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The Prehistory of the Birch Run Road Site, Saginaw County, Michigan

Caven P. Clark
Western Michigan University

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THE PREHISTORY OF THE BIRCH RUN ROAD SITE, SAGINAW COUNTY, MICHIGAN

by

Caven P. Clark

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Master of Arts
Department of Anthropology

Western Michigan University
Kalamazoo, Michigan
August 1985
The Birch Run Road site (20SA393), located in the archaeologically complex Saginaw Valley, was partially impacted by the extension of Birch Run Road across the Flint River. In many respects typical of Saginaw Valley sites as a whole, the Birch Run Road site produced artifacts attributable to the Early Archaic, Late Archaic, Late Woodland and historic periods. The prehistoric occupations are evaluated with special attention to the context and form of lithic raw materials, and use of projectile points in determining temporal placement. The Late Woodland component, ca. A.D. 800-1100, represents the most intensive occupation of the site. Physical evidence of this occupation includes Wayne, Spring Creek, and Younge tradition ceramics; hearth, pit, and burial features; and food remains suggesting non-specialized resource utilization.
ACKNOWLEDGEMENTS

I would like to express my gratitude to those who endured the production of this manuscript. First and foremost, my chair, Dr. Elizabeth Garland, who exhibited perseverance despite our many shared albatrosses. Dr. William Cremin's vigilant editing was crucial in bringing this thesis into its final form. Dr. Margaret Holman supplied the dialogue that carried it to completion.

Thanks are due to those who provided special assistance or expertise: the Saginaw Archaeological Commission for the loan of the materials, Ms. Kathryn Parker for the ethnobotanical analysis, Mr. Michael Higgins for the identification of the faunal remains, Dr. Robert Sundick for help in age determination of the human physical remains, and Dr. Robert Jack Smith for his kind encouragement and support.

Useful discussions with Dr. Robert G. Kingsley and Dr. William Lovis contributed to this report. Ms. Sue Gibson provided remarkably patient technical support. Finally, I would like to thank Dr. Ronald O. Kapp, Dr. J. Tracy Luke, and Mr. Scott G. Beld for their help in the formative period.

This thesis is dedicated to all my kin, both real and fictive.

Caven P. Clark
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RESEARCH OBJECTIVES

The research objectives of this analysis focus on the elucidation of the Late Woodland component at the Birch Run Road site and the articulation of the data derived therefrom with the extant Late Woodland data base in the Saginaw Valley. The Late Woodland occupation(s) at Birch Run is represented by the bulk of the feature and artifactual evidence and provides an opportunity to evaluate existing models of settlement systems and patterns for this area during this period.

In order to best approach this assessment it is necessary to place the Late Woodland component(s) in time. This is, in part, accomplished by examining ceramic types which are dated at other sites, and in part by the radiocarbon dating of features at Birch Run. In addition, the form and context of local and nonlocal chert types will be contrasted with Luedtke's (1976) data for the Late Woodland period. There is evidence to suggest that changing socioeconomic relationships in the Middle to Late Woodland transition saw a decline in the exchange and use of exotic raw materials, with a concomitant increase in the use of locally available cherts. The configuration of lithic raw materials at the Birch Run Road site should, when compared to Luedtke's findings, indicate the temporal position of the Late Woodland component.

Luedtke (1976) has also provided a sliding scale of Late Woodland projectile point forms as a measure of approximate temporal placement.
This approach is tested with a small group of Late Woodland projectile points from Birch Run as an additional means of determining the chronological position of the Late Woodland component.

As will be seen in the report and artifact analyses which follow, the Birch Run Road site, or at least that portion of it excavated in this project, raises a host of questions concerning the implicit use of the Late Woodland period as a unitary cultural/temporal phenomenon. It will be argued that the Late Woodland is composed of distinct cultural entities indicated by discrete ceramic types. Furthermore, the effect of a complex view of the Late Woodland on extant models will be evaluated. The archaeological evidence from the Birch Run Road site will not answer the issues raised, but will provide the opportunity to address them from a unique perspective outside the valley center. Directions for future work on Saginaw Valley Late Woodland cultures will be offered.
PREVIOUS RESEARCH AND THE HISTORY OF THE PROJECT

The 1978-1979 investigations at the Birch Run Road site, 20SA393, were initiated to mitigate the impact on cultural resources posed by the Birch Run Road project, FAS 7324. This highway project involved the construction of a new segment of Birch Run Road across the Flint River and its floodplain as well as the enhancement of existing right-of-way west of the Flint River, including one minor realignment. The bridge construction and improvement of Birch Run Road has greatly facilitated east-west movement of traffic in this part of Saginaw County.

The initial survey, impact assessment, and proposed mitigation were conducted and reported by the Saginaw Archaeological Commission, Fel V. Brunett, director (Brunett 1978), at the request of Carlson, Hohloch, and Piotrowski, Inc. of Flint and by the Saginaw County Road Commission, Gordon Ely, director. A pedestrian survey was completed in the spring of 1978, disclosing only one prehistoric site in the right-of-way. A test square 1.5 m on a side was excavated on the levee of the east bank of the Flint River, producing only recent material. A 1 m² unit, placed in the center of the right-of-way in the Birch Run Road site, then in corn, yielded a wide range of prehistoric lithic debris. This unit was excavated to a depth of about 20 cm, well within the 30 cm plow zone, and could not be relocated during subsequent excavations.

3
The assessment of site significance was augmented by Donald B. Simons of Grand Blanc who has been surface collecting in this area for some time. His activity on the Birch Run Road site correctly pointed to the heart of the site lying north of the right-of-way.

Brunett (1978:6-7) based his determination of the site's potential significance on the recovery of two stemmed "argillite" points and quartzite biface, suggesting that the problematic Satchell Complex could be better understood through further excavation here. Demonstrably Early Archaic, Late Woodland, and historic period artifacts were not considered in the assessment of site significance.

Recommendations for site mitigation included the locating of all cultural features by means of hand excavation with a minimum sample of 30% (Brunett 1978:6-7). The contract drafted subsequent to this impact assessment stipulated a 20% to 30% sample of site area within the right-of-way.

Preparation of the Birch Run Road site for final mitigation included a deep-plowing strategy similar to that used in the salvage of the Naugle site in Midland County (Ozker 1976). This technique was intended to disclose the locations of subplow zone cultural features. Areas of darkened soils, carbonized plant remains, and fire-cracked rock (FCR) were flagged as they were brought to the surface to mark localities for probabilistic recovery of cultural data in the hand excavation phase. This was the condition of the site prior to the author's involvement in November 1978.
SETTING AND ENVIRONMENT

The Birch Run Road site is located in sections 22 and 27, T10N, R5E, Taymouth Township, Saginaw County, Michigan (Figures 1 and 2). It is situated on a high (relative to the floodplain) flat bank of the Flint River with a maximum elevation of 621.5 ft. above sea level. The bank runs north-south, gradually decreasing in elevation to the south where it merges with the floodplain and where another ridge swings to the southeast. Soils here are primarily sandy-loam with about 20% coarse sand and gravels larger than 1.6 mm. This overlies lacustrine clays at 70 cm below surface. The spring season water table was consistently encountered at the interface between these soil zones. Water flowed freely in a northerly direction towards the Flint River when it was exposed at the bottom of the deeper excavations.

The surface geology of the Birch Run Road site is the result of a series of late glacial and postglacial events. The ice of the Saginaw lobe and the Huron lobe bifurcated the Lake Huron basin and scoured out the extremely flat topography which characterizes most of Saginaw County. Proglacial lakes formed between the terminal moraine and ice front of the Saginaw lobe. The deposition of lacustrine sediments concluded with the Lake Lundy phase at about 12,000 B.C. (Dorr and Eschman 1970; Wayne and Zumberge 1965). The inundation of the site ended with the lowering of the Huron basin lake level and subsequent fluctuations did not affect this area again.
Figure 1. Sites mentioned in text.

A. Juntunen
B. Zemaitis
C. Kanitz
D. Brown
E. Barnes
F. Sumac Bluff/Naugle
G. Andrews
H. Bussinger
I. Tyra
J. Mahoney
K. Bugai
L. 20LP98
M. Pine Grove Cemetery
N. Draper Park
O. Malone
P. Birch Run Road

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Figure 2. Location of Birch Run Road site (arrow), sections 22 and 27, Taymouth Township, Saginaw County, Michigan.
The proglacial Lake Saginaw initially drained into the Michigan basin through the Maple-Grand River outlet until the terminal Port Huron moraine permitted overflow into the Huron basin. The Shiawassee Embayment, referring to the impoundment of water in the lowlands of central Saginaw County, occurred during the Nipissing and Algoma stages of Lake Huron, between 5,000 and 3,000 B.P. Subsequent to the Algoma stage and the draining of the embayment, the area has become an extensive wetland known as the Shiawassee Flats.

The formation of an essentially modern drainage system was initiated by the downcutting of the Flint River's channel and meandering of the river. The Flint is part of an extensive watershed which includes the Tittabawassee, Shiawassee, and Cass Rivers, collectively known as the Saginaw after their final confluence a few kilometers west of Saginaw Bay.

Palynology has produced a consistent pattern of vegetational evolution in the late Pleistocene and early Holocene Great Lakes region. Although poorly documented, the plant communities immediately following the glacial retreat may have resembled modern tundra. Kapp (1977:12) describes an "abrupt" termination of glacial conditions followed by significantly warmer climate.

Picea characterizes the pollen record in Michigan at about 10,500 B.P., followed by the gradual migrations and development of modern plant communities. Pinus dominates the period around 9,500 B.P., giving way to a succession of deciduous species. Relatively low levels of Picea and Pinus pollens were noted for the period
between 7,150 and 5,000 B.P. at a core site in central Michigan (Kapp 1977:16). Oak-elm hardwoods are established by 7,200 B.P. followed by a period of warmer-moister conditions which fostered the expansion of beech-maple forests (Kapp 1977:18). At about 3,000 B.P. the climate became arid and/or cooler, documented by an increase in coniferous species. This condition has remained to the present.

Land survey records for Taymouth Township were examined at the Saginaw County Courthouse. Witness trees on section lines and at section corners were recorded by species and girth. These records constitute the basis for reconstruction of the presettlement forests (Bourdo 1956). Only those witness trees located at section corners and at quarter or half section intervals were used in this assessment of Taymouth Township presettlement forests.

The oldest document consulted is a U.S. government map made in 1821 which shows the boundaries of the Flint River Indian Reserve. This was of limited use due to the small number of witness trees recorded. Only 14 corners and water crossings were noted. The Field Notes of Saginaw County, Volume II, records 412 witness trees blazed in 1840 in the survey of Taymouth Township. The composition of Taymouth Township forests, taken as an arbitrary political unit, corresponds to Kapp's (1978:13) beech-maple hardwoods community.

Keene (1979, 1981) has reconstructed the presettlement forests in a substantial portion of the Saginaw Valley immediately north of Taymouth Township. This area is predominantly swamp forest with black ash, elm, and willow. The resource potential of the swamp forest is low due to the paucity of mast-producing trees.
The division of land in the vicinity of the project area began with the cession of vast territories by the Indians to the United States. The treaty by which reserves were established was conducted at the site of Saginaw in 1819 in a meeting between Lewis Cass and leaders of the local bands of Chippewa, Ottawa, and Potawatomi. Twenty-one tracts were set aside for groups, families, and individuals of this mixed group.

Plat maps and surveyors' records occasionally mention or depict the location of Indian settlements along the Flint River in the vicinity of the Birch Run Road site (Figure 3). The 1821 survey map which established the reservation boundaries shows the village of Kishkabawee north of 20SA393 in sections 16 and 27 on both banks of the Flint in the vicinity of the confluence of Silver Creek and Pine Run with the Flint. On the same map there are several structures indicated on both sides of the river which are designated as "Reaume's Village." The location of the settlement and the identity of its occupants is confused by inconsistent recording of Indian names in the treaty document of 1819. Dustin (1968:114) points out the particulars of the problem:

Still another example of indifferent nomenclature was exhibited in the Flint River reserve which reads: "One tract . . . to include Reaume's Village . . . ." Reaume was a Frenchman of indifferent character, he had no village. It should have read, "Neome's Village," for he was the chief of the band at that point and was noted throughout the territory but his name sounded like that of the Frenchman.
Figure 3. Historic villages and reservation boundaries in the Birch Run Road site vicinity.

A. Flint Run reservation, 1821
B. Kishkabawee Indian village, 1821
C. Reume's village, 1821
D. Peonagowink Indian village, 1859
E. James Morse's shingle mill and the Pine Run canal, 1859
F. 20SA393
This large reserve was in Taymouth Township and extended south into Genesee County. It lay on both sides of the river, and included the Indian ford (Kishkabawee), near the present town hall and is now the home of twenty or thirty of those who ceded their land. There is no finer location on the Flint River.

Also mentioned by Dustin is the village of Peonagowink. Lewis Cass, according to Dustin (1968:99), came to Saginaw for the treaty negotiations, "following the Indian trail by way of Pontiac, Flint, (and) Peonagowink." The ford at Kishkabawee is part of this trail system. Peonagowink is shown on an 1857 map as occupying both sides of the Flint in sections 22 and 27, and may have included in part both the high bank and floodplain portions of 20SA393. Local collectors have reported recovering gun parts and fragments of iron and brass vessels on the west side of the river near what may have been the locus of the village.

By 1859 a canal had been constructed at the north end of the site which diverted the Pine Run drainage from its natural course. An 1877 map shows the canal in section 22 as the primary outlet, while the original outlet is depicted as a short intermittent stream. At this time one James Morse owned a shingle mill on the north side of the canal. Since this time the use of the land has been primarily agricultural with sporadic residential development focusing on river front parcels.
FIELD METHODS

For the mitigation, a grid system was established for the right-of-way through the site, encompassing an area of 45 m by 70 m. Reference points for both surface collection and excavation units are designated in two meter increments from datum (e.g., N12-14, W36-38). All features and artifacts were assigned specific metric coordinates. A temporary datum was established at the juncture of the southern edge of the right-of-way of Birch Run Road and the western edge of the pavement of existing Morseville Road (Figure 4).

A controlled surface collection was undertaken along two perpendicular transects encompassing about 20% of the site area within the right-of-way. This was intended to determine surface densities of cultural materials and to facilitate the implementation of the probabilistic excavation strategy called for in the mitigation proposal. Surface collecting, however, was abandoned when it became apparent that the overall surface debris density was light, diffuse, and essentially homogeneous over the site area. The only observation resulting from this exercise was that FCR increased in density from south to north, as was anticipated given Don Simon's assertion that the most "active" part of the site lay to the north of the right-of-way and is further confirmed by similar trends in lithic densities subsequently plotted for the excavation units.

The excavation of those areas evidencing possible features was begun after the termination of the surface collection, conveniently
Figure 4. Map of Birch Run Road site showing excavation units, stripped area, and right-of-way. (Scale is in meters.)
coinciding with the advent of frost-free ground conditions. The excavation units were designated by numerical sequence as well as by horizontal provenience. The plow zone in each case was treated as a single level and sifted through a \( \frac{1}{4} \)-inch wire mesh. Averaging 30 cm in depth, the plow zone produced virtually the entire lithic assemblage at the Birch Run Road site. Factors influencing the recovery of materials from the screen involved the ever-varying degrees of moisture and the amount of mixing with clayey deposits along the western edge of the site.

Fifteen of these possible feature areas marked during the deep plowing episode were tested by the excavation of 44 units, each measuring 2 m on a side. If no feature fill was encountered at the base of the plow zone in a given square, a contiguous unit was excavated. While some flagged areas produced neither features nor evidence of displaced feature fill, three units did contain features, and the investigation of five other flagged units produced features in adjacent units. This observation suggests that the minimum effective size of excavation units on this site might more appropriately have been 16 m\(^2\) or 4 m on each side. When only part of a feature was defined, the adjacent unit overlying the remainder of the feature was removed to permit delineation of the entire feature in plan view. All features were completely excavated. The hand excavation of 4 m\(^2\) units accounted for 5.5% of the impacted portion of the site (176 m\(^2\)).

During machine stripping of the site, the author walked next to and slightly behind the blade of a bulldozer as the plow zone was
pushed away. Features identified at the plow zone-subsoil interface were immediately flagged and covered with black plastic in order to retain moisture. The study area within the right-of-way was stripped from the centerline, first to the north and then to the south, exposing in this manner more than 57% of the impacted area, or about 1820 m².

The mechanical stripping phase, although not a part of the original mitigation proposal, provided not only valuable archaeological data but provided insight with respect to the effectiveness of the prior deep plowing of the site. An informal comparison of features detected by deep plowing with those exposed by stripping suggests that the former technique is about 50% effective and is strongly biased in favor of features with dark and/or FCR-rich fill. In retrospect, the use of deep plowing without stripping would have produced a very limited and unrepresentative range of features actually present within the right-of-way, and indeed would have resulted in our having overlooked several important ones. Moreover, the destructive effects of deep plowing are such that its overall benefit as a probabilistic recovery technique is questionable.

Hand excavation and stripping of the site revealed 31 cultural features. These were treated by first defining their entire plan view by shovel scraping and troweling. Plan views were mapped at a scale of 1:10 cm and photographed. The feature was then cross sectioned along the longitudinal axis and the first half of the feature fill removed by natural soil zones. The vertical profile
was then drawn at the same scale and photographed. Post molds and features where rodent activity was suspected were profiled in quarter section, usually perpendicular to the first profile, to verify the integrity and shape of the feature.

Matrix samples for flotation were obtained for every feature resulting in a significant amount of data. For most features all fill was retained, whereas the larger features were sampled with a minimum of 10 l of soil being collected per 10 cm level of vertical fill. For features that were substantially displaced by deep plowing, supplementary flotation samples were collected from the plow scars where the fill was observed to be relatively unmixed with plow zone material. A total of 531.5 l of feature matrix was processed in a laboratory setting using 1.6 mm mesh for the recovery of the heavy fraction and .5 mm mesh for the removal of the light fraction. Sand constituted approximately 80% of the floats and was removed prior to hand sorting the remaining 20% consisting of coarse sand and gravels.

The excavation of the Birch Run Road site produced a modest sample of material culture, typologically spanning the late Paleo-indian to the historic period. The features produced subsistence and mortuary data which permit a description and evaluation of what appears to be the periphery of an early Late Woodland settlement.

This thesis constitutes a reassessment of these data, benefiting from four years of retrospect. More importantly, the analysis undertaken on this occasion includes a substantially modified inventory of botanical, faunal, and human remains. The initial descriptive
section treating features, artifact classes, and biological remains will proceed along fairly traditional lines, leading then to an evaluation of the cultural-historical sequence manifest in the material culture and a consideration of extant settlement and subsistence models for the early Late Woodland in central Lower Michigan.
RESULTS OF EXCAVATION

Features

One of the most exhaustive treatments of archaeological features to date is Wolynec's (1977) study of the Koster site, a deeply stratified Archaic site in Illinois. Her analysis includes a review of feature description which suggests that, in general, features are often incompletely and inconsistently reported. The main thrust of Wolynec's methodological consideration is the development of a systematic process of obtaining and organizing feature data. The features excavated at the Birch Run Road site do not constitute a population sufficient for a detailed manipulation such as that undertaken by Wolynec. However, the assumptions which constitute the framework for the presentation and interpretation of the data are the same regardless of sample size or site complexity.

An individual feature may be described as a hearth, fire-bed, storage pit, burial, etc. In more technical terms, a feature may be defined as an aggregate of physical and chemical remains in which the patterning of form, constituent elements, and spatial relationships with other features encode information about past behaviors. It is important to recognize that the population of features from the Birch Run Road site is nonrandom and that, unfortunately, it represents only one peripheral portion of the settlement. Since no systematic investigations were undertaken outside the right-of-way there is no way to determine the extent to which the features and
materials produced by the mitigation project are representative of the total array of data actually present in the site. However, for evaluative purposes it will be assumed that some degree of representativeness exists in this data set. Clearly, it will not be possible to infer community organization from such a peripheral sample.

The Birch Run features are grouped according to their form, dimensions, and constituent materials. Post molds, stains, and unique features excluded, the population was divisible into two major groups. Type A refers to features with indications of in situ burning, while Type B features are those lacking such indications. These are further differentiated into subgroups which may or may not represent functional distinctions.

Feature dimensions, especially maximum depth, are not regarded as reliable criteria for discriminating feature types except at a very general level. This is due to the destruction by machine stripping of a minimum of the upper 30 cm, and often largest, portion of a feature. Plan and profile views of each feature are shown in Figures 5-11. Ranges and means of each feature subclass are presented in Table 1.

The term "fill" refers to the soil matrix of a feature; the term "zone" designates discrete units of fill which are differentiated on the basis of color, texture, and constituent materials. Any given feature will have one or more fill zones depending on its functional and depositional history. As distinguished by fill zone, a feature may appear more than once in the feature subgroup classification, since in several instances one or more distinct feature types superimpose other features. For example, hearth types A₁ and A₂
Figure 5. Features at the Birch Run Road site.
Figure 6. Features at the Birch Run Road site.
Figure 7. Features at the Birch Run Road site.
Figure 8. Features at the Birch Run Road site.
Figure 9. Features at the Birch Run Road site.
Figure 10. Features at the Birch Run Road site.
Figure 11. Features at the Birch Run Road site.
<table>
<thead>
<tr>
<th>Feature Type</th>
<th>Length</th>
<th>Width</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>$A_1$ (n = 2)</td>
<td>$\bar{X}$ = 95.5</td>
<td>65.0</td>
<td>19.5</td>
</tr>
<tr>
<td></td>
<td>$R$ = 76-115</td>
<td>62-68</td>
<td>13-26</td>
</tr>
<tr>
<td>$A_2$ (n = 5)</td>
<td>$\bar{X}$ = 78.4</td>
<td>48.4</td>
<td>16.4</td>
</tr>
<tr>
<td></td>
<td>$R$ = 28-69</td>
<td>27-42</td>
<td>8-30</td>
</tr>
<tr>
<td>$A_3$ (n = 8)</td>
<td>$\bar{X}$ = 42.7</td>
<td>35.2</td>
<td>17.0</td>
</tr>
<tr>
<td></td>
<td>$R$ = 28-69</td>
<td>27-42</td>
<td>6-29</td>
</tr>
<tr>
<td>$B_1$ (n = 7)</td>
<td>$\bar{X}$ = 49.2</td>
<td>36.0</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td>$R$ = 20-85</td>
<td>18-60</td>
<td>4-34</td>
</tr>
<tr>
<td>$B_2$ (n = 5)</td>
<td>$\bar{X}$ = 205.8</td>
<td>95.2</td>
<td>34.8</td>
</tr>
<tr>
<td></td>
<td>$R$ = 161-240</td>
<td>75-112</td>
<td>14-51</td>
</tr>
</tbody>
</table>

Superimpose type $B_1$ pits in three instances. In each case the hearths are constructed entirely within the limits of the pit with no overlapping of the plan views, implying that the hearths were quite intentionally excavated into abandoned pits during the same or
subsequent occupations of the site. This may be the result of intentional selection of previously disturbed areas requiring less effort to dig than areas of undisturbed vegetation. There are no indications of seasonal differences between the fill zones of superimposed features.

Three post molds were associated with Feature 1, zone A, and paired post molds were associated with Features 15, 17, and 21. The association of posts with a hearth or pit may refer to a variety of possible functions, such as a windscreen or support rack for cooking or drying. The three post molds with Feature 1 clearly superimposed the zone B pit fill and were distributed around the west side of the FCR concentration. Paired post molds are closely spaced and superimpose (Features 15 and 21) or are superimposed by (Feature 17) associated pits. There is no direct evidence of domiciles within the right-of-way at Birch Run.

Ceramics were recovered from four hearths and from the burial pit. No diagnostic lithic items were found in association with any feature. Since there are no striking differences between feature contents, either in quantity or kind, it is suggested that the features located within the right-of-way are essentially coeval in time. Feature 33 is a possible exception to this since it contains a disproportionate amount of debitage, representing either a specialized activity area of the Late Woodland occupation or a temporally discrete event. Only a radiocarbon date could clarify this feature's relationship to the other features. The dimensions and material contents of all features are presented in Table 2.
Table 2
Summary and Feature Dimensions and Artifact Contents at 20SA393

<table>
<thead>
<tr>
<th>Feature No./Zone</th>
<th>Type</th>
<th>Dimensions (cm)</th>
<th>Material Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, Z. A</td>
<td>$A_1$ dated A.D. 1050±50 (Beta 6528)</td>
<td>76 x 68 x 13</td>
<td>10 Bayport flakes, 1 cordmarked body sherd, 1 cordmarked basal sherd, 18 FCR</td>
</tr>
<tr>
<td>1, Z. B</td>
<td>$B_2$</td>
<td>161 x 100 x 42</td>
<td>4 Bayport flakes, 11 till chert flakes, 23 FCR</td>
</tr>
<tr>
<td>2</td>
<td>fire-reddened sand</td>
<td>115 x 50 x 0</td>
<td>no material</td>
</tr>
<tr>
<td>3</td>
<td>$A_3$</td>
<td>40 x 35 x 14</td>
<td>1 opposed ridge wedge, Bayport 1 FCR</td>
</tr>
<tr>
<td>4</td>
<td>$A_3$</td>
<td>45 x 35 x 28</td>
<td>1 Bayport flake, 1 till chert flake, 1 quartzite flake, 4 sherdlets, 2 smoothed cordmarked neck sherds, 6 FCR</td>
</tr>
<tr>
<td>5</td>
<td>$A_3$</td>
<td>42 x 41 x 29</td>
<td>no material</td>
</tr>
</tbody>
</table>
Table 2 (continued)

<table>
<thead>
<tr>
<th>Feature No./Zone</th>
<th>Type</th>
<th>Dimensions (cm)</th>
<th>Material Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>A₃</td>
<td>39 x 35 x 9</td>
<td>no material</td>
</tr>
</tbody>
</table>
| 7, Z. A          | A₃    | 35 x 31 x 21    | 1 Bayport flake
|                  |       |                 | 1 till chert flake                |
| 7, Z. B          | B₁    | 85 x 59 x 22    | 1 Bayport flake
|                  |       |                 | 1 quartzite hammerstone           |
|                  |       |                 | 1 FCR                             |
| 8                | A₂    | 80 x 44 x 10    | 2 Bayport flakes
<p>|                  |       |                 | 1 FCR                             |
| 9, Z. A          | post mold? | 17 x 12 x 8 | no material                       |
| Z. B             |       | 28 x 17 x 6     | small lumps of ocher-like material |
| Z. C             | rodent run? | 40 x 6 x 5 | no material                       |
| Z. D             | fire-reddened sand | 68 x 63 x 0 | no material                       |</p>
<table>
<thead>
<tr>
<th>Feature No./Zone</th>
<th>Type</th>
<th>Dimensions (cm)</th>
<th>Material Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>10, Z. A</td>
<td>A₂</td>
<td>65 x 54 x 17</td>
<td>4 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 Onondaga flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 till chert flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 opposed ridge wedge, till chert</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 FCR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 rim sherd</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 sherdlet</td>
</tr>
<tr>
<td>10, Z. B</td>
<td></td>
<td>145 x 133 x 30</td>
<td>2 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 Bayport blade-like flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 hammerstone (?)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 collared rim sherd</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 basal sherd</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 sherdlet</td>
</tr>
<tr>
<td>10, Z. C</td>
<td></td>
<td>145 x 133 x 51</td>
<td>1 Bayport biface fragment, distal tip</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 till chert flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 utilized Bayport bipolar flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 split till chert pebble</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 FCR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 smoothed cordmarked rim sherd</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 body sherds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14 sherdlets</td>
</tr>
</tbody>
</table>
Table 2 (continued)

<table>
<thead>
<tr>
<th>Feature No./Zone</th>
<th>Type</th>
<th>Dimensions (cm)</th>
<th>Material Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>post mold</td>
<td>16 x 15 x 13</td>
<td>no material</td>
</tr>
<tr>
<td>12</td>
<td>stain</td>
<td>51 x 31 x 0</td>
<td>no material</td>
</tr>
<tr>
<td>13</td>
<td>B1</td>
<td>21 x 20 x 24</td>
<td>1 Bayport flake</td>
</tr>
<tr>
<td></td>
<td>post mold?</td>
<td></td>
<td>1 FCR</td>
</tr>
<tr>
<td>14</td>
<td>B1</td>
<td>20 x 20 x 10</td>
<td>no material</td>
</tr>
<tr>
<td>15, Z. A</td>
<td>B1</td>
<td>72 x 37 x 14</td>
<td>1 Bayport flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 FCR</td>
</tr>
<tr>
<td>Z. B1</td>
<td>post mold</td>
<td>17 x 15 x 16</td>
<td>1 Bayport flake</td>
</tr>
<tr>
<td>Z. B2</td>
<td>post mold</td>
<td>14 x 14 x 10</td>
<td>no material</td>
</tr>
<tr>
<td>16</td>
<td>B1</td>
<td>20 x 18 x 4</td>
<td>no material</td>
</tr>
<tr>
<td>17, Z. A</td>
<td>B1</td>
<td>67 x 38 x 34</td>
<td>3 FCR</td>
</tr>
<tr>
<td>Z. B1</td>
<td>post mold</td>
<td>11 x 8 x 10</td>
<td>no material</td>
</tr>
<tr>
<td>Z. B2</td>
<td>post mold</td>
<td>10 x 10 x 8</td>
<td>no material</td>
</tr>
</tbody>
</table>
Table 2 (continued)

<table>
<thead>
<tr>
<th>Feature No./Zone</th>
<th>Type</th>
<th>Dimensions (cm)</th>
<th>Material Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>A&lt;sub&gt;1&lt;/sub&gt;</td>
<td>115 x 62 x 26</td>
<td>2 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 mano fragment rearticulated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>from 31 pieces of FCR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>31 additional pieces of FCR</td>
</tr>
<tr>
<td>19</td>
<td>stain</td>
<td>72 x 41 x 0</td>
<td>1 quartzite flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 FCR</td>
</tr>
<tr>
<td>20</td>
<td>stain</td>
<td>50 x 26 x 0</td>
<td>no material</td>
</tr>
<tr>
<td>21, Z. A&lt;sub&gt;1&lt;/sub&gt;</td>
<td>A&lt;sub&gt;2&lt;/sub&gt;</td>
<td>135 x 52 x 30</td>
<td>12 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 Bayport uniface</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 till chert bipolar flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9 FCR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 sherdlets</td>
</tr>
<tr>
<td>Z. A&lt;sub&gt;2&lt;/sub&gt;</td>
<td>A&lt;sub&gt;3&lt;/sub&gt;</td>
<td>28 x 27 x 10</td>
<td>13 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 till chert flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 FCR</td>
</tr>
<tr>
<td>Z. A&lt;sub&gt;3&lt;/sub&gt;</td>
<td>post mold</td>
<td>7 x 7 x 14</td>
<td>no material</td>
</tr>
<tr>
<td>Z. A&lt;sub&gt;5&lt;/sub&gt;</td>
<td>post mold</td>
<td>12 x 11 x 8</td>
<td>no material</td>
</tr>
</tbody>
</table>
Table 2 (continued)

<table>
<thead>
<tr>
<th>Feature No./Zone</th>
<th>Type</th>
<th>Dimensions (cm)</th>
<th>Material Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>21, Z. B</td>
<td>B₂</td>
<td>232 x 112 x 51</td>
<td>4 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 till chert flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 mano/hammerstone, fire-cracked</td>
</tr>
<tr>
<td>Z. C</td>
<td>rodent run?</td>
<td>30 x 28 x 36</td>
<td>1 FCR</td>
</tr>
<tr>
<td>22</td>
<td>A₂</td>
<td>45 x 26 x 17</td>
<td>3 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 exotic chert flake</td>
</tr>
<tr>
<td>23</td>
<td>A₂</td>
<td>67 x 66 x 8</td>
<td>3 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td>dated</td>
<td></td>
<td>3 till chert flakes</td>
</tr>
<tr>
<td></td>
<td>A.D. 950±370</td>
<td>(UGa 2890)</td>
<td>1 FCR</td>
</tr>
<tr>
<td>24</td>
<td>rodent run</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25/26, Z. A</td>
<td>B₂</td>
<td>240 x 75 x 32</td>
<td>5 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 greywacke flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 sandstone abrader(?)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>19 FCR</td>
</tr>
<tr>
<td>Z. B</td>
<td>B₁</td>
<td>60 x 60 x 22</td>
<td>1 Bayport flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 Bayport uniface</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7 FCR</td>
</tr>
</tbody>
</table>
Table 2 (continued)

<table>
<thead>
<tr>
<th>Feature No./Zone</th>
<th>Type</th>
<th>Dimensions (cm)</th>
<th>Material Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>B₂</td>
<td>231 x 96 x 35</td>
<td>6 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 FCR</td>
</tr>
<tr>
<td>28</td>
<td>A₃</td>
<td>69 x 42 x 19</td>
<td>1 utilized Bayport flake</td>
</tr>
<tr>
<td>29, Z. A</td>
<td>B₂</td>
<td>165 x 93 x 14</td>
<td>4 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 till chert flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 FCR</td>
</tr>
<tr>
<td>Z. B</td>
<td></td>
<td>165 x 93 x 5</td>
<td>1 Bayport flake</td>
</tr>
<tr>
<td>30</td>
<td>historic trash pit</td>
<td>238 x 226 x 57</td>
<td>5 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 nails with adhering wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>21 FCR</td>
</tr>
<tr>
<td>31</td>
<td></td>
<td>rodent run</td>
<td>no material</td>
</tr>
<tr>
<td>32</td>
<td>A₃</td>
<td>44 x 36 x 6</td>
<td>no material</td>
</tr>
<tr>
<td>33</td>
<td>unique</td>
<td>92 x 50 x 37</td>
<td>134 Bayport flakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 utilized Bayport flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 till chert flake</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 quartzite flake, utilized(?)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 FCR</td>
</tr>
</tbody>
</table>
Feature subgroups are classified as follows:

Type A₁ hearths are round or oval in plan view, and shallow and basin shaped in cross section. The fill is rich and black with abundant charcoal and FCR. Two features of this type were identified: Feature 1 (zone A) and Feature 18.

Type A₂ hearths are distinguished from A₁ hearths by the absence of functionally associated FCR and from A₃ hearths by their larger size and indications of extensive in situ burning. Five examples of type A₂ hearths were identified: Features 8, 10 (zone A), 21 (zone A₁), 22, and 23.

Type A₃ hearths are small, round, and basin shaped in profile. The feature fill is black. Walls are lightly oxidized. FCR is small in size and diffuse throughout the fill or is entirely absent. The A₃ hearth may intergrade with A₂ hearths at the upper end of the size range. Eight features were classified as type A₃: Features 3, 4, 5, 6, 7 (zone A), 21 (zone A₂), 28, and 32.

Type B₁ pits are round or oval in plan view with brown unburned fill. FCR is diffuse throughout the matrix and there is no suggestion of in situ burning. Four features, Feature 7 (zone B), 13, 14, and 15, are of this type.

Type B₂ pits are differentiated from type B₁ only by their substantially larger size. Four examples were identified: Features 1 (zone B), 21 (zone B), 25, and 27.
Several features were unique and could not be included in the above classification. These are described as follows:

Feature 2 consisted of an irregularly shaped area of red oxidized subsoil, probably representing a fired surface.

Feature 9 consisted of a single post mold, an area stained red by several small lumps of an oxidized mineral, and a small zone of dark brown sand located at the edge of a circular area of burned sand.

Feature 10 contained the only human remains on the site. It appears that this large, round, bowl-shaped pit was excavated solely for interment of the dead. This feature is described in detail in the section on human remains.

Feature 29 was a shallow oval or brown fill overlying a thin basal lens of black fill.

Feature 33 was a rectangular, flat-bottomed pit with black fill and slight indications of in situ burning. FCR was diffuse throughout the matrix and debitage was particularly abundant.

Minor or problematic feature categories include stains and areas of oxidized soils. Stains (Features 12, 19, and 20) exhibit good plan view definition but discernible vertical profiles are lacking. They may represent truncated type B pits or may be noncultural in origin. Areas of fire-reddened soils suggesting flat burned surfaces were encountered on two occasions (Features 2 and 9, zone D). Very little, if any, material was associated with either stains or oxidized soils.
Features 25 and 26 were combined into a single entity after profiling. Features 24 and 31 were determined to be rodent burrows. Feature 30 was a large historic trash pit and is excluded from further consideration in the context of this description and analysis of the prehistoric occupations of the Birch Run Road site.

In the analysis of botanical contents of features (Appendix A) Parachini has utilized the term "smudge pit" in those instances where the carbonized remains consist primarily or exclusively of bark (Features 5, 6, 7, 8, 23, and 28). All of these are subsumed in one of the hearth types above. As initially defined by Binford (1967), smudge pits also include a series of circumferential post molds. At the Birch Run Road site, post molds are not associated with any of these hearths but occur, instead, with type B pits which lack evidence of in situ burning. Thus, while functionally specific implications of a bark fire are not precluded, smudge pits, sensu strictu, do not occur at this site.

The horizontal distribution is, as noted above, inconclusive due to the limited area exposed by stripping. A combination of proximity to the bluff edge and highest possible ground with good drainage may have been factors involved in the selection of areas for feature construction. The greatest density of features within the right-of-way, as well as most of the domestic refuse, comes from the vicinity of Feature 10 (Figure 12).

The cultural affiliation of the features is determined by Late Woodland radiocarbon dates from Features 1, 10, and 23, and by the recovery of Late Woodland ceramics from Features 1, 4, and 10. The
Figure 12. Distribution of features on the Birch Run Road site.  
(Scale is in meters.)
other features, with the exception of the historic Feature 30, are presumed to be Late Woodland in origin on the basis of their similarity in conditions of preservation, constituent materials, and proximity to the dated features.

**Chronometric Dating**

Three radiocarbon dates were obtained from prehistoric features at the Birch Run Road site which place the Late Woodland occupations between circa A.D. 800 and A.D. 1100.

The charcoal sample from Feature 23, zone A, consisting largely of bark, produced a date of A.D. 950 ± 370 (UGa 2890). The large standard deviation renders the resulting date equivocal, although the mean is in concert with the other dates obtained from the site.

A sample of mixed types of wood charcoal weighing 10.7 g was obtained from Feature 1, zone A, producing a date of A.D. 1050 ± 50 (Beta 6528). This sample dates a small quantity of ceramics and a variety of plant food remains.

A 4.7 g sample consisting primarily of hophornbeam with oak and beech was obtained from Feature 10, zones B and C. The resulting date of A.D. 830 ± 90 (Beta 4517) pertains to the burials, associated ceramics, and a maize cupule.

**Human Remains**

Feature 10, zone C, contained two human skeletons. In plan view this feature was oval with a smaller area of black soils (zone A) near the southwestern edge of the pit orifice. The profile showed zone A
to be a distinct basin-shaped type A2 hearth superimposing the zone B fill. Zone B soils were subsoil-like dark brown loamy sands and gravels grading into the darker and less gravelly zone C matrix.

All human remains were confined to zone C with the exception of cranial fragments and teeth displaced upward into zone B by rodent activity. Rodent runs were clearly observed at the southern edge of the feature during definition of the plan view. These disturbances were traced diagonally through zone B to the northern edge of the pit where they went down, following the edge of the pit, to the area of the skull of Individual 1. Smaller rodent runs were noted along the floor of the pit, displacing orbital and frontal elements of Individual 1 and most elements of Individual 2.

The pit orifice at the base of the plow zone measured 145 cm x 133 cm. The walls of the pit converge only slightly to a flat clay floor 58 cm below the base of the plow zone, or about 88 cm below the modern surface. The clay pit floor is a natural soil interface and not an aspect of the mortuary program. The water table at the time of excavation coincided with the floor of the pit, contributing to the poor preservation of the bones. The unique dimensions and shape of this feature suggest that it was excavated expressly for the purpose of burial and does not represent the reuse of a previously existing storage or refuse facility.

Despite the extreme disturbance of the skull of Individual 1 and poor bone preservation, the position of interment is clear (Figure 13). Individual 1 is flexed on its left side with the head to the north. Long bones, vertebrae, and the clusters of rib and
Figure 13. Plan view of burials in Feature 10.

A. Skull fragments, Individual 1
B. Mandible
C. Frontal and orbital fragments
D. Right humerus
E. Ribs
F. Neural arches and centri of vertebrae
G. Right femur
H. Left femur
I. Right tibia
J. Left tibia
K. Left fibula
L. Femoral diaphyses, Individual 2
M. Concentration of fetal elements, Individual 2
cranial fragments are in anatomical position, indicating a primary interment.

A dental age of 2 to 3 years was calculated for Individual 1 based on Sundick's (1972) stages of calcification and eruption (Table 3).

Table 3
Degree of Calcification in the Deciduous and Permanent Dentition of Individual 1

<table>
<thead>
<tr>
<th>Dentition</th>
<th>i₁</th>
<th>i₂</th>
<th>c</th>
<th>m₁</th>
<th>m₂</th>
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</tr>
<tr>
<td>Mandibular</td>
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<td>0.5</td>
<td>.25</td>
<td>*</td>
<td>0.5</td>
</tr>
</tbody>
</table>

*Missing or enclosed in crypt.

Porous surfaces were observed on portions of the exterior of the vault of the skull and on most diaphyses, including the linea aspera of the femora, the tibial tuberosity, the interosseous crest of the radius, and the deltoid tuberosity of the humeri. This observation reflects the highly vascularized condition of young bone and is not attributable to pathology. Tooth enamel is slightly eroded on the labial surfaces of both deciduous mandibular first molars. Otherwise the dentition and skeleton appear quite normal.
Vertebral fragments were examined for evidence of fusion between centrii and neural arches in order to augment the dental age assessment. The fragments were inconclusive in this respect due to their poor preservation.

Individual 2 is represented by many very small fragments of the cranial and postcranial skeleton. Two femoral diaphyses are nearly complete and show the highly vascularized nature of the bone. The teeth of this individual were scattered over the northeast half of the pit floor, presumably by rodents. The mandible and maxilla were not recovered intact, and no teeth were associated with the few fragments recovered, precluding observations of alveolar eruption. Calcification is about half completed for the deciduous incisors and canines. Permanent molars may be indicated by one quarter calcified crowns. An age of less than six months is indicated. The position of burial could not be determined, although it is likely that this infant was placed on the pit floor to the east of Individual 1.

In summary, Feature 10 represents the simultaneous interment of a child and an infant. Burial was in a pit without accompanying grave goods. All cultural material associated with this feature was present as pit fill. A radiocarbon date places this feature in the mid-ninth century.

Variability seems to characterize the mortuary program of the early Late Woodland in Michigan. A survey of burial sites (Cleland and Clute 1969; Halsey 1976; Lovis 1979; Lovis and Sauer 1979; Wilkinson 1966) indicates that flexed single burial and multiple pit
interment were both common modes. The lack of grave goods with infants and children was noted at 20LP98 (Lovis 1979).

The disposal of children and infants may have been more opportunistic than the treatment of older individuals. Burial of these young individuals may have been conducted wherever the deaths occurred, in contrast to adults whose status permitted access to the mortuary program involving discrete burial sites. While children and infants are not precluded from major Wayne Mortuary Complex sites, it may be a function of proximity to such a site at the time of death which explains the lower incidence of children and infants in the more formal cemeteries.

Faunal Remains

The faunal assemblage from features at the Birch Run Road site (Table 4) provides only scant evidence of the types of resources exploited here or of the seasonality of food procurement activities. Features 8 and 10 produced the largest samples of faunal materials. The materials in Feature 21 are probably intrusive, given their unburned and unbroken condition and the species represented. The small mammalian elements found in Features 24 and 25 might represent prehistoric food debris, or they might be of historic origin.

In contrast, Features 8 and 10 contained evidence for a diverse prehistoric resource base, indicated by mammal, fish, amphibian, and bird bones. All are calcined or burned and tend to be broken into very small pieces, representing food which was probably processed and consumed on the site.
<table>
<thead>
<tr>
<th>Feature/Zone</th>
<th>Species/Class</th>
<th>Element</th>
<th>n/wt (g)</th>
<th>Comments</th>
</tr>
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<td>lake trout</td>
<td>tooth</td>
<td>1/.04</td>
<td>calcined</td>
</tr>
<tr>
<td></td>
<td>(Salvelinus namaycush)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>small mammal</td>
<td></td>
<td>1/.02</td>
<td>calcined</td>
</tr>
<tr>
<td></td>
<td>unidentified bone</td>
<td></td>
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<td></td>
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<td>2 burned, 1 unburned</td>
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<td></td>
<td>2/.11</td>
<td>burned</td>
</tr>
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<td></td>
<td>turtle</td>
<td></td>
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</tr>
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<td></td>
<td>unidentified bone</td>
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<td>7/.05</td>
<td>burned</td>
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<td>fish</td>
<td>scale</td>
<td>118/.66</td>
<td>burned or calcined</td>
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<td>1/-</td>
<td></td>
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<td>15/.93</td>
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<tr>
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<td>incisor frag.</td>
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<td>calcined</td>
</tr>
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<td></td>
<td>1/.09</td>
<td>calcined(?)</td>
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<td></td>
<td>turtle</td>
<td></td>
<td>2/.02</td>
<td>calcined</td>
</tr>
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<td></td>
<td>amphibian (small frog) or toad</td>
<td>incisor frag.</td>
<td>1/.01</td>
<td>calcined</td>
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<td>111/.54</td>
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<td>Species/Class</td>
<td>Element</td>
<td>n/wt (g)</td>
<td>Comments</td>
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<tr>
<td>-------------</td>
<td>--------------</td>
<td>---------</td>
<td>---------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>21 zone A</td>
<td>rodenta</td>
<td>incisors, distal femur, phalanges</td>
<td>1/0.06</td>
<td>unburned, probably intrusive</td>
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<td>unburned</td>
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<td></td>
<td></td>
<td>bird</td>
<td>2/0.03</td>
<td>1 unburned, 1 partially burned</td>
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<tr>
<td></td>
<td></td>
<td>unidentified bone</td>
<td></td>
<td></td>
</tr>
<tr>
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</tr>
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<td></td>
<td>1/0.20</td>
<td></td>
</tr>
<tr>
<td>25 zone A</td>
<td>mammal</td>
<td>radius; distal end</td>
<td>1/10.8</td>
<td>unburned, historic</td>
</tr>
<tr>
<td>31 zone A</td>
<td>white-tailed deer (Odocoileus virginianus)</td>
<td>radius;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The presence of the sucker family, Catostomidae, is noted by a single scale from Feature 10. Many species of sucker are tolerant of relatively warm, slow, and turbid stream conditions such as are found in the Flint River and the Shiawassee Flats. Suckers are spring spawners, at which time they may be found in concentrated numbers as they run up tributary streams (Eddy and Underhill 1978).

A single lake trout (Salvelinus namaycush) tooth, identified by Dr. Gerald Smith, Museum of Paleontology, the University of Michigan, was found in Feature 8. Habitat preference of the lake trout is for well oxygenated water and temperatures between 44° and 53° F (7° and 11.5° C) (Cleland 1966; Sommers et al. n.d.). Spawning and peak availability in terms of aboriginal procurement occurs during the fall season, with individuals returning to the same spawning shoals annually (Cleland 1966). The preferred habitat of the lake trout does not include inland river systems, although they currently make fall runs upriver along with introduced salmon species, presumably to feed on the salmon roe. It is doubtful, given the documented habitat of the lake trout, that a doughty individual would brave the tepid and shallow waters of the Shiawassee Flats to run up the Flint River. It is suggested that the lake trout was brought to the Birch Run Road site from a more appropriate fishing site in Saginaw Bay or along Lake Huron.
Ceramic Artifacts

The ceramic assemblage from the Birch Run Road site is small with little internal variation. It consists of 56 sherds and one pipe fragment. Half (28) of the sherds were recovered from features, 30% (17) were derived from plow zone excavation, and 20% (11) were collected from the surface of the site. There are two rims, five neck sherds, 18 body sherds, two basal sherds, and 29 very small "sherdlets." Over half of the sherds are exfoliated on one or both surfaces. Preserved on 13 sherds, exterior surface treatment is primarily cord-marked (46%), smoothed cordmarked (31%), or fabric impressed (23%). All preserved interior surfaces are smoothed.

Temper is divided into three petrographic classes. Crushed quartz between 1 mm and 5 mm accounts for 51% (29) of all sherds. Granitic temper between 1 mm and 5 mm was noted in 16% (9) of the items. Granitic grit larger than 5 mm was found in two items. Sand temper is present in only one specimen. Temper size and type was not observable on 15 small sherds.

Cordage twist (Hurley 1975:85) direction could not be determined for most of the assemblage. S-twist fiber impressions were noted on 10 (17%) sherds and Z-twist on two (3%). Both Z-twist impressions were on sherds found on the surface north of the right-of-way.

Sherd thickness, measurable on 15 items, ranges from .4 cm to 1.1 cm, with a mean thickness of .7 cm.

With one exception, the ceramics recovered from the surface and plow zone tend to be more heavily eroded, exfoliated, and smaller in
size than feature-derived sherds. The only example of decorated pottery, however, is a large neck sherd (Figure 14, D) recovered from the surface north of the right-of-way (Brunett 1978). The surface treatment is smoothed cordmarked with a horizontal row of oblique cord-wrapped stick impressions along the upper margin of the sherd. Cordage impressions are S-twist. The interior surface has exfoliated entirely, exposing crushed granitic temper between 2 mm and 7 mm in size. Similar examples can be found in both the Vase tool-impressed and Wayne corded-punctate ceramic types (Fitting 1965:155, 158).

Sherds recovered from prehistoric features tend to be in a good state of preservation, despite the exfoliation. Only two sherds from Feature 10 are of diagnostic value. The remainder, largely cordmarked body sherds, are attributed to a Wayne and/or Vase derived complex occupying the Birch Run Road site. These feature-associated ceramics are described below.

Two sherds were found in Feature 1. In zone A a basal sherd with a fabric-impressed exterior and smooth interior was recovered. Thickness of this sherd ranges from 4 mm to 8 mm. Temper is crushed granite between 1 mm and 5 mm. Cordage impressions are indistinct and limited to a few irregular S-twist strands. This item is dated A.D. 1050 ± 50 (Beta 6528).

A second sherd from Feature 1 was found in zone A fill displaced by the deep plowing of the site prior to excavation. This body sherd is unique on the site with respect to its fine paste. It has a water or wind-worn appearance. The surface is indistinct, possibly cordmarked, with a smooth interior. The temper is crushed quartz up to
Figure 14. Ceramics from the Birch Run Road site.
5 mm in size. The sherd is .7 cm thick; cordage impressions are weathered away.

Feature 4 produced two sherds from the same vessel; one from zone A and one from plow-displaced zone A fill. Exteriors have heavily smoothed cordmarking with smooth interiors. Temper is crushed quartz up to 5 mm. Sherd thickness varies from .9 cm to 1.3 cm. Cordage impressions have been almost completely obliterated, preserving only a few S-twist impressions. Surface contours of the larger sherd suggest that its position is near the neck. The ceramic type could be either in the Wayne or Younge tradition.

Feature 10 yielded the most substantial portion of the ceramic assemblage. One fabric-impressed neck sherd (Figure 14, C), broken just below a thin and slightly everted rim, was recovered from the zone A hearth. The interior is smooth. Temper is crushed granite between 1 mm and 5 mm. Cordage is S-twist. Sherd thickness varies from .4 cm below the rim to .7 cm. This sherd cannot be reliably classified as to type although it undoubtedly represents a Late Woodland ware. One small nondiagnostic sherdlet was also found in the zone A fill.

The zone B pit fill overlying the burials in Feature 10 produced two sherds and two small sherdlets. A collared rim (Figure 14, B) and a body sherd from the same vessel resemble the type Spring Creek collared (Fitting 1968:23). The rim is straight in profile with a rough surface; the lip is flat and smooth. An applique(?) collar is present 1.7 cm below the rim. Surface treatment is indistinct, probably fabric impressed. Temper is crushed granite up to 5 mm in size.
The thickness of the rim varies from 4 mm to 7 mm; the body sherd varies between 6 mm and 7.5 mm. Cordage twist direction could not be determined.

In zone C, in the dark fill mixed with the cranial fragments of the older of the two individuals, one rim (three articulating sherds), five body sherds, and nine small sherdlets were recovered. All derive from the same vessel, probably a Wayne cordmarked variety (Fitting 1965). The rim (Figure 14, A) is straight and smooth with a rough, thin lip. Exterior surface treatment is smoothed cordmarking. The interior, preserved on two body sherds, is smooth. Temper is crushed granite, 1 mm to 5 mm, and sherd thickness ranges between .5 cm and .65 cm. Cordage twist direction is indeterminate on all sherds due to the extensive smoothing.

A single body sherd from Feature 10, zone C, appears weathered and has a more sandy paste than the Wayne ware sherds. It cannot be related to any of the other sherds from the site with the possible exception of the single weathered sherd from Feature 1 which also has a finer paste than the Late Woodland materials.

The radiocarbon date of A.D. 830 ± 90 (Beta 4517) pertains to both the Spring Creek and Wayne ceramics from zones B and C in Feature 10. These fill zones are distinguished only by a change in color, becoming much darker with proximity to the burials, and are not interpreted as the product of discrete depositional episodes. Both types of ceramics are considered part of the general pit fill, not as grave furniture, but as trash.
Two nondiagnostic sherdlets were recovered from Feature 21, zone A₁. Only one smooth interior surface is preserved. Temper is crushed granite between 1 mm and 7 mm in size.

A pipe stem fragment (Figure 14, E) was found on the surface, north of the right-of-way near the bluff edge. The exterior is highly burnished, lacks decoration, and is pale brown to brown in color. The interior core color is black, grading to gray towards the exterior. The clay is lightly tempered, if at all, with very fine quartz sand. The bore diameter is about 6.5 mm with a slight tapering towards one end. It might be noted that the tapering is the same as that of a cattail (Typha latifolia) stalk, and the fine linear striae on the bore are also similar to those found on a cattail stalk.

In transverse profile the stem has one flat surface with opposing surface and sides rounded. Pipes with flat tops and rounded sides and bottoms have been found in a post-Wayne tradition grave lot (Burial 81) at the Bussinger site (Halsey 1976:371) and with Mackinac phase ceramics at the Juntunen site (McPherron 1966:268-269). Pipes similar to the Birch Run Road specimen have also been recovered at the Brown site in Gratiot County where they are associated with both Wayne and Mackinac ceramics (Beld 1978).

The ceramic inventory from the Birch Run Road site consists of examples of Wayne, Spring Creek, and a small number of body sherds which could belong to either Wayne or Younge tradition types. Brashler (1981:331) has identified Spring Creek ceramics in the Saginaw Valley where she suggests that contact between the Spring Creek tradition and the Wayne tradition was relatively infrequent but probably more
frequent at Saginaw Wayne sites than at Wayne tradition sites in southeastern Michigan.

More common is the co-occurrence of Wayne and Vase ceramics at mortuary sites (Fitting 1965; Halsey 1968, 1976). Brashler (1981) has proposed a possible cultural symbiosis between the Younge and Wayne traditions, suggesting that mutually exclusive subsistence-settlement systems underlay a peaceful coexistence in southeastern Michigan. Interaction between Younge and Wayne people is, in addition to their common use of mortuary sites, expressed in the sharing of decorative elements on ceramics (Brashler 1981).

In the absence of diagnostic lithics, the small ceramic assemblage demonstrates a Late Woodland temporal placement for four cultural features. Although by themselves inconclusive with respect to specific cultural-historical questions relating to Saginaw Valley prehistory, the Birch Run Road ceramics represent the complexity of interregional interaction in the combination of Wayne, Spring Creek, and Younge traditions.

Lithic Analysis

The lithic assemblage was subjected to a classification designed to identify the sources of lithic raw materials, stages of reduction present at the site, and the tasks performed at the site involving stone tools. Stages of reduction were based on a continuum model, beginning with an unmodified chert cobble or nodule and proceeding to a finished bifacial tool. Alternative trajectories for use
and modification were considered in the assessment of specialized techniques of usable flake production.

The lithic analysis describes the chert and nonchert sources which constitute the Birch Run Road site lithic assemblage. Individual tool classes are then described for the assemblage.

**Lithic Raw Materials**

The identification of source areas for discrete raw materials has greatly enhanced the potential of regionally oriented lithic analyses by observing fluctuations in quantity and kind of raw materials as cultural interaction networks vary in direction and intensity. It will be demonstrated below that the configuration of lithic raw materials at the Birch Run Road site fits into a regional pattern of shifting distributions of exotic cherts in the Late Woodland period.

The lithic assemblage is divided into two primary groups: chipped and nonchipped artifacts and debitage. Within these broad categories the assemblage is further classified by discrete raw material types. Chert, fine-grained quartzite, greywacke, and phyl-lite constitute the raw materials associated with percussion and pressure flaking techniques. Granite, coarsely grained quartzite, schist, and diorite provide the materials for tools shaped by pecking and grinding. The latter group is described as nonchipped lithics.

Locally derived raw materials include Bayport chert, till chert, and a wide range of nonchert cobbles and pebbles. These materials...
could have been procured directly by the occupants of the Birch Run Road site, possibly on a regular basis, or perhaps seasonally.

Bayport chert has its source in the Upper Mississippian Bayport limestone formation of Bay, Tuscola, Arenac, and Huron counties of eastern central lower Michigan (Dustin 1927; Lane 1900; Luedtke 1976; Pringle 1937; Rominger 1876). Bayport is perhaps the best of the few major chert sources in the Lower Peninsula and was extensively used throughout Michigan's prehistory. Luedtke (1976:197ff.) provides specific locations of outcrops as well as a description of the visual characteristics of Bayport chert. Figure 15 shows the general area of the major sources of Bayport chert along with that of the other chert types found at the Birch Run Road site.

At the Birch Run Road site Bayport chert is the most common constituent of every chipped tool class and debitage. Temporally it spans the Paleoindian through Late Woodland periods.

Till chert also constitutes an important part of the lithic assemblage. Till cherts are typically small in size with a weathered rind. The quality is highly variable with frequent inclusions and frost-planes often rendering the chert unknappable for most purposes. Although opaque white to gray colors predominate there is considerable diversity of cherts present as glacial till.

Till chert would have been readily available in sorted river and stream channels, or could have been casually acquired as a byproduct of pit excavation on the site. About 80% of the gravelly inclusions in soils at the Birch Run Road site are greater than one-quarter inch in size. Of this, less than 1% is chert of knappable quality. Because
Figure 15. Source areas of chert types described in text.
of small core size, till chert artifacts tend to be present in the smaller tool classes such as unifaces and utilized flakes. Although not a major aspect of flint working at the site, the reduction of till chert pebbles using the bipolar technique is indicated by the presence of both bipolar cores and bipolar debitage.

Fine-grained quartzite, greywacke, and phyllite are also present in small quantities in the local till gravels at Birch Run. Unlike till chert, the parent cobbles of these materials tend to be of larger size and were therefore suitable for large chipped tool manufacture. Greywacke occurs at Birch Run in the form of a large core and as stemmed bifaces diagnostic of the Satchell complex (Peske 1963). Flaked quartzite artifacts include large bifaces, cores, and debitage. The use of quartzite has been suggested as a temporal marker of the Early Archaic period (Lee 1957; Lovis, Kingsley, Forsberg, and Hodges 1980; Mason 1981). While the data from the Birch Run Road site does not preclude this assessment, it is doubtful that the use of quartzite is restricted to the Early Archaic.

Phyllite is represented by a broad, flat, hoe-like biface, a netsinker, and a bifacially modified flake, none of which can be dated. The use of phyllite may represent the practical limits of acceptability for knapping qualities.

Local sources also provided the raw materials for the nonchipped lithic assemblage. Cobbles from primary till or redeposited contexts such as river beds were used as the hearth stones recovered as fire-cracked rock, pitted cobbles, and hammerstones. Granite, schist, and coarse-grained quartzite are the major groups recognized at Birch Run.
Nonlocal sources are divided between those from which materials were directly procured, implying long-distance travel, and those from which materials were indirectly procured, involving some form of gift-giving or exchange. The proportion of local to nonlocal (exotic) chert types, and the form and context in which each type occurs, are indicative of social boundaries (Luedtke 1976). While the nonlocal cherts recovered at the Birch Run Road site constitute a numerically minor part of the assemblage, they indicate changing patterns of inter-regional interaction in the Late Woodland period.

Identification of five chert types, Onondaga, Norwood, Burlington, and Ohio Flint Ridge, was made macroscopically, utilizing comparative collections at Western Michigan University and Michigan State University. Upper Mercer chert was identified by recognition without the aid of a comparative collection.

Onondaga chert is found throughout the Niagara escarpment in the Lower to Middle Devonian formation (Luedtke 1976:270ff.). At the Birch Run Road site Onondaga chert is the most common exotic raw material, accounting for 3% of the debitage (Table 5) and occurring in almost every chipped tool class, albeit in small numbers.

The temporal context of most Onondaga chert in Michigan suggests, in accordance with Luedtke’s observations, that there is an influx of eastern-derived cultural elements during the Late Woodland period. At the Birch Run Road site, one flake of Onondaga was recovered from Feature 10, zone A, a hearth which superimposed the burial pit and must postdate the radiocarbon date obtained from the zone B and C matrix. Onondaga chert is also found among the wedges and bifaces.
Table 5
Distribution of Chert Types and Debitage Classes from Excavation Units

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<th>Raw Materials</th>
<th>Decortication Block</th>
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<th>%</th>
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<td></td>
<td></td>
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<td>Secondary</td>
<td>Tertiary</td>
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<td>10</td>
<td>40</td>
</tr>
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<td>(Wt)</td>
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<td>% (N)</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>(Wt)</td>
<td>20</td>
<td>3</td>
<td>20</td>
<td>27</td>
</tr>
</tbody>
</table>
One Levanna point of Onondaga chert (Figure 29, G) is consistent with the chronological position suggested by both Feature 10 and Luedtke's (1976) characterization of this material as a late phenomenon in Michigan.

Upper Mercer chert occurs in the Lower Pennsylvanian formations of eastern central Ohio (Carskadden 1971; Luedtke 1976; Stout and Schoenlaub 1945). Although present throughout Michigan's prehistoric record, Upper Mercer does not make a substantial showing until the latter part of the Middle Woodland and early Late Woodland transition. Upper Mercer was an important part of the Wayne Mortuary complex (Halsey 1976; Luedtke 1976) where it is most frequently found as Jack's Reef corner-notched points or unnotched triangular preforms.

At Birch Run, Upper Mercer chert occurred only as small tertiary debitage indicating that bifaces of this material were present on the site, and that they were undergoing some minimal modification here. No examples of Upper Mercer were dated at the site. The zenith of the use of Upper Mercer seems to be between A.D. 500 and A.D. 700 as suggested by radiocarbon dates from the Zemaitis site in Ottawa County (Michael Murphy, personal communication) and at the Kanitz site in Gratiot County (Clark 1978). Thus, the paucity of Upper Mercer at the Birch Run Road site is consistent with the time range indicated by the radiocarbon assays for the Late Woodland occupation.

Norwood chert occurs in the Middle Devonian Petosky formation in the northwestern Lower Peninsula (Cleland 1973; Luedtke 1976; Pohl 1930). This important source supplied much of the northern Lower Peninsula with a good quality tabular chert, available in primary
outcrops and secondary deposits. Norwood chert sources are reported from several localities within a small area south of Lake Charlevoix and northwestern Antrim County.

Norwood occurs as final reduction debitage at the Birch Run Road site. Luedtke's (1976:352) distribution of Norwood chert in the Late Woodland period indicates its low density in the Saginaw Valley. Like Upper Mercer, Norwood had something of a florescence in popularity in the late Middle Woodland at the Zemaitis site (Michael Murphy, personal communication). Also, like Upper Mercer, its use appears to decline in the Late Woodland, although it continues to occur on Late Woodland sites throughout central Lower Michigan (e.g., Beld 1978).

Burlington chert presents special problems in identification. Cantwell (1980) notes the difficulties in distinguishing between the Crescent City, Missouri, quarries and Burlington sources in Illinois. In light of this, the Burlington category as used in this analysis makes no attempt at differentiation, although a large comparative collection from both sources was available for this assessment. The cultural-historical implications of either source are presumed to be the same.

The ebb and flow of Burlington chert is closely related to the same motivations and mechanisms operating on Upper Mercer, Norwood, and Flint Ridge cherts. Most Burlington appears in a Middle Woodland context and is coterminous with the transition to the Late Woodland period. It occurs only as final reduction debitage at the Birch Run Road site.
Flint Ridge chert occurs in the Middle Pennsylvanian Vanport formation as a large outcrop in eastern central Ohio, notably in Muskingum and Licking counties (Luedtke 1976; Murphy 1972; Stout and Schoenhlaub 1945). A large comparative collection was available for this analysis. However, the reliability of the identification of Ohio Flint Ridge is hampered by its own variability and its tendency to occur as small tools and debitage. It is further confounded by similarities with some of the till chert materials.

Flint Ridge is represented at Birch Run by an end scraper and five waste flakes, none of which was from datable context. As suggested above, the incidence of Flint Ridge at Birch Run is probably linked to that of Upper Mercer and Burlington, seeing considerable diminution of use through time.

A few examples of Purple chert debitage were tentatively identified in the Birch Run debitage. Purple chert was initially described as a till chert resource in southwestern Michigan (Clark 1981:16). Alternatively, these Birch Run specimens also resemble some of the atypical Kettlepoint chert in the type collection at the Museum, Michigan State University.

Kettlepoint chert, which has its source in southwestern Ontario, was not identified among the Birch Run Road lithics. In its source area Kettlepoint is abundant in the form of water-worn cobbles of high quality chert. At the Draper Park site, St. Clair County, Michigan, a Late Woodland site coeval with the Birch Run Late Woodland component, Kettlepoint chert replaces Bayport as the dominant raw material (Fran Seager-Boss, personal communication).
The apparent lack of Kettlepoint chert at Birch Run raises questions concerning the differential mechanisms operating on the movement of Onondaga and Kettlepoint chert into the Saginaw area. From a logistical perspective, both materials may have passed along the same route if transported by the shortest route from southwestern Ontario. An alternative route for Onondaga is around the southern shore of Lake Erie, bypassing the primary sources of Kettlepoint chert. There is, of course, no reason to assume that Kettlepoint chert would necessarily have accompanied Onondaga when the latter entered Michigan.

As expected, Bayport chert is the major source for the Birch Run Road site assemblage. Trace cherts, including Upper Mercer, Flint Ridge, Burlington, and Norwood, occur primarily as final reduction debitage. There is a relatively high proportion of Onondaga chert in the waste flakes, an observation which will be considered further with respect to its cultural-historical implications.

Nonchert debitage constitutes a minor aspect of the chipped stone industry. Quartzite is the most numerous category, followed by greywacke and slate (Table 6). The flake morphology indicates that bifacial tools were produced using these raw materials; an observation borne out by the recovery of both quartzite and greywacke bifaces from the site.

The vast majority of the debitage is derived from final stages of reduction (secondary and tertiary waste flakes). Only 7% of the assemblage is attributable to initial reduction, involving only Bayport chert and till chert sources. Given the proximity of the Birch Run Road site to the Bayport sources, this figure is very low.
Table 6
Distribution of Nonchert Raw Materials and Debitage Classes from Excavation Units

<table>
<thead>
<tr>
<th>Raw Materials</th>
<th>Decortication Block</th>
<th>Debitage Class</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N)</td>
<td>Primary</td>
<td>Secondary</td>
<td>Tertiary</td>
</tr>
<tr>
<td>Quartzite</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>(Wt) 20.8</td>
<td>79.2</td>
<td>38.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Greywacke</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(Wt)</td>
<td>170.5</td>
<td>36.7</td>
<td>7.6</td>
</tr>
<tr>
<td>Slate</td>
<td>1</td>
<td>1</td>
<td>2.9</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(Wt)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>1</td>
<td>4</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(Wt) 20.8</td>
<td>249.7</td>
<td>77.9</td>
<td>8.9</td>
</tr>
<tr>
<td>%</td>
<td>4</td>
<td>15</td>
<td>51</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>(Wt) 5</td>
<td>66</td>
<td>20</td>
<td>3</td>
</tr>
</tbody>
</table>
Platform condition was examined on all flakes (Table 7). Platforms were determined to be unprepared, prepared, or absent. The debitage classes of block and fragment which by definition lack platforms are excluded from this assessment. Within the prepared category the presence or absence of grinding was noted as a subcategory. Platform grinding was utilized in all debitage classes but is most frequently found in the secondary and tertiary flake classes.

### Table 7
Platform Condition by Debitage Class of Waste Flakes from Excavation Units

<table>
<thead>
<tr>
<th>Debitage Class</th>
<th>Absent N</th>
<th>Absent %</th>
<th>Prepared N</th>
<th>Prepared %</th>
<th>Unprepared N</th>
<th>Unprepared %</th>
<th>Ground N</th>
<th>Ground %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decortication</td>
<td>15</td>
<td>29</td>
<td>4</td>
<td>8</td>
<td>32</td>
<td>63</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Primary</td>
<td>21</td>
<td>43</td>
<td>2</td>
<td>4</td>
<td>26</td>
<td>53</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Secondary</td>
<td>108</td>
<td>39</td>
<td>28</td>
<td>10</td>
<td>142</td>
<td>51</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>Tertiary</td>
<td>463</td>
<td>52</td>
<td>234</td>
<td>26</td>
<td>194</td>
<td>22</td>
<td>97</td>
<td>11</td>
</tr>
</tbody>
</table>

Feature 33 is the only feature at the Birch Run Road site which contained more than an incidental amount of debitage. With the sole exception of one till chert secondary flake, all debitage from this feature is derived from the same parent core/preform of Bayport chert. One hundred and thirty-five flakes represent a discrete episode of reduction involving the production of a single Bayport biface. Exclusive of 23 fragmentary flakes, the platform condition of the remaining 112 pieces of debitage is presented in Table 8.
<table>
<thead>
<tr>
<th>Debitage Class</th>
<th>Platform Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Absent</td>
</tr>
<tr>
<td>Decortication</td>
<td>- -</td>
</tr>
<tr>
<td>Primary</td>
<td>- -</td>
</tr>
<tr>
<td>Secondary</td>
<td>3 17</td>
</tr>
<tr>
<td>Tertiary</td>
<td>48 51</td>
</tr>
</tbody>
</table>

**Debitage**

Debitage classes used in this analysis are defined as follows. Decortication flakes (Figure 16) are those which retain greater than 30% unmodified rind or cortex on the dorsal surface. Flake platforms are usually unprepared. Decortication flakes represent the initial reduction of a cobble or pebble core. However, they are not necessarily the product of the trimming away of unwanted weathered surfaces.

Block debitage is defined as those items which are angular and lacking discernible orientation. There are no platforms or concentric rings of percussion indicative of normal flaking. Thus, blocks are not true flakes but are the inevitable byproduct of testing and initial reduction which represent the fracturing of the stone along frost-planes or other internal flaws. Thermally crazed chert blocks are not included in this class since they are not produced as a part of the reduction sequence.
Figure 16. Representative examples of debitage classes.
A. Decortication
B. Primary
C. Secondary
D. Tertiary
Primary debitage may have up to 30% unmodified rind or cortex on the dorsal surface. Primary flakes are considered an aspect of initial reduction. Dorsal ridges are pronounced, usually running longitudinally. Platforms are unprepared in most instances. Although flake size is not a criterion for classification, the primary and decortication flakes do tend to represent the largest items in the debitage.

Secondary debitage is characterized by the absence of rind or cortex, although small amounts of unmodified surface may be present. The flake scars on the dorsal surface increase in complexity, as multiple scars from previous flake detachment are present in the form of several longitudinal and/or oblique ridges which tend to be less pronounced than in the primary flake class. Striking platforms include the entire range of possible conditions. However, platform preparation by faceting and grinding makes a substantial showing among the secondary debitage.

Tertiary debitage includes those flakes with flat dorsal surfaces. Flake scars are numerous with flat intervening ridges. Platform preparation reaches its highest levels in this class. Flakes of bifacial retouch are included in the tertiary class.

Fragments are those flakes which lack platforms, or platforms lacking flakes, which cannot be confidently placed in any debitage class. They tend to be small in size and, for the most part, represent fragments of secondary and tertiary debitage.

The distribution of lithic raw materials by debitage class from excavation units is shown in Tables 5 and 6.
Cores

In concert with the relatively small amount of initial reduction debitage, few cores were recovered at the Birch Run Road site. Those involving direct-freehand percussion are discussed here; bipolar cores will be considered below in the bipolar lithics section. Six chert cores and core fragments were found in excavation units. In addition, one greywacke and one quartzite core were found on the surface of the plow zone.

Two Bayport cores (Figure 17, A and B) may have served as a source for small usable flakes. One (A) is derived from a large primary flake, the unmodified platform of which is preserved as a short lateral edge of the core. Most of the small flakes, not exceeding 2 cm in length, originate from a flat unprepared platform. Another (B) is roughly discoidal and quite small. Lamellar flakes have been struck from flat, slightly faceted platforms. It is uncertain if this item's primary purpose was a core or whether it may have been intended as a tool itself.

A large discoidal core (Figure 20, A) was found at Birch Run by Donald Simons prior to the project. The material is Bayport chert, probably heat treated as suggested by a rich yellow patina. The core is symmetrical with bifacial primary flake scars distributed evenly across both surfaces. About 40% of the margin of the core retains heavy abrasion as platform preparation. Although no other cores similar to this one were recovered during the excavation, a number of
Figure 17. Cores and blades.
A, Flake-core, Bayport chert;
B, Discoidal flake-core, Bayport chert;
C-D, Blades, Purple chert.
flakes are attributed to the reduction technique associated with this type of core. These are discussed below as Type 2 blades.

Three chert core fragments reflect the initial testing of till chert pebbles by direct-freehand percussion. They lack evidence of systematic flake detachment and, in this respect, represent the opportunistic use of low quality chert resources.

A large biplano greywacke core (Figure 18) has broad expanding flake scars originating from a flat unmodified rind platform on both faces. These converge at the termination of the remnant rind to form a bifacial margin. Flake removal appears to have been the primary intent, although the core itself could have been further modified into a large chopping tool.

The only typical plano-convex core is made of a fine-grained quartzite (Figure 19). The plano surface is unmodified rind which serves as the platform for all flakes struck from this core. Flake scars originate at the rind and vary considerably in size. In terms of this item's function or intended outcome, two possibilities are suggested. First, usable flakes were produced from this core, hence its inclusion in this artifact category. Second, it may have been used as a "scraper-plane." As a discrete tool class the scraper-plane has little currency in the literature of the Great Lakes region, although it is an important constituent of lithic assemblages in California (e.g., Kowta 1969; Treganza and Malamud 1950) where it is thought to be associated with the processing of yucca and agave plant fibers. The Birch Run specimen exhibits edge rounding along its entire margin, indicating either its use as a scraper-plane or, more
Figure 18. Tabular core, greywacke (argillite).
Figure 19. Plano-convex quartzite core.
remotely, that the core was discarded after platform preparation of
the striking platform.

**Blades**

The definition of true blades includes evidence for deliberate
and systematic core platform preparation and removal of successive
blades. The overall proportions of a blade exhibit a tendency for
greater length than width (Sanger 1970). Two types of blades were
recovered at the Birch Run Road site.

Three items represent the Type 1 blade. Two (Figure 17, C and D)
are made of a heat-altered(?) chert, possibly of local origin. The
third item is made of till chert and retains approximately 85% unmodi-
fied rind on its dorsal surface. All three have minimal preparation
in the form of light faceting blows; grinding is absent. All have
unifacially modified lateral margins which are straight and essen-
tially parallel. No cores attributable to this type of blade were
recovered.

The Type 2 blade is morphologically similar to expanding primary
and secondary flakes with heavily ground striking platforms (Figures
20-22). The dorsal surface is characterized by superimposed flake
scars of low relief; there are no longitudinal arris (dorsal ridges).
Of the 12 items included in this category, one (Figure 22, A) is uni-
facially modified. All others exhibit unifacial use-wear indicative
of light scraping activities. All are made of Bayport chert, one of
which (Figure 20, C) was heat treated prior to detachment.
Figure 20. Core and flakes with prepared striking platforms.
A, Discoidal flake-core, Bayport chert;
B-D, Flakes with prepared striking platforms, Bayport chert.
Figure 21. Flakes with prepared striking platforms, Bayport chert.
Figure 22. Flakes with prepared striking platforms, Bayport chert.
Although the second group does not resemble blades as they are usually known in the Great Lakes region, it does meet the true blade criteria on several counts. The fortunate recovery of a discoidal core (Figure 20, A) by Donald Simons provides evidence for the systematic production of the Type 2 blades. Platform preparation is exaggerated in all cases, and immediate use of the blades may have been intended since none were recovered which lacked use-wear.

Temporal placement of the blades at the Birch Run Road site is uncertain. Type 1 blades, although closer to the "classic" form of blades as lamellar flakes, do not resemble Hopewell products but may simply be a "cottage industry" outside the more formal traditions of blade manufacture.

The Type 2 blades and discoidal core have strong similarities with the Middle Woodland Cobden core technique (McNerney 1975; White 1968). At Birch Run one blade of this type (Figure 22, B) was recovered from Feature 10, zone B, dated A.D. 830 ± 90. Otherwise, there is no basis for temporal placement of this technique based on the excavation data.

There is a possibility that this type of blade production is related to the biface manufacture which took place in the vicinity of Feature 33. Both the Type 2 blades and the debitage from Feature 33 share heavily ground platforms on Bayport chert. Unlike the blades, however, the debitage showed virtually no evidence of utilization and tends to be much smaller in size.
Whether they are considered to be blades or systematically produced usable flakes, these artifacts constitute a unique aspect of the lithic industry at the Birch Run Road site.

Unifaces and Utilized Flakes

Unifacially modified and utilized flakes form a functional category involving scraping activities relating to fabrication of nondurable products such as hides, bone, shell, and wood. Utilized flakes may represent either the opportunistic use of debitage, or may involve the systematic or unsystematic production of flakes for use. Systematically produced flakes are defined above as blades.

Utilized flakes are pressed into service without any prior modification, and are characterized in this assemblage by use-wear on one or more edges. This is usually a unifacial invasion of the dorsal aspect by small continuous nibbling and rounding, indicative of light scraping. Bifacial wear on an unmodified edge suggests a cutting function. However, at Birch Run no examples of this were noted, suggesting that cutting functions were performed by bifacial implements.

To a certain extent, unifacial tools (Figure 23) are functionally similar to the utilized flakes, but encode a more formal and systematic approach to an intended task-oriented outcome. A longer and perhaps more strenuous use-life may also have been intended for a unifacial tool than for the relatively unsophisticated utilized flake. Attributes of unifacial tools presented in Table 9 include flake type, lithic raw material, position of modified edge, shape of modified edge, and type of use-wear.
Figure 23. Unifacial tools.
Table 9
Nonmetric Attribute Summary of Unifacial Tools from Excavation Units

<table>
<thead>
<tr>
<th></th>
<th>End Scrapers (n = 14)</th>
<th>Side Scrapers (n = 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Flake Type:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decortication</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Primary</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td>Secondary</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>Tertiary</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fragment</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>Raw Material:</td>
<td></td>
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<tr>
<td>Bayport</td>
<td>10</td>
<td>72</td>
</tr>
<tr>
<td>Onondaga</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Flint Ridge</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Till chert</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Position of Modification:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distal</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Distolateral</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Distal-unilateral</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td>Distal-bilateral</td>
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<td>14</td>
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<tr>
<td>All margins</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Unilateral</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Position indeterminate</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td>Shape of Modified Edge:</td>
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</tr>
<tr>
<td>Convex</td>
<td>11</td>
<td>79</td>
</tr>
<tr>
<td>Subconcave</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Irregular</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Straight</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 9 (continued)

<table>
<thead>
<tr>
<th>Wear Type</th>
<th>End Scrapers (n = 14)</th>
<th>Side Scrapers (n = 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Polished</td>
<td>8</td>
<td>58</td>
</tr>
<tr>
<td>Rounded</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Crushed</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Stepped</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Nibbled</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

Unifaces are divided into two general categories based on the position of edge modification: end scrapers tend to have distal modification and side scrapers are modified on their lateral margin. One end scraper (Figure 23, A) has a prepared hafting element. This tool has been bifacially thinned bilaterally to form a haft element appropriate to a socket handle. Other unifaces lack a prepared hafting element but could have been held on relatively simple, split stick hafts (cf. Keeley 1982). There appears to have been little interest in conserving unifacial tools by resharpening. One scraper (Figure 24, E) made on a primary flake has five rejuvenation scars, indicated by arrows, on the ventral surface, indicating an attempt to refurbish the use potential of this item.

The ratio of unifacial and utilized flakes to unmodifieddebitage is 1:20.8. This is a relatively high ratio which could be interpreted as an emphasis on fabrication using these tools relative to flint knapping. As Table 10 indicates, unifacial tools are most frequently drawn from the primary and secondary flake classes in contrast to
Figure 24. Unifacial tools (arrows indicate rejuvenation flake scars on ventral surface of working edge).
utilized flakes for which secondary and tertiary flakes were considered suitable.

Utilized flakes show a tendency for more frequent incidence of till cherts, most of which are unsuitable for use as more formal unifaces by virtue of their small size. Position of use-wear on utilized flakes is primarily distal or lateral. Most are convex to straight in shape. Use-wear is nibbled in most cases with a minor incidence of edge rounding and polishing.

### Table 10
Nonmetric Attribute Summary of Utilized Flakes (N = 47) from Excavation Units

<table>
<thead>
<tr>
<th>Flake Type:</th>
<th>N</th>
<th>%</th>
<th>Shape of Utilized Edge:</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decortication</td>
<td>4</td>
<td>9</td>
<td>Convex</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>Primary</td>
<td>7</td>
<td>15</td>
<td>Subconvex</td>
<td>13</td>
<td>29</td>
</tr>
<tr>
<td>Secondary</td>
<td>17</td>
<td>36</td>
<td>Straight</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>Tertiary</td>
<td>19</td>
<td>40</td>
<td>Subconcave</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Raw Materials:</td>
<td></td>
<td></td>
<td>Concave</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Bayport</td>
<td>40</td>
<td>85</td>
<td>Deep concavity</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Till chert</td>
<td>7</td>
<td>15</td>
<td>Denticulate</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Irregular</td>
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<td>2</td>
</tr>
<tr>
<td>Position of Wear:</td>
<td></td>
<td></td>
<td>Wear Type:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distal</td>
<td>20</td>
<td>43</td>
<td>Nibbled</td>
<td>34</td>
<td>72</td>
</tr>
<tr>
<td>Distolateral</td>
<td>3</td>
<td>6</td>
<td>Polished</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Distal-unilateral</td>
<td>7</td>
<td>15</td>
<td>Rounded</td>
<td>4</td>
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<td>Crushed</td>
<td>2</td>
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<tr>
<td>Proxolateral</td>
<td>1</td>
<td>2</td>
<td>Bifacial nibbling</td>
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<td>Bifacial polishing</td>
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Bipolar Lithics

Twenty-one bipolar lithic artifacts, including surface finds, plow zone excavation units, and features, were utilized in the assessment of this small but important artifact class. Six categories of bipolar artifacts are recognized in the Birch Run Road site assemblage. Three of these are considered varieties of wedges and three pertain to the use of bipolar percussion as a reduction technique.

The opposed-ridge (Binford and Quimby 1963) wedge is the most common form (Figure 25, B-H). They are typically quadrilateral with two or four battered margins. Four of the opposed-ridge wedges (Figure 25, B-F) are bidirectional. In one instance (Figure 26, A) a biface fragment has been employed as a wedge. There are two ridge-area, one area-point, and one ridge-point wedges. One opposed-ridge specimen (Figure 25, D) was found in Feature 3.

Bipolar reduction of pebble cherts and quartzite has produced two battered pebbles, two split pebbles (Figure 26, C and D), and five bipolar flakes. A single ridge-area item of quartzite (Figure 26, B) is equivocal with respect to its placement in the wedge or reduction categories here.

There appears to have been a selective principle operating with respect to the use of certain raw materials for bipolar implements or cores. All reduction related bipolar materials are made of till cherts in contrast to the wedges which include seven examples of Bayport, two Onondaga, and two till chert specimens. Bipolar reduction appears to have been a minor facet of the lithic industry at the Birch
Figure 25. Bipolar lithics:
A, Area-point wedge;
B-F, Bidirectional opposed-ridge wedges;
G-H, Unidirectional opposed-ridge wedges.
Figure 26. Bipolar lithics:
A, Opposed-ridge wedge made on biface fragment;
B, Quartzite bipolar item;
C-D, Bipolar split till chert pebbles;
E-G, Bipolar debitage.
Run Road site. Wedges, on the other hand, constitute a relatively numerous tool class.

**Bifaces**

Diagnostic bifaces from the Birch Run Road site represent the Paleoindian, Early Archaic, Late Archaic, and Late Woodland periods. The Archaic materials are compared with extant point types. However, the Late Woodland artifacts are presented not as point types, per se, but as a unit which represents the diversity of forms in use during this period. These diagnostics are presented below in roughly chronological order. The metrics of these artifacts are presented in Appendix B. All diagnostics were recovered from the surface or plow zone of the site.

One Paleoindian artifact (Figure 27, A) was recovered from the plow zone at Birch Run. It is a proximal portion of a Bayport biface, probably broken and discarded in the course of manufacture. One surface is covered by relatively long expanding flake scars with pronounced intervening ridges. This represents an intermediate or secondary stage of biface production. The opposite surface is evenly chipped with low intervening ridges between flake scars. A single long expanding flake scar originates basally, truncating the evenly chipped surface and terminating in an abrupt hinge. The medial portion of the proximal margin is heavily ground, suggesting platform preparation in anticipation of additional basal thinning flakes or flutes. The breakage on this artifact is not conchoidal but angular,
Figure 27. Diagnostic hafted bifaces from the Birch Run Road site.
A, Barnes preform;
B-F, Bifurcate-based points
G-H, Middle-Late Archaic side-notched points;
I, "Satchell" point.
indicating that a thermal agent may have been involved. No use-wear is present on the preserved portions of the blade margin.

This artifact is morphologically similar to fluted points from the Barnes site in Midland County, Michigan (Voss 1977; Wright and Roosa 1966). Direct comparison was made between this item and the Barnes site assemblage curated at the Chippewa Nature Center in Midland. This is the only artifact in the Birch Run assemblage attributed to the Paleoindian period.

The bifurcate tradition of the Early Archaic (Chapman 1975) is represented by five points and point fragments (Figure 27, B-F). All are made of Bayport chert. In this assessment Broyles' (1971) typology is modified in accordance with Chapman's (1975, 1977) less rigid use of types in favor of an approach which stresses the range of variability within each type cluster.

Two bifurcates (Figure 27, B and C) are similar to the Kanawha stemmed type (Broyles 1971:59; Chapman 1975:105-106). Both are characterized by slightly expanding stems with small bifurcations. The distomedial juncture is obtuse with heavy marginal grinding extending from the shoulders to, but not including, the bifurcation. The subconcave blade margins of one (Figure 27, B) show evidence of cutting damage. The other item is in the Donald Simons collection and was not examined for edge-wear.

Two items (Figure 27, D and E) are considered St. Albans side-notched (Broyles 1971:72-75; Chapman 1975:108-110). Following Chapman (1975) the distinction between Broyles' variety A and B is not made here. On the Birch Run specimens the stems are slightly expanding
with shallow basal notches. Distomedial juncture is obtuse. No grinding is present. One is heavily damaged; the other has serrate margins with edge rounding occurring on the points of highest relief, indicative of cutting functions.

A fifth bifurcate (Figure 27, F) is a basal fragment of a LeCroy point (Broyles 1971:69; Chapman 1975:106-108). The hafting element is roughly parallel with a deep bifurcation. Light abrasion is present on both lateral margins of the tang. A straight break, possibly of thermal origin, occurred at or below the point of distomedial juncture.

The bifurcate tradition is dated between 6500 and 6000 B.C. in the Middle South (Chapman 1975, 1977). However, in the Great Lakes region it is poorly documented. Some initial investigation into the context of bifurcate points has been undertaken in the Saginaw Valley where there is the potential for relating those points to fossil beach strands (Luke and Beld 1981; Ozker 1977).

The Late Archaic period is represented by four diagnostic points. One of these (Figure 27, G) is a Brewerton eared-notched type (Ritchie 1961:19-20). It is characterized by bilateral notches, basal "ears" extending well beyond the blade margins, and a heavily ground subconcave base. Shoulders are weak from repeated resharpening of the blade. The raw material is Bayport chert. The blade has light use-wear consisting of small scalar and stepped scars.

One proximal fragment (Figure 27, H) is of the Raddatz side-notched type (Wittry 1959:44-46). The blade is broken just above the shoulders with a transverse hinge fracture. The hafting element is
formed by bilateral notches made by bifacial removal of small pressure flakes. Notches are roughly square with slightly obtuse or right-angled distomedial juncture, and are placed well above the base. The base itself is straight and heavily ground. Ears are conspicuous but do not extend beyond the blade width at the shoulders. The transverse profile is thin and lenticular. The raw material is Bayport. Similar points occur at the Andrews site in Saginaw County where they are dated 1220 B.C. (Papworth 1967). At the Naugle site in Midland County, Ozker (1976:327) identifies similar artifacts as early Late Woodland based on their general association with the major component there.

The Satchell Complex (Peske 1963) of the Late Archaic is represented by two stemmed greywacke points. One (Figure 27, I) was recovered in the initial survey of the site (Brunett 1978); the second (not illustrated) is in the Donald Simons collection. Both points are symmetrical in outline but are roughly flaked. Stems are straight with a slight proximal flaring. Shoulders are weak and distomedial juncture is obtuse. Use-wear consists of light bilateral edge rounding.

The Satchell Complex is dated 1060 B.C. ± 110 and 1355 B.C. ± 135 at the Pine Grove Cemetery site in Genesee County (Simons 1972, 1979), and 1830 B.C. ± 85 in southwestern Ontario (Kenyon 1980). The characteristic association of stemmed lanceolate points and selection of greywacke or argillitic raw materials is distinctive, possibly representing a westward extension of the Late Archaic Broadpoint tradition.
(Kenyon 1980) across the lower Great Lakes to a terminus in central Lower Michigan.

No Dustin or Feeheley points were recovered at the Birch Run Road site despite the close proximity to other sites belonging to these major Late Archaic complexes. Likewise, no evidence of the Early or Middle Woodland periods was found at Birch Run.

The remainder of the Birch Run Road site points include a series of notched-expanding stemmed forms which are considered to have derived from the Late Woodland component at the site. Instead of imposing a typology on each morphological variant, Luedtke (1978) has suggested that they may be treated with respect to the proportionate frequencies of general hafting element configuration. She identifies a trend from corner-notched to side-notched, stemmed, and triangular forms. However, at no point in time is one form exclusive of the others. This heterogeneity is characteristic of Late Woodland assemblages throughout the region. The Late Woodland points from the Birch Run Road site are described below.

A single, fragmentary, expanding stemmed point (Figure 28, A) has a straight transverse break across the blade. The hafting element consists of wide bilateral concavities formed by bifacial removal of small pressure flakes. Shoulders are moderately well defined with obtuse or right-angled distomedial juncture. The base is convex and unground with only unifacial thinning. The material is Bayport chert. This artifact could be included in a variety of types from the Late Archaic to Late Woodland, and will not here be considered part of the Late Woodland assemblage.
Figure 28. Diagnostic hafted bifaces from the Birch Run Road site.
A, Expanding stemmed point;
B, Contracting stemmed point;
C-J, Late Woodland notched-expanding stemmed points.
There is one contracting stemmed point (Figure 28, B). The blade is symmetrical with subconvex margins. The transverse profile is plano-triangular, becoming biplano at the hafting element. Shoulders are weak with obtuse distomedial juncture. The stem contracts to a straight unground base. Use-wear indicative of a cutting function is present on both lateral margins in the form of edge rounding and small stepped flake scars. The raw material is Bayport chert.

Four points and point fragments (Figure 28, C-F) constitute one variety of Late Woodland notched-expanding stemmed form. Blades are convex to subconvex with asymmetric biconvex transverse profiles. Shoulders tend to be moderately well defined to weak and lack barbs. Distomedial juncture is right angled. The hafting element is formed by the removal of sequential flakes, bifacially, at an oblique angle to the longitudinal axis. Stems expand quickly to a point equal to or exceeding the maximum width of the blade. Bases are straight to subconvex and are ground in three of four instances. Two blade margins lack evidence of use-wear, one exhibits bilateral-bifacial crushing just below a transverse hinge fracture. Raw materials include three examples of Bayport and one unidentified chert.

Another group of four points (Figure 28, G-J) constitutes a second variety of Late Woodland and notched-expanding stemmed points. They are distinguished from the preceding group by the relative lack of care in execution and the tendency for the hafting element to be lateral-coincidental (at right angles to the longitudinal axis) rather than oblique. Blades are subconvex with asymmetric biconvex profiles.
Flaking is unevenly applied on the blade surfaces. Notches are wide and shallow, formed by bifacial pressure flaking. Shoulders are weak and the distomedial juncture is obtuse. Like the preceding group, bases expand rapidly but are, in all cases, unground. All items are made of Bayport chert.

Both of the above groups represent variation within a single generalized notched-expanding stemmed series. Similar points occur at the Schultz site (Fitting 1972) and at most Late Woodland sites throughout the Saginaw watershed and in southeastern Michigan.

Another Late Woodland variety consists of very small notched points, here divided into two groups. Three of these diminutive notched points (Figure 29, A-C) are carefully made. Blades are triangular in outline with straight or slightly excursive margins. Barbs are present on one item. The hafting element is formed by small narrow pressure flake removal oblique to the longitudinal axis. Stems are expanding, culminating in straight to subconcave bases. Basal grinding is present on one item (Figure 29, A). Blade margins lack evidence of use-wear. The raw materials are unidentified, probably of nonlocal origin. Two of the three have extensive thermal damage.

Three other points (Figure 29, D-F) are manufactured on secondary waste flakes. Two are notched and the third is essentially triangular. These items represent the production of hafted bifaces with a minimum of effort or technical expertise. Blades are shaped by unifacial or bifacial trimming of small pressure flakes. Hafting elements are made by simple bifacial notching, producing shallow bilateral constrictions. Bases are unmodified or minimally thinned and grinding is absent.
Figure 29. Diagnostic hafted bifaces from the Birch Run Road site.  
A-C, Diminutive notched points;  
D-F, Late Woodland "flake" points;  
G, Levanna point.
Use-wear indicative of cutting is present on all specimens in contrast with the previous group which exhibited pristine margins. Two of these "flake points" are made of Bayport chert while the third is of a thermally altered, unidentified chert.

The last diagnostic biface from the Birch Run Road site (Figure 29, G) is a Levanna point (Ritchie 1961:31-32) made of Onondaga chert. It is evenly flaked with incurvate blade margins. The base is straight and unground; relatively large thinning flakes have been removed from the base. Use-wear is restricted to the distal half of the blade margins and consists of cutting damage in the form of edge-rounding and crushing.

The Late Woodland points described above include one stemmed point, one triangular point, and 13 notched-expanding stemmed forms. A comparison to Luedtke's (1978:7) distribution of point forms through time indicates that the Birch Run assemblage best fits the early part of her time periods, between A.D. 800 and A.D. 1000. The low incidence of triangular forms also suggests that the date cannot be much later than A.D. 1000. The radiocarbon assays from the Birch Run Road site, while not directly dating any of these artifacts, is in agreement with the time range suggested by Luedtke's model.

There are eight point fragments which lack diagnostic value. Four are distal fragments, three are proximal, and one is a triangular fragment with both proxolateral corners broken off. All items are made of Bayport chert with the exception of one distal fragment.

Six Bayport chert biface fragments represent distal and lateral segments of preforms, probably broken during manufacture or during use.
as knives. No whole preforms were recovered from the Birch Run Road site. Only these few specimens attest to the intermediate stages of biface production.

There are seven bifacial knives. Two (Figure 30, A and B) have notched-expanding stemmed hafting elements and are relatively large in size, with extensive use-wear on the blade margins. Five knives are essentially triangular with variation due to the placement and degree of attrition. Four of these are illustrated in Figure 30 (C-F). Two are made of Bayport chert, two are till chert, and one is made of Onondaga chert. One knife (Figure 30, D) was recovered from the subsoil-plow zone interface very near the pit orifice of Feature 1.

One Bayport biface (Figure 31, A) functioned as a gouge. The pointed end of this tool makes use of the hard chalcedony nucleus of the Bayport nodule from which it was made.

One perforator or drill-like artifact (Figure 31, B) was recovered. It is made on a unique agate material, probably of till origin. It is primarily unifacial although four flake scars technically make it a biface. The distal end is smooth and has a single longitudinal spall originating at the tip indicating that force was exerted along this axis. Although no typical drills were found at the Birch Run Road site, two distal fragments of bifaces are the appropriate size and shape of drill bits or microgouges. Neither fragment exhibits the polished use-wear characteristics of drills. One is Bayport chert; the other is Onondaga.

There are three bifacially flaked phyllite artifacts. One (Figure 32, A) is tentatively considered a netsinker. It is roughly
Figure 30. Bifacial knives from the Birch Run Road site.
Figure 31. Bifacial tools from the Birch Run Road site. A-B, Gouges; C, Bifacially modified flake.
Figure 32. Bifacial tools from the Birch Run Road site.
A, Netsinker(?);
B, "Hoe" or hoe-like implement.
flaked with bilateral indentations. Another artifact (Figure 32, B) is broad and flat with well developed polish distally, suggesting a hoe-like implement. The third phyllite tool (Figure 31, C) is a bifacially modified flake with polish occurring along the convex distal margin.

Three large quartzite bifaces were found on the plowed surface of the site. One (not illustrated) found by Donald Simons is made of white fine-grained quartzite. Another (Figure 33, A) was recovered during the initial site survey (Brunett 1978) and is made of red and white banded quartzite. The third (Figure 33, B) is made of an off-white, fine-grained quartzite. All are thick in cross section with broad flake scars.

One artifact (Figure 35, A) combines the techniques of percussion flaking and grinding. The outline is pentagonal with a flat battered poll and a bivectorally shaped bit. Bifacial flake scars superimpose a bifacially ground margin on both lateral edges and on the bit itself. A finely ground working edge is preserved on the bit. The raw material is a green greywacke or fine-grained sandy siltstone. A large number of virtually identical artifacts have been recovered from the Oxbow Archaeological District, Midland County, Michigan, and are currently on display at the Chippewa Nature Center.

Another unique item (Figure 34) is a large naturally produced flake, representing a massive decortication flake, with a bifacially chipped margin. In addition, localized battering is present on the central areas of both the dorsal and ventral surfaces. The ventral surface also exhibits evidence of grinding in the same region as the
Figure 33. Quartzite bifaces from the Birch Run Road site.
Figure 34. Unique tool: Cobble flake with bifacial chipping, grinding on central portion of ventral surface, and pecking on both dorsal and ventral surfaces.
Figure 35. Ground stone tools from the Birch Run Road site.
battering wear. The material is a fine-grained argillite. This unusual tool was recovered as a piece plot on the mechanically stripped surface at N37-W60.

Nonchipped Lithics

Nonchipped lithic artifacts comprise a small but important part of the prehistoric tool kit at the Birch Run Road site, ranging from ground celts to relatively unsophisticated pitted cobbles, manos, and hammerstones. The most likely source for cobbles from which most of these tools were made is the local glacial till. Cobble size and hardness attributes probably tend to favor the selection of igneous and metamorphic rocks for tools with a percussive function. Obviously, sandstone is best suited for abrasive functions.

A total of nine hammerstones were recovered. These are subdivided into four categories based on shape. All categories share the requisite attributes of battering damage, either localized or diffuse, and usually located at one or both ends and/or on lateral margins.

Four "egg-shaped" hammerstones, all surface finds, have localized battering on edges and ends. Two are made of granite and two are of quartzite.

Two hammerstones are an elongated oval shape. One is quartzite and one is porphyry. Use-wear is limited to localized battering on the ends only. Both are surface finds.

There are two flat ovate hammerstones. One is a surface find; it is made of granite and has battering damage on both poles and lateral edges. The other was recovered from Feature 7, zone B. It
exhibits battering on all margins and is made of quartzite. The quartzite is fire-cracked and blackened but not fragmented.

A large quartzite cobbble was found in the zone B fill of Feature 10. It is about three times larger than the other hammerstones and has diffuse battering damage along a rounded convex end.

One pitted cobbble, possibly used in conjunction with the nut processing activities associated with Feature 1, was recovered as a piece plot on the bulldozed surface at N17-W60. The granite cobbble has a flat surface with a single small shallow pit in the center.

An andesite anvil was recovered from the plowed surface of the site, also in the vicinity of Feature 1. It exhibits a centralized but not pitted area of diffuse battering. This type of tool would be appropriate for either nut processing, functioning as a pitted cobbble, or could be related to the bipolar reduction of lithic materials.

A second anvil, also a surface find, combines this function with that of a mano or grinding stone. Multiple functions implied from the co-occurrence of more than one wear type on a single artifact are not uncommon among cobbble tools. This item is made of andesite and has two flat surfaces which show evidence of polish and linear striae, indicative of a mano function. In addition, one flat surface exhibits a centralized area of diffuse battering possibly indicating an "incipient" pit (Figure 36).

Two manos were recovered in a fragmentary state as fire-cracked rock (FCR). Feature 18 produced 31 pieces of granite FCR, some of which were rearticulated to form part of a mano with a finely polished, flat, grinding surface. A second possible mano was found among the
Figure 36. Cobble mano with pecked area.
FCR from Feature 21, zone B. It exhibits a single flat surface with poorly developed wear. The raw material is a fine-grained diorite.

Two sandstone abraders were found: one from the surface and one from Feature 25, zone A. The former (Figure 37, B) has two well developed linear grooves on one surface. The abrader from Feature 25 has one shallow linear groove on one flat surface.

Three celts or adzes have been found at the Birch Run Road site. A single complete specimen (Figure 35, B) was a surface find made by Donald Simons. The other two (Figure 35, C and D) were surface finds made during the excavation of the site. One is unique in form and material, having a narrow bit with a quadrilateral profile manufactured of meta-greywacke. The other two are made of diorite and have similar lenticular transverse profiles.

Celts occur in a wide variety of shapes and sizes, and appear to cover a broad temporal range. The celts from Birch Run, particularly the two diorite items, are similar to the "adzes" from the Bussinger site (Halsey 1976:131-142). However, the multicomponent nature of the Birch Run Road site, and the lack of good context for these three celts, precludes a confident attribution to any particular period between Late Archaic and Late Woodland.

**Summary of the Lithic Analysis**

Nominally, Paleoindian, Early Archaic, and Late Archaic components are present at the Birch Run Road site in the form of diagnostic projectile points. The major part of the nondiagnostic lithic assemblage, consisting of unmodified flakes, utilized flakes, unifaces, bipolar
Figure 37. Nonchipped tools:
A, Mano recovered as FCR in Feature 18;
B, Sandstone abrader.
lithics, and nonchipped lithics, is believed to belong to the Late Woodland component(s) at the site.

The overall picture presented by the Late Woodland lithic assemblage is one lacking in evidence for functional specialization. Small numbers of typical tool classes were recovered indicating that a wide range of tasks was conducted at the site. Initial reduction of lithic materials is poorly represented with more emphasis being placed on the final stages of tool production and maintenance.

While Bayport chert met most of the requirements of the chipped stone industry, Onondaga chert accounted for 3% of the debitage and was present in the form of a Levanna point and as wedges. The quantity of Onondaga chert relative to Bayport in the Birch Run Road site assemblage may be indicative of an influx of eastern-derived cultural manifestations related to the Younge tradition (Brose and Essenpreis 1973; Fitting 1965; Luedtke 1976).

By examining the relative proportions of exotic cherts, notably Upper Mercer and Onondaga, it was possible to suggest a date ca. A.D. 900 for the Late Woodland at Birch Run. Furthermore, following Luedtke (1978), it was suggested that the proportions of notched, expanding, and triangular Late Woodland projectile points indicated a date between A.D. 800 and A.D. 1000. Both assessments were later corroborated by radiocarbon dates from Features 1 and 10.

It was not possible to clarify the context of quartzite and greywacke based on the Birch Run Road site data. Quartzite artifacts, usually large ovate bifaces, were not recovered from a datable context or association. There does not seem to be any evidence suggesting
that the use of quartzite is restricted to the Early Archaic period, although the data from Birch Run are equivocal in this respect.

Stemmed greywacke points recovered from Birch Run were compared to Satchell complex materials, but cannot themselves be used to address the temporal position of the Satchell complex.
SUMMARY AND CONCLUSIONS

Excavations at the Birch Run Road site produced evidence of prehistoric occupations beginning, minimally, 8500 years ago with the Bifurcate Point tradition of the Early Archaic. One artifact hints at an earlier visit by Paleoindians. All lithic artifacts representing these periods are made of Bayport chert, attesting to the familiarity of these early foragers with the resources of the Saginaw Valley.

The Late Archaic component at Birch Run is evidenced by the presence of "Satchell Complex" stemmed greywacke bifaces and by a single boldly side-notched point base which may date somewhat earlier. The absence of a strong Late Archaic component here is noteworthy, given the intensive use of the valley margins during this period. No features could be assigned to the Late Archaic component on the basis of form, contents, or radiocarbon dates. Component may, in fact, be too strong a term with which to characterize the Late Archaic at Birch Run.

A hiatus in site use may be responsible for the absence of Early and Middle Woodland materials. It is with the early part of the Late Woodland period, ca. A.D. 800, that evidence of site use is amplified by the construction of pit and hearth features and the refurbishing of stone tools. Temporal boundaries of the Late Woodland component(s) were established by using four approaches:
1. Ceramic types from Birch Run, Wayne, Vase, and Spring Creek were compared with specimens from dated sites.

2. Relative frequencies of lithic raw materials, especially Bayport, Upper Mercer, and Onondaga, were compared to Luedtke's (1976) data base.

3. Relative frequencies of hafting element forms (side-notched, corner-notched, stemmed, and triangular) were compared to the "sliding scale" of point forms offered by Luedtke (1978).

4. Absolute dates were obtained from three features.

   Each approach, but particularly the latter three, indicates that a 300 year span of site use, from A.D. 800 to A.D. 1100, embraces the bulk of the Late Woodland component(s) at the Birch Run Road site.

   The Late Woodland occupation(s) of the Birch Run Road site is difficult to characterize given the peripheral location of the area excavated relative to the more intensively utilized area to the north. This notwithstanding, the artifacts recovered indicate low intensity site use with low numbers of ceramic vessels. The lithic assemblage points to tool maintenance rather than tool production, emphasizing the final stages of biface reduction and resharpening. Despite the presence of a wide range of tools, their low frequencies suggest that activities of a generalized nature were conducted here.

   Botanical and faunal remains also indicate a generalized use of resources. Nut species recovered include hickory, butternut, black walnut(?), beech, and acorn. One cultigen, *Zea mays* (Northern Flint race), was recovered from Feature 10. Similarly, faunal remains
exhibit no tendencies toward specialization. They include lake trout, sucker, turtle, bird, and unidentified large and small mammal.

Types and placement of prehistoric features revealed no discernible patterns of organization. As noted earlier, there is very little superpositioning of features, but where it does occur the superposition of a later feature usually is confined to the limits of extant earlier features. This is interpreted as an intentional reuse or re-excavation of facilities over a brief period of time. A single pit contained the remains of two very young individuals; too young, perhaps, to have been afforded a place in the more formal cemeteries of the Wayne tradition.

How, then, does the Birch Run Road site fit into the larger context of Late Woodland settlement and subsistence in the Saginaw Valley? Projecting the adaptive systems of the historic period back into prehistory, Fitting and Cleland (1969) define three settlement systems (Chippewa, Ottawa, and Miami-Potawatomi) which correspond to the Canadian biotic province, the Canadian-Carolinian transition zone, and the Carolinian biotic province, respectively. In order to classify a given site as belonging to one of the three settlement systems, it is necessary to reduce the assemblage into gross functional categories (pots, points, scrapers, etc.) to generate ratios between categories. These ratios are compared to expectations of assemblage composition of various seasonal activities documented ethnohistorically.

The bulk of the Saginaw Valley is included in the range of the Miami-Potawatomi settlement type, with the eastern and northern
margins included in the Ottawa system (Fitting and Cleland 1969:290). However, few sites are presented in support of the model, and none is located in or near the Saginaw Valley. Fitting (1971) attempts to come to terms with the applicability of this settlement model in the Saginaw by suggesting that all three systems utilized the valley for different resources at different times of the year, scheduling their use to minimize conflict and competition. While some of Fitting's specific site interpretations are questionable, he concludes:

The Saginaw Valley presents an unusual situation in the Late Woodland period. No single settlement system seems to be represented as in earlier time horizons. The Late Woodland sites are more numerous than in earlier periods, but there is a wide range of site types, artifact styles and economic patterns. . . . The Late Woodland archaeological sequence in the Saginaw Valley is derivative from all surrounding areas. There is no clear-cut pattern of internal cultural development. Furthermore, there is no consistency of site types or settlement systems. (1971:39)

In general, the statement applies to individual sites as well as to the valley as a whole. Halsey (1976:435) makes reference to the Saginaw Valley as "the great camping ground" and notes that, "in fact, no distinctive settlement type—either seasonal-functional (Fitting 1969) or ethno-ecotypical (Fitting and Cleland 1969; Fitting 1972)—may really be applied with any confidence to the Bussinger site."

Such is the case with many Late Woodland sites in the Saginaw Valley, which typically produce a mixed assemblage containing elements of two or more discrete ceramic traditions. Yet, there is reason to take exception to Fitting's (1971:39) statement that "no clear cut pattern of internal cultural development" exists for the Saginaw
Valley. Granted, it is not "clear cut," but Brashler's (1981) study of boundary maintenance in the early Late Woodland does suggest that the Saginaw Valley was "home" to the northern Wayne tradition. Further, it may be asserted that the use of certain mortuary sites (Bussinger, Tyra, Bugai) from the Late Archaic through Late Woodland reflects continuity of a cognizant identity with the Saginaw Valley on the part of these prehistoric people.

The archaeology of Saginaw County is the subject of a paper by Peebles (1978) in which a synthetic overview is offered with the benefit of an active decade of grant and contract research in this area. Just as Fitting and Cleland's (1969) model makes use of fundamental principles linking settlement and subsistence to the physical landscape, Peebles' model for the Late Woodland is structured around the physical characteristics of the valley. The model consists of three concentric rings, each one containing sites of distinctive composition reflecting their position in a hierarchical settlement system. Peebles summarizes:

[The model] envisions a relatively permanent "village" at its core, specialized, seasonally utilized settlements near this village, and small upland camps occupied by a very few persons who performed a limited number of tasks for a short period of time. (1978:122-123)

The model assumes that agriculture was undertaken at the core sites (e.g., Tyra and Bussinger) as well as at some of the seasonally utilized settlements referred to as "farmsteads" (Peebles 1978:123), such as the Mahoney site. There is also an impression of a strong sociopolitical entity based on the core area which exerts its authority up each tributary of the Saginaw River system.
While there is evidence for maize agriculture in the western Lake Erie basin and southern Ontario by Late Woodland times (Stothers and Yarnell 1977), the production and consumption of cultigens in the Saginaw Valley seems slight by comparison. Lovis (1984) comments on the paucity of agricultural villages in the Wayne phase which he believes suggests a "florescence of intensive foraging economy."

There is no firm evidence that food production was an important activity in the Saginaw Valley at any time in prehistory. Certainly the data from the Mahoney site, as reported by Bigony (1970), do not support Peebles' characterization of the site as a farmstead.

Brashler (1981) suggests the possibility of a mutually beneficial relationship between the food producers of the Younge tradition and the intensive foragers of the Wayne tradition. Ties between these two groups are evidenced by an interdigitation of decorative types (Brashler 1981:334) and a common association in both mortuary and nonmortuary contexts. The possibility of the acquisition of maize from the Younge tradition in exchange for the products of foraging may lend credence to Fitting's (1975:44) statement that:

Cultigens played an important role in the settlement systems and social organization in the entire area, even in regions where agriculture was not practiced.

"Important" is a relative term and the extent to which maize consumption figured in the diets of the Saginaw Wayne tradition people is equivocal. Brashler (1981) notes that there were no known associations between maize and Wayne ceramics, thus making the recovery of
maize from Feature 10 at Birch Run the only instance of this association in the Saginaw Valley.

Lack of tension between the Wayne and Younge traditions is indicated by shared mortuary sites and frequent co-associations elsewhere in the valley. Yet the southern Wayne tradition of southeast Michigan "seems to disappear with the ascendancy of the Younge tradition" (Brashler 1981:335), possibly moving north to join their Saginaw relatives. The only possible example of the type of agricultural village suggested by Peebles is the Malone site which has two late prehistoric components: one is dated A.D. 1100 ± 110 and is compared with the Glen Meyer phase of Ontario; the second is Upper Mississippian and is dated A.D. 1410 ± 100 (Fitting 1971:39).

Minimally we are left with an understanding of the Late Woodland occupations of the Saginaw Valley that suggests an in situ development from a Late Archaic base. Continuity in mortuary and subsistence behavior underscores the adaptational and emically cognized integrity of the Saginaw Valley residents. Yet, there was substantial interaction between the Wayne tradition and its neighbors, particularly Younge, but also Spring Creek, Mackinac, Traverse, and Allegan as well. Permeable boundaries permitted free access to the Saginaw Valley and its resources but did not necessarily include burial privileges there.

Future studies should seek to refine our knowledge of lithic raw materials, projectile point morphology, and ceramic types within and between each river system of the Saginaw drainage. Such an approach could indicate patterns in land use by each of the neighboring ceramic
traditions relative to the resident Wayne folk. The Birch Run Road site, perhaps because of its location at a fording place on the Flint River, saw the passage of people bearing the Wayne, Younge, and Spring Creek traditions. The edge of their encampment produced an array of materials indicative of a generalized use of the site for brief intervals. Most of the Birch Run Road site lies to the north under snow or corn where it, without question, harbors considerably more data with the real likelihood of enhancing our current understanding of Saginaw Valley prehistory.
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These consist of pages:

125-134, Appendix A: Botanical Remains From The Birch Road Site.
APPENDIX B

Metrical and Nonmetrical Attributes of Diagnostic Bifaces from the Birch Run Road Site

<table>
<thead>
<tr>
<th>Type</th>
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Note. All measurements are in centimeters. Only whole measurements are given.
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