyclopedia 1981)
1 clear bottle fragment with a flat panel
embossed "--N'S--". This probable medicine
bottle postdates 1861 (Switzer 1974)
4 pieces of common yellow pottery dating after
1826 (Brose 1967)
2 transfer printed ware, one black and one

- brown, postdating 1810 (Demeter and Lowery 1977) or 1825 (Brose 1967)
- 6 fragments of blue transfer printed ware postdating 1830 (Demeter and Lowery 1977)
- 1 sherd of mocha ware, first developed in the 18th century and popular in Canada from the 1840s (Linebaugh 1983)
- 5 pieces of blue-banded annular ware postdating 1810 (Demeter and Lowery 1977)
- 1 fragment of Rockingham ware, developed in 1750 and manufactured in the United States after 1844 (Brose 1967)
- 10 blue spatterware sherds. This material was, according to Pilling (cited in Demeter and Lowery 1977), popular between 1825-1850. However, Brose (1967) states that it was most popular in the mid 19th century
- 4 blue edge ware sherds (wheat edge and straight rim) postdating 1840 (Demeter and Lowery 1977)
- 12 pieces of sprigware or gaudy dutch postdating 1828 (Demeter and Lowery 1977)

20KZ212 Carroll Abbey 1 is a moderately dense lithic and FCR scatter covering an estimated 900 m² in the SE 1/4, NE 1/4, SE 1/4, NE 1/4 of Section 8, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Situated in a fallow field affording only moderate surface visibility, this material appears to be associated with a slight sandy knoll adjacent to the shoreline of East Lake. Unfortunately, no artifacts indicative of the site's cultural affiliation or temporal placement were found. Low to moderate priority.

1 utilized flake
14 flakes

20KZ213 Carroll Abbey 2 is a findspot in the SW 1/4, NE 1/4, SW 1/4, NW 1/4 of Section 9, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Here, surveyors found a biface of unknown affiliation and temporal placement. This locus is approximately 300 m E of 20KZ212. Low priority.

1 biface fragment

20KZ214 Ray Rhoades 1 is a diffuse scatter of lithic debris and FCR in the S 1/2, NE 1/4, NW 1/4, NW 1/4 of Section 9, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. The site covers an area of about 1.2 ha and lies along the edge of the marsh flanking East Lake on the east. It is some 200 m from water's edge to 20KZ214. Cultural affiliation and temporal placement are unknown. Low to moderate priority.

1 biface fragment
2 utilized flakes
10 flakes

20KZ215 Ray Rhoades 2 is located immediately upslope and east of the wooded marsh bordering the northeast side of East Lake in the S 1/2, SW 1/4, SE 1/4, SW 1/4 of Section 4, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. This moderate lithic debris and FCR scatter encompasses one hectare and is probably Archaic in affiliation, judging from the single diagnostic artifact recovered. Moderate to high priority.

1 projectile point
1 biface fragment
1 utilized flake
9 flakes (two of quartzite)

20KZ216 Ray Rhoades 3 is also a moderate lithic debris and FCR scatter proximal to the wooded marsh flanking the northeast side of East Lake. Covering about 6250 m² in the SE 1/4, NW 1/4, SE 1/4, SW 1/4 of Section 4, Pavilion Township, T3S R10W, Kalamazoo County, Michigan, this site sits atop a small knoll commanding an excellent view of both the marsh and the lake. The material recovered by surveyors is not diagnostic, but a moderate to high priority is assigned to this site.

1 projectile point fragment
1 bifacial blank or preform fabricated from Bayport chert
1 uniface
1 utilized flake
12 flakes

20KZ217 Joseph Scharping 1 covers an estimated 3500 m² in the N 1/2, SW 1/4, SW 1/4, NE 1/4 of Section 10, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. According to Mr. Scharping, the small knoll at this location overlooking the confluence of the two small branches that form the Portage River was formerly higher and also known for its artifacts. However, the crest of the knoll was removed for road fill several years ago, resulting in almost complete destruction of the site. The three items in the collection from 20KZ217 were found slightly downslope of the former crest, seemingly confirming the land-owner's story. The cultural affiliation and temporal placement of the site are not known. Low priority.

1 biface fragment of Bayport chert
2 flakes

20KZ218 Joseph Scharping 2 is a findspot in the NE 1/4, NW 1/4, NE 1/4, SW 1/4 of Section 10, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. The artifact recovered from this locus is a large quartzite biface fragment. Cultural affiliation and temporal placement of this site cannot at this time be ascertained. Low priority.

1 biface fragment

20KZ219 John Lutke 1 occupies an estimated 1500 m² in the NE 1/4, NW 1/4, NE 1/4, SE 1/4 of Section 21, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Located along a gentle slope approximately 350 m W of the Portage River, this site consists of a light scatter of lithic debris and FCR. The site is possibly related to the nearby John Lutke 2 site (20KZ220), which commences 80-100 m upslope and to the south of 20KZ219. Neither of the artifacts recovered from this site is diagnostic. Hence, the cultural affiliation and temporal placement are not known. Low priority.

1 bifacial blank or preform
1 bifacial drill
7 flakes

20KZ220 John Lutke 2, located upslope and south of the previously mentioned site, extends along a ridge paralleling the river for almost 200 m in the E 1/2, SW 1/4, NW 1/4, SE 1/4 of Section 21, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Covering an estimated 1.5 ha, this site is characterized by a light scatter of lithic material and FCR. The only diagnostic implement is a projectile point with an expanding stem not unlike that typical of the Gibson point. Therefore, a Middle Woodland temporal placement is suggested for 20KZ220. Moderate priority.

1 projectile point
1 bipolar implement
1 uniface
6 flakes

20KZ221 Clarence Flach 1 is a light lithic and FCR scatter in the NW 1/4, NE 1/4, NW 1/4, SW 1/4 of Section 15, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. This site occurs on rolling terrain sloping toward the Portage River and occupies about 1.2 ha of space. The cultural affiliation and temporal placement of this site are not known. Low priority.

1 large triangular biface
1 uniface
7 flakes

- 20KZ222 Clarence Flach 2 is a light to moderate scatter of prehistoric debris in the SE 1/4, NW 1/4, NW 1/4, SW 1/4 of Section 15, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. It is located on the same sloping ground and to the south of 20KZ221, overlooking Portage River and its adjacent marshland immediately to the E of the site. Site area is estimated to encompass approximately 5400 m². No artifacts suggestive of its placement in time were recovered from the surface by surveyors. Low priority.
- 1 bipolar tool
 - 1 hammerstone
 - 1 utilized flake
 - 3 flakes
- 20KZ223 Clarence Flach 3 is a findspot located to the south of the aforementioned sites in muck soils bordering the Portage River. Situated in the SE 1/4, SW 1/4, NW 1/4, SW 1/4 of Section 15, Pavilion Township, T3S R10W, Kalamazoo County, Michigan, it seems likely that it would be related to those sites occurring nearby. Unfortunately, like 20KZ221 and 222, the cultural affiliation and temporal placement of this site cannot be determined. Low priority.
- 1 biface
- 20KZ224 Clarence Flach 4 extends over approximately 4500 m² of a ridge immediately W of 20KZ221 in the NW 1/4, NW 1/4, NW 1/4, SW 1/4 of Section 15, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. It can be characterized as a moderate scatter of lithic debris associated with a light and diffuse scatter of FCR. Nothing in the collection is diagnostic, and the site's cultural affiliation and placement in time cannot be ascertained. Low priority.
- 1 biface fragment of Bayport chert
 - 1 piece of worked quartzite
 - 6 flakes
- 20KZ225 The Scratch site occupies about 2500 m² of a partially destroyed ridge spur or finger of land extending from the uplands eastward into the floodplain bordering Portage Creek in the NE 1/4, SE 1/4, SW 1/4, NE 1/4 of Section 23, Schoolcraft Township, T4S R11W, Kalamazoo County, Michigan. The land is for the most part wooded, and surveyors found it only because of a bulldozer cut through it permitting vehicular movement from the uplands to stream's edge. The undisturbed portion of the site, representing no more than about 50% of the

landform once available for human occupation, was intensively shovel tested following the discovery of considerable FCR and several flakes along the top of the cut at a level just below the sod. This resulted in the recovery of more FCR, together with one artifact and more flakes, but surveyors observed nothing suggestive of the presence of cultural features. The artifact, a distal fragment of a projectile point, is not diagnostic. Therefore, the site's age and probable affiliation cannot be determined. Low priority.

1 projectile point fragment
10 flakes

20KZ226

The Simpson Paper Company site is characterized by a relatively dense scatter of lithic debris accompanied by moderate quantities of FCR over a pronounced ridge in the NW 1/4, NW 1/4, SE 1/4 and SW 1/4, SW 1/4, NE 1/4 of the NE 1/4 of Section 23, Schoolcraft Township, T4S R11W, Kalamazoo County, Michigan. Covering an estimated 2.7 ha, the site overlooks Portage Creek and its broad marshy floodplain to both and E and S. Repeated surface collecting yielded one point suggesting a human presence during the Archaic/Woodland transition; nine pieces of Upper Mercer chert, commonly regarded as being suggestive of Middle Woodland or Early Late Woodland occupation; and two Late Woodland Madison points. High priority.

4 projectile points
2 biface fragments
2 bifacial blanks or preforms
2 slate gorget fragments
3 cores
1 pitted cobble
6 unifaces
4 utilized flakes
197 flakes (nine are of Upper Mercer chert)

Based upon reliable information from area collectors, WMU sought permission from the Simpson Paper Company of Vicksburg to both collect and test excavate this potentially very important site. Following several surface collecting forays in this freshly plowed and washed field, a series of test squares aggregating 74 m² were located primarily on the eastern one-third of the site. Excavations revealed 11 cultural features and a wealth of ceramic and lithic data, which are now being prepared for study in the Fall.

20KZ227

Simpson North Ridge is located due north of and across a 30-40 m wide depression from 20KZ226 in the center, W 1/2, NE 1/4 of Section 23, Schoolcraft Township,

T4S R11W, Kalamazoo County, Michigan. It covers approximately 5 ha and is characterized by an extensive lithic and FCR scatter. Because the ridge upon which 20KZ227 is located is in the same field as 20KZ226, this site was intensively surface collected along with the Simpson Paper Company site, resulting in an equally impressive assemblage of cultural items, as well as several observations of soil staining suggesting the presence of subsurface cultural features. Both cultural debris and areas of oxidized soil tend to be concentrated in the eastern portion of the site, overlooking Portage Creek and its marshy floodplain. The artifacts recovered from the site's surface suggest a multicomponent situation, with evidence of Archaic and Middle Woodland/Early Late Woodland occupations being reflected in projectile points and the presence of Upper Mercer chert. High priority.

- 4 projectile points
- 2 biface fragments
- 2 bifacial scrapers
- 5 cores (one is bipolar)
- 8 unifaces
- 9 utilized flakes
- 194 flakes (one of Upper Mercer chert and six of Indiana hornstone)

20KZ228 Sehy is a moderate prehistoric debris scatter covering about 3600 m² in the W 1/2, SE 1/4, SW 1/4, SW 1/4 of Section 22, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. Located 600 m E of the Portage River, the site occupies a small sandy ridge surrounded by poorly drained muck soils. No artifacts were recovered that assist in fixing the cultural affiliation and temporal placement of this site. Low priority.

- 1 bifacial knife of Flint Ridge chert
- 1 utilized flake
- 5 flakes (one of argillite)

20KZ229 The Cagney site was defined while the survey team was seeking to confirm the existence of the burial mound previously recorded with the State of Michigan as 20KZ10. Although we were able to determine that the supposed cultural manifestation was no more than a natural feature of the glacial landscape, we did collect a handful of flakes from the rolling terrain immediately S and E of the "mound" in the NW 1/4, NW 1/4, NW 1/4, SW 1/4 of Section 16, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. This site is characterized by a very light scatter of lithic debris associated with FCR over an area of about 1.2 ha. No artifacts were recovered. However, the presence of Upper Mercer chert does suggest a Middle Woodland/Early Late Woodland temporal placement for 20KZ229.

4 flakes (one of Upper Mercer chert)

20KZ230 Frank Fleck 1 is a light scatter of lithic debris and FCR in the W 1/2, NW 1/4, SW 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazog County, Michigan. Covering approximately 6750 m² of gently rolling terrain, this site is located about 500 m NW of East Lake. No material indicative of cultural affiliation and temporal placement was recovered. Low priority.

5 flakes (one of Indiana hornstone)

20KZ231 Frank Fleck 2 is situated on a slight rise of sandy soil about 400 m NW of East Lake in the center, N 1/2, SW 1/4, SE 1/4 of Section 5, Pavilion Township, T3S R10W, Kalamazoo County, Michigan. This diffuse scatter of lithic debris and FCR occurs over an area of almost five hectares. No diagnostic items were recovered, and the cultural affiliation and temporal placement of this site are also unknown. Low priority.

2 core fragments
2 unifaces
11 flakes

SUMMARY:

WMU survey coverage of almost 4 km² in Pavilion and Schoolcraft townships, Kalamazoo County, Michigan in 1984 has resulted in the discovery and recording of 35 new archaeological sites. Two sites (20KZ201 and 211) are historic homesteads, another (20KZ199) yielded evidence of both historic and prehistoric components, and the remaining 32 produced only prehistoric material. In summary, 49 cultural components have tentatively been identified. These are as follows:

Prehistoric components - 46

Paleo-Indian	- 0
Archaic	- 3
Early Archaic	- 1

Middle Archaic	-	1
Late Archaic	-	4
Woodland	-	1
Early Woodland	-	3
Middle Woodland	-	6
Late Woodland	-	5
Upper Mississippian	-	1
Undetermined	-	21
<u>Historic components</u>	-	3

The size of the Barton Lake study area in Schoolcraft Township and the number of hectares (N =33) surveyed and new archaeological sites (N =3) recorded provide a sample that is far too small for meaningful comparisons to be made at this time. It is, however, noteworthy that two of the sites occurring along Portage Creek above Barton Lake are as large as any recorded in Pavilion Township this year and that they produced surface collections that are certainly the equal of or perhaps even more impressive than assemblages from sites in the latter area. All that we are here prepared to say is that additional work in the Barton Lake area will in all probability establish this as a rich archaeological zone requiring intensified research efforts on the part of the archaeological community.

Our summary of the 1984 Pavilion Township data set will include comparisons between the following in an effort to validate our contention in 1982 that the Portage River-Indian Lake area warranted additional research: (1) sites occurring in fields adjacent to East Lake, an upland body of water lying

in the Kalamazoo River drainage, and those sites recorded along the Portage River this year; (2) Portage River sites found this year and those recorded downstream near Indian Lake in 1982; and (3) all of the 1982 and 1984 Portage River-Indian Lake sites and sites recorded in 1980-1981 in the Upper Kalamazoo River Valley of Jackson County, Michigan.

1. The 29 prehistoric sites for which it has been possible to estimate site area range in size from findspots to several encompassing about five hectares. The mean site area calculated for the 1984 site population is $21.25 \text{ ha}/29 \text{ sites} = 7328 \text{ m}^2$. For the 13 sites located along Portage River the average is $8.45/13 = 6500 \text{ m}^2$. Those occupying land around East Lake average $12.80/16 = 8000 \text{ m}^2$.

With respect to the matter of site density or frequency of occurrence, derived by dividing the number of sites by the number of km^2 surveyed, the 1984 prehistoric site population has yielded a density of $30 \text{ sites}/3.65 \text{ km}^2 = 8.22$. For the Portage River sites the SD is $14/2.7 = 5.19$, and for East Lake we have calculated an SD of $16/0.95 = 16.84$.

Finally, we have calculated an occupational intensity (OI) index by assigning the following values to these sites: findspot - 1.0; debris scatter - 5.0; and component - 10.0. The OI derived from all sites is $115/30 = 3.83$. For the Portage River sites it is $63/14 = 4.50$, while the East Lake sites have yielded an OI of $52/16 = 3.25$.

These observations suggest that while sites occur more frequently and are larger near East Lake, the level of

prehistoric activity is not as great around this lake as it was along the river. Perhaps the greater number of sites per km² surveyed about East Lake actually is more indicative of activities seldom leading to intensive occupation of particular site loci (e.g. seven of 10 findspots, possibly reflecting isolated episodes of hunting during which a tool was lost or discarded, occur near East Lake) and/or frequent shifting of a group from one locus to another during exploitation of those resources common to the marshy shoreline of the lake (e.g. sites do appear to be somewhat strung out along the edge of the marsh overlooking East Lake, especially along the east and northwest sides).

2. Comparing the 1982 and 1984 data sets from the Portage River-Indian Lake study area has revealed that sites found this year are on the average larger (6500 m²) than in 1982 ($\bar{X} = 2890 \text{ m}^2$), 2.2 times to be precise, but that site density is far greater downstream (1982 - $51/3.9 = 13.08$) than was recorded for this year (1984 - $14/2.7 = 5.19$), by a margin of more than 2.5:1. And while the OI values are quite similar (1982 - $247/51 = 4.84$; 1984 - $63/14 = 4.50$), they do reflect an anticipated diminishing or lessening of prehistoric activity as one proceeds upstream. (Cremin, Stout, and Murphy 1982).
3. A final comparison of potential interest involves the combining of all Portage River-Indian Lake data for evaluation in terms of a data set recorded several years ago for the Upper Kalamazoo River Valley (Cremin and

Clark 1981; Cremin and Dinsmore 1981; Speranza, Dinsmore, and Cremin 1981). This comparison has been made easier by the fact that in both samples the population of prehistoric sites numbers 65. With respect to site area, the mean calculated for the Upper Kalamazoo is 3819 m². The Portage River-Indian Lake (or Upper Portage River Valley) average is 3610 m². Site density for the respective areas is $65/13.1 = 4.96$ and $65/6.6 = 9.85$. Finally, the OI determined for the Kalamazoo River sites is $298/65 = 4.58$, and for the Portage River-Indian Lake sites the OI value is $310/65 = 4.77$.

These observations derived from study areas near the headwaters of the Kalamazoo and Portage rivers suggest that on the average sites in the two areas are strikingly similar in size and that the intensity of human activity in prehistoric times was virtually the same. The only marked difference is noted in comparing site densities. Surveyors had to evaluate almost twice as much land in the Upper Kalamazoo River Valley as they did along the Portage River to record the same number of archaeological sites. The significance of these observations, as well as those noted earlier in this summary section, remains to be fully appreciated, and certainly more archaeological research specifically undertaken to address hypotheses derived from these survey observations will need to be accomplished before their importance to our understanding of area prehistory can be established beyond a reasonable doubt.

REFERENCES CITED:

- Academic American Encyclopedia
1981 Mirror. Academic American Encyclopedia, 13: 464. Arete Publishing Company, Princeton.
- Austin, F.R.
1979 Soil survey of Kalamazoo County, Michigan. United States Department of Agriculture. Washington.
- Barber, E.A.
1904. Marks of American Potters. Patterson and White Company, Philadelphia.
- Brose, D.
1967 An introduction to dating historic ceramics in Michigan. Coffinberry News Bulletin, 14(4): 34-41.
- Cremin, W.M. and C.P. Clark
1981 Additional site survey in the upper Kalamazoo River valley: the 1981 field season. In Cremin, ed., Kalamazoo Basin Survey, 1976-1980, pp. 68-79. Department of Anthropology, Western Michigan University, Archaeological Report 11.
- Cremin, W.M. and R.E. Dinsmore
1981 An archaeological survey of Calhoun and Jackson Counties, Michigan: 1980 multiple transect survey in the upper Kalamazoo River valley. Department of Anthropology, Western Michigan University, Archaeological Report 10.
- Cremin, W.M., C.B. Stout, and M.L. Murphy
1982 An archaeological survey along Portage River and Dorrance Creek above Indian Lake in Pavilion Township, Kalamazoo County, Michigan. Department of Anthropology, Western Michigan University, Archaeological Report 14.
- Demeter, C. S. and W.L. Lowery
1977 An archaeological and historical investigation of the Berrien Springs jail house site. The Michigan Archaeologist, 23 (2,3): 41-114.
- Durant, S.W.
1880 History of Kalamazoo County, Michigan. Everts and Abbott, Philadelphia.
- Hinsdale, W.B.
1931 Archaeological atlas of Michigan. University of Michigan Handbook Series 4.

Hodler, T.W., R. Brewer, L.G. Brewer, and H.A. Raup,
compilers

1981 Presettlement vegetation of Kalamazoo County, Michigan. Department of Geography, Western Michigan University.

Lorrain, D.

1968 An archaeologist's guide to nineteenth century American glass. Historical Archaeology, 2: 35-44.

Newman, T.S.

1970 A dating key for post-eighteenth century bottles. Historical Archaeology, 4: 70-75.

Speranza, S., R.E. Dinsmore, and W.M. Cremin

1981 Kalamazoo basin survey site roster: a summary of data recovered from 325 sites. In Cremin, ed., Kalamazoo Basin Survey, 1976-1980, pp. 80-102. Department of Anthropology, Western Michigan University, Archaeological Report 11.

Stevens, E.J.

1923 Archaeological map of Kalamazoo County, Michigan. Stevens, Kalamazoo.

Switzer, R.R.

1974 The Bertrand bottles: a study of 19th century glass and ceramic containers. National Park Service, United States Department of the Interior. Washington.

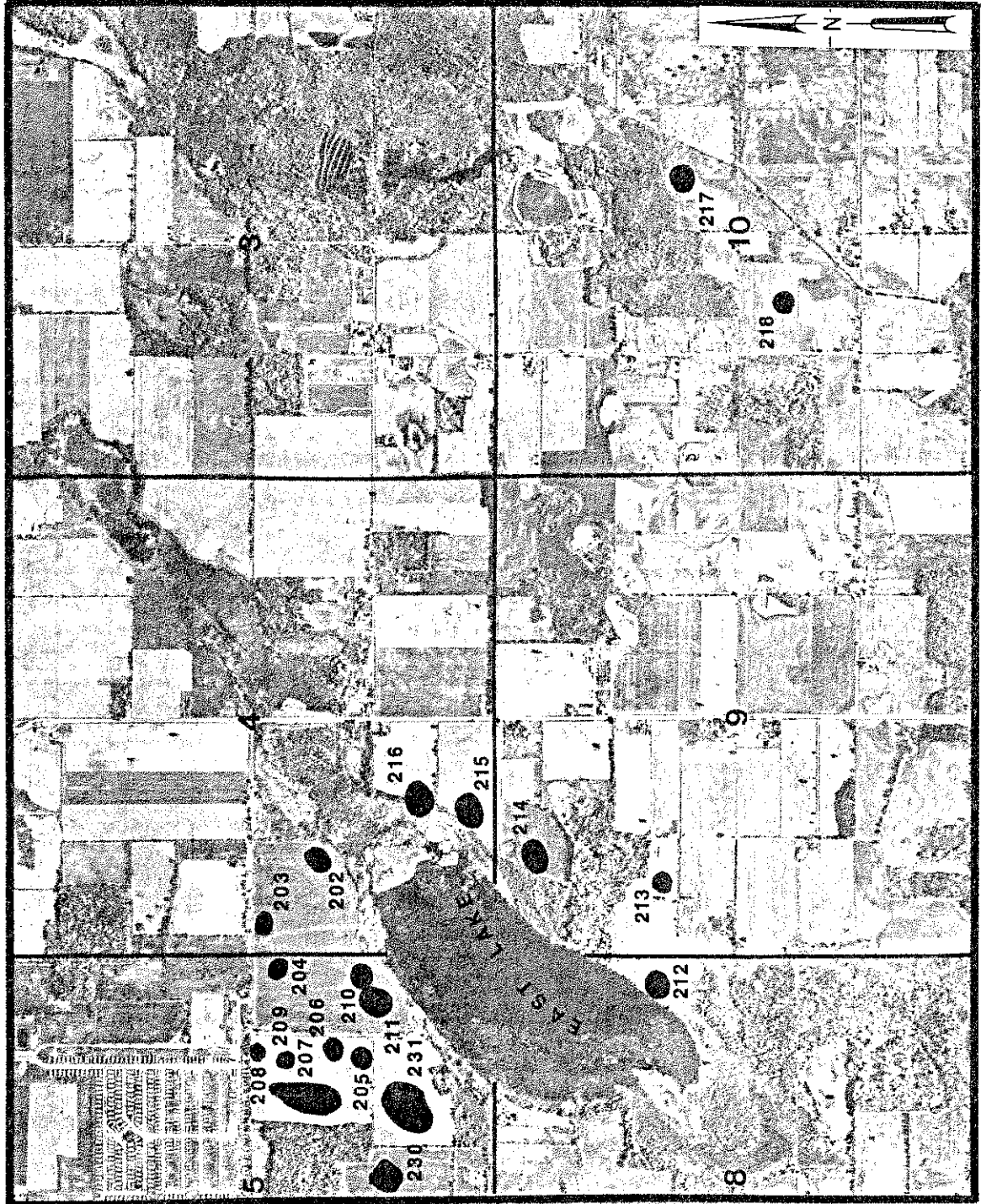
APPENDIX I

SECTIONAL AERIAL PHOTOGRAPHS
SHOWING THE LOCATIONS AND APPROXIMATE SPATIAL
CONFIGURATIONS OF 35 ARCHAEOLOGICAL SITES

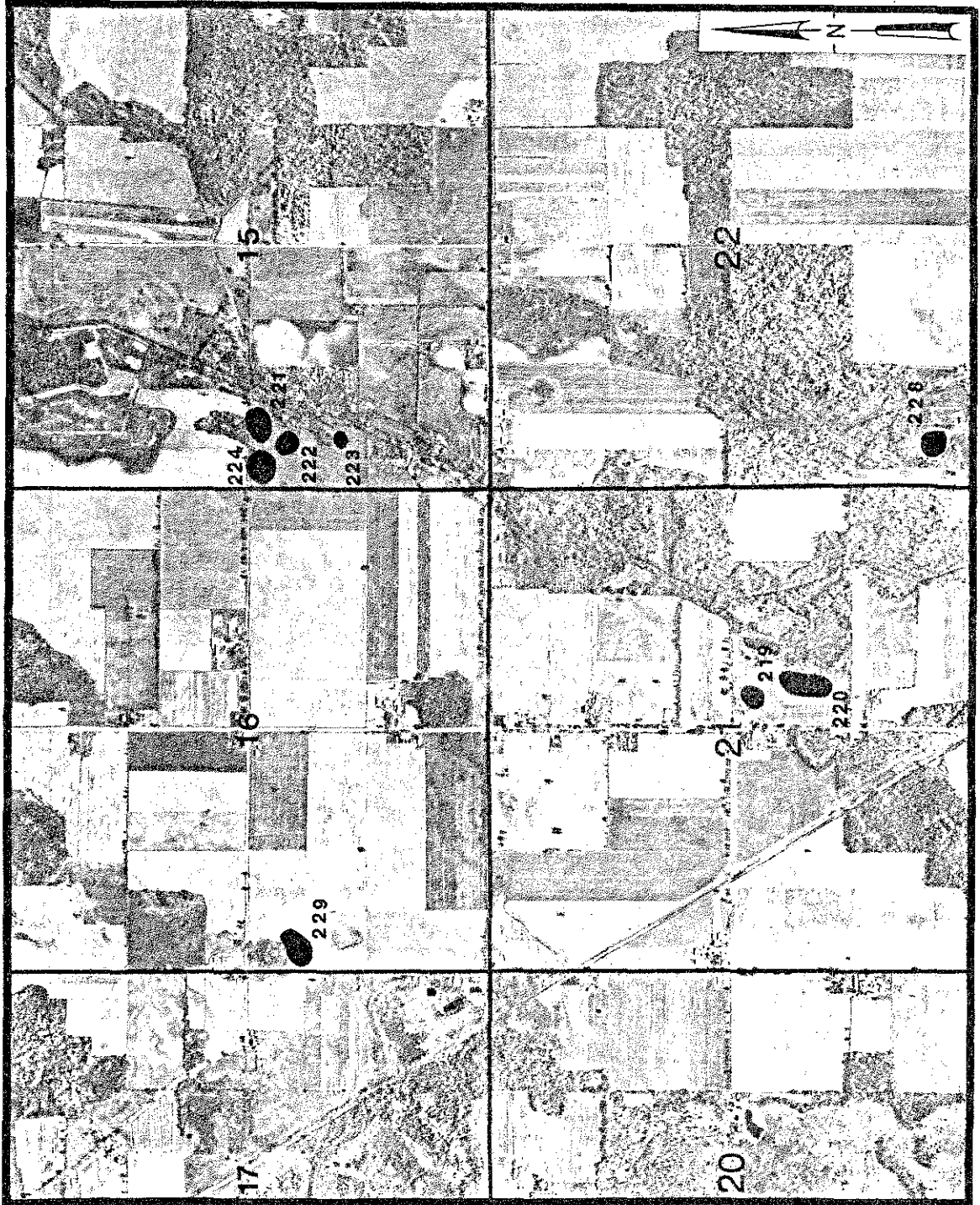
(NOT TO SCALE)

20KZ _

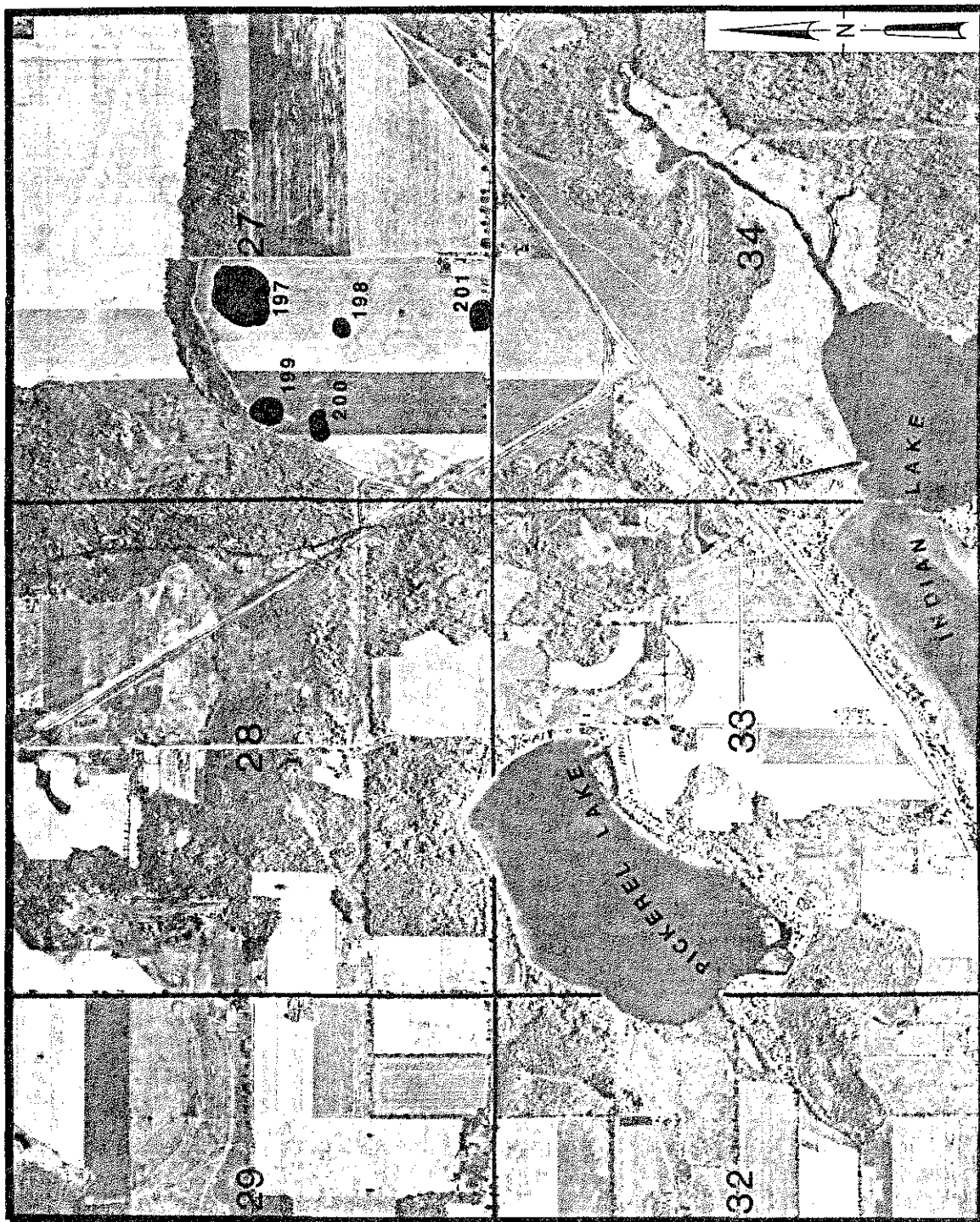
Pavilion Township, Sections 3, 4, 5, 8, 9, 10



Pavilion Township, Sections 15, 16, 17, 20, 21, 22



Pavilion Township, Sections 27, 28, 29, 32, 33, 34



Schoolcraft Township, Sections 13, 14, 15, 22, 23, 24

