A PRELIMINARY ASSESSMENT OF ARCHEOLOGICAL RESOURCES IN THE VICINITY OF THE PROPOSED WHITE RIVER DEVELOPMENT, BADLANDS NATIONAL MONUMENT, SOUTH DAKOTA

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MIDWEST ARCHEOLOGICAL CENTER
OCCASIONAL STUDIES IN ANTHROPOLOGY

1. Anderson, Adrienne B.
   1974 Archeological Assessment, Mount Rushmore National Memorial, 1973

2. Mundell, Raymond L.
   1975 An Illustrated Osteology of the Channel Catfish (*Ictalurus punctatus*)

3. Weymouth, John W.
   1976 A Magnetic Survey of the Walth Bay Site (39WW203)

4. Zeimens, George M.
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5. Falk, Carl R., Steve Holen and Robert Pepperl
   1978 A Preliminary Assessment of Archeological Resources in the Vicinity of the Proposed White River Development, Badlands National Monument, South Dakota

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ACKNOWLEDGMENTS

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INTRODUCTION

In mid-June 1976, the Division of Archeological Research was contacted by the Midwest Archeological Center concerning the need for a preliminary evaluation of cultural resources located in the vicinity of the planned White River Development, Badlands National Monument, South Dakota. In addition to an archeological survey, a paleontological reconnaissance was requested. These investigations were to be implemented in conjunction with a National Park Service assessment of potential impacts resulting from the development of interim visitor and management facilities in the South Unit of the Monument.

Formal arrangements between the University and the National Park Service for this work were concluded in late June; the field investigation was initiated on July 12 and completed on July 24, 1976. The project was conducted under the general supervision of Carl R. Falk. Steve Holen directed the archeological field investigation and prepared a draft report covering the results of these activities. Robert Pepperl prepared the inventory of cultural materials recovered during the field effort. Dr. Michael R. Voorhies and Ms. E. Jane Voorhies were responsible for the evaluation of paleontological resources. A letter detailing results of the field investigation together with an assessment of potential project impact was forwarded to the Midwest Archeological Center on August 3, 1976. The following report completes documentation of all phases of the investigation under the original purchase order agreement.

Study Definition

This study is basically descriptive and is oriented toward the development of information necessary to permit National Park Service compliance with pertinent sections of Executive Order 11593, "Protection and Enhancement of the Cultural Environment," dated May 13, 1971, as well as relevant provisions of the National Environmental Policy Act of 1969 (P.L. 91-190) and related legislation. Further, information resulting from this work provides a contribution, however small, toward knowledge of human occupation and use of a portion of the Badlands Monument.

The basic focus of the investigation was the location, identification, and evaluation of archeological resources within the project area, followed by an assessment--based on field observation and information provided by the National Park Service--of potential impact to defined resources as a result of the development, construction, and operation of planned visitor and staff facilities. In addition, the contractor was requested to conduct a reconnaissance level

survey for paleontological remains within the study area and to provide an evaluation of possible impact to these resources as a result of planned development.

Area Definition

Following the descriptive specifications provided by the National Park Service, the study area may be defined as "...Section 19, Township 41 North, Range 43 West and Section 24, Township 41 North, Range 44 West, Shannon County, South Dakota" (U.S.G.S. topographic maps, 7.5 minute series; Stirk Table and Imlay SW quadrangles, South Dakota). It was further requested that particular attention be given to lands lying between the "...2,600' and 2,650' elevation..." with highest priority placed on examining the planned realignment of "...the road to Red Shirt and the proposed location of the visitor contact and administrative facility, the storage building, and the residence trailer."

Procedures

Given the objectives outlined above, the following steps were initiated:

1. Records Search. Archeological survey records for the area under consideration were examined, utilizing the resources of the Midwest Archeological Center.

2. Literature Search. Relevant background information was compiled from published and manuscript sources available through the University of Nebraska and the Midwest Archeological Center.

3. National Register Consultation. The most recent full publication of the National Register of Historic Places was consulted with respect to National Register properties which might lie within or adjacent to the study area.

4. Other Consultation. Informal communications with the respective staffs of the Midwest Archeological Center and Badlands National Monument were initiated. In order to implement the paleontological portion of the investigation, Dr. Michael Voorhies and Ms. E. Jane Voorhies (Nebraska State Museum) were retained on a consulting basis. Dr. Voorhies is an internationally known vertebrate paleontologist with considerable professional experience in the Niobrara drainage to the south of the study area; E. Jane Voorhies is a trained and experienced geologist.

5. Field Survey and Reconnaissance. In conjunction with the collection of relevant background information, an intensive archeological survey of the study area was undertaken. Subse-

quent to this phase of the work, a reconnaissance survey of paleontological resources was completed.

6. Coordination with Contracting Agency. Throughout the period, coordination was maintained with the Midwest Archeological Center. The progress of the field investigation, preliminary evaluations, recommendations, and general requirements of the final report were discussed.

BACKGROUND

Summary and Results of Past Archeological Investigations

Professional investigations of the archeological record within the Badlands National Monument have been few, and in fact little systematic work has been done in southwestern South Dakota. Several studies, however, are pertinent to the White River Development evaluation and are noted here, including reference to the early recognition of archeological phenomena in the Badlands area (Sheldon 1905; Strong 1940:387), as well as works pertaining to archeological remains along the White River in northwestern Nebraska (Champe 1946:63-65; Schultz and Stout 1945:244). A summary review of the archeology of the Angostura Reservoir area by Jack T. Hughes (1949:266-277) provides a useful compilation of research in the general area prior to 1950.

Systematic investigation within the Badlands National Monument is lacking; though some work has been carried out in the North Unit. During an 8 week period in 1953, Paul Beaubien completed a reconnaissance level survey and minor test excavations within the North Unit; at least 30 sites were located, yielding ceramic, lithic, and bone debris (Beaubien 1953). In 1958, Park development, in conjunction with Mission 66, necessitated the salvage investigations of two previously located sites. The results of this work were included in an unpublished manuscript by Dee C. Taylor (1961), representing the only detailed consideration of the area's cultural resources.

In addition to the investigations outlined above, Britt (1970) has reported the results of a cursory surface investigation of the Millard Ridge (Cedar Butte) area and a number of memoranda summarizing preconstruction survey activities by personnel from the Midwest Archeological Center may be found in the area files of that same organization. As of the summer of 1976, at least 48 numbers had been assigned to sites in the immediate North Unit area; though at least four of these appear to be outside the Monument proper and the specific locations of several are unclear. Based on information available to us, no sites have been documented within the South Unit; though a brief reconnaissance of 2,730 acres within the Buffalo Gap National Grassland in extreme southern Pennington County and north of the White River area resulted in the identification of 18 archeological sites (Kay 1974).

Chronology. Based on the results of Beaubien's earlier survey and general frameworks provided by Lehmer (1954), Caldwell *et al*. (1960), and Hurt (1961), as well as his own investigation, Taylor (1961:79-84) has provided a tentative chronology for the Badlands area which essentially follows the sequence defined for North America (Willey 1966) and the

general Plains area (Wedel 1961; Frison 1973). Finding little empirical evidence for use of the Badlands during the Big Game Hunting ("Early Hunters") period or the subsequent Plains Archaic ("Hunters and Collectors") period, Taylor (1961:81-82) suggested that at least two sites had yielded materials indicative of the Plains Woodland period. Materials suggestive of Plains Village period use of the area were also noted. Both Middle Missouri ("Early Village") and Coalescent ("Late Village") Tradition sites were expected, as well as remains reflecting protohistoric and historic Sioux groups (Taylor 1961:82-84). Substantive evidence is not plentiful, however. From a broad perspective and based on Taylor's summary arguments, it is reasonable to infer human use of the Badlands for at least the past two millennia, with earlier occupations and/or use of the area beginning at the unspecified (and presumably much earlier) date. More detailed consideration of the archeological evidence from the adjacent areas of northwest Nebraska and southwest Wyoming would undoubtedly provide a more detailed background against which the Badlands materials might be viewed.

National Register Properties

Based on our consultation with the most recent full publication of the National Register of Historic Places (Federal Register, February 1, 1977; Vol. 42, No. 21), no known National Register properties are located within the defined study area. A single property, Prairie Homestead, is located north of Interior, South Dakota, in Jackson County, and Wounded Knee Battlefield is located to the south in Shannon County.

Summary of Known Cultural Resources

Our background research failed to locate evidence of known archeological sites (historic or prehistoric) in the defined project area. Limited archeological survey and excavation within the North Unit have resulted in the identification of nearly 50 archeological sites suggestive of human use of the immediate area over at least two millennia; though the chronological position and taxonomic affiliation of these sites is somewhat vague at best. Finally, no National Register properties have been identified within, or in the immediate environs of, the study area.

ARCHEOLOGICAL SURVEY INVESTIGATION: 1976

During the period from July 12 to July 23, a field crew under the direction of Steve Holen conducted an intensive survey of the White River Development area. Holen was assisted by Darcy Morey, Deborah Weston, and Douglas Marsh, all University of Nebraska undergraduate anthropology majors. Site forms, maps, photographs, and related records were organized by Holen and have been filed with the Midwest Archeological Center. Recovered materials have been transferred to the Midwest Archeological Center for permanent storage.

Field Procedures

The archeological survey was carried out by two teams, each composed of two individuals; all lands within the designated survey area were systematically covered on foot. Spacing between team members was varied in relation to terrain and ground cover and was consistent with maximum visibility. In some instances it was deemed desirable to extend survey coverage beyond the defined boundaries. Sites located outside the two-section study area reflect such decisions: efforts outside the project boundary were not systematic--these areas remain to be fully surveyed.

Much of the land included in the survey area supported a heavy grass cover, making surface identification of sites difficult. Thus, attention was focused on areas of natural erosion, animal burrowing, and human disturbance. Most sites were discovered in these "disturbed areas."

No attempt was made to carry out systematic sampling within identified site areas. Unless otherwise noted, materials collected from each site reflect an attempt to recover all cultural items within defined site limits.

Sites Located

A total of 23 archeological sites--all appearing to represent Native American use of the area--were located during the survey period (Fig. 1). Five of these lie partially or wholly outside the project area. Table 1 provides site locations and a generalized indication of site size. Other relevant site data are summarized below and in following sections.

39SH6 (NE¼ SW¼ NE¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,610'). This site is located on a low rise on the second terrace of the White River. Cultural materials were found within an area approximately 5 m. in diameter; vegetation was sparse.

39SH7 (NW¼ SE¼ SE¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,710'). This site is located on the top and slopes of a prominent hill,

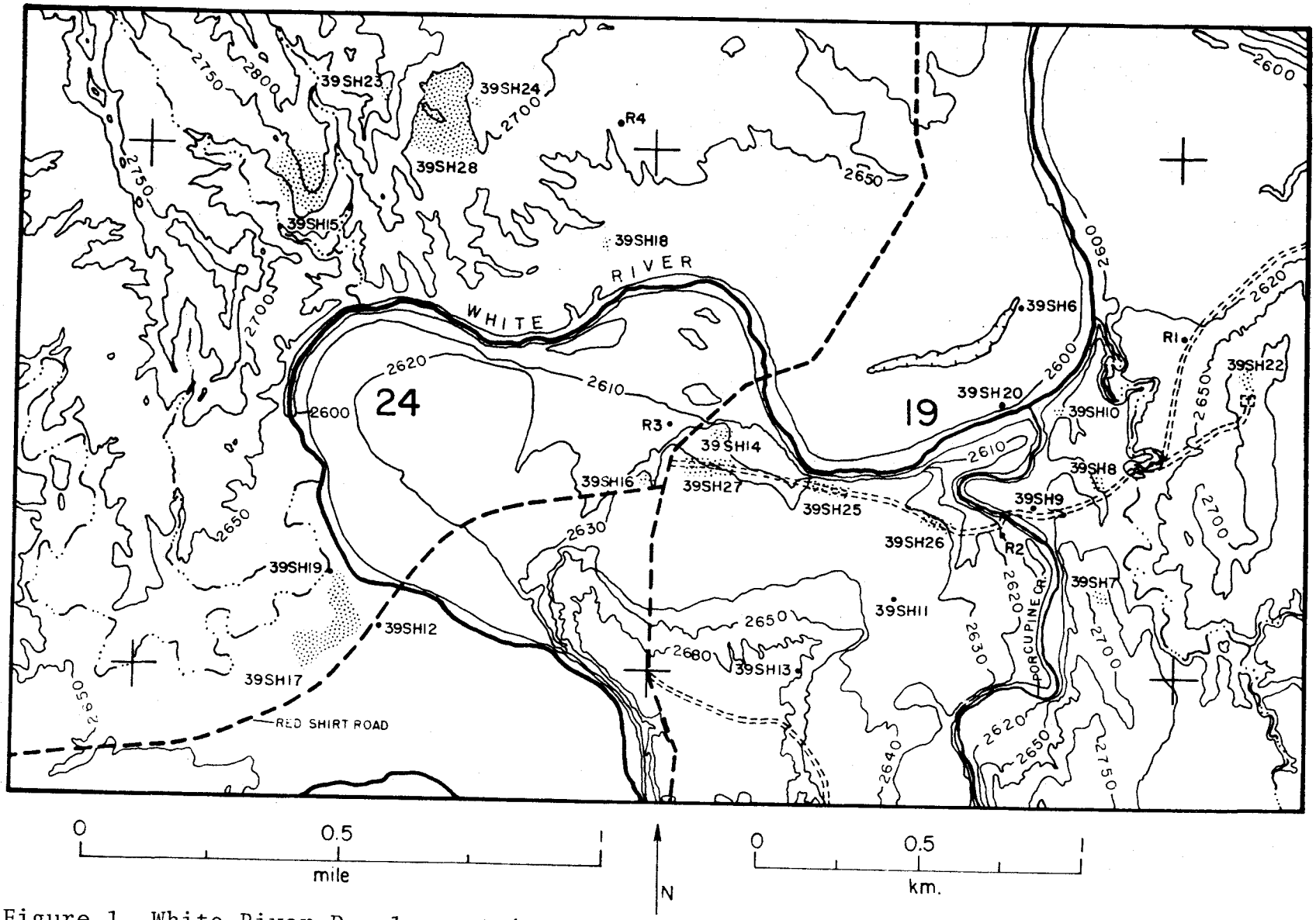

Figure 1. White River Development Area, Badlands National Monument, South Dakota. Site limits indicated by stippling. Contour interval 50 ft. Adapted from U.S.G.S. topographic maps, Stirk Table and Imlay SW, South Dakota.

Table 1. Summary of Identified Sites, White River Development Area, Badlands National Monument, South Dakota--1976 Survey.

Site	Location	Elevation	Estimated Area (m^2)	Comment
39SH6	NE¼ SW¼ NE¼, Sec. 19 T41N, R43W (Imlay SW)	2,610'	20	minor erosion
39SH7	NW¼ SE¼ SE¼, Sec. 19 T41N, R43W (Imlay SW)	2,710'	2,400	minor erosion
39SH8	NW¼ NE¼ SE¼, Sec. 19 T41N, R43W (Imlay SW)	2,620'	8,400	eroding terrace edge
39SH9	SE¼ NW¼ SE¼, Sec. 19 T41N, R43W (Imlay SW)	2,610'	50	eroding terrace edge
39SH10	NW¼ NE¼ SE¼, Sec. 19 T41N, R43W (Imlay SW)	2,620'	500	eroding terrace edge
39SH11	SE¼ SE¼ SW¼, Sec. 19 T41N, R43W (Imlay SW)	2,630'	707	exposed by prairie dog town
39SH12	SE¼ SE¼ SW¼, Sec. 24 T41N, R44W (Stirk Table)	2,630'	314	site partially destroyed
39SH13	SW¼ SE¼ SW¼, Sec. 19 T41N, R43W (Imlay SW)	2,690'	-	exposed in bulldozer cut
39SH14	N½ NW¼ SW¼, Sec. 19 T41N, R43W (Imlay SW	2,620'	2,400	minor erosion
39SH15	NW¼ NE¼ NW¼, Sec. 24 T41N, R44W (Stirk Table)	2,700-2,750'	32,400	5 sub-areas defined; minor erosion
39SH16	NE¼ NE¼ SE¼, Sec. 24 T41N, R44W (Imlay SW)	2,630'	3,200	minor erosion

Table 1. Continued

Site	Location	Elevation	Estimated Area (m^2)	Comment
39SH17	S½ SE¼ SW¼ and NE¼ SE¼ SW¼, Sec. 24, T41N, R44W (Stirk Table)	2,640'	40,500	eroding terrace edge
39SH18	SE¼ NE¼ NE¼, Sec. 24 T41N, R44W (Imlay SW)	2,623'	600	exposed by erosional gulley
39SH19	NW¼ SE¼ SW¼, Sec. 24 T41N, R44W (Stirk Table)	2,620'	-	buried deposit exposed in bank
39SH20	SE¼ SW¼ NE¼, Sec. 19 T41N, R43W (Imlay SW)	2,600'	-	buried hearth exposed in bank
39SH21	SE¼ NE¼ SE¼, Sec. 16 T41N, R44W (Stirk Table)	3,130'	-	located 2 mi. NW of project area; minor erosion
39SH22	SE¼ SW¼ NW¼, Sec. 20 T41N, R43W (Imlay SW)	2,710'	9,375	located outside project area; minor erosion
39SH23	SE¼ SE¼ SW¼, Sec. 13 T41N, R44W (Stirk Table)	2,810'	350	minor erosion
39SH24	SE¼ SW¼ SE¼, Sec. 13 T41N, R44W (Stirk Table)	2,710'	900	located outside project area; minor erosion
39SH25	S½ NE¼ SW¼, Sec. 19 T41N, R43W (Imlay SW)	2,630'	-	buried deposit exposed in roadbed
39SH26	SE¼ NE¼ SW¼ and SW¼ NW¼ SE¼, Sec. 19, T41N, R43W (Imlay SW)	2,630'	-	buried deposit exposed in roadbed
39SH27	NW¼ SW¼, Sec. 19 T41N, R43W (Imlay SW)	2,630'	-	buried deposit exposed in roadbed
39SH28	SW¼ SW¼ SE¼, Sec. 13 T41N, R44W (Stirk Table)	2,680-2,700'	60,700	surface heavily eroded

between Porcupine Creek to the east and an intermittent stream to the west. Two areas of concentration were noted: Area A includes the hilltop and the east and west slopes, covering an area approximately 30 m. in diameter; Area B consists of a smaller lithic concentration, located downslope to the northwest. Vegetation was light to moderate over the site area. Lithic debris was noted between the two areas. The total site size is approximately 80 m. (north-south) by 30 m. (east-west).

39SH8 (NW¼ NE¼ SE¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,620'). Site 39SH8 is located on the third and fourth terraces: 200 m. east of Porcupine Creek and 40 m. north of a pasture road. Cultural material was found along eroding terrace margins and on uneroded surfaces where vegetation was sparse. A concentration of fire-cracked rock was found along the edge of the third terrace, where ants had cleared vegetation. Three flakes were found associated with this concentration. Debris was scattered over an area 120 m. (north-south) by 70 m. (east-west). The total site area could not be determined due to heavy grass cover.

39SH9 (SE¼ NW¼ SE¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,610'). This site was found along an eroding terrace edge: 5 m. north of a pasture road and east of Porcupine Creek. Surface evidence included scattered flakes in an area 10 m. (east-west) by 5 m. (north-south). Material appeared to be eroding from the upper 30 cm. of the terrace; although no clear cultural strata were observed. Undisturbed deposits may lie under heavy sod to the north.

39SH10 (NW¼ NE¼ SE¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,620'). Cultural material was found eroding from the edge of the fourth terrace on the south side of the White River and east of Porcupine Creek. A thin scatter of lithic debris was found over an area 10 m. (north-south) by 50 m. (east-west). No clear cultural strata were recorded along the eroding terrace edge. Heavy grass cover to the north prevented determination of the total site area.

39SH11 (SE¼ SE¼ SW¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,630'). This site is on the broad fourth terrace south of the White River and west of Porcupine Creek. Lithic material is thinly scattered over an area 30 m. in diameter, which has been cleared of vegetation by prairie dogs. Heavy grass covers the surrounding area; no cultural materials were found here.

39SH12 (SE¼ SE¼ SW¼ Section 24, Township 41 North, Range 44 West, Stirk Table Quadrangle, South Dakota. Elevation 2,630'). Site 39SH12 is on a small terrace remnant which has been truncated by construction of the Red Shirt road; con-

struction has partially destroyed the site. Lithic material was found over an area 20 m. in diameter; vegetation was sparse. Site 39SH17 is located directly across the road to the north and may represent the same occupation.

39SH13 (SW¼ SE¼ SW¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,690'). Lithic debris was found in a shallow bulldozer cut located on the crest of a low hill just above the broad fourth terrace south of the White River. An east-west section line is 5 m. south of the cut. Materials found in the cut were scattered over an area 15 m. (east-west) by 5 m. (north-south). An undisturbed deposit of undetermined extent remains; no cultural materials were found on the original ground surface. Material was also found on a second low hill east of the highway and west of Site 39SH13. The ground is presently littered with many cobbles, but modern gravel quarrying operations have disturbed much of the original surface.

39SH14 (N½ NW¼ SW¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,620'). This site is located on the third terrace south and west of the White River. Cultural material was found over an area 80 m. (east-west) by 30 m. (north-south). Surface visibility was obscured by a heavy grass cover.

39SH15 (NW¼ NE¼ NW¼ Section 24, Township 41 North, Range 44 West; Stirk Table Quadrangle, South Dakota. Elevation 2,730'). Site 39SH15 is located on the uplands north of the White River. A spring flows from a steep, wooded slope west of the site. Two dry canyons converge to the south forming a V-shaped trough around the upland ridge. The defined site areas are included within a 10-15 acre block; test excavations would be necessary to determine site extent more accurately.

Five separate collection areas were designated A through E.

Area A is the main concentration of cultural material and is located on the southwest spur of the ridge just above a steep, wooded slope. Cultural materials were found eroding from a dark humic zone 10-30 cm. below the surface and over a distance of 50 m. to the south and west. Some debris was found on the grassy surface above the eroded exposure. Deposits east and north of the exposure appear well protected by the heavy grass cover.

Area B is located along the west side of the ridge on a westward projection which lies about 175 m. north of Area A and east of the wooded slope. Cultural debris, including the base of a lanceolate point, was found in an area approximately 35 m. in diameter. Grass cover was moderate to heavy.

Area C includes displaced materials found at the base of the steep, south, east, and west slopes.

Area D is located on the crest of the ridge, east of Area B and northeast of Area A. Little material was found here; vegetation was sparse.

Area E is located at the base of the west slope, 50 m. west of the spring, on a low rise. Debris was found intermixed with unworked cobbles and scattered over an area 5 m. in diameter; cover was sparse.

The wooded slopes around the spring support a wide variety of vegetation not found in other parts of the study area. American elm, hackberry, ash, and two species of willow were noted; as well as red cedar and cottonwood, which are found throughout the survey area. Both gooseberry and chokecherry were present (the chokecherry had ripe, dark purple-to-black and yellow fruit at the time of survey). Wild grape, poison ivy, poison oak, false Solomon's seal (roots edible), and pigweed were also noted in the area around the spring.

39SH16 (NE¼ NE¼ SE¼ Section 24, Township 41 North, Range 44 West; Imlay SW Quadrangle, South Dakota. Elevation 2,630'). This site is located on the fourth terrace to the south of the White River and northwest of a point where the Red Shirt road meets the main highway. Cultural material was found on the terrace and eroding from the slope over an area 80 m. (east-west) by 40 m. (north-south). The site appears well protected by a heavy grass cover, except along the terrace edge where grass is sparse. An abandoned roadcut provided a clear profile; there was no indication of buried deposits. This area may be part of Site 39SH27 across the road to the east.

39SH17 (S½ SE¼ SW¼ and NE¼ SE¼ SW¼ Section 24, Township 41 North, Range 44 West; Stirk Table Quadrangle, South Dakota. Elevation 2,640'). Site 39SH17 covers a large area on the terrace north of the Red Shirt road and west of the White River Bridge. The site is bounded on the west by an intermittent stream. Cultural material was found on the surface in areas of sparse vegetation and along the eroding edges of the terrace, within an irregular area 250 m. (north-south) by 200 m. (east-west).

39SH18 (SE¼ NE¼ NE¼ Section 24, Township 41 North, Range 44 West; Imlay SW Quadrangle, South Dakota. Elevation 2,623'). This site is on the north side of the White River and east of a north-south erosional gully which cuts into the present terrace. Two concentrations of fire-cracked rock were found in a heavily eroded area adjacent to the gully. The site may extend into the heavily grassed area on either side of the gully. Cultural material was found over an area 20 m. (east-west) by 30 m. (north-south).

39SH19 (NW¼ SE¼ SW¼ Section 24, Township 41 North, Range 44 West; Stirk Table Quadrangle, South Dakota. Elevation 2,620'). Lithic debris was found eroding from an exposed bank

on the east side of an intermittent stream, north of the Red Shirt road and west of the White River. Flakes, bifacial tools, and charcoal were observed at a depth of 2.5 m. below the original surface. Profiling revealed cultural material lying directly above a developed soil horizon, approximately 5 cm. in thickness. Cultural material was found along the profile for a distance of 3 m.: the heaviest concentration was 40 cm. wide and included a 2 cm.-thick zone of flakes. The exposed materials are contained in a slump block which has slipped 70 cm. below the original surface and are in immediate danger of eroding into the stream below.

39SH20 (SE¼ SW¼ NE¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,600'). Site 39SH20 consists of a buried hearth exposed in the eroded bank of the first terrace north of the White River and 65 m. west of the confluence of the River and Porcupine Creek. The hearth was 35 cm. below the present ground surface. Burned earth, 15 cm. thick and 80 cm. in diameter, was capped by a 4 cm.-thick ash lens. Although this feature appeared to be cultural in origin, no cultural materials were found in or near the hearth. Erosion will soon destroy this feature.

39SH21 (SE¼ NE¼ SE¼ Section 16, Township 41 North, Range 44 West; Stirk Table Quadrangle, South Dakota. Elevation 3,130'). This site was inadvertently discovered on the top of Cedar Butte, some 2 miles north and west of the project area. The Butte offers a commanding view of the terrain. Cultural material was observed in the top 30 cm. of an eroding, south-facing slope. The top of the Butte supports a deposit of gravel and cobbles which may have provided raw materials for tools found on the Butte. The site is well protected by a heavy grass cover to the north of the eroding slope. The north half of the Butte was examined for archeological remains, but the south half only received cursory inspection.

39SH22 (SE¼ SW¼ NW¼ Section 20, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,710'). Cultural material was found over an area 125 m. (north-south) by 75 m. (east-west) on the top and north slope of a prominent hill south of White River and north of St. Mary Magdalene Cemetery. There was slight erosion along the north slope, but the area appeared to be well protected by grass cover. Some flakes were found in the trail running by the cemetery.

39SH23 (SE¼ SE¼ SW¼ Section 13, Township 41 North, Range 44 West; Stirk Table Quadrangle, South Dakota. Elevation 2,810'). This site is on a high hill and ridge west of Site 39SH28--a probable quarry area. Cores and decortication flakes suggest that the area of Site 39SH23 may have been a primary processing area for the reduction of cobbles from the nearby quarry. Lithic debris is found over an area 35 m. (north-south) by 10 m. (east-west).

39SH24 (SE¼ SW¼ SE¼ Section 13, Township 41 North, Range 44 West; Stirk Table Quadrangle, South Dakota. Elevation 2,710'). The site is on flat, pasture land along the east side of the cobble-strewn quarry area--Site 39SH28. Cultural material was found in an area 45 m. (north-south) by 20 m. (east-west).

39SH25 (S½ NE¼ SW¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,630'). Site 39SH25 is located on a pasture road running east-west along the fourth terrace south of the White River. The west edge of the site begins where the road descends to the third terrace and extends along the road for 130 m. to the east. Cultural material was exposed in the roadbed, about 20 cm. below the original surface. Little cultural material was found in the pasture to either side, suggesting an intact deposit below the sod. A field estimate of the site area was precluded by the heavy cover.

39SH26 (SE¼ NE¼ SW¼ and SW¼ NW¼ SE¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,630'). This site is located in an east-west roadbed on the fourth terrace south of the White River. The east edge of the site is just west of Porcupine Creek; materials were found from this point and west along the road for 85 m. The site is well protected by heavy vegetation on either side of the road.

39SH27 (NW¼ SW¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota. Elevation 2,630'). Site 39SH27 is located in an east-west pasture road on the fourth terrace south of the White River. Cultural material was found in the roadbed for a distance of 150 m. A small amount of debris was found in the pasture to the north; the site appears to be well protected by the heavy vegetation on either side of the road.

39SH28 (SW¼ SW¼ SE¼ Section 13, Township 41 North, Range 44 West; Stirk Table Quadrangle, South Dakota. Elevation 2,680'-2,700'). This site is located in a heavily eroded area north of the White River. Large quantities of cobbles cover the surface of an area in excess of 15 acres.

Material Remains

A total of 1,185 items were recovered during the field investigation. With the exception of two ceramic specimens and 46 pieces of bone debris, all recovered items are lithic. A full descriptive inventory of these materials is presented in Appendix A. Table 2 provides a summary of these materials by site.

Table 2. Summary of Material Remains, White River Development Area, Badlands National Monument, South Dakota--1976 Survey.

Site	Chipped Stone "Tool Forms" Biface	Flake	Block	Reduction Process Flake	Block	Debris	Ground Stone	Other Lithic	Ceramic	Bone	Site Total
39SH6				4	1					3	8
39SH7		1		6	3		4	7		7	28
39SH8		3	3	12	2	18		10			48
39SH9				2				4			6
39SH10				4		2		2		1	9
39SH11		1		5	1	1		3			11
39SH12	1	2	1	7	2	11		5			29
39SH13	1	2		2	1	4		1			11
39SH14		4	1	8		21		10	1	2	47
39SH15	3	9	11	49	8	81		49		26	236
39SH16	1	6	2	6	2	15		6			38
39SH17	3	8	3	7	1			3			25
39SH18		4		3				39			46
39SH19	4	1	2	107		82		1			197
39SH21		3	1	11		22		9			46
39SH22	1			12	3	50		1			67
39SH23		5	4	2	2	7		17			37
39SH24	1	2	1	4	4			2			14
39SH25	1	7	4	17	4	6		3			42
39SH26		7	5	13		45				3	73
39SH27	2	9	3	15	3	89		12	1	4	138
39SH28		4	8	2	15						29
TOTALS	18	78	47	297	54	455	4	184	2	46	1,185

Recent Sites

In addition to identified archeological sites, the remains of four recent structures were located (Fig. 1). Based on interviews with National Park Service personnel, it appears that these structures were abandoned prior to or during World War II, when the area was utilized as a bombing and gunnery range by the U.S. Army. Surface evidence does not contradict such a suggestion. Specific information is summarized below.

R1 (NW¼ SW¼ NW¼ Section 20, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota). This site is located north of the pasture road on the fourth terrace above the White River. Two foundations, a well, and a concrete water tank were noted; glass and can fragments were scattered over the surface.

R2 (SE¼ NW¼ SE¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota). This site is located just south of the pasture road on the left bank of Porcupine Creek. A cement foundation, four dugout depressions, and scattered debris were noted.

R3 (NW¼ NW¼ SW¼ Section 19, Township 41 North, Range 43 West; Imlay SW Quadrangle, South Dakota). According to Park personnel, this site is the remains of a gas station and store. It is located on the second terrace south of the White River, approximately 30 m. west of the present highway. Foundations, gas piping, historic debris, and several trees mark the locations which will be largely destroyed by construction of the planned residence and visitor center.

R4 (SE¼ SE¼ SE¼ Section 13, Township 41 North, Range 44 West; Imlay SW Quadrangle, South Dakota). This site is located along the south edge of a high table north of the White River. A limestone foundation, a dugout, and one small tree mark the location. A well is located in a small canyon to the west of the foundation.

PALEONTOLOGICAL RECONNAISSANCE

In addition to the inventory of archeological remains, a reconnaissance and evaluation of paleontological resources in the immediate area of the proposed development was completed. This work was carried out on July 23 and 24, 1976, by Ms. E. Jane Voorhies and Dr. Michael R. Voorhies (Division of Paleontology, Nebraska State Museum-Lincoln). No fossil remains were located in the geologically recent deposits in the vicinity of proposed construction areas. Additional paleontological survey investigations were deemed unnecessary. Fossiliferous strata of Oligocene age (25-30 million years ago) were noted less than a mile to the west of the development area, however.

DISCUSSION

A relatively large number of archeological specimens were recovered during the survey: 96 per cent are lithic and most of these are chipped stone. Few of the items may be considered "diagnostic" from current perspectives. Two small body sherds recovered from Sites 39SH4 and 39SH27, respectively, point toward the use of the immediate area by Plains Village period, or contemporary, groups sometime during the last millennium; a small notched, triangular biface (arrowpoint) from Site 39SH17 is consistent with this suggestion. The recovery of the basal portion of a lanceolate point from Site 39SH15 may reflect a somewhat earlier use of the area by Paleo-Indian or Archaic period groups. In the absence of firm chronometric data, and without detailed field and laboratory analysis, further inference seems of little value. Certainly none of the work carried out in conjunction with this project violates the general, and admittedly sketchy, cultural-historical model summarized by Taylor (1961:79-84) over 15 years ago; the need for basic research in the Badlands National Monument area is painfully evident.

Materials suitable for the manufacture of stone tools are abundant throughout the surveyed unit. A large number of the specimens recovered may be directly associated with the preparation and manufacture of stone tools, arguing that many of the defined sites represent workshop and quarry areas. Lithic materials found throughout the Badlands area undoubtedly provided an important resource for many prehistoric groups. Potentials for the investigation of a number of specific research problems focusing on these lithic resources, in conjunction with a basic inventory of archeological sites, is also evident.

Evaluation of Probable Impact

The preliminary results of this investigation, in terms of the probable impact of planned development on identified cultural and paleontological resources, were communicated to the Chief, Midwest Archeological Center, on August 3, 1976. The information provided is reviewed and expanded in the following sections.

Direct Impact. Twenty-three archeological sites were located in the course of this investigation (two lie outside the defined study area); only one of these will be directly affected by planned development. Site 39SH16, located just west of the north-south Scenic road to Rocky Ford road and north of the Red Shirt road, will be destroyed by construction of visitor facilities, a parking lot, and a residence road. Portions of the site have been previously disturbed.

Four recent building sites were noted during the survey: one of these--the remains of a filling station and general store--will be destroyed by planned construction.

No fossil materials were found in the vicinity of the development. The sedimentary deposits exposed at the construction site were determined to be of probable Holocene age (less than 10,000 years old) and are unlikely to contain significant vertebrate remains.

Indirect Impact. Based on our field evaluation, it appears that the planned development will have little, if any, significant impact on identified resources. However, increased use of the White River Development area, by both visitors and Park personnel, may result in measurable indirect impact--particularly with respect to surface materials. Increased foot and vehicular traffic may be expected to hasten erosional processes in many areas and will undoubtedly uncover artifactual and/or fossil debris. Materials so exposed will be an understandable attraction to both the casual and more ardent collector. The potential for discovery of unknown buried deposits cannot be ignored (a number of the sites reported herein manifest no surface expression).

Recommendations

With the exception of loci detailed below, it is recommended that measures be taken to preserve all sites located. No further investigations are recommended at the present time. Existing ground cover should be maintained and, where possible, steps taken to prevent further erosion. If future developments within the area, visitation, or erosion appear to threaten identified sites, further field evaluation should be programmed. Fossiliferous materials exposed less than a mile west of the development area should also be protected.

39SH16. As noted, this site will be destroyed by construction activities. Based on evaluation of remaining deposits, recovered specimens, and relationships to sites in the immediate area, no further field investigation is recommended. As detailed in our August 3, 1976, assessment, we recommend that an individual with some archeological training be present as earthmoving and construction progress in the site area. Should these activities reveal unknown buried deposits, work should be terminated immediately and a full professional evaluation sought.

39SH19. Portions of this site are in danger of erosional destruction and have already slumped some 70 cm. below the present ground surface. Mitigative efforts (test excavation and extensive profiling) will be necessary if information is to be salvaged before the site is totally destroyed.

National Register Eligibility

On the basis of available information, none of the archeological sites identified within the two-section study area appear at present to warrant consideration for nomination to the National Register of Historic Places. Future investigation of these sites may alter this preliminary assessment. Systematic survey investigation of lands within the South Unit may result in the identification of a site complex deserving of consideration for a district nomination.

SUMMARY AND CONCLUSIONS

Archeological and paleontological investigations of a limited portion of the South Unit of Badlands National Monument were carried out during July 1976, under an agreement between the University of Nebraska and the National Park Service. The primary objectives of this study were the identification and evaluation of resources within the defined study area, as well as an assessment of probable impact to these resources resulting from planned construction and operation of visitor and staff facilities. The results of this work are summarized below.

1. A review of archeological investigation within the North Unit, Badlands National Monument suggests use of the area over the past two millennia: additional, but more tenuous, evidence points to a probable use of the area during earlier temporal periods.

2. Intensive survey investigations within the defined White River Development area (South Unit) resulted in the definition of 22 archeological sites: an additional site was located some two miles northwest of the study area.

3. Information recovered from newly identified sites is consistent with the general cultural-historical model developed for the Badlands area in conjunction with work in the North Unit (Taylor 1961:79-84).

4. Planned construction activity will result in the destruction of a single archeological site--39SH16: no further investigations at this site are recommended.

5. Active bank slump and erosional activity threaten a second site--39SH19: test investigations are recommended to mitigate this loss.

6. Preservation and protection of remaining sites is recommended.

7. Four recent sites were located: one of these--the site of a filling station and general store--will be destroyed by planned construction. Further investigation of this site is not recommended.

8. An investigation of paleontological resources in the immediate development area yielded negative results. Further field work is not recommended. Protective measures for fossil deposits west of the development area are recommended, however.

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APPENDIX A

Descriptive Inventory of Cultural Materials

This inventory provides a quantified list of all specimens collected during the field survey. Lithic materials comprise 96 per cent of the sample; 80 per cent of the total inventory are included as chipped stone.

All collected materials are quantified per site area at two descriptive levels. The set of descriptions provided at the most general level are summarized in Table 2, which is included in the body of the report. The specific descriptive observations made on individual specimens are listed in Table B of this Appendix.

The purpose of the general level descriptions is to indicate the quantity and overall composition of materials represented in the sample. The major source of variability in descriptive attributes is presented within the chipped stone group. Observations at the general level are primarily organized by technological considerations as indicated in the definitions provided below.

A. "Tool" forms: exhibit a pattern of modified margins and surfaces which describe a particular morphology of "edges" and/or "elements," where edges are defined by unifacial or bifacial marginal flake scars and elements are the combined relationship of edges and juncture points which describe a discrete area on the specimen.

1. Biface: exhibit surfaces and margins described by bifacially patterned flake scars which obscure the attributes of the original form (e.g., flake) and describe identifiable "edges" and "elements."

2. Flake: specimens which exhibit positive scars (e.g., the bulb of percussion) as well as "edges" and/or "elements" described by unifacial or bifacial marginal flake scars.

3. Block: exhibit negative flake scars only in conjunction with discontinuous marginal flake scars which describe "edges" and/or "elements."

B. Reduction process: specimens which exhibit surfaces and margins defined by the chipping process of reducing lithic materials in the absence of scars which describe discrete "edges" or "elements."

1. Flake: exhibits positive scars and is sufficiently complete to describe a particular morphology (defined below).

2. Block: specimens which exhibit negative flake scars only.

3. Debris: exhibit sufficient attributes to be described as a product of the chipping process, but are insufficiently complete to allow easy identification of particular flake characteristics.

Qualitative observations made on each specimen are intended to place each item within the dimensions of technology, morphology, and fracture or completeness (Ahler 1975). An attempt is made to provide a logical system of macroscopic observations of surface attributes which are sensitive to the processes of manufacture and/or use of various materials. The description of each specimen in these terms is accompanied by an indication of quantity, raw material, and maximum dimensions, where appropriate. Metrical observations are included only as a means for establishing relative size distinctions necessary in summarizing various aspects of the collected materials. For example, longitudinal measurements are included whenever this orientation can be identified as a means to determine size grades among flake specimens in the reduction process group. Maximum values for length, width, and thickness measured in relation to the longitudinal axis are provided for each specimen included in the "tool" form group as an indication of the range of variability within particular subgroups.

Preliminary raw material classifications, necessary to the description of individual lithic specimens, were established on the basis of a cursory examination of the lithic materials collected on the survey and through the inspection of materials collected in the Nebraska Badlands and the Spanish Diggings vicinity in Wyoming. A large part of the lithic resources available throughout this general region are represented by Oligocene stream-deposited cobbles. The survey area is included within the distribution of exposures of these Oligocene formations (Vondra 1958). These materials have a distinctive cone-fractured surface appearance which when noted in the present sample is indicated as "cobble" cortex. Among the chipped stone specimens in the sample exhibiting cortex, 53 per cent are described as having a "cobble" cortex.

The major portion of these lithic materials are differentiated on the basis of the distinction between fibrous cryptocrystalline (chalcedony) and granular cryptocrystalline (jasper/chert) varieties of quartz and the more coarse-grained silicified sediments or quartzite (Hurlbut 1966). These distinctions can be made on the basis of macroscopic observations with considerable consistency. More complete description of these material categories and others used in this inventory can be obtained elsewhere (Ahler 1975).

Subdivision of the chipped stone materials in terms of technology, morphology, and fracture classes resulted in the description of 41 groups. Frequencies within these groups are low, and eight of the groups are represented by a single specimen.

Among the "tool" form categories, unifacial, steeply beveled, flake tools are the most frequent with a total of 23 specimens, followed by bifacially flaked, plate chalcedony segments represented by 19 specimens.

Complete flakes are defined by the presence of sufficient attributes to describe the relation of margins to the longitudinal axis and to the striking platform. Description of rectangular, elongate, expanding, and contracting flake groups accounted for 89 per cent of the complete flakes of which 44 per cent were described as expanding flakes.

Complete flakes were also size graded on the basis of maximum longitudinal dimension as: large (30+ mm.) represented by 34 per cent of the specimens; small (20-29.9 mm.), 36 per cent; and minute (1-19.9 mm.), 26 per cent; the remaining portion of the sample was accounted for by the "other flake" group.

A summary of specimen completeness or fracture among chipped stone technological groups is provided in Table A.

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Table A. Summary of Chipped Stone Specimen "Completeness"

	Chipped Stone*												
	"Tool" Forms						Reduction Process						
Site	Biface		Flake		Block		Flake		Block		Debris	Total	
	c	i	c	i	c	i	c	i	c	i	i	c	i
39SH6:							1	3		1		1	4
39SH7:			1				4	2	2	1		7	3
39SH8:			2	1	2	1	8	4	1	1	18	13	25
39SH9:								2					2
39SH10:							3	1			2	3	3
39SH11:			1				2	3	1		1	4	4
39SH12:		1	2			1	6	1	1	1	11	9	15
39SH13:		1		2			1	1		1	4	1	9
39SH14:			2	2		1	5	3			21	7	27
39SH15:		3	4	5	5	6	33	16	4	4	81	46	114
39SH16:		1	4	2		2	2	4	2		15	8	24
39SH17:		3	3	5	1	2	1	6	1			6	16
39SH18:			2	2			2	1				4	3
39SH19:	2	2	1			2	87	20			82	90	107
39SH21:				3		1	11				22	11	26
39SH22:		1					12			3	50	11	55
39SH23:			2	3		4		2	2		7	4	16
39SH24:		1	2		1			4	3	1		7	5
39SH25:		1	1	6		4	5	12	1	3	6	7	32
39SH26:			2	5		5	3	10			45	5	65
39SH27:		2		9		3	4	11		3	89	4	117
39SH28:			2	2	6	2	2		9	6		19	10
Total												267	682

*Does not include "other lithics" group.

c = complete
i = incomplete

Table B. Descriptive Inventory of Cultural Materials, White River Development Area, Badlands National Monument, South Dakota.

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH6		Chipped Stone, Complete				
	1	Expanding flake	Grey/white chalcedony	20		
		Chipped Stone, Incomplete				
	1	Elongate flake, distal end segment, cortex	White/grey chalcedony	23		
	1	Flake, medial fragment, cortex	Light brown chalcedony	21		
	1	Flake, distal end fragment, white patina	Light brown chalcedony	26		
	1	Rectangular block, large bifacial flake scars, cortex	Grey/light brown mottled chalcedony	65		
		Bone				
	3	Small, unidentifiable bone fragments				
39SH7 AREA A		Chipped Stone, Incomplete				
	1	Tabular block segment, large unifacial flake scars, cortex	Light grey chalcedony	38		
		Ground Stone				
	1	Rounded, elongate cobble, crushing at two transverse ends	Grey fine-grained sandstone	175	90	70
	1	Rounded pebble, crushing ? along one edge	Clear/grey quartz	50		
		Other Lithics				
	1	Rounded cobble fragment	Clear/grey quartz	45		
	1	Coarse and fine grained plate	Conglomerate	160		
		Bone				
	6	Small, unidentifiable bone fragments				
	1	Tooth fragment				
AREA B		Chipped Stone, Complete				
	1	Rectangular flake, steep unifacial retouch along distal margin	Red/yellowish brown quartzite	26	24	8
	1	Rectangular flake	Brown chert	26		
	1	Rectangular flake	Grey fine-grained quartzite	30		
	1	Rectangular flake, cortex	Light grey/brown jasper	45		
	1	Rectangular block, large bifacial flake scars, cortex	White/yellow/red/brown jasper	80		
	1	Expanding flake	Light grey/brown jasper	30		
	1	Large, elongate cobble, irregular bifacial flake scars along lateral margin	Brown quartzite	190	70	55
		Chipped Stone, Incomplete				
	1	Flake, proximal end fragment	Brown quartzite	12		
	1	Flake fragment	Light grey/brown jasper	10		

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH7 (Continued)						
AREA B		Ground Stone				
	1	Elongate cobble, battering on transverse margin	Purple fine-grained quartzite	155	65	45
	1	Triangular cobble, crushing at apex	Grey fine-grained sandstone	155	85	75
		Other Lithics				
	1	Irregular block fragment, cortex	Coarse plate chalcedony	65		
	1	Rectangular fragment, cortex	Light grey/brown jasper	28		
	1	Irregular cobble fragment	Light grey chalcedony	65		
	1	Rounded pebble segment	Clear/grey quartz	35		
	1	Pebble	Soft red sandstone	10		
39SH8		Chipped Stone, Complete				
	1	Rectangular flake, unifacial retouch along lateral edges	Brown quartzite	45	31	13
	1	Ovate flake, steep unifacial retouch on excurvate transverse edge	Clear/grey chalcedony	34	26	6
	1	Large, triangular block, irregular multifacial flake scars	Purple quartzite	145	110	75
	1	Rectangular, bifacially flaked block (from "hearth")	Grey jasper	52	51	28
	1	Large, expanding flake	Brown quartzite	53		
	1	Elongate flake, single flake scar notches ? in both lateral margins	Light brown quartzite	41	19	8
	3	Expanding flakes	Dark brown quartzite Pink quartzite White mottled chalcedony	25 44 36		
	1	Rectangular flake	Pink quartzite	34		
	2	Small, rectangular flakes	Grey chalcedony	17-25		
	1	Multifacially flaked block	Dark brown quartzite	47		
		Chipped Stone, Incomplete				
	1	Thick flake, distal end segment, unifacial retouch ? along excurvate transverse margin (from "hearth")	Dark brown chalcedony	46	39	13
	1	Flake, proximal end segment (from "hearth")	Purple quartzite	20		
	1	Flake, proximal end segment, dorsal flute	Grey chalcedony	24		
	1	Discoidal block, edge segment, irregular unifacial flake scars along margin	Grey chalcedony	79		
	1	Expanding flake, proximal end segment	Yellow/brown coarse quartzite	37		

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH8 (Continued)						
	3	Small, irregular flake fragments	Yellow/brown coarse quartzite			
	14	Small flake fragments	(9) Brown quartzite	13-23		
			(1) Grey quartzite	11		
			(2) Pink quartzite	10-13		
			(2) Plate chalcedony	12		
	1	Flake fragment	Plate chalcedony	28		
	1	Rectangular flake, proximal end segment	Pink quartzite	27		
	1	Large, block fragment, discontinuous acute bifacial retouch	Grey chalcedony	84	34	33
		Other Lithics				
	1	Thick fragment	Clear/grey chalcedony	32		
	1	Rounded cobble fragment	White quartz	31		
	6	Small fragments	(1) Red jasper (1) Brown chert (2) Tan chert (2) Clear quartz			
	2	Fragments	Heat altered?			
39SH9		Chipped Stone, Complete				
	2	Flakes, proximal end segments	Red jasper	17		
		Other Lithics				
	4	Fragments	(3) Red/yellow jasper (1) White quartz			
39SH10		Chipped Stone, Complete				
	1	Rectangular flake	Purple chalcedony	25		
	2	Small flakes	Grey chalcedony	11-16		
		Chipped Stone, Incomplete				
	1	Thick flake, distal end segment	Purple chalcedony			
	1	Thick flake fragment, cortex	Brown chalcedony			
	1	Small flake fragment, cortex	Light brown chalcedony			
		Other Lithics				
	1	Heat altered block	White/grey burned chalcedony?			
	1	Small fragment	Heat altered?			
		Bone				
	1	Small, unidentifiable bone fragment				
39SH11		Chipped Stone, Complete				
	1	Thick, rectangular flake, discontinuous unifacial retouch? on distal transverse margin	Grey quartzite	46	36	13
	2	Rectangular flakes, "cobble" cortex	Grey/yellow chert	36-41		
	1	Multidirectional flaked cobble, step fractured surfaces	Yellow/pink chalcedony	79	58	40

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH11 (Continued)						
		Chipped Stone, Incomplete				
	1	Large, contracting flake, distal end segment	Light brown quartzite	53		
	1	Flake segment	Clear/grey chalcedony	44		
	1	Flake segment	Red quartzite			
	1	Flake fragment	Grey chert			
		Other Lithics				
	3	Fragments, "cobble" cortex	(1) Grey mottled chert (1) Blue chalcedony (1) Yellow chert			
39SH12		Chipped Stone, Complete				
	1	Large, expanding flake, crushing along incurvate and excurvate margins	Light brown quartzite	75	46	10
	1	Thick, triangular flake, discontinuous retouch on steep and acute edges	Dark brown quartzite	63	36	20
	1	Thick, elongate flake	Light brown quartzite	44		
	2	Thick, rectangular flakes	Light brown quartzite	26		
	1	Elongate flake	Grey/brown chert	44		
	1	Small flake, "cobble" cortex	White, heat altered?	33		
	1	Bifacially flaked block, "cobble" cortex	Brown quartzite	58		
		Chipped Stone, Incomplete				
	1	Biface, basal element, straight base, excurvate lateral margins	Purple chalcedony	32	30	7
	1	Elongate, ridged flake, distal end segment	Grey mottled chalcedony	23		
	1	Ovate segment, irregular bifacial flake scars, patina?	White chalcedony	45		
	1	Flake fragment, cortex	White chalcedony			
	8	Small flake fragments	Red to brown quartzite			
	1	Bifacially flaked block segment	Yellow chert	59		
	2	Flake fragments, cortex	Clear chalcedony (moss inclusions)			
		Other Lithics				
	2	Small fragments	Grey chert			
	1	Large fragment	Brown chalcedony			
	1	Fragment	Brown quartzite			
	1	Block fragment	Red chert			
39SH13		Chipped Stone, Complete				
	1	Thick, rectangular flake	Light brown quartzite	36		

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH13 (Continued)						
		Chipped Stone, Incomplete				
	1	Parallel-sided biface, basal element, excurvate basal edge	Grey fine-grained quartzite	22	36	7
	1	Expanding flake fragment, retouched "notch" in distal transverse edge	White chert	28	34	7
	1	Ridged flake, proximal end segment, unifacial flake scars on lateral margin	Light brown quartzite	21	26	7
	4	Flake fragments	Grey fine-grained quartzite Purple quartzite White chalcedony Brown quartzite			
	1	Rectangular cobble segment, multidirectional flake scars, "cobble" cortex	Yellow to red chalcedony	77	55	46
	1	Ridged, parallel-sided flake, medial segment	Grey mottled chalcedony	16		
		Other Lithics				
	1	Fragment	White quartz			
39SH14		Chipped Stone, Complete				
	1	Triangular flake, unifacial steeply beveled excurvate transverse edge and one lateral edge, bifacial retouch on other lateral margin	White mottled chalcedony	31	26	9
	1	Expanding flake, grinding along lateral margins, "cobble" cortex	Grey quartzite	48	32	5
	1	Rectangular flake	Grey mottled chert	35		
	1	Contracting flake	Yellow chalcedony	42		
	3	Expanding flakes	Red to brown quartzite			
		Chipped Stone, Incomplete				
	1	Elongate flake segment	Yellow/brown quartzite	18	12	4
	1	Elongate flake, medial segment	Brown chalcedony	22		
	1	Ridged flake, distal end segment, steeply retouched transverse edge	Yellow/brown quartzite	19	21	5
	1	Flake edge segment, steep unifacial retouch	Brown chalcedony	13	21	4
	1	Plate segment, irregular flake scars on margin	Plate chalcedony	64	47	23
	1	Flake, proximal end fragment	Grey chalcedony	16		
	14	Flake fragments	(2) Yellow/brown quartzite (3) Brown quartzite (2) Tan chert (1) Grey mottled chert (5) Brown chalcedony (1) Pink chalcedony			

Table B. Continued

Site Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH14 (Continued)					
1	Large flake fragment, "cobble" cortex	Yellow/grey/red banded chert			
6	Small flake fragments	(4) Plate chalcedony (2) Clear/white chalcedony			
	Other Lithics				
2	Large fragments	Yellow/red banded quartzite			
8	Fragments	(1) Plate chalcedony (1) Red to brown quartzite (3) Grey quartzite (1) Brown chert (1) White quartz (1) Brown chalcedony			
	Ceramics				
1	Ceramic body fragment, rough black exterior, buff interior, no visible temper		15	11	3
	Bone				
2	Small, unidentifiable bone fragments				
39SH15 AREA A					
	Chipped Stone, Complete				
1	Small, ovate flake, unifacial steeply beveled transverse and one lateral margin	Light brown chalcedony	20	17	5
1	Large, rectangular flake, unifacial retouch along one lateral edge	Dark grey/brown quartzite	49	44	8
2	Triangular-ovate blocks, sinuous bifacial edges	Grey jasper Purple/grey mottled jasper	62	37	17
1	Thick, rectangular flake, steep retouch along lateral edge forming small beak element	Yellow/brown chert ("Marshland")	53	42	12
1	Split cobble, minute unifacial retouch on incurvate lateral edge, "cobble" cortex	Grey chert	88	55	35
1	Small, expanding flake	Clear/white chalcedony	22		
2	Thick, rectangular flakes	Brown quartzite Yellow quartzite	31 28		
1	Large, expanding flake	Dark grey quartzite	46		
7	Expanding flakes	Red, yellow, brown, grey, white quartzite	19-31		
4	Elongate flakes	Reddish brown, grey, yellow, light brown quartzite	24-29		
1	Thick, tabular flake	Light grey quartzite	27		
2	Small, expanding flakes	Purple, brown jasper			

Table B. Continued

Site Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH15 (Continued) AREA A					
1	Expanding flake	Grey mottled jasper			
1	Thick, expanding flake, "cobble" cortex	Red mottled jasper	39		
1	Tabular, split block	Brown quartzite	97		
1	Discoidal, bifacially flaked block	Brown quartzite	64	56	23
2	Multifacial flaked blocks	Light brown quartzite	72-83		
1	Keeled block	Clear/grey chalcedony (with inclusions)	59		
1	Thick, rectangular flake	Grey mottled jasper	59		
	Chipped Stone, Incomplete				
1	Biface, basal element, parallel-sided, excurvate basal margin	Dark brown chalcedony	30	35	10
2	Rectangular flakes, distal elements, possible beak element fractured?	Light brown chalcedony Dark brown chalcedony	29 33	18 31	5 7
1	Plate, acute bifacial collateral straight edges (segment)	Plate chalcedony	96	53	9
1	Plate, acute bifacial straight edge, segment	Plate chalcedony	103	43	6
1	Plate fragment, bifacial acute straight edge	Plate chalcedony	17	39	5
1	Elongate flake, distal end segment, retouched? lateral edge	Grey/brown quartzite	22		
1	Rectangular flake, distal end segment	Grey/brown quartzite	19		
1	Thick flake, distal fragment	Dark brown chalcedony	17		
1	Elongate flake, proximal end segment, dorsal flute	Banded red jasper	24		
1	Thick, elongate flake segment	Dark brown quartzite	21	10	7
47	Small, thin flake fragments	(3) Red jasper (3) Yellow/brown jasper (1) Grey jasper (1) Brown jasper (23) Yellow/red/brown quartzite (3) Clear chalcedony (3) White chalcedony (2) Dark brown chalcedony (3) Purple quartzite (2) Yellow quartzite (3) Brown quartzite			
19	Thick, flake fragments	Purple, brown, yellow quartzite			

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH15 (Continued)						
AREA A						
	3	Elongate flake segments	Dark brown, pink and brown jasper			
	1	Rectangular flake, proximal end segment	Clear chalcedony	26		
	1	Thick flake, proximal end segment	Dark grey quartzite	27		
	1	Thick flake, proximal end segment, "cobble" cortex	Brown jasper			
	11	Flake fragments	(8) Clear/grey chalcedony (1) Burned chalcedony (2) Yellow/grey chert			
	1	Thick flake fragment	Grey mottled jasper			
	1	Irregular, step fractured cobble, "cobble" cortex	Red/yellow/grey mottled quartzite	124	88	62
	1	Large fragment, irregular bifacial flake scars	Purple/yellow mottled jasper	67	51	20
		Other Lithics				
	3	Plate segments	Plate chalcedony			
	1	Large fragment	Yellow/grey lined jasper			
	1	Tabular fragment	Purple coarse-grained quartzite			
	11	Fragments	(1) Black, heat altered? chalcedony (1) Purple, heat altered? chalcedony (2) White quartz (1) Orange chalcedony (4) Dark brown chalcedony (1) Soft sandstone			
	11	"Fire cracked" rocks	Heat altered quartzite?			
		Bone				
	10	Small, unidentifiable bone fragments				
	3	Unidentified tooth fragments				
AREA B		Chipped Stone, Complete				
	1	Large, thick, irregular flake, cortex	Grey chalcedony	54		
	1	Rectangular flake	Grey/brown chert	31		
	2	Small, rectangular flakes	Grey/brown chert Brown quartzite	23 20		
		Chipped Stone, Incomplete				
	1	Elongate biface, basal element, incurvate base, excurvate lateral acute edges	Purple chalcedony	41	29	9
	1	Thick, expanding flake, proximal end segment	Clear/grey chalcedony	29		

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH15 (Continued)						
AREA B						
	1	Elongate flake, proximal end segment, dorsal thinning, "cobble" cortex	Yellow chert	29		
	1	Irregular, flaked block, cortex	Grey chalcedony	74	33	24
		Other Lithics				
	1	Fragment	Dark/light brown quartzite	44		
AREA C		Chipped Stone, Complete				
	1	Rectangular flake, cortex	Dark grey/clear chalcedony	40		
	1	Thick, rectangular flake, weathered dorsal surface, cortex	Grey/purple quartzite	57		
	1	Large, thick, rectangular flake, weathered dorsal surface, cortex	Purple quartzite	73		
	2	Large, thick, rectangular flakes, "cobble" cortex	Yellow jasper Yellow/grey mottled chert	76 82		
	1	Small, expanding flake	Clear chalcedony			
		Chipped Stone, Incomplete				
	1	Thick, expanding flake, proximal end segment, cortex	Grey/purple quartzite	38		
	1	Expanding flake, proximal end segment	Yellow/brown quartzite	32		
	1	Flake, proximal end segment	Yellow/grey mottled chert	21		
	1	Thick, wide, elongate biface, rounded end element, one straight and one excurvate lateral edge	Yellow/grey mottled chert	48	43	12
	1	Large, plate medial segment, acute bifacial lateral edge	Plate chalcedony	59	70	13
	1	Large, thick flake, medial segment, unifacial "notch"? in acute edge	Purple quartzite	34	63	14
	1	Fragment with flake scars, cortex	Grey chalcedony	49		
AREA D		Chipped Stone, Incomplete				
	1	Tabular segment, large unifacial flake scars along margin	Dark brown chalcedony	45	29	11
	1	Large, thick, elongate flake, distal end segment, remnant of alternating retouch? along transverse and lateral margin	Yellow chert	68	46	19
	1	Large, plate fragment, battering or remnant of retouch? on straight lateral edge segment	Dark brown chalcedony (silicified wood)	69	90	14
		Other Lithics				
	1	Fragment	Grey chert	53		

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH15 (Continued)						
AREA E		Chipped Stone, Complete				
	1	Rectangular flake, unifacial retouch along straight distal edge and two excurvate lateral edges, wide dorsal flute	Grey chalcedony	37	53	10
	1	Large, thick, discoidal block, bifacially flaked margin, cortex	Brown mottled quartzite	69	78	30
	1	Large, thick, discoidal block, unifacial flake scars, "cobble" cortex	Yellow/grey/purple mottled chert	73	68	28
	1	Rectangular flake	Yellow chert	56		
		Chipped Stone, Incomplete				
	1	Small flake, proximal end segment	Purple quartzite	17		
	1	Thick flake fragment	Yellow chert	36		
	1	Flake fragment	Brown quartzite	26		
		Other Lithics				
	1	Large fragment, "cobble" cortex	Yellow/grey/purple mottled chert	67		
	1	Pebble fragment, cortex	Yellow/grey banded jasper	48		
39SH16		Chipped Stone, Complete				
	1	Thick, triangular flake, dorsal thinning and remnant of unifacial retouch? on transverse edge, "cobble" cortex	Grey chalcedony	41	44	13
	1	Small, rectangular, ridged flake, retouch? on steep transverse edge	Dark brown chalcedony	23	19	5
	2	Thick flakes, unifacial notch in lateral margin, "cobble" cortex	Red jasper Clear/grey chalcedony	44 45	23 27	13 14
	1	Small, rectangular flake	Yellow jasper	19		
	1	Large, thick, contracting flake	Purple quartzite	74		
	2	Flaked blocks, cortex	Grey mottled chalcedony Dark brown chalcedony ("Knife River flint")	49 38	46 35	22 24
		Chipped Stone, Incomplete				
	1	Plate segment, acute bifacial excurvate edge	Plate chalcedony	59	45	9
	1	Small, plate fragment, acute bifacial edge	Plate chalcedony	12	28	8
	1	Thin biface, triangular segment, shallow notch in one edge	Clear chalcedony	18	25	4
	1	Rectangular flake, distal end segment, steep unifacial bevel on narrow transverse ? edge	Brown quartzite	30	23	7
	1	Small, ovate flake, distal ? fragment, dorsal thinning, basal element	Brown chalcedony	16	15	5

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH16 (Continued)						
	1	Elongate flake, proximal end segment	Purple quartzite	37		
	1	Rectangular flake, proximal end segment	Clear/grey chalcedony	25		
	1	Large, thick flake segment, cortex	Purple quartzite	50		
	1	Thin flake, longitudinal segment	Clear chalcedony	26		
	2	Thick flake fragments	Brown chert Light brown quartzite	39 29		
	13	Small flake fragments	(3) White jasper (silicified wood) (3) Clear chalcedony (1) Purple quartzite (1) Yellow jasper (3) Red/brown quartzite (1) Light brown quartzite (1) Yellow quartzite	20+		
		Other Lithics				
	6	Small fragments	(4) Yellow/grey quartzite (1) Plate chalcedony (1) White quartz			
39SH17		Chipped Stone, Complete				
	1	Ovate, hinge fracture flake, bifacially thinned, discontinuous crushing on margin, dorsal flute	Yellow/grey mottled chalcedony	39	23	7
	1	Ovate, bifacially thinned, flake segment	Dark brown quartzite	41	27	6
	1	Thick, ovate block, irregular bifacial thinning	Dark brown quartzite	69	38	19
	1	Small, ovate flake	Yellow/white/grey lined chalcedony	24		
	1	Thick, discoidal block, unifacial thinning, "cobble" cortex	Yellow/grey mottled chert	74		
	1	Small, thick, rectangular flake ("gun flint" shape)	Clear "glass" quartz	20		
		Chipped Stone, Incomplete				
	1	Small, tabular flake, distal end segment, minute flake scars along steep margins	Dark brown chalcedony	21	22	5
	1	Thick, rectangular flake segment, discontinuous steep retouch	Flattop chalcedony	32	27	10
	1	Notched, triangular biface, straight-sided blade element	Yellow jasper (moss inclusions)	21	14	4
	1	Triangular biface segment, fractured at all three juncture points, excurvate lateral margins	Greenish brown quartzite	32	20	6

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH17 (Continued)						
	1	Plate segment, acute bifacial edge, excurvate margin	Plate chalcedony	36	48	7
	1	Plate segment, acute bifacial edge, straight margin	Plate chalcedony	22	27	6
	1	Wide, flat, biface end segment, retouched straight and excurvate lateral edges, excurvate transverse margin	Purple/grey quartzite	56	56	11
	1	Irregular, thick flake, unifacial notch	Yellow jasper (moss inclusions)	33	28	12
	1	Thick, elongate flake, proximal end segment, partial unifacial thinning	Brown quartzite	42	39	10
	1	Thick, elongate flake, end segment, steep collateral retouch	Dark brown chalcedony	41	28	14
	2	Elongate flakes, proximal end segments, dorsal flute	Grey/clear chalcedony Grey chalcedony	39 37		
	1	Parallel-sided flake, proximal end segment, dorsal flute	Clear chalcedony	20		
	1	Thick flake?, end segment	Clear "glass" quartz	30		
	1	Large, expanding flake, proximal end segment	Brown quartzite	70		
	1	Irregular flake fragment	Brown quartzite	48		
		Other Lithics				
	2	Plate segments	Plate chalcedony Plate chalcedony	44 25	68 39	14 8
	1	Split block	Red/grey, heat altered?	52	60	26
39SH18		Chipped Stone, Complete				
	1	Thick, triangular flake, unifacial steep irregular retouch, crushing along excurvate transverse margin and lateral edges	Purple/grey mottled jasper	50	32	13
	1	Thick, rectangular flake, unifacial thinning, crushing on margins	Brown quartzite	51	58	21
	1	Thick, irregular flake, cortex	Grey chalcedony	42		
	1	Small, expanding flake	Yellow/brown jasper	12		
		Chipped Stone, Incomplete				
	1	Thin, expanding flake, proximal end segments, crushing on lateral edges	Purple/grey mottled jasper	40	32	5
	1	Tabular segment, discontinuous unifacial retouch and crushing on lateral edges	Dark brown chalcedony (silicified wood)	42	22	7
	1	Thick, elongate flake, distal end segment	Pink chalcedony	32		
		Other Lithics				
	6	Blocky fragments, "cobble" cortex	Yellow/brown jasper	27-62		

Table B. Continued

Site Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH18 (Continued)					
3	Small fragments	Yellow/brown jasper	18-25		
1	Pebble fragment	Red jasper	34		
1	Fragment	Pink quartzite	39		
1	Small fragment	Clear/grey chalcedony	17		
27	"Fire cracked" rocks				
39SH19 OUTWASH AREA					
	Chipped Stone, Complete				
1	Ovate biface, regularized margins	Red jasper	62	36	9
1	Elongate flake, cortex	Clear/grey chalcedony	28		
4	Expanding flakes	Grey quartzite Light brown quartzite Yellow chalcedony Clear/grey chalcedony	31 29 35 26		
2	Small, rectangular flakes, dorsal flute	Brown chalcedony (white inclusions)	23 23		
2	Small, thin, rectangular flakes	White chalcedony Yellow quartzite	19 15		
2	Expanding flakes	Clear/grey chalcedony	18 15		
	Chipped Stone, Incomplete				
1	Bifacial, sinuous edge fragment, excurvate margin	Brown quartzite	47	18	6
1	Irregular fragment, crushing or retouch? along straight margin, "cobble" cortex	Yellow/grey jasper	35	35	14
1	Contracting flake, proximal end	Dark brown quartzite	33		
1	Thin flake, distal end segment	Dark brown quartzite	28		
5	Thick flake fragments	(1) White chalcedony (2) Clear/grey chalcedony (2) Brown chalcedony	14-30		
15	Small flake fragments	(3) Clear chalcedony (5) Brown chalcedony (3) Purple chalcedony (1) Grey chalcedony (2) Light brown quartzite (1) Grey mottled quartzite	7-18		
	Other Lithics				
1	Cobble fragment	Grey, heat altered			
BROWN QUARTZITE REDUCTION AREA					
	Chipped Stone, Complete				
2	Rectangular flakes	Dark brown quartzite	25 20		
1	Expanding flake	Dark brown quartzite	18		

Table B. Continued

Site Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH19 (Continued)					
BROWN QUARTZITE REDUCTION AREA					
2	Thick, rectangular flakes	Dark brown quartzite	24 21		
1	Thick, contracting flake, weathered surface	Dark brown quartzite	31		
	Chipped Stone, Incomplete				
1	Thick, expanding flake, proximal end segment, weathered surface	Dark brown quartzite	27		
2	Thin, expanding flakes, segments	Dark brown quartzite	18 16		
1	Thick flake fragment	Dark brown quartzite	26		
1	Sinuous, bifacial edge segment	Dark brown quartzite	62		
YELLOW CHERT REDUCTION AREA					
	Chipped Stone, Complete				
2	Thick, expanding flakes, cortex	Yellow chert	28 27		
1	Thick, rectangular flake	Yellow chert	25		
1	Small, rectangular flake	Yellow chert	21		
1	Small, contracting flake	Yellow jasper	10		
1	Small, thin, elongate flake	Yellow jasper	31		
1	Small, thin, contracting flake	Yellow jasper	28		
1	Small, thin, ovate flake	Yellow jasper	20		
4	Small, thin, rectangular flakes	Yellow jasper	14- 19		
2	Minute, elongate flakes	Yellow jasper	12- 13		
3	Minute, contracting flakes	Yellow jasper	8- 14		
2	Minute, expanding flakes	Yellow jasper	6		
2	Minute, rectangular flakes	(1) Yellow jasper (1) Brown quartzite	7-12		
	Chipped Stone, Incomplete				
1	Sinuous, bifacial edge segment	Yellow jasper	37	12	9
1	Bifacial edge segment	Yellow chert	36		
1	Elongate flake, proximal end segment	Yellow chert	21		
1	Contracting flake, proximal end segment	Yellow chert	16		
1	Rectangular flake, proximal end segment	Yellow chert	18		
2	Expanding flakes, proximal end segments	Yellow chert Brown quartzite	18 14	19 20	5 4
3	Thick flake fragments	Yellow chert	18- 21		

Table B. Continued

Site Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH19 (Continued)					
YELLOW CHERT REDUCTION AREA					
5	Minute, thin flake fragments	Yellow chert	4-10		
PROFILE EXCAVATION AREA					
	Chipped Stone, Complete				
1	Triangular-ovate biface, regularized margins	Red/yellow jasper	53	37	9
1	Large, contracting flake, crushing or retouch? along incurvate and excurvate margins	Yellow/grey jasper	70	39	10
DARK BROWN QUARTZITE CONCENTRATION					
	Chipped Stone, Complete				
5	Thick, expanding flakes	Dark brown quartzite	39 40 33 40 23 24		
5	Thin, expanding flakes	Dark brown quartzite	24 19 21 17 16		
3	Thin, elongate flakes	Dark brown quartzite	48 31 21		
3	Thick, contracting flakes	Dark brown quartzite	40 32 27		
5	Minute, elongate flakes	Dark brown quartzite	7-16		
5	Minute, expanding flakes	Dark brown quartzite	9-13		
	Chipped Stone, Incomplete				
2	Expanding flakes, proximal end segments	Dark brown quartzite	15-22		
3	Thin flake fragments	Dark brown quartzite			
13	Minute, thin flake fragments	Dark brown quartzite			
7	Thick flake fragments	Dark brown quartzite			
YELLOW CHERT CONCENTRATION					
	Chipped Stone, Complete				
6	Elongate flakes	Yellow chert	48 38 36 34 38 34		
3	Expanding flakes	Yellow chert	25 22 26		
5	Expanding flakes	Yellow chert	20 20 20 15 15		

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH19 (Continued)						
YELLOW CHERT CONCENTRATION						
	3	Small, rectangular flakes	Yellow chert	14 11 12		
	6	Minute, elongate flakes	Yellow chert	10- 21		
		Chipped Stone, Incomplete				
	2	Flakes, proximal end segments	Yellow chert	17		
	8	Thick flake fragments	Yellow chert	15		
	8	Thin flake fragments	Yellow chert			
	20	Minute flake fragments	Yellow chert			
39SH21		Chipped Stone, Complete				
	1	Large, thick, contracting flake, cortex	Grey quartzite	62		
	2	Thick, rectangular flakes	Clear chalcedony Clear/grey chalcedony	47 38		
	1	Thick, expanding flake	Grey jasper	32		
	1	Thick, expanding flake, cortex	Flattop chalcedony	37		
	2	Small, expanding flakes	Purple chalcedony Clear/grey chalcedony	22 21		
	2	Small, elongate flakes	Grey quartzite White jasper	26 24		
	2	Small, rectangular flakes	Brown quartzite Grey quartzite	14 10		
		Chipped Stone, Incomplete				
	1	Thick, rectangular flake, longitudinal segment, steeply retouched distal transverse edge	White jasper	48	25	18
	1	Rectangular flake segment, unifacial notch, cortex	White chert	45	24	8
	1	Flake segment, unifacial crushing on incurvate margin, "cobble" cortex	Yellow/grey chert	46	36	9
	1	Plate fragment, acute bifacial edge segment	Plate chalcedony	25	21	6
	3	Thin flake fragments	Grey chalcedony Clear chalcedony White chert	25 26 26		
	3	Thick flake fragments	Grey chert			
	3	Small, thick flake fragments	(2) Clear/grey chalcedony (1) Brown chalcedony			
	13	Small, thin flake fragments	(5) Clear chalcedony (4) Light brown chalcedony (3) Grey chalcedony (1) Light brown jasper (1) Brown jasper			

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH21 (Continued)						
		Other Lithics				
	7	Fragments	Clear "glass"			
	2	Small fragments	Red/grey chert			
39SH22		Chipped Stone, Complete				
	5	Expanding flakes	(4) Brown quartzite (1) Grey quartzite	17-26		
	2	Rectangular flakes	Brown quartzite Grey quartzite	27-37		
	1	Large, thick, rectangular flake	Brown quartzite	53		
	1	Thick, expanding flake	Clear "glass"	37		
	2	Small, elongate flakes	Yellow chert Brown quartzite	26 19		
		Chipped Stone, Incomplete				
	1	Corner, triangular notched biface, corner notched segment	Purple quartzite	20	19	4
	18	Thick flake fragments	(4) Clear/grey chalcedony (2) Yellow chert (1) Grey chalcedony (1) Light brown chalcedony (5) Brown quartzite (1) Red jasper (1) Dark grey quartzite (1) Dark brown chalcedony (1) Purple quartzite (1) Purple chalcedony			
	1	Bifacial edge segment	Yellow jasper	47	14	8
	29	Small, thin flake fragments	(9) Clear chalcedony (7) Clear "glass" (6) Brown quartzite (2) Red quartzite (1) Yellow quartzite (1) Yellow chert (1) Brown chalcedony (1) Pink chalcedony (1) Red jasper			
	1	Large, thick flake, irregular flake scars	Purple/grey chalcedony	50		
	1	Thick fragment, irregular flake scars	Brown quartzite	56		
	1	Spheroidal block, irregular flake? scars	Clear "glass"			
	3	Irregular fragments, flake scars	Grey quartzite	31-39		
	1	Tabular fragment	Purple, heat altered?			
39SH23		Chipped Stone, Complete				
	1	Triangular, expanding flake, crushing on margins	Grey fine-grained quartzite	24	30	7
	1	Ovate flake, crushing on margins	Brown quartzite	29	28	7

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH23 (Continued)						
	1	Cobble, unidirectional flake scars	Yellow chert	68	58	34
	1	Split cobble, irregular flake scars, "cobble" cortex	Grey jasper	62	57	31
		Chipped Stone, Incomplete				
	1	Plate segment, acute bifacial edge	Plate chalcedony	27	33	6
	1	Large, thick, elongate flake segment, unifacial retouch on lateral edge, cortex	Brown quartzite	57	39	16
	1	Large, thick fragment, unifacial crushing on excurvate margin, "cobble" cortex	Yellow mottled chert	55	43	29
	1	Fragment, unifacial crushing? on acute edge	Brown/grey chalcedony (silicified wood)	44	26	11
	2	Thick flake segments, steep unifacial retouch?	Red quartzite Brown quartzite	28 20	28 21	8 7
	1	Thick fragment, crushing on acute edge	Clear/grey chalcedony	30	20	13
	1	Large, rectangular flake segment, "cobble" cortex	Clear/grey chalcedony	44		
	1	Small, thin flake fragment	Brown quartzite	14		
	6	Thick flake fragments	(1) Purple/grey quartzite (2) Plate chalcedony (1) Clear/grey chalcedony (1) Brown quartzite (1) Red quartzite			
	1	Large, expanding flake, proximal end segment	Brown quartzite	45		
		Other Lithics				
	2	Blocky fragments	Clear/grey chalcedony Grey jasper (silicified wood)	50 50		
	7	Pebble fragments	(1) Red jasper (3) Brown jasper (1) Grey jasper (1) Red quartzite (1) Clear quartz			
	3	Cobble segments	(1) Clear/grey chalcedony (1) Brown mottled jasper (1) Plate chalcedony ?			
	1	Large cobble	Clear/grey chalcedony			
	4	"Fire cracked" rocks	(3) Heat altered quartzite (1) Heat altered chalcedony			
39SH24		Chipped Stone, Complete				
	1	Thick, elongate flake, steeply beveled excurvate transverse edge, bifacial notch in lateral edge?	Grey/dark grey chalcedony	57	28	12

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH24 (Continued)						
	1	Small, triangular-ovate biface, irregular facial scars	Brown mottled jasper (moss inclusions)	47	25	9
	1	Rectangular flake, steeply beveled excurvate transverse edge, step-fractured	Yellow chert	33	25	8
	1	Large, thick block, battering along obtuse irregularly flaked transverse edge, "cobble" cortex	Yellow chalcedony	92	64	43
	1	Multidirectional flaked block	Brown/purple quartzite	51	45	27
	1	Split cobble, "cobble" cortex	Red/grey chalcedony	69	59	39
	1	Split pebble	Red jasper	28	24	14
		Chipped Stone, Incomplete				
	1	Thick, rectangular flake, proximal end segment	Clear/grey chalcedony	27		
	2	Flakes, proximal end segments	Yellow jasper Dark brown quartzite	20 28		
	1	Thick flake, proximal end segment, "cobble" cortex	Yellow jasper	35		
	1	Large, thick segment, unifacial flake scars	Dark brown quartzite	90		
		Other Lithics				
	1	Thick fragment	Burned quartzite			
	1	Small pebble fragment	Yellow jasper			
39SH25		Chipped Stone, Complete				
	1	Thick, rectangular flake, steeply beveled transverse edge, unifacial notch in lateral margin	Clear/grey chalcedony	24	22	11
	1	Thick, expanding flake, cortex	Dark brown chalcedony	43		
	2	Small, expanding flakes	Plate chalcedony Light brown quartzite	20		
	1	Small, rectangular flake	Yellow/brown jasper	19		
	1	Small, thick flake	Plate chalcedony	17		
	1	Large, thick, bifacial block	Clear chalcedony	65	63	25
		Chipped Stone, Incomplete				
	1	Biface, basal corner segment, excurvate lateral edge	Light brown chalcedony	31	28	8
	1	Plate, rounded end segment, irregular unifacial edges	Plate chalcedony	44	60	10
	1	Ovate, bifacial edge segment	Flattop chalcedony	54	29	11
	1	Plate, bifacial edge segment	Plate chalcedony	33	37	8
	1	Thick flake segment, steep unifacial retouch on two edges	Brown quartzite	24	28	9

Table. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH25 (Continued)						
	1	Large, thick flake segment, unifacial crushing on excurvate edge	Dark brown/grey chalcedony (silicified wood)	50	53	25
	3	Flake fragments, marginal crushing?, cortex	Clear/grey chalcedony Clear/grey chalcedony Yellow chalcedony	39 29 30	21 23 25	11 11 9
	1	Elongate flake, discontinuous unifacial marginal retouch	Dark brown quartzite	30	14	7
	1	Thick plate segment, irregular obtuse bifacial edge?	Plate chalcedony	50	52	18
	1	Thick, elongate flake, end segment, cortex	Clear/grey chalcedony	30		
	1	Large, thick flake, proximal end segment	Dark grey chalcedony	39		
	4	Thick flakes, end segments	Mottled chalcedony Mottled chalcedony Brown quartzite Yellow/grey chert	25 22 22 19		
	5	Thin flakes, end segments	Clear chalcedony Clear chalcedony Light brown/grey mottled quartzite Light brown/grey mottled quartzite Light brown/grey mottled quartzite	20 28 24 23 17		
	1	Small, elongate flake, segment	Yellow chalcedony	16		
	6	Small flake fragments	(1) Yellow quartzite (1) Grey chert (4) Clear/grey chalcedony			
	3	Flake fragments, cortex	Flattop chalcedony Dark grey chalcedony Dark grey chalcedony	40 56 64		
		Other Lithics				
	3	Thick fragments	(2) Dark grey chalcedony (1) Yellow quartzite			
39SH26		Chipped Stone, Complete				
	1	Thick, expanding flake, irregular crushed margins	Reddish brown quartzite	41	48	11
	1	Thick, rectangular flake, steep marginal retouch	Clear/grey chalcedony	45	33	13
	1	Thick, expanding flake, cortex	Light grey quartzite	25		
	1	Thick, elongate flake	Yellow chalcedony	33		
	1	Thick flake, "cobble" cortex	Yellow chert	24		
		Chipped Stone, Incomplete				
	3	Plate segments, acute bifacial edges	Plate chalcedony	21	36	8
	1	Thick, rectangular flake, proximal end segment, large deep unifacial notch	Brown/grey quartzite	46	31	13

Table B. Continued

Site Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH26 (Continued)					
1	Thick, expanding flake, serrated ? unifacial retouch on lateral acute edge	Black obsidian	37	30	11
1	Thick, elongate flake, unifacial acute edge segment?	Yellow fine-grained	63	33	22
1	Thick block fragment, steep unifacial "notch"	Grey chalcedony	52	39	21
1	Thick, irregular block segment, steep unifacially retouched incurvate edge	Yellow/grey quartzite	63	33	22
1	Small, elongate flake, medial segment, crushing? on acute lateral edge, "cobble" cortex	Brown jasper	21	15	5
1	Small flake, end segment, unifacial retouch?	Grey chalcedony	22	19	7
7	Thick flakes, end segments	(2) Grey/brown quartzite (1) Dark brown quartzite (2) Clear chalcedony (2) Yellow quartzite	19-20 25 22-32 21-29		
3	Thin flakes, end segments	Brown jasper Grey quartzite Clear chalcedony	27 21 19		
6	Large, thick flake fragments	(1) Plate chalcedony (2) Grey chalcedony (1) Purple quartzite (1) Brown chalcedony (1) Brown quartzite (1) Brown jasper			
8	Small, thick flake fragments	(2) Brown (1) Yellow (2) Grey/brown jasper (1) Yellow/grey quartzite (1) Yellow/grey chert (1) Clear/white chalcedony			
24	Small, thin flake fragments	(2) Red (2) Grey (4) Brown (1) Yellow jasper (1) Grey chert (2) Red/brown (3) Yellow (3) Brown (3) Grey quartzite (1) Clear (2) Brown chalcedony			
	Chipped Stone, Incomplete				
6	Thick fragments, irregular flake scars	(1) Brown jasper (silicified wood) (2) Plate chalcedony (1) Purple chalcedony (1) Yellow/grey mottled chert			
1	Fractured pebble	Grey chalcedony			

Table 5. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH26 (Continued)						
		Bone				
	3	Small, unidentifiable bone fragments		32-33		
39SH27		Chipped Stone, Complete				
	1	Small, thick, contracting flake	Yellow chert	25		
	1	Small, thick, rectangular flake	Brown chalcedony	31		
	1	Small, elongate flake	White chalcedony	34		
	1	Minute, thick flake	Dark brown chalcedony	15		
		Chipped Stone, Incomplete				
	1	Wide biface, pointed end segment, excurvate acute lateral edges	Yellow chert	59	51	11
	1	Wide biface, pointed end segment, steep unifacial alternating beveled lateral edges (one straight, one excurvate)	Pinkish grey fine-grained quartzite	49	44	7
	1	Plate fragment, acute bifacial edge	Plate chalcedony	24	33	8
	1	Plate medial segment, collateral bifacial acute edges	Plate chalcedony	19	26	6
	1	Thick plate segment, discontinuous bifacial ? incurvate edges	Plate chalcedony	53	38	14
	1	Flake fragment, steep unifacially beveled edge	Light brown/grey quartzite	18	21	4
	1	Expanding flake, proximal end segment, retouch ? on excurvate edge	Red jasper	28	41	5
	4	Flake end segments, unifacial retouch?	Light brown/grey quartzite Light brown/grey quartzite Grey jasper Red/brown quartzite	22 24 25 34		
	1	Thick, pointed end segment, large irregular flake scars	Black chert	43	23	10
	1	Thick flake segment, steep unifacial retouch?	Grey/yellow mottled chert	35	42	15
	1	Elongate flake, proximal end segment, crushing? on acute excurvate edge	Grey jasper	31	19	6
	1	Small fragment, unifacial notch?	Clear chalcedony	15	25	5
	8	Large, thick flake segments	(1) Grey/brown quartzite (3) Brown quartzite (2) Plate chalcedony (1) White chalcedony (1) Clear/yellow chalcedony			

Table B. Continued

Site Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH27 (Continued)					
2	Elongate flakes, end segments	Dark brown chalcedony			
13	Thick flake fragments	(5) Grey/brown quartzite (1) Plate chalcedony (4) Light brown/grey chalcedony (2) Grey chalcedony (1) Dark brown chalcedony			
27	Thin flake fragments	(3) Purple/grey mottled chalcedony (1) Yellow chalcedony (6) Clear/white/grey chalcedony (3) Dark brown chalcedony (2) Grey quartzite (3) Light brown quartzite (2) Purple quartzite (1) Brown jasper (2) Yellow jasper (3) White/grey jasper			
10	Small, thick flake fragments	(3) Brown quartzite (1) Grey quartzite (6) Clear/grey chalcedony			
35	Small, thin flake fragments	(2) Dark brown chalcedony (3) Light brown chalcedony (17) Clear/white/grey chalcedony (8) Brown quartzite (2) Light brown quartzite (3) Grey quartzite			
4	Thick, irregularly flaked fragments	(1) Dark brown chalcedony (1) Clear/white chalcedony (2) Flattop chalcedony			
3	Large, thick, split block segments, irregular flake scars	Grey chalcedony ("cobble" cortex)	90	77	32
		Brown chalcedony	91	67	29
		Grey/brown quartzite	82	38	22
	Other Lithics				
2	Large fragments	(1) Clear quartz (1) Yellow/grey chert			
5	Small fragments	(1) Clear quartz (2) Plate chalcedony (1) White chalcedony (1) Purple/grey chert			
5	"Fire cracked" rock fragments	(2) Red, heat altered chalcedony? (3) White/grey, altered chalcedony			
	Ceramics				
1	Small, black fragment, paddled? surface, mica?	pottery	11	13	4

Table B. Continued

Site	Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH27 (Continued)						
		Bone				
	4	Unidentified bone fragments		24-57		
39SH28		Chipped Stone, Complete				
	1	Thick, rectangular flake, crushing on acute lateral edges (decortication - "cobble" cortex)	Yellow chalcedony	63	45	23
	1	Thick, elongate flake, crushing? on lateral margins, "cobble" cortex	Red/yellow/grey mottled chalcedony	63	38	24
	1	Thick, expanding flake, "cobble" cortex	Yellow chert	68	66	28
	1	Thick block, large bifacial flake scars and crushing? on sinuous margin, cortex	Grey/brown quartzite	83	53	25
	1	Large, thick, expanding flake, large flake scars on dorsal surface	Red/brown quartzite	75	48	22
	1	Large, thick, ovate block, large bifacial flake scars, sinuous obtuse edge	Red/grey quartzite	135	102	44
	1	Large, thick, rectangular block, large bifacial flake scars, irregular sinuous edge, "cobble" cortex	Grey/yellow mottled chert	137	90	42
	1	Thick block, multidirectional, large bifacial flake scars	Brown quartzite	85	71	32
	1	Thick block, unifacial flake scars, "cobble" cortex	Brown quartzite	81	65	45
	1	Small, thick, multidirectional block, "cobble" cortex	Brown fine-grained	49	38	21
	1	Large, thick, tabular block, unifacial sinuous margin with crushing? cortex	Yellow/grey chalcedony (silicified wood)	103	85	45
	1	Thick block, large bifacial flake scars, sinuous excurvate edge "cobble" cortex	Grey/pink/yellow	91	76	42
	1	Large, thick cobble, large bifacial flake scars on single sinuous edge, "cobble" cortex	Purple/white/yellow jasper	135	114	58
	1	Large, thick cobble, irregular multidirectional step fracture scars, "cobble" cortex	Dark brown chalcedony (white inclusions similar to "Knife River flint")	96	102	64
	1	Thick block, large multidirectional flake scars, "cobble" cortex	Grey/yellow jasper	60	57	54
	1	Multidirectional, flaked block	Pink/grey quartz	64	57	47
	2	Large cobbles, with "occasional" large flake scars, "cobble" cortex	Yellow/grey/red jasper Yellow/pink fine-grained quartzite	82 140		

Table B. Continued

Site Quantity	Description	Material	Maximum Dimensions (mm.) len.	wid.	thk.
39SH28 (Continued)					
1	Large, thick, multifacial block, multidirectional step fracture scars, cortex	Grey/brown/purple quartzite	125	122	111
	Chipped Stone, Incomplete				
1	Large, thick flake segment, crushing? on acute lateral edge, "cobble" cortex	Yellow quartzite	83	50	17
1	Large, thick, expanding flake, proximal end segment, discontinuous steep retouch?	Brown quartzite	66	60	22
1	Thick, bifacial edge segment, crushing? on sinuous edge, "cobble" cortex	Yellow chalcedony			
1	Split cobble segment, crushing? along incurvate steep margin, "cobble" cortex	Light brown/yellow fine-grained quartzite	104	92	56
2	Thick block segments, bifacial flake scars, cortex	Grey fine-grained quartzite	111	59	35
		Brown/purple banded fine-grained quartzite	84	51	15
1	Flaked segment, cortex	Dark grey chalcedony	59	36	16
1	Thick, rectangular, split? block segment	Light brown quartzite	60	63	34
1	Large, thick, split? cobble, large multidirectional flake scars, cortex	Dark brown fine-grained quartzite	101	78	53
1	Large, thick, split? cobble, multidirectional flake scars, "cobble" cortex	Grey/yellow/red mottled fine-grained quartzite	113	95	73

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