

**ARCHAEOLOGY AS ENVIRONMENTAL EDUCATION: INVESTIGATIONS AT THE  
BAY VIEW POINT SITE, DULUTH, MINNESOTA**

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The project was conducted in cooperation with the Bay View Elementary School (Proctor School District), the Duluth Urban Wilderness Camp, and the Duluth Archaeology Center, LLC.

## **ABSTRACT**

Support from the Center For Community and Regional Research was used to conduct laboratory analysis of materials recovered from the 2008 field work at the Bay View School Forest. Three UMD students were employed to analyze the materials (lithics and a red rock cluster), complete paperwork preparatory for curation, conduct background research, compile maps for illustrations, and write draft sections for the final report.

This project had several objectives. The research potential of the Bay View Point site was investigated by analysis of the materials from the site excavations in 2008. Additional work is needed to address the specific research questions but the site is recommended as eligible for the National Register of Historic Places. Implications for public policy are that this topographic situation on the Duluth Hillside does contain archaeological sites and should be investigated further to comply with Federal and State regulations. The place of archaeology in environmental education is further demonstrated by the enthusiastic participation of volunteers and the information that was gained from this effort.

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## INTRODUCTION

### BACKGROUND

Environmental education typically focuses on the natural resources aspect of the environment: vegetation, animals, birds, geology, and other physical components. Appreciation of and respect for these resources, including the fragility of the landscape, are topics of importance. However, another aspect of the physical landscape, archaeological sites, is often not considered in typical environmental curricula. This resource is just as fragile and subject to loss from the ever encroaching activities of modern society as any other type. This principle is reflected in Federal and State laws regarding consideration of archaeological sites prior to project implementation. This application of archaeology to public policy is known as Cultural Resource Management (CRM) and over the last four decades has increasingly become a component of public policy.

Information on past human activities is contained within archaeological sites, which are three-dimensional patterns of artifacts and other clues encased within soils and sediments. Archaeological investigations locate (by survey) and examine (by excavation) such sites; CRM is the method and theory underlying the procedures used to retrieve and then apply this information to management decisions. Much of the funding (and therefore work) for archaeology in the United States is generated by CRM projects through various public agencies and private firms.

Although generally on public lands or for projects with public funds (and thus a part of public policy), the information gathered by CRM investigations is also directly applicable to research objectives as well. The data generated by CRM projects provides the bulk of the information on past human use of the landscape in most regions. However, collation of this information for broader research studies beyond specific, project-driven objectives often requires additional investigation.

An on-going archaeological project supported by a variety of local agencies and organizations focuses on investigation of the Bay View School Forest (BVSF) in West Duluth (Figure 1). The land is under cooperatively managed by the Bay View Elementary School in the Proctor School District with the City of Duluth (a city forest that includes state tax-forfeit lands under administration of St. Louis County). A grant from the Lake Superior Coastal Program supports development of environmental education programs, including trails, for this cooperative project. The project is a



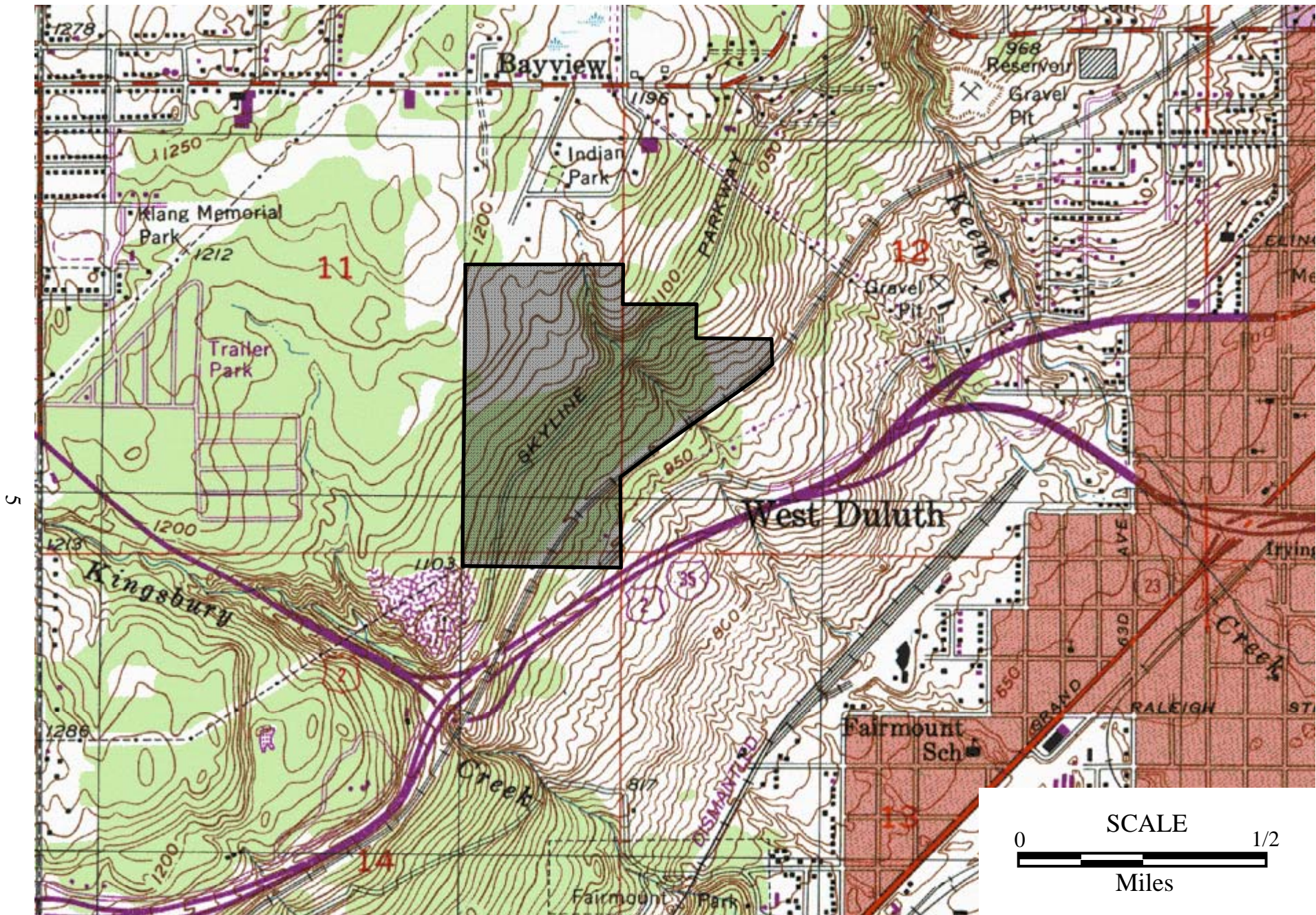


Figure 1. Location of BayView School Forest, West Duluth quadrangle (1:24,000) USGS topographic map



multi-year effort, started in 2007, that incorporates archaeology research, CRM, and environmental education efforts.

Archaeological investigations were conducted by the lead faculty and personnel from the Duluth Archaeology Center in cooperation with participants from the Bay View Elementary School and City of Duluth recreation program (2007) and the Duluth Urban Wilderness Camp (2008). Students enrolled in ANTH 4696 (a UMD Anthropology course offered through Continuing Education) supervised a week of survey in 2007 (2 students) and two weeks of survey and excavation in 2008 (6 students). Grants from the Minnesota Power Foundation supported the 2007 reporting (to Proctor School District) and 2008 field school expenses (to UMD). Three prehistoric sites were found in the BVSF over the two years (Figure 2).

The 2008 CCRR project focused primarily on analysis of materials from the 2008 excavations at the Bay View Point site (21SL1015). The site is located on a terrace (probably glacial in origin) above the highest shoreline feature of Glacial Lake Duluth (Farrand 1960). Although no direct information on the age of the site was recovered in summer 2007 or 2008, the location above abandoned shorelines of Glacial Lake Duluth (the oldest proglacial lake in this area) suggests a potential for great antiquity and possibly very early entry of humans into Northeastern Minnesota. This topographic situation is similar to Thunder Bay, Ontario, where numerous archaeological sites are recorded on Glacial Lake Minong shorelines which represents a slightly later time period (Ross 1997). Relatively few archaeological sites dating before the European contact period are known from the North Shore in Minnesota and none have been investigated extensively (Radford, personal communication 2007; Mulholland and Mulholland 2008). Therefore the Bay View Point site contains great research potential as well as providing environmental education opportunities and information for public policy decisions.

## RESEARCH OBJECTIVES

This CCRR project has three types of objectives in support of the BVSF project. Research objectives include investigation of site size, activities, and the number of occupations. Public policy objectives are to determine if the site is eligible for the National Register of Historic Places and, if it is, recommend management policies to preserve and interpret the site. Educational objectives are

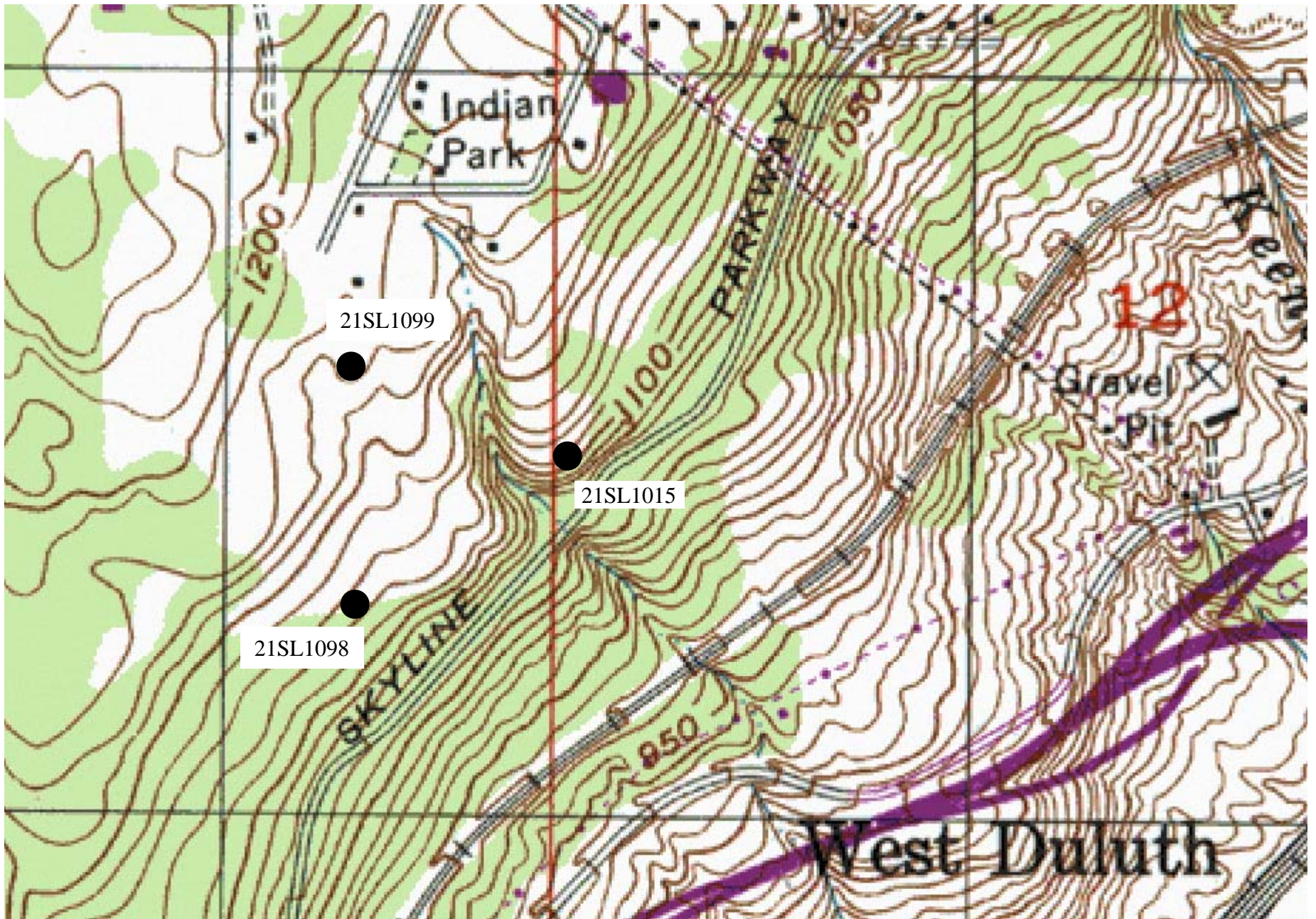


Figure 2. Site Locations, West Duluth Quadrangle (1:24,000) USGS Topographic Map

to review the site as an example of archaeological materials that should be considered in environmental education.

The specific goal of this project is to analyze the materials recovered from the 2008 archaeological excavation. In addition, reporting tasks include preparation of illustrations and written summaries of specific topics. Curation fees at the Minnesota Historical Society and printing the report of the 2007 investigations were also included.

## METHODS

The Bay View Point site (21SL1015) is on public lands under City, School District, and State/County authority. Therefore, archaeological investigations are required to follow the State Historic Preservation Office (SHPO) guidelines (Anfinson 2005) including supervision by qualified personnel and investigation under a State Archaeology Office license as required under the Field Archaeology Act (MnST 138). The investigations were under the direction of Dr. Susan Mulholland, who meets Secretary of Interior standards and holds an annual archaeology license (#08-009) from the State Archaeologist. Field work was conducted primarily by students enrolled in the UMD archaeology field school, ANTH 4696, offered through Continuing Education for summer 2008. Volunteers from the public and various educational organizations also participated.

The laboratory analysis employed three UMD students from November 2008 to February 2009 (total of 200 hours). Standard artifact cleaning techniques were followed, including both wet and dry brushing of artifacts. Of particular concern was analysis of a cluster of red rocks recovered at the base of one of the units. Basic report preparation tasks were also accomplished, including submission of state site forms for two new prehistoric sites discovered during the 2008 field work. Maps and floor plans of the units were produced in AutoCad (version 2005). Preliminary report writing was conducted by students; the report on 2007 field work (Mulholland and Mulholland 2008) was printed.

Some anticipated tasks were not carried out in this project. Datable materials such as charcoal or bone, if found, could provide firm ages of the occupation(s). However, no suitable materials were recovered in the field investigations. Instead, additional funds were allocated to curation fees at the Minnesota Historical Society in St. Paul (greater than expected) and thin



sectioning of the red rock (not anticipated in the initial budget).

### STUDENT INVOLVEMENT

The field work was conducted in conjunction with UMD students registered for ANTH 4696, Field Research in Archaeology. This field course teaches practical, necessary field skills by engaging students in real field situations that arise from conducting archaeological field research. Six students worked approximately 40 hours per week for two weeks during the summer course.

Three of the students from the field school were hired to conduct the laboratory analysis directly supported by this project. These students cleaned artifacts, digitized wall profiles and floor plans, drafted figures, filled out state site forms, and wrote reports. In addition, they attended meetings with UMD geology professors regarding identification of the red rocks as well as conducted research at the State Historic Preservation Office and Office of the State Archaeologist in St. Paul.

## **PROJECT TASKS**

### LABORATORY ANALYSIS

Two major classes of artifacts were recovered from the 2008 excavation of the Bay View Point site. Lithic debitage was recovered from all four excavation units in varying amounts, similar in amount and types to those recovered during the 2007 survey. In addition, a cluster of red rocks was located at the base on one of the units. These two classes of artifacts required different analytical techniques.

*Lithic Artifacts:* Preliminary cleaning and identification was conducted during one week of the field school course (ANTH 4696). However, in-depth identification and analysis was conducted during this project. The artifacts were reviewed for lithic material type in consultation with a regional lithic expert and the identifications finalized. Lot check lists for all excavation proveniences were completed, as required for curation and analysis. Preparation for curation at the Minnesota Historical

Society in St. Paul, Minnesota was conducted. A repository agreement was obtained and curation fees for three sites arranged.

*Red Rock Cluster:* The cluster of red rocks was analyzed in detail. The rocks had been assigned lot numbers by excavation level during the field school (ANTH 4696) but no further review was conducted at that time. The rocks were set out to dry over a period of several weeks before dry brushing to remove the adhering sediment. The weight and size of the rocks was then recorded. A refit analysis was also conducted to determine whether any of the rocks could be small pieces of a larger rock. Six refits were identified, with two or more rocks fitting together for each refit.

A meeting was held with Professor Emeritus John Green of the UMD Geology Department on identification of the rocks. Dr. Green was not able to identify the rocks, although he is an expert on rocks of the North Shore. At his suggestion, a second meeting with Professors Emeritus Richard Ojakangas and Charles Matsch (also of the UMD Geology Department) was held. No conclusive identification was made by these experts; however, the suggestion was made that a thin section of the rock would be helpful in identification efforts.

A sample of the red rock was submitted to Spectrum Petrographics (a private company in Vancouver, WA) to make a thin section. A thin section is a slice of the rock mounted on a microscope slide in order to view the minerals and other components. The sample was determined to be an altered ferruginous mudstone multiple breccia, formed by multiple cycles of sedimentation and breakage. Thermal alteration in some cycles introduced iron as well as quartz or opal.

NOTE: The red rocks were later discussed at several venues: the Council for Minnesota Archaeology symposium (February 2009 in St. Cloud, Minnesota), the Lake Superior Basin Workshop (March 2009 in Pine City, Minnesota), and the Canadian Archaeology Association Annual Meeting (May 2009 in Thunder Bay, Ontario). Although not conclusive, the rocks appear to be from the Sibley Formation in Thunder Bay, Ontario (Fralick, personal communication 2008).

## REPORTING TASKS

Several tasks associated with reporting were conducted under this project. These include preparation of figures as illustrations, filling out state site forms to obtain state site numbers, and

writing preliminary sections. In addition, the report of the 2007 investigations was printed.

*Illustrations:* Several types of maps are needed as illustrations for the final archaeological report. Location maps use the U.S.G.S. topographic maps as a base to show locations of survey areas and sites. Sketch maps of sites are drawn from field maps using AutoCad (2005 version) and then imported into PowerPoint (2007 version) for incorporation into the text. Wall profiles and floor plans of various levels in the excavation units were also digitized in AutoCad.

*State Site Forms:* Archaeological sites are assigned state site numbers by the Office of the State Archaeologist upon submission of a state site form. The form is four pages listing information about location in several formats, materials found, type of site, and survey data. In addition, each form is accompanied by two maps, a location map on a USGS topographic map and a sketch map of the site. In this project, two state site forms were completed and submitted to the OSA; both forms were for the prehistoric sites (21S11098, 21SL1099) discovered in 2008 on the Bay View School Forest.

*Writing:* The student employees conducted some preliminary writing tasks. Two students wrote a short report of the survey of four areas in 2008, including all background, methods, and results sections. The third student did analysis of the red rock cluster and produced summaries as well as descriptions of the rocks by level, including refits. These reports will be incorporated into the final report of the archaeological investigations, to be done at the conclusion of the multi-year project.

The report of the 2007 investigations (Mulholland and Mulholland 2008) was printed and copied for distribution.

#### RESEARCH AT STATE ARCHAEOLOGY OFFICES IN ST. PAUL

Two repositories of statewide archaeological information are located in St. Paul: the State Historic Preservation Office (SHPO) and the Office of the State Archaeologist (OSA). Both offices were visited with the three students to conduct background research.

The SHPO is housed in the Minnesota Historical Society. Copies of unpublished reports (the “grey literature”) are filed here, from projects that require SHPO review. Site files are also



maintained, with the data recorded in an electronic database as well as on USGS topographic maps. Although limited information is available via email, the reports and particularly locations of previous surveys are only obtained through direct visits to the office.

The OSA is housed at the Fort Snelling History Center. Unpublished reports are also filed here, resulting from projects that require a State Archaeology license. Although some reports duplicate the SHPO files, many reports are unique to OSA. In addition, the OSA assigns state site numbers and therefore has the most updated state site forms. The sites are plotted on County maps for easy identification of sites in a specific region.

Students reviewed the site files in both offices to determine if any other sites or surveys were present. In addition, personnel from SHPO and OSA gave presentations on the functions of the offices as well as instruction in filling out state site forms.

## CONCLUSIONS

### PROJECT OBJECTIVES

Information directly bearing on the significance of the Bay View Point site (21SL1015) was obtained during the field and laboratory investigations. In addition, two new prehistoric sites (21SL1098, 21SL1099) that were identified during the summer 2008 field work in the Bay View School Forest were documented by state site forms during this project. A few significant conclusions can be drawn at this point.

1: *Research Potential*. The Bay View Point site is recommended as eligible for the National Register of Historic Places under criterion D, the potential to contain information on historic contexts. Although no diagnostic artifacts (indicative of a time frame) or organic materials (that could give a radiocarbon date) were recovered, the site is definitely prehistoric in nature. The aceramic nature of the materials (no ceramics on the site) further suggests a period prior to 2000 years ago, when ceramics were first used in northeastern Minnesota (Mulholland 2000). Archaeological prehistoric sites on the North Shore are rare and therefore contain potential for future research.

However, a specific historic context still cannot be assigned to this site at this time. Site function is also unclear although the scatter of debitage, predominantly shatter, suggests some type of lithic procurement activities. The presence of a soft red rock that can be carved and forms a powder is suggestive of procurement focused on this material type.

CONCLUSION: The occurrence of a prehistoric site on or above a glacial lake shoreline is not unexpected but rare, particularly in northeastern Minnesota. Additional survey and excavation at the Bay View Point site may recover materials that would add to our understanding of the human activities at this site.

2: *Public Policy.* The 2008 survey in the other portions of the Bay View School Forest area identified two new prehistoric sites, 21SL1098 and 21SL1099. This brings the number of prehistoric sites known on the Duluth Hillside to three, all in the BVSF. None have yielded diagnostic materials that would indicate time frame or function of the sites. However, the simple fact that Native American sites are present on the topographic feature is significant; no one had thought to look in this topographic situation before, so no efforts were made to require archaeological survey. The new data on presence of sites will inform decisions by the SHPO regarding future projects.

CONCLUSION: Prehistoric Native American sites can be expected to be associated with glacial lake features in Duluth (and by extension, the North Shore of Lake Superior). Therefore, any construction projects in this geographic situation that need to comply with State or Federal legislation regarding cultural resources need to require survey of undisturbed areas prior to disturbance. The public policy implications for other areas where glacial lake features are located also are that more extensive survey efforts will be required.

3: *Environmental Education.* Archaeological sites are environmental resources that need to be considered in environmental education. Site deposits are part of the landscape and susceptible to destruction by ground disturbing activities. In addition, archaeological activities are of interest to various public groups including school children and adults. The Bay View School Forest project is specifically designed to enhance environmental education for elementary students. Other volunteers from the public also gained an appreciation of the fragile nature of archaeological deposits.

CONCLUSIONS: Concern for the environment needs to encompass the cultural resources as well as more traditionally considered plant, animal, and soil resources. This concern should be incorporated into environmental education programs and curricula.

### PROJECT BENEFITS

The immediate benefit from this project was analysis of materials and preparation of items for the final report on this multi-year project. Data from the review of lithics and the red rock cluster will be incorporated into sections of the final report. [By agreement with the State Archaeologist, the final report will be delayed until the field work is complete some years in the future.] In addition, tasks in preparation for curation of the materials were conducted.

Beyond the specific data generated by this research, there are additional community benefits from the conduct of this project. College students were directly involved in the research project through laboratory analysis and research. All learned first hand where and how archaeological data are generated and what is required to analyze information. This experience is important for further pursuit of a career in archaeology, whether in cultural resource management or academic venues. Most archaeological careers in the U.S. today are in cultural resource management, where part of the objectives are to identify and manage places of relevance. Students thus received the exact sort of training and experience that they will need as professional archaeologists.

Further, the mutual dependence of field work and theory was illustrated by the research oriented nature of this project. In order to advance the discipline, research oriented projects need to be conducted; management of the resource (sites and the data contained within them) is a different perspective on archaeology but one that is vital to the future preservation of the database. Public policy is directly involved with management of archaeological sites to preserve information about the past. Data generated from CRM projects is crucial to advancing the knowledge about past groups. Students (as well as professionals) need to be aware of the interrelation of CRM and research.

The interrelation of archaeological resources and the environment is manifest in the location of archaeological deposits within the sediments on the landscape. Ground disturbance of any type will cause impacts to the deposits, resulting in loss of information as well as artifacts. Therefore the



preservation of historical information contained within site deposits is a concern for environmental issues. In recognition of this interdependence of environment and archaeology, the Boulder Lake Environmental Center (UMD and MP) partnered with the Sociology-Anthropology Department of the University of Minnesota Duluth (UMD) during 2008 in the archaeological field school. The BLEC continues to incorporate archaeological presentations in their environmental education programs, including the MnDNR Master Naturalist certification. This cooperation has worked well and should continue in the future.

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