



1978

3-An Archaeological Survey of Allegan County, Michigan: 1978 Multiple Transect Survey in the Middle Kalamazoo River Valley

William M. Cremin
Western Michigan University

Jean F. Marek
Western Michigan University

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DEPARTMENT OF ANTHROPOLOGY
WESTERN MICHIGAN UNIVERSITY

ARCHAEOLOGICAL REPORT NO. 3
1978

AN ARCHAEOLOGICAL SURVEY OF ALLEGAN COUNTY,
MICHIGAN: 1978 MULTIPLE TRANSECT SURVEY
IN THE MIDDLE KALAMAZOO RIVER VALLEY

WILLIAM M. CREMIN
JEAN F. MAREK

ACKNOWLEDGEMENTS

This project has been funded through a grant from the United States Department of Interior, National Park Service, under the provisions of the National Historic Preservation Act of 1966, through the Michigan History Division, Michigan Department of State.

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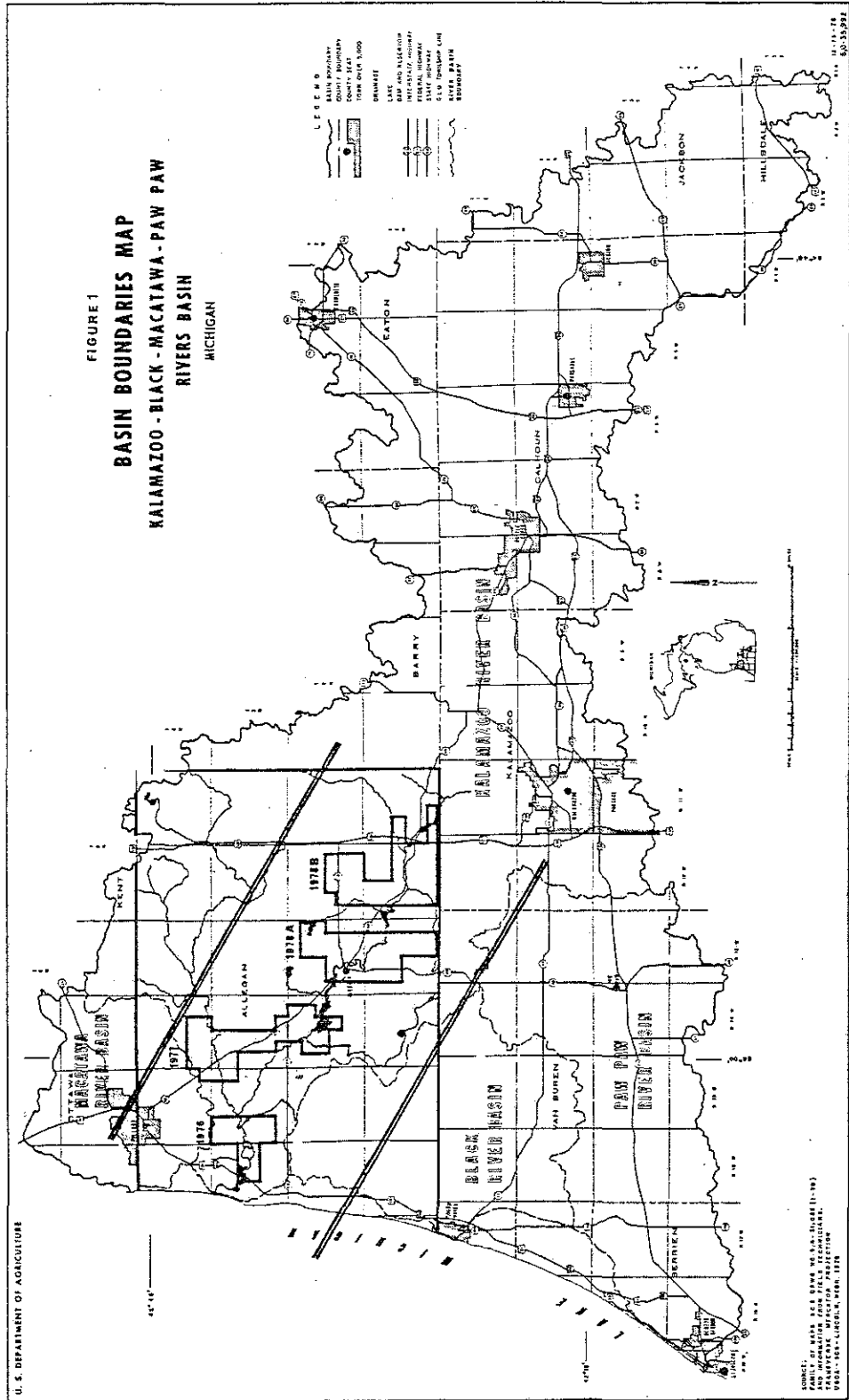
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Valley Chapter, these survey programs have accounted for the vast majority of the 613 sites which are currently recorded in Allegan County.

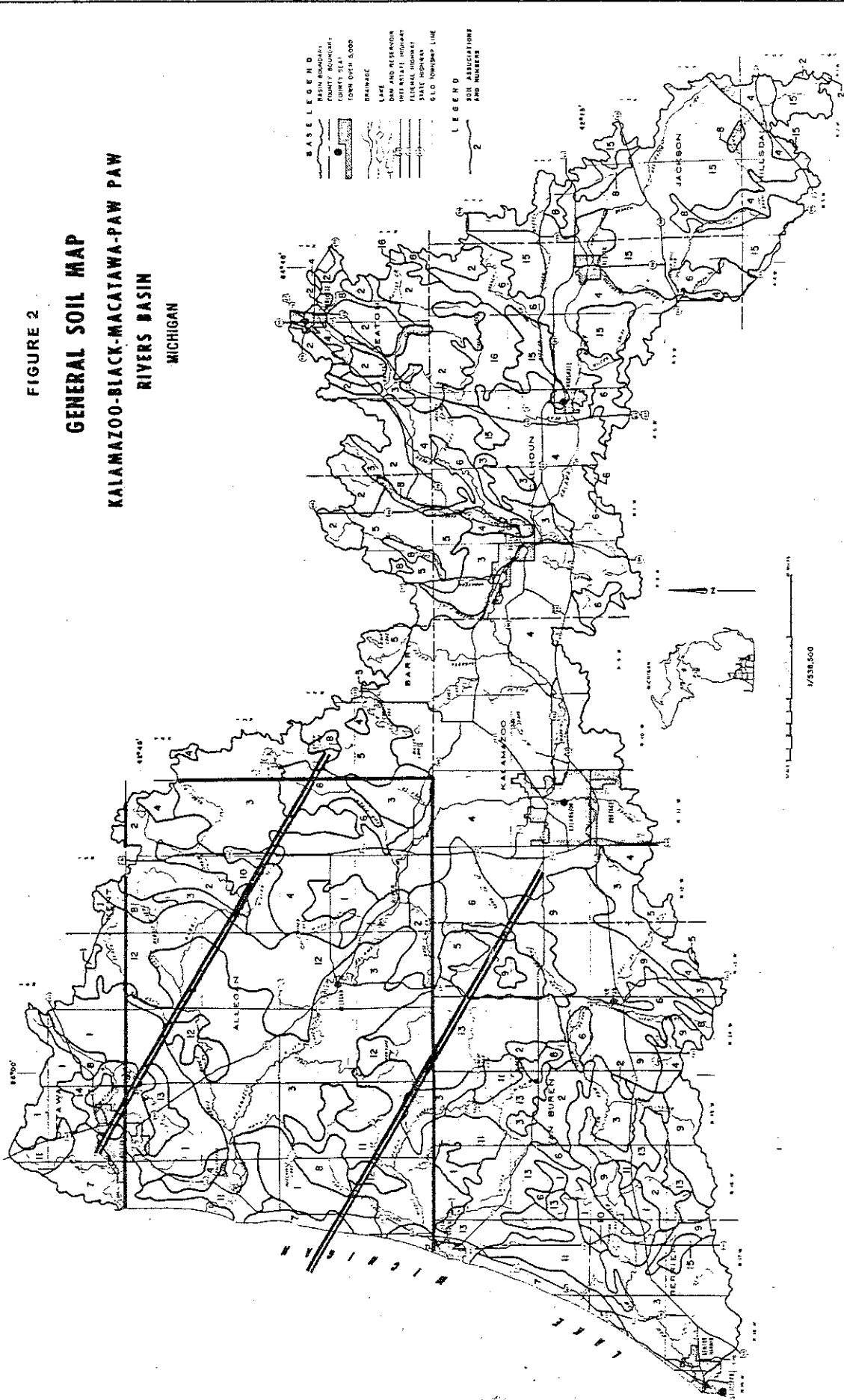
Cremin's initial efforts to correlate the distribution of sites with aspects of the environment were undertaken in conjunction with the 1976 field school. While the field school was excavating the multicomponent Hacklander site, located about 7 km above the mouth of the Kalamazoo River, a survey team began to investigate a 41 km² area encompassing the immediate site environs and extending upstream as far as the confluence of the Kalamazoo and Rabbit rivers (Figure 1). Twelve km² of this transect were evaluated and 25 new sites added to the 16 which had been previously recorded (Cremin 1978b; Neusius 1978).

During the past season, portions of the 1976 transect were revisited by survey teams under the direction of Garland. Eleven units lying within the transect were included in a stratified random sample of quarter-sections (64.75 ha) drawn from the 2 westernmost tiers of townships in the county. Surveyors on this occasion recorded 67 new sites, bringing the total now known for this area to 108 sites (Garland and Kingsley n.d.).

In 1977, as in the previous year, Cremin's Kalamazoo Basin Survey was integrated with the annual field school, but with the addition of grant support for survey from the Michigan History Division. The availability of external funding, together with our desire to implement more rigorous survey procedures, resulted in much better coverage during this season than had been realized in 1976.

The area investigated in 1977 is located 9 km upstream from the 1976

FIGURE 2
GENERAL SOIL MAP
KALAMAZOO-BLACK-MACATAWA-PAW PAW
RIVERS BASIN
MICHIGAN



transect and included an area of 93 km², or the equivalent of one township (Figure 1). This transect was stratified according to the distribution of soils plotted on a recent map of the basin prepared by the USDA-Soil Conservation Service (1974; Figure 2) and, secondarily, by rank ordering of streams. Following Lovis (1976), the quarter-section was established as the sampling unit and a 40% simple random sample of all units occurring within each of 6 strata was generated. Of 38 km² included in the sample, more than 14 km² were evaluated, with coverage by stratum varying from 32% to 47%, or 40% on the average. For our efforts we realized an addition of 62 sites to the 13 which had previously been known to occur in this portion of the valley (Cremin 1978b; Cremin, Hoxie and Weston 1978).

This year the Kalamazoo Basin Survey moved upstream into the middle valley almost to the Allegan-Barry-Kalamazoo county lines, where multiple transects were established for investigation simultaneously by 2 teams of surveyors (Figure 1). As in past years, this research was carried out in conjunction with the WMU archaeological field school, and for the second year we received grant support for survey from the Michigan History Division. There now follows a report of the activities of the 1978 Kalamazoo Basin Survey, together with a brief description of the project area and the 157 archaeological sites which were recorded during the 6 week field project.

2. The 1978 Project Area

During the 1978 field season the Kalamazoo Basin Survey moved upstream into the middle valley, establishing and investigating 2 survey transects between Lake Allegan on the west and the Allegan-Barry-Kalamazoo county lines on the east. Transect A (Figure 3) and Transect B (Figure 4) each encompass 93 km² of the valley and its adjacent uplands, and are centered on the river communities of Allegan and Otsego, respectively. As in past years, transect boundaries are purposefully irregular, reflecting our attempts to include within each sampling universe an area providing as much ecological diversity as possible.

In contrast to the 1977 study area (Cremin, Hoxie and Weston 1978), located immediately below Lake Allegan in an area of nearly level to rolling sand deposits laid down by glacial lakes (Figure 5) and largely dominated by oak-pine forest cover, the middle valley exhibits more relief and also supports a more diverse flora (Cremin 1978a; 1978b). Morainal features dominate on uplands and the course of the Kalamazoo River conforms to former glacial outwash channels (Transect A) or inland lake deposits (Transect B). Conifers, so prevalent in the lower valley, are here largely confined to low, wet areas supporting bog communities. Extensive marshland and/or swamp associations are comparatively rare. The mesophytic beech-maple community is usually the climax association on the valley floor, and the adjacent uplands are dominated by the xerophytic oak-hickory forest. A final distinguishing characteristic of the middle valley is the presence of numerous

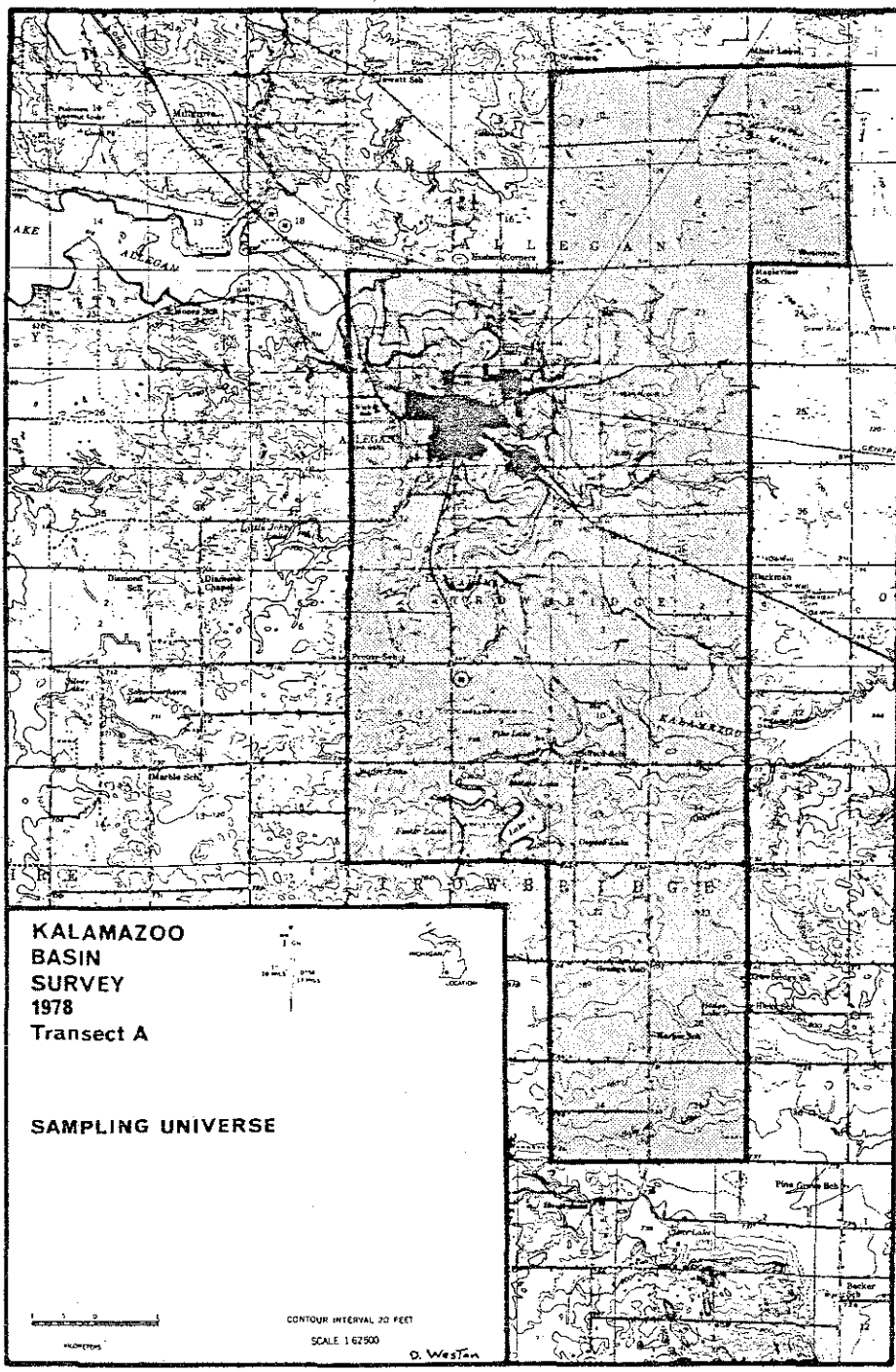


Figure 3

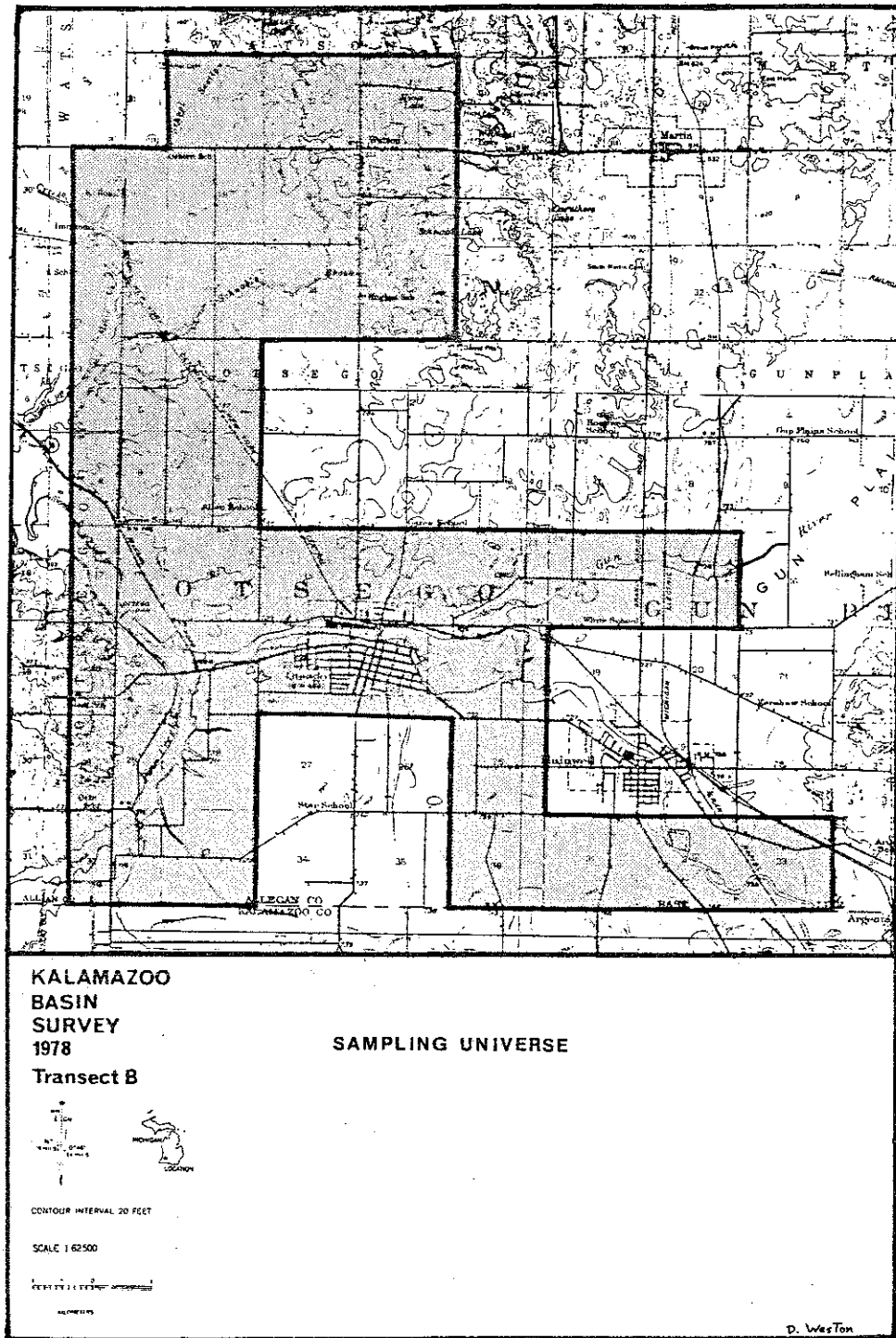
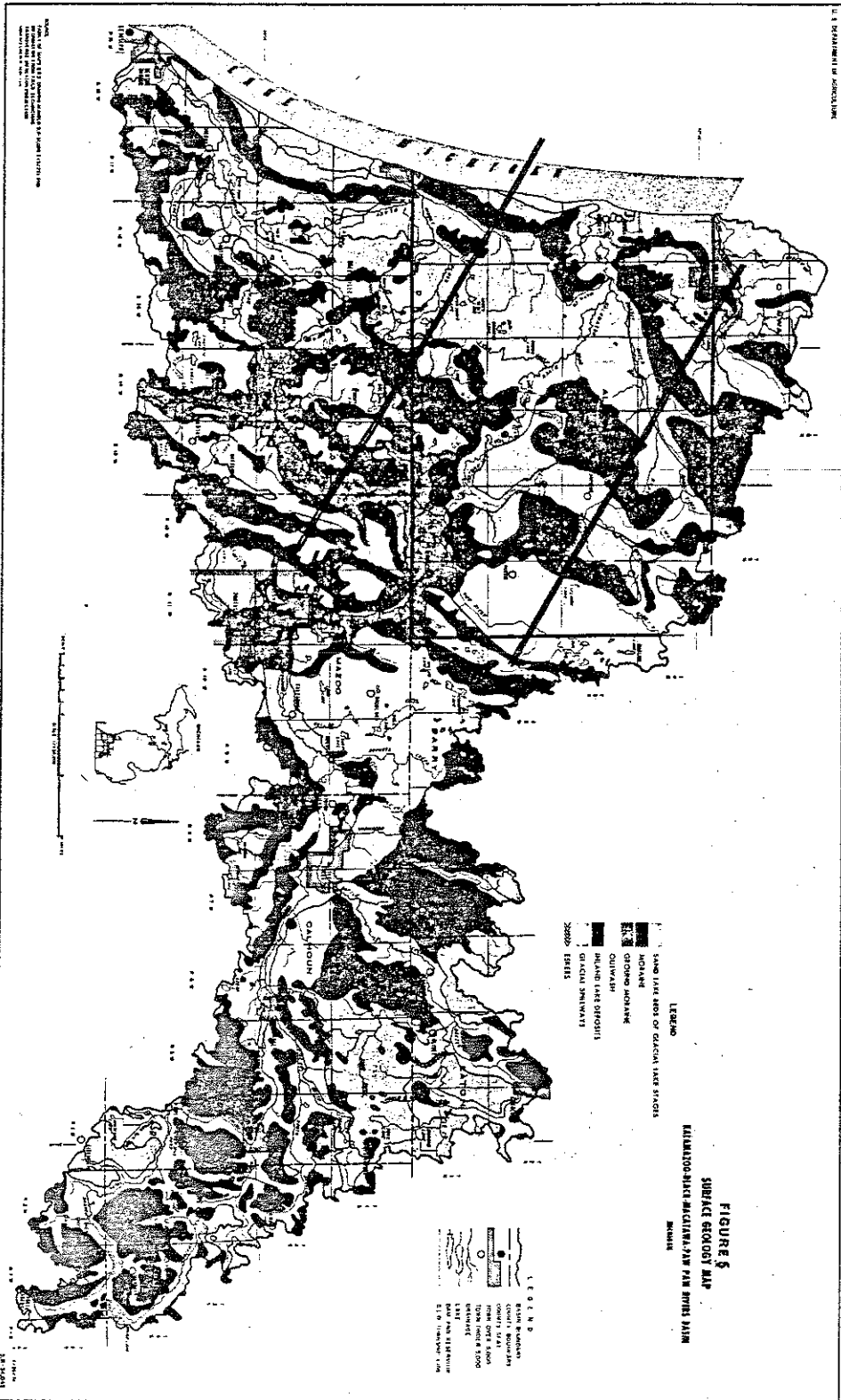


Figure 4



kettle lakes and also many small bodies of water which lack outlets. Generally, given the density of oak-hickory species in the 1978 project area, it is reasonable to assume that the prehistoric residents of the Kalamazoo Basin found the plant resource potential of this area to be far greater than that of the lower valley.

Transect A commences at the Allegan-Van Buren county line and extends in a northerly direction to Miner Lake, providing an overall length of 17.7 km. East-west dimensions vary from 3.2 to 6.4 km, with the average width of the transect being 5.3 km. Within this transect, inaccessible stream bottoms constitute 33 km² and the area potentially available for pedestrian survey aggregates 60 km².

Transect B, which is much more irregular than Transect A, begins at the Allegan-Kalamazoo county line and extends in a northerly direction to Hicks Lake, providing an overall length of 14.5 km. East-west dimensions range between 3.2 and 12.9 km, with the mean width of the transect being 4.4 km. Within Transect B only 6 km² were judged to be inaccessible due to the presence of water; 87 km² were determined to be potentially available for walk-over survey.

3. Previous Archaeological Research in the Project Area

As was the case in 1977, little archaeological field work has been undertaken in the project area. An examination of the literature and site files in the Department of Anthropology revealed only 6 sites recorded for the 2 transects, with an additional 3 sites nearby (Figures 6 and 7). Of these, only the Nahans #2 site (A37-Figure 6; KBS-78-A93) has been tested. Limited excavations were undertaken at the site by Mr. Lawrence Dorothy and members of the Kalamazoo Valley Chapter of the Michigan Archaeological Society in 1973. On the basis of data recovered it would appear that both Archaic and Historic components are represented at Nahans #2 (Jerrel Sorensen, personal communication).

Whenever possible, survey teams revisited sites known to exist within the limits of the transects. For these, surveyors have reported no change in status, and archaeologists at WMU are not now contemplating additional testing of the sites.

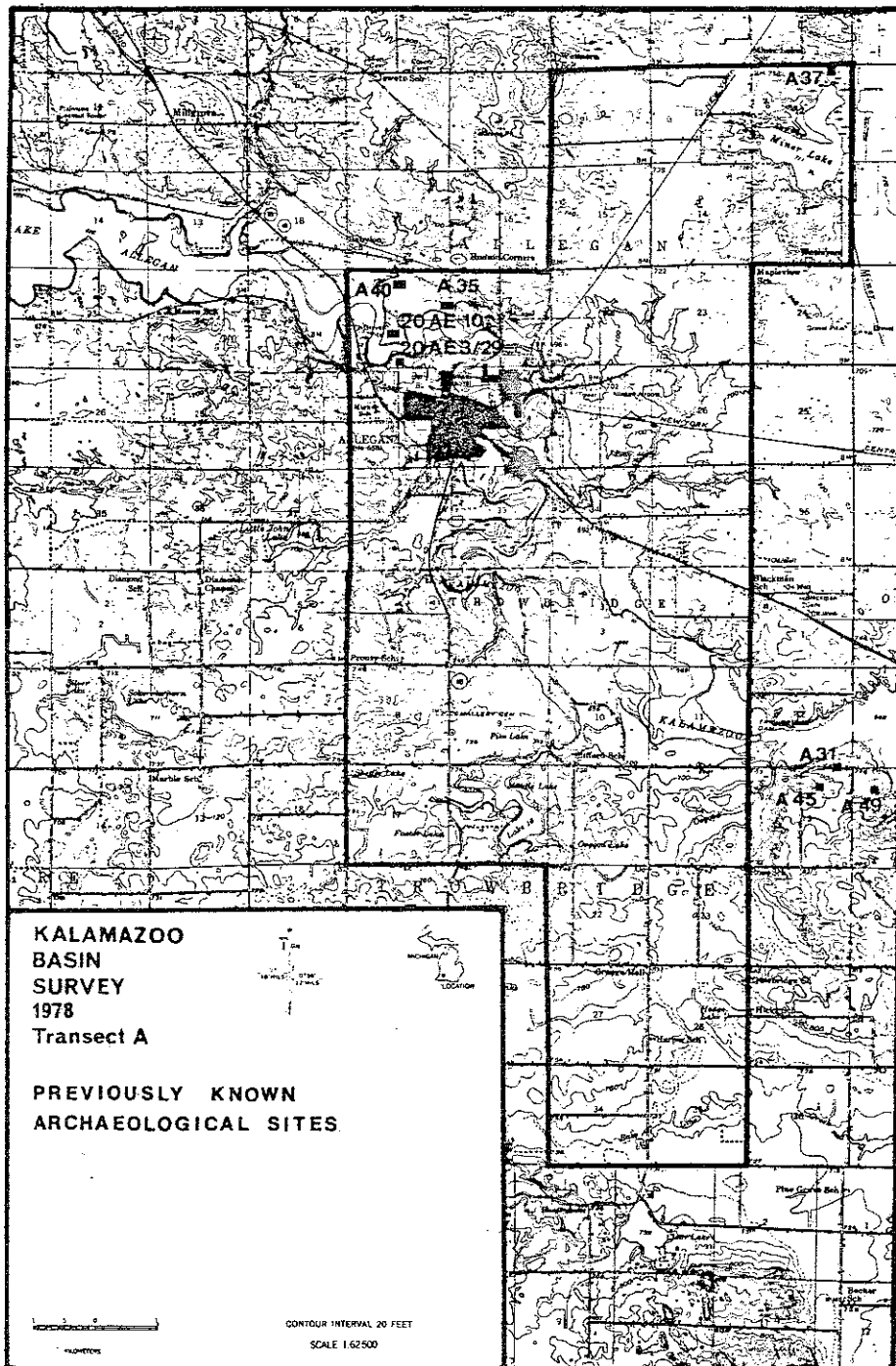


Figure 6

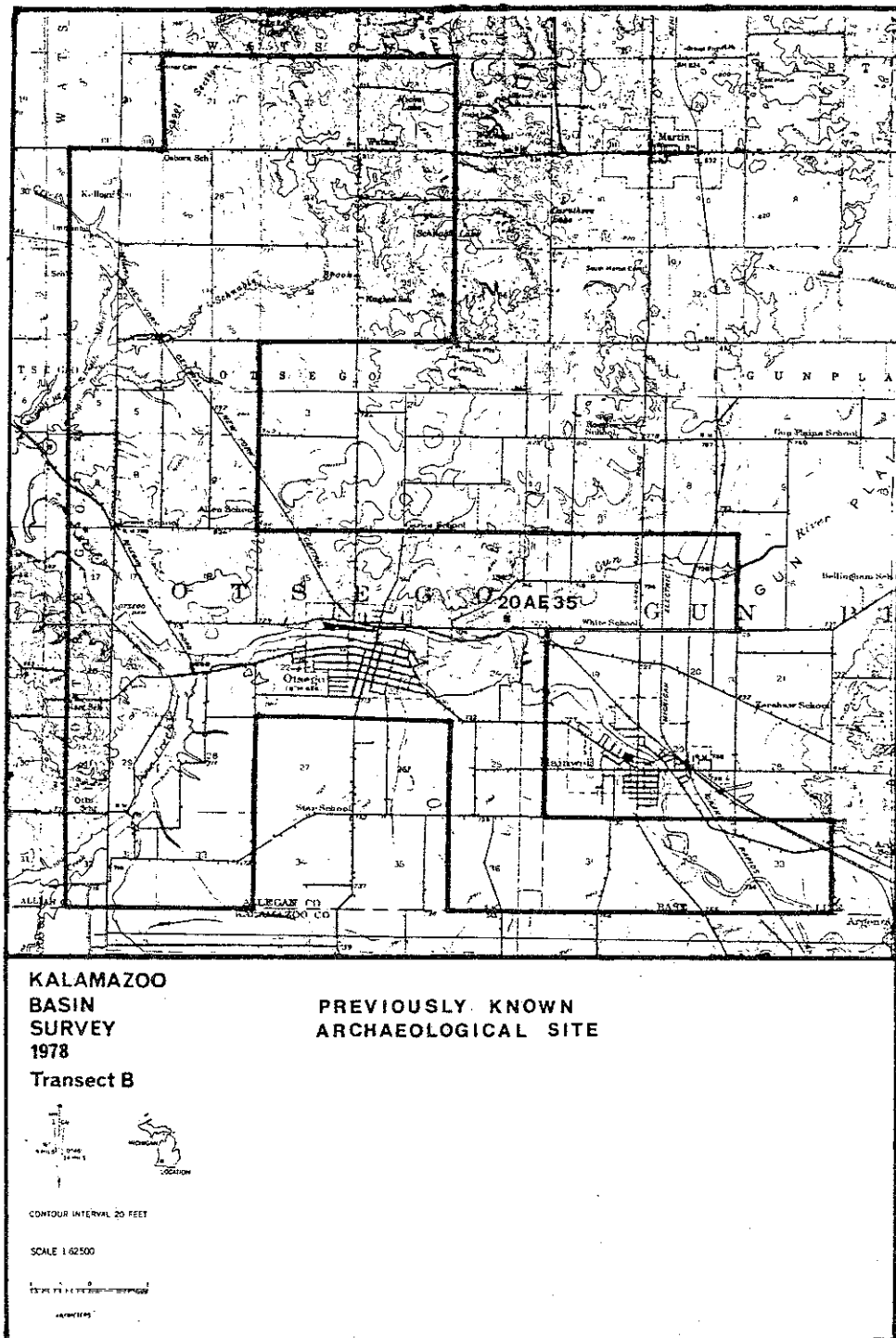


Figure 7

4. Site Survey Methodology

A. Research Design

To facilitate systematic investigation of the project area in the 6 field weeks allotted, both survey transects were stratified according to the distribution of soils on the USDA-Soil Conservation Service (1974) map of the basin and, secondarily, by rank ordering of all permanent streams. Soils occurring within the transects are assigned to 6 associations:

Blount-Morley (1)

Soils of this association are medium textured and lie on nearly level to gently sloping topography. They are developed in predominantly clay, clay loam and silty clay glacial till. Internal drainage ranges from well-drained to poorly drained and their permeability rates are low. Native vegetation consists principally of mixed hardwoods and oaks, with the potential productivity being low to medium for Blount and very high for Morley soils. Soils of this association occur only in the northern portion of Transect B and constitute 23.3 km² (25%) of that transect.

Miami-Conover (2)

These are also medium textured soils that lie on gently sloping to rolling topography. They are developed in predominantly loam, silt loam and clay loam glacial till. Internal drainage varies from well-drained to poorly drained and the permeability rates are medium. Miami soils support oak, ash, walnut, cherry, basswood, maple and other hardwoods. Potential productivity for these soils is rated as medium. Conover soils are associated with mixed hardwoods, especially beech, maple, elm and hickory. Their potential productivity ranges from low to

medium. The soils of this association occur in the southern portion of Transect A and the southwest corner of Transect B, aggregating 15.5 km² (17%) in the former and 10.4 km² (11%) in the latter area.

Oakville-Spinks-Oshtemo (3)

Soils of this association are coarse textured and lie on nearly level to steep topography. They are developed in sand, sandy loam, stratified sand and loamy sand and stratified sand and gravel, occurring primarily on old lake beds, outwash plains and moraines. They are well-drained soils with high permeability rates. Conifers, mixed hardwoods and oaks comprise the arboreal vegetation. Woodland suitability information for the soils of this association indicates only that the potential productivity for mixed hardwoods and oak is low to medium. This association is widespread in Transect A, constituting 49.2 km² (53%) of this sampling universe.

Kalamazoo-Oshtemo (4)

These are also coarse textured soils lying on level to gently sloping topography. They are developed in sand, sandy loam and clay loam overlying stratified sand and gravel. They are well-drained with medium to high permeability rates. Associated with these soils in the Middle Kalamazoo Valley is the climax oak-hickory forest, together with black walnut, ash, poplar and other deciduous species. The potential productivity of these soils is very high. Kalamazoo-Oshtemo soils constitute 39.5 km² (42%) of Transect B.

Brady-Gilford (6)

Course textured soils on level to depressional topography. They are developed in sandy loam to sandy clay loam outwash material overlying stratified sand and gravel. They are poorly drained with medium permea-

bility rates. In depressional features these soils support various marsh grasses. Dominant arboreal species include the elm-ash-maple community of the swamp forest. Woodland suitability studies indicate that the potential productivity for Brady soils is low to medium, and for the Gilford soils it is low to very low. This association is confined to the Gun River drainage, aggregating a mere 5.2 km² (6%) of the area in Transect B.

Miami-Hillsdale (12)

Soils comprising this association are medium to coarse in texture and are found on rolling to steep topography. They are developed in glacial drift and till, ranging from sandy loam, loam and silt loam, to sandy clay loam. They are well-drained with medium permeability rates. Miami-Hillsdale soils are favorable to the growth of mixed hardwoods and oak, with the potential productivity being high to very high for hardwoods and high for the oaks. These soils occupy the northern one-third of Transect A, totaling 28.5 km² (31%) of the area. In Transect B this association occupies 14.9 km² (16%) of the Kalamazoo Valley and its adjacent uplands in the west central portion of the study area.

Upon completion of the soil map for the 2 transects, the area occupied by each association was further subdivided on the basis of whether or not permanent streams were present and, if present, their rank order relative to one another. For those portions of a given association lacking permanent streams, the number of the soil association (e.g. Blount-Morley-1) has been used to distinguish the sampling stratum. Areas of a soil association adjacent to streams have been assigned 2 numbers; the first number referencing the soil association and the second indicating the rank order of the proximal stream. For example, areas of soil assoc-

ciation 4 (Kalamazoo-Oshtemo) bordering on the Kalamazoo River (a rank order 1 stream) in Transect B are assigned to sampling stratum 4-1. For areas of this association adjacent to the Gun River (a rank order 2 stream) the designation is 4-2.

In aggregate, 9 sampling strata are recognized for Transect A (Figure 8) and 14 have been delineated for Transect B (Figure 9) on the basis of the aforementioned criteria. For Transect A these are (with the proportion of the transect occupied by each):

- Stratum 2: This stratum consists of portions of the Miami-Conover association which do not occur in close proximity to any permanent stream. It constitutes 9.7 km² (10%) of the transect.
- Stratum 2-2: Same association as above, but including areas adjacent to tributaries of the Kalamazoo River. This stratum aggregates 3.2 km² (3%) of Transect A.
- Stratum 2-3: Same as above, but designating areas which are near 3rd order streams. This stratum constitutes 2.6 km² (2%) of the transect.
- Stratum 3: Areas of Oakville-Spinks-Oshtemo soils which are not found near any permanent streams. This stratum comprises 24 km² (26%) of the transect.
- Stratum 3-1: Same as above, but with areas bordering on the Kalamazoo River. This stratum aggregates 18.7 km² (20%) of the transect.
- Stratum 3-2: Same as above, but designating areas adjacent to streams tributary to the Kalamazoo River. It aggregates 6.5 km² (7%) of the transect.

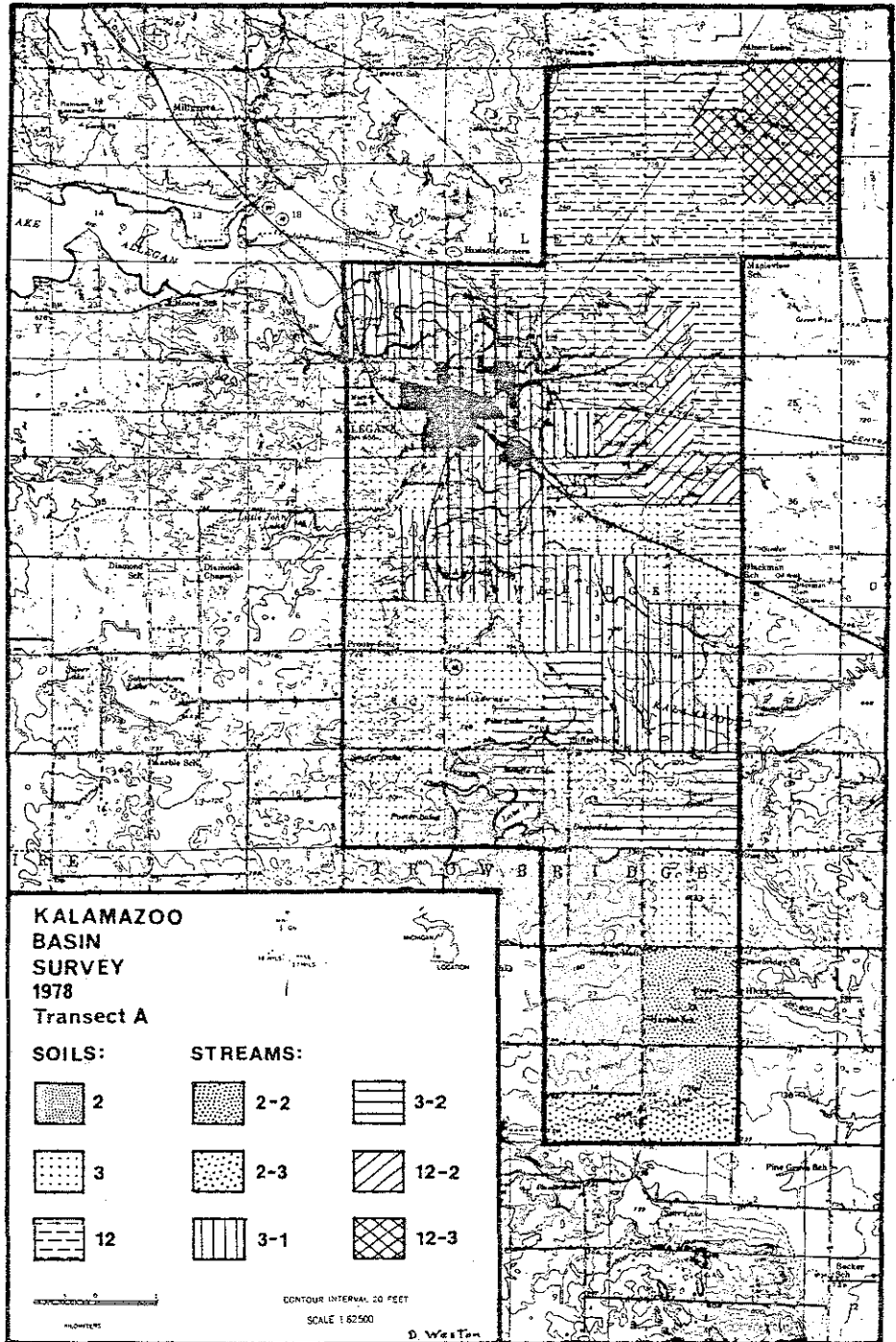


Figure 8

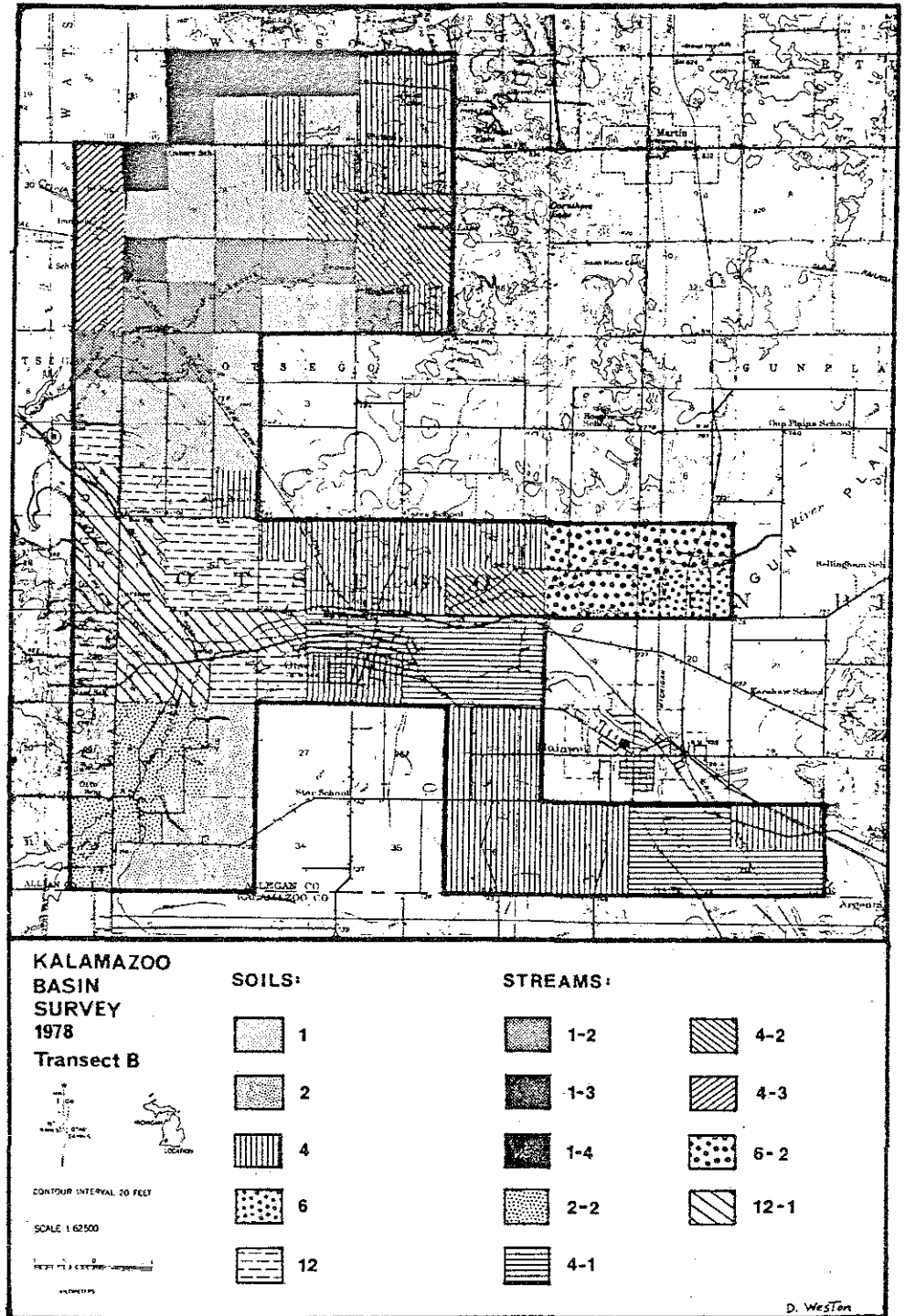


Figure 9

- Stratum 12: This stratum consists of Miami-Hillsdale soils which are not found in close proximity to any permanent streams. It constitutes 20.1 km² (22%) of the transect.
- Stratum 12-2: Same as above, but including areas adjacent to tributaries of the Kalamazoo River. This stratum aggregates 3.9 km² (4%) of the transect.
- Stratum 12-3: Same as above, but designating areas of the Miami-Hillsdale association which are proximal to 3rd order streams. This stratum comprises 4.5 km² (5%) of Transect A.

For Transect B the sampling strata (together with the proportion of the transect occupied by each) are as follows:

- Stratum 1: This stratum consists of Blount-Morley soils which do not occur in close proximity to any permanent streams. It aggregates 12.3 km² (13%) of the transect centered on Otsego.
- Stratum 1-2: Same as above, but including areas which border tributaries of the Kalamazoo River. In total, 6.5 km² (7%) of the transect are assigned to this stratum.
- Stratum 1-3: Same as above, but including only a single quarter-section which is proximal to a 3rd order stream. This stratum constitutes a mere 0.6 km² (>1%) of the transect.
- Stratum 1-4: Same as above, but designating areas bordering 4th order streams. This is the only occurrence of a 4th order sampling stratum in the 1978 project area. It comprises 3.9 km² (4%) of Transect B.
- Stratum 2: Areas of Miami-Conover soils which are removed from permanent streams. It constitutes 5.8 km² (6%) of the

transect.

- Stratum 2-2: Same as above, but including areas of this soil association which are proximal to tributaries of the Kalamazoo River. This sampling stratum comprises 4.6 km² (5%) of the transect.
- Stratum 4: Portions of the Kalamazoo-Oshtemo association which do not occur near any permanent streams. This stratum aggregates 23.3 km² (25%) of the transect.
- Stratum 4-1: Same as above, but designating areas which are adjacent to the Kalamazoo River. It constitutes 9.1 km² (10%) of the transect.
- Stratum 4-2: Same as above, but designating areas of Kalamazoo-Oshtemo soils which border on 2nd order streams. It comprises 4.5 km² (5%) of the transect.
- Stratum 4-3: Areas of the above association which are proximal to 3rd order streams. This stratum occupies 2.6 km² (3%) of Transect B.
- Stratum 6: Brady-Gilford soils which are found in areas lacking permanent streams. This stratum constitutes 1.3 km² (1%) of the transect.
- Stratum 6-2: Same as above, but including areas which border on Gun River, a major tributary of the Kalamazoo. This sampling stratum aggregates 3.9 km² (4%) of the transect.
- Stratum 12: Miami-Hillsdale soils which are removed from permanent streams. This stratum constitutes 7.8 km² (8%) of the transect.
- Stratum 12-1: Same as above, but designating those areas of this

association which border on the Kalamazoo River. It comprises 7.1 km^2 (8%) of the transect.

Following Lovis (1976), the quarter-section (64.75 ha) was established as the unit of area by which both survey transects would be sampled. Initially, a 40% stratified random sample of 144 quarter-sections was generated. However, the number of units targeted for investigation actually exceeds 40% if one considers as the total area the sum of those quarter-sections which were accessible to surveyors. Because of the presence of numerous lakes and streams, only 93 units in Transect A and 135 units in Transect B were available for intensive pedestrian survey.

In Transect A, 59 quarter-sections were targeted for evaluation. In 25 field days the 5-person survey team visited a total of 66, or 71% of the accessible sampling units (Figure 10). Of 38.2 km^2 included within the sample, more than 16.6 km^2 (44%) were intensively surveyed, with coverage by stratum ranging from 36.5% to 109.5%, or 51.4% on the average. Table 1 summarizes surveyor coverage in Transect A by stratum and random sampling unit. We realized an addition of 113 new sites (Figure 11) to the 8 which had been previously recorded for the transect and adjacent areas.

In Transect B, 57 quarter-sections were selected for investigation. In 25 field days the 5-person team working in this area visited a total of 58, or 43% of the accessible units (Figure 12). Of 36.9 km^2 included within this sample, almost 16.1 km^2 (43.6%) were evaluated, with coverage by stratum ranging between 34% and 59.2%, or 45.6% on the average. Table 2 provides information on surveyor coverage in this transect. Here, 44 new sites (Figure 13) were recorded, bringing the total number of sites now known to occur in this area to 45.

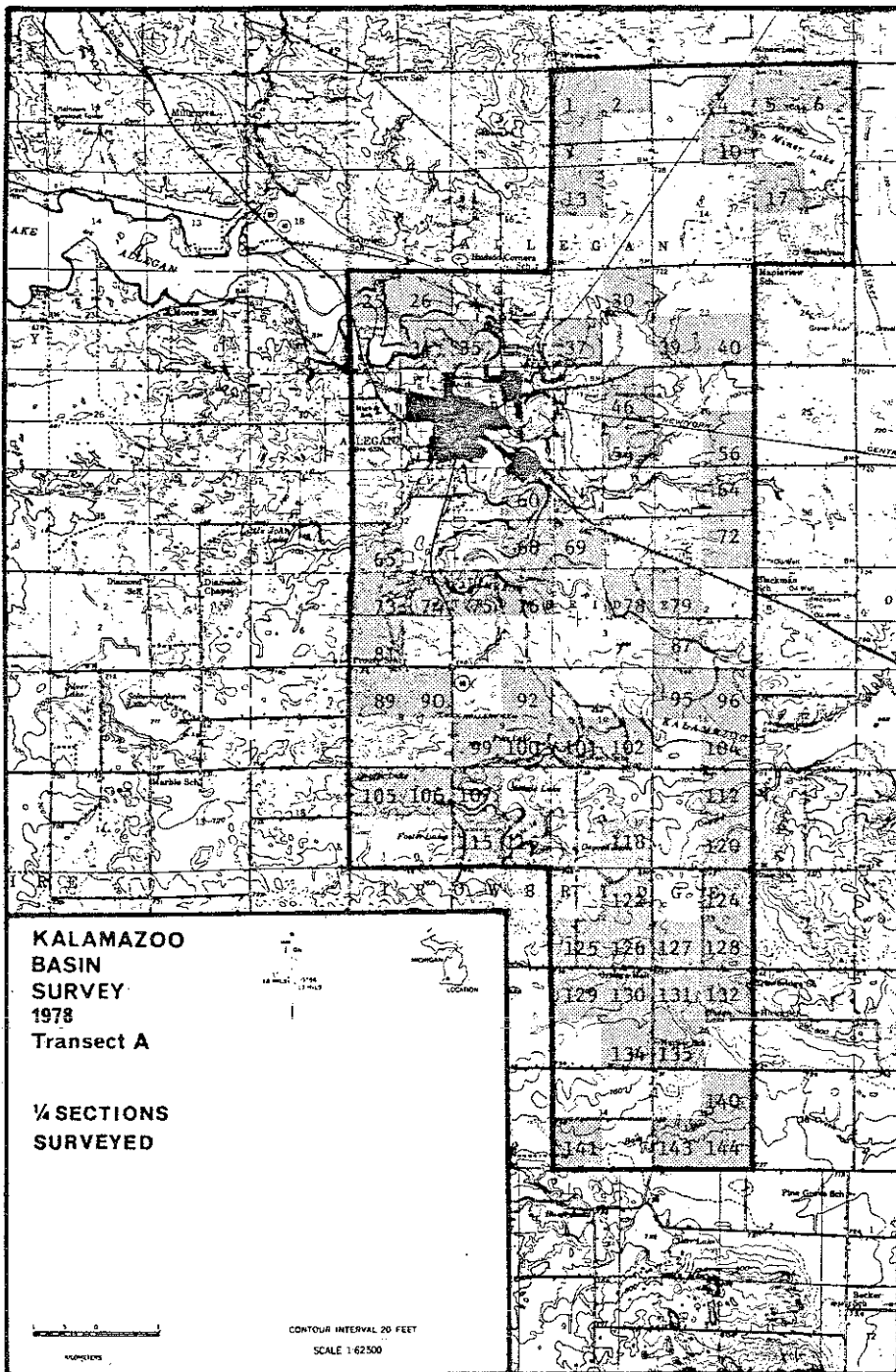


Figure 10

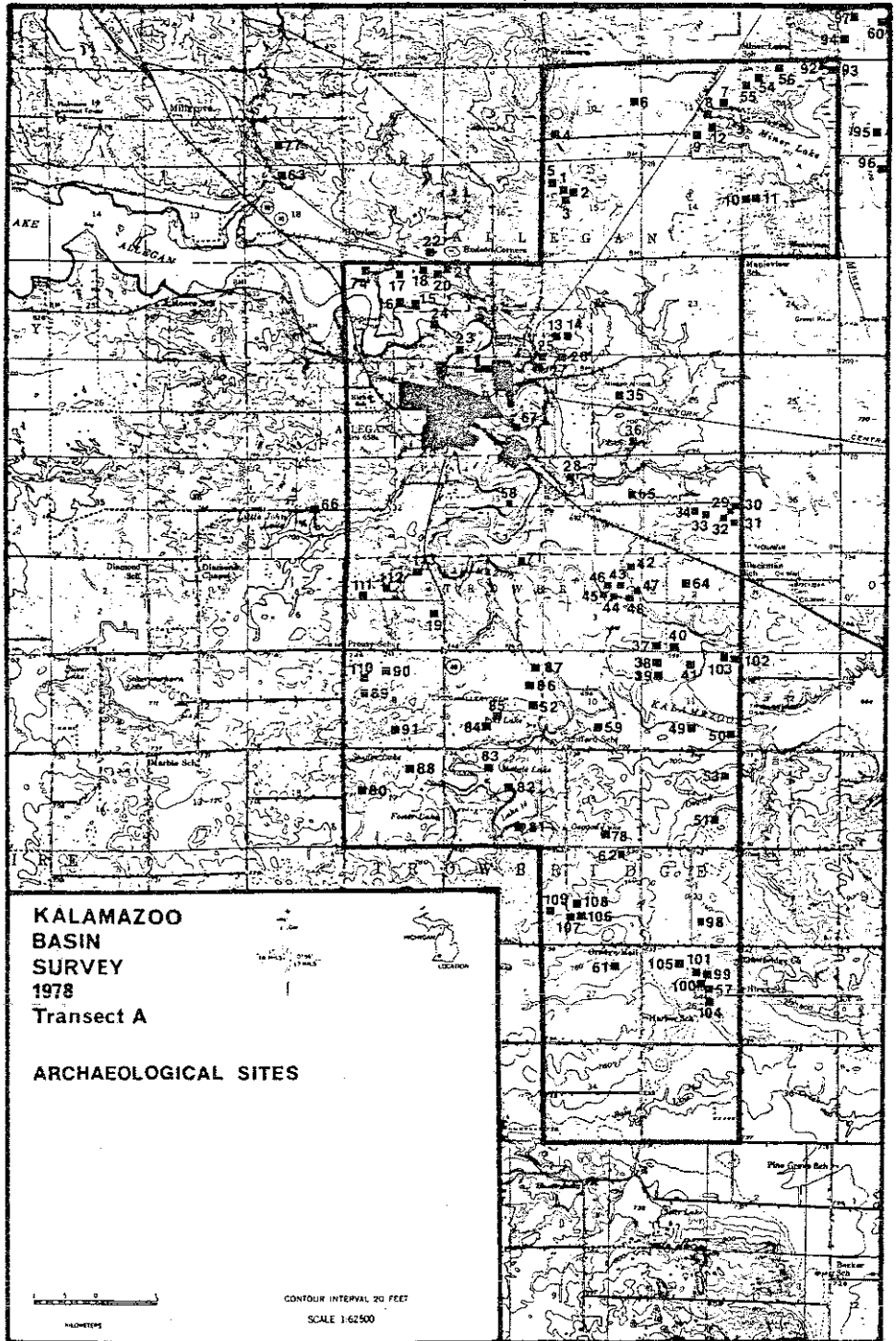


Figure 11

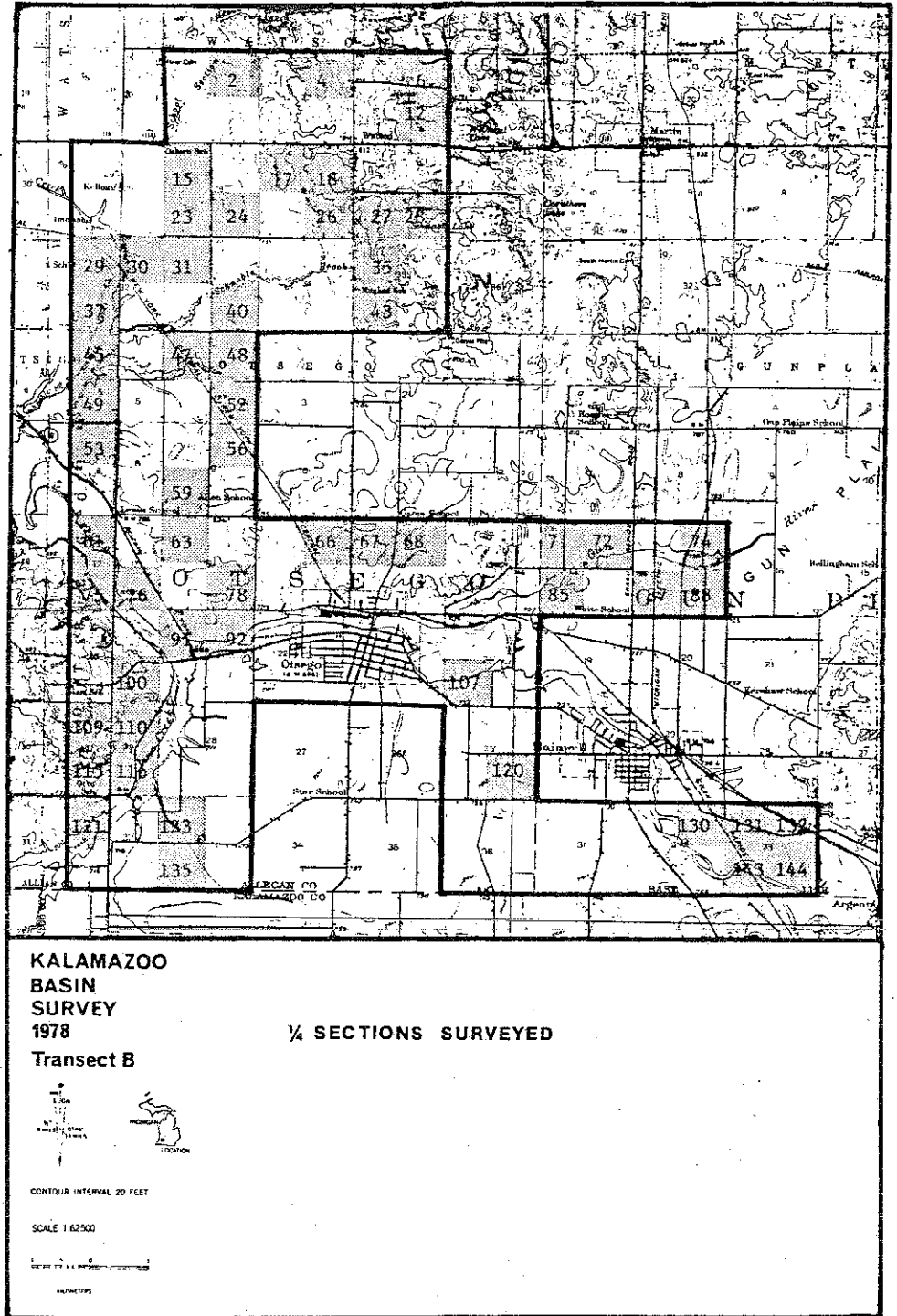


Figure 12

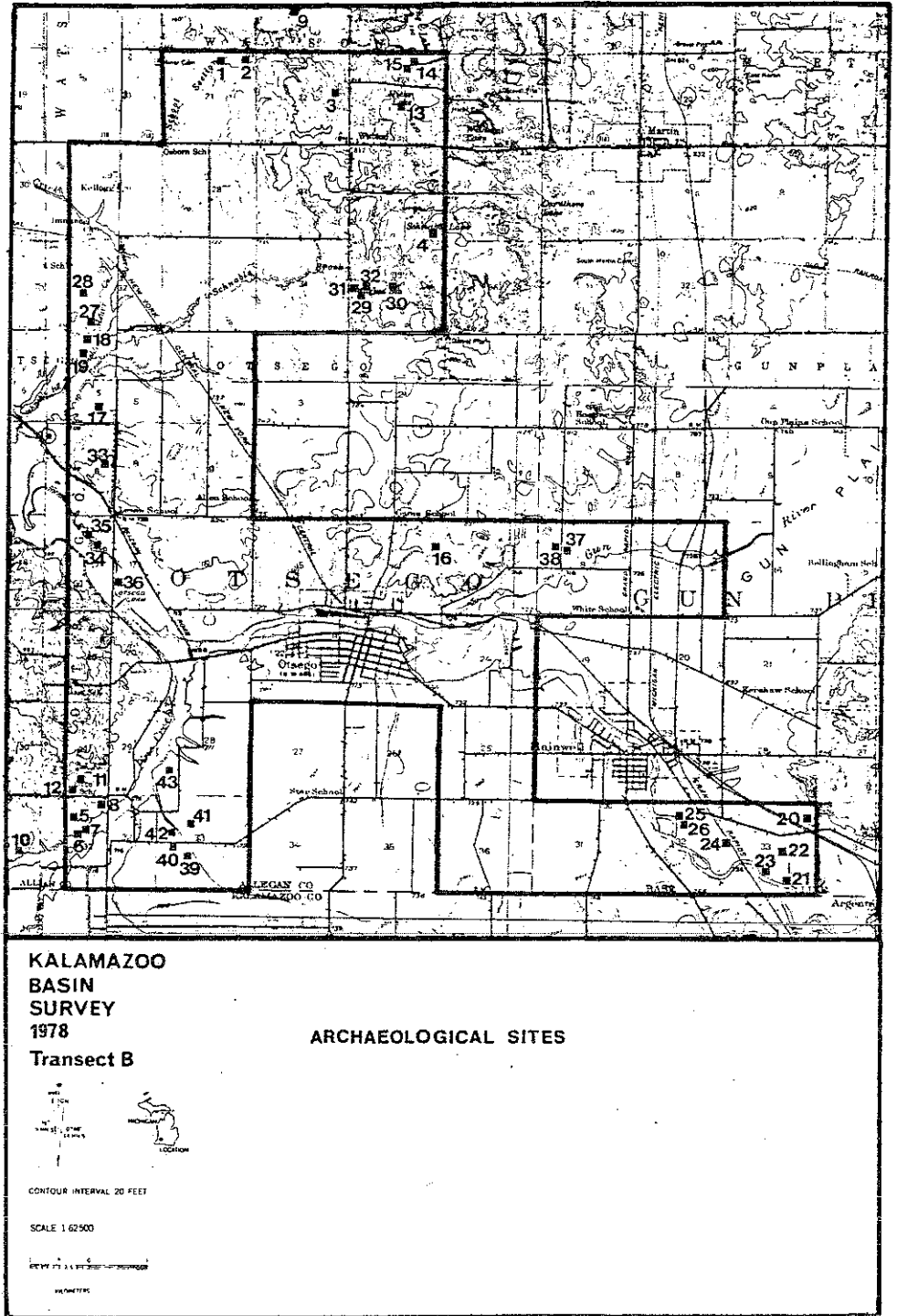


Figure 13

B. Field Procedures

Each transect was investigated in the same manner, with the 5-person survey party working in each area focusing on gaining access to parcels of land with good surface visibility. In those situations where the current land use pattern reflected agricultural activities and fields were available for evaluation, the team formed a line at one end of the area designated for survey with the individuals spaced at 25 m intervals. The team then moved through the field following the furrows in a zig-zag fashion. Each person was instructed to first walk 10 paces to the left at a 45° angle to the line of movement, and then back to the right across the line of movement at an angle of 90° for 20 paces. This pattern of movement was maintained until all team members reached the far end of the field, where they shifted 25 m beyond the individual at the end of the line and commenced movement in the opposite direction. This procedure was repeated until the entire parcel had been thoroughly covered.

In more restricted areas and on landforms lacking good, continuous surface visibility, systematic coverage was not possible. In these situations the team was instructed to disperse over the parcel and seek out visible areas which could be evaluated. In addition, minimal use was made of soil samplers to probe beneath the surface in likely areas of low surface visibility. For example, the team working in Transect A utilized a 1 m core sampler to test a suspected mound feature located in a forested parcel. This device allowed them to rather quickly ascertain that the feature was indeed artificial, but that it represented the remains of a modern gravel extraction operation rather than a prehistoric feature. Finally, in the event that a sur-

veyor observed cultural debris while walking an area, the whole team assembled in this locale in an attempt to precisely delimit the extent of scatter and recover any diagnostic material present.

Upon completion of each quarter-section, the team discussed any significant findings or observations and appropriate entries were made in the daily log. Log entries commonly reference the local topography, drainage pattern, vegetational cover, sites discovered, the number of hectares surveyed and any problems that had been encountered which might adversely affect the quality of our data. In the event that a site had been recorded, a specially prepared form was filled out and a sketch map drawn of the area. In addition, informant sites were revisited whenever possible and private collections of artifacts from these sites were examined and photographed.

C. Laboratory Procedures

All cultural material collected during the survey was examined, cleaned and accessioned into the archaeological collections housed in the WMU Department of Anthropology. An inventory of the contents of surface collection bags was added to the site survey forms used in the field, in order that it would not be necessary to prepare separate catalog forms. All relevant data about each site were then entered on the form utilized by the University of Michigan, and at this time local site numbers (KBS-78-) were changed to reflect the numbering system used by the State. Following completion of the appropriate forms, the cataloged material was placed in the collections for future reference and study.

Table 1: Survey Coverage of Transect A by Stratum and Random Sampling Unit (¼ Section or 64.75 ha)

Stratum 2: N= 15 (6 targeted) Objective-388.50 ha

<u>RS#</u>	<u>Coverage</u>	
107	18.6	
115	40.5	
122	44.5	
134	28.3	
126	16.2	
130	8.1	
125	32.4	
<u>116</u>	<u>.4</u>	
8	189.0 ha	Achieved-48.6%

Stratum 2-2: N= 5 (2 targeted) Objective-129.50 ha

<u>RS#</u>	<u>Coverage</u>	
131	48.8	
135	32.4	
132	48.6	
<u>140</u>	<u>12.1</u>	
4	141.9 ha	Achieved-109.5%

Stratum 2-3: N= 4 (2 targeted) Objective-129.50 ha

<u>RS#</u>	<u>Coverage</u>	
143	24.3	
144	16.2	
<u>141</u>	<u>20.2</u>	
3	60.7 ha	Achieved-46.9%

Stratum 3: N= 37 (14 targeted) Objective-906.50 ha

<u>RS#</u>	<u>Coverage</u>	
92	24.3	
128	24.3	
124	33.8	
73	32.4	
106	6.1	
89	28.3	
96	24.3	
90	46.5	
79	28.3	
127	38.4	

(continued on next page)

99	8.1	
69	2.0	
81	48.6	
<u>65</u>	<u>4.1</u>	
14	349.5 ha	Achieved-38.6%

Stratum 3-1: N= 29 (12 targeted) Objective-777 ha

<u>RS#</u>	<u>Coverage</u>	
75	16.2	
95	27.1	
26	48.6	
74	40.5	
78	27.1	
35	28.3	
60	8.0	
34	20.2	
104	20.2	
25	24.3	
76	12.1	
105	.4	
68	.4	
<u>102</u>	<u>10.1</u>	
14	283.5 ha	Achieved-36.5%

Stratum 3-2: N= 10 (4 targeted) Objective-259 ha

<u>RS#</u>	<u>Coverage</u>	
120	32.4	
100	24.3	
118	48.6	
101	10.1	
<u>112</u>	<u>.4</u>	
5	115.8 ha	Achieved-44.7%

Stratum 12: N= 31 (13 targeted) Objective-841.75 ha

<u>RS#</u>	<u>Coverage</u>	
4	16.2	
2	24.3	
40	24.3	
37	56.7	
7	20.2	
13	32.4	
30	34.4	
72	55.7	
46	1.0	

(continued on next page)

1	32.4	
<u>56</u>	<u>40.5</u>	
11	338.1 ha	Achieved-40.2%

Stratum 12-2: N= 6 (3 targeted) Objective-194.25 ha

<u>RS#</u>	<u>Coverage</u>	
54	30.2	
64	44.5	
<u>39</u>	<u>26.3</u>	
3	101.0 ha	Achieved-52%

Stratum 12-3: N= 7 (3 targeted) Objective-194.25 ha

<u>RS#</u>	<u>Coverage</u>	
10	16.2	
17	40.5	
5	24.3	
<u>6</u>	<u>8.1</u>	
4	89.1 ha	Achieved-45.9%

Totals:

Sampling Universe	144 quarter sections (93 units accessible)
Targeted Units	59 quarter sections (3,820.25 ha)
Surveyed Units	66 quarter sections, with coverage of 1,668.60 ha (44%)

Summary by Stratum

Stratum 2:	8 quarter sections /189.0 ha (48.6%)
Stratum 2-2:	4 quarter sections /141.9 ha (109.5%)
Stratum 2-3:	3 quarter sections /60.7 ha (46.9%)
Stratum 3:	14 quarter sections /349.5 ha (38.6%)
Stratum 3-1:	14 quarter sections /283.5 ha (36.5%)
Stratum 3-2:	5 quarter sections /115.8 ha (44.7%)
Stratum 12:	11 quarter sections /338.1 ha (40.2%)
Stratum 12-2:	3 quarter sections /101.0 ha (52.0%)
Stratum 12-3:	4 quarter sections /89.1 ha (45.9%)

Average coverage for 9 sampling strata= 51.4% of accessible land in sample from each stratum.

Table 2: Survey Coverage of Transect B by Stratum and
Random Sampling Unit ($\frac{1}{4}$ Section or 64.75 ha)

Stratum 1:	N= 19 (8 targeted)	Objective-518.00 ha
<u>RS#</u>	<u>Coverage</u>	
56	45	
24	32	
31	12	
15	40	
23	18	
49	36	
48	10	
<u>52</u>	<u>20</u>	
8	213 ha	Achieved-41.1%
<hr/>		
Stratum 1-2:	N= 10 (4 targeted)	Objective-259.00 ha
<u>RS#</u>	<u>Coverage</u>	
40	35	
45	16	
43	30	
<u>47</u>	<u>10</u>	
4	91 ha	Achieved-35.1%
<hr/>		
Stratum 1-3:	N= 1 (1 targeted)	Objective-64.75 ha
<u>RS#</u>	<u>Coverage</u>	
<u>30</u>	<u>30</u>	
1	30 ha	Achieved-46.3%
<hr/>		
Stratum 1-4:	N= 6 (3 targeted)	Objective-194.25 ha
<u>RS#</u>	<u>Coverage</u>	
4	50	
<u>2</u>	<u>40</u>	
2	90 ha	Achieved-46.3%
<hr/>		
Stratum 2:	N= 9 (4 targeted)	Objective-259.00 ha
<u>RS#</u>	<u>Coverage</u>	
109	20	

Table 2, continued

115	40	
135	16	
112	4	
<u>123</u>	<u>24</u>	
5	104 ha	Achieved-40.2%
<hr/>		
Stratum 2-2:	N= 7 (3 targeted)	Objective-194.25 ha
<u>RS#</u>	<u>Coverage</u>	
110	35	
116	40	
<u>121</u>	<u>40</u>	
3	115 ha	Achieved-59.2%
<hr/>		
Stratum 4	N= 36 (13 targeted)	Objective-841.75 ha
<u>RS#</u>	<u>Coverage</u>	
131	40	
18	50	
120	32	
68	50	
132	40	
67	40	
12	15	
6	15	
17	25	
<u>66</u>	<u>38</u>	
10	345 ha	Achieved-41.0%
<hr/>		
Stratum 4-1:	N= 14 (3 targeted)	Objective-194.25 ha
<u>RS#</u>	<u>Coverage</u>	
107	32	
143	25	
130	25	
<u>144</u>	<u>40</u>	
4	122 ha	Achieved-62.8%
<hr/>		

Table 2, continued

Stratum 4-2:	N= 7 (3 targeted)	Objective-194.25 ha
<u>RS#</u>	<u>Coverage</u>	
28	25	
35	15	
26	18	
<u>27</u>	<u>8</u>	
4	66 ha	Achieved-34.0%
<hr/>		
Stratum 4-3:	N= 4 (2 targeted)	Objective-129.50 ha
<u>RS#</u>	<u>Coverage</u>	
29	40	
<u>37</u>	<u>30</u>	
2	70 ha	Achieved-54.1%
<hr/>		
Stratum 6:	N= 2 (1 targeted)	Objective-64.75 ha
<u>RS#</u>	<u>Coverage</u>	
87	15	
<u>88</u>	<u>20</u>	
2	35 ha	Achieved-54.1%
<hr/>		
Stratum 6-2:	N= 6 (3 targeted)	Objective-194.25 ha
<u>RS#</u>	<u>Coverage</u>	
85	20	
74	20	
72	20	
<u>71</u>	<u>20</u>	
4	80 ha	Achieved-41.2%
<hr/>		
Stratum 12:	N= 12 (5 targeted)	Objective-323.75 ha
<u>RS#</u>	<u>Coverage</u>	
63	55	
78	20	
59	40	
<u>53</u>	<u>40</u>	
4	155 ha	Achieved-47.9%

Table 2, continued

Stratum 12-1: N= 11 (4 targeted) Objective-259.00 ha

<u>RS#</u>	<u>Coverage</u>	
92	15	
91	12	
100	30	
75	5	
61	15	
<u>76</u>	<u>15</u>	
6	92 ha	Achieved-35.5%

Totals:

Sampling Universe	144 quarter sections (135 accessible)
Targeted Units	57 quarter sections (3,690.75 ha)
Surveyed Units	58 quarter sections, with coverage of 1,608.00 ha (43.6%)

Summary by Stratum

Stratum 1:	8 quarter sections /213 ha (41.1%)
Stratum 1-2:	4 quarter sections /91 ha (35.1%)
Stratum 1-3:	1 quarter section /30 ha (46.3%)
Stratum 1-4:	2 quarter sections /90 ha (46.3%)
Stratum 2:	5 quarter sections /104 ha (40.2%)
Stratum 2-2:	3 quarter sections /115 ha (59.2%)
Stratum 4:	10 quarter sections /345 ha (41.0%)
Stratum 4-1:	4 quarter sections /122 ha (62.8%)
Stratum 4-2:	4 quarter sections /66 ha (34.0%)
Stratum 4-3:	2 quarter sections /70 ha (54.1%)
Stratum 6:	2 quarter sections /35 ha (54.1%)
Stratum 6-2:	4 quarter sections /80 ha (41.2%)
Stratum 12:	4 quarter sections /155 ha (47.9%)
Stratum 12-1:	6 quarter sections /92 ha (35.5%)

Average coverage for 14 sampling strata= 45.6% of accessible land in sample from each stratum.

5. Description of Sites Recorded and Catalog of Surface Collections

With respect to the following site descriptions, an assessment is made regarding each site's relative significance. That is, a "low, moderate, or high priority" is assigned to each site reflecting its potential interpretive value to Western Michigan University's current research goals which are: (1) to erect a cultural chronology, and (2) delineate prehistoric land use patterns in the Kalamazoo River Valley.

A. Sites in Transect A¹

- KBS-78-A1
20 AE 352 Rozeboom #1. Small campsite in the center of the NW 1/4 of Section 15, Allegan Township, T2N R13W, Allegan County, Michigan. Cultural debris scattered over 25 m², including a biface, several unifacial scrapers, and a chert core, located on ridge in rolling hills above swampland. Moderate priority.
- | | |
|-----------|---------------------|
| 20 flakes | 3 possible unifaces |
| 1 biface | 3 chert cores |
| 1 uniface | |
- KBS-78-A2
20 AE 199 Rozeboom #2. Small campsite in the center of the NW 1/4, Sec. 15, Allegan Twp., T2N R13W, Allegan Co., MI. About 10 m² of cultural debris on a low ridge above swampland. Moderate to low priority.
- | | |
|----------|--|
| 8 flakes | |
| 1 bone | |
- KBS-78-A3
20 AE 200 Rozeboom #3. Small campsite in the center of the NW 1/4, Sec. 15, Allegan Twp., T2N R13W, Allegan Co., MI. About 10 m² of cultural debris on a small circular knoll below rolling hills and overlooking swampland. Moderate to low priority.
- | | |
|------------------|------------------------|
| 2 flakes | 2 chert core fragments |
| 1 utilized flake | |
- KBS-78-A4
20 AE 201 Hough. Small campsite in the NW 1/4, SW 1/4, Sec. 10, Allegan Twp., T2N R13W, Allegan Co., MI. About 20 m² of cultural debris below a steep, high hill. Moderate to low priority.
- | | |
|--------------------|------------------------|
| 9 flakes | 3 chert core fragments |
| 1 possible uniface | |

¹. Asterisked (*) sites are informant sites which are not shown on the archaeological site map for Transect A, but rather, are indicated on the maps included in Appendix I.

- KBS-78-A5
20 AE 202
Rozeboom #4. Possible small campsite in the NW 1/4, NW 1/4, Sec. 15, Allegan Twp., T2N R13W, Allegan Co., MI. About 20 m² of cultural debris between low rolling hills. Moderate to low priority.
2 flakes
1 biface
- KBS-78-A6
20 AE 203
Brenner. Possible small campsite in the SE 1/4, NE 1/4, Sec. 10, Allegan Twp., T2N R13W, Allegan Co., MI. About 5 m² of cultural debris on a low hill in a flat cultivated field. Moderate to low priority.
6 flakes
1 poss. uniface
2 core fragments
1 chert pebble
- KBS-78-A7
20 AE 204
Liechti. Possible small campsite in the SE 1/4, NE 1/4, Sec. 11, Allegan Twp., T2N R13W, Allegan Co., MI. Approximately 30 m² of cultural debris on the face of low hills rising to the east. Moderate priority.
7 flakes
1 uniface
2 chert core fragments
- KBS-78-A8
20 AE 205
Everett. Small campsite in the NW 1/4, SE 1/4, Sec. 11, Allegan Twp., T2N R13W, Allegan Co., MI. About 30 m² of cultural debris among low, slightly rolling hills. Moderate priority.
5 flakes
1 poss. uniface
3 core fragments
- KBS-78-A9
20 AE 206
Mason. Small campsite in the NW 1/4, SE 1/4, Sec. 11, Allegan Twp., T2N R13W, Allegan Co., MI. About 10 m² of cultural debris on slightly rolling land just west of Miner Lake. Low priority.
1 flake
1 bifacial scraper
2 bones
1 core fragment
- KBS-78-A10
20 AE 207
Haas #1. Isolated find in the center of the NW 1/4 of Sec. 13, Allegan Twp., T2N R13W, Allegan Co., MI. Isolated flake in rolling hills 1/2 mile southwest of Miner Lake. Low priority.
1 large flake
- KBS-78-A11
20 AE 208
Haas #2. Campsite in the center of the NW 1/4, Sec. 13, Allegan Twp., T2N R13W, Allegan Co., MI. About 25 m² of cultural debris including a Hi-Lo point, possible chippage, and f.c.r. on a small knob just above a kettle. High priority.
9 flakes
1 Hi-Lo point
- KBS-78-A12
20 AE 209
Miner Lake. Campsite in the NE 1/4, SE 1/4, Sec. 11, Allegan Twp., T2N R13W, Allegan Co., MI. About 20 m² of cultural debris on a prominent eroded bank on the western edge of Miner Lake. Moderate to low priority.
6 flakes
3 unifaces
1 poss. thumbnail scraper
3 poss. core fragments
- KBS-78-A13
20 AE 210
Industrial Park #1. Campsite in the center of the SW 1/4 of Sec. 22, Allegan Twp., T2N R13W, Allegan Co., MI. About 25 m² of cultural debris on an eroded hillside and on top of a prominent hill. Moderate priority.
18 flakes
1 bifacial wedge
1 thumbnail scraper

- KBS-78-A14
20 AE 211
Industrial Park #2. Campsite in the center of the SW 1/4, Allegan Twp., T2N R13W, Allegan Co., MI. About 10 m² of cultural debris on a small hill below and east of a prominent hill. Moderate priority.
9 flakes
1 biface fragment
1 unifacial scraper
4 poss. utilized flakes
- KBS-78-A15
20 AE 212
Worden. Campsite in the SW 1/4, NE 1/4, Sec. 20, Allegan Twp., T2N R13W, Allegan Co., MI. About 25 m² of cultural debris near pine trees at the top of a high bluff on the north bank of the Kalamazoo River. Moderate to low priority.
8 flakes
1 unifacial side scraper
- KBS-78-A16
20 AE 213
Goodwin-Worden. Campsite in the SW 1/4, NE 1/4, Sec. 20, Allegan Twp., T2N R13W, Allegan Co., MI. About 10 m² of cultural debris at the top of a high bluff near a fenceline separating two properties on the north bank of the Kalamazoo River. Moderate to low priority.
4 flakes
1 unifacial side scraper
5 core fragments
- KBS-78-A17
20 AE 214
Babylon. Campsite in the NW 1/4, NE 1/4, Sec. 20, Allegan Twp., T2N R13W, Allegan Co., MI. About 50 m² of cultural debris near mobile home in a flat, sandy vineyard on the E side of a large ravine which flows S into the Kalamazoo River. Moderate priority.
3 flakes
1 biface
1 uniface
1 bone
7 core fragments
2 poss. utilized flakes
4 retouched flakes
4 heavier scrapers
- KBS-78-A18
20 AE 215
Asparagus. Campsite in the NW 1/4, NE 1/4, Sec. 20, Allegan Twp., T2N R13W, Allegan Co., MI. About 20 m² of cultural debris on small E-W ridge in slightly rolling farmland just west of a house. Moderate to low priority.
6 flakes
- KBS-78-A19
20 AE 393
Hubbard House. Possible campsite in the middle of the SE 1/4, Sec. 5, Trowbridge Twp., T1N R13W, Allegan Co., MI. A light scatter of cultural debris on a loam ridge south of a spring that flows north into a pond. Low priority.
8 questionable flakes
1 unifacial scraper
1 stemmed point base
- KBS-78-A20
20 AE 217
Morel Pond. Campsite in the center of NE 1/4, Sec. 20, Allegan Twp., T2N R13W, Allegan Co., MI. About 20 m² of cultural debris in flat farmland at the foot of a large sand ridge. Moderate priority.
36 flakes
1 poss. scraper
1 bone fragment

- KBS-78-A21
20 AE 218 Worden Pit. Possible village on the line of Sec. 21, NE 1/4, Sec. 20, Allegan Twp., T2N R13W, Allegan Co., MI. About 25 m² of cultural debris, including a broken point and a rimsherd, on a hillside by a sand borrow pit. Moderate priority. (Site badly disturbed.)
4 potsherds 1 poss. utilized flake
24 flakes 2 core fragments
1 biface
- KBS-78-A22
20 AE 301 Fox. Campsite or possible village in SE 1/4, SE 1/4, Sec. 17, Allegan Twp., T2N R13W, Allegan Co., MI. About 4645 m² of heavy cultural debris with some exotic cherts on the tops of wind eroded dunes. Moderate to high priority.
101 flakes 7 bone fragments
3 unifacial scrapers 2 poss. copper pieces
- KBS-78-A23
20 AE 302 Fairgrounds #1. Campsite in SW 1/4, SW 1/4, Sec. 21, Allegan Twp., T2N R13W, Allegan Co., MI. About 30 m² of cultural debris on a low bench on the west side of the Kalamazoo River at the extreme E end of the county fairgrounds. Moderate priority.
13 flakes
- KBS-78-A24
20 AE 335 Fairgrounds #2. Possible campsite in SW 1/4, SW 1/4, Sec. 21, Allegan Twp., T2N R13W, Allegan Co., MI. About 20 m² of light cultural debris on a low bench the south side of the Kalamazoo River near horse barns. Moderate to low priority.
13 flakes 1 biface fragment
- KBS-78-A25
20 AE 303 NE Ravine #1. Campsite in extreme SW 1/4, SW 1/4, Sec. 22, Allegan Twp., T2N R13W, Allegan Co., MI. About 10 m² of cultural debris in flat, grassy yards in a residential section. Moderate to low priority.
6 flakes
- KBS-78-A26
20 AE 304 NE Ravine #2. Campsite on line of Sec. 27, extreme SW, SW 1/4, Sec. 22, Allegan Twp., T2N R13W, Allegan Co., MI. About 10 m² of cultural debris on the N bank above a small winding stream which flows 3/4 mile SW to the Kalamazoo River. Moderate to low priority.
7 flakes 1 biface
- KBS-78-A27
20 AE 305 NE Ravine #3. Campsite in the extreme NE, NE 1/4, Sec. 28, Allegan Twp., T2N R13W, Allegan Co., MI. About 10 m² of cultural debris on the N bank of a small stream which flows 1/4 mile SW to the Kalamazoo River. Moderate priority.
2 flakes
3 firecracked rocks
- KBS-78-A28
20 AE 306 Watertower. Campsite in the center of the NW 1/4, Sec. 34, Allegan Twp., T2N R13W, Allegan Co., MI. About 30 m² of cultural debris on a high point of land on the N side of a stream which flows 3/4 mile NW to the Kalamazoo River. Moderate priority.
7 flakes 2 shells 2 poss. utilized flakes
2 bifaces 1 firecracked rock

- KBS-78-A29
20 AE 307
Jennings #1. Possible campsite in the NE 1/4, SE 1/4, Sec. 35, Allegan Twp., T2N R13W, Allegan Co., MI. About 25 m² scatter of cultural debris on small rise SE of a small swampy area. Low to moderate priority.
2 flakes 1 poss. point fragment
2 poss. bifacial scrapers
- KBS-78-A30
20 AE 308
Jennings #2. Possible campsite in the NE 1/4, SE 1/4, Sec. 35, Allegan Twp., T2N R13W, Allegan Co., MI. About a 25 m² scatter of cultural debris on a small rise just north of a small, circular swampy area. Moderate to low priority.
3 flakes 1 poss. retouched flake
1 core fragment 2 poss. utilized flakes
- KBS-78-A31
20 AE 309
Dar1 #1. Campsite in the NE 1/4, SE 1/4, Sec. 35, Allegan Twp., T2N R13W, Allegan Co., MI. About 30 m² of cultural debris on slightly rolling farmland just north of a swamp. Moderate priority.
20 flakes 2 core fragments
1 biface 1 retouched flake fragment
1 poss. uniface
- KBS-78-A32
20 AE 310
Dar1 #2. Possible campsite in the NE 1/4, SE 1/4, Sec. 35, Allegan Twp., T2N R13W, Allegan Co., MI. About 25 m² of cultural debris on a low rise on the north side of a single tree in slightly rolling farmland. Moderate to low priority.
3 flakes 1 uniface
1 biface 1 poss. retouched flake
- KBS-78-A33
20 AE 311
Dziek #1. Possible campsite in NW 1/4, SE 1/4, Sec. 35, Allegan Twp., T2N R13W, Allegan Co., MI. Approximately 20 m² of cultural debris on small sand ridges in woodlands. Moderate to low priority.
2 flakes 1 chert core
1 poss. utilized flake
- KBS-78-A34
20 AE 312
Dziek #2. Campsite in NW 1/4, SE 1/4, Sec. 35, Allegan Twp., T2N R13W, Allegan Co., MI. About 10 m² of cultural debris on a small sand ridge to the southeast of a swampy area. Moderate priority.
12 flakes 2 poss. utilized flakes
3 bones 1 chert core
- KBS-78-A35
20 AE 313
Airport. Campsite in the center of the NE 1/4, Sec. 27, Allegan Twp., T2N R13W, Allegan Co., MI. About 30 m² of cultural debris on a prominent linear sand ridge NE of the runway. Moderate to low priority.
5 flakes 1 bone
1 biface
- KBS-78-A36
20 AE 314
Allegan Hayfield Management Area. Campsite in the SE 1/4, SE 1/4, Sec. 27, Allegan Twp., T2N R13W, Allegan Co., MI. About 25 m² of cultural debris, including a fire pit, on a sand ridge running N-S and surrounded on the W, S, and SE by a stream. Moderate to high priority.
13 flakes 1 unifacial scraper
1 projectile point 4 bone fragments
(Cahokia-like) 1 historic kaolin pipe stem

- KBS-78-A37
20 AE 315
Wisconsin Sledge #1. Campsite in the SW 1/4, SW 1/4, Sec. 2, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on the NE tip of a ridge in rolling hills about 400 m NE of the Kalamazoo River. Moderate priority.
18 flakes
- KBS-78-A38
20 AE 316
Wisconsin Sledge #2. Campsite in the NW 1/4, NW 1/4, Sec. 11, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 30 m² of cultural debris on the middle hill of three descending hills about 200 m east of the Kalamazoo River. Moderate priority.
10 flakes
1 biface
1 unifacial scraper
2 marked rocks
4 chert pebbles
- KBS-78-A39
20 AE 317
Wisconsin Sledge #3. Possible campsite in the center of the W 1/2, NW 1/4, Sec. 11, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 20 m² of cultural debris on the lowest hill about 75 m east of the Kalamazoo River. Moderate to low priority.
6 flakes
1 uniface
1 chert core
- KBS-78-A40
20 AE 318
Wisconsin Sledge #4. Possible campsite in the SE 1/4, SW 1/4, Sec. 2, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 20 m² of cultural debris just south of a gravel pit on descending hills about 400 m east of the Kalamazoo River. Moderate to low priority.
8 flakes
1 chert core
- KBS-78-A41
20 AE 319
Wisconsin Sledge #5. Campsite in the north 1/4, on the line between the NE and NW 1/4's, Sec. 11, Trowbridge Twp., T1N R13W, Allegan Co., MI. Approximately 25 m² of cultural debris on the lower terrace of the Kalamazoo River, about 800 m east of the river. Moderate priority.
5 flakes
1 projectile point
1 bifacial wedge
1 utilized flake
1 poss. triangular tool
- KBS-78-A42
20 AE 320
Evergreen #1. Possible campsite in the NE 1/4, NE 1/4, Sec. 3, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 5 m² of cultural debris on a prominent sand ridge with blowouts along the top and a spring about 30 m to the north. Low to moderate priority.
3 flakes
1 large core fragment
- KBS-78-A43
20 AE 321
Evergreen #2. Possible campsite in the center of the NE 1/4, Sec. 3, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 10 m² of lightly scattered cultural debris on a moderately high sand knoll at the corner of a woodlot. Low to moderate priority.
5 flakes
- KBS-78-A44
20 AE 322
Evergreen #3. Possible village in the SW 1/4, NE 1/4, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 50 m² of cultural debris, including pottery, a point, and a fire pit, on high sand banks

about 200 m east of the Kalamazoo River. High to moderate priority.

2 potsherds
11 flakes
1 projectile point
1 scraper
1 core fragment

KBS-78-A45
20 AE 323

Evergreen #4. Campsite in the SW 1/4, NE 1/4, Sec. 3, Trowbridge Twp., T1N R13W, Allegan Co., MI. Approximately 25 m² of cultural debris on a high sand bank about 75 m east of the Kalamazoo River. Moderate to low priority.

8 flakes
1 biface

KBS-78-A46
20 AE 324

Evergreen #5. Campsite in the SW 1/4, NE 1/4, Sec. 3, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on a small sand ridge about 100 m east of the Kalamazoo River. Moderate to low priority.

1 flake
2 unifacial scrapers

KBS-78-A47
20 AE 325

Evergreen #6. Campsite in the SE 1/4, NE 1/4, Sec. 3, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 15 m² of cultural debris on a prominent sand ridge about 400 m north of the Kalamazoo River. Moderate priority.

39 flakes
3 core fragments

KBS-78-A48
20 AE 326

Evergreen #7. Campsite in the SE 1/4, NE 1/4, Sec. 3, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 20 m² of cultural debris, including a point, a knife, and scrapers, on a subtle sand ridge about 200 m north of the Kalamazoo River. Moderate priority.

10 flakes
1 projectile point
1 knife base
2 unifacial scrapers
3 core fragments

KBS-78-A49
20 AE 327

Winn. Campsite in the center of the line between the SE and SW 1/4's, Sec. 11, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 50 m² of cultural debris on a high bench on the south bank of the Kalamazoo River. Moderate priority.

25 flakes
1 broken point
1 biface (poss. drill)
1 bifacial scraper

KBS-78-A50
20 AE 328

Trowbridge Dam. Campsite in the SE 1/4, SE 1/4, Sec. 11, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 50 m² of cultural debris on a low bench on the south bank of the Kalamazoo River. Moderate priority.

16 flakes
7 decortication flakes
1 worked flake

KBS-78-A51
20 AE 329

Crowley. Possible campsite in the N half of the SE 1/4, Sec. 14, Trowbridge Twp., T1N R13W, Allegan Co., MI. A sizable light scatter of cultural debris on a small ridge in rolling farmland about 400 m north of Osgood Drain. Low to moderate priority.

5 questionable flakes
1 uniface
2 decortication flakes

- KBS-78-A52
20 AE 330 Stockdale. Possible campsite in the N central part of the SE 1/4, Sec. 9, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 40 m² of cultural debris concentrated around two or three springs on the western side of a ridge. Moderate priority.
5 flakes 8 blocky flakes
2 points 1 retouched flake
4 decortication flakes 4 quartzite chips
- KBS-78-A53
20 AE 331 Borgert. Possible campsite in the center of the NE 1/4, Sec. 14, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 20 m² of cultural debris on the side of a prominent ridge with sand blowouts about 800 m south of the Kalamazoo River. Low to moderate priority.
3 flakes 1 blocky flake
- KBS-78-A54
20 AE 332 Maurer #1. Possible campsite in the north-central part of the NW 1/4, Sec. 12, Allegan Twp., T2N R13W, Allegan Co., MI. About 25 m² of cultural debris on the northern slope of a high gravelly knoll about 800 m north of Miner Lake. Moderate to low priority.
2 flakes 2 decortication flakes
12 blocky flakes
- KBS-78-A55
20 AE 333 Maurer #2. Possible campsite in the center of the SW 1/4, NW 1/4, Sec. 12, Allegan Twp., T2N R13W, Allegan Co., MI. About 25 m² of cultural debris on a high gravelly ridge running N-S, about 800 m north of Miner Lake. Moderate to low priority.
1 flake 9 blocky flakes
1 possible core
- KBS-78-A56
20 AE 334 Palenick. Possible campsite in the center of the NW 1/4, Sec. 12, Allegan Twp., T2N R13W, Allegan Co., MI. About 20 m² of cultural debris on a low ridge about 800 m northwest of Miner Lake. Moderate to low priority.
2 flakes 4 blocky flakes
1 decortication flake
- KBS-78-A57
20 AE 382 Hicks #1. Campsite in the center of the S 1/2, NE 1/4, Sec. 26, Trowbridge Twp., T1N R13W, Allegan Co., MI. A collection of points was made by the owner from slightly rolling farmland about 400 m northeast of Hodge Lake. Moderate priority.
- KBS-78-A58
20 AE 336 Spruce. Possible campsite in the SW 1/4, of the NE 1/4, Sec. 33, Allegan Twp., T2N R13W, Allegan Co., MI. Fire pits were reported by the landowner on a high bench about 100 m west of the Kalamazoo River. Moderate to high priority.
3 flakes
- KBS-78-A59
20 AE 337 Nunley. Possible campsite in the NW 1/4, SE 1/4, Sec. 10, Trowbridge Twp., T1N R13W, Allegan Co., MI. An isolated point found in the roadway of a flat fallow field about 800 m east of a second order stream. Low priority.
1 projectile point

- KBS-78-A60
20 AE 338
Gilligan. Campsite in the NW 1/4, SE 1/4, Sec. 6, Hopkins Twp., T3N R12W, Allegan Co., MI. About 30 m² of cultural debris on a former lake edge at the foot of an 840' high ridge. Moderate priority.
27 flakes 14 blocky flakes
- KBS-78-A61
20 AE 339
Thompson. Possible campsite in the NW 1/4, NE 1/4, Sec. 27, Trowbridge Twp., T1N R13W, Allegan Co., MI. A Holcombe-like fluted point, possible chippage and f.c.r. found on a prominent sandy ridge dropping toward an unnamed stream flowing from Minkler to Hodge Lake. Moderate to high priority.
15 blocky flakes 1 fluted point
- KBS-78-A62
20 AE 340
Pierson. Possible campsite in the center of the N of the NE 1/4, Sec. 22, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of lightly scattered cultural debris on a ridge about 300 m SE of Osgood Lake. Low to moderate priority.
1 flake 2 blocky flakes
1 decortication flake
- KBS-78-A63
20 AE 341
Coburn. Informant site in the NE 1/4, NW 1/4, Sec. 18, Allegan Twp., T2N R13W, Allegan Co., MI. A paleo point reported from about 200 m east of Dumont Creek. Low priority.
- KBS-78-A64
20 AE 342
Allen. Informant site in the SE 1/4, NW 1/4, Sec. 2, Trowbridge Twp., T1N R13W, Allegan Co., MI. Turkey tails and spear points reported found in slightly rolling farmland about 1600 m north-east of the Kalamazoo River. Moderate priority.
- KBS-78-A65
20 AE 343
Armintrout. Informant site in the SE 1/4, NE 1/4, Sec. 34, Allegan Twp., T2N R13W, Allegan Co., MI. Points and firepits have been reported about 400 m southeast of a second order stream. Moderate priority.
- KBS-78-A66
20 AE 344
Little John. Large informant site in the SW 1/4 and NE 1/4, NE 1/4, Sec. 31, Allegan Twp., T2N R13W, Allegan Co., MI. About 4645 m² of cultural debris from sand blowouts on a small ridge about 100 m northeast of Little John Lake. Points and other artifacts are also reported for this area.
- KBS-78-A67
20 AE 345
Dam. Informant site in the center of the SE 1/4, Sec. 28, Allegan Twp., T2N R13W, Allegan Co., MI. A fishing site on the river-banks at a former rapids in downtown Allegan. Moderate priority.
- KBS-78-A68*
20 AE 346
Paint Pits. Informant site along the middle of the NE and SE 1/4's, Sec. 29, Valley Twp., T2N R14W, Allegan Co., MI. Paint pits along the west bank of Swan Creek. Moderate priority.
- KBS-78-A69*
20 AE 347
South Swan Creek Pond. Informant site at the western edge of the NE 1/4, Sec. 20, Valley Twp., T2N R14W, Allegan Co., MI. Points, axes, and other cultural material reported on the SW side of Swan Creek Pond. Moderate priority.

- KBS-78-A70* Bellware. Informant site at the center of the NE 1/4, Sec. 6,
20 AE 348 Cheshire Twp., T1N R14W, Allegan Co., MI. A burial with a
bannerstone reported on the west bank of Swan Creek.
Moderate to high priority.
- KBS-78-A71 Ray. Informant site on the N side, NE 1/4, Sec. 4,
20 AE 349 Trowbridge Twp., T1N R13W, Allegan Co., MI. An Indian
burial ground with a clay figurine reported on the north
bank of the Kalamazoo River. Moderate to high priority.
- KBS-78-A72* Westfahl. Informant site in the SE 1/4, NE 1/4, Sec. 6,
20 AE 350 Hopkins Twp., T3N R12W, Allegan Co., MI. Artifacts
collected northeast of the Rabbit River. Moderate priority.
- KBS-78-A73* VanderKolk. Informant site in the SW 1/4, SE 1/4, Sec. 6,
20 AE 351 Manlius Twp., T3N R15W, Allegan Co., MI. Artifacts collected.
Moderate priority.
- KBS-78-A74 Goodwin, Campsite in the NW 1/4, NW 1/4, Sec. 20, Allegan
20 AE 394 Twp., T2N R13W, Allegan Co., MI. About 25 m² of scattered
chippage on a sandy hill west of a second order stream that
flows south into the Kalamazoo River. Moderate priority.
32 flakes
- KBS-78-A75* Selkirk Mission. Informant site on the N. side of Selkirk
20 AE 353 Lake, Sec. 29, Wayland Twp., T3N R11W, Allegan Co., MI.
Indian mission reported. Moderate priority.
- KBS-78-A76* Selkirk Village. Informant site on the SW side of Selkirk
20 AE 354 Lake, Sec. 29 (? or Sec. 32), Wayland Twp., T3N R11W,
Allegan Co., MI. An Indian village reported on the Old
Orchard Golf Course. Moderate to high priority.
- KBS-78-A77 Teusink. Informant site in the eastern 1/2 of the SW 1/4, Sec. 7,
20 AE 355 Allegan Twp., T2N R13W, Allegan Co., MI. Copper points
reported about 400 m east of Dumont Creek. Moderate priority.
- KBS-78-A78 Bullfrog. Campsite in the SW 1/4, SE 1/4, Sec. 15,
20 AE 356 Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m²
of cultural debris on high ground on the northeast side
of Osgood Lake. Moderate priority.
8 blocky flakes 4 poss. axes
2 decortication flakes
- KBS-78-A79* Canning Factory. Informant site in the SW 1/4, NW 1/4,
20 AE 357 Sec. 4, Clyde Twp., T2N R15W, Allegan Co., MI. Artifacts
collected near junk. Moderate priority.
- KBS-78-A80 Sheffer Lake. Campsite in the SW 1/4, NW 1/4, Sec. 17,
20 AE 358 Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m²
of cultural debris on a prominent sand ridge about 400 m
south of Sheffer Lake. Moderate to low priority.
15 flakes

- KBS-78-A81
20 AE 359
Lake Sixteen. Possible Paleoindian campsite in the SW 1/4, SE 1/4, Sec. 16, Trowbridge Twp., T1N R13W, Allegan Co., MI. Grooved ax and large points found by landowner on low hills about 350 m south of Lake Sixteen. Moderate priority.
- KBS-78-A82
20 AE 360
Van Order. Possible campsite in the SW 1/4, NE 1/4, Sec. 16, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on the south side of a stream running between Middle Lake and Lake Sixteen. Moderate to low priority.
2 flakes 3 blocky flakes
- KBS-78-A83
20 AE 361
Stube. Possible campsite in the NE 1/4, NW 1/4, Sec. 16, Trowbridge Twp., T1N R13W, Allegan Co., MI. An isolated scraper found on a prominent point about 150 m northwest of Middle Lake. Low priority.
1 unifacial scraper
- KBS-78-A84
20 AE 362
Noecker #1. Possible campsite in the NE 1/4, SW 1/4, Sec. 9, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on a small hill about 50 m northeast of Pike Lake. Moderate to low priority.
10 flakes
- KBS-78-A85
20 AE 363
Noecker #2. Possible campsite in the NE 1/4, SW 1/4, Sec. 9, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on a small hill about 300 m northeast of Pike Lake. Moderate to low priority.
4 flakes 4 blocky flakes
- KBS-78-A86
20 AE 364
Bently #1. Possible campsite in the center of the SE 1/4, NE 1/4, Sec. 9, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on a prominent 740' ridge in highlands about 1500 m west of the Kalamazoo River. Moderate priority.
4 blocky flakes 1 point
- KBS-78-A87
20 AE 365
Bently #2. Possible campsite in the center of the NE 1/4, NE 1/4, Sec. 9, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris in highlands about 1500 m west of the Kalamazoo River. Moderate priority.
4 flakes 1 firecracked rock
4 blocky flakes
- KBS-78-A88
20 AE 366
R.E.Y. Possible campsite in the NW 1/4, NE 1/4, Sec. 17, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 50 m² of cultural debris on a grassy sand knoll in an area surrounded by inland lakes about 400 m east of Sheffer Lake. Moderate priority.
6 flakes

- KBS-78-A89
20 AE 367
Kaylor #1. Informant site in the SW 1/4, NW 1/4, Sec. 8, Trowbridge Twp., T1N R13W, Allegan Co., MI. A Paleoindian point base and other points reported found on a hillside about 1600 m northwest of Pike Lake. Moderate priority.
- KBS-78-A90
20 AE 368
Kaylor #2. Informant site in the NE 1/4, NW 1/4, Sec. 8, Trowbridge Twp., T1N R13W, Allegan Co., MI. Points reported found in hilly farmland about 1500 m northwest of Pike Lake. Moderate priority.
- KBS-78-A91
20 AE 369
Kaylor #3. Informant site in SW 1/4, SE 1/4, Sec. 8, Trowbridge Twp., T1N R13W, Allegan Co., MI. Points reported found in hilly farmland about 800 m west of Pike Lake. Moderate priority.
- KBS-78-A92
20 AE 370
Nahan #1. Informant site in NE 1/4, NE 1/4, Sec. 12, Allegan Twp., T2N R13W, Allegan Co., MI. A collection of points from the upper terrace of a series of descending hills about 300 m north of Miner Lake. Moderate priority.
- KBS-78-A93
20 AE 371
A37
Nahan #2. Informant site in the NE 1/4, NE 1/4, Sec. 12, Allegan Twp., T2N R13W, Allegan Co., MI. A collection of points from the lower terrace of a series of descending hills about 300 m north of Miner Lake. Moderate priority.
- KBS-78-A94
20 AE 372
Bailey. Informant site in the SW 1/4, SW 1/4, Sec. 6, Watson Twp., T2N R12W, Allegan Co., MI. A collection of points and scrapers from the base of an 860' hill about 800 m northeast of Miner Lake. Moderate priority.
- KBS-78-A95
20 AE 373
Overton North. Informant site in the NE 1/4, SW 1/4, Sec. 7, Watson Twp., T2N R12W, Allegan Co., MI. Cultural debris near former lake bed about 800 m east of Miner Lake. Moderate priority.
- KBS-78-A96
20 AE 374
Overton South. Informant site in the NE 1/4, NE 1/4, Sec. 18, Watson Twp., T2N R12W, Allegan Co., MI. Points collected from edge of former lake bed about 800 m east of Miner Lake. Moderate priority.
- KBS-78-A97
20 AE 375
Katusic. Informant site in the NW 1/4, SW 1/4, Sec. 6, Watson Twp., T2N R12W, Allegan Co., MI. Points collected from the base of an 860' hill about 1300 m northeast of Miner Lake. Moderate priority.
- KBS-78-A98
20 AE 376
McNutt. Campsite in the SW 1/4, SE 1/4, Sec. 23, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris from slightly rolling farmland between a swamp and an intermittent stream. Moderate priority.
4 flakes
1 uniface
1 bone

- KBS-78-A99
20 AE 377
Gavan #1. Possible campsite in the NW 1/4, NE 1/4, Sec. 26, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 30 m² of cultural debris from rolling land about 350 m northeast of Hodge Lake. Moderate priority.
8 flakes 1 core
1 unifacial scraper
- KBS-78-A100
20 AE 378
Gavan #2. Campsite in the NW 1/4, NE 1/4, Sec. 26, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on rolling land about 175 m northeast of Hodge Lake. Moderate priority.
24 flakes 9 decortication flakes
- KBS-78-A101
20 AE 379
Gavan #3. Campsite in the NW 1/4, NE 1/4, Sec. 26, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 30 m² of cultural debris on rolling land about 300 m northeast of Hodge Lake. Moderate priority.
14 flakes
- KBS-78-A102
20 AE 380
Wuis #1. Campsite in the NE 1/4, NE 1/4, Sec. 11, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 20 m² of cultural debris on a slightly rolling field south of a ravine about 1000 m north of the Kalamazoo River. Moderate priority.
5 flakes 3 cores
- KBS-78-A103
20 AE 381
Wuis #2. Campsite in the NE 1/4, NE 1/4, Sec. 11, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 50 m² of cultural debris, including a firepit exposed by plowing, on slightly rolling fields south of a ravine about 1000 m north of the Kalamazoo River. Moderate to high priority.
5 flakes 1 biface
- KBS-78-A104
20 AE 383
Hicks #2. Campsite in the center of the NW 1/4, SE 1/4, Sec. 26, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 30 m² of cultural debris on small sand dunes about 300 m east of Hodge Lake. Moderate priority.
1 potsherd 101 flakes
- KBS-78-A105
20 AE 384
Hicks #3. Campsite in the NE 1/4, NW 1/4, Sec. 26, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on flat ground about 50 m west of a small stream. Moderate to low priority.
4 flakes
- KBS-78-A106
20 AE 385
Betzner #1. Campsite in the NE 1/4, SW 1/4, Sec. 22, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on a low ridge running north-south, about 75 m north of a small pond. Moderate priority.
10 flakes 1 scraper
- KBS-78-A107
20 AE 386
Betzner #2. Campsite in the NE 1/4, SW 1/4, Sec. 22, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 20 m² of cultural debris on a small knoll running north-south, about 100 m northeast of a small pond. Moderate priority.
6 flakes 1 biface

- KBS-78-A108
20 AE 387
- Betzner #3. Campsite in the NE 1/4, SW 1/4, Sec. 22, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on a prominent ridge about 25-50 m west of a small pond. Moderate priority.
21 flakes 1 unifacial scraper
3 cores 1 core
- KBS-78-A109
20 AE 388
- Emmons. Possible campsite in the NW 1/4, SW 1/4, Sec. 22, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on a small knoll in slightly rolling farmland about 150 m SE of a small pond. Moderate to low priority.
3 flakes 1 core
- KBS-78-A110
20 AE 389
- Lane. Campsite in the SE 1/4, NW 1/4, Sec. 8, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on a prominent ridge running north-south. Moderate to low priority.
3 flakes
- KBS-78-A111
20 AE 390
- Waigand #1. Campsite in the SW 1/4, NW 1/4, Sec. 5, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 25 m² of cultural debris on a hilltop in rolling farmland about 1300 m SW of the Kalamazoo River. Moderate to low priority.
2 flakes 1 biface
- KBS-78-A112
20 AE 391
- Waigand #2. Campsite in the SE 1/4, NW 1/4, Sec. 5, Trowbridge Twp., T1N R13W, Allegan Co., MI. An isolated scraper on a low ridge in rolling farmland about 900 m SW of the Kalamazoo River. Moderate to low priority.
1 bifacial scraper
- KBS-78-A113
20 AE 392
- Foster School. Possible campsite in the E 1/2, NW 1/4, Sec. 5, Trowbridge Twp., T1N R13W, Allegan Co., MI. About 15 m² of cultural debris on a low sand hill above a deep ravine about 350 m SW of the Kalamazoo River. Moderate to low priority.
1 utilized flake 4 flakes

B. Sites in Transect B¹

- KBS-78-B1
20 AE 284 Bryant Site. Campsite in the NW 1/4 of the NE 1/4 of Sec. 21, Watson Twp., T2N R12W, Allegan Co., MI. About 1000 m² of cultural debris, mostly flint chips scatter on a slight sand ridge approx. 150 m NW of School Section Brook to the W of the Bryant house. Low priority.
1 biface 21 flint flakes
- KBS-78-B2
20 AE 259 Blank. Chipping station in the NE 1/4, NE 1/4, Sec. 21, Watson Twp., T2N R12W, Allegan Co., MI. About 2500 m² of light cultural debris scatter on a sand ridge approx. 70 m N of the S branch of School Section Bk. Low priority.
11 flint flakes
- KBS-78-B3
20 AE 260 Counterman. Small campsite or chipping station in the SE 1/4, NE 1/4, Sec. 22, Watson Twp., T2N R12W, Allegan Co., MI. About 3000 m² of light cultural debris scatter on 2 sandy knolls in a clay field approx. 300 m SE of a headwater pond for the S branch of School Section Bk. Low priority.
1 projectile point 10 flint flakes
- KBS-78-B4
20 AE 261 Schnable Lake. Large campsite or village in the SE 1/4, SE 1/4, Sec. 26, Watson Twp., T2N R12W, Allegan Co., MI. About 10000 m² of heavy cultural debris scatter on top of a high sand bluff overlooking the NE side of Schnable Lake, 140 m away. Moderate to high priority.
1 ground stone wedge 90 flint chips
1 projectile point fragment 2 small exfoliated sherdlets
2 scrapers
- KBS-78-B5
20 AE 262 Sebring. Isolated projectile point find in the NW 1/4, NW 1/4, Sec. 32, Otsego Twp., T1N R12W, Allegan Co., MI. A light generalized scatter of cultural debris accompanied this point find approx. 600 m N of Pine Creek. Low priority.
1 projectile point fragment 8 flint chips
2 scraper fragments
- KBS-78-B6
20 AE 263 Pine Creek A. Chipping station in the SE 1/4, NW 1/4, Sec. 32, Otsego Twp., T1N R12W, Allegan Co., MI. About 100 m² of localized cultural debris approx. 200 m N of Pine Creek on a till plain. Low priority.
12 flint chips

1. Asterisked (*) sites are informant sites which are not shown on the archaeological site map for Transect B, but rather, are indicated on the maps included in Appendix I.

- KBS-78-B7
20 AE 264 Pine Creek B. Small campsite in the SW 1/4, NW 1/4, Sec. 32, Otsego Twp., T1N R12W, Allegan Co., MI. About 500 m² of light cultural debris scatter on a slight sand ridge approx. 300 m N of Pine Creek. Low priority.
2 projectile points 2 flint chips
- KBS-78-B8
20 AE 265 Nuyen. Campsite in the NE 1/4, NW 1/4, Sec. 32, Otsego Twp., T1N R12W, Allegan Co., MI. About 1000 m² of cultural debris on a sand ridge approx. 300 m N of Pine Creek. Moderate priority.
2 projectile points 4 flint chips
2 bifaces
- KBS-78-B9
20 AE 266 Kent. Probable camp or village site reported to be in the SW 1/4, NW 1/4, Sec. 15, Watson Twp., T2N R12W, Allegan Co., MI. Numerous stone artifacts have reportedly been taken from the NE side of School Section Lake. Probable high priority. Not visited by WMU. No surface collection was made.
- KBS-78-B10
20 AE 267 Ames. Probable Archaic village site in the NE 1/4, SW 1/4, Sec. 31, Otsego Twp., T1N R12W, Allegan Co., MI. About 10000 m² of cultural debris on a terrace bank approx. 40 m N of Baseline Creek near the confluence of Pine Creek. High priority.
Dorsy Ames Collections: WMU Surface Collection:
82 projectile points 2 projectile points
4 ground stone celts 8 flint chips
1 drilled slate gorget
- KBS-78-B11
20 AE 268 Dugan. Isolated projectile point find in the SW 1/4, SW 1/4, Sec. 29, Otsego Twp., T1N R12W, Allegan Co., MI. Found on a slight slope in a gently rolling cultivated field approx. 800 m NW of Pine Creek. Low priority.
1 projectile point
- KBS-78-B12
20 AE 269 Lindsey. Small chipping station in the SW 1/4, SW 1/4, Sec. 29, Otsego Twp., T1N R12W, Allegan Co., MI. About 200 m² of light cultural debris scatter on a sandy knoll in a gently rolling cultivated field approx. 700 m NW of Pine Creek and 300 m SW of 20 AE 268. Low priority.
6 flint flakes
- KBS-78-B13
20 AE 270 Hicks Lake. Campsite in the NW 1/4, SE 1/4, Sec. 23, Watson Twp., T2N R12W, Allegan Co., MI. About 5000 m² of moderate cultural debris scatter on a gently rolling sandy ridge on the SE side of Hicks Lake. Moderate priority.
1 projectile point 31 flint flakes
1 utilized flint flake

- KBS-78-B14
20 AE 271
Big Lake. Small campsite in the NW 1/4, NE 1/4, Sec. 23, Watson Twp., T2N R12W, Allegan Co., MI. About 400 m² of light cultural debris scatter on a small sandy knoll on the W slope and approx. 15 m from Big Lake. Moderate to low priority.
1 projectile point 6 flint flakes
- KBS-78-B15
20 AE 272
Cramer. Small campsite in the NW 1/4, NE 1/4, Sec. 23, Watson Twp., T2N R12W, Allegan Co., MI. About 300 m² of light cultural debris scatter approx. 60 m from and on the WSW side of Big Lake near 20 AE 271. Moderate to low priority.
1 projectile point base 6 flint flakes
- KBS-78-B16
20 AE 273
Newland. Isolated ovate preform find in the NE 1/4, NE 1/4, Sec. 14, Otsego Twp., T1N R12W, Allegan Co., MI. Located in an open field on gently rolling topography. Low priority.
1 preform
- KBS-78-B17
20 AE 274
Brooks. Small site in the SE 1/4, SW 1/4, Sec. 5, Otsego Twp., T1N R12W, Allegan Co., MI. About 50 m² of light cultural debris on a slight rise in generally level terrain approx. 600 m SE of Schnable Brook. Low priority.
2 large flint chips
- KBS-78-B18
20 AE 275
Orlo. Campsite in the NW 1/4, NW 1/4, Sec. 5, Otsego Twp., T1N R12W, Allegan Co., MI. About 250 m² of moderate cultural debris on a slight sand ridge approx. 100 m NW of Schnable Brook. Moderate priority.
38 flint chips
- KBS-78-B19
20 AE 276
Minnard. Small camp in the SW 1/4, NW 1/4, Sec. 5, Otsego Twp., T1N R12W, Allegan Co., MI. About 2500 m² of light cultural scatter on a sandy ridge approx. 75 m W of Schnable Bk. near its confluence with Miner Creek. Moderate to low priority.
1 biface 9 flint chips
1 core
- KBS-78-B20
20 AE 277
Substation. Two isolated projectile point finds in the NE 1/4, NE 1/4, Sec. 33, Gun Plain Twp., T1N R11W, Allegan Co., MI. Located at the base of a 30 m high morainal system to the NE and 1.25 km from the Kalamazoo River to the SW. Low priority.
2 projectile points
- KBS-78-B21
20 AE 278
Steele. Isolated projectile point find in the SW 1/4, SE 1/4, Sec. 33, Gun Plain Twp., T1N R11W, Allegan Co., MI. Located approx. 25 m NNE of the Kalamazoo River on a cultivated terrace. Low priority.
1 projectile point

- KBS-78-B22
20 AE 279
Bruce. Campsite in the NW 1/4, SE 1/4, Sec. 33, Gun Plain Twp., T1N R11W, Allegan Co., MI. About 1000 m² of cultural debris on a slight ridge approx. 600 m NNE of the Kalamazoo River. Moderate to low priority.
1 biface 13 flint chips
- KBS-78-B23
20 AE 280
Riverview. Campsite in the NE 1/4, SW 1/4, Sec. 33, Gun Plain Twp., T1N R11W, Allegan Co., MI. About 1000 m² of cultural debris on a slight ridge approx. 30 m NE of the Kalamazoo River. Moderate to low priority.
2 bifaces 6 flint chips
1 core-wedge?
- KBS-78-B24
20 AE 281
Penn Central. Isolated projectile point find in the SW 1/4, NW 1/4, Sec. 33, Gun Plain Twp., T1N R11W, Allegan Co., MI. Located on a slight ridge approx. 300 m NW of the Kalamazoo River. Low priority.
1 projectile point 1 flint chip
- KBS-78-B25
20 AE 282
Dandy Acres. Campsite in the NW 1/4, NE 1/4, Sec. 32, Gun Plain Twp., T1N R11W, Allegan Co., MI. About 200 m² of cultural debris on a sand and gravel ridge approx. 100 m NE of the Kalamazoo River. Moderate to low priority.
1 projectile point 1 uniface
1 notched scraper 3 flint chips
- KBS-78-B26
20 AE 283
Albertson. Campsite in the NW 1/4, NE 1/4, Sec. 32, Gun Plain Twp., T1N R11W, Allegan Co., MI. About 600 m² of cultural debris on a sand/gravel ridge approx. 150 m E of the Kalamazoo River. Moderate to low priority.
2 projectile points 6 flint flakes
1 biface
- KBS-78-B27
20 AE 285
Germain. Chipping station in the SE 1/4, SW 1/4, Sec. 32, Watson Twp., T2N R12W, Allegan Co., MI. About 3750 m² of light cultural debris on a low sandy ridge approx. 100 m W of Miner Creek. Low priority.
13 flint chips
- KBS-78-B28
20 AE 286
Rozenboom. Isolated projectile point find in the NW 1/4, SW 1/4, Sec. 32, Watson Twp., T2N R12W, Allegan Co., MI. Located on a high sand slope approx. 500 m W of Miner Creek. Low priority.
1 projectile point
- KBS-78-B29
20 AE 287
Robinson. Isolated fluted projectile point find in the NW 1/4, SW 1/4, Sec. 35, Watson Twp., T2N R12W, Allegan Co., MI. Located on a terrace bank approx. 30 m to the SW of Schnable Brook. Moderate to low priority. Point in the Robinson's possession.
1 projectile point

- KBS-78-B30
20 AE 288
Georgie. Small chipping station located in the NE 1/4, SW 1/4, Sec. 35, Watson Twp., T2N R12W, Allegan Co., MI. About 400 m² of very light cultural debris scatter on a clay ridge approx. 30 m E from Schnable Brook. Low priority.
4 flint chips
- KBS-78-B31
20 AE 289
Hughes School. Campsite in the NW 1/4, SW 1/4, Sec. 35, Watson Twp., T2N R12W, Allegan Co., MI. About 600 m² of lightly scattered cultural debris approx. 60 m W of Schnable Brook and adjacent to 20 AE 287. Low to moderate priority.
2 projectile points 6 flint flakes
(one fragmented)
- KBS-78-B32
20 AE 290
Schnable Brook. Campsite in the NW 1/4, SW 1/4, Sec. 35, Watson Twp., T2N R12W, Allegan Co., MI. About 800 m² of cultural debris on a high sandy ridge approx. 50 m N of Schnable Brook, the course of which marks 3 sides of the site.
1 uniface end scraper 5 flint chips
1 argillite scraper (?)
- KBS-78-B33
20 AE 291
Sloothaak. Isolated projectile point find in the SE 1/4, NW 1/4, Sec. 8, Otsego Twp., T1N R12W, Allegan Co., MI. Located on the slope of a high clay ridge approx. 1200 m NE of the Kalamazoo River. Low priority.
1 projectile point
- KBS-78-B34
20 AE 292
Moose Lodge. Campsite in the SE 1/4, NW 1/4, Sec. 17, Otsego Twp., T1N R12W, Allegan Co., MI. About 400 m² of cultural debris on a high sand bank approx. 200 m NE of the Kalamazoo River. Moderate priority.
14 flint chips
- KBS-78-B35
20 AE 293
Clark. Campsite in the NE 1/4, NW 1/4, Sec. 17, Otsego Twp., T1N R12W, Alleagn Co., MI. About 625 m² of cultural debris on a high sand bank approx. 150 m NE of the Kalamazoo River. Moderate priority.
2 projectile points 9 flint chips
- KBS-78-B36
20 AE 294
Rossmen. Small campsite in the NW 1/4, SE 1/4, Sec. 17, Otsego Twp., T1N R12W, Allegan Co., MI. About 50 m² of light cultural debris scatter on a high sand bluff approx. 150 m NNE of the Kalamazoo River. Low to moderate priority.
1 scraper 2 flint chips
- KBS-78-B37
20 AE 295
George. Isolated projectile point find in the SE 1/4, NW 1/4, Sec. 18, Gun Plain Twp., T1N R11W, Allegan Co., MI. Located on a slight rise of sand approx. 400 m N of the Gun River. Low priority.
1 projectile point
- KBS-78-B38
20 AE 296
Scott. Isolated projectile point find in the SW 1/4, NW 1/4, Sec. 18, Gun Plain Twp., T1N R11W, Allegan Co., MI. Located on a slight sand rise approx. 400 m N of Gun River and W of 20 AE 295. Low priority.
1 projectile point

- KBS-78-B39
20 AE 297
Albert. Small camp in the NE 1/4, SW 1/4, Sec. 33, Otsego Twp., T1N R12W, Allegan Co., MI. About 750 m² of light cultural debris on a low sand rise approx. 1600 m SE of Pine Creek. Low to moderate priority.
1 projectile point 6 flint chips
- KBS-78-B40
20 AE 298
Swanger. Isolated projectile point find of possible Archaic affiliation in the NW 1/4, SW 1/4, Sec. 33, Otsego Twp., T1N R12W, Allegan Co., MI. Found in the basement fill under the residence of Mrs. Albert Nuyen by her grandson who now has it in his possession. Low priority.
1 projectile point
- KBS-78-B41
20 AE 299
Stickle. Probable campsite located in the E 1/2, NW 1/4, Sec. 33, Otsego Twp., T1N R12W, Allegan Co., MI. Private collection of projectile points and biface in the possession of the Donald Stickle family, reportedly from their farm. A more exact located of the occupation area could not be discerned. Probable moderate priority. No surface collection was made.
- KBS-78-B42
20 AE 300
Spencer. Chipping station in the center of the SW 1/4, NW 1/4, Sec. 33, Otsego Twp., T1N R12W, Allegan Co., MI. About 400 m² of cultural debris approx. 80 m SE of Pine Creek near an unnamed stream. Moderate to low priority.
16 flint chips
- KBS-78-B43
20 AE 396
File. Probable campsite or large chipping area in the NW 1/4, SW 1/4, Sec. 28, Otsego Twp., T1N R12W, Allegan Co., MI. About 800 m² of cultural debris in sand blow outs on a bluff approx. 400 m ESE of Pine Creek. Moderate to low priority.
62 flint chips
- KBS-78-B44*
20 AE 395
Nakikion. Probable campsite in the SW 1/4, SW 1/4, Sec. 7, Otsego Twp., T1N R12W, Allegan Co., MI. Private collection of artifacts in the possession of Mrs. Nakikion and her sister Mrs. Dorothea Wray reportedly found in this area on a high sand bank approx. 50 m SW of the Kalamazoo River. Probable moderate priority. No surface collection was taken.

6. Interpretations and Conclusions

The 157 archaeological sites recorded in 1978 and briefly described in Section 5 of this report are not easily summarized and interpreted. Surface collections rarely contain significant quantities of cultural debris and very few diagnostic artifacts have been found. Be that as it may, the data available to us clearly indicate that human groups have occupied the Middle Kalamazoo River Valley since Paleo-Indian times (ca. 12,000-10,000 B.P.).

As was the case with the 1977 KBS project (Cremin, Hoxie and Weston 1978), the vast majority of sites located this year suggest extensive rather than intensive utilization of the project area in prehistory. Most prevalent are sites which are either "spot" finds of projectile points without associated debris or lithic scatters which also commonly include fire-cracked rock and one or more artifacts. These sites usually range in size from less than one m² to several hundred m², but on occasion may be even more extensive, covering as much as several thousand m². On the basis of the kinds and quantities of debris recovered and the location and size of the sites, themselves, it is tempting to suggest that they represent activities ranging from an isolated episode of hunting during which a projectile was lost or discarded, to short-term, limited activity sites where specific extractive and/or maintenance tasks were performed. The dispersed pattern of settlement which appears to prevail in the project area correlates quite nicely with both the opportunities for exploiting diverse resources afforded by climax oak-hickory forest on the one hand, and current ecological models of hunter-gatherer subsistence-

settlement which emphasize "flexibility" (with respect to changing group composition, site selection and the time and duration of site occupation) in the seasonal scheduling of resource procurement (for example, see Cremin 1978c; Jochim 1976).

While it would be highly desirable for archaeologists to test a representative sample of these sites in order to more precisely ascertain their temporal placement and function, most can at this time be assigned only a "low" to "moderate" priority. The field program at WMU is just not large enough to initiate a more thorough evaluation of these many small sites. The several exceptional sites which have been given "high" priority status by surveyors should receive out attention in the very near future. We refer specifically to the Haas #2 site (KBS-78-A11) and the Thompson site (KBS-78-A61). Both have yielded Paleo-Indian points in association with camp debris. At this time we are planning to seek permission to test one or both of these sites during the 1979 field season.

Components deserving systematic test excavation are exceedingly rare in the middle valley, with 2 occurring in Transect A and only one in Transect B. Both the Allegan Hayfield Management Area site (KBS-78-A36) and the Evergreen #3 site (KBS-78-A44) are small, covering as estimated 25 m² and 50 m², respectively. However, debris densities were observed to be relatively high on these sites and cultural features are exposed on the surface. They have been assigned a "moderate" to "high" priority by surveyors.

In Transect B, only the Schnable Lake site (KBS-78-B4) appears to qualify as a component. Here, surveyors observed a heavy scatter of cultural debris extending over an area of about 10,000 m² on top

of a sand bluff overlooking the lake. This is the only site given a "high" priority in this transect.

An informant site, Ames (KBS-78-B10), appears to be the find of the field season. Located on Base Line Creek, just outside of Transect B, Ames may represent an Archaic-Woodland period base settlement or village. The collection from this site, in the possession of the landowner, Mr. Dorsey Ames, is perhaps the finest from a single site that we have seen in the valley (see Plates). Mr. Ames picked up this material from the surface some years ago when he still plowed his field using a team of horses. Our hasty reconnaissance of the site area, estimated at about 10,000 m², yielded some additional evidence confirming the presence of a prehistoric site. With the landowner's permission, the Ames site will be the prime target for test excavation by the 1979 archaeological field school.

Referring now to just those 143 sites (both previously known and recently discovered) which occur in surveyed portions of the 1978 project area, we have recorded one site for every 17 ha surveyed in Transect A and one site per 39 ha in Transect B. The combined average for the 2 transects is one site per 24 ha, which compares quite favorably with the rate of recovery (one site per 23 ha surveyed) for the transect below Lake Allegan evaluated in 1977 (Cremin, Hoxie and Weston 1978).

Table 3 summarizes site density data for both transects by individual sampling stratum. Combining site density data for both transects results in a mean density of 3.86 sites per km² surveyed. This is less than $\frac{1}{2}$ the density recorded for our 1976 transect near the confluence of the Kalamazoo and Rabbit rivers in the lower valley

Table 3: Site Density per Km² (Calculated by Dividing the Number of Sites by the Actual Km² Surveyed) for Transects A and B by Sampling Stratum

Stratum:	Transect A	Transect B
1		0.47
1-2		6.59
1-3		0.00
1-4		3.33
2	4.23	5.77
2-2	4.22	4.35
2-3	0.00	
3	4.57	
3-1	11.27	
3-2	6.90	
4		1.76
4-1		4.10
4-2		3.03
4-3		2.86
6		0.00
6-2		2.50
12	5.62	0.65
12-1		3.26
12-2	0.99	
12-3	12.36	
<hr/>		
20 Strata	50.16	38.67
	$\bar{X} = 5.57$	$\bar{X} = 2.76$

and nearly identical to that recorded for the 1977 transect immediately below Lake Allegan (Cremin 1978b). These data suggest that the frequency with which prehistoric sites occur in the valley diminishes as one proceeds upstream from the river's mouth.

Somewhat different results are obtained when the individual transects are considered. As is indicated in Table 3, the site density recorded for Transect A is more than 2 times greater than the density calculated in Transect B. While this observation is generally consistent with our previous comment regarding the progressive reduction in the number of sites recorded as our survey program has moved upstream, we are still faced with trying to explain why the density for

Transect A is also $1/3$ greater than that recorded for the 1977 transect downstream.

Turning now to the matter of densities recorded for sampling strata occurring within the 1978 transects, we have noted an absence of sites in only 3 of 20 strata. In all 3 cases we cannot dismiss the possibility that this observation is an artifact of our sampling strategy. In aggregate, only 6 quarter-sections occurring in these strata were included in the sample, and surveyors were able to evaluate only 125 ha, or 32% of the area targeted for investigation.

In both transects, strata removed from streams almost always show site densities well below the average recorded for the entire sampling universe. The only exception is Stratum 2 in Transect B, for which we have calculated a site density 2 times greater than the average density. This soil association is confined to the southern-most portions of both transects; an area drained by Pine Creek and its major tributary, Base Line Creek. According to local informants, this area of the county has long been known to contain significant archaeological resources (e.g. Ames site). The presence of numerous sites in both Stratum 2 and Stratum 2-2 requires explanation, and the answers lie with the implementation of much needed problem-oriented research.

Again, as in 1977 (Cremin, Hoxie and Weston 1978), surveyors observed a strong correlation between high site density and the presence of permanent streams, especially the Kalamazoo River. As is shown in Table 3, all sampling strata bordering on the Kalamazoo have site densities higher than the average recorded for the transects in which they occur. For Stratum 3-1 in Transect A and

Stratum 4-1 in Transect B, site density approaches twice that recorded on the average.

Interestingly, the highest densities recorded in both transects are associated with tributary strata. Stratum 12-3 in Transect A and Stratum 1-2 in Transect B have densities of 12.36 (\bar{X} = 6.27) and 6.59 (X = 2.76), respectively. Clearly, the prehistoric occupants of the Middle Kalamazoo Valley show a marked preference for locating sites in close proximity to the main trench and the valleys of larger tributary streams. And, with respect to streams of lower rank order (Stratum 12-3 in Transect A; Stratum 1-4 in Transect B), a possible explanation for the higher site densities observed in these instances might be the presence of clear-water lakes which are drained by them. In retrospect, it might have been advisable to create separate sampling strata to treat with the numerous lakes dotting the landscape in the 1978 project area.

As a means of checking the validity of interpretations derived from site density data, we have also calculated an index of occupational intensity utilizing suggestions provided by Christopher Pebbles (personal communication). In this instance:

- | | | |
|--------------------|---|-----------|
| 01: spot find | = | 1 point |
| 02: lithic scatter | = | 5 points |
| 03: component | = | 10 points |

Table 4 lists values assigned to the various sampling strata in the 2 transects. Combining data from both transects results in a mean intensity score of 17.31 for the entire project area. This is more than 3 times less than the value calculated for the 1976 transect and more than 7 points lower than the intensity score recorded for the 1977

Table 4: Occupational Intensity Values Calculated for Sampling Strata in Transects A and B

Stratum:	Transect A	Transect B
1		2.35
1-2		28.57
1-3		0.00
1-4		16.67
2	16.93	21.15
2-2	21.13	18.26
2-3	0.00	
3	21.71	
3-1	55.28	
3-2	34.48	
4		5.22
4-1		17.21
4-2		22.73
4-3		8.57
6		0.00
6-2		2.50
12	28.11	0.65
12-1		16.30
12-2	9.90	
12-3	52.81	
<hr/>		
20 Strata	239.95	158.18
	\bar{X} = 26.66	\bar{X} = 11.30

transect (Cremin 1978b). Like the data set presented earlier, calculation of this index strongly suggests less intensive utilization of the valley by prehistoric residents as we move upstream from the lake shore.

However, once again, we observe different results when the values for individual transects are compared. As is shown in Table 4, the intensity score for Transect A is almost 3 times greater than the value recorded for Transect B, and it is also higher than the score of 26 obtained for the 1977 transect downstream (Cremin 1978b). Calculation of this index also points to the discrepancy in the generalization offered earlier that the intensity of prehistoric occupation decreases as we proceed upstream. Apparently, the area around the community of

Allegan offered prehistoric residents of the valley something "extra", but at this point in time we are unable to identify with any confidence the possible reason(s) for the higher site density and occupational intensity recorded for Transect A.

With respect to individual strata in the 1978 transects, we observed that occupational intensity scores compare quite favorably with the previous data set; they also illustrate a marked preference for locating sites in close proximity to a perennial stream. Again, Stratum 2 in Transect B is the only area removed from permanent streams that has an intensity score in excess of the average for the transect. Stratum 12 in Transect A approaches the average score, but all other strata in both transects which are characterized by an absence of streams have scores well below the mean.

Generally, for both transects, the highest scores are associated with strata flanking the Kalamazoo River. This is especially true for Stratum 3-1 in Transect A, which has the highest score calculated for strata occurring in this sampling universe. However, the value for Stratum 12-3, centered on Miner Lake, is also very high. While it is entirely possible that this latter observation reflects in part the great assistance in locating sites provided by an area collector knowledgeable with respect to the land around this lake, archaeologists at WMU have long known that this area was relatively rich in cultural resources. We would suggest that Miner Lake, once much larger than at present, was the "magnet" drawing prehistoric peoples to this area of the transect. Some support for this interpretation can be gained from the distribution of archaeological sites, which clearly conforms to the ancient shoreline.

In Transect B, Stratum 4-1 and Stratum 12-1 have values about 50% higher than the average score. However, the highest scores have been calculated for 3 secondary stream strata (Stratum 1-2, Stratum 2-2 and Stratum 4-2). Here, in this portion of the valley, prehistoric residents appear to have utilized tributary valleys to an even greater extent than the main trench. Significantly, climax oak-hickory forest is better developed in this transect than elsewhere in the Kalamazoo Basin of Allegan County, and it is reasonable to speculate (in the absence of appropriate ecological data) that the major food producing species of this association (e.g. white oak, hickory and black walnut) achieved their greatest development in tributary drainage systems. We would suggest that additional investigation will establish that most sites occurring in secondary valleys were utilized on a seasonal basis by small groups exploiting high-food yielding upland resources, such as nuts and the many mammals frequenting oak-hickory woodlands.

Site density and occupational intensity data derived from 3 seasons of systematic site survey in the Kalamazoo Basin of Allegan County have recently been summarized by the senior author (Cremin 1978b). These data tentatively suggest a pattern of prehistoric settlement consisting of seasonal and/or multi-seasonal base camps and limited activity sites which may be ancillary either to main habitation areas in this valley or, alternatively, base camps or settlements located outside of the Kalamazoo River Basin. It would appear that the best candidates for intensively occupied sites are concentrated in the lower valley, with impressive components recorded to date being increasingly rare as we move upstream from the confluence of the Kalamazoo and Rabbit rivers. In the middle valley, i.e. the area of

our 1978 transects, only 3 of 143 sites occurring within surveyed portions of the sampling universes would appear to represent components, at least on the basis of surface indications. And 2 of these are very small by comparison to sites downstream. Additionally, at least one site occurring outside the limits of the 2 transects, the Ames site, certainly qualifies as a major component.

In contrast to transects surveyed in previous years, the 1978 project area, located in a portion of the valley which is increasingly dominated by oak-hickory forest, shows a dispersed pattern of settlement. Sites are generally smaller than those found downstream, with a greater number occurring in tributary valleys and in upland areas which are somewhat removed from permanent streams. Rarely are these sites indicative of intensive occupation, but rather suggest periodic, presumably seasonal dispersion of populations into smaller, task-specific groups--work parties that were more appropriate to the efficient exploitation of upland food species which were not as spatially concentrated as the rich aquatic and riparian resources maximally available in the lower valley.

7. Recommendations for Future Research and Cultural Resource Management

Sites recorded during the 1978 survey were found either in areas under cultivation (e.g. fields, tree nurseries) or erosional features, such as sand banks along rivers and overlooking lakes. Therefore, the archaeological context is undergoing constant alteration and valuable information is being irretrievably lost. Fortunately, for the vast majority of sites found in fields, deep plowing is the exception rather than the rule, and the destruction process is not accelerating appreciably at present. If current land use patterns are not drastically altered, all but the very shallow sites will be with us for some time to come.

In marked contrast to the 1977 project area, which in large part consisted of land in the Allegan State Game Area, there is no "safe" area within this season's transects. Rather, land alteration activities were observed to be underway in several areas, especially in the vicinity of major communities like Allegan and Otsego. Inasmuch as federal money is seldom involved in these projects, archaeologists have had little if any meaningful input into the decision-making process with respect to these small public and privately sponsored activities. It is hoped that the greater visibility achieved by archaeologists working in Allegan County in recent years can in some small way have a desirable impact on these developments, and lead to a greater exchange of information between those interested in management of cultural resources and that sector of the population engaged in various activities relating to alteration of the existing landscape.

With respect to WMU's future research objectives, it is of course highly desirable that at least those sites assigned "high" priority status be further evaluated. Unfortunately, while our objectives and needs are high, our means are not. Our small but active program revolves around an 8 week field session, during which one or more sites are selected for systematic test excavation. Furthermore, the problems which are currently the focus of our field program do not always allow for considerations of cultural resource management. That is, we cannot always shift our emphasis from one site to another in response to a perceived need arising out of our survey programs. Surely, the interface between "pure" and "conservation" research is difficult to address, especially in the context of a small graduate program like WMU's which has to satisfy the needs of future professional archaeologists requiring the acquisition of skills in problem-oriented archaeology.

Be that as it may, and assuming continued landowner cooperation, the 1979 field school will attempt to include in its activity at least some judicious testing of several sites found this year. I refer specifically to those "high" priority sites which might not only deserve nomination to the National Register, but may also shed new light on the Paleo-Indian and Archaic occupations of the Kalamazoo Basin. In terms of the current objectives of the Kalamazoo Basin Archaeological Project, components dating to these periods have much to contribute to our understanding of prehistoric subsistence-settlement in this region.

8. Catalog of All Artifactual Material Recovered During the Survey

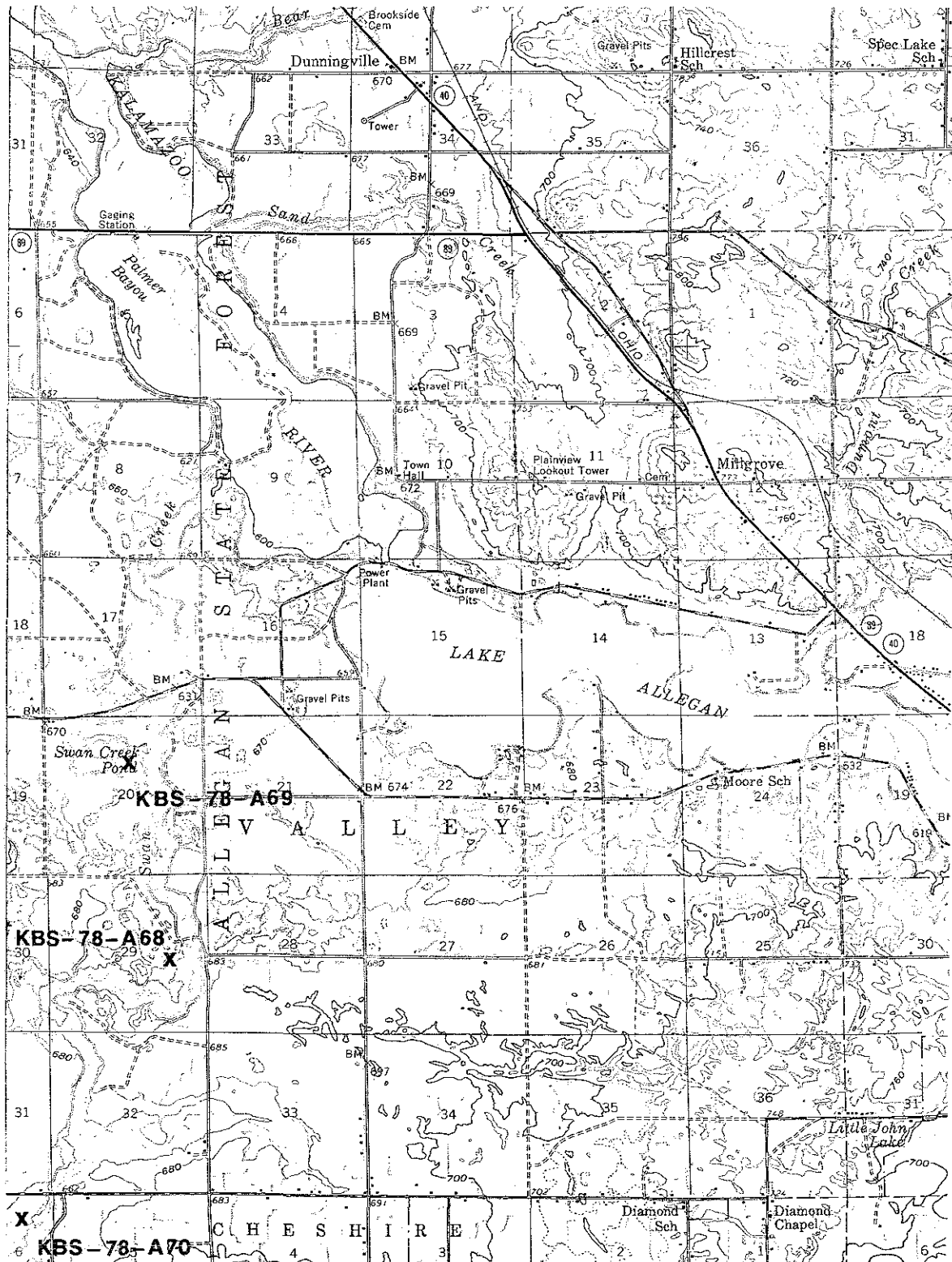
For a complete listing of cultural debris collected during the 1978 survey, the reader is referred to Section 5 above. Here, the catalog of artifactual material has been included together with the site description.

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APPENDIX I

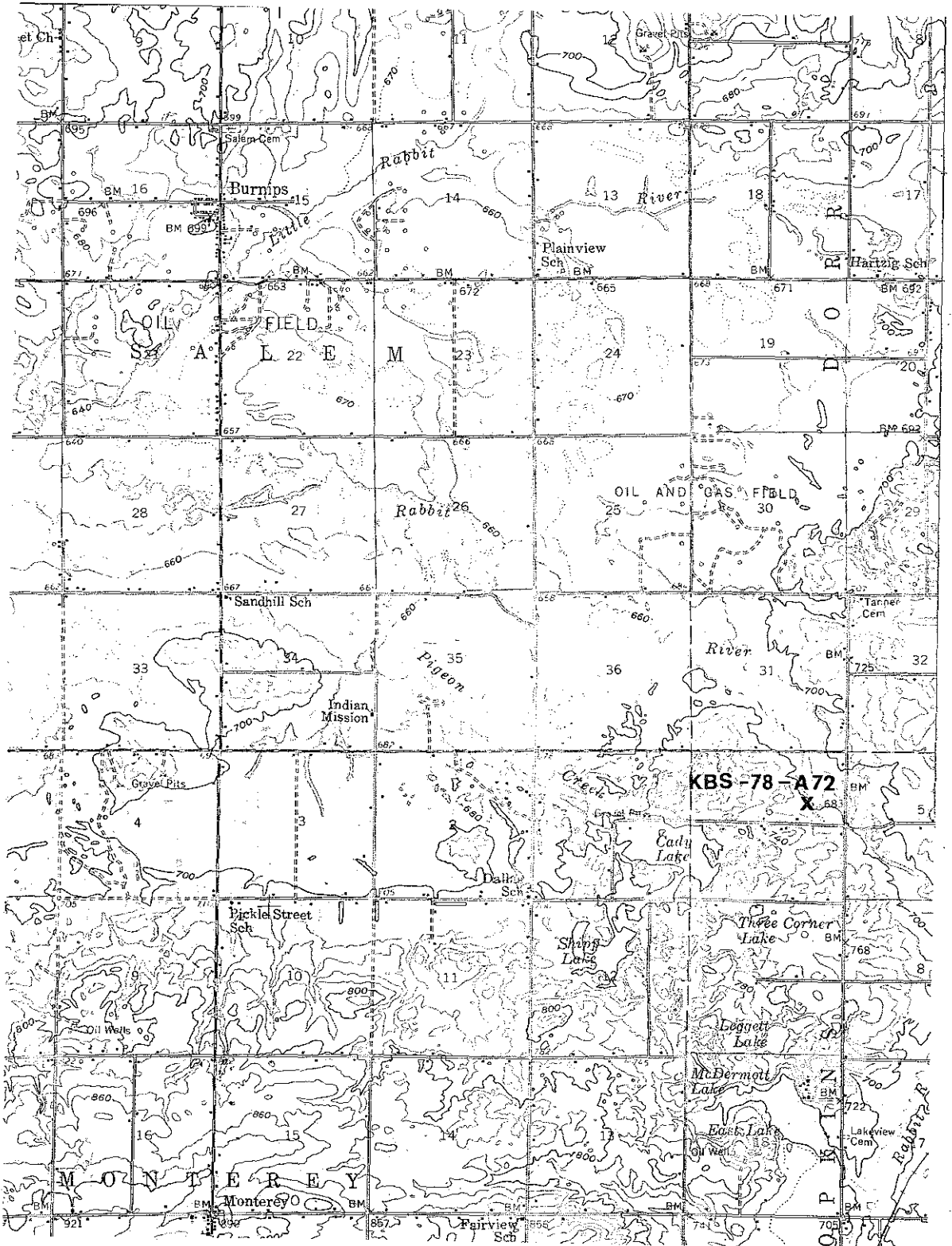
Series of Maps Showing the Locations of
Sites not Indicated on Maps in the Text

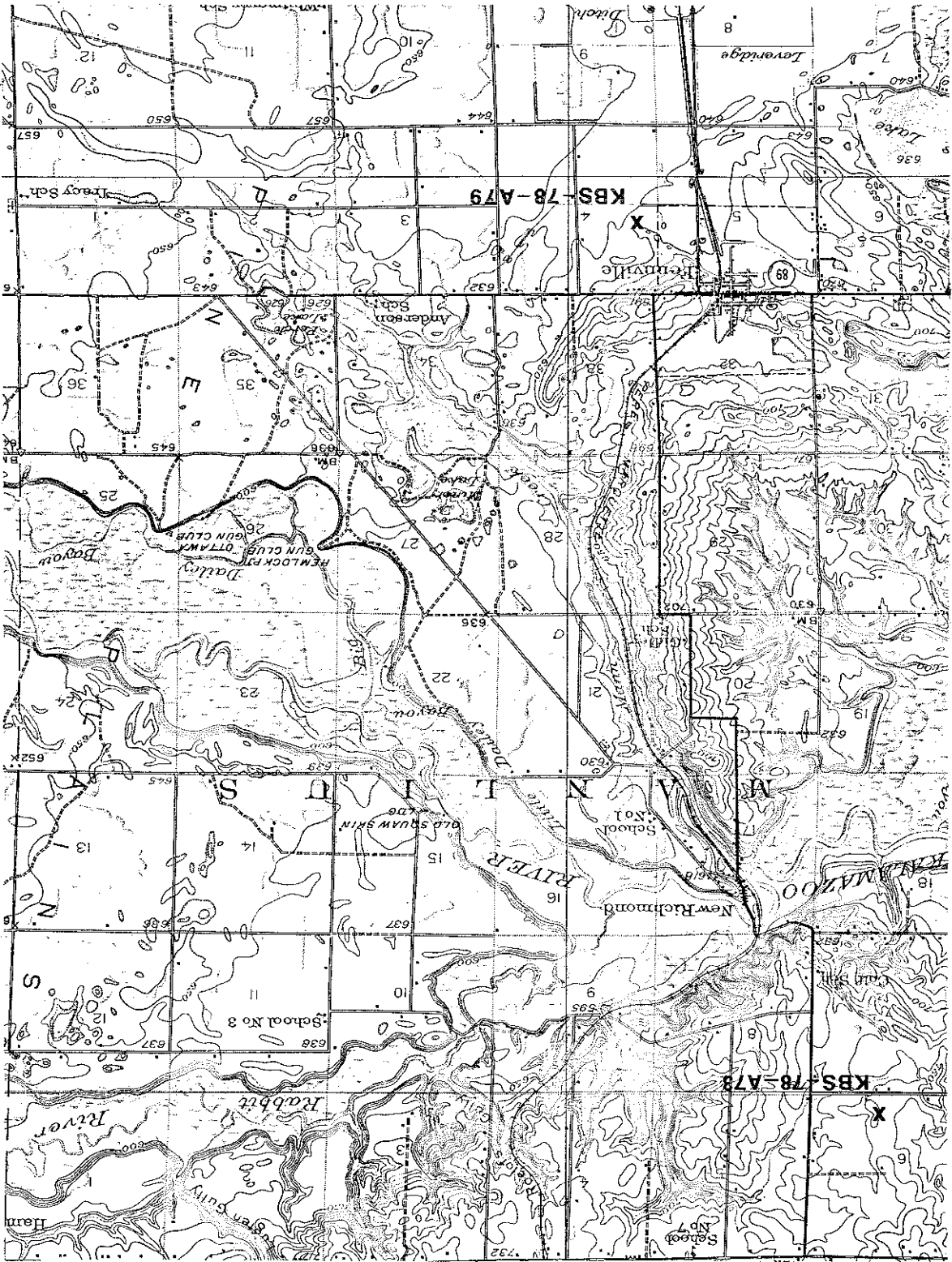


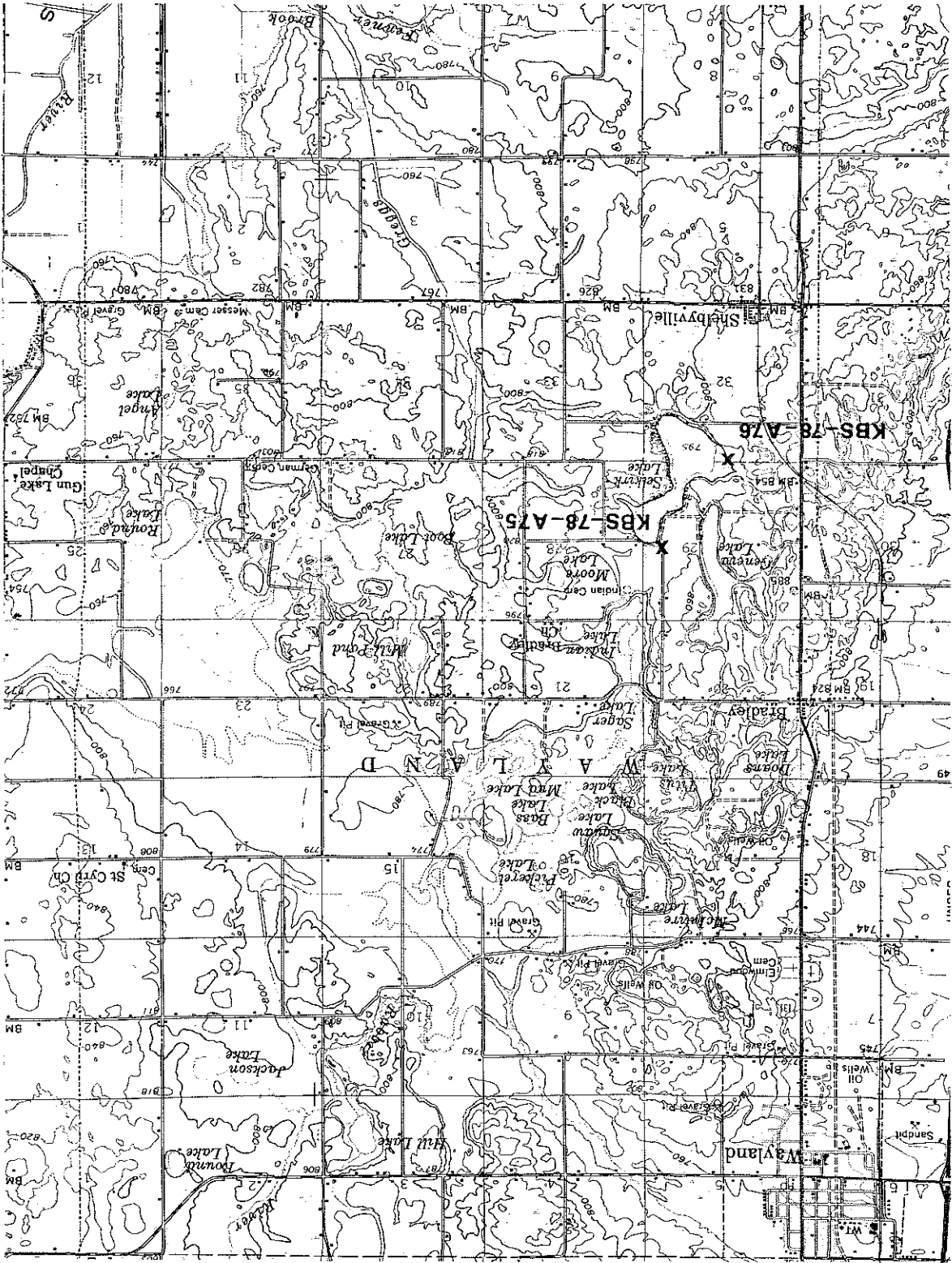
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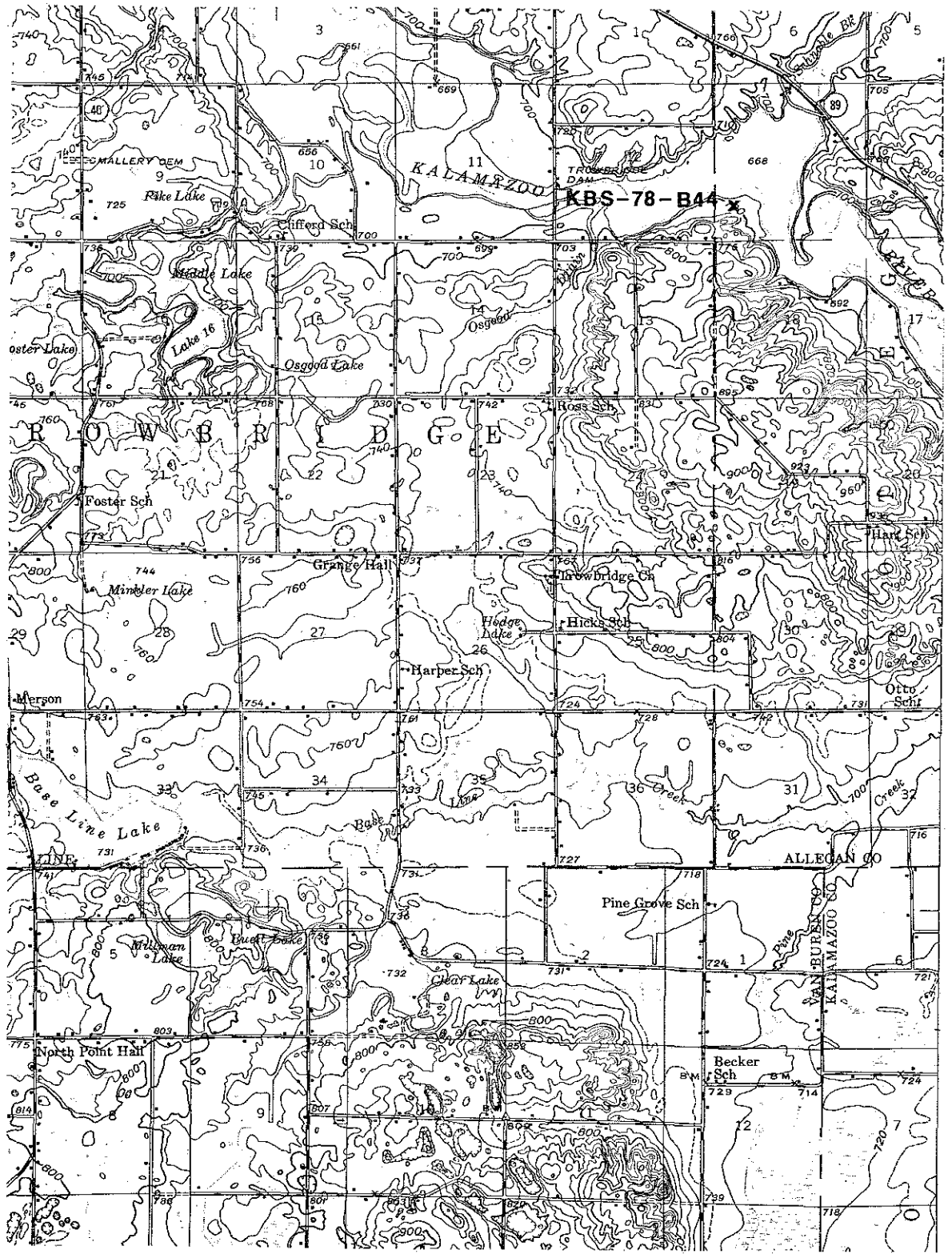
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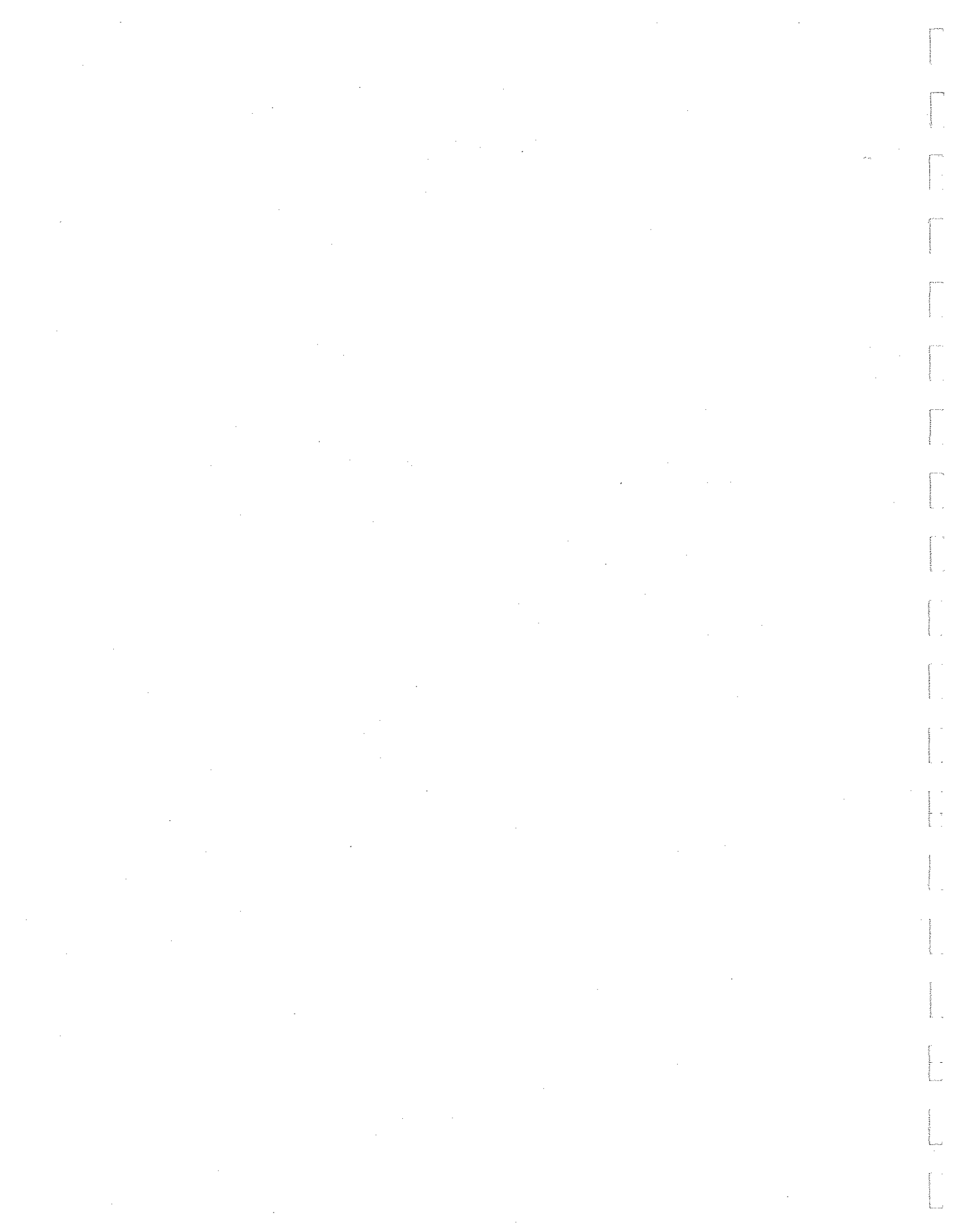






PLATES

Note: On the page facing each plate, the site number (KBS-78-) for the corresponding artifact is given.



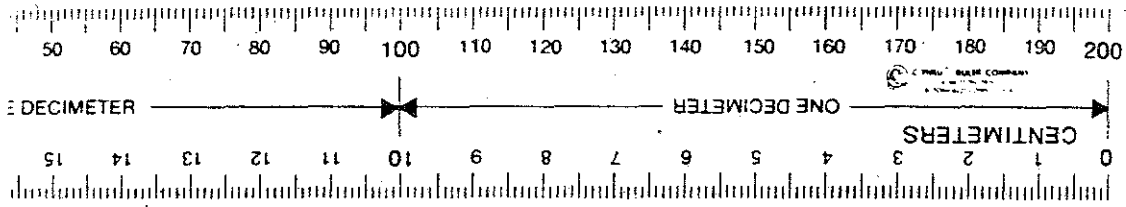


PLATE 1



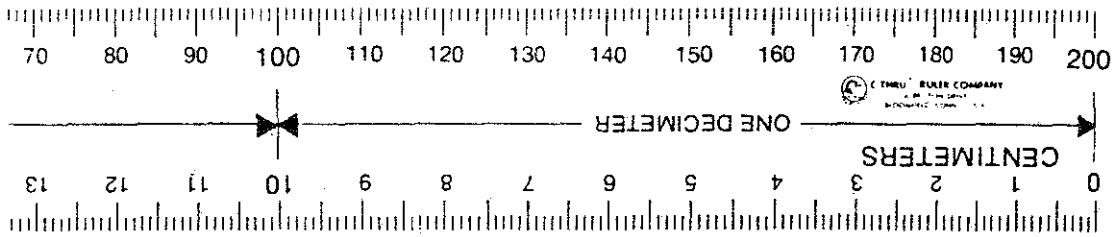


PLATE 2

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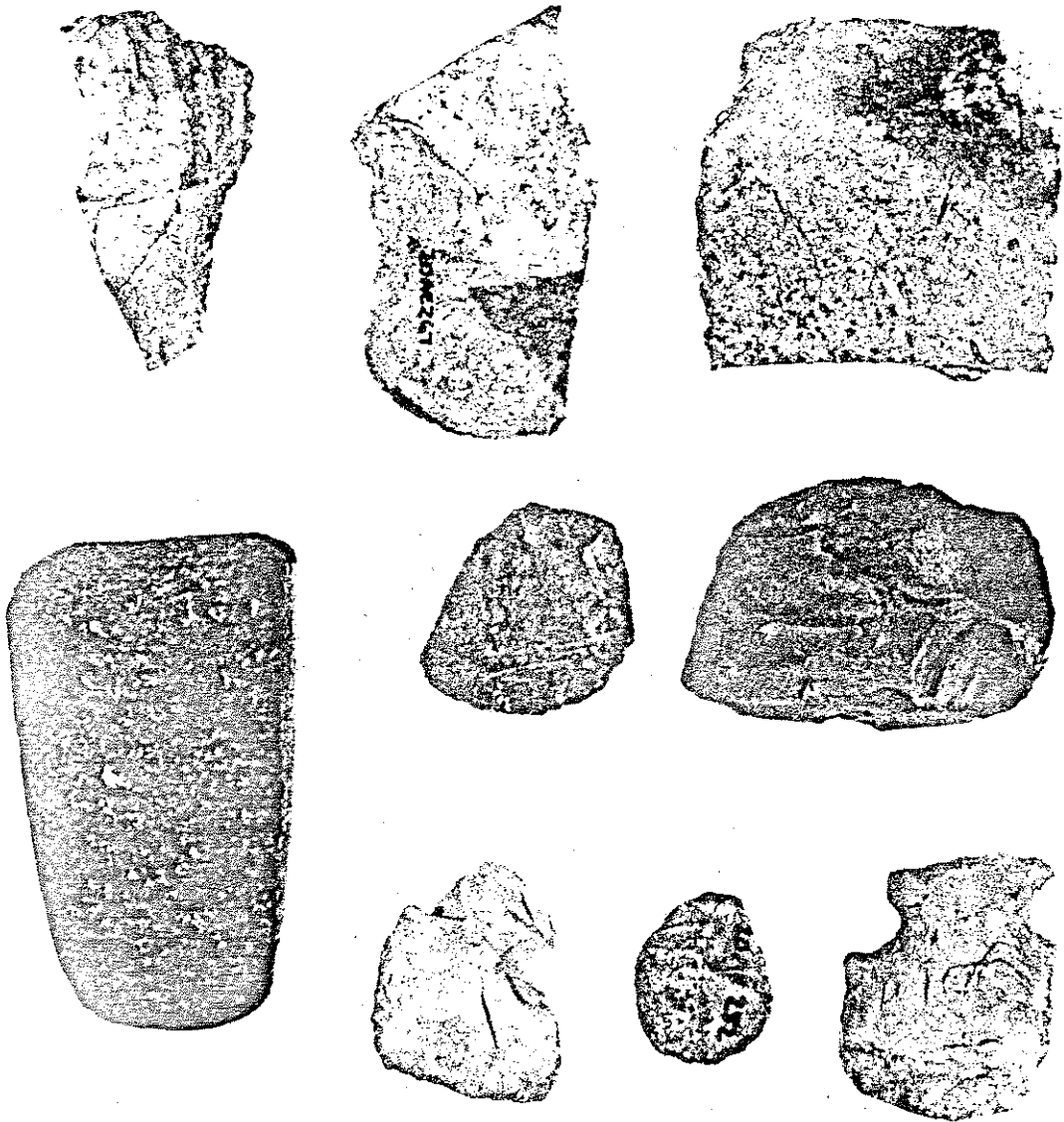
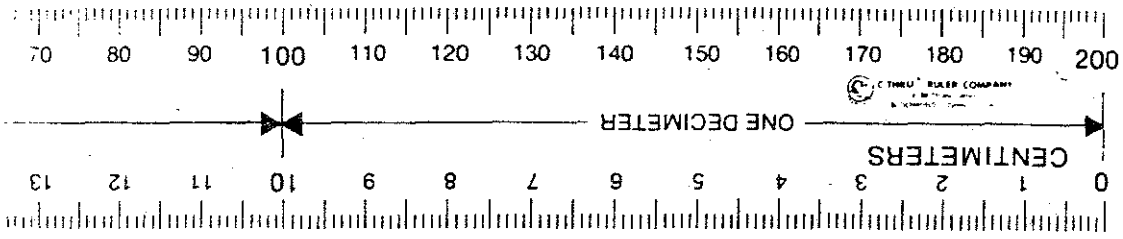


PLATE 3



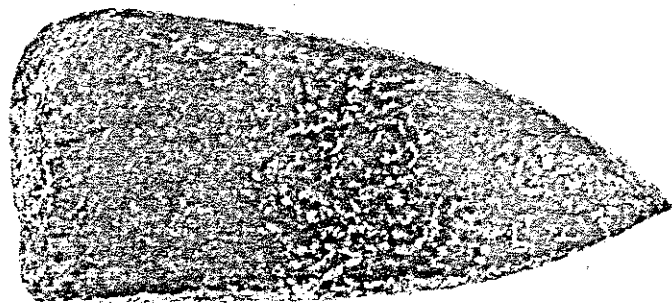
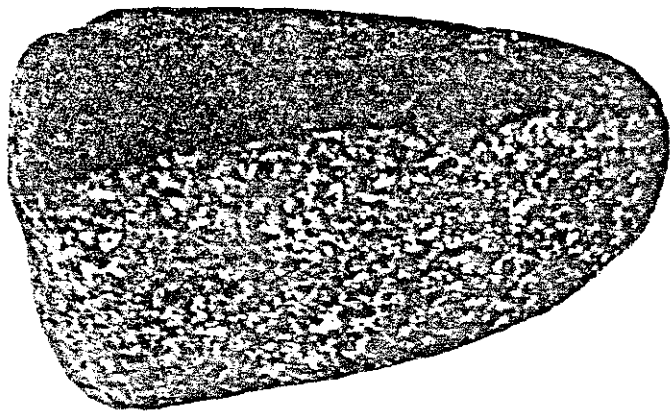
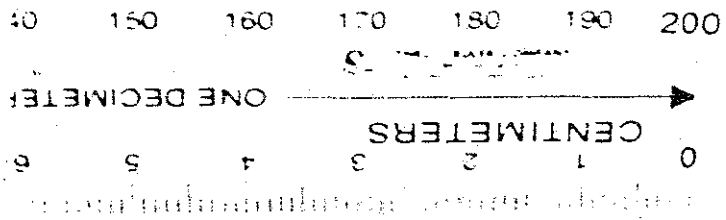


PLATE 4

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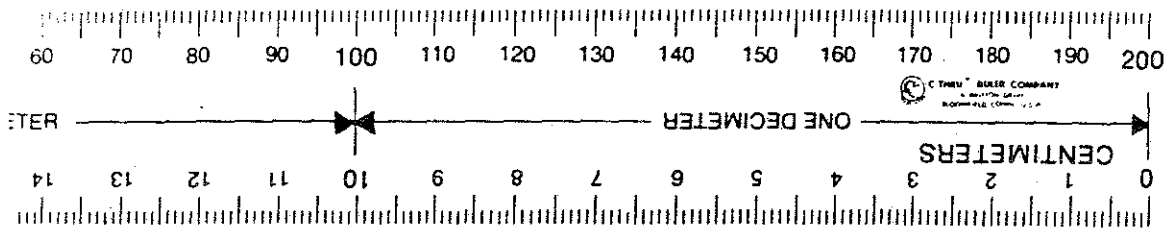


PLATE 5

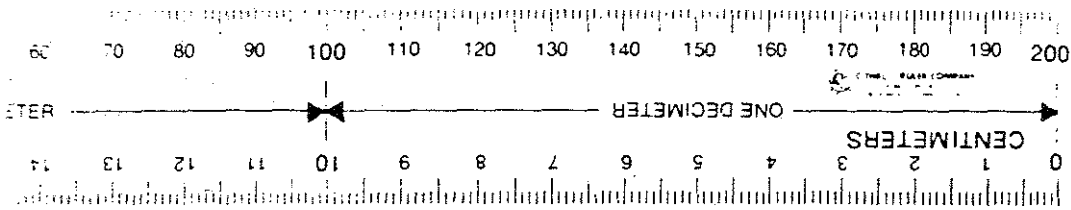
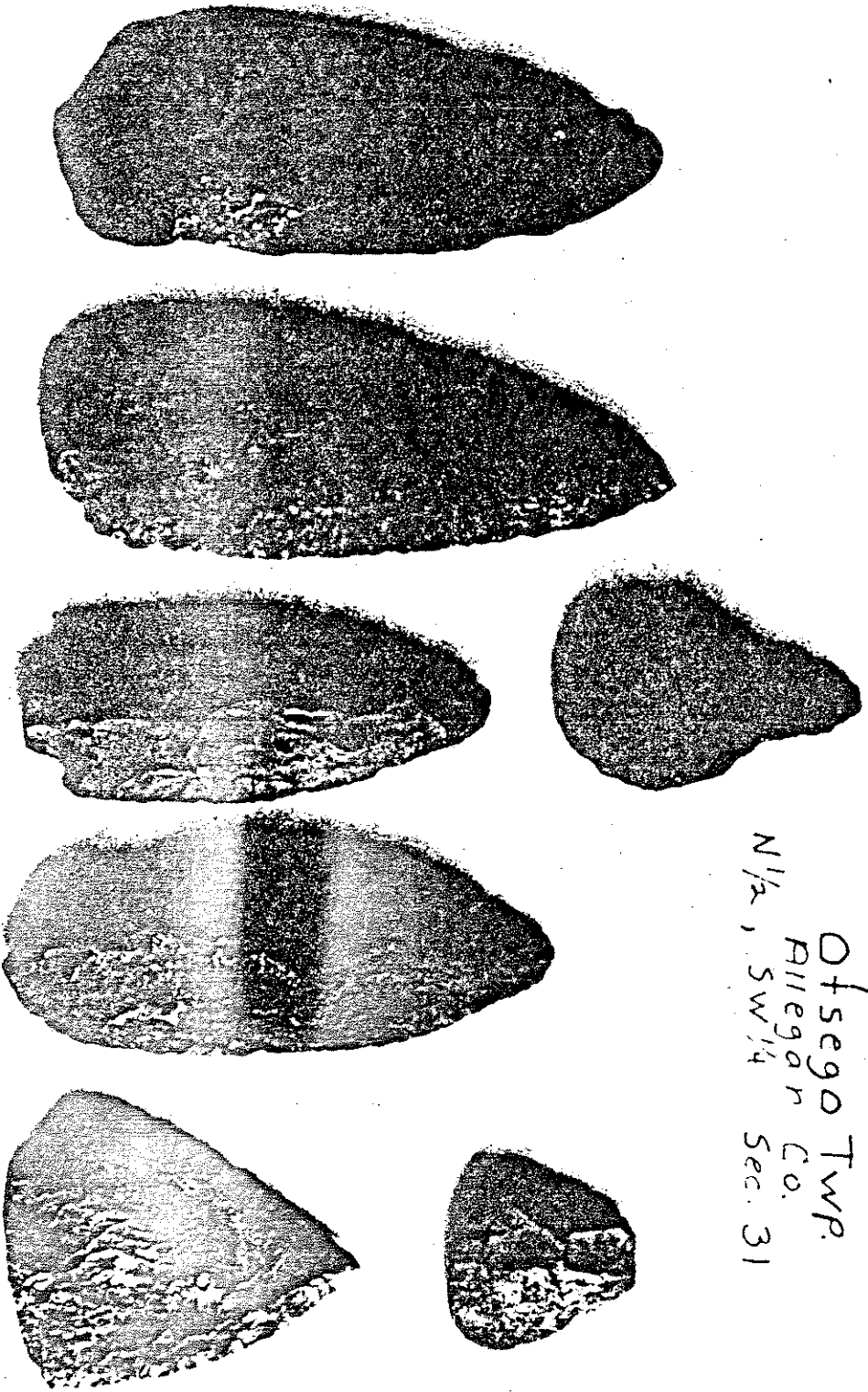


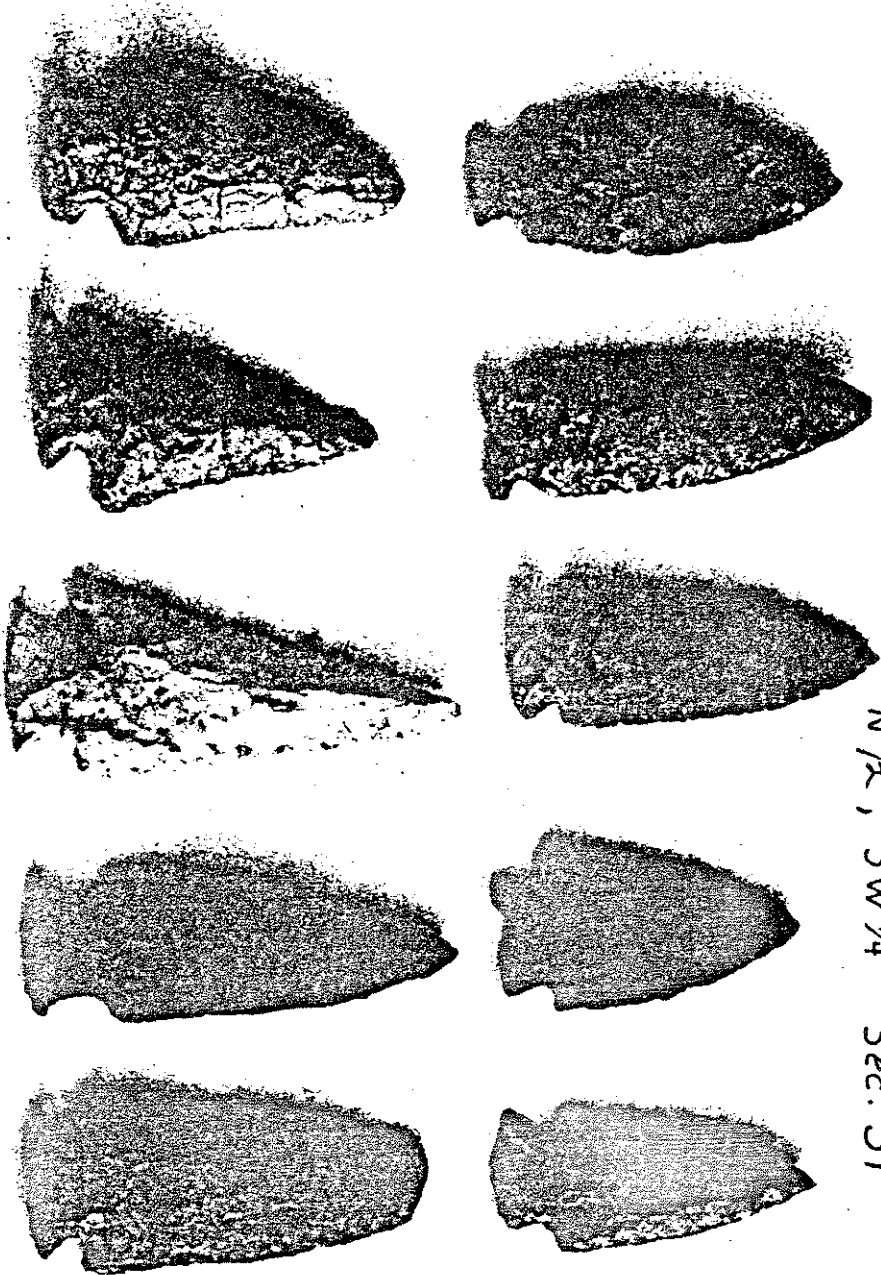
PLATE 6



Dorsey Ames Collect.
Otsego Twp.
Alleghen Co.
N¹/₂, SW¹/₄ Sec. 31

PLATE 7

Dorsey Ames Collection
Otsego Twp.
Rilegan Co.
N¹/₂, SW¹/₄ Sec. 31



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Dorsey Ames Collection
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Alleghan Co.
N¹/₂, SW¹/₄ Sec. 31

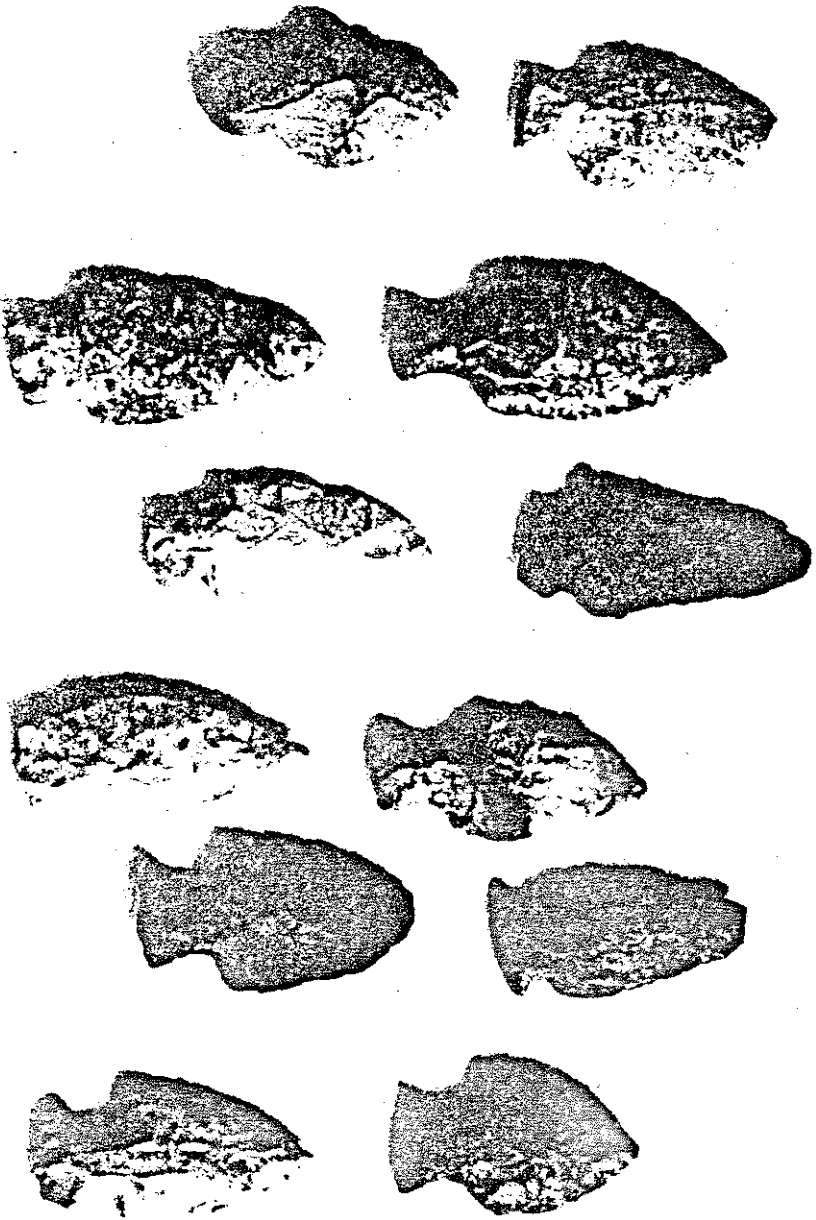
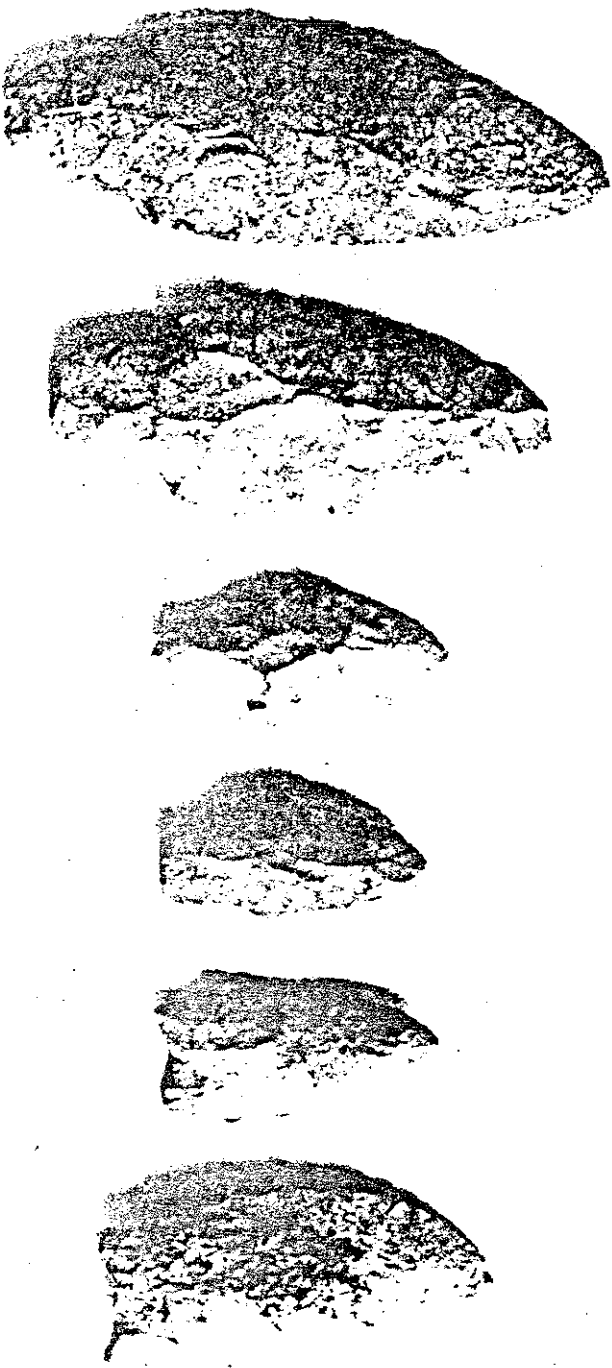


PLATE 9

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Dorsey Amer. Collection
Osage Twp.
Pileas, Mo.
N. 1/2, SW 1/4, Sec. 31



Pl. 10
No. 10
Pileas, Mo.
N. 1/2, SW 1/4, Sec. 31

PLATE 10

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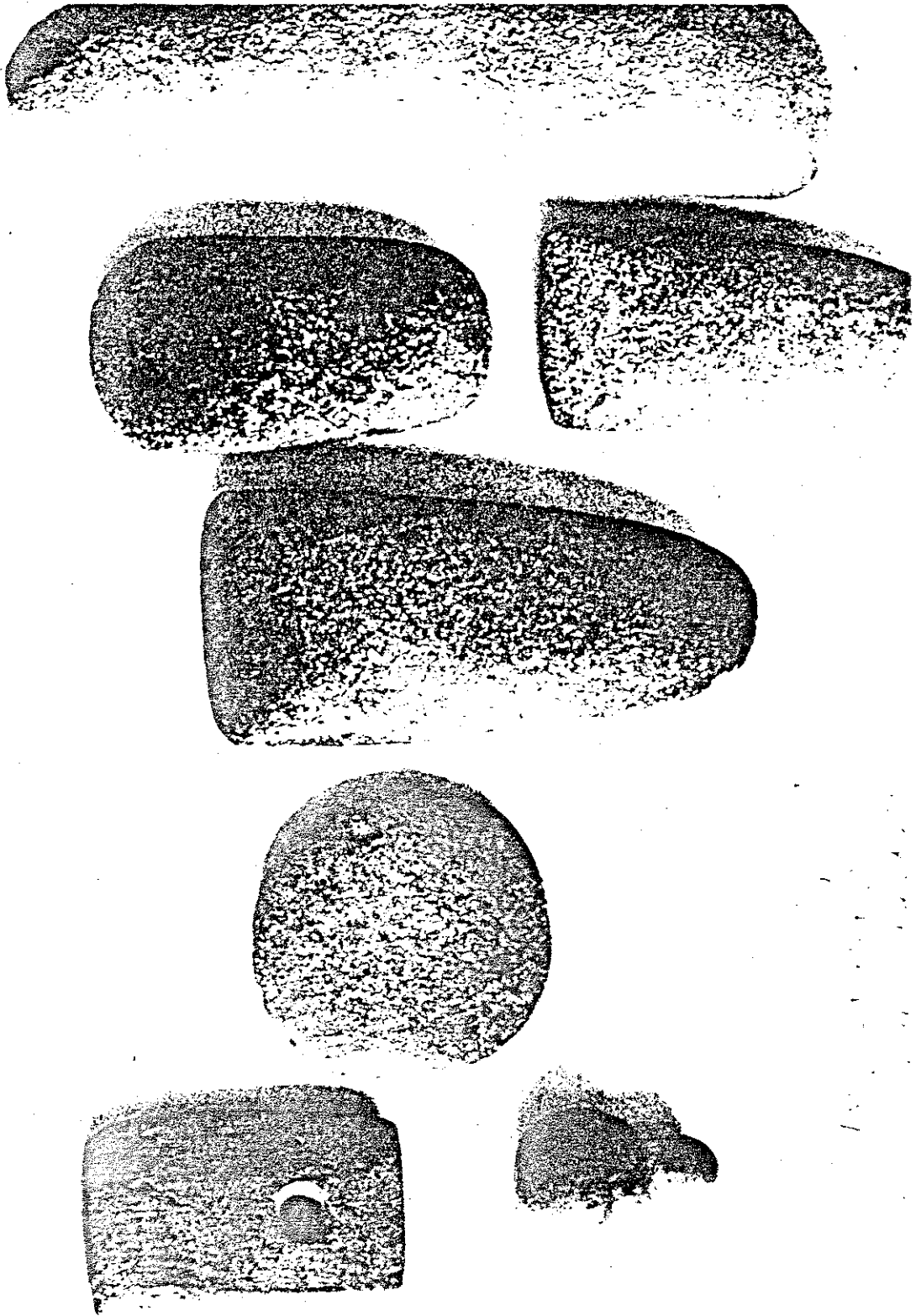


PLATE II