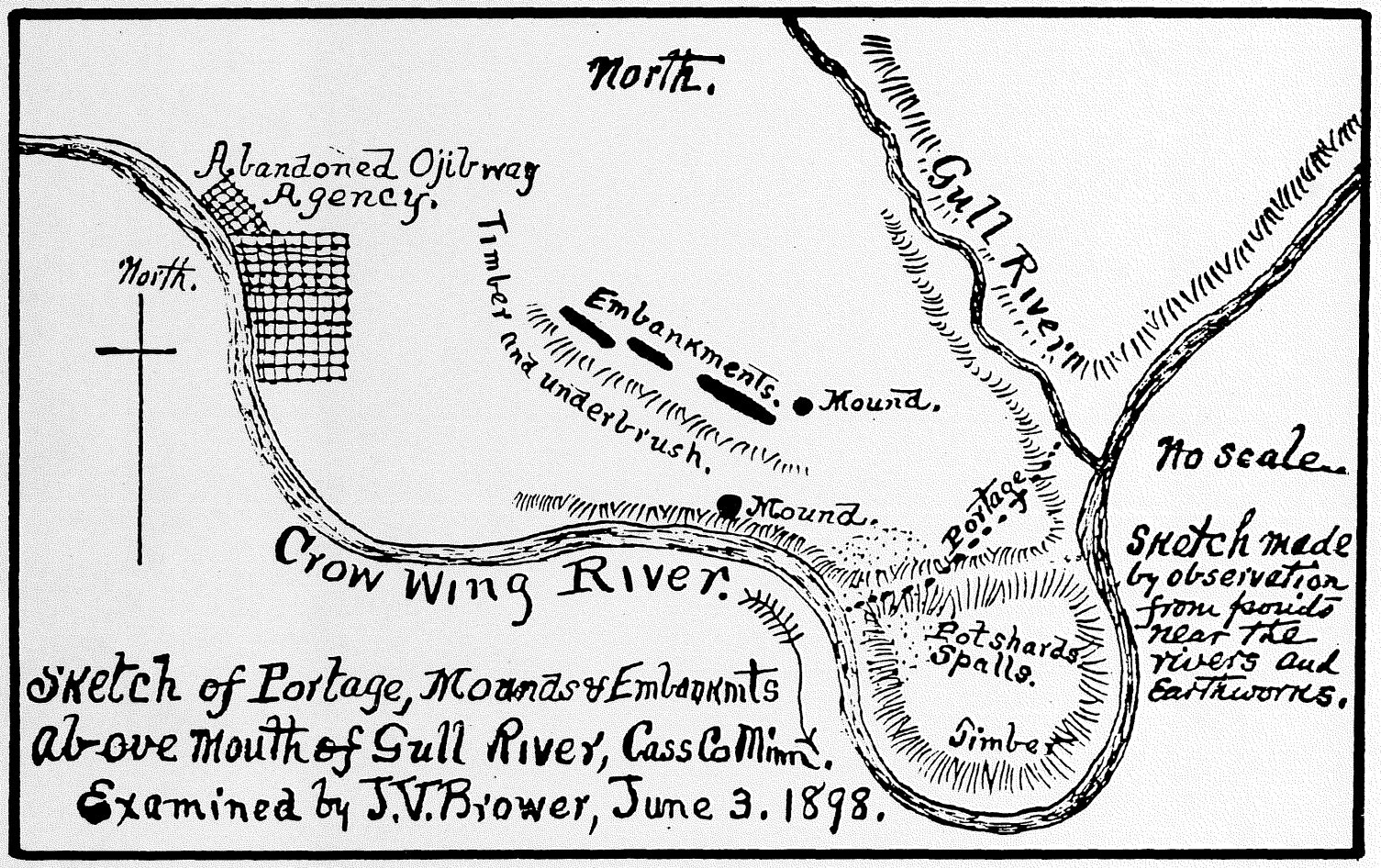
MINNESOTA DEPARTMENT OF NATURAL RESOURCES

WATER ACCESS PROGRAM

ARCHAEOLOGICAL RECONNAISSANCE SURVEY

ANNUAL REPORT - 1990



MARCH 1991

PREPARED BY: PATRICIA M. EMERSON
MINNESOTA HISTORICAL SOCIETY

TED IN ACCORDANCE WITH CONTRACT #90-C2356 BETWEEN THE MINNESOTA
ICAL SOCIETY AND THE MINNESOTA DEPARTMENT OF NATURAL RESOURCES

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Cover: Sketch of area around confluence of Gull & Crow Wing Rivers
Jacob V. Brower, 1898

ABSTRACT

This report presents the results of the fifth full year of operation of the Minnesota Department of Natural Resources Water Access Program Archaeological Reconnaissance Survey. The program operates through the Archaeology Department of the Minnesota Historical Society, with funding provided by the Minnesota Department of Natural Resources-Trails & Waterways Unit. The intent of the program is to conduct cultural resource reviews of projects initiated by the Water Access and River Recreation Programs, which operate under the mandate of Minnesota Statutes Chapter 86A, The Outdoor Recreation Act of 1975. The current objectives, research methods and operational structure of the Water Access Program Archaeological Survey are explained in Chapter I. The remainder of the report contains descriptions of individual project reviews completed during the year.

During 1990, preliminary information was received from DNR regarding 38 proposed property acquisitions. Information on 13 new Water Access or River Recreation Program facility development or rehabilitation projects was also received (these were projects for which no data had previously been received). Record reviews resulted in identification of 4 known sites that might be affected by these projects. Field examination of these sites will be conducted as DNR progresses with detailed project planning.

Phase I field review was initiated during 1990 at 33 project areas, located in 22 different counties. Twenty-eight of these reviews were completed during the 1990 field season; one additional project that was begun in 1987 was also finished during the year. The remaining five projects require additional work that is scheduled for the 1991 field season. Out of the 34 project areas partly or completely field-reviewed in 1991, five were found to contain resources that potentially would be affected by proposed development. Two of these sites will receive further attention in 1991; for the other three (21JK3, 21JK19 and 21MC4), development proceeded as planned.

Implementation of recommendations presented in the 1989 Annual Report for two other projects (Lake Christina and Lake Osakis) took place during 1990 and is discussed herein. Finally, descriptions of three projects done in co-operation with other units of government are included in this report. One of these was done as part of an Itasca County Highway Department project and was reviewed by the County-Municipal Highway Survey. The other two are located on U.S. Forest Service lands and were reviewed under the direction of the Chippewa National Forest Archaeologist.

Summary lists of all projects reviewed by this program since 1985 can be found in the Appendices. These tables are organized both by DNR Region and by county, and include brief indications of review results and site numbers when applicable. Legal descriptions for all project areas are also provided, although only general locations are given for project areas that contain cultural deposits.

ACKNOWLEDGMENTS

A number of people were involved to some degree in the work completed by the Water Access Program Survey during 1990. Before his departure from the Trails & Waterways Unit, Steve Kirch continued to provide support and assistance. Kim Lockwood, who assumed many of Steve's responsibilities for coordinating the survey, has been eager to improve communication and efficient operations. Other members of the Central Office staff including Mike Markell, John Steward and Steve Mueller provided information that was vital to effective program operation.

All of Trails & Waterways' Area Managers have been willing to provide project information when needed. Several Area Managers took the time to visit or assist with fieldwork at various project areas. Bureau of Engineering staff including Ray Lind, Jerry Fabian, Dave Nelson, Stan Linnell and Scott Brekke provided project information and coordinated monitoring at Lake Christina, Shah-Bush-Kung Bay and the Osakis Mill property.

Particular appreciation goes to Ted Lofstrom, formerly Environmental Assessment Officer for SHPO, State Archaeologist Dr. Christy Hohman-Caine, and Earl Sargent of the Minnesota Indian Affairs Council for consultation on a variety of problems. Les Peterson of the Trunk Highway Survey and Randy Peterson of the County-Municipal Highway Survey provided useful project and site data; Bob Clouse, MHS Archaeology Department Head, served as administrative support; and the growing staff of the Archaeology Department contributed opinions and encouragement. The contributions of these individuals are acknowledged. The content of this report, however, remains the sole responsibility of the author.

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I. INTRODUCTION

This report presents the results of work conducted during 1990 by the Minnesota Department of Natural Resources (DNR) Water Access Program Archaeological Reconnaissance Survey. In this section, the history, objectives and current structure of the program are explained. Explanations of the methods used for documentary, field and laboratory research and analysis are provided in the "Research Design" portion of this chapter.

Most of this report contains descriptions of individual projects reviewed during 1990. These descriptions are summary versions of the formal research reports prepared for each project and submitted to regulatory agencies for review. Rather than repeat identical descriptions of field methods for each project, standardized approaches are defined in this chapter. It can be assumed that they were used for all reviews unless otherwise noted for a particular project.

Each project description is accompanied by an enlarged portion of the appropriate USGS Quadrangle on which the location of the project area is indicated. More detailed maps are provided only for project areas at which cultural deposits were identified during review. The Reference Number assigned by the State Historic Preservation Office (SHPO) is included for each project, except those under the immediate jurisdiction of a Federal agency, in which case an agency identifier is provided. (If more information is needed about a particular project, copies of the original review reports can be requested from the Program Archaeologist.)

Most of the project summaries in this report describe negative surveys: those during which no cultural resources were identified. Review of these projects ended at the reconnaissance (Phase I) level. For many of these projects, DNR's planned development was completed in 1990. Some reviews resulted in identification of resources that might be affected by proposed construction. Additional research was completed for some of these in 1990; others will receive further attention in the coming field season. Final reports are also included for a few projects first discussed in the 1989 Annual Report.

This report serves, in part, to document DNR's compliance with Federal and State cultural resource management regulations. It is therefore organized to reflect the administrative structure of the Trails & Waterways Unit. Project reviews are grouped first according to the program through which they were undertaken: Water Access Program projects in Chapter II and River Recreation Program projects in Chapter III. Chapter II is further organized according to the DNR administrative region in which projects are located (see page 3). Within each region, they are presented in alphabetical order by county and project name. River Recreation projects are discussed in alphabetical order by county only. The appendices provide summaries of review results organized separately by DNR region and by county. A list of detailed legal descriptions for all projects reviewed and a master map showing approximate project locations can also be found at the back of this report. (Note: the information about site locations contained in this report is confidential, and is not intended for public distribution. It is provided solely for review and management purposes. If needed, detailed site information can be requested from the Office of the State Archaeologist.)

Program Background

The Water Access Program Survey began in November of 1985, when DNR contracted with the Minnesota Historical Society (MHS) to provide professional services necessary for cultural resource review of development projects proposed by the Water Access and River Recreation Programs. Those programs are both operated by DNR's Trails & Waterways Unit, which focuses on construction and maintenance of facilities for water recreation. Most of the work undertaken by Trails & Waterways is mandated by Minn. Stat. 86A, the Outdoor Recreation Act of 1975, which defined specific types of recreational/educational facilities that were to be developed and maintained by DNR. Between 40 and 50 water access/river recreation development projects are completed every year by this division of DNR. The majority are Public Water Access (boat launching) sites; other types of projects include shorefishing facilities, carry-in canoe accesses and campgrounds along designated state canoe routes.

Because many of these facilities are developed for use by anglers and waterfowl hunters, a portion of the funding used for access development is derived from state fishing and hunting license fees. Additional funding comes from a percentage of the excise tax on fuel used in recreational boating and other sources such as the State bonding program. However, a substantial part of the annual access development budget comes from Federal sources: the Wallop-Breaux Trust Fund, which derives from the Federal excise tax on sport fishing equipment; the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service; and U.S. Coast Guard Boating Safety Program grants. Additionally, many access development projects require Special Permits issued by the U.S. Army Corps of Engineers under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) or Section 404 of the Clean Water Act (33 USC 1344).

Because many undertakings of the Water Access and River Recreation Programs use Federal funds and require Federal permitting, they come under Federal jurisdiction for the purposes of Section 106 of the National Historic Preservation Act (NHPA). Project planning must include consideration of the possibility that a proposed undertaking will affect cultural resources. Project information must be reviewed by the State Historic Preservation Office (SHPO), a division of the Minnesota Historical Society, in order to conform to the requirements of 36 CFR 800.

State law also requires consideration of the effect that projects on public land may have on sites of archaeological, historic or cultural significance. Minn. Stat. 138.31-138.42 (the Field Archaeology Act) requires project review by the Director of the MHS and the State Archaeologist's Office (SAO) if a project will affect areas where there are known or suspected to be archaeological sites. If those sites relate to Indian history or religion, the Minnesota Indian Affairs Council (MIAC) must also be given an opportunity to comment on the proposed undertaking. Minn. Stat. 138.51-138.66 (the Historic Sites Act) requires review of projects that will affect properties designated therein as "State Historic Sites", and also directs agencies to cooperate with MHS in the "preservation of historic and archaeological sites". (Reviews required under these laws are done by SHPO on behalf of the Director of MHS.) Minn. Stat. 307.08, the Private Cemeteries Act, provides protection to human interments outside of platted cemeteries. SAO is responsible for determining appropriate preservation strategies when such interments might be affected by agency undertakings; MIAC shares that responsibility for burials that are determined to be Indian. (Appendix II contains additional information about state and Federal CRM regulations).

In order to fulfill these statutory requirements, the Water Access and River Recreation Programs established the Water Access Program Archaeological Reconnaissance Survey in cooperation with MHS. The essential objective of this program is to carry out the research necessary to meet the requirements of State and Federal law. It thus is similar in purpose to three other programs operating through the MHS Archaeology Department: the Trunk Highway, County-Municipal Highway and State Parks surveys.

The management structure and policies of the Water Access and River Recreation Programs are central to the effective operation of the review process. As funding sources have stabilized over the past 5 years, these programs have made significant changes in administrative organization, policies and operational focus. Those changes have required corresponding adjustments in procedures used to complete project reviews in an efficient manner. An overview of DNR's current policies and procedures will provide a framework for explanation of the review process as it is presently carried out.

Program Structure

Administrative Organization

Because the Trails & Waterways Unit, like the rest of DNR, places great emphasis on responding to local needs and conditions, many of its activities originate in its six Regional Headquarters. Each region is, in turn, divided into two or more "areas", each of which has an Area Office (see Figure 1). At each office there is an Area Manager who holds primary responsibility for project planning, coordinating co-operative projects and responding to public inquiries and concerns. Although DNR Central Office staff are responsible for final administrative review and funding of proposed undertakings, the Area Managers oversee the details of project planning and execution.

In order to maintain responsiveness to program needs on a state-wide basis, the Water Access Program Archaeologist works closely with Central Office staff in establishing overall review priorities and coordinating the flow of project information. However, it is the Area Managers who provide the most detailed information about upcoming projects. They frequently attend on-site meetings with the Program Archaeologist to explain proposed construction or assist with fieldwork.

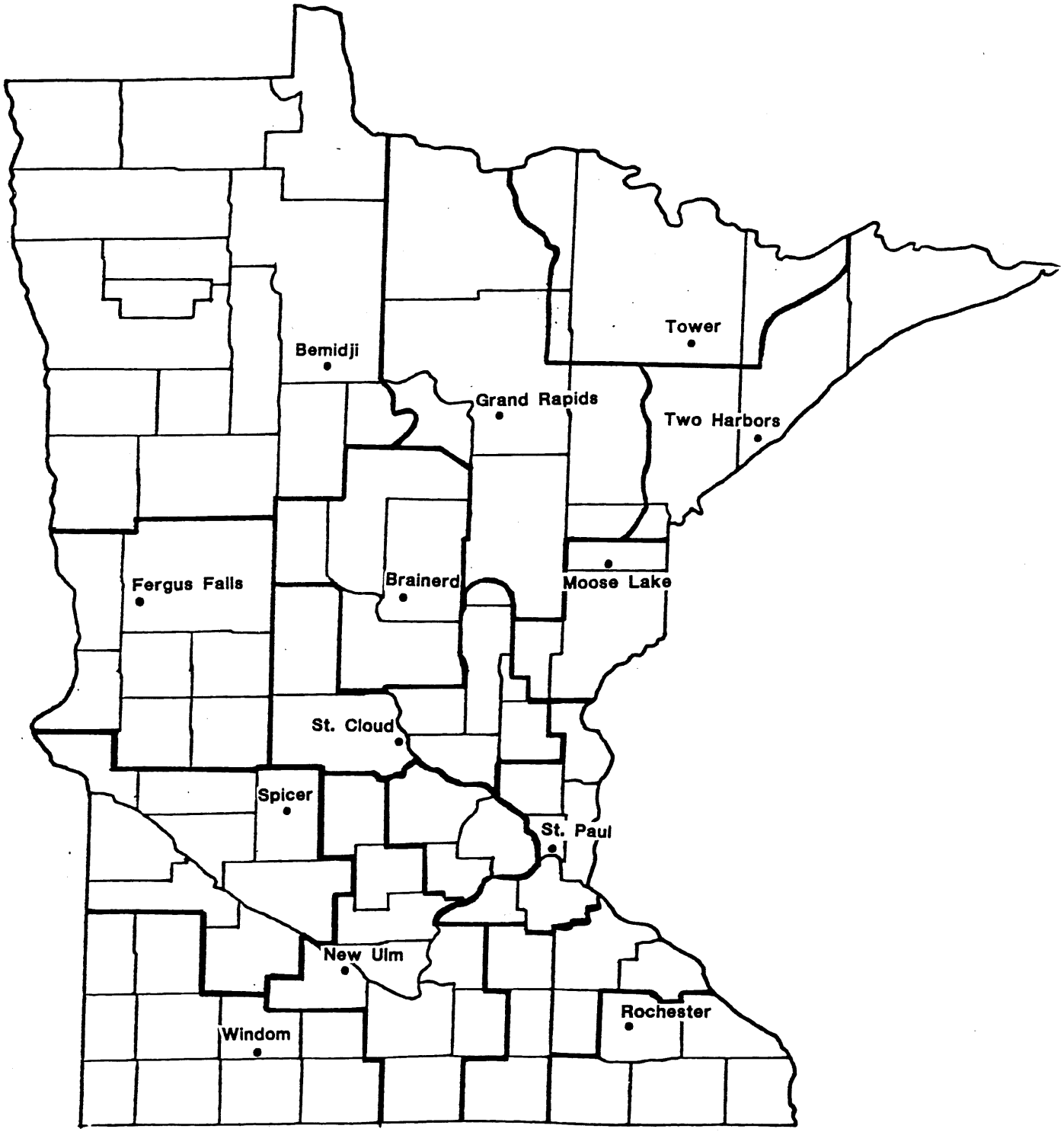
Project Types

Activities carried out by the Water Access and River Recreation Programs that are reviewed through this program fall into four major categories. For each category, there are special considerations that affect the manner in which the review process is carried out and the timeframe established for its completion.

Land Acquisition

The Trails & Waterways Unit is authorized by Minn. Stat. 97A.141 Subd. 1 to acquire lands suitable for development of water recreation facilities. This usually is accomplished by purchasing fee-simple title to appropriate lands from private owners, but may also involve a long-term lease, or cooperative agreement with another unit of government. DNR's Bureau of Real Estate Management handles the actual process of establishing purchase terms, after information about a potential acquisition is forwarded from the Trails & Waterways Unit. The specifics of the process are defined by State Statute and administrative rule; standard procedures include obtaining a formal "Option to Purchase" which is in effect for two to nine months. During this time, DNR may elect to buy the property at a specified price.

Figure 1. Trails & Waterways Unit Area Offices



This approach allows DNR time to resolve title questions, survey property boundaries, and solicit public comment on the proposed acquisition.

The Program Archaeologist receives information about proposed land acquisitions at the time they are transmitted to the Bureau of Real Estate Management. A review of available documentation about known resources and previous surveys in the vicinity is done at that time. Field review of acquisition properties is not normally done until the land purchase is completed and development design work has started. If there is a compelling reason to suspect that eventual development of access facilities will affect a site, field review may be carried out before the State takes title to the property. This provides DNR with information needed to make appropriate decisions about resource management early in the planning process.

New Development

These projects involve construction of water access facilities in a new location, often on recently purchased property. DNR's Bureau of Engineering handles project design by preparing preliminary and final plans according to a set of "typical" facility layouts of various sizes and configurations. Standard facilities for a new access include one or more concrete plank launch ramps 12' in width, gravel or bituminous-surfaced parking areas, and entry/exit roads, normally 18' to 22' wide, as needed to provide safe access to the parking and launch areas. Sizes and shapes of parking areas are quite variable, depending on property boundaries, engineering concerns and anticipated levels of usage, but generally are based on allowance of a 12' by 50' space for each car/trailer unit, plus drive lanes. Most of the projects reviewed through this program include parking areas large enough for 8 to 24 units, totaling roughly 9,000 to 30,000 square feet in size.

Information about new development projects is normally received by the Program Archaeologist in June of each year, when a proposed development schedule for the coming state fiscal year is compiled. Standard records reviews are conducted at that time, and field review schedules are determined later. Construction information is received as DNR Engineering staff progresses with design work for each project.

Rehabilitation/Cooperative Projects

Some of the projects reviewed each year involve modification or expansion of an existing water access facility, usually to improve traffic flow, reduce maintenance problems or expand capacity. These "rehabilitation" projects sometimes include acquisition of additional land in order to expand the size of a particular water access facility, or may be directed towards enhancement of facilities previously under the jurisdiction of another unit of government, a utility company or a private organization. Rehabilitation projects range in scope from minor improvements such as resurfacing to extensive re-arrangement of ramps, parking lots and roads. The larger projects often affect land areas not previously altered by access construction. Therefore, they have as much potential to adversely affect cultural resources as do new developments. They are reviewed using the same procedures as other projects.

Access rehabilitation projects are often undertaken in cooperation with another government agency, according to program policy as laid out in Minn. Stat. 86A. This coordination often takes the form of reimbursement paid by DNR to a local unit of government for access development or rehabilitation. Sometimes, it consists of establishment of a co-operative agreement for management of access facilities

located on property owned by a county, city or township. The formal agreements established for these projects generally require conformance with all applicable state regulations; cooperative projects with local governments are therefore reviewed in the same manner as other projects. DNR also occasionally enters into a cooperative agreement with a Federal agency such as the U.S. Forest Service for development of public access facilities on Federal land. Since most of these agencies have their own cultural resource specialists, project review in such cases is coordinated with those individuals.

Crew Projects

The final project category is one that constitutes a larger proportion of the program workload each year. These are "Regional Crew projects" - small-scale developments undertaken by Regional maintenance crews. This approach to access development has received more emphasis every year, in response to increasing public demand for access development. Appropriate projects for crew construction are selected and designed each year by the Area Managers, often at newly-purchased property. From an engineering standpoint, these projects are considered small and non-complex, and thus do not require detailed planning. They generally are built according to "typical" facility layouts, and can usually be planned and executed in a shorter timeframe than projects that must go through the full design and bidding process. From the perspective of cultural resource review, however, these projects have as much potential for adverse effect as do larger projects executed by outside contractors. They therefore are subject to review in the same manner as other development projects. (Since the review process is the same for new development, rehabilitation and Regional crew projects, for the purposes of this report they are treated as a single project category called "development projects".)

Review Priorities

Initial selection of each year's projects is done by personnel in Trails & Waterways' Area Offices. Lists of properties proposed for development or rehabilitation are then submitted to the Central Office in St. Paul, where the final selection of projects for the year is made. The state fiscal year (July 1 through June 30) is the basis for development schedules: projects reviewed during calendar year 1990 included both FY90 and FY91 development priorities.

The exact schedule for field review of upcoming projects is established by the Program Archaeologist in consultation with a designated individual in Trails & Waterways' Central Office. Several factors must be taken into account in determining project priorities. Since much of the design work on development projects is done over the winter months, there are usually some projects ready for construction in each region by the time fieldwork can start in the spring. These projects are given top priority for preliminary survey, if it has not yet been completed. Bidding of projects is done according to normal procedures regardless of survey status, with the understanding that construction is not to begin until field survey has been done. Contractors are not given approval to proceed with work until the Program Archaeologist has determined that the project will not affect any identifiable resources.

If records review or preliminary survey has shown that a project will affect cultural resources, the intent, if not the practice, has been to make sure that projects are not bid until appropriate additional research is done and a management plan is formulated. Better means are needed to coordinate review schedules with design and funding priorities, particularly for projects at which site evaluation research must be completed before a final determination of effect can be made.

Program Research Design

Research Objectives

The primary concern of this program is to ensure that the Water Access and River Recreation Programs are in compliance with Federal and State cultural resource regulations. Those regulations are based on the philosophy that "cultural resources" - in the broadest sense, evidence of human occupation of the landscape - are of public value, and their presence should be taken into account when public agencies plan undertakings that might affect them. These resources can take many forms: archaeological deposits, standing structures, even natural features and geographic locales can be considered cultural resources. Similarly, their value can be measured on many different scales: many are unique sources of scientific information; some are representations of our common heritage as the inhabitants of this continent; some are of value on a spiritual or cultural basis to members of particular ethnic groups; others reflect specific historic trends, incidents or individuals that are of importance in understanding the history of an area.

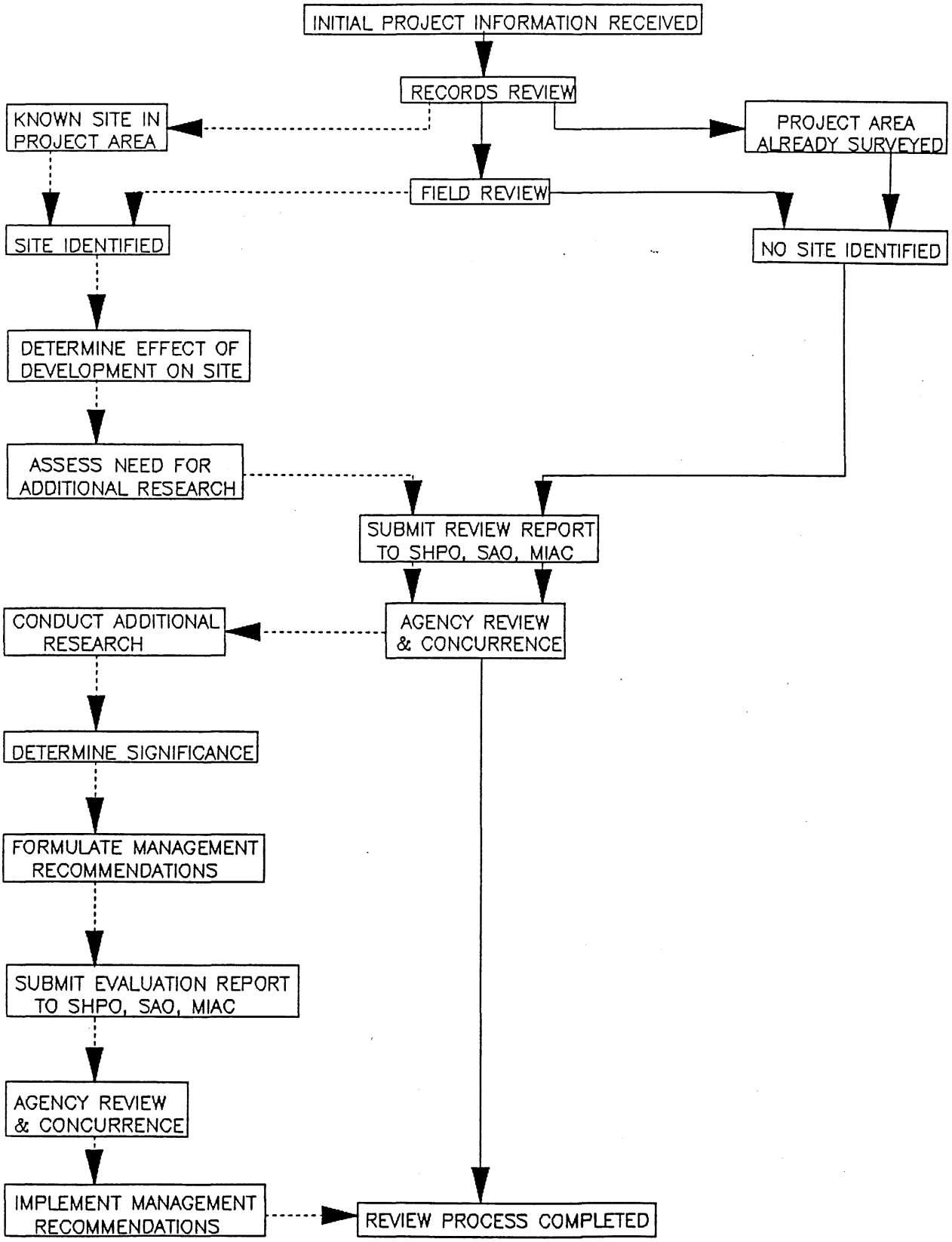
The legislation that mandates cultural resource review of public undertakings provides broad guidelines for research intended to protect cultural resources. On the Federal level, a specific phased approach is defined; it emphasizes flexibility in execution in order to be applicable to a wide range of undertakings. Since one purpose of this program is to insure compliance with the law, Federal and State CRM guidelines form the basis for the program's research design. In very broad terms, the following objectives must be met for each review (see Figure 2):

1) inventory of cultural resources present in a project area;
2) evaluation of the significance of each inventoried resource;
3) determination of the potential effect of the proposed undertaking on significant resources;
4) establishment of a plan for mitigation of effect; and
5) documentation of the entire review process and its results.

These same guidelines are applied to every project reviewed during the year. The specific research methods and management strategies that are applied do vary, however, with the nature of the identified resources and the circumstances of a proposed undertaking. An evaluation of significance may require field research, archival research or a combination of the two, depending on the nature of the resource involved. Decisions about appropriate management strategies for significant resources must also relate directly to the specifics of the proposed undertaking. At each step of the process, therefore, there are alternative paths that can be followed. Selection of the best approach to resource protection in a particular case usually requires consultation among several parties, who may hold conflicting views of what constitutes a satisfactory outcome. The crucial factors in reaching mutual agreement in these situations are flexibility and the ability to consider multiple perspectives.

Beyond the requirements of the law, there are additional principles that underlie the work done by this program. All cultural resource management activities are based on the premise that cultural resources are of public value and therefore worthy of protection. One objective of this program is to serve as an advocate for this point of view. This advocacy must be conducted within the strictures of legal, economic and political realities. However, those realities are not sufficient justification for disregard of cultural resources during project planning. Thoughtful consideration of all means of protecting cultural resources remains the

Figure 2. Cultural Resource Review Process - Schematic Representation



obligation of DNR as well as other public agencies, and it is part of this program's responsibilities to provide assistance towards meeting that obligation.

There is also a need to expand the objectives of this program beyond the requirements of law, to address the concerns of anthropological and historical research. On the Federal level, this integration of "compliance-oriented" and "research-oriented" activities is considered a legitimate part of the process, but it is often difficult to put into practice on the level of individual project reviews, particularly in small-scale programs such as this. At minimum, however, program activities should include some consideration of how the descriptive data recovered during project reviews might be used by other researchers in addressing a wide range of questions. There is an implicit obligation to make sure that program activities are conducted in a manner consistent with the standards of the discipline, that research results are understandable and accessible to other researchers, and that documentation is sufficiently detailed to serve as basic research data.

Because the aim of this program is to protect cultural resources, all methodological considerations must be based on the assumption that every project under review holds some potential to harm such resources. This is particularly important in regard to archaeological deposits, which by their nature are more difficult to identify and evaluate than other kinds of resources. The alternative, an *a priori* assumption that a particular project or set of projects will not affect any resources, cannot be justified with respect to the essential objective of the review process. It is important to remember that standard CRM field methods are a compromise between the ideals of scientific research and the realities of publicly-funded projects. They are based on statistical sampling principles, and do not provide absolute certainty that nothing of importance will be lost. They therefore should not be further compromised by inconsistent application.

It has become common for multiple-project survey programs to use intuitive judgments regarding "high-potential" areas for site location as a first step in the review process. While practical considerations often make some sort of "first cut" a necessity, this particular approach is one that should be applied only with extreme caution, and with the awareness that it increases the level of bias in the process. Proximity to water, for instance, is often cited as a critical factor in settlement patterning. While positive application of this criterion to identify high potential areas has some validity, the unfortunate tendency has been to assume that the opposite case is equally valid: that site potential decreases with increasing distance from water. This and other misapplications of probability theory occasionally are used to justify eliminating certain projects from field review, which undoubtedly has resulted in damage to or complete loss of resources in some cases.

Such "predictive models" are usually based on the assumption that our current understanding of past settlement patterns is sufficiently detailed to allow us to distinguish landscapes that are likely to contain cultural resources from those that are not. This assumption, in turn, is predicated on the belief that the current body of data about archaeological site locations constitutes a valid sample of the universe of sites. Unfortunately, this is not true. Archaeologists are very good at finding sites that are easy to find: in cultivated fields or other places where recent disturbance has uncovered archaeological materials; in areas where there has been little change in the landscape over the past several thousand years; in locations where the cultural deposit appears in the upper portion of the soil

column. We are not nearly as adept at identifying cultural deposits in locations that are less accessible and more difficult to examine. The current "sample" of sites, therefore, over-represents sites in particular landscape settings, and very poorly reflects the three-dimensional nature of site distribution. With increased emphasis on examination of a broader range of geomorphic settings in recent years, our awareness of the variability in settlement patterns has become more sophisticated. However, there is still much work to be done before we fully understand the relationships between landscape setting and site potential.

Even if it were possible to evaluate site potential solely with reference to landscape setting, an additional concern would arise from the fact that much archaeological information is of a very subtle nature. Archaeological sites reflect activities carried out on human scale, and often cannot be detected without investigations conducted on a correspondingly small scale. What may appear on a map as a low-potential area may look very different on the ground. Most available cartographic information does not provide the level of detail necessary to determine the actual nature of the terrain within a confined area, so at least a minimal level of field examination is necessary for most projects. The major exceptions to this practice are cases in which complete alteration of natural terrain can be documented, or current conditions prohibit application of standard field methods: borrow pits, artificial or "reclaimed" land, areas underneath bituminous surfacing or buildings, etc.

In a similar manner, it is not appropriate to eliminate some projects from review simply because they don't appear to have the potential to contain <u>significant</u> sites. When such an approach is taken, it is usually based on a definition of "significance" that hinges on the size or density of the cultural deposit. But these are not the only considerations in determining research potential or necessarily the most important, although our ability to interpret small, disturbed and fragmentary deposits is admittedly limited at present. Considerations such as the size of a particular project area do not provide justification for exempting the project from review. After all, the objective of preliminary survey is to <u>inventory</u> resources that might be affected by an undertaking; evaluations of significance take place at a later stage of the process.

Programs such as this one, which deal with widely scattered and usually small areas of potential effect, are limited in the extent to which they can provide detailed analysis of individual archaeological deposits. From DNR's perspective, it is usually more efficient to re-design a project to eliminate adverse effect than to provide the funding and time necessary for extensive data recovery as a form of mitigation. Thus, very few Water Access Survey project reviews lead to extensive mitigative research - to date, only two projects have been recommended for data recovery. In one case, DNR has indefinitely delayed the project, and in the other case, construction plans have been altered to completely avoid the site and thus eliminate the need for data recovery.

Since large-scale excavations are such a rarity in this program, analysis is limited to data collected during reconnaissance survey and small-scale testing for evaluation of significance. While these are legitimate processes, they do not provide samples of the full range of data classes in a given site. Information recovered from limited excavation may not be adequate to support detailed analysis of more complex topics in archaeological research such as inter-site and intra-site patterning, technological processes, dietary profiles, or relationships among site components. The data collected from project areas reviewed by this program are,

however, useful for addressing questions with a broader geographic base: temporal and cultural variations in settlement decisions, for instance, or spatial distribution of particular ceramic or lithic types. The "negative data" provided by most of the program's reviews may also contribute something to eventual refinement of the technical aspects of site identification.

Research Methods

Given the research focus described above, it is obvious that standard procedures must be applied to all project reviews, in order to maintain a reasonable level of consistency in program activities. There is a minimum level of scrutiny that must be applied to each individual project review in order to maintain any degree of confidence in the reliability of survey results. To a large extent, the methods used for project review have been dictated by current standards of professional practice and the requirements of law. The review process uses a set of general procedures that can be modified to accommodate the circumstances of each project while maintaining consistent research standards. The specifics of the process through which they are applied have been tailored to meet DNR's operational needs, but are still intended to maintain comparability to other similar programs.

Project Area Description

The first step in reviewing any project is evaluation of the physical characteristics of the project area, its present condition, land use history and the degree and nature of past disturbance. Base-line information for each project comes from Regional staff: location, legal description, current condition, ownership, and the general nature of the proposed work are all described on standard information forms forwarded to the Program Archaeologist from Trails & Waterways Central Office. Sometimes, other information such as boundary and topographic surveys or aerial photography is also available.

Additional data are then compiled for each project area, using 7.5-minute USGS Quadrangles from which topographic, hydrologic and land-use data are taken. In counties for which USDA-SCS has published detailed soil surveys, the formal soil classification for each project area is also recorded. Occasionally, another public agency has some jurisdiction over or interest in a particular project area. More detailed maps of the area or other specialized information is sometimes available from these sources, and, as noted above, the review process is coordinated with cultural resource specialists from other agencies when appropriate.

Standard physiographic and geomorphic designations are determined for each project area. Physiographic divisions follow those defined in Wright's "Physiography of Minnesota" (in Sims & Morey, Geology of Minnesota, 1972). Each physiographic subdivision represents an area of the state in which topography, drainage, natural vegetation and other surface features are more or less consistent and definable in terms of specific Pleistocene and Holocene geomorphic processes. They provide a general characterization of the landscape in a particular locality. This information, in turn, can provide insight into the potential for past human occupation of that landscape.

More precise delineations of physiographic characteristics are taken from a set of eleven publications issued between 1969 and 1981 by the "Minnesota Soil Atlas Project" undertaken by the University of Minnesota Agricultural Experiment Station. Each publication is a topographic map of a portion of the state within which "geomorphic regions" are delineated. These regions are subdivisions of Wright's physiographic divisions, defined by local relief, drainage patterns, vegetation and

soil types (see Figure 3). . Accompanying documentation defines each geomorphic region and provides summary data about Pleistocene landscape formation processes, water resources, soil types and current land use. Because they are drawn on a more detailed scale than physiographic divisions, geomorphic designations provide more exact data about the environmental nature of each project area.

Examination of available geomorphic information is relevant to two aspects of the review process. First, it aids in the selection of appropriate field survey methods by identifying locations that may require special techniques. For instance, it might be possible to identify post-Altithermal alluvial fans which may overlie older habitation surfaces, and would therefore require deep testing, which is not a standard practice in preliminary survey. Other sorts of post-Pleistocene landscape changes that relate to survey strategies or assessment of site potential can also be inferred from analysis of geomorphic information.

Second, geomorphic definition provides a starting point for interpreting whatever evidence of past human occupation might be recovered during field survey. Although many details remain to be defined, our current understanding of most past human occupations of Minnesota suggests that choices about suitable locations for a variety of human activities were usually based on specific micro-environmental criteria. Cultural variations that appear in many parts of the archaeological record can be attributed to such localized environmental features as water routes, location of lithic material sources and seasonal availability of plant resources. Therefore, an understanding of how current landscapes reflect past conditions is critical to identifying and understanding the evidence of human occupation found in different ecological settings. Admittedly, the geomorphic information used in project reviews reflects modern conditions, and must be extrapolated to define probable past conditions, but it is still the best means available for providing some environmental context during initial project review.

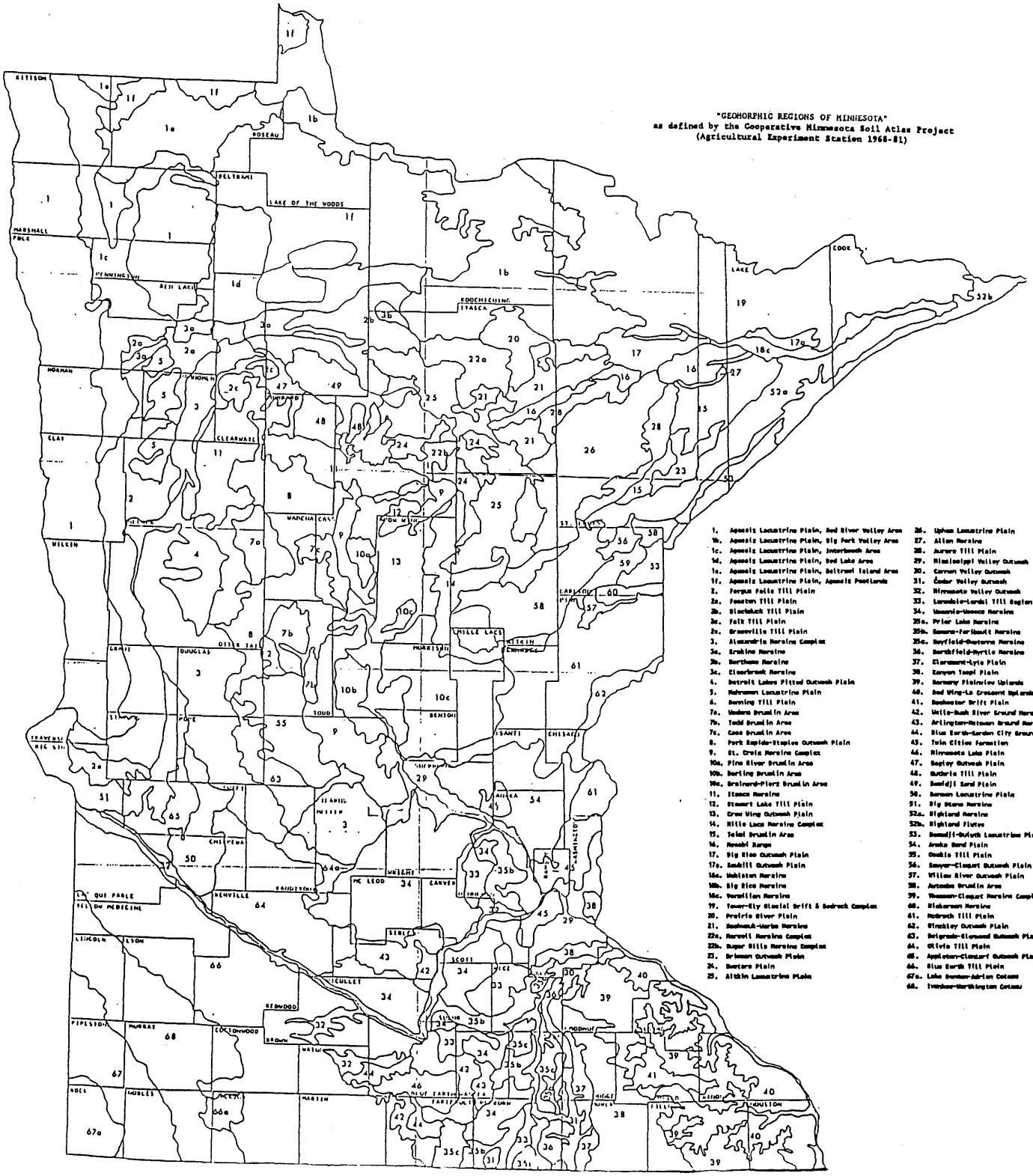
Records Review

After base-line descriptive information has been compiled for a project area, an examination of existing documentation about cultural resource research in and near the project area is conducted. This process provides a frame of reference for conducting field research and evaluating research results, and sometimes allows for immediate identification of resources that might be affected by a proposed undertaking.

The projects reviewed through this program generally involve small parcels of land, averaging about 2 acres in size, although larger areas are sometimes acquired or developed. Cultural resources, however, can only be interpreted within the context of broader settlement and resource utilization patterns. Data about resources known to be present in the vicinity of a particular project area are therefore considered during records review, even though the proposed undertaking will not necessarily have any direct effect on them.

As a practical matter, it has been necessary to restrict the scope of this aspect of the review process to a level consistent with the magnitude of potential effect for a typical project. Initial records review concentrates, therefore, on resources and research within a one-mile radius of each project area. The aims of this process are to determine, first, if there are any identified or suspected cultural resources in or close to the project area and second, if any formal cultural resource surveys have been conducted in that vicinity. At minimum, the following sources are consulted during records review:

Figure 3. Geomorphic Regions of Minnesota



- state site files maintained by SAO, which contain data about officially recorded archaeological sites;
- N. H. Winchell's The Aborigines of Minnesota (1911), which contains descriptions and maps of earthworks and habitation sites throughout the state, some of which have not been assigned official state site numbers;
- unpublished data about observed or suspected site locations that have not been confirmed in recent years, including the field notes of T.H. Lewis, Jacob V. Brower's journals, Lloyd Wilford's "County Memos", and data received from private landowners, amateur archaeologists and other informants;
- original Government Land Office survey maps and field notes or Trygg compilation maps;
- cultural resource survey report files maintained by SHPO;
- "The National Register of Historic Places: Minnesota Checklist"; and
- SHPO standing structure inventory files.

Additional sources of information may also be consulted as appropriate, including survey index lists for the Trunk Highway and County-Municipal Highway Archaeological Survey Programs, and records of the Minnesota Statewide Archaeological Survey (MnSAS). When appropriate, cultural resource inventory files of public agencies such as the U.S. Forest Service and the U. S. Army Corps of Engineers are checked. Information is often sought from other archaeologists when they are known to have a research interest in or unpublished data about a particular area.

These first steps in the review process are generally completed within two weeks of the date on which the Program Archaeologist first receives information about a proposed project. If a known site is identified that might be affected by DNR's proposed work, Area Managers and Central Office personnel are notified immediately so that they can take that information into consideration during the planning and design processes.

Reconnaissance Survey

The methods applied during this phase of investigation are based on accepted professional practices, particularly those outlined in "Archaeological Survey Standards for Minnesota" (Council for Minnesota Archaeology, 1977). Field survey is assumed to be necessary for every project unless specific information about the project area or the nature of the proposed work obviates that need. For instance, a rehabilitation project that involves only placement of new surfacing material within an existing parking area might not require field survey. Before that determination could be made, however, it would be necessary to review detailed project plans in order to verify the nature of the proposed undertaking.

The aim of this phase of review is to collect enough information about the project area to provide reasonable assurance that any resources that might be affected will actually be identified during the review process. Most of the properties developed as Public Water Access locations have heavy vegetative cover and have not recently been under cultivation, which makes the probability of identifying cultural deposits from surface manifestations very low. Therefore, shovel testing is the primary technique for reconnaissance-level field survey; surface reconnaissance provides supplementary data when appropriate. Shovel tests are a minimum size of no less than 30 centimeters square. Vertical provenience control is maintained by arbitrary levels no more than 10 centimeters in thickness; often, subsurface provenience can be determined to the closest 5-centimeter level. All excavated soil is screened through 1/4" wire mesh, and provenience of recovered

cultural materials is recorded by test number and level. Generalized soil profiles are recorded for each shovel test. A test interval of 15 meters is considered standard, but is subject to change when warranted by field conditions - verified disturbance, topographic variation, standing structures, etc.

If records review has shown that there is a known site within or adjacent to a project area and existing documentation about the site is sufficiently detailed, field survey of the project area may not be necessary. In other cases, standard reconnaissance survey may be conducted. Many sites now in the official state files were initially recorded on the basis of very limited field research. The site forms may have incomplete or incorrect locational data and little or no information about temporal or cultural affiliation. Site area definitions may simply not be detailed enough to allow for a determination of the extent to which a site overlaps with DNR's proposed construction area. In such situations, reconnaissance survey is conducted in order to confirm the presence of the site and define its boundaries in three dimensions.

Site Evaluation

If a cultural deposit is identified during records review or reconnaissance survey, a second level of review is undertaken. The first topic that must be addressed at this stage of research is the probable effect of proposed development on the site area. This question can usually be answered by reviewing construction plans or other information provided by the Project Engineer, to define the limits of disturbance and the types of land-alteration activities (clearing, cutting, filling, recontouring, landscaping, etc.) that will take place. If it is determined that the project as planned will not affect the site area in any way, a recommendation can be made that construction proceed with no additional review. Depending on the details of construction and the configuration of the site area, it is sometimes possible for the Engineer to revise construction plans so a site identified during reconnaissance survey is completely avoided. When this approach is feasible, it becomes the basis for a recommendation that the planned construction proceed according to the modified plan, with no further review.

If, however, it appears that proposed construction would have an effect on any part of the site area and there are no feasible alternatives that would eliminate that effect, research on a second topic - the nature, extent and significance of the cultural deposit - must be undertaken. Occasionally, sufficient data are recovered during reconnaissance survey to allow for detailed assessment of the site's nature, configuration, condition and research potential. For most sites, however, determinations of significance require additional fieldwork beyond the reconnaissance level.

During site evaluation, the primary sampling method is excavation of formal test units. These units are normally 1 meter square in size, often laid out and excavated in 1 by 2 meter blocks. They are excavated in 5 centimeter arbitrary levels, unless cultural stratigraphy can be clearly defined, and horizontal provenience is normally maintained by unit half. All soil matrix is screened as for shovel tests. If soil conditions warrant, water-screening may be used as an alternative method. Also, when the cultural deposit appears to contain substantial amounts of micro-remains, the excavated soil matrix may be brought into the laboratory and water-processed through geologic screens to aid recovery of very small artifacts and organic remains.

The total area excavated and the placement of individual units are determined

by reference to shovel test results, construction plans and project area topography. Generally, formal excavation focuses on recovery of a representative sample of the cultural materials present in areas that will be affected by proposed construction. Additional field methods are applied when appropriate to the nature of the site; these may include the use of ground-penetrating radar or metal detectors to "map" subsurface features, or controlled collection of surface materials in cultivated fields. In cases where human interments are suspected to be present, SAO may be asked to conduct special studies to define probable burial areas.

Documentary research is sometimes an appropriate strategy for collecting data relevant to evaluations of significance. This is usually the case when dealing with Euro-American resources, either in the form of standing structures or archaeological deposits. There may occasionally be sufficient evidence readily available in SHPO or MHS files to reach a conclusion about the value of a historic resource, but it is more often the case that other sources must be consulted. County or local historical societies are often good sources of archival data in these situations.

During both reconnaissance survey and site evaluation, test locations are mapped in the field with reference to a defined datum, either a permanent benchmark (USGS or DNR) or some other stable structure. When topographic maps of project areas are available, they are used as base field maps and all test locations are tied in to property boundaries, benchmarks and existing surface features. Locational information is transferred to final plans when they become available from Project Engineers.

Data Analysis

Artifact catalogs and curation

Cultural materials recovered from sites identified during field review are accessioned into the collections of the MHS as the property of the State of Minnesota. (Materials recovered during work done under permit from an Indian Reservation are identified as required by the terms of the permit.) Detailed artifact catalogs are generated for each collection, using the MHS catalog system. In general, artifact descriptions are based on characteristics observable in unaided or low-magnification examination. Although no formal protocol for artifact classification has yet been established for this program, certain standards have been applied as consistently as possible. At minimum, each artifact description includes an identification of raw material and a morphological classification that follows a more-or-less standardized scheme. Additional items such as dimensions, indications of use wear, intentional modifications, decorative motifs, and current condition are included if appropriate. Diagnostic artifacts are labeled whenever possible using established taxonomies, as discussed below. A standard terminological scheme is followed in artifact catalogs and also in the artifact summary lists included in this report.

Lithic raw materials are classified according to probable geological origin, whenever possible. Items that cannot be identified using available reference materials are described using general raw material categories. Many lithic materials used in traditional native technology are also known to have been thermally pre-treated to improve workability, and the physical changes resulting from that process have been defined for some of these materials. Lithic artifacts that clearly exhibit such changes are noted in catalogs as "thermally altered". Finished lithic tools, for which there is presently no standard reference for Minnesota, are classified primarily by gross morphology. Affinities to named tool

types defined in other parts of the region are noted where appropriate. Debitage is categorized by core reduction or finishing stage. Debitage classifications have been defined on the basis of several attributes, including dimensions, percentage of cortex and overall shape of the piece. Thus, a flake measuring less than 7 mm in length or width might be categorized as a "primary flake" if one surface is more than 50% cortex, or as a "secondary flake" if it exhibits scars from flake removal on more than one face and retains cortex on no more than about 20% of its surface.

For ceramic artifacts, the model contained in Anfinson (1979) and modified in more recent studies provides the basis for identification of diagnostics. Tempering material is described as "grit", which refers to crushed granite, "sand", "grog" or "shell". Many sherds, however, appear to contain quantities of more than one tempering material. In cases where the paste is tempered with very finely crushed granite or the clay included large proportions of sand, assignment to either the "grit" or the "sand" category is tentative at best - especially when dealing with very small sherds.

Similarly, descriptions of surface treatment on individual sherds should not be considered absolute, since partial reconstructions often exhibit what appear to be a variety of different surface modes on a single vessel. Recent experiments in ceramic manufacture have also shown that the conventional wisdom about the origin of certain surface treatments may be in error. It now appears that woven bags were commonly used as molds, leaving impressions on the vessel exterior that have not usually been identified as resulting from that type of technique. In the artifact lists in this report, the terms "fabric-impressed" or "net-impressed" are used to refer to sherds on which very clear warp and weft can both be distinguished. All other cases of non-smooth surfaces are classified together as "cord-roughened" (abbreviated "cr"). Decorative modes are described with reference to method of application and placement on the vessel surface. Not all available descriptive details are presented in the artifact summary lists in this report; many catalog entries include measurements such as sherd thickness or tool dimensions that have been omitted for the purposes of this report.

Floral and faunal materials recovered from archaeological contexts are identified to the level of taxonomic detail possible, using standard reference works and a comparative faunal collection housed at Ft. Snelling History Center. Special treatment for preservation of fragile items is applied where appropriate, using acrylic resin stabilizers or other methods recommended by the Society's Collections Archaeologist/Conservator.

In general, the scope of this program does not allow for application of specialized analytical techniques or detailed studies of sub-assemblages. The intent of the descriptive process is to provide enough specific information to support the conclusions and recommendations of a particular review, and to generate a database that will be available for reference or in-depth study by future researchers. When appropriate, samples suitable for soils, paleobotanical, microfaunal or radiometric analysis are collected as part of site evaluation research and are maintained in curation for possible future analysis. All materials recovered during reconnaissance survey and site evaluation are curated in the MHS archaeological collections housed at the Fort Snelling History Center.

Site description

The locations of sites identified during reconnaissance survey are defined using standard legal descriptions, usually to the closest 10-acre parcel (quarter-

quarter-quarter section). Universal Transverse Mercator (UTM) coordinates are also calculated for each site area. The vertical extent of each site is defined by subsurface artifact distribution, and is divided into separate occupation components when it is possible to do so. The types, quantities and distributions of recovered artifacts are used as the basis for functional designations.

The Federal CRM process requires each SHPO to compile a comprehensive plan to serve as a framework for identification, evaluation and management of the state's cultural resources. The plan must include definitions of "historic contexts": thematic entities with spatial/temporal boundaries that represent definable cultural units and contain specified types of "properties" (resources). In Minnesota, a draft plan that presents such a set of organizational categories for non-archaeological (mostly Euro-American) resources has been formulated, and work continues on filling in the details of each of those categories. The portion of the plan which deals with archaeological resources has not progressed as far: an initial outline of proposed contexts was completed in 1989, and is now being revised. Once it is better established, that plan will serve as a guide for description and evaluation of specific resources that can be consistently applied.

In the absence of an established comprehensive plan, temporal and cultural designations for sites identified during this program's project reviews are drawn from a model of culture history developed out of more than a century of historic and archaeological research in Minnesota and the Upper Midwest. Although the details of this model are in constant revision as new data become available, the general outline of major cultural trends it provides is useful for base-line site definitions. Under this framework, archaeological sites in various parts of the state are classified as reflecting occupations belonging to one or more of a set of major cultural traditions. This is neither the only such model in current use nor necessarily the most accurate, but it is generally accepted among archaeologists in Minnesota and surrounding states. It therefore provides some common ground for evaluations of significance relative to our current understanding of the archaeological record of the region.

Paleo-Indian

The earliest period of human occupation of Minnesota probably started just after the last retreat of Pleistocene Epoch glaciers from the region, approximately 12,000 B.P. (before present). Although Paleo sites in Minnesota are very rare, evidence from other parts of the continent suggests a cultural complex characterized by low-density nomadic populations, a subsistence strategy focused on hunting of large game animals, particularly Pleistocene megafauna, and a distinctive stone tool technology. Examples of several types of Paleo period tools have been found in Minnesota, but only in a few instances have they been in association with other habitation materials in primary deposition.

The existing body of data about the Paleo-Indian period in Minnesota is not sufficient to define either temporal or geographic subdivisions, although some temporal shift might be inferred from the climatic and vegetation successions that moved across the state at the end of the Pleistocene. Recent research in Northeastern Minnesota does suggest that the Paleo-Indian settlement was patterned by a very different exploitive scheme than later occupations. Criteria such as proximity to water that are commonly used to predict probable site locations are not necessarily relevant to the study of these earliest occupations.

Archaic

Early Holocene climatic changes created increasingly complex ecological patterns in Minnesota and resulted in some large-scale changes in the composition of biotic communities. The cultural responses to environmental change during this period included a shift in resource utilization strategies to more efficient means of exploiting a wider range of resources, more emphasis on the use of plant resources as dietary staples, and development of regional distinctions in technologies and settlement patterns. The Archaic is also defined in a negative sense, in that it marks the disappearance of the distinctive lithic technologies of the preceding period, and predates the introduction of ceramic technology to the region.

The Archaic in Minnesota appears to have had three geographic subdivisions in Minnesota, which are commonly identified by terms borrowed from other parts of the continent: Shield Archaic in the boreal forest of the far northeast, Eastern Archaic in the deciduous forest areas and Plains Archaic on the western prairies. Although beginning and ending dates for the Archaic period vary in different parts of the state, the general timeframe for this cultural tradition is roughly from 9,000 to 3,000 B.P.

Possible temporal subdivisions within the Archaic Period can be inferred from geomorphic investigations that have identified a climatic maximum known as the Altithermal which occurred during the early part of the Archaic period. This extended warm and dry episode, which peaked between 6,000 and 8,000 years ago, caused drastic changes to the landscapes created during the late Pleistocene and must have had a severe impact on human adaptive patterns as well. As the climate tempered, cultural responses once again created a new combination of adaptive strategies. As with the Paleo-Indian period, sites dating to the Archaic are rare, and much remains to be done before an accurate model of human occupation during this time can be constructed.

Woodland

The post-Altithermal Archaic period saw an amelioration of climate, and by about 3,000 B.P. the broad climatic and vegetational patterns found in present-day Minnesota were fairly well established, although there continued to be shorter-term regional fluctuations in environmental character. The cultural patterns evident in Minnesota during this time reflect a proliferation of localized adaptive strategies, the appearance of ceramic manufacture as a major new technology, and adoption of mound-building as a primary burial mode. Archaeological sites dating to the Woodland period have also yielded considerable evidence of cultural interchange between the inhabitants of Minnesota and major cultural complexes in other parts of the continent.

The Woodland Tradition in Minnesota is subdivided into a number of discrete phases distinguished from one another by different technologies, settlement patterns, and subsistence strategies. Many have overlapping temporal and geographic boundaries. Some of these cultural patterns seem to have been of limited duration, and others appear to have persisted until relatively recent times - certainly until the first appearance of Europeans in the region. Because identification of Woodland sites in Minnesota is often based on nothing more than the presence of ceramic sherds, many cultural subdivisions have been defined almost exclusively with respect to ceramic technology. Although ceramic styles are undoubtedly useful as tempero-cultural markers, this overemphasis on a single technology as the critical diagnostic is undoubtedly obscuring our understanding of the actual nature of

Woodland period occupations in Minnesota.

Mississippian

A major influence on some Woodland period cultures in Minnesota was the growth, around A.D. 1000, of a complex, state-level agricultural society in the central Mississippi River Valley. This influence is reflected in Minnesota's archaeological record in varying degrees, ranging from local adaptation of specific cultural traits such as intensive corn agriculture to the apparent participation of Minnesota populations in trade networks emanating from Mississippian urban areas in the American Bottoms. Local adaptation of Mississippian cultural traits is most directly seen in cultural complexes found in southeastern Minnesota; sites reflecting this cultural pattern are defined as belonging to the "Oneota Tradition". They date roughly from A.D. 800-900 to about A.D. 1400. Some probable Mississippian influence also appears in the technologies and subsistence strategies of central, western and northern Minnesota, although in a more attenuated form.

Middle Missouri

While indigenous cultures in eastern Minnesota changed through contact with the Mississippian state, the inhabitants of the prairie regions to the west apparently were being influenced by interaction with agricultural societies that arose on the Plains of Nebraska and the Dakotas. Specific cultural manifestations identified in Minnesota that reflect this influence include the "Great Oasis" and "Cambria" traditions. Material culture from such sites, particularly ceramic wares, reflect incorporation of Middle Missouri traits into existing Woodland technologies. Subsistence patterns also reflect an increased reliance on horticultural activities, particularly the use of introduced cultigens such as maize and squash. Bison hunting, however, appears to have remained an essential element of both subsistence and technological practices. The dates for Middle Missouri sites in Minnesota range between c. A.D. 900 and A.D. 1300.

Initial European Contact

By the 17th century, the indigenous cultures of Minnesota began to reflect the appearance of Europeans on the North American continent. New items of material culture that were introduced as trade goods gradually were incorporated into traditional technologies. The physical arrival of Europeans in the area ultimately resulted in disruption of long-standing social, technological and ideological traditions. The mechanisms and pace of these changes, which are not yet well understood, can be derived from archaeological sites reflecting both aboriginal and immigrant settlements from c. A.D. 1640 to the time of the first long-term European settlement in the early 1800s.

Post-Contact

Archaeological data that reflect Indian occupations since the 1600s or the Euro-American presence in Minnesota contain much information that is not readily available from the documentary evidence of standard historical research. Sites in this category are highly variable in form, representing as they do the wide range of settlement patterns, subsistence activities and economic strategies practiced by the state's inhabitants over the past several hundred years. Evaluation of these resources is often difficult, because with very few exceptions, they have been given little attention by archaeologists in the past.

Non-archaeological resources

Although Trails & Waterways is not actively involved in acquisition of buildings and does not have an administrative system for maintenance of standing

structures, property acquisitions do occasionally include existing buildings. In those cases, the structures are evaluated for potential significance, using the guidelines of the draft comprehensive plan for the appropriate context. Generally, structures must be more than 50 years old to be considered potentially significant, unless they possess some unusual characteristics of form or association. If a structure is determined significant, plans for treatment are formulated in consultation with the SHPO Historic Architect and Historian.

Determination of significance

When all the data about a particular site have been synthesized and evaluated, consideration is given to the possibility that the site may qualify for nomination to the National Register of Historic Places under the criteria for evaluation contained in 36 CFR 60. A crucial factor in the evaluation of most archaeological sites is "integrity", which actually refers to a set of qualities rather than a single characteristic. That which is usually evaluated first is the three-dimensional integrity of the cultural deposit: the extent to which it has (or has not) been disturbed in its vertical or horizontal dimensions by natural or cultural forces. Another important characteristic is integrity of content: many sites that might otherwise be of considerable value have been badly degraded by removal of specific artifact types by unauthorized collectors. There is also the question of integrity of location: is the deposit presently in a landscape setting that is consistent with its original point of deposition?

After questions about the integrity of the resource have been addressed, one may apply a set of formal criteria, delineated in 36 CFR 60, for determining eligibility for Register nomination. For archaeological sites, determinations of eligibility are usually based on either Criterion "A": an eligible property may be one which is "associated with events that have made a significant contribution to the broad patterns of our history", or Criterion "D": eligible properties are those "that have yielded, or may be likely to yield, information important in prehistory or history". If sufficient evidence has accumulated to support a determination of eligibility under these or other standards of significance defined for Register properties, SHPO may issue a formal determination of eligibility, at which time the same level of protection afforded to properties actually listed on the National Register of Historic Places applies. Thus far, no sites identified under this program and found to be eligible for listing on NRHP have actually gone through the entire nomination process as described in 36 CFR 60 and supporting documentation.

Although determinations of significance are sometimes oriented towards gross measurements such as site size or number of artifacts recovered, these sorts of standards are not necessarily the most important aspects of a site. There is a need to give due consideration to disturbed or small sites with sparse artifact assemblages, also. Such sites may reflect particular time periods, traditions or activities within a cultural pattern that do not appear elsewhere in the archaeological record. They may constitute important data classes, under-representation of which in site inventories could bias both theoretical and empirical studies. Dealing with such sites is usually difficult, for there are few established standards by which they can be judged. There is little precedent for declaring that they may be likely to yield important information, so they rarely are intensively investigated, and their "non-significance" thus becomes a self-fulfilling prophecy. The research potential of these resources needs to be more fully addressed in the future, particularly within the framework of comprehensive preservation planning.

For a project that involves no Federal funding or permitting, criteria for defining the significance of a resource are not well defined. State law enumerates a set of buildings and sites (the "State Register") that are specifically protected, but does not set forth detailed guidelines for evaluating the importance of other sites. (Proposed changes in Minn. Stat. 138.43-138.51 that would clarify this situation may be presented to the State Legislature in the current session.) It has been the practice in this program to use the Federal criteria as a guide to determinations of significance for non-Federal projects; in particular, Criterion "D". However, application of Federal guidelines to non-Federal projects is not strictly followed. In the Federal process, management strategies must be formulated only for resources that are eligible for NRHP nomination. Those determined ineligible qualify for no further consideration. This dichotomous standard, while a reasonable compromise between resource protection and opposing concerns, does leave many sites unprotected that are not completely unimportant. On the level of State law, the intent is clearly to compel agencies to give some minimal level of consideration to the effects of their actions on <u>all</u> cultural resources, not just those that meet the highest standards of significance. If it is possible to minimize damage to those resources within the scope of the agency's operations, every effort should be made to do so.

When a particular resource has been identified as significant, recommendations are formulated for protection of the resource or the information it contains by application of a variety of management strategies. This is done in consultation with SHPO (acting both in its Section 106 role and on behalf of the Director of MHS), SAO, MIAC and DNR. Very often, protection of a site may be accomplished by modification of construction plans to completely avoid disturbance to the site area as defined by the results of field review. When complete avoidance is not feasible, specific construction restraints may be implemented to reduce the extent of impact to the site area, often coupled with limited excavation to define the nature of cultural deposits that construction may make inaccessible for future research. If damage to a site during construction is unavoidable, a recommendation is sometimes made for recovery of site data that would otherwise be destroyed, usually by extensive archaeological excavation and application of special research techniques. Although data recovery has been recommended for a few projects reviewed by this program, none of those recommendations have yet been carried out, as noted previously. Because of the time commitment they require, it is anticipated that they will be handled through special arrangements, beyond the normal operation of this program.

Once a proposed management plan is agreed upon by all concerned parties, implementation of necessary activities is coordinated through the Program Archaeologist. This may involve monitoring of all or part of the actual construction process or making arrangements for data recovery research by other archaeologists. If a site has been determined eligible for nomination to the NRHP and there is Federal involvement in the project, review and comment by the Advisory Council on Historic Preservation are part of the process.

Review Documentation

If, for a particular project, no resources are identified during records review or reconnaissance survey, the final stage of the review process is the production of a research report which includes a description of the project area, the proposed development, the research methods applied, and a discussion of all information gathered during each stage of the review process. A recommendation is made that the project proceed with no additional review, which completes the review

process for most of the projects dealt with through this program. These reports are then submitted to SHPO, SAO and MIAC for their review. If those agencies concur with the stated recommendations, DNR is notified that project planning can proceed with no further coordination with the Program Archaeologist.

If a cultural deposit has been identified in a project area, an initial review report is prepared which includes a description of the data recovered from the site and the type of construction proposed by DNR; this information is used to support management recommendations if they are necessary. When no additional research is to be conducted, this initial project report constitutes the final phase of the review process. If site evaluation is conducted, a second report is prepared that presents the results of that work in support of a second set of management recommendations. If data recovery is recommended, the Scope of Work for that research includes a requirement for generation of a detailed formal report after completion of field research and data analysis.

Besides individual project reports, a summary report of program activities is prepared and forwarded to DNR, SHPO, the Head of the MHS Archaeology Department, SAO and MIAC each month. These reports identify project-specific review activities that have been initiated or completed during a given month. During the field season, DNR and the Head of the Archaeology Department are also provided with project status reports on a biweekly basis. These reports show what stages of the review process have been completed for each project on the current development priority list, and identify project areas for which there is some particular concern regarding potential effect on cultural resources. Copies of both the monthly reports and the project status reports are forwarded to Area Managers from Trails & Waterways Central Office. This allows field personnel to track the progress of each project and alerts them to situations that may require special attention.

Documentation of program activities also includes preparation of official records such as state site forms, National Register nominations and collections accession documents. Master lists of all projects reviewed since the inception of the Program are maintained as reference for other researchers. This information, along with original field notes, maps and photographs, is part of the permanent files of the program, which are maintained at the offices of the MHS Archaeology Department at Fort Snelling History Center.

II. WATER ACCESS PROGRAM DEVELOPMENT PROJECTS

REGION I - NORTHWEST

Becker County

Acorn Lake

(SHPO Ref. #90-2463)

Location

Northeast shore of the lake, about 2.5 miles northwest of the City of Frazee, MN (see Figure 4).

Funding/Permit Status

Development costs for this project were to be used as State match for Federal funds received through the U.S. Coast Guard Boating Safety Grant Program.

Physiographic Province/Geomorphic Region

Wadena Drumlin Area (Wright 1972)/Detroit Lakes Pitted Outwash Plain (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

Scope of Project

Development of a new Public Water Access facility at the site of a former private access. DNR planned to construct a 7-unit parking lot, ramp approach road and turn-around loop at the location of a launch site created by the former property owner. Because most of the construction area has a steep slope, the proposed work was to involve mostly cutting and filling to create suitable slopes.

Description of Project Area

DNR's property on Acorn Lake is an irregularly-shaped parcel adjacent to a township road. Most of the property is on the steep sideslope above the lake; the former owner built a road leading from the township road down the slope to the shoreline, and created a small turn-around loop and dirt launch ramp. The upper portion of the property is covered with tall grass; the shoreline is wooded.

Records Review

Previous surveys: there have apparently been no formal cultural resource surveys in the immediate vicinity of Acorn Lake.

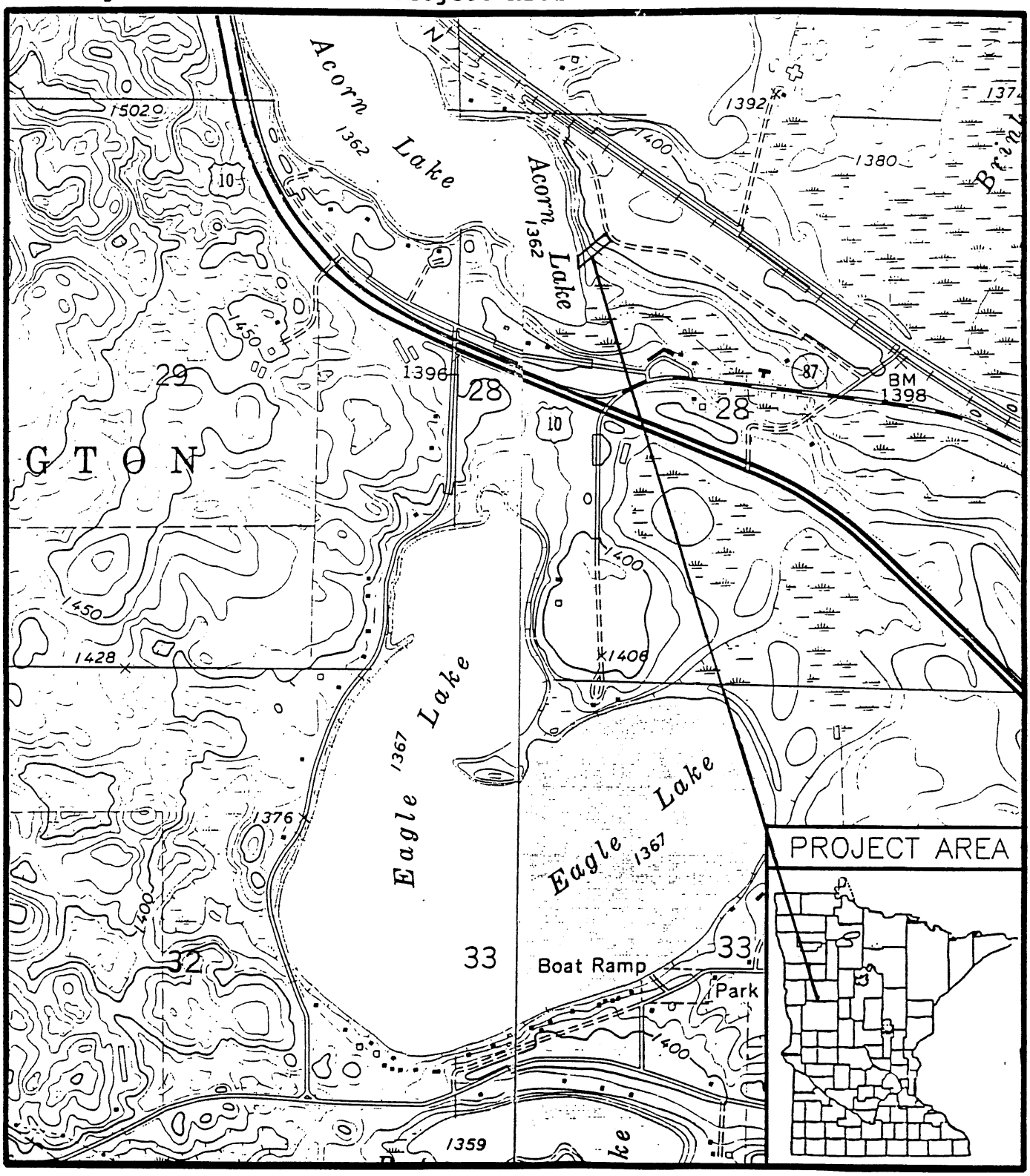
Known sites: the only known resources in the vicinity of the project area are 21BK2 and 21BK5, mound groups located on the Otter Tail River in Frazee, about 2 miles east of DNR's property.

Field Review

Methods: surface reconnaissance along length of existing road and turn-around loop; shovel tests on level portions of property.

Results: surface visibility along the existing road was fair to moderate. Cut faces about 30 cm high were visible in several locations on the slope. Most of the construction area appears to have too much slope to have been suitable for habitation; no subsurface testing was done in these areas. A few shovel tests were dug at the top of the slope and close to the shoreline on the lower part of the property. No cultural materials were found on surface or in any shovel test.

Figure 4. Acorn Lake Project Area



USGS Frazee & Vergas Quadrangles, 1973, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Management Recommendations
It appeared that the proposed project would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Pearl Lake (SHPO Ref. #90-1680)

Location
Southern shore of Pearl Lake, about 6 miles southwest of Detroit Lakes, MN (see Figure 5).

Funding/Permit Status
This project was to be partially funded through the U.S. Coast Guard Boating Safety Grant Program.

Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright 1972)/Alexandria Moraine Complex (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

Description of Project Area
In order to provide public access to Pearl Lake, DNR purchased a single lot in a recently platted subdivision that was formerly agricultural land. The property is located in an area of complex morainal topography, marked by strongly rolling hills and steep lakeside slopes. At the southwestern end of Pearl Lake, the terrain drops into a relatively level, low-lying area which contains numerous small wetlands through which the lake drains. DNR's project area is on the edge of this low area, part of which was filled by the previous landowner. At the time of survey, the property was densely vegetated with grass and brush; the only trees were located along the shoreline. Two field roads crossing the property provided the only surface visibility.

Scope of Project
Development of a new Public Water Access facility. DNR proposed to construct a 12-unit gravel-surfaced parking lot and install a single concrete plank ramp. Access to the parking lot would be provided by an existing township road. Construction was to involve mostly placement of fill on the existing ground surface, with some cutting along the eastern side of the property.

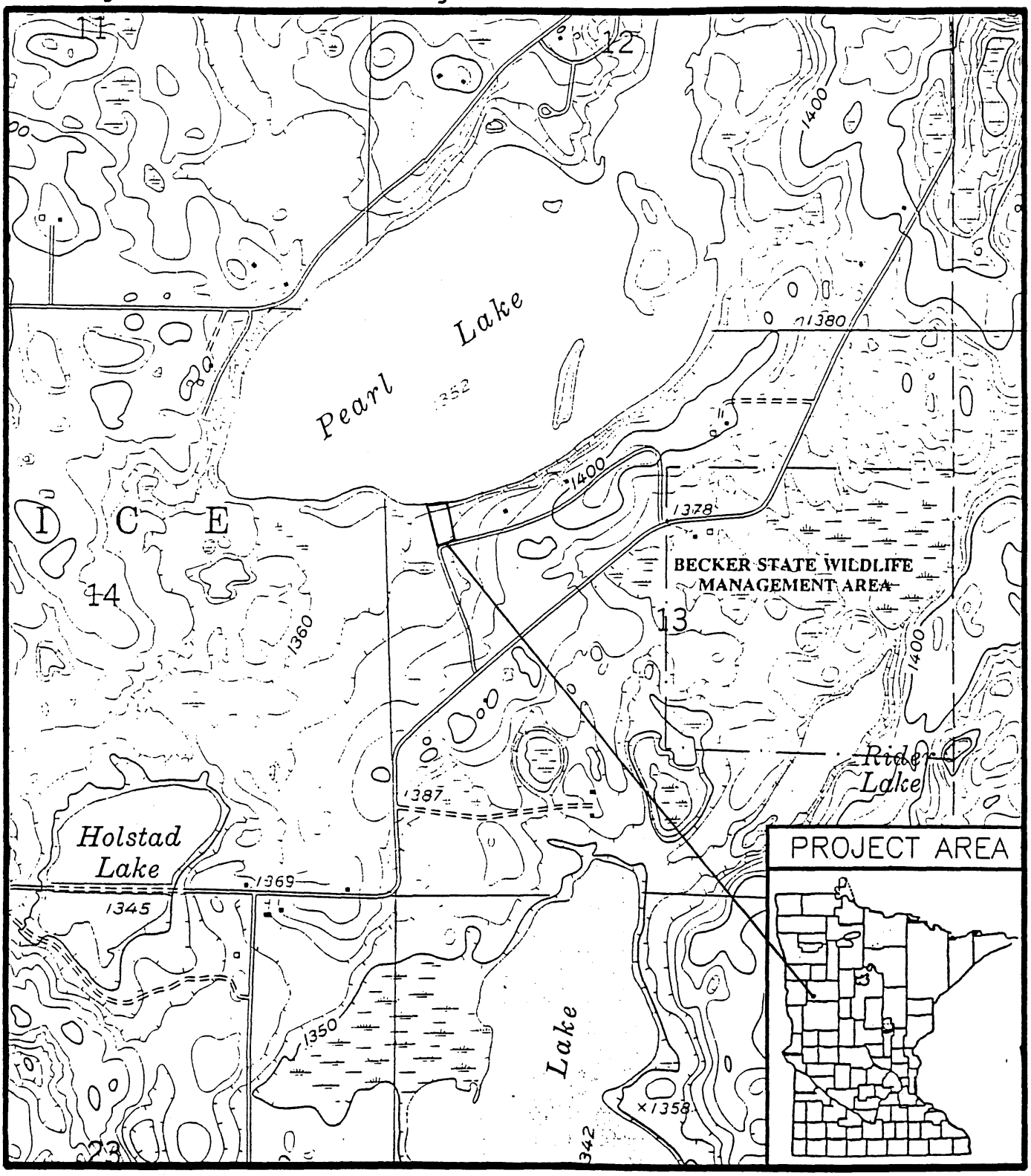
Records Review
Previous surveys: the only formal cultural resource surveys known to have been done in the vicinity of Pearl Lake were along CSAH 6, several miles to the northeast, done by the County-Municipal Highway Survey (Anfinson & Peterson 1989).

Known sites: the closest identified cultural resources are habitation and mound sites located on Lakes Sallie and Muskrat, c. 4 miles to the east.

Field Review
Methods: 15-meter interval grid of shovel tests over entire construction area; examination of surface exposures along field roads and edge of adjacent township road.

Results: soil profiles observed in shovel tests had rather erratic stratigraphy, which may relate to filling done by the previous landowner. In the majority of the tests, soils had well-developed sandy silt loam organic horizons over well-sorted,

Figure 5. Pearl Lake Project Area



USGS Audobon Quadrangle, 1982, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

slightly coarse subsoil. In a few places, strata of sandy clay or mixed gravelly clay were noted. No cultural materials were recovered from surface or any shovel test.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Douglas County

Lake Christina (21DL46) (SHPO Ref. #89-0972)

Location
East shore of Lake Christina, just north of the channel that connects Christina to Pelican Lake, about 3 miles east-southeast of the City of Ashby, MN (see Figure 6).

Funding/Permit Status
This project was to be funded in part through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Alexandria Moraine Complex (Wright 1972)/ Alexandria Moraine Area (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

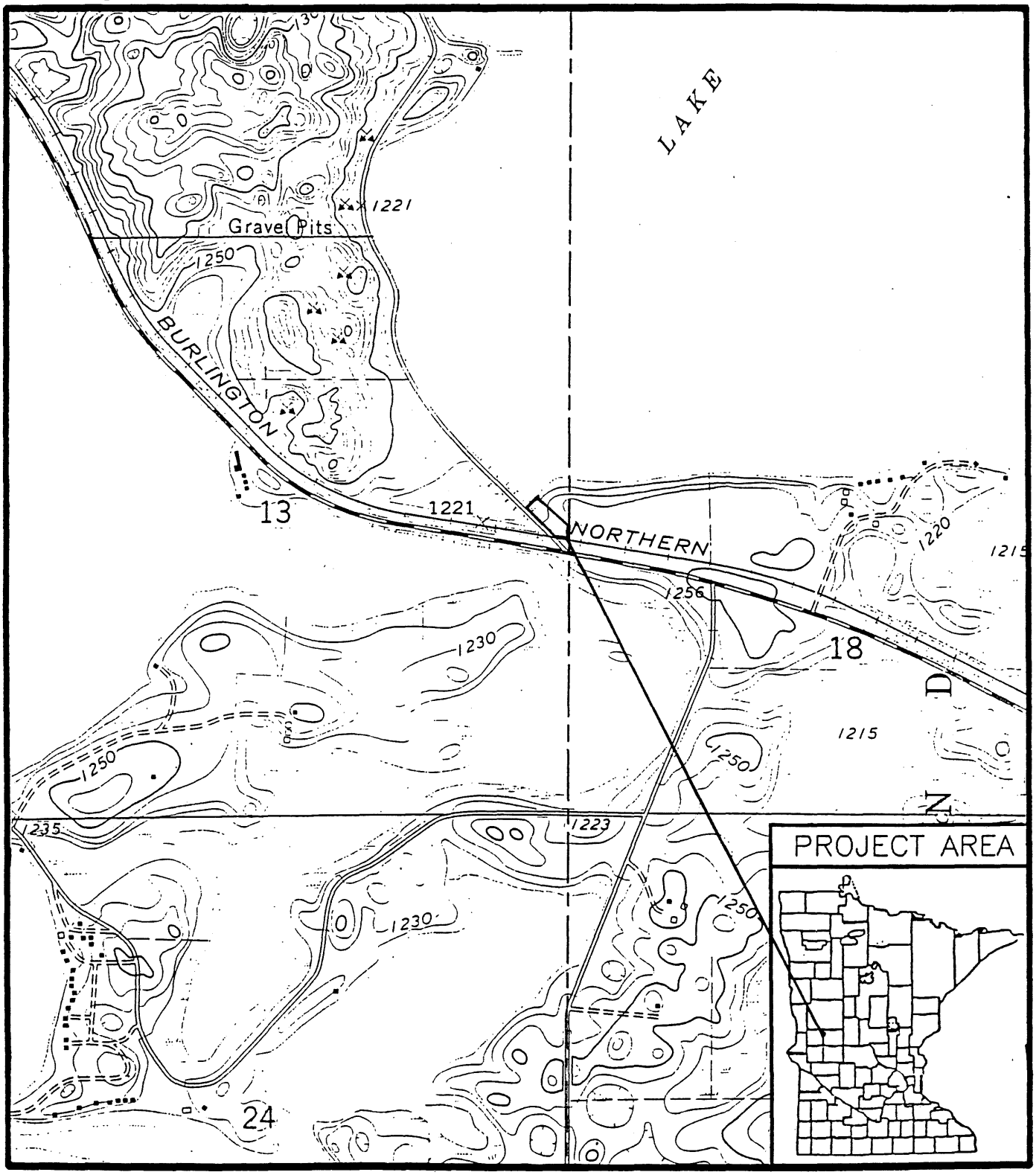
Description of Project Area
The project area is located on the margin of a level upland ridge which is bordered by steep slopes along the lakeshore. This property is part of the Gustave Melby farm, a 140-acre plot that was homesteaded in 1877 and donated to DNR-Wildlife Section in 1986 by a member of the Melby family. The land is now being managed for restoration of native vegetation and wildlife (especially waterfowl) habitat.

The property includes the Melby farmstead, located on the Grant-Douglas County line, just north of CSAH #82 (old Trunk Highway 52). When acquired by the State, there were several buildings standing in this area, including a farmhouse built in the 1920s to replace the original Melby house, a barn, silo, several smaller outbuildings, and a number of small cabins that the family would rent to hunters in the fall. All of these structures were used for practice burns by the local fire department and the remnants were razed. Poured concrete foundations remain to mark the locations of the house, barn and silo. Additional structures, mostly hunter's cabins, are marked by cellar depressions on a wooded ridge west of the house location. The farmstead is bordered to the east and south by a large field, formerly in corn, that was planted to prairie grass by DNR in early 1988.

The topography of the project area consists of complex slopes, forming a series of ridges and swales, portions of which have been altered by construction of a railroad grade and adjacent roads. The proposed construction site is a roughly triangular area in the far southwest corner of the property. It is bounded on the southwest by a township road and on the east by the farm driveway, which approximately follows the north-south county boundary.

Scope of Project
Construction of a small parking lot and launch ramp for access to Lake Christina was

Figure 6. Lake Christina Project Area



USGS Ashby Quadrangle, 1973, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

initially on the Water Access Program FY88 development list. However, before design work for the project was initiated, DNR-Division of Fisheries closed the lake to fishing for three years, so that a long-range lake reclamation project could be completed. The Water Access Program thus postponed the full-scale access development project until FY90. However, the local Sportsman's Club did offer to pay for installation of a ramp for waterfowl hunters in 1988; DNR initially agreed to do this work in the fall of that year, but never completed the installation. The development proposed for FY90 consisted of a 15-unit bituminous parking lot and 50'-long concrete plank ramp. An existing entry to the property from CSAH #82 was to be retained and upgraded.

Records Review

Previous surveys: in 1980, MnSAS surveyed several areas on the shores of Lake Christina; in 1987, SAO mapped a portion of a large burial mound group on a peninsula in Pelican Lake, just south of the project area (a portion of the peninsula is within DNR's Wildlife Management Area); limited reconnaissance survey was done in 1988 by the Water Access Program Archaeologist (Emerson 1989:37-43).

Known sites: the project area is immediately adjacent to the recorded area of **21DL46**, a Woodland habitation site recorded by 1981 by MnSAS on the basis of artifacts recovered from the surface of two cultivated fields, one of which is the field now planted with prairie grass. The other field, immediately east of DNR's property, is owned by the Palmquist family. The site area defined by MnSAS extended from the Palmquist farm on the east to the treeline along the western edge of the field on the Melby property. The materials retrieved by MnSAS consisted mostly of lithic debitage, but did include the tip and midsection of a small biface and several ceramic sherds. One of these is a very small rim segment that exhibits what appear to be very fine rectangular dentate stamps on its exterior.

Additional known sites in the area include several groups of burial mounds on both Christina and Pelican Lakes, and informant reports of habitation materials from nearby locations. Gravel pit operations on the ridge just west of the Christina-Pelican channel have yielded human remains on several occasions in the past. No authentication of burial sites in the vicinity has been done except as noted above, and none of the nearby habitation sites have received any intensive investigation.

When the Program Archaeologist was notified of the proposed access development in 1988, the Regional Wildlife Manager indicated that a local resident, a relative of the Melby family, had told him that two children had been buried on the farmstead in the late 1800s. That informant indicated that the graves were located somewhere to the west of the farmhouse, which would put them on a narrow ridge overlooking the lake.

The donor of the property (Gustave Melby's granddaughter), who now lives out of state, later confirmed that two of Gustave and Eliza Melby's ten children were buried on the farmstead. Matthew, one of a set of twins, died in 1883 at the age of four days. Another son, John, died during an 1886 diptheria epidemic, at the age of about 10 months. The donor also indicated that her recollection was that the graves were located "east of the old barn". That structure may have stood in the location now marked by a rectangular concrete slab and partial fieldstone foundation, with an attached round foundation, which would put them some distance from the proposed access construction area.

The donor also mentioned having been told that the farmstead location was once

a "meeting ground" for Indians, chosen because it provided a clear view of both Lake Christina and Pelican Lake (prior to construction of the railroad grade). She noted having found arrowheads in the farmyard on occasion. Other area residents also indicated that they had collected artifacts from this area in the past, and mentioned finding large numbers of projectile points and other lithic tools.

Field Review

1988 survey: the reconnaissance survey conducted in 1988 consisted of four shovel tests dug in the area that was to be affected by ramp installation. This locale is just southwest of the former site of three hunters' cabins, which sat at the base of the sideslope below the wooded ridge west of the house. These tests yielded evidence of recent disturbance in the form of a layer of debris, consisting of charred wood, roofing material, tin cans and glass fragments. This deposit was encountered in all four shovel tests, starting just below the present surface to depths of about 50 cm. A few artifacts indicative of a Woodland habitation component were also found in three of the four shovel tests, but all were contained within the layer of recent debris.

As part of this survey, surface reconnaissance was also conducted in the former cultivated field just east of the farmstead. DNR had disked the field and planted prairie grasses the previous spring, but the grass had not taken hold over the entire field. There were unvegetated areas scattered throughout the field, comprising perhaps 30% of its total area. These exposures were examined for cultural materials. Artifacts retrieved from surface include 3 small triangular un-notched and side-notched projectile points, 1 scraper, a quantity of lithic debitage and a few small grit-tempered ceramic sherds with cord-roughened surfaces.

Because DNR planned no further work at Lake Christina until FY90, no additional survey was conducted in 1988. After consultation with SHPO and SAO, it was recommended to DNR that the future access construction project be designed so as to avoid disturbance of both the prairie grass area and the ridge west of the farmhouse, which one informant identified as the location of the Melby family burials. (Visual examination of this area yielded no surface indications of the presence of graves. No formal effort to identify the burial locations was undertaken by SAO.)

1990 survey: the Lake Christina access development project was rescheduled for FY90, and design work was initiated during 1989. Additional reconnaissance survey was conducted in 1990 within the area that would be affected by parking lot construction. A 15-meter interval grid of shovel tests was dug in that area, starting adjacent to the entry road and proceeding towards the lakeshore (see Figure 7). Cultural materials were recovered from 6 of 11 shovel tests in this area. Vertical distribution of these materials was confined to the upper 30 cm in each location, and the maximum density for a single test was only two items (see Figure 8).

Examination of the proposed construction area indicated that portions of it have been disturbed by past construction activities. An underground telephone line runs northeast-southwest across the upper part of the proposed parking lot area. Stratigraphic variation noted in shovel tests along the southwest side of the construction area may be the result of installation of this line. The lower portion of the parcel, close to the shoreline, has been disrupted by demolition of hunter's cabins, as described above. It also appeared likely that the narrow ridge along the southern edge of the property is a remnant of a larger ridge that was cut away for

Figure 7. 21DL46 - Area Tested in 1990

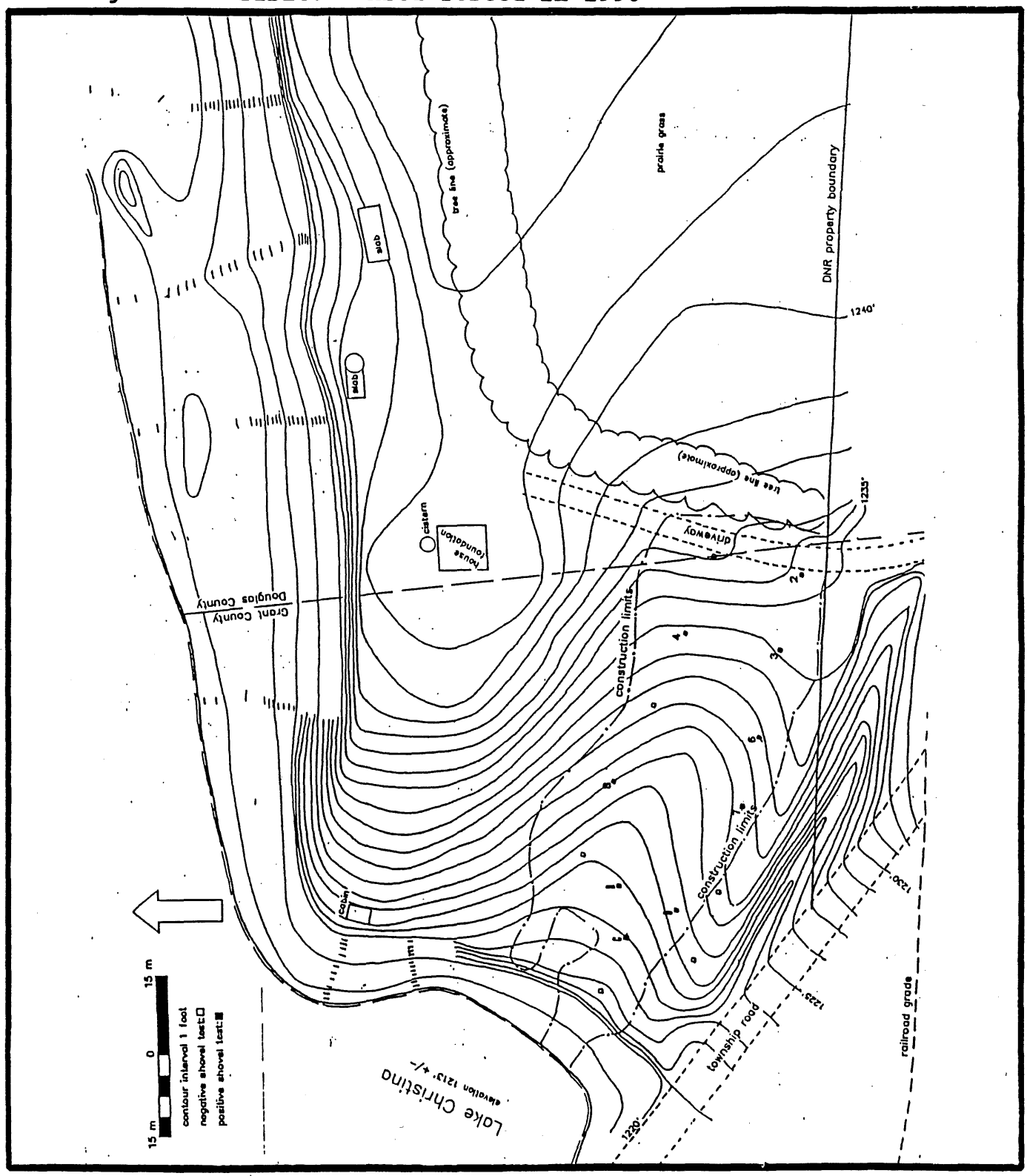


Figure 8. 21DL46 - Artifacts Recovered

1980 surface reconnaissance (MnSAS):
(as cataloged in 1981)

- 1 grit near-rim sherd, dentate stamped
- 5 grit body sherds, cord-wrapped-paddled
- 1 grit ceramic crumb
- 1 chert projectile point, base missing
- 1 chert biface
- 2 scrapers: chert, quartzite
- 55 flakes: 20 chert, 13 quartzite, 13 quartz
  fire-cracked rock observed

1988 surface reconnaissance:

- 16 grit body sherds: 8 cr, 8 exfoliated
- 1 projectile point, sub-triangular, un-notched: quartzite
- 2 projectile points, triangular, side-notched: chert
- 1 scraper: chert
- 27 shatter fragments: 9 quartz, 7 chert, 6 Swan River Chert, 3 quartzite, 1 jasper taconite, 1 chalcedony
- 5 primary flakes: 2 Tongue River Silica, 2 chert, 1 quartzite
- 13 secondary flakes: 6 quartzite, 4 chert (1 utilized), 2 Knife River Flint, 1 oolitic chert
- 29 tertiary flakes: 17 chert, 5 Tongue River Silica, 6 quartzite, 1 Gunflint Silica
- 12 retouch flakes: chert
- 1 cobble (utilized): jasper
- 1 clamshell fragment, possibly incised

1990 surface reconnaissance:

- 1 grit rim sherd: flat lip, sci on exterior of lip; interior exfoliated (very small)
- 8 grit body sherds: 6 cr, 2 exfoliated
- 1 projectile point, triangular: tan chert
- 1 scraper, trapezoidal (probably hafted): gray quartzite
- 1 scraper, turtleback, high bevel: tan chert
- 2 nodules: Swan River Chert (1 possibly thermally altered)
- 1 core fragment: Swan River Chert?
- 5 primary flakes: 2 Swan River Chert, 1 Tongue River Silica (thermally altered), 1 gray chert, 1 white chert (mostly cortex)
- 9 secondary flakes: 3 Swan River Chert (1 thermally altered), 2 quartz, 1 white chert, 1 siltstone (utilized), 1 variegated brown/red chert, 1 white? chert (thermally altered)
- 8 tertiary flakes: 3 white? chert (thermally altered), 2 jasper, 1 Tongue River Silica, 1 quartzite, 1 Swan River Chert

1988 shovel tests (ramp area):

- ST B, 30-40 cm: 4 grit body sherds: 1 cr, 1 smooth, 2 exfoliated
- 3 tertiary flakes: 1 Tongue River Silica, 1 chert, 1 quartzite
- 1 bone fragment
- 40-50 cm: 1 tertiary flake: chert
- ST C, 40-50 cm: 1 grit body sherd: exfoliated
- ST D, 10-20 cm: 2 ceramic crumbs
- 20-30 cm: 1 grit body sherd: simple-stamped?
- 1 ceramic crumb
- 1 retouch flake: chalcedony
- 30-40 cm: 2 grit body sherds: cr
- 1 ceramic crumb
- 40-50 cm: 1 ceramic crumb

1990 shovel tests:

- ST 2, 0-10 cm: 1 grit body sherd: cr
- 1 tertiary flake: tan chalcedony
- ST 3, 0-10 cm: 1 secondary flake: white chert
- ST 4, 10-20 cm: 1 tertiary flake: brown chert (thermally altered)
- 20-30 cm: 1 grit body sherd: simple-stamped (broken after recovery to 2 pcs.)
- ST 6, 0-10 cm: 2 grit body sherds: 1 cr, 1 smooth
- ST 7, 10-20 cm: 1 grit rim sherd: flat, everted lip, oblique cwsi on interior & exterior of lip; 4 nested rows of vertical zig-zag cwsi on exterior over smooth surface; cr below shoulder
- ST 8,10-20 cm: 1 secondary flake: Swan River Chert (thermally altered)

railroad grade and township road construction. The existing ditch along the northeast side of the township road appears to be much larger than is normally required for a road of this size, and may reflect removal of fill material from that ridge for construction of the railroad grade. The township road formerly followed an alignment that crossed the southeastern corner of the construction area; a portion of the course of this road can still be discerned just to the west of the existing driveway.

Additional surface reconnaissance was also conducted in the prairie grass field east of the construction area, in hopes of recovering additional diagnostic materials. Although the vegetation in this area was much denser than it had been in 1988, there were still some areas with good surface exposure. Artifacts similar to those found in 1988 were recovered during surface reconnaissance conducted on three separate occasions. Additionally, evidence of the presence of at least one human interment within the former cultivated field was noted during one episode of surface reconnaissance. A fragment of human cranium measuring approximately 3.5 cm by 4.5 cm in size was observed on the surface of a small rise near the center of the field. One edge of the fragment appeared to be broken along a suture; the other edges exhibited evidence of weathering. A second, very small fragment of cranium was noted in the same area, but no additional remains were observed. It is suspected that these remains indicate the former presence of one or more undocumented burial mounds. This field was one of the first areas cleared for planting by Gustave Melby, and thus would have been under cultivation long enough for most surface indications of embankments to be obliterated. Because of the presence of human remains, no subsurface testing was done in the prairie grass area.

Review Results

The types of artifacts recovered during the 1988 and 1990 survey work are similar to the materials recovered by the MnSAS crew in 1980. The projectile points are all relatively small un-notched or side-notched isosceles triangles, similar to types such as Madison that are associated with the Late Woodland Period. The ceramics are somewhat more difficult to classify. All of the recovered body sherds are small (less than the size of a quarter) and many are partially exfoliated. Surfaces are eroded, making it difficult to identify any diagnostic characteristics. It does appear that at least three different surface treatments are present in the assemblage: a thoroughly smoothed surface, a cord-roughened surface, and another that seems to carry impressions made by a carved paddle or stamp ('simple-stamped').

Of the two rim sherds recovered during 1990, one is very small and was not initially recognized as a rim fragment. Only a portion of the exterior surface is intact; it carries what appear to be impressions of thin, twisted single-strand cord, starting at the edge of the lip and extending obliquely downward for about 0.5 cm. The other rim is considerably larger and bears little resemblance to the first. It is of moderate thickness (average c. 0.6 cm), with a 5-cm high, slightly outflaring rim, mostly flattened but unthickened lip, and cord-wrapped-stick impressions. These impressions were made obliquely on both the interior and exterior of the lip, giving a slightly crimped appearance when viewed from above. The only other decorations are four nested rows of zig-zag stick impressions, forming continuous chevrons around the neck of the vessel. The sherd is broken at the very top of the shoulder curve, but a small portion of cord-roughened surface can be discerned in this area.

This rim sherd does not strictly conform to any presently defined ceramic type in Minnesota. It appears to have some affiliation to Onamia wares, based on the

height of the rim and the application of cord-wrapped-stick impressions on both interior and exterior to create the crimping effect on the lip. The zig-zag or chevron motif, however, is not seen in Onamia ceramics. It is more suggestive of Plains-oriented manifestations, particularly those belonging to the Middle Missouri Tradition. In Minnesota, chevron design motifs are found in Cambria and Great Oasis Wares, although in neither of these are the designs made with cord-wrapped stick impressions. (Note that Cambria ceramics have been recovered from a few sites in the general vicinity, including several sites at Lake Oscar in central Douglas County, 21GR5 on Barrett Lake in Grant County, and 21SW5 on the Pomme de Terre River.)

The presence of this sherd thus suggests an occupation episode at Lake Christina by people with some affiliation to the Middle Missouri Tradition. It has been suggested by several researchers that one might expect to find extractive camps reflecting Middle Missouri connections all along the prairie-woodland interface in the western part of the state. Given the position of this site near the head of the Pomme de Terre drainage, communication between the Lake Christina area and Middle Missouri manifestations of the Prairie Lakes region in southwestern Minnesota could not be considered unlikely.

Management Recommendations

Based on the results of field survey, the original definition of 21DL46 can be expanded to include the entire area north of CSAH #82 from the Palmquist farmstead on the east to the shore of Lake Christina on the west. The site appears to include at least 4 discrete components:

a) Native American habitation, tentatively identified as dating from the Middle to Late Woodland periods, and possibly associated with Plains Village traditions, represented by habitation debris found in surface and subsurface contexts (surface distributions in particular suggest that there may be a number of definable occupation or activity loci within the larger site area);

b) Euro-American habitation, dating between 1877 and the 1970s, represented by structural remnants and sheet midden;

c) one or more undocumented burial mounds, evidenced by human skeletal material observed on the surface of a field to the east of the proposed construction area; and

d) two Euro-American burials, circa 1883 and 1886, probably located on the eastern side of the farmstead property, the presence of which was indicated by a local resident and verified by the donor of the property. (A revised state site form reflecting this information has been submitted to SAO. The portion of the site that is in Grant County has been subsumed under the existing Douglas County site designation.)

Although disturbed by a variety of recent activities, the Woodland Period habitation components at this site may hold some research potential, particularly in light of the possibility of illuminating the extent of Middle Missouri influence/interaction in the moraine area that forms the eastern edge of the prairie in west-central Minnesota. The presence of burials outside platted cemeteries also brought the site under the jurisdiction of the State Archaeologist's Office and the Minnesota Indian Affairs Council for the purposes of Minn. Stat. 307.08. In order to protect habitation data from undue disruption during construction of the proposed access facility, and to ensure that the requirements of 307.08 are met, a series of construction restraints and management approaches were formulated and it was recommended that the project proceed contingent on execution of a set of specified actions. In general, the recommendations focused on restricting all construction to

the swale area tested in 1990, with ground-disturbing activities to be closely monitored by the Program Archaeologist. The Area Wildlife Manager was also notified of the presence of one or more human burials within the prairie grass area. He indicated that current management plans called for a second planting of grass within the next several years. However, this plan could easily be modified to create a set-aside area that would be left undisturbed. He is aware of the need to consult with SAO and MIAC before any formal plans for vegetation management are formulated.

Construction of the Lake Christina access took place in August of 1990. The Program Archaeologist monitored almost the entire project, and was given the opportunity to examine the project area for possible burial or habitation features after vegetation was removed. A few artifacts related to the cultural deposit already identified were found along the edges of the construction zone; there was no indication that the work disturbed any significant artifact deposits, features or burials.

Lake Mary/South (SHPO Ref. #90-1575)

Location

South shore of Lake Mary, about 6 miles southwest of the City of Alexandria, MN (see Figure 9).

Funding/Permit Status

This project was to be funded in part through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region

Alexandria Moraine Area (Wright 1972)/Alexandria Moraine Complex (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

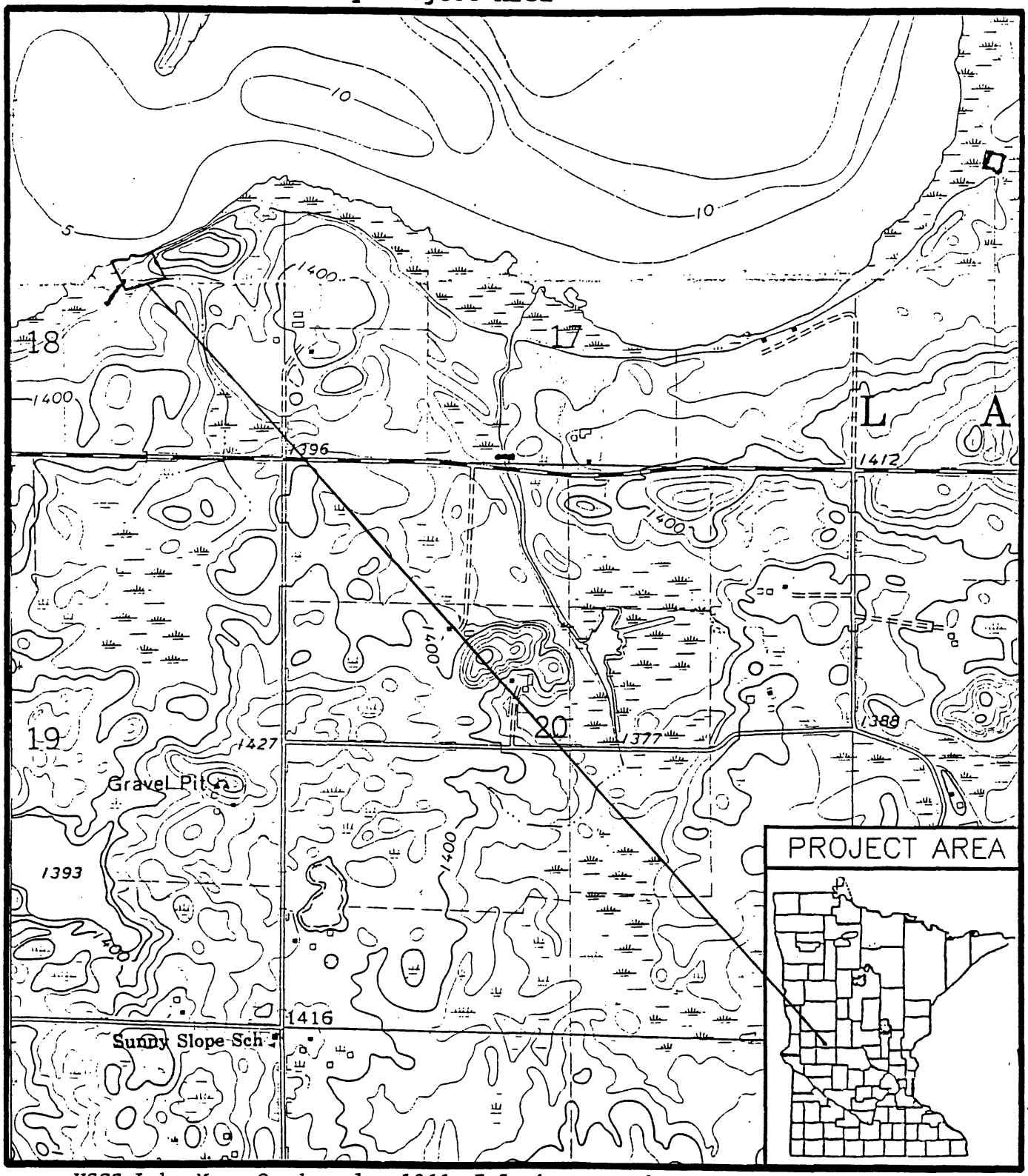
Description of Project Area

DNR has operated a Public Access facility at the north end of Lake Mary for some years. However, a recent drop in the lake level has rendered that access unusable. In 1989, DNR purchased two lots in a recently platted subdivision at the south end of the lake in order to construct a new access. The property has a c. 3'-high ice ridge running the length of the shoreline. On the westernmost lot, the ground is low-lying and slopes down into a wetland bordering a small drainage. On the eastern side, the terrain rises to a glacial ridge that crests about 16' above the current lake level. At the time of survey, the entire property was overgrown with tall grass and brush. The very northern edge was being kept mowed by the adjacent land owner, who had also put in a small garden plot on the edge of the property. Several piles of concrete rubble and a concrete slab foundation from a summer cabin were still in place on the property.

Scope of Project

Development of a new Public Water Access facility. DNR planned to construct an 18-unit parking lot and concrete launch ramp that would allow access to the southern part of the lake, which has suffered a substantial drop in water level in the past three years. Part of the proposed parking lot would be in low ground that is intermittently saturated; work in this area was to involve placement of fill over filter fabric. Along the northern side of the parking lot, the proposed work would require cutting into the toe slope of a glacial ridge that runs parallel to the lakeshore.

Figure 9. Lake Mary Project Area



USGS Lake Mary Quadrangle, 1966, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Records Review
Previous surveys: the closest known research in the vicinity is the Trunk Highway Survey review of a proposed TH #27 upgrade which included survey of the highway corridor at the north end of Lake Mary, conducted in 1990.

Known sites: there are several recorded archaeological sites on Lake Mary: 21DL55, DL56 and DL57, identified in 1981 by MnSAS, are located on the west and southwest shores of the lake. Additional sites were identified in 1990 by the Trunk Highway Survey at the north end of the lake; evaluation of these sites is pending.

Field Review
Methods: 15-meter grid of shovel tests in proposed construction area. Surface exposures along the shoreline were checked; the surface of the garden plot along the property line, which had not been recently tilled, was also examined.

Results: On the higher ground, soils were well-developed sandy clay loams with high proportions of coarse glacial materials. In the lower portion of the project area, this changed to a very mucky clay loam with very little coarse-grained material. On the lakeward side of the ice ridge, a thin loamy sand horizon overlay clean sand and beach sediments. No cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Otter Tail County

Lake Anna (SHPO Ref. #90-1574)

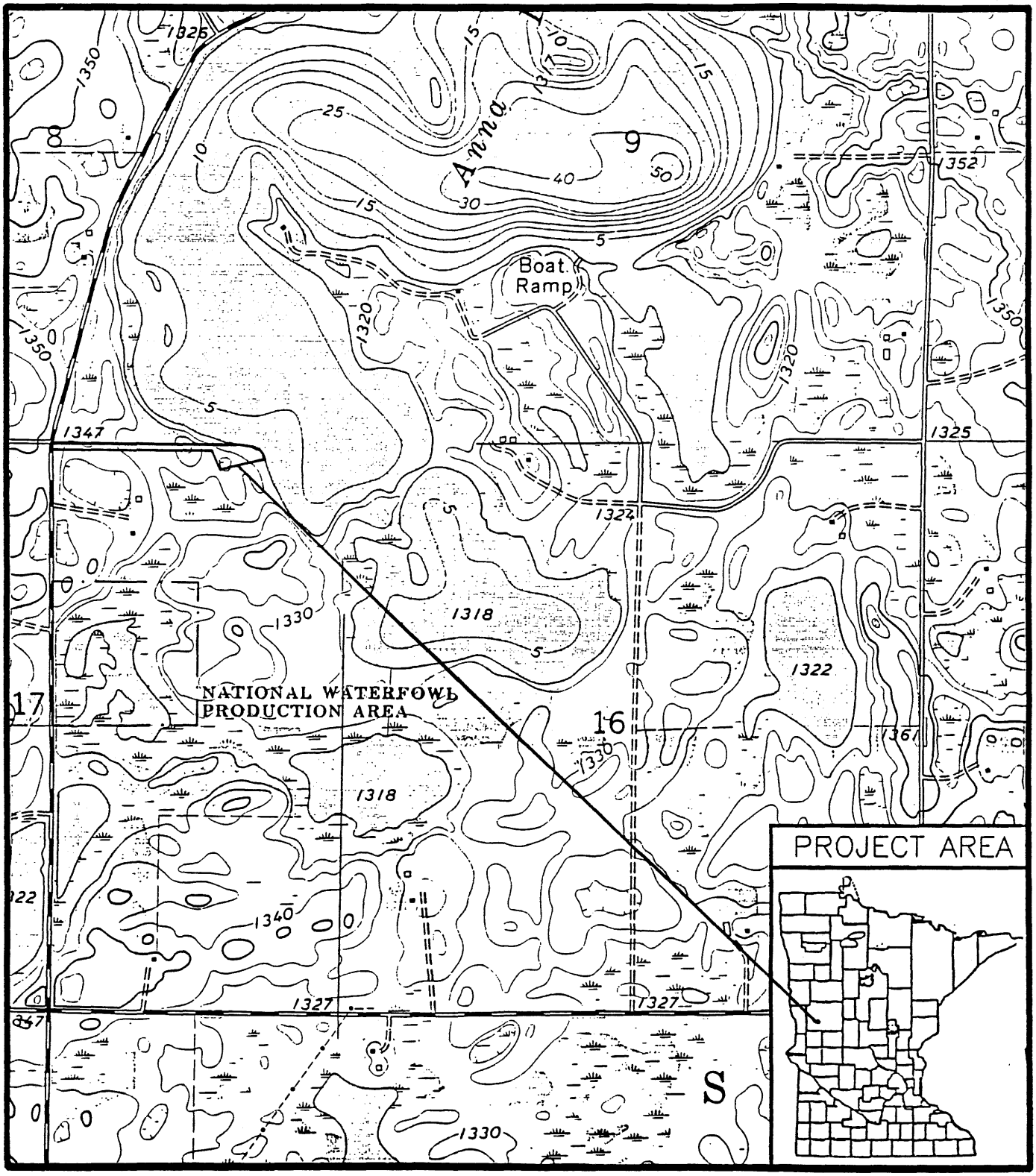
Location
West shore of the lake, about 3.5 miles north of the City of Underwood, MN (see Figure 10).

Funding/Permit Status
This project was to be funded in part through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. The work also required a Special Permit from the Corps of Engineers for filling of a wetland.

Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright 1972)/Alexandria Moraine Complex (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

Description of Project Area
In 1989, DNR purchased a parcel of agricultural land on the shore of Lake Anna and secured a road easement connecting that parcel with north-south CSAH #35, which is located about 1/4 mile west of the lake. This road easement crosses a series of ridges and swales. The lakeshore parcel is characterized by an abandoned ice ridge, about 3 meters back from the current shoreline, which separates the lake from a small wetland area. The surrounding terrain, which is all cultivated, is moderately rolling.

Figure 10. Lake Anna Project Area



USGS Underwood Quadrangle, 1973, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Scope of Project
Development of new Public Water Access facilities. Construction plans called for a 13-space parking area, concrete plank ramp, and approximately 1400 feet of new entry road. Road and parking lot construction was to involve both cutting and filling; a small (Class I) wetland in the center of proposed parking area was to be filled.

Records Review
Previous surveys: there apparently have never been any formal cultural resource surveys in the vicinity of Lake Anna. Segments of CSAH #35 have been examined by the County-Municipal Highway Survey, but these have all been 5 miles or more from Lake Anna.

Known sites: the only known cultural resource in the general vicinity of Lake Anna is 21OT54, which is located on Norway Lake, about 3 miles south of DNR's property.

Field Review
Methods: 15-meter interval shovel tests along the crest of the ice ridge in parking lot area; surface reconnaissance along new road alignment and field edges adjacent to the construction area.

Results: surface reconnaissance was conducted the day after a snowfall, when all snow cover had melted. Part of the road easement and some fields near the lakeshore had been recently tilled; surface visibility was fair to moderate. In shovel tests, soils were uniformly coarse-textured very sandy loams over beach sediments and glacial till. The ice ridge has been stable long enough to develop a recognizable organic horizon. No cultural material was found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Big Pine Lake (SHPO Ref. #90-2001)

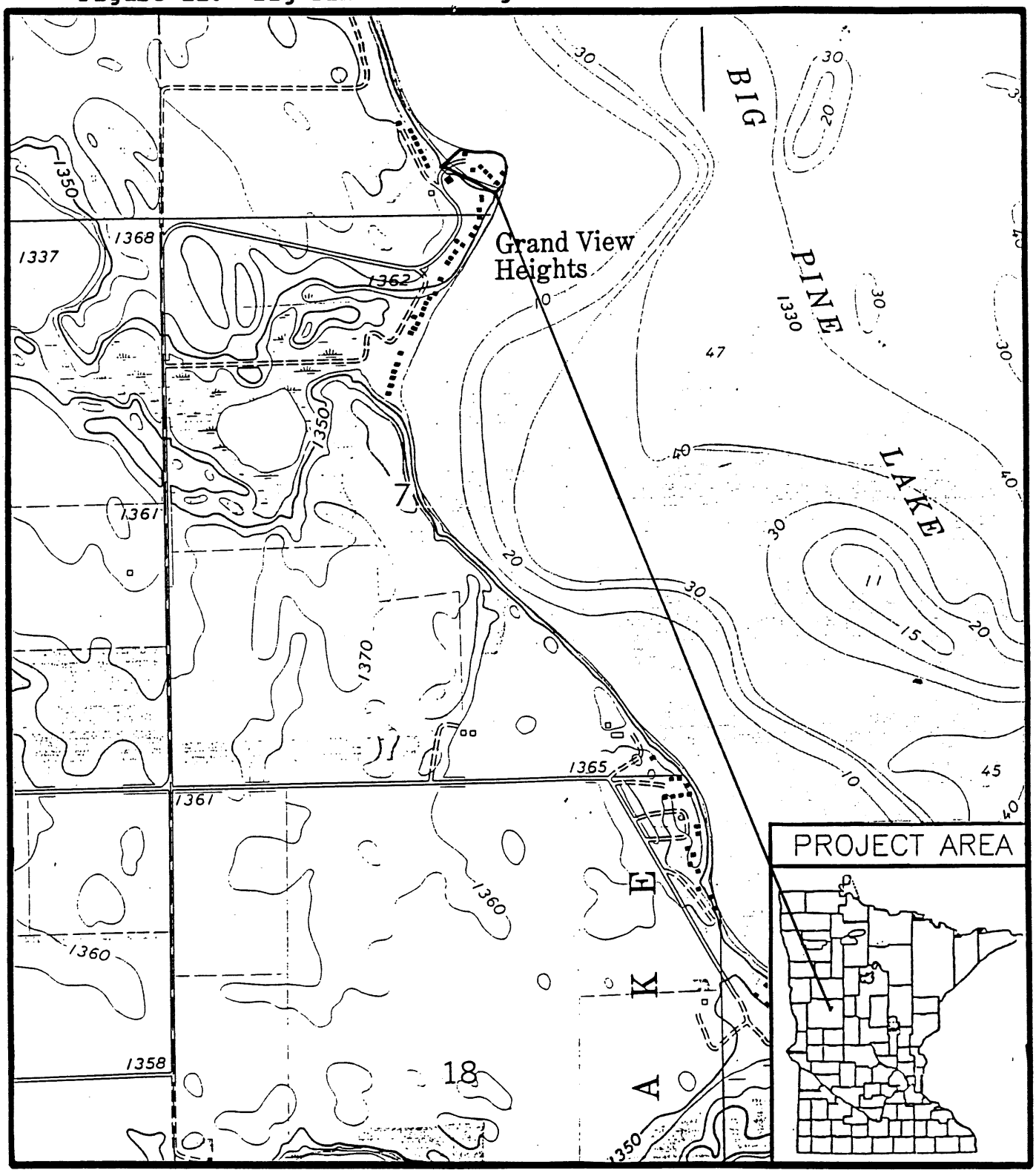
Location
West shore of Big Pine Lake, about 3.5 miles north-northeast of the City of Perham, MN (see Figure 11).

Funding/Permit Status
This project was to be funded in part through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright 1972)/Detroit Lakes Pitted Outwash Plain (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

Description of Project Area
In 1988, DNR purchased a portion of the former Grandview Lodge Resort on Big Pine Lake for access development. The resort property includes a low point of land along the lakeshore where a number of rental cabins, an office, shop, fish house and underground fuel storage tank were located, and a level upland terrace about 25' above the current lake level. This terrace, which is bordered by very steep slopes, is the site of the resort lodge, several additional cabins, and was also the location of a dancehall that was moved to the County Fairgrounds in 1988. The lodge

Figure 11. Big Pine Lake Project Area



USGS Perham Quadrangle, 1973, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

went out of business in 1982, and the property has been unused since then. At the time of survey, the entire property was overgrown with grass and brush.

Scope of Project
Development of new Public Water Access facilities. DNR proposed to construct a 22-unit gravel-surfaced parking area, entry road, turn-around loop and double concrete ramps. Because the construction area is on low ground, most of the work was to require placement of fill. Some cutting would be needed to create a new entry road leading to the parking area from an adjacent township road.

Records Review
Previous surveys: no evidence was found that there have been any formal cultural resource surveys in the immediate vicinity of this project area.

Known sites: there are a number of known cultural resources on Big Pine and adjacent Little Pine Lake, including an unplatted cemetery (21OT2) and several habitation areas. The Trygg compilation of original land survey information also shows an "Indian Village" immediately adjacent to the project area. The surveyor's notes for this township include the comment "There is an Indian village on the lake in Secs. 6 & 7..." The notes also mention a cultivated field intercepted while running the line between Sections 6 and 7. The recorded distances from the section line and the surveyor's rough map indicate, however, that the field was located on the upland, with the village to the west of it, at least 600 feet west of the shoreline. This would put them both on private land, probably in what is now a large corn field, some distance from DNR's proposed construction area.

Field Review
Methods: 15-meter grid of shovel tests in construction area on lower terrace; examination of surface exposures along dirt road and shoreline.

Results: the construction area is located on the low ground adjacent to the lakeshore. It includes the former sites of seven cabins, apparently built in the 1930s or 1940s, which were demolished just after DNR purchased this property. Concrete block outlines and debris piles mark these structure locations. Three other buildings were located along the western edge of the property; concrete slab foundations and an underground gasoline storage tank are still in place in this area.

Shovel tests in the construction area showed that much of this area has been filled and otherwise disturbed, undoubtedly in connection with construction of the resort cabins. Soil profiles were reasonably consistent, exhibiting c. 1' of coarse fill material over beach sediments in most places. Other than surface debris from the cabins, no cultural materials were found in the construction area.

Management Recommendations
Subsurface testing of the proposed construction area failed to locate any evidence of significant cultural resources that might be affected by access development. However, the Grandview Lodge itself, which is situated on a terrace overlooking the construction area, may be of some historic significance. According to the local historical society, this resort business started in 1892, making it one of the earliest such operations in the Perham area. The main lodge building has deteriorated badly since the business ceased operation. It is subject to frequent vandalism, but might still have some potential for rehabilitation and re-use. At present, DNR has no plans to do anything with the building. Area staff are aware

that the Program Archaeologist must be notified if any plans are formulated to do additional work that might affect the building. Given that condition, it was recommended that the project proceed as planned with no additional review.

REGION II - NORTHEAST

Cass County

Lake Winni/Richards Townsite (USFS)

Location
South shore of Lake Winnibigoshish, about 3 miles west-northwest of Bena, MN (see Figure 12).

Funding/Permit Status
This was a co-operative project between DNR-Trails & Waterways Unit and the U.S. Forest Service. The project area is Federal property; cultural resource review was undertaken by Chippewa National Forest.

Physiographic Province/Geomorphic Region
Bemidji Area (Wright 1972)/Aitkin Lacustrine Plain (Minnesota Soil Atlas Project, Bemidji Sheet, 1980)

Description of Project Area
The project area is located in moderately rolling sand plain. The Forest Service developed a small campground and boat launching facility here some years ago; the access consisted only of a dirt ramp where the campground road dead-ends at the lakeshore.

Scope of Project
DNR proposed to move the launch area south along the shoreline, install a double concrete ramp, and build a 20-unit gravel-surfaced parking area. The existing entry road was to be upgraded by widening and resurfacing for a distance of approximately 4,800 feet.

Review Summary
This project was reviewed under the direction of the Chippewa National Forest Archaeologist. A Woodland Period cultural deposit was identified, which overlapped with the area to be disturbed by construction. Evaluation of this site and mitigation were conducted in 1989 and 1990. Mitigation activities included monitoring of construction. Additional information about this review can be requested from the Chippewa National Forest Archaeologist (Forest site #0271).

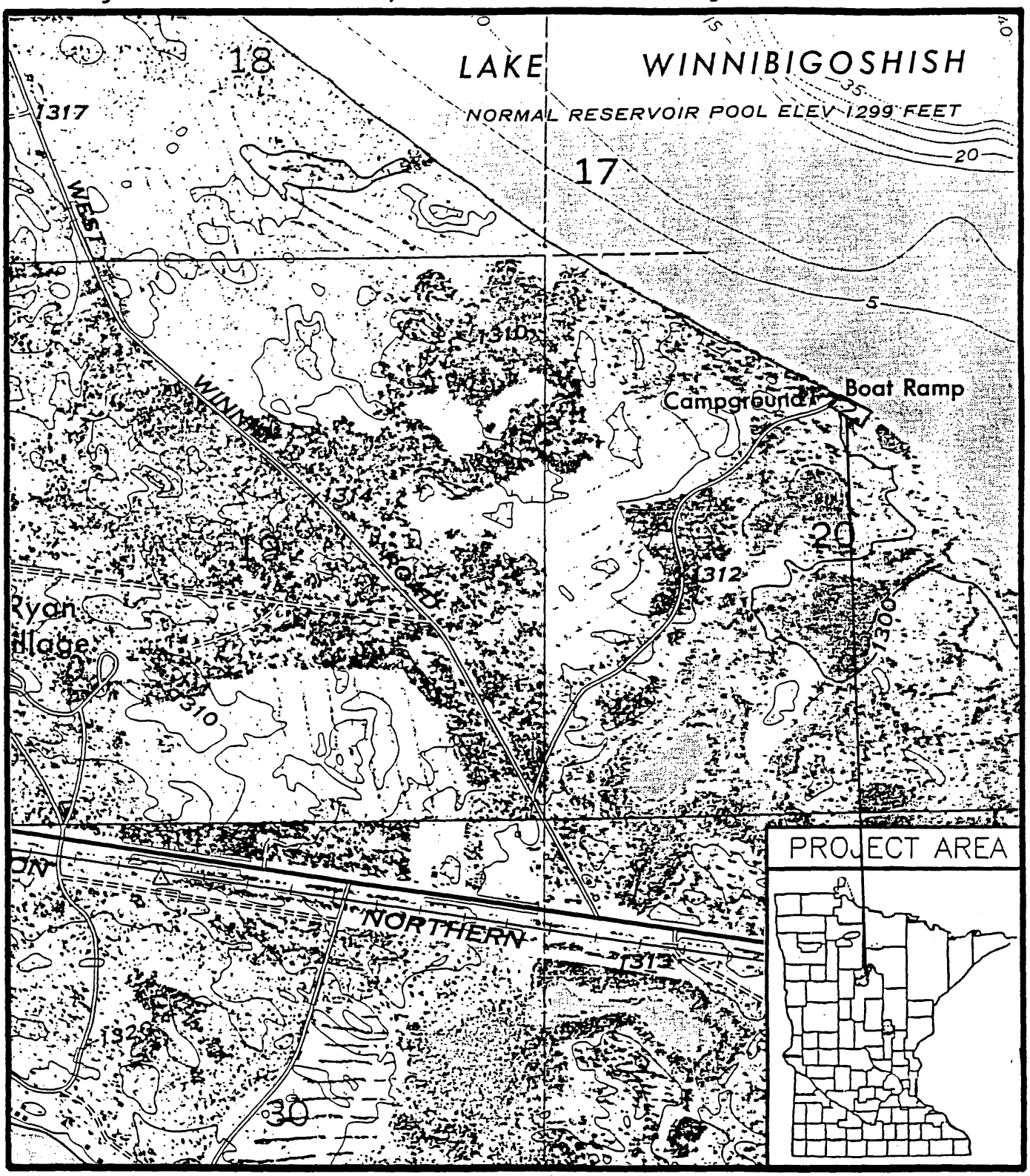
Itasca County

Bowstring Lake/South (SHPO Ref. #90-2568)

Location
South shore of Bowstring Lake, about 15 miles north-northeast of the City of Deer River, MN (see Figure 13). [Note: this property is within the boundaries of the Leech Lake Reservation. Archaeological survey was conducted under the terms of a Reservation permit.]

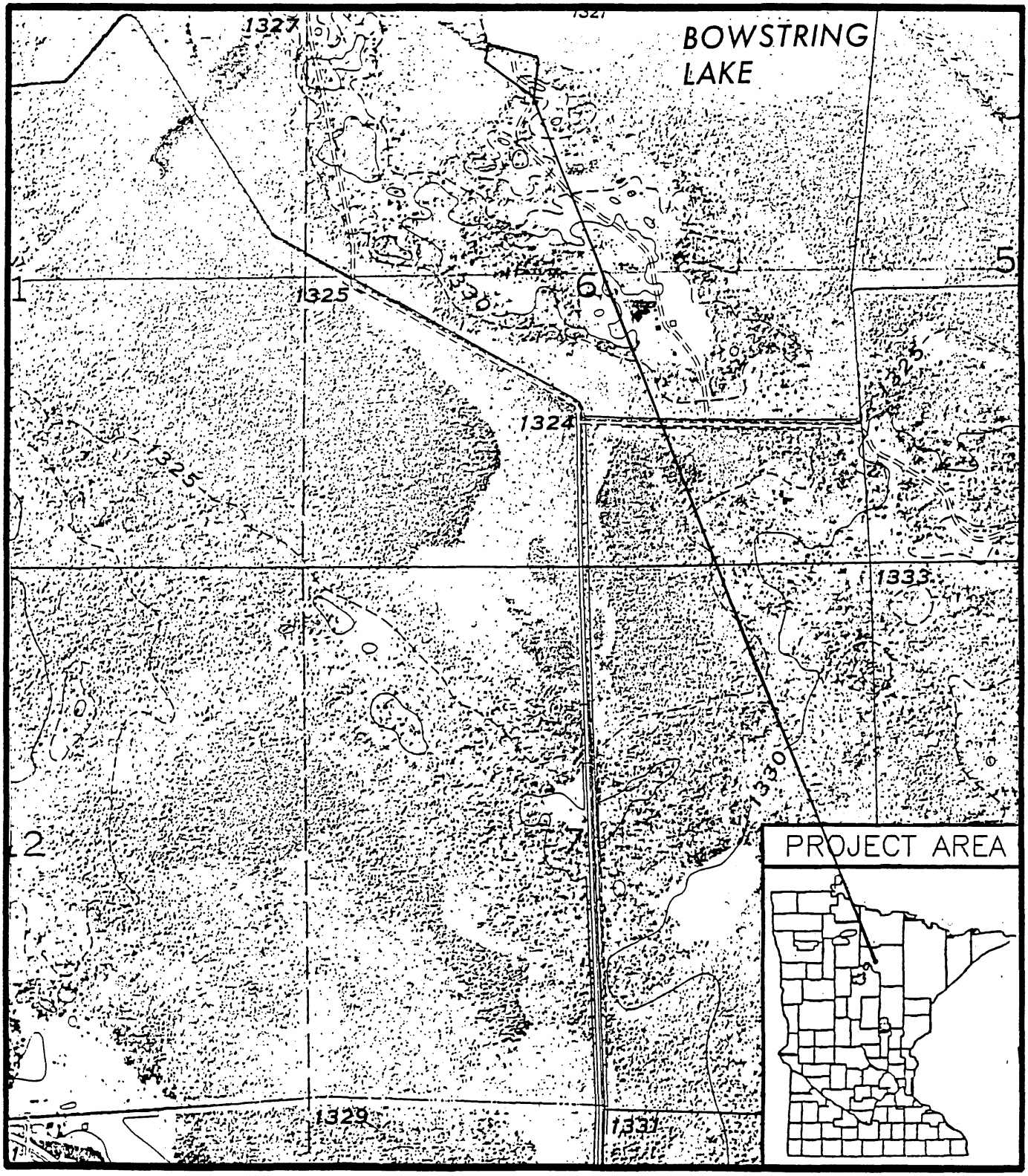
Funding/Permit Status
Development costs for this project were to be used as State match for Federal funds received through the Federal Aid in Sportfishing Restoration Fund administered by

Figure 12. Lake Winni/Richards Townsite Project Area



USGS Portage Lake & Bena Quadrangles, 1971, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Figure 13. Bowstring Lake/South Project Area



USGS Bowstring Lake Quadrangle, 1970, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Glacial Lakes Upham & Aitkin (Wright 1972)/Aitkin Lacustrine Plain (Minnesota Soil Atlas Project, Hibbing Sheet, 1971).

Description of Project Area
The project area is the location of an existing DNR Public Water Access, reached via about one-half mile of dirt road that crosses a series of ridges and swales as it approaches the lakeshore (this segment of road is not shown on the 1970 USGS Quadrangle). The access itself consists of a single concrete ramp and a small, partially graveled parking area surrounded by woods (birch, pine, spruce and ash). South of the existing lot, the terrain drops into a large swamp that is bordered by low ridges and swales. There is no other development along this part of the lakeshore.

Scope of Project
Rehabilitation and expansion of the existing Public Water Access in order to expand capacity. DNR planned to enlarge the existing parking area in two directions and install two new concrete launch ramps. About 400' of entrance road was also to be upgraded by widening and filling.

Additional parking was to be created by expanding the existing lot along its western and southern edges, and creating a new section of lot centered on what is now the entry road. This would involve filling of lowland on the south side of the road; part of the fill material was to be taken from a sandy ridge that lies between the road and lakeshore.

Records Review
Previous surveys: the only surveys known to have been done in the general vicinity of the project area are cultural resource surveys conducted by Chippewa National Forest. None of these were in immediate proximity to DNR's property.

Known sites: the Chippewa National Forest cultural resource inventory notes three properties near the project area: a farmstead, a hunting camp and a homestead, all located more than 1/4 mile from DNR's property. There are also two recorded archaeological sites on Bowstring Lake (21IC12 and 21IC17); both are located on the north shore, across the lake from the project area. None of these resources would be affected by the proposed construction.

Field Review
Methods: 15-meter interval shovel tests in areas to be affected by construction; examination of surface exposures along entry road and shoreline.

Results: portions of the entry road had low cutbanks ($\leq$ 30 cm) which appeared to have been recently cut. These were visually inspected, as were unvegetated areas within the parking lot and along the lakeshore. Shovel tests were dug in the parking lot expansion areas, and across the ridge that will be used as a fill source. Shovel tests were also dug on ridge crests adjacent to the existing road, proceeding south from the new parking area to the start of the proposed road upgrade corridor.

Soils observed in shovel tests were consistently very silty sand loams with a shallow organic horizon overlaying silt and fine sand. Disturbed stratigraphy noted

in a few places appeared to relate to treefalls and rodent burrowing. No cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Sherry Arm, Lake Pokegama (SHPO Ref. #89-1714)

Location
Northeast quadrant of the CSAH #17 bridge crossing over the inlet to the Sherry Arm of Lake Pokegama from Little Pokegama Lake, about 5 miles south of the City of Grand Rapids, MN (see Figure 14).

Funding/Permit Status
This project was done under the terms of a co-operative agreement between DNR-Trails & Waterways Unit and Itasca County Highway Department. Rehabilitation of an existing access was to be done as part of a county road reconstruction project that included bridge replacement over the Sherry Arm inlet. DNR was to provide reimbursement to the County for project costs related to access improvement.

Physiographic Province/Geomorphic Region
Sugar Hills-Mille Lacs Moraine Area (Wright 1972)/Swatara Plain; Aitkin Lacustrine Plain adjoins to east and south (Minnesota Soil Atlas Project, Hibbing Sheet, 1971)

Description of Project Area
The project area is within rolling moraine topography, with steep-sided knolls and ridges interspersed with numerous small wetlands. The area affected by construction is within the lowlands on the margin of the Sherry Arm.

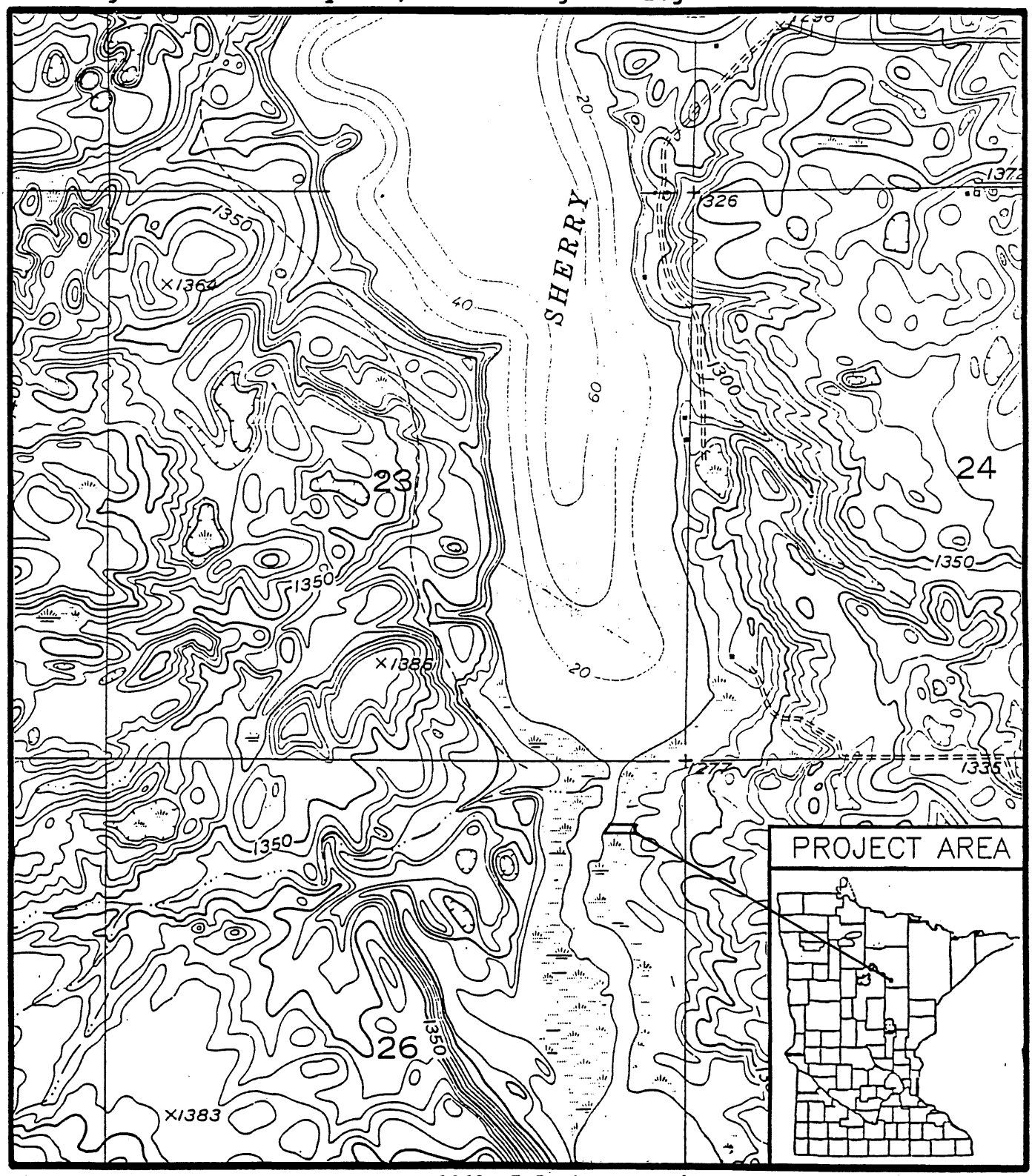
Scope of Project
Reconstruction of the existing access facility was to involve resurfacing of the existing parking area and slight expansion of the parking lot to the north of its present location. Most of the construction area is within the CSAH #17 right-of-way.

Review Summary
This project was reviewed in 1989 by the County-Municipal Highway Archaeological Reconnaissance Survey, as part of the review of proposed reconstruction and bridge replacement along CSAH #17. That review indicated that there are no significant cultural resources that would be affected by access rehabilitation. It was recommended that no further review be done unless project plans were changed. Detailed information about the review process and results is available in the County-Municipal Highway Survey Annual Report for 1989 (Anfinson & Peterson 1990:193-197).

Lake Winni/Plug Hat Point (USFS)

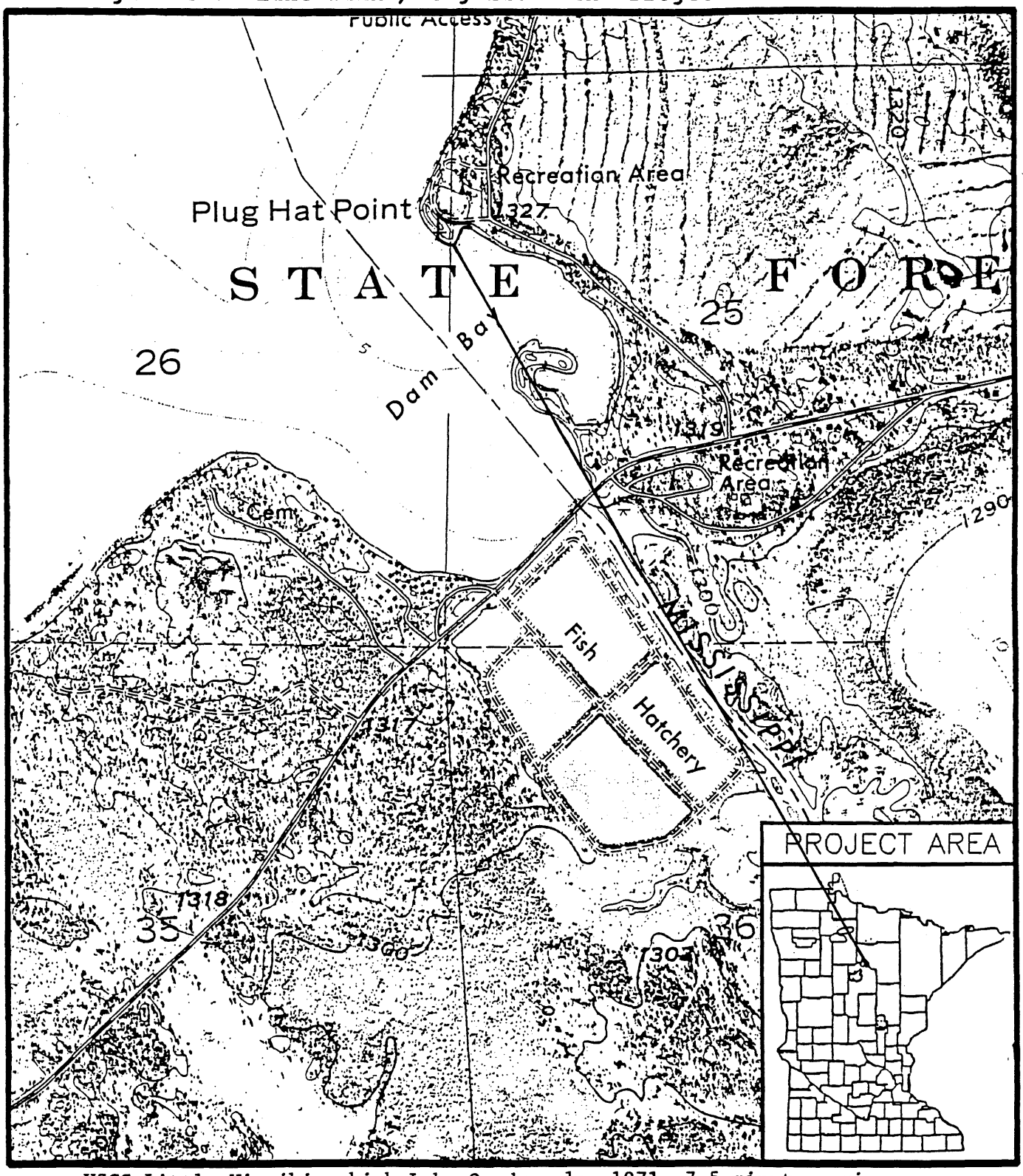
Location
East shore of Lake Winnibigoshish, just north of the Mississippi River outlet, about 9 miles northeast of Bena, MN (see Figure 15).

Figure 14. Sherry Arm, Lake Pokegama Project Area



USGS Grand Rapids Quadrangle, 1969, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Figure 15. Lake Winni/Plug Hat Point Project Area



USGS Little Winnibigoshish Lake Quadrangle, 1971, 7.5 minute series enlarged x 1.50; scale approximately 1:16,000

Funding/Permit Status
This was a co-operative project between DNR-Trails & Waterways Unit and the U.S. Forest Service. The project area is Federal property; cultural resource review was undertaken by Chippewa National Forest.

Physiographic Province/Geomorphic Region
Bemidji Area (Wright 1972)/Aitkin Lacustrine Plain (Minnesota Soil Atlas Project, Bemidji Sheet, 1980)

Description of Project Area
The project area is located on the shore of Lake Winni, just north of the Mississippi River outlet, in an area of rolling sandy plains. The existing access is part of a larger recreation area that includes roads, parking lots, camping facilities and a picnic area. Developed portions of the area are covered with mowed grass and some scattered white pine and oak.

Scope of Project
Rehabilitation of the existing access in order to provide better parking facilities and upgrade the ramp. DNR planned to expand the existing parking lot slightly to the north, and replace the existing ramp with a new double plank ramp.

Review Summary
The area to be affected by this project was reviewed under the direction of the Chippewa National Forest Archaeologist. The existing access is just south of the site designated 21IC27, a Middle to Late Woodland habitation. The site was recorded in 1976 on the basis of information received from a local resident who had collected artifacts from the shallows just off Plug Hat Point during low water episodes. Testing of adjacent dry land in 1976 yielded no evidence of cultural deposits on the higher terrain, and it was assumed that the entire site area is inundated. The Chippewa Forest Archaeologist determined that DNR's proposed project would not adversely affect the site. (More detailed information about this review can be requested from Chippewa National Forest.)

St. Louis County

Crane Lake (SHPO Ref. #90-2009)

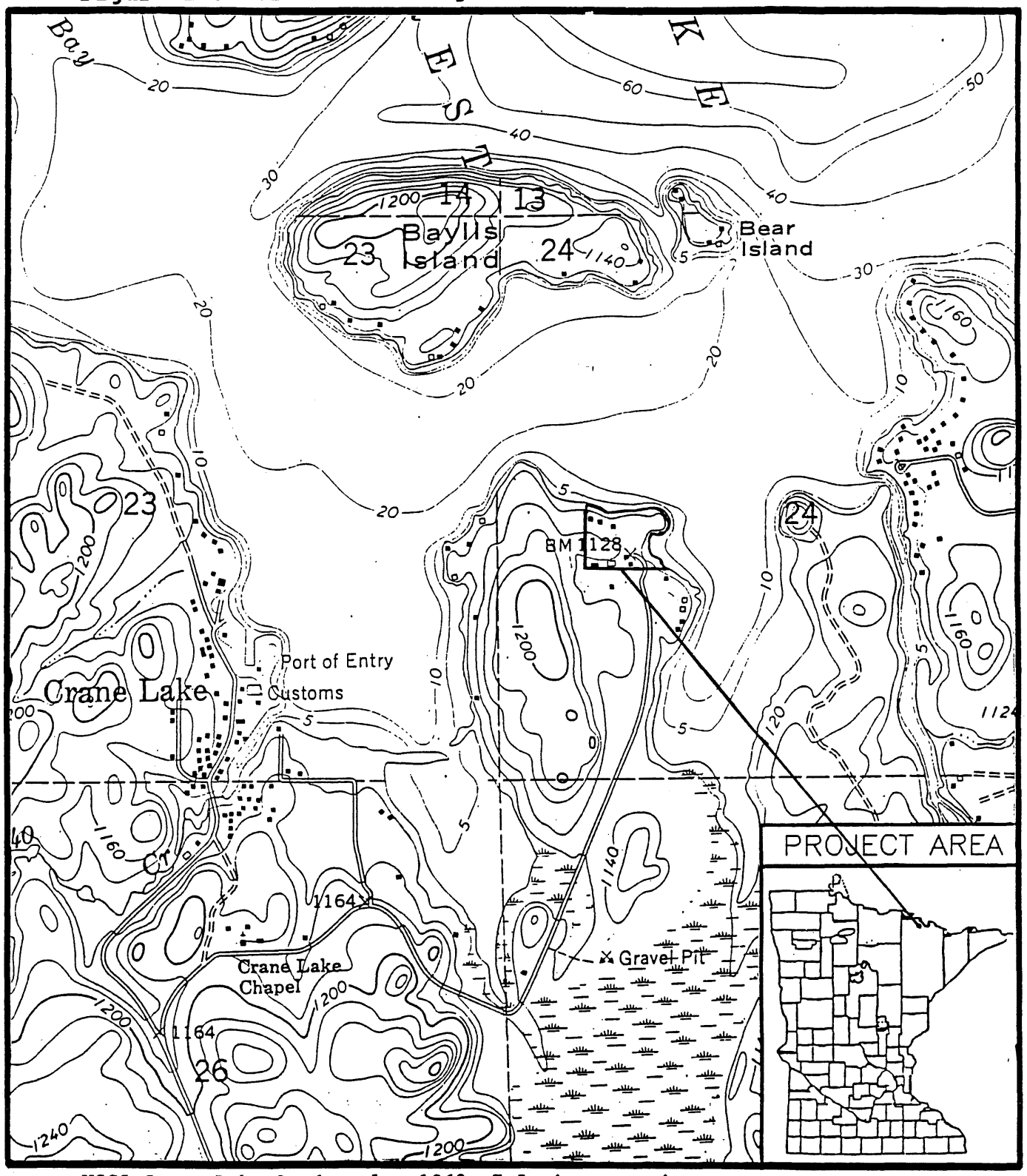
Location
Northeast corner of a small point of land at south end of Crane Lake, about 2 miles east of the City of Crane Lake, MN (see Figure 16).

Funding/Permit Status
This project was to be funded in part through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Border Lakes Area (Wright 1972)/Tower-Ely Glacial Drift & Bedrock Complex (Minnesota Soil Atlas Project, International Falls Sheet, 1981).

Description of Project Area
The project area is located on property that was formerly a DNR Forestry Station, situated between the mouth of the Vermilion River (about 2 miles to the west) and the mouth of the Echo River (about 1/2 mile to the east). A cabin and several other

Figure 16. Crane Lake Project Area



USGS Crane Lake Quadrangle, 1963, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

outbuildings that once stood on the property were demolished after the property was transferred to the Trails & Waterways Unit, and the cabin site was covered with c. 3' of fill. Buildings standing at the time of survey included a garage, boathouse, gas storage shed and outhouse, all woodframe structures with poured concrete slabs and foundations. There were also underground utilities, overhead power/telephone lines, a disabled gas pump, and a functioning well on the property.

The project area is generally level ground, situated about 2 feet above the summer elevation of Crane Lake, which is artificially controlled. It is bordered on the west by an abandoned county road alignment, part of which was to be incorporated into the access facility. Vegetation on the property consisted of grassy lawn with scattered pine, spruce and poplar. Just west of the adjacent road, the terrain rises abruptly, with numerous large outcrops of crystalline bedrock.

Scope of Project
Development of new Public Water Access facilities. DNR proposed to construct a 45-unit parking area and install double concrete plank ramps for access to a small bay at the south end of Crane Lake. Most of the work was to involve placement of fill on the present surface; new ramps will replace an existing single metal ramp. A portion of the property outside the construction area was to be left in its present condition, to serve as a day use/picnic area for boaters.

Records Review
Previous surveys: both Superior National Forest and National Park Service (in Voyageur's National Park) have conducted cultural resource surveys around Crane Lake in the past. The project area proper has never been surveyed. Additionally, MHS has conducted research on Society property at the mouth of the Vermilion River, the site of several fur trading posts and Native American habitation sites.

Known sites: In addition to the sites at the mouth of the Vermilion, there are several other archaeological sites with Laurel, Blackduck and Euro-American components on the southern part of Crane Lake. None of these sites is less than 1 mile from DNR's property.

Field Review
Methods: 15-meter interval grid of shovel tests over construction area, except where interrupted by standing structures, graveled areas and ditches. The shoreline was examined for surface exposures, but the high mid-summer lake level limited visibility along the water line.

Results: shovel test profiles indicated that much of the project area has received coarse fill material in the past, probably in connection with construction of the Forestry Station. There were numerous small irregularities in the ground surface, most of them related to road construction, power line poles, drainage ditches and culverts. In unfilled areas, soils were very coarse sandy loams over sandy clay with high proportions of pebbly till. This clay stratum was saturated at depths between about 25 and 50 cm below the present surface. No cultural materials indicative of a significant archaeological deposit were found in the tested area.

Management Recommendations
It appeared that the proposed construction would not affect any significant historic resources. It was recommended that the project proceed as planned with no additional review.

REGION III - CENTRAL

Cass County

Lake Emily (SHPO Ref. #90-1747)

Location

Southwest corner of Lake Emily, adjacent to TH #6 on the south edge of the City of Emily, MN (see Figure 17).

Funding/Permit Status

This project was to involve funding from the U.S. Coast Guard Boating Safety Grant Program; it was done under the terms of a Limited-Use Permit from MnDOT and also required a Special Permit from the Corps of Engineers.

Physiographic Province/Geomorphic Region

Brainerd-Automba Drumlin Area (Wright 1972)/Crow Wing Outwash Plain; Mille Lacs Moraine Complex adjoins on east side of lake (Minnesota Soil Atlas Project, Duluth Sheet, 1975).

Description of Project Area

The project area is a narrow strip of land owned by MnDOT and operated as a combination Public Access and Wayside Rest. The land between the TH #6 right-of-way and the paved access road for the wayside rest is an artificial wetland, created by MnDOT in the 1960s when the alignment of TH #6 in this vicinity was changed.

Scope of Project

Rehabilitation and expansion of an existing Public Water Access facility, located in a MnDOT Wayside Rest between the lakeshore and the northbound lane of TH #6. This facility originally consisted of a single launch ramp and a small paved parking area adjacent to the paved wayside rest entry road. DNR planned to create a 20-space parking lot and replace the existing ramp. This work was to involve filling of an artificial wetland that lies between TH #6 and the wayside rest entry road.

Records Review

Previous surveys: surveys of portions of the TH #6 alignment conducted in 1969 did not include the wayside rest property. Recent work along TH #6 by the Trunk Highway Survey has involved only parcels some distance south of the City of Emily.

Known sites: there are no known cultural resources in the immediate vicinity of the project area.

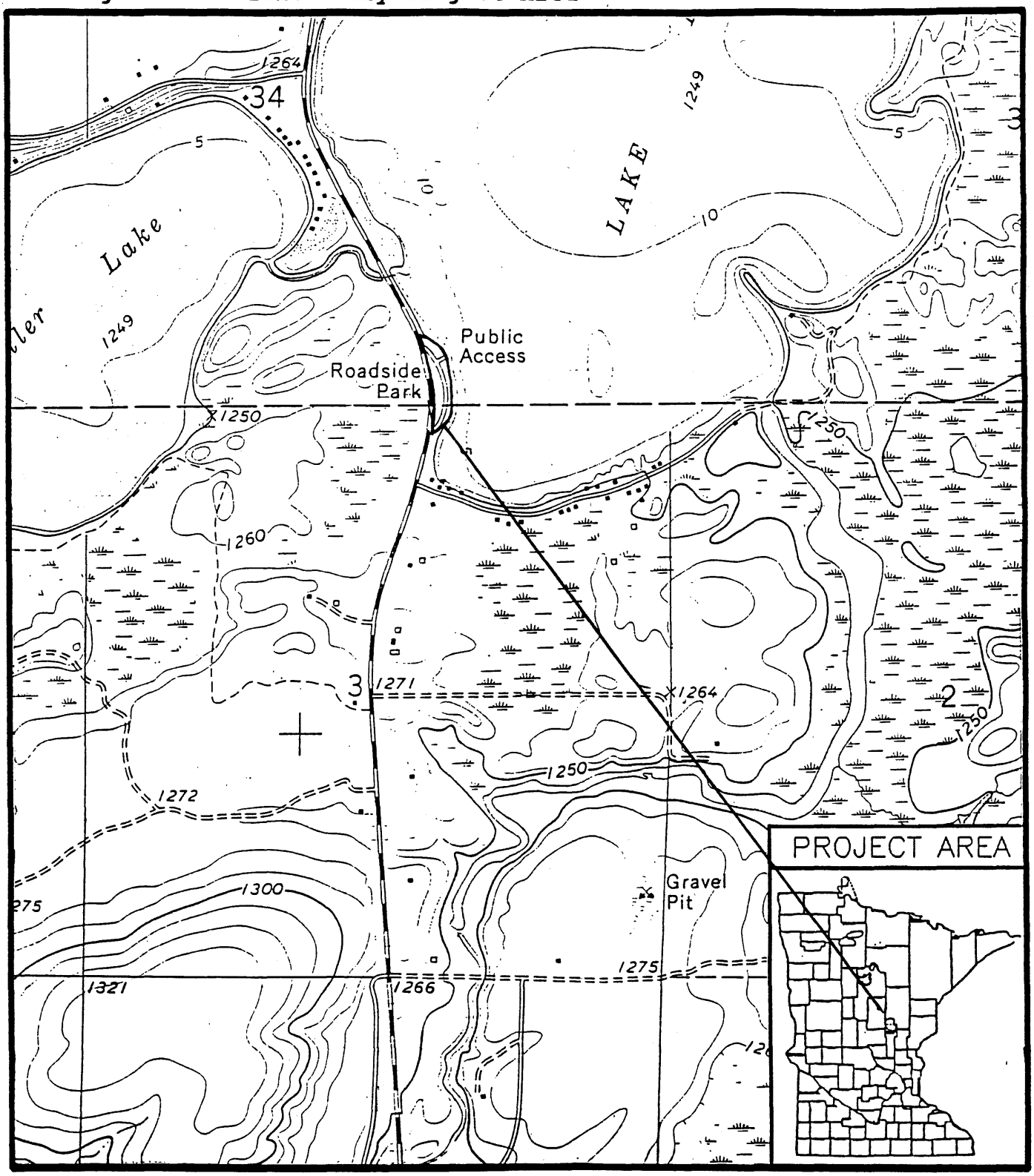
Field Review

Examination of the existing access facility indicated that the proposed construction would only affect lands that had already been thoroughly disturbed by highway and wayside rest construction. Most of the new parking area was to be situated on top of the artificial wetland; the remainder was to include the existing paved roadway and small parking area. No formal survey of the project area was therefore undertaken.

Management Recommendations

It appeared that this project would not affect any significant cultural resources. It was recommended that construction proceed as planned with no additional review.

Figure 17. Lake Emily Project Area



USGS Emily Quadrangle, 1973, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Douglas County

Osakis Milling Company (SHPO Ref. #90-1212)

Location

South shore of Lake Osakis, in the City of Osakis, MN (see Figure 18).

Previous Research

The Water Access Program Survey Annual Report for 1989 (Emerson 1990:91-94) contains a detailed discussion of the background of this project. To summarize that information: in 1986, the Trails & Waterways Unit purchased property in the City of Osakis for the purpose of expanding the existing City-operated access facility. The property included the Osakis Milling Company building, which was listed on the National Register of Historic Places as of 1983. DNR made numerous attempts to find a buyer for the building, which was vacant, with no success. By 1989, it was apparent that there were no feasible options for reuse of the building and it would be demolished.

DNR agreed that HABS (Historic American Building Survey) documentation of the building would be done prior to demolition. That work was coordinated by the Program Archaeologist and was conducted in the spring of 1990, as described below.

Documentation and Collections

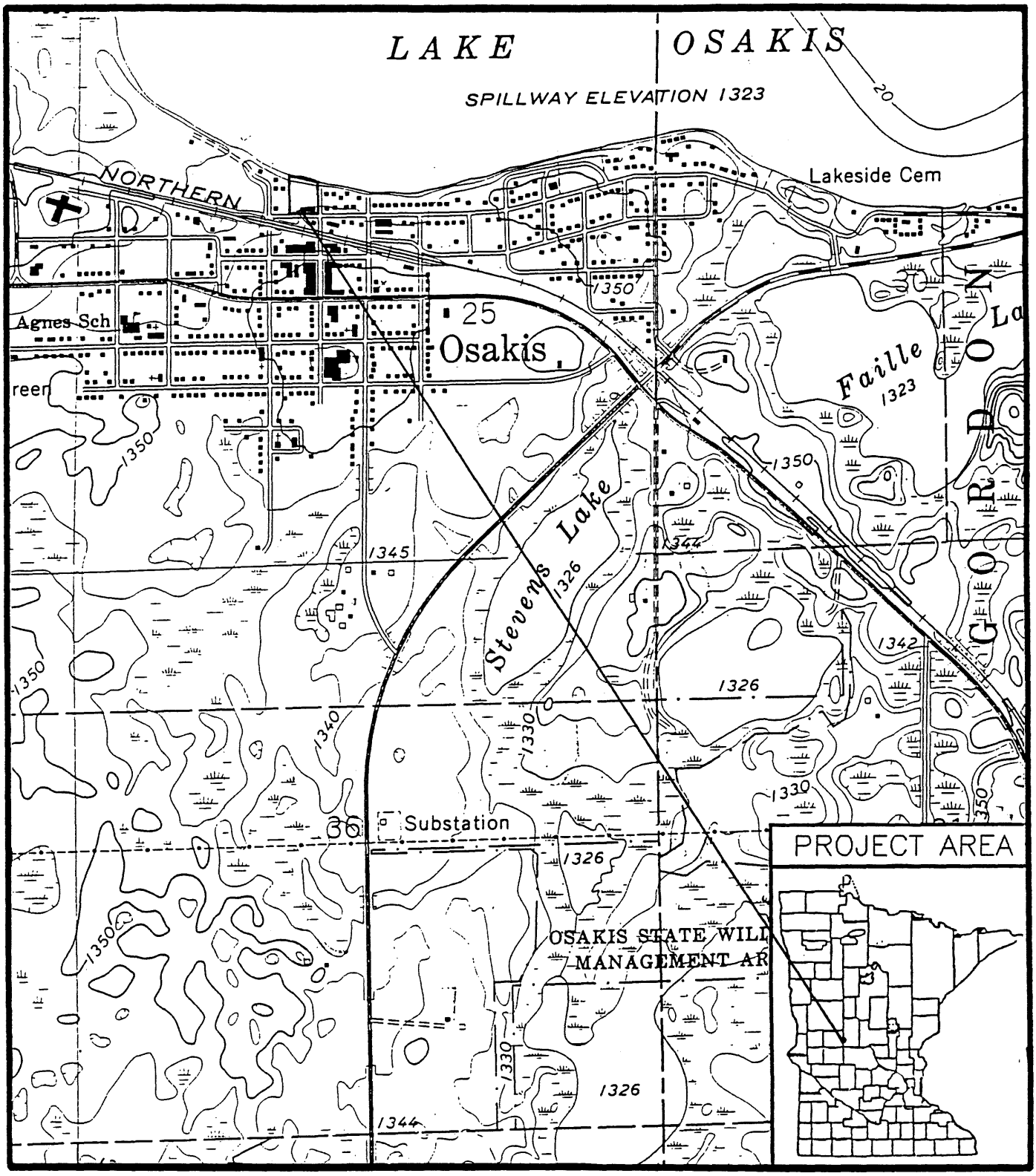
Photographic documentation: arrangments were made for a DNR staff photographer to take a series of large-format (4" by 5"), perspective-corrected black-and-white photographs of the interior and exterior of the Osakis Mill. A total of 40 photographs were taken over the course of a day, showing general views of all exterior facades, all principal interior spaces and a number of specific construction details. The negatives were archivally processed and will be submitted to NPS along with the rest of the required HABS documentation.

Museum Collections acquisitions: the Museum Collections Department of MHS was notified of the impending demolition of the structure and given an opportunity to examine the machinery, fixtures and other items left in the building when it was vacated. Museum personnel determined that there were a few items that were of sufficient historic interest to warrant acquisition. These included grain bags, metal feed store signs and several pieces of machinery from Minnesota manufacturers or companies. The designated items were removed from the structure prior to demolition (with one exception) and later transported to the Society's collection storage facility in St. Paul. The one item that was not removed from the building was a "grain separator" manufactured by the Hogmoe Corporation of Minneapolis. Fortunately, it survived demolition of the building almost completely intact. It was retrieved from the debris and later turned over to Museum Collections.

Narrative report: DNR contracted with a historical consultant for research on the history of the Osakis Milling company and production of a narrative report consistent with HABS specifications. That research was conducted in August of 1990, and a report detailing the architectural nature and history of the building was completed in September. The report will be submitted to NPS along with the photographic documentation.

Demolition: demolition of the Osakis Mill finally occurred in August of 1990. This process was documented by the Program Archaeologist in a series of color and black-and-white photographs showing the progress of the demolition.

Figure 18. Osakis Milling Company Project Area



USGS Osakis Quadrangle, 1966, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Pine County

Upper Pine Lake (SHPO Ref. #90-2179)

Location
North shore of Upper Pine Lake, about 5 miles east of the City of Finlayson, MN (see Figure 19).

Funding/Permit Status
This project was to involve funding from the U.S. Coast Guard Boating Safety Grant Program.

Physiographic Province/Geomorphic Region
Brainerd-Automba Drumlin Area (Wright 1972)/McGrath Till Plain (Minnesota Soil Atlas Project, Duluth Sheet, 1977).

Description of Project Area
The project area is a sandy ridge that drops into swampy low ground along the lakeshore. On the north side of the ridge, the terrain drops abruptly into another swampy area, a portion of which was to be filled to create parking space. A private driveway leading from the adjacent township road to a summer residence traverses the ridge (this driveway was to be relocated outside of DNR's property). The higher portions of the project area are wooded (mostly pine) with a moderately dense understory.

Scope of Project
Development of new Public Water Access facility. Previously, the end of a gravel township road was being used as an unimproved access to Upper Pine Lake. DNR purchased one lot adjacent to this road and planned to construct an 8-unit parking lot and install a concrete plank ramp.

Records Review
Previous surveys: no evidence was found that there have been any formal cultural resource surveys in the vicinity of Upper Pine Lake.

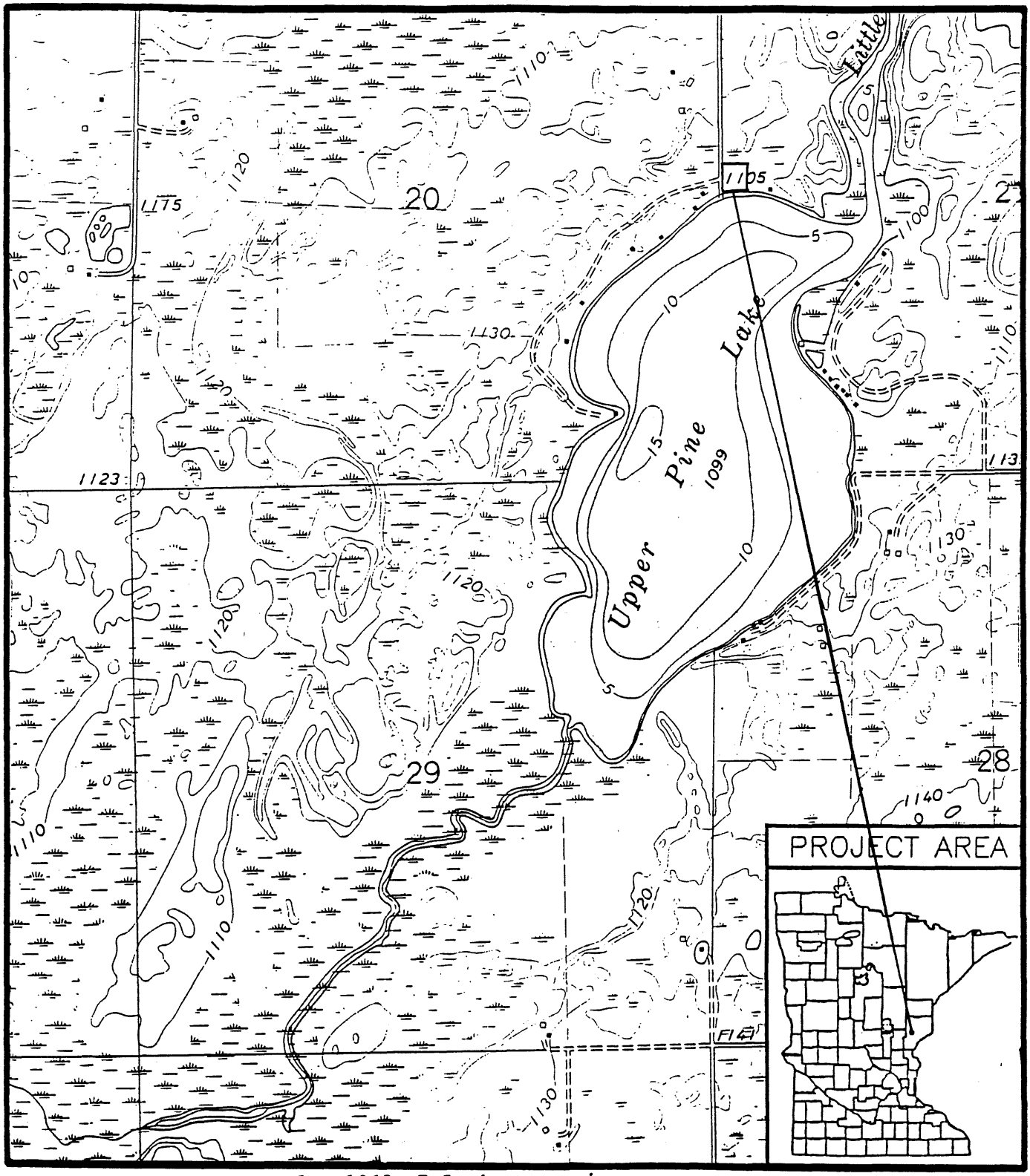
Known sites: there are no recorded cultural resources within a 1-mile radius of Upper Pine Lake.

Field Review
Methods: surface reconnaissance along driveway on crest of ridge; 15-meter grid of shovel tests in higher portion of construction area.

Results: surface visibility along the driveway, which had not been graveled, was fair to moderate. Soils in all shovel tests were reddish, very sandy loams over typical Superior Lobe deposits of coarse sand and poorly sorted glacial till. The natural stratigraphy appeared to be substantially intact and undisturbed. No cultural materials were found anywhere on surface or in any shovel test.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Figure 19. Upper Pine Lake Project Area



USGS Giese Quadrangle, 1968, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Stearns County

Lake Koronis (SHPO Ref. #88-1913)

Location
East shore of the lake, adjacent to TH #55, about 5 miles southeast of the City of Paynesville, MN (see Figure 20).

Funding/Permit Status
Development costs for this project were to be used as State match for funding obtained from the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright 1972)/Alexandria Moraine Complex (Minnesota Soil Atlas Project, St. Cloud Sheet, 1975).

Description of Project Area
The existing access property is situated on artificial fill in a wetland area. The facility consists of a gravel-surfaced parking lot and double concrete plank ramp.

Scope of Project
Paving of existing gravel-surfaced parking lot. The existing parking lot was improved by DNR in 1988; the 1990 project consisted only of removing fill material and placing bituminous surfacing within the existing lot.

Previous Project Review/Recommendations
DNR's access rehabilitation project was reviewed in 1988 through the Water Access Program Survey. At that time, it was confirmed that the facility is situated entirely on artificial fill, and the proposed work would have no effect on potentially significant resources. Since the work that was done in 1990 did not affect areas outside the fill section, no field review was undertaken. This project did not affect any cultural resources; it was recommended that work proceed with no additional review.

Rice Lake (Field #90TW-3-2) (SHPO Ref. #91-0542)

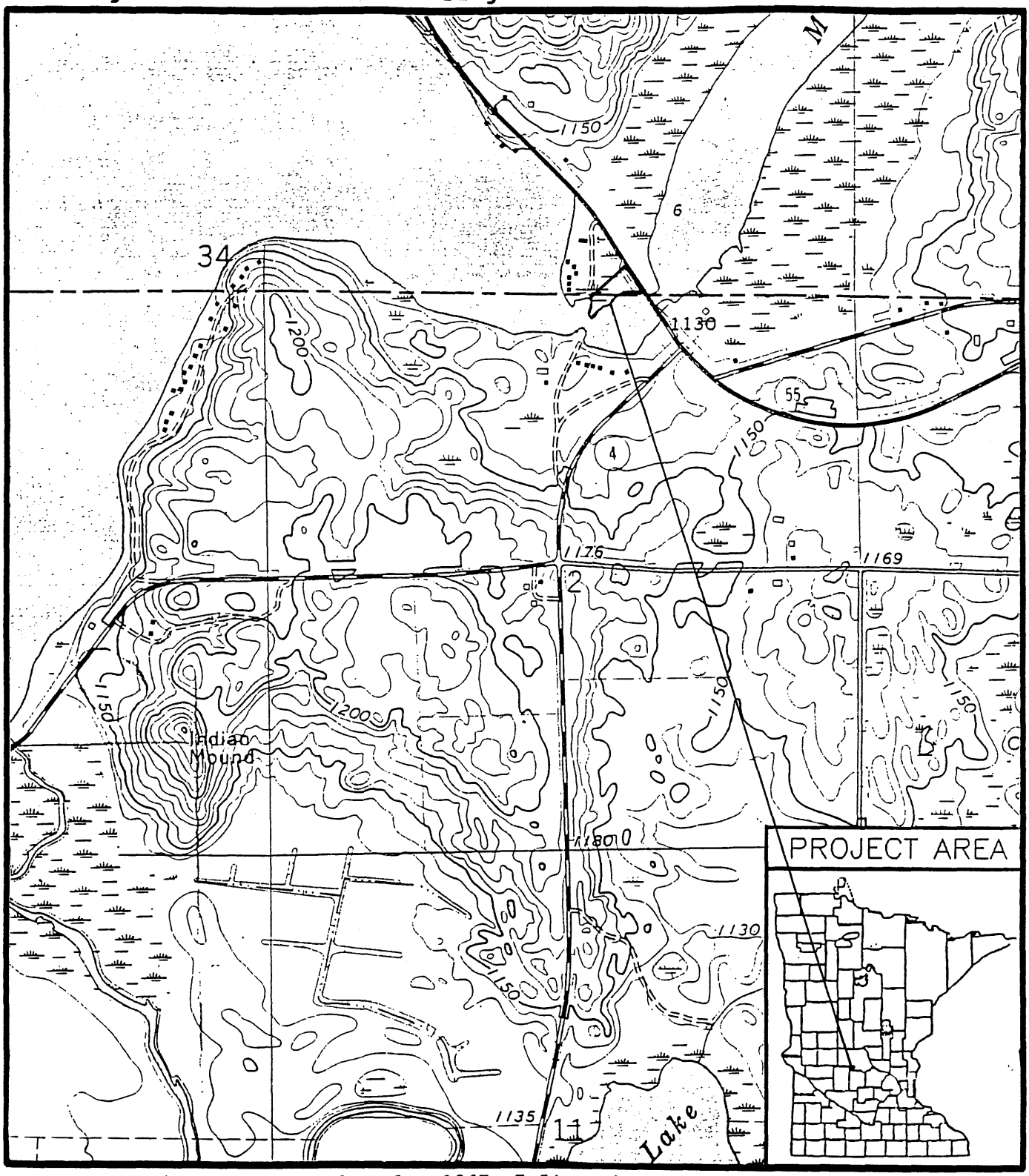
Location
South shore of Rice Lake, about 5 miles east of the City of Paynesville, MN (see Figure 21).

Funding/Permit Status
Development costs for this project may be used as State match for Federal funds received through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Alexandria Moraine Complex (Wright 1972)/Alexandria Moraine Area (Minnesota Soil Atlas Project, St. Cloud Sheet, 1979).

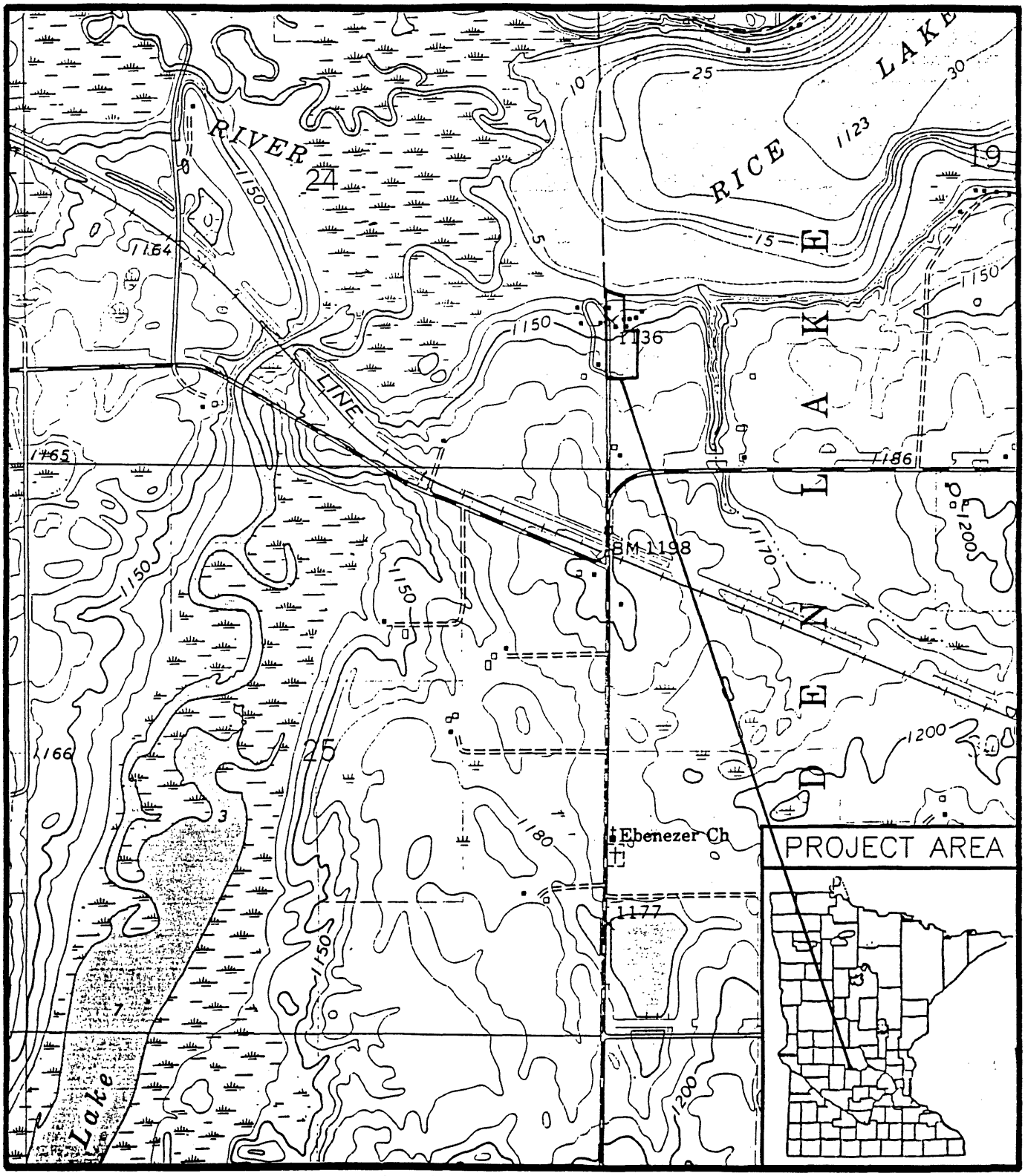
Description of Project Area
The project area is just east of the outlet of Rice Lake (the North Fork of the Crow River), about 2.5 miles upstream of the point at which the river enters Lake Koronis. The property was formerly the site of a resort operation. At the time it

Figure 20. Lake Koronis Project Area



USGS Lake Koronis Quadrangle, 1967, 7.5′ series
enlarged x 1.50; scale approximately 1:16,000

Figure 21. Rice Lake Project Area



USGS Lake Koronis Quadrangle, 1967, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

was purchased by the State, there were 6 cabins and several other outbuildings standing on the property. These structures were all demolished by DNR. Other features related to the resort include underground electric and telephone lines, wells and septic systems.

The project area is roughly bisected by a driveway that provides access to year-round residences east of DNR's property. The parcel north of this driveway was the location of most of the resort buildings; areas not graded off during demolition are covered by mowed grass with some hardwoods and conifers. The shoreline is characterized by an almost vertical cutbank about 4 meters in height at the eastern property line, dropping to a height of less than 1 meter at the western property line. (Lake level fluctuation has caused erosional damage along most of this cutbank, although the lake level has subsided recently and is now about 2 feet below the "normal" high water mark.)

The other portion of the property, located to the south of the private driveway, is mostly pastureland. One cabin and outhouse (both also demolished) were located here, adjacent to a small patch of woods; the remainder of the parcel is covered with tall grass. Adjacent to the driveway, this parcel is a continuation of the first terrace above the lake. Further south, a terrace break is discernable in the approximate middle of the parcel. Beyond this break the ground rises gradually to a higher terrace, cresting just beyond the southern boundary of the State property.

Scope of Project

Construction of a new Public Water Access. DNR plans to construct a 21-unit main parking area, a 15-unit overflow lot, install double concrete ramps and construct a series of drainage ditches and settling ponds. An existing township road will provide ingress to the parking lot. Widening and resurfacing of this road will be part of DNR's construction contract; costs will be shared by DNR and the township.

Records Review

Previous surveys: MnSAS review of known sites, 1978; Trunk Highway Survey review of TH #55 projects around Lake Koronis; County-Municipal Highway Survey review of several county road improvement projects near Lake Koronis. None of the previous survey work in the vicinity was within less than 1/2 mile of DNR's property.

Known sites: there are a number of known resources in the Rice Lake area, most of which are located on the shores of Lake Koronis. These include both habitation areas and burial mound groups. Some of these were initially surveyed by T.H. Lewis; others were documented by Wilford and some were identified during survey work conducted over the past 15 years. The Statewide Archaeological Survey did record a habitation site at the west end of Rice Lake, about 1/2 mile from DNR's property; no formal evaluation of the site was done. There is also informant data to indicate the presence of additional habitation areas along the North Fork of the Crow River and Mud Lake, which connects Rice Lake to Lake Koronis.

Field Review

Methods: examination of exposed areas along driveway and around former cabin locations; 15-meter interval grid of shovel tests over construction area. Additional shovel tests were dug after a cultural deposit was identified in the initial grid.

Results: the initial shovel test grid identified a subsurface deposit of lithic and

ceramic artifacts, concentrated generally in the eastern half of the property (see Figure 22). Additional shovel tests were then dug at closer intervals in an attempt to define site boundaries. As of the end of the 1990 field season, a total of 48 shovel tests had been dug, 13 of which yielded cultural materials. As Figure 22 shows, horizontal distribution of these materials is fairly consistent in the northeast corner of the property, but becomes somewhat more erratic as one moves south.

Evidence of disturbance to natural soil stratigraphy was noted in a number of shovel tests, although it did not follow a completely consistent pattern. Disturbance related to cabin construction was fairly common in the northern part of the project area and adjacent to the existing driveway and township road ditch. Differences in soils were also evident. In general, shovel tests along the western side of the property showed finer-textured soils, with increasing proportions of sand to the east. This change appears to relate to drainage patterns, reflecting downward-sloping surfaces from both the east and the south which converge in the vicinity of the township road.

The artifact assemblage recovered during preliminary survey contains only two items indicative of cultural affiliation (see Figure 23). One very small rim sherd was recovered from ST 23: it carries short, oblique cord-wrapped stick impressions on both the interior and exterior of the straight, flat rim. Another decorated sherd which also carries cord-wrapped-stick impressions was recovered from ST 9; this artifact is very small, and it is not possible to determine the orientation of the decoration on the vessel. The remainder of the cultural assemblage consists of small cord-roughened body sherds and lithic debitage.

Management Recommendations

The preliminary development plan proposed for Rice Lake by DNR defines a construction area that would overlap with the cultural deposit identified on the property. The present design shows that almost the entire northern portion of the property would be affected by construction of the main parking lot and adjacent drainage ditches. The southern part of the property would not be as extensively affected; the Project Engineer has indicated that construction of an overflow parking lot in this area could probably be changed from cut-and-fill to fill only.

Personnel in both DNR Trails & Waterways Unit and Bureau of Engineering have been informed of the presence of a cultural deposit in the construction area, and it has been recommended that no further project planning be done until additional fieldwork can be completed. Subsurfacing testing done to date at Rice Lake has not been sufficient to clearly define the nature and extent of the cultural deposit that is present on DNR's property. The existing artifact assemblage is relatively sparse and provides no clear indication of the function or potential significance of the site. Further research proposed for the spring of 1991 would include:

a) additional shovel testing in the construction area to define the horizontal extent of the cultural deposit;

b) shovel testing on the private property to the east of DNR's project area, if permission can be obtained from the landowner;

c) reconnaissance survey of the area to be affected by upgrading of the adjacent township road; and

d) excavation of a minimum of 6 square meters within the site area, to further define its nature, current condition, and potential significance.

Figure 22. Rice Lake (Field #90TW-3-2) - Area Tested in 1990

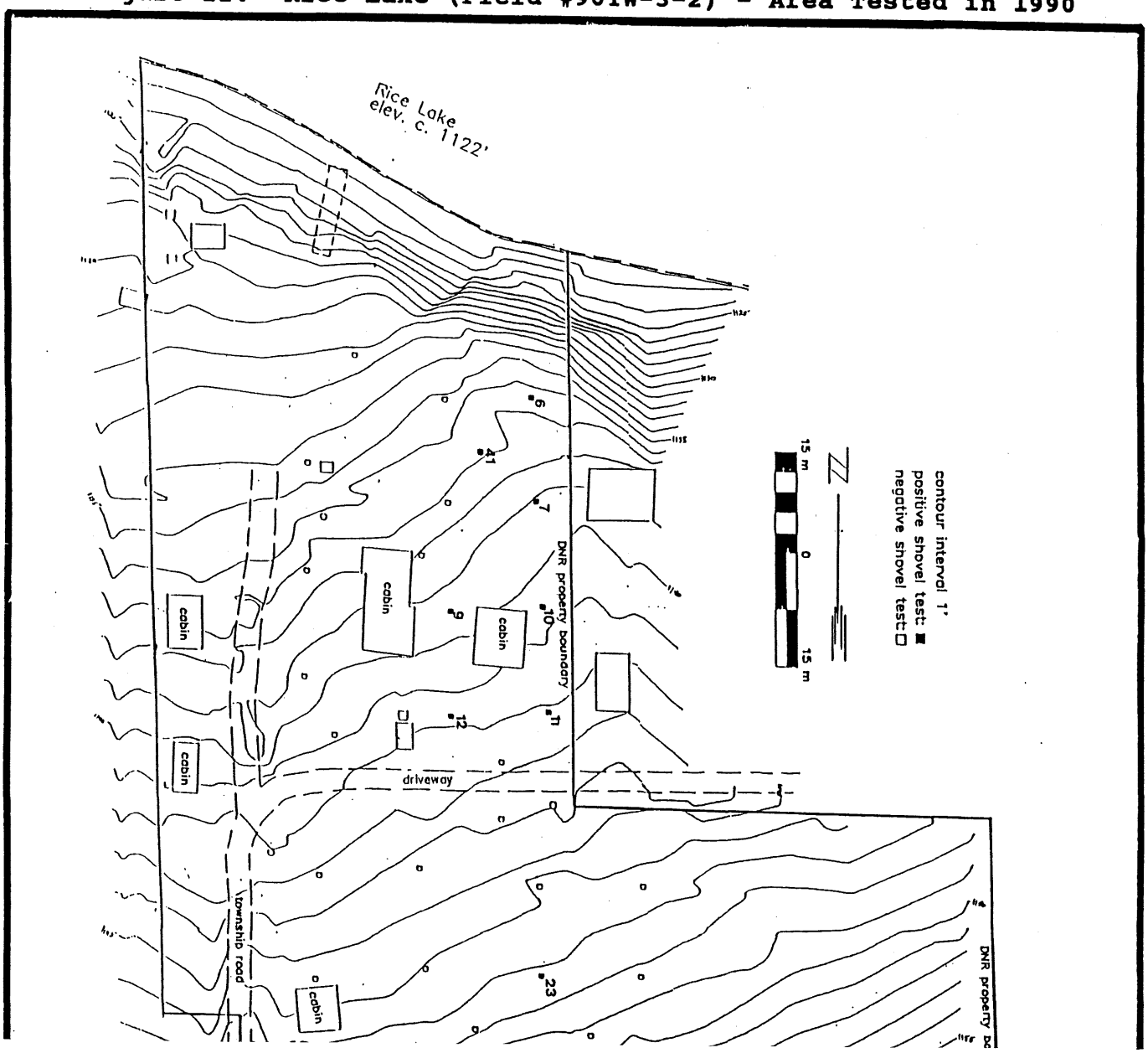


Figure 23. Rice Lake (Field #90TW-3-2) - Artifacts Recovered

ST 6, 10-20 cm: 2 grit body sherds, cr
20-30 cm: 3 grit body sherds, cr
1 fired clay fragment, not tempered
2 tertiary flakes: white quartz
ST 7, 10-20 cm: 1 grit body sherd, cr
20-30 cm: 1 thinning flake: siltstone (utilized)
ST 9, 10-20 cm: 1 secondary flake: amber quartzite
20-30 cm: 1 grit neck sherd, cwsi
3 tertiary flakes: 1 Tongue River Silicified Sediment, 2 Swan River Chert (1 thermally altered)
30-40 cm: 1 secondary flake: siltstone
1 tertiary flake: Swan River Chert (thermally altered)
ST 10, 20-30 cm: 1 grit body sherd, cr
ST 11, 0-10 cm: 2 grit body sherds, cr
10-20 cm: 3 tertiary flakes: Tongue River Silicified Sediment, Swan River Chert: white chert
20-30 cm: 1 secondary flake: white quartz
ST 12, 10-20 cm: 1 grit body sherd, cr? (surface worn)
20-30 cm: 9 grit body sherds, cr
30-40 cm: 3 grit body sherds: 1 cr, 2 exfoliated
ST 23, 10-20 cm: 1 grit rim sherd: flat lip, cwsi on interior, cwsi? on exterior - surface worn
1 grit body sherd, cr
1 tertiary flake: gray quartzite
20-30 cm: 1 thinning flake: Swan River Chert (thermally altered)
ST 26, 0-10 cm: 1 grit body sherd, exfoliated
1 secondary flake: white oolitic chert (thermally altered)
10-20 cm: 2 grit body sherds, cr (surface worn)
1 thinning flake: tan chalcedony (utilized)
ST 27, 10-20 cm: 1 grit body sherd, surface indistinct
ST 32, 10-20 cm: 1 grit body sherd, cr? (surface worn)
1 tertiary flake: white quartz
ST 35, 10-20 cm: 1 secondary flake: tan chert (thermally altered)
ST 41, 10-20 cm: 1 secondary flake: Tongue River Silicified Sediment
1 tertiary flake: Tongue River Silicified Sediment
20-30 cm: 1 grit body sherd, cr
1 secondary flake: Tongue River Silicified Sediment
2 tertiary flakes: white quartz, white chalcedony
30-40 cm: 1 secondary flake: Tongue River Silicified Sediment
ST 48, 0-10 cm: 1 grit body sherd, surface indistinct

After this work is completed, a more detailed site evaluation will be compiled. If the site appears to warrant further consideration, recommendations for design modification, construction restraints and/or mitigation will be formulated in consultation with DNR personnel. A report on the results of additional research and final recommendations will then be prepared and submitted for review.

REGION IV - SOUTHWEST

Brown County

Lake Hanska/South (SHPO Ref. #91-0407)

Location

South shore of the lake, adjacent to CSAH #6, about 6 miles west of the City of Hanska, MN (see Figure 24).

Funding/Permit Status

Development costs for this project were to be used as State match for Federal funds received through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region

Blue Earth Till Plain (Wright 1972)/Blue Earth Till Plain with Minnesota Valley Outwash adjoining to southeast (Minnesota Soil Atlas Project, New Ulm Sheet, 1977).

Description of Project Area

The western edge of DNR's property is about 450' east of the spillway that controls drainage from Lake Hanska through a series of artificial ditches and eventually into the Watonwan River. The spillway elevation is 1,012'; with recent low water conditions, the lake level has been 1' or more below the outlet elevation for several years.

The property that was to be affected by the proposed construction is lowland, separated from the current lakeshore by a low ice ridge. The original entry road to the access was built on fill across the far eastern side of the property. Adjacent to the road corridor is a bermed waste treatment settling pond, with agricultural lands further to the east and to the west. At the time of survey, the lower part of the project area was covered with grass and wetland vegetation.

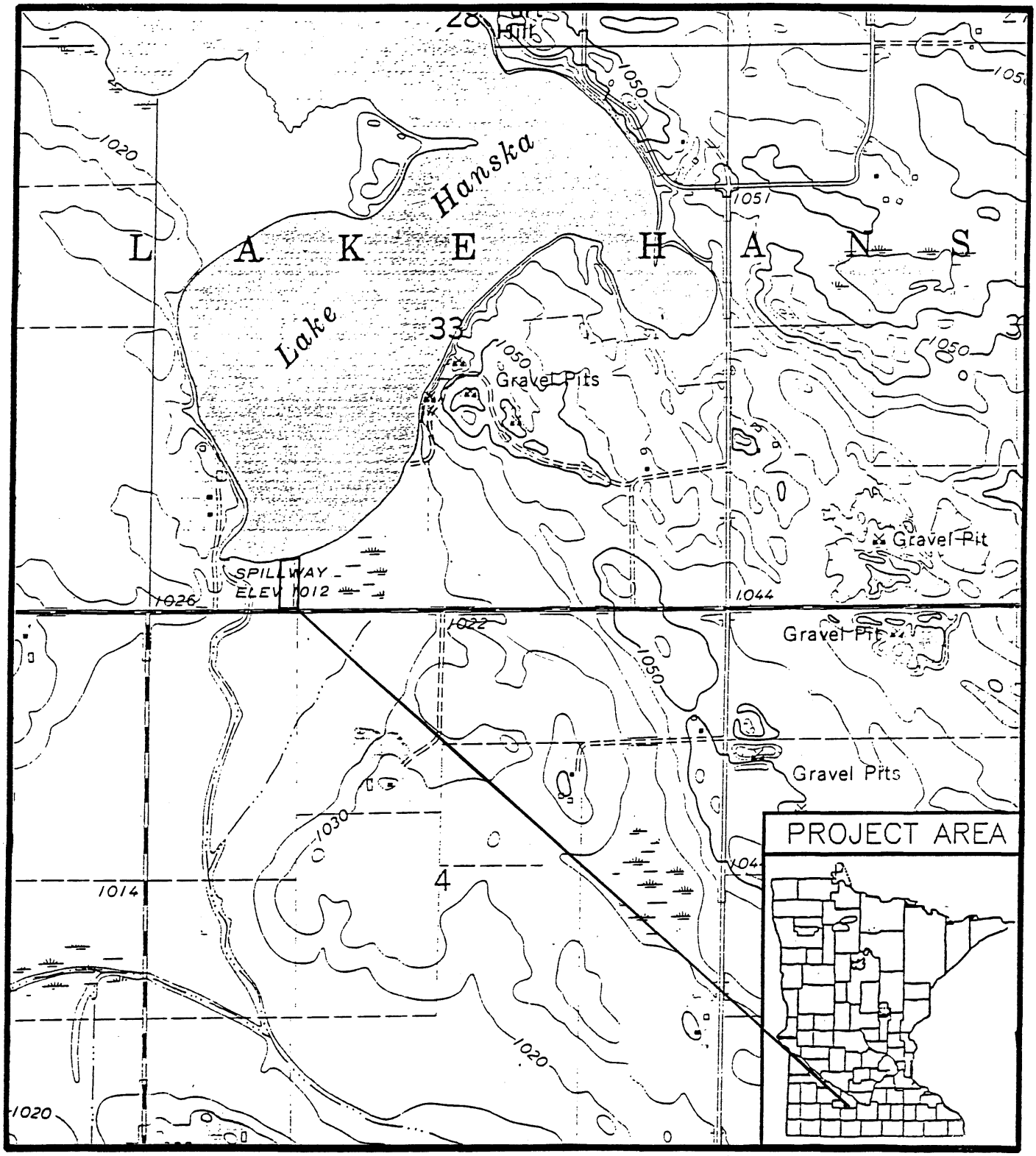
Scope of Project

DNR planned to expand an existing Public Water Access facility which originally consisted of a gravel entry road running between CSAH #6 and the lakeshore. Parking was available in a small gravelled area on the west side of the entry road near the lakeshore. From that point, a gravel road leads west to adjacent property owned by Brown County. DNR proposed to construct a 17-unit parking lot that would incorporate most of the existing road. The remainder of the lot was to be constructed on fill placed in a low area. A new driveway was to be built west of the existing entry; the in-place ramp would be retained in its original location.

Records Review

Known sites: there are a number of recorded sites on the shores of Lake Hanska, all of which are on the northern and northeastern shores of the lake. One of these is the Synsteby Site (21BW1), a multicomponent habitation site which is listed on the National Register of Historic Places. Identified components at this site include Middle Woodland, Late Woodland and Oneota. Other sites on the lake include an 1862 fortification known as Fort Hill and several other Woodland and Oneota habitation areas. There are no recorded sites on the south shore of the lake, in the vicinity of the project area.

Figure 24. Lake Hanska/South Project Area



USGS Lake Hanska East Quadrangle, 1967, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Previous surveys: past work in the area includes a survey of Lake Hanska County Park conducted by the Science Museum of Minnesota (Hudak 1975), MnSAS review of local sites in 1978 and mitigation at 21BW1 conducted by MHS in 1987 in connection with park improvements. No formal survey has been undertaken on the south shore of the lake.

Field Review
Methods: visual inspection of existing facilities and proposed construction area; a few shovel tests in the lower part of the property and on the ice ridge at the lake shore.

Results: based on visual examination, it appeared that the ice ridge along the lakeshore was a relatively recent formation. One shovel test dug just west of the launch ramp confirmed that the ridge is composed of unsorted gravels with very little organic content.

Shovel tests in the lower ground showed that soils in this area are typical of those that develop under wetland conditions; they are underlain by well-sorted sands that may be old lake bottom sediments. It is possible that this area was part of the lakebed at one time, when the water level was higher than it is currently. No cultural materials were found in shovel tests or on surface within the proposed construction area.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Cottonwood County

Bean Lake (SHPO Ref. #91-0461)

Location
Center of the west shore of Bean Lake, about 5 miles northwest of the City of Storden, MN (see Figure 25).

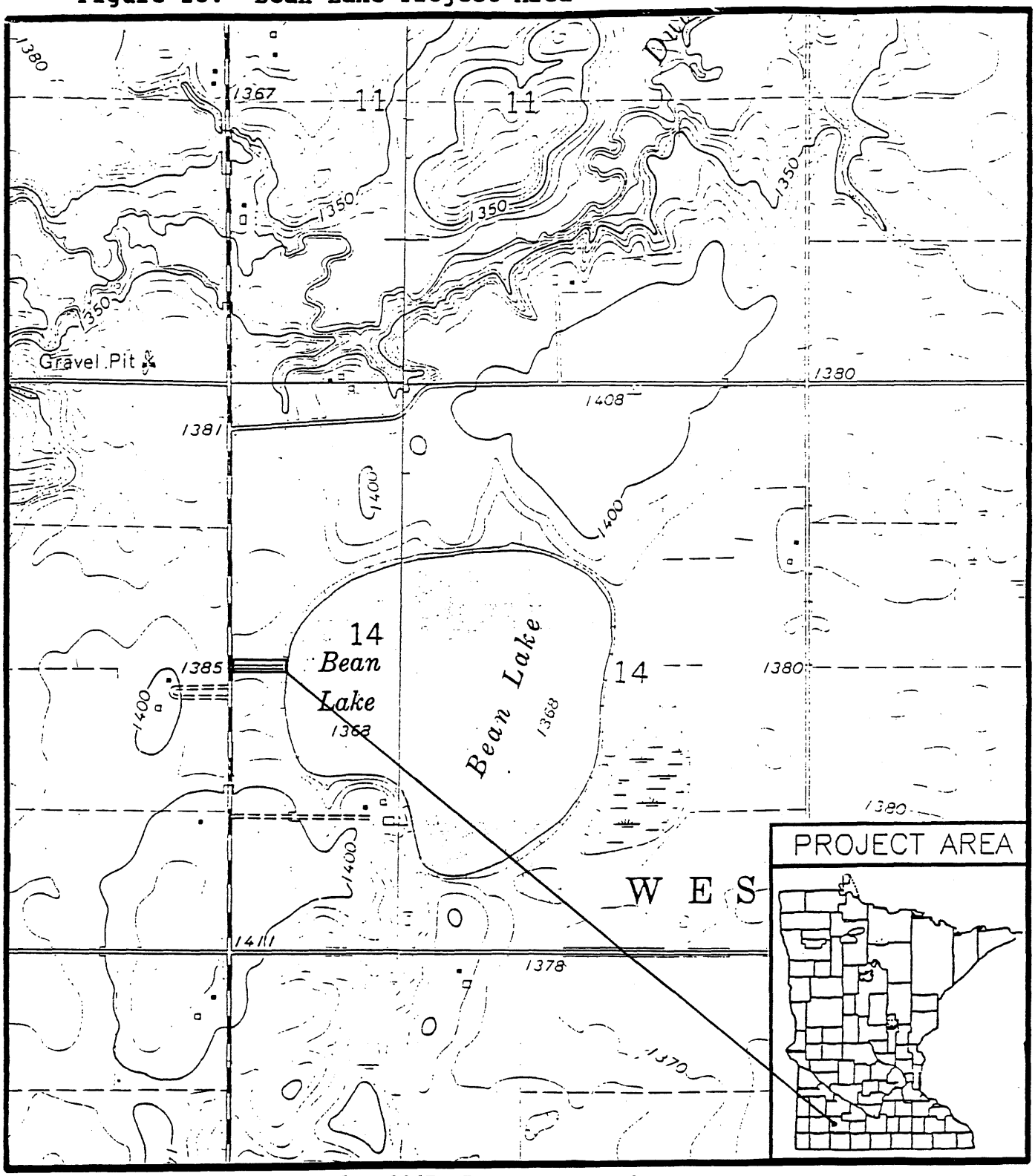
Funding/Permit Status
This project will not involve any Federal funding or permitting. Construction work will be done in the spring of 1991 by DNR's regional maintenance crew under a cooperative agreement with Cottonwood County.

Physiographic Province/Geomorphic Region
Coteau des Prairies, Outer Part (Wright 1972)/Ivanhoe-Worthington Coteau (Minnesota Soil Atlas Project, New Ulm Sheet, 1981).

Description of Project Area
The terrain surrounding the project area is gently rolling ground moraine; land adjacent to the access facility was all under cultivation in 1990. Bean Lake is connected to Double Lake to the south by a well-defined drainage that presently carries a small, intermittent stream.

Scope of Project
DNR planned to upgrade an existing Public Water Access by installing a concrete ramp

Figure 25. Bean Lake Project Area



USGS Storden Quadrangle, 1967, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

and creating head-in parking spaces. The original facility was constructed within the right-of-way for a short length of county road that dead-ends at the lakeshore. There was no defined parking area, and the launch area consisted only of a dirt ramp. In 1990, Cottonwood County agreed to allow DNR to create formal parking spaces by widening the existing roadbed to the limits of the right-of-way.

Records Review
Previous surveys: the only formal survey known to have been done in this area is the MnSAS 1978 review of known sites in Cottonwood County.

Known sites: there are two recorded archaeological sites in the vicinity of the project area: 21CO6 and 21CO8. Both of these are located on Double Lake, which is connected to Bean Lake by a pronounced drainage channel about 1 mile long. The two sites were recorded on the basis of information received from a local collector and have not been formally investigated.

Field Review
Methods: visual examination of existing launch area and dirt approach.

Results: the entire length of the county road between CSAH #6 and the lakeshore has been covered with gravel; there are a few exposures along the ditch cut on the south side. These areas and the edges of the adjacent cultivated fields were examined for cultural materials, as was the launch area at the shoreline. It was apparent that the entire right-of-way corridor had been graded at the time the road was constructed. Some vegetation has re-grown along the north side of the road, but an elevation change between the right-of-way and the adjacent plowed field showed clearly that the A horizon is entirely missing within the road alignment. No cultural materials were noted anywhere in the project area.

Management Recommendations
It appeared that this project would not affect any significant cultural resources. It was recommended that construction proceed as planned with no additional review.

Jackson County

Fish Lake (SHPO Ref. #90-1497)

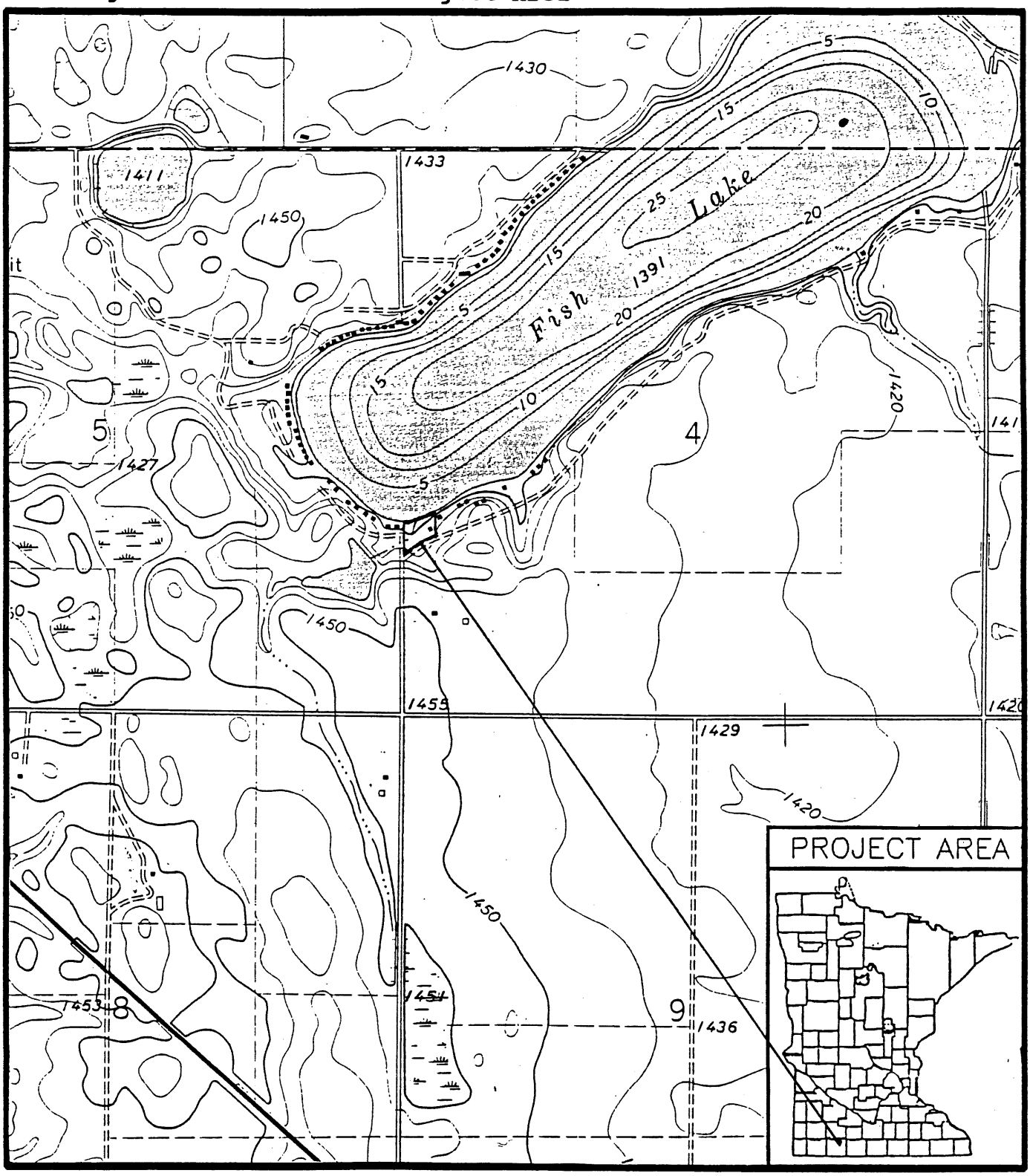
Location
Southwestern corner of Fish Lake, about 5 miles south of the City of Windom, MN (see Figure 26).

Funding/Permit Status
Development costs for this project were to be partly reimbursed from the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Blue Earth Till Plain (Wright 1972)/Blue Earth Till Plain (Minnesota Soil Atlas Project, New Ulm Sheet, 1977).

Description of Project Area
The project area is an existing access facility consisting of a concrete ramp at the end of a township road, with an adjacent gravel loop road and small parking area. These improvements are situated on gently sloping land at the base of a high ridge.

Figure 26. Fish Lake Project Area



USGS Windom Quadrangle, 1970, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

The access area is separated from the crest of this ridge by a township road grade.

The original access was built in an area that was formerly the site of a restaurant which closed in the early 1980s. The restaurant building was abandoned and burned, and the remnants were razed in 1987, just before the State of Minnesota purchased the parcel. The property includes a commercial septic system, buried water and telephone lines, and the restaurant parking lot which previously had bituminous surfacing (now removed). Underground utilities were to be abandoned by DNR prior to access rehabilitation.

Scope of Project
Expansion and rehabilitation of existing Public Water Access facility. DNR proposed to relocate an existing concrete ramp and expand the original parking area. The work was to involve mostly placement of fill on lowland.

Records Review
Previous surveys: no evidence was found that there have ever been any formal cultural resource surveys in the vicinity of the project area.

Known sites: there are no recorded cultural resources on Fish Lake or within a 1-mile radius of DNR's property.

Field Review
Methods: shovel tests at 15-meter intervals in ungravelled portions of parking lot area; examination of surface exposures along the lakeshore and sideslopes of intermittent drainage.

Results: evidence of recent disturbance was noted throughout the construction area consisting mainly of debris from building demolition found on the surface and mixed into the upper c. 30 cm in most shovel tests. Disturbance from buried water lines was also encountered. No other cultural materials were found anywhere on the property.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

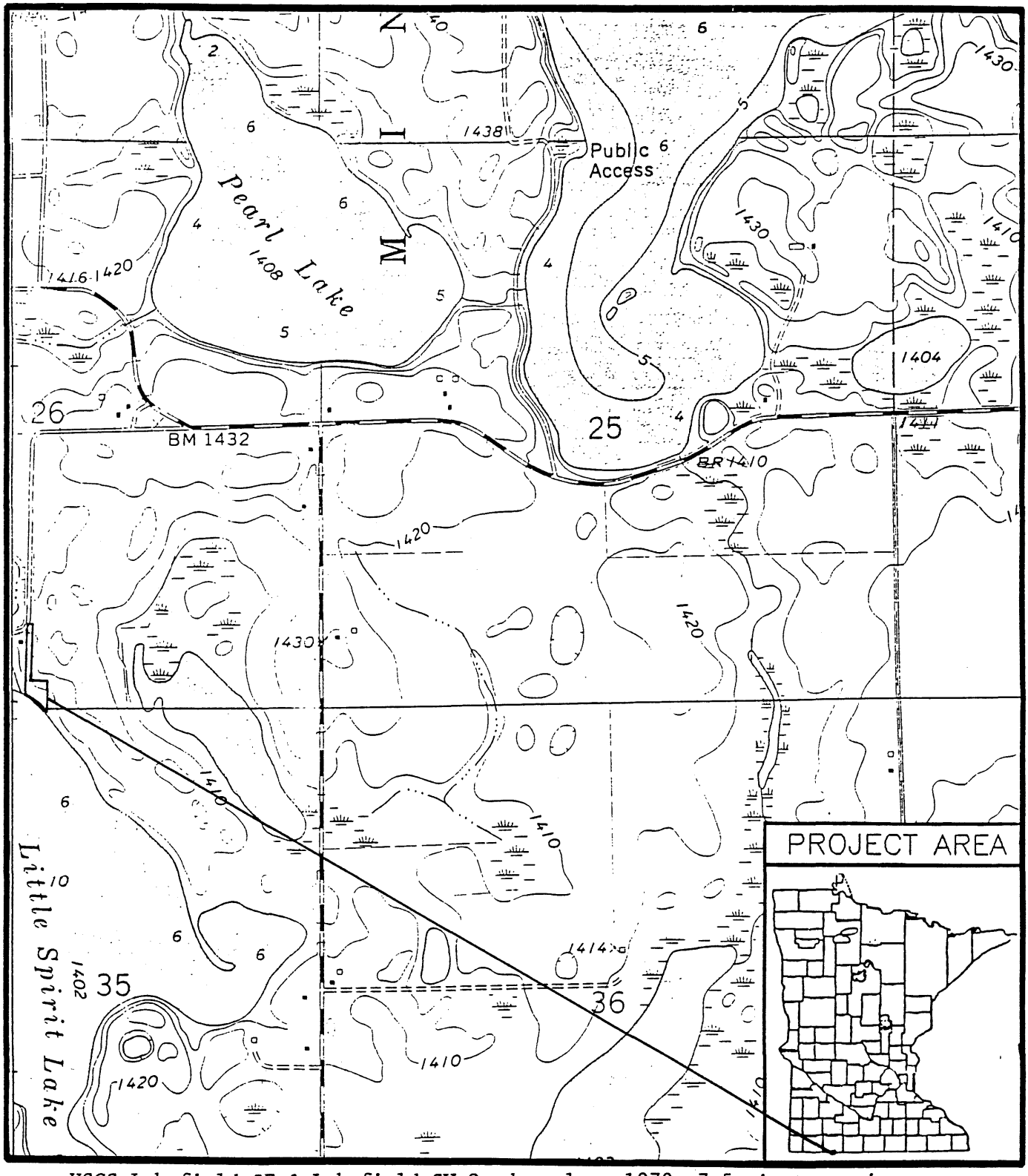
Little Spirit Lake (SHPO Ref. #90-1522)

Location
North end of Little Spirit Lake, about 5 miles southwest of the City of Jackson, MN and 1 mile north of the Minnesota-Iowa border (see Figure 27).

Funding/Permit Status
Development costs for this project were to be used as State match for Federal funds received through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Blue Earth Till Plain (Wright 1972)/Blue Earth Till Plain (Minnesota Soil Atlas Project, New Ulm Sheet, 1977).

Figure 27. Little Spirit Lake Project Area



USGS Lakefield SE & Lakefield SW Quadrangles, 1970, 7.5 minute series enlarged x 1.50; scale approximately 1:16,000

Description of Project Area
DNR's property is a rectangular parcel situated on the concave sideslope of a high ridge overlooking the lake. At the time of survey, most of the property was pasture, with a line of mature hardwoods along the lakeshore. It is bordered to the east and north by cultivated fields, and was accessible via an unimproved field road. DNR planned to move the road to a new alignment and upgrade it to carry two-way traffic.

Scope of Project
Development of a new Public Water Access facility. The proposed development was to include a concrete plank ramp, 16-unit gravel-surfaced parking area, 6-space grass overflow parking lot and approximately 600 feet of new entrance road. Because the property is located in rolling terrain, construction was to include both cutting and filling.

Records Review
Previous surveys: testing of 21JK16, the Robertson Park Site (Oothoudt 1976) and 21JK17, the Brown Park Site, by MHS personnel; MnSAS 1978, examination of informant report areas on Little Spirit and nearby lakes; no other known formal research on the Minnesota portion of Little Spirit Lake.

Known sites: there are known to be recorded archaeological sites on the Iowa side of the lake, although detailed information about those sites was not readily available. On the Minnesota side, there are two archaeological site areas on Little Spirit Lake that have been reported by local informants but never formally recorded; both are on the eastern shore, c. 1 mile from DNR's property. Other sites in the vicinity include 21JK16 and JK17 in county parks on Loon and Pearl Lakes to the northeast.

Field Review
Methods: 15-meter grid of shovel tests in level portions of construction area and where new road alignment crosses ridge crests; surface examination of cultivated fields bordering State property.

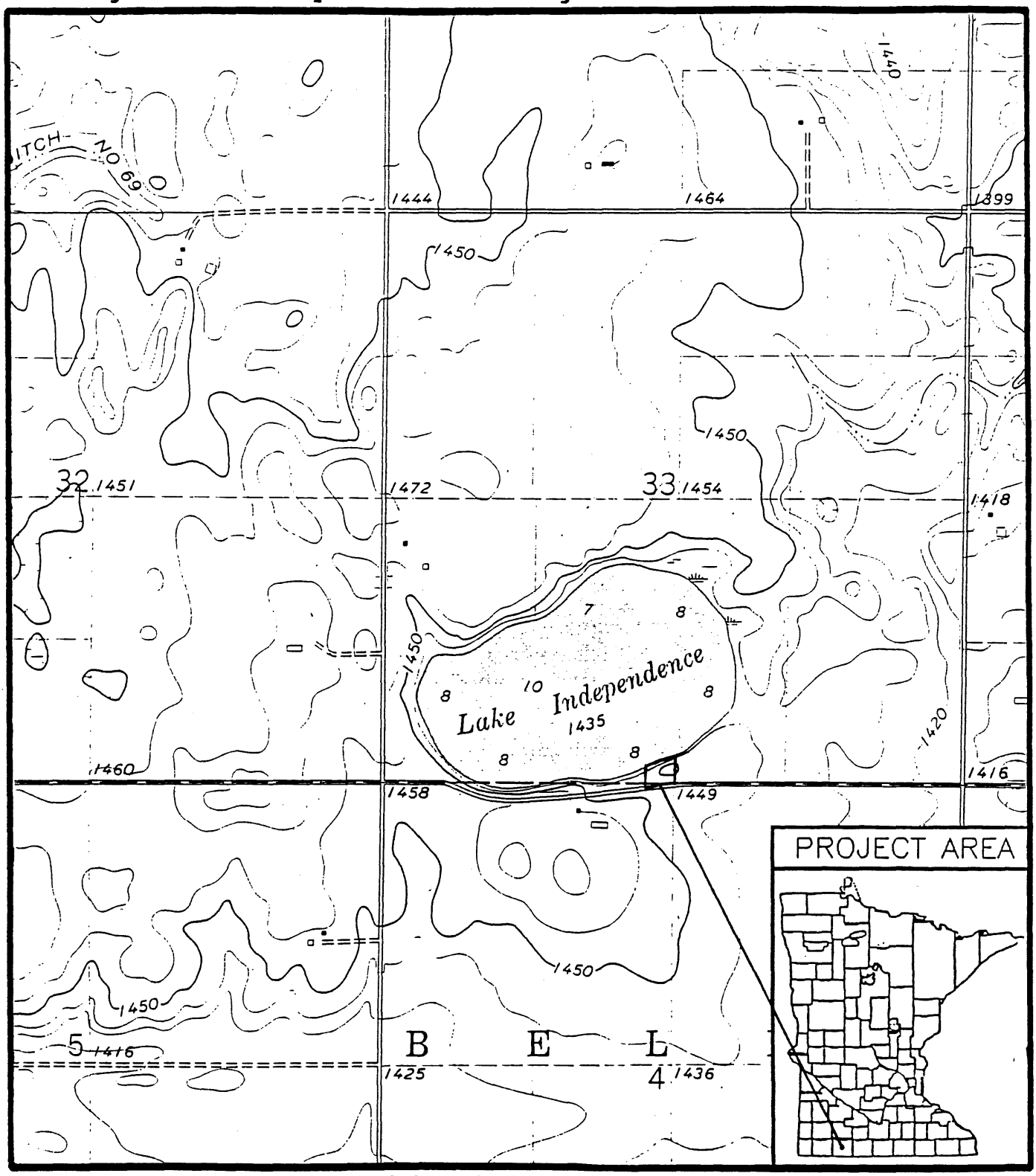
Results: Soil profiles in all shovel tests were consistent silty to sandy clay loams. The depth of the A horizon varied depending on slope, but showed no evidence of severe disturbance. Surface transects were walked along the edges of the fields to the north and east of the construction area just after a rainstorm, when surface visibility was moderate to good. The former owner of the property was asked if he knew of any archaeological materials in the area. He was familiar with the recorded sites on Loon and Pearl Lakes, but stated that he had never found artifacts on his land. No cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed development would not affect any significant cultural resources. It was recommended that construction proceed as planned with no additional review.

Independence Lake (21JK19)

Location
South shore of the lake, adjacent to CSAH #28, about 10 miles north-northwest of the City of Jackson, MN (see Figure 28).

Figure 28. Independence Lake Project Area



USGS Windom Quadrangle, 1970, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Funding/Permit Status
This project involved no Federal funding or permitting. It was constructed by DNR's Regional Maintenance crew.

Physiographic Province/Geomorphic Region
Blue Earth Till Plain (Wright 1972)/Blue Earth Till Plain (Minnesota Soil Atlas Project, New Ulm Sheet, 1981).

Records Review
Previous surveys: there apparently have not been any formal cultural resource surveys in the immediate vicinity of Independence Lake.

Known sites: the closest recorded resources are along the Des Moines River, several miles to the southwest.

Description of Project Area
The project area is on a small knoll overlooking the south shore of Independence Lake. The crest of the knoll is about 15 feet above the "normal" lake level, and is separated from the shoreline by a wooded, almost vertical cutbank. Most of the property was formerly cultivated land which had been overgrown by sumac and brush in recent years. The backslope of the knoll has been truncated by the in-place grade of CSAH #28 and associated ditches. The western side of the property is a steep cut, created by a private owner for lake access purposes.

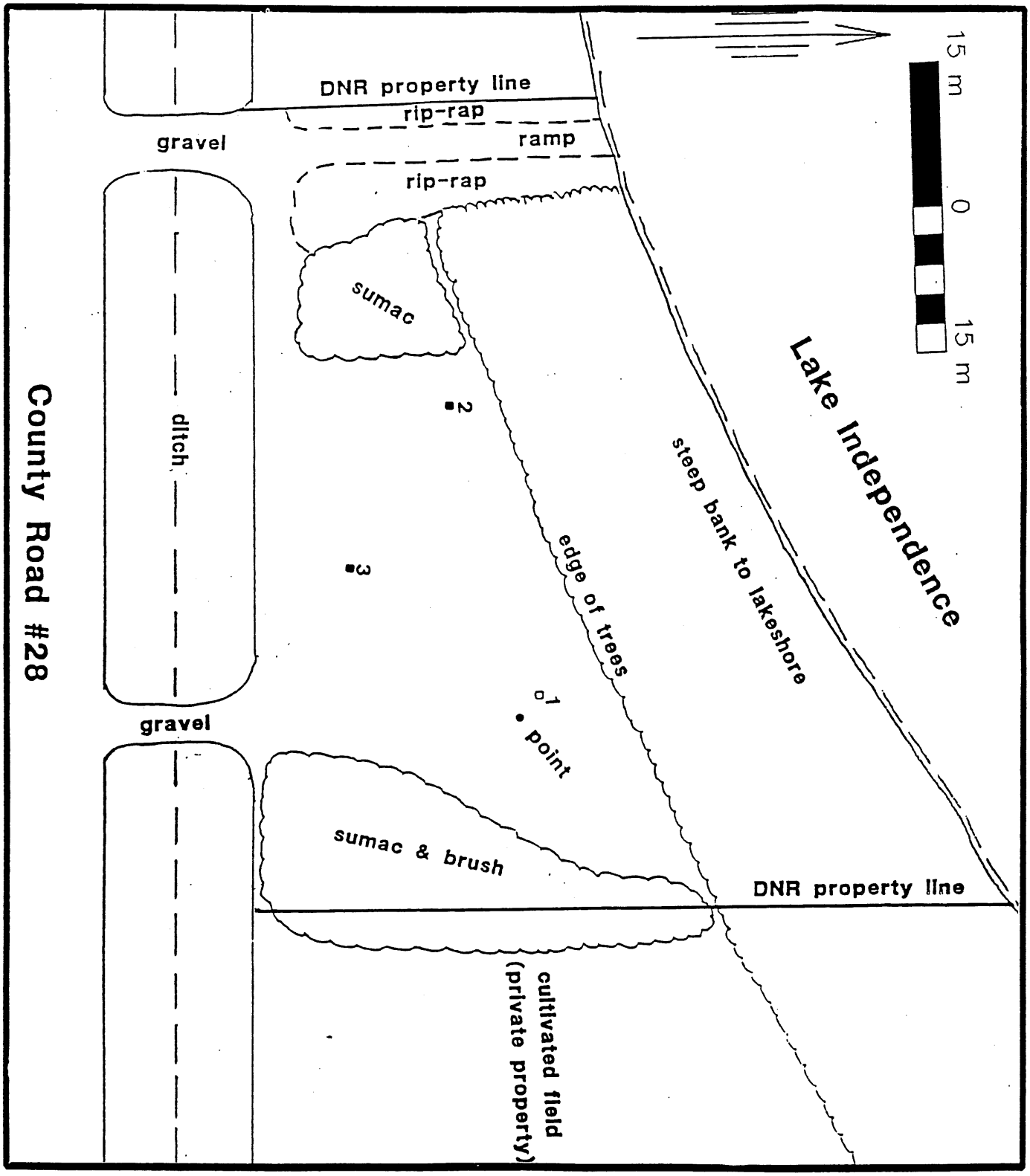
Scope of Project
When the Program Archaeologist first received information about this project in 1989, DNR's Area Manager indicated that the proposed work would consist of creation of a gravel parking area and installation of concrete planks in the existing ramp cut. He proposed having the work done by the Regional Maintenance Crew, but was soliciting an opinion from DNR-Bureau of Engineering regarding the need for extensive changes in the ramp area. The project was not to proceed until these engineering concerns were resolved.

Field Review
The Program Archaeologist received no further information about the status of this project during 1989. In the spring of 1990, the project area was visited for the purpose of preliminary survey. It was then discovered that the proposed work had already been completed. A new ramp had been installed, and the central portion of the property had been graded off to create a parking lot. Brush piles remained along the treeline at the top of the bank, where they had been pushed when the new parking area was created.

Surface reconnaissance within the parking lot area resulted in identification of a cultural deposit that had been disturbed by the access expansion project. A quantity of lithic debitage was found scattered over the surface of the graded area. Several shovel tests dug within the lot showed that part of the A horizon had been removed, but some of it remained in place (see Figure 29). The following artifacts were recovered from the site:

surface:	1 corner-notched projectile point: gray chert
	2 shatter fragments: chert, Tongue River Silicified Sediment
	14 secondary flakes: 8 chert, 2 oolitic chert, 2 quartzite, 2 quartz
	2 tertiary flakes: chert
ST 2, 10-20 cm:	1 secondary flake: oolitic chert
ST 3, 20-30 cm:	1 tertiary flake: jasper

Figure 29. 21JK19 - Area Tested in 1990



Conclusions & Recommendations
The cultural materials recovered at Independence Lake include only one diagnostic item: a small triangular projectile point with u-shaped corner notches. Based on this artifact, a Late Woodland cultural affiliation is proposed for this site. The artifact assemblage is not of sufficient size to provide a basis for delineation of site function, although a short-term habitation, perhaps associated with resource procurement, is not unlikely.

No further work is planned for this site, since the access expansion project has been completed. Regional personnel will be notified, however, that no additional work should be undertaken before the Program Archaeologist is notified.

Round Lake (21JK3) (SHPO Ref. #90-1630)

Location
Center of the east shore of Round Lake, about 4 miles northeast of the City of Round Lake, MN (see Figure 30).

Funding/Permit Status
Development costs for this project were to be used as State match for Federal funds received through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

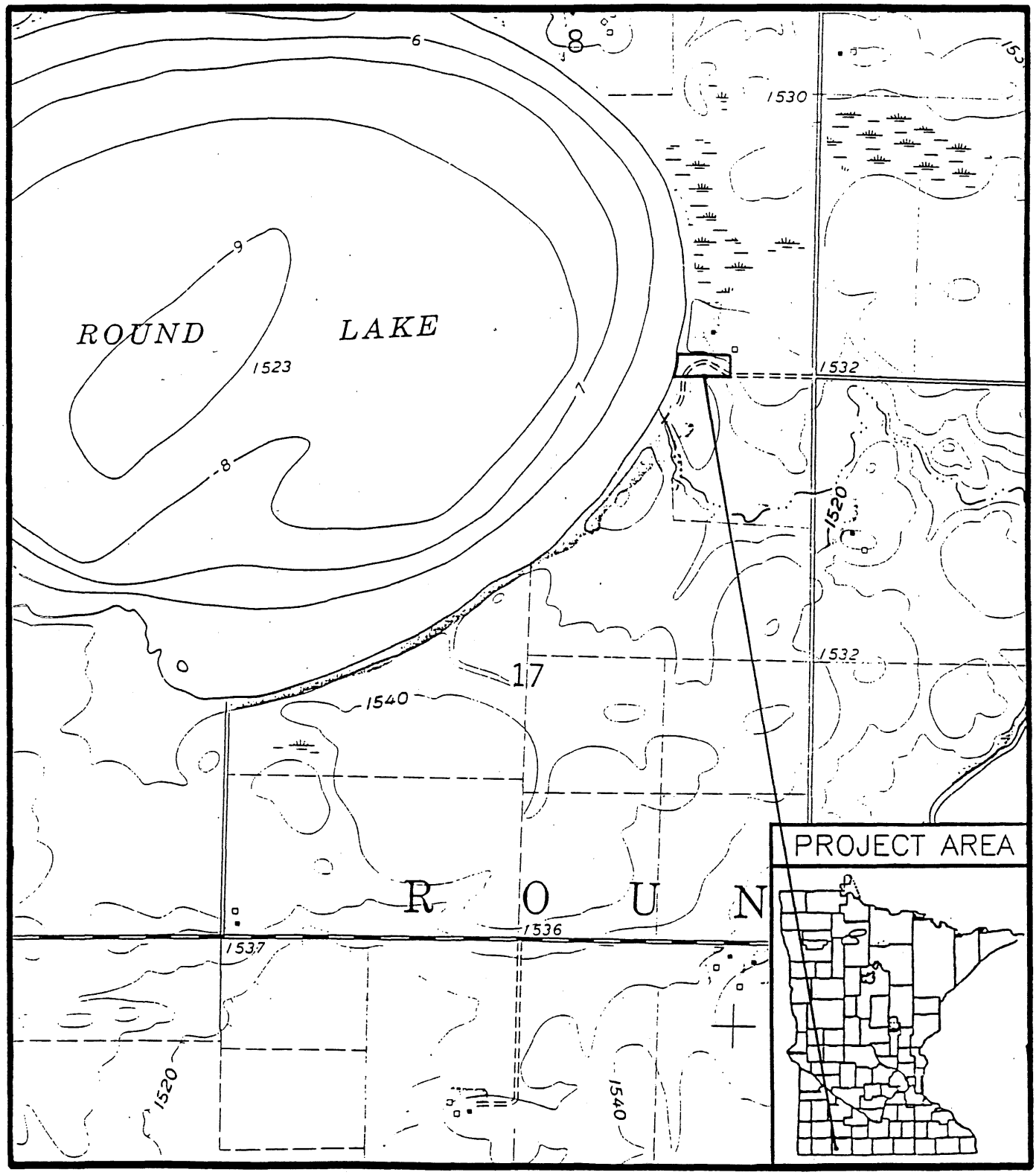
Physiographic Province/Geomorphic Region
Coteau des Prairies, Outer Part (Wright 1972)/Ivanhoe-Worthington Coteau (Minnesota Soil Atlas Project, New Ulm Sheet, 1977).

Description of Project Area
DNR's property includes part of the right-of-way of a east-west township road, a concrete launch ramp installed at the end of the road, the adjacent ditch and a portion of the sideslope of a large, low knoll overlooking the lake. This area is mostly grass, with a line of mature trees along the top of the low cutbank at the lakeshore. Two narrow gravel driveways cross the property, leading to the lakeshore from the adjacent private campground.

The 1960 USGS Round Lake Quadrangle shows that the township road adjacent to the project area at one time had a slightly different alignment than at present. Rather than following the section line all the way to the lakeshore, the road had a semi-circular curve that brought it across the proposed construction area. This alignment still can be detected on the ground, in the form of remnants of fill section and traces of shallow ditching on the upslope side of the old road grade.

Scope of Project
Rehabilitation and expansion of existing Public Water Access. The original facility consisted of a concrete ramp on the lakeshore at the end of a township road. In the past, people using the ramp have parked along the township road right-of-way or in nearby private driveways. In order to resolve local concerns about this situation, DNR purchased an adjoining parcel of land and planned to construct a gravel-surfaced lot that would provide 15 parking spaces outside the road right-of-way. Because the parking lot will be located on the sideslope of a low knoll, construction was to require some cutting along the higher side of the property and filling along its southern edge, where it drops towards wetland across the road.

Figure 30. Round Lake Project Area



USGS Round Lake Quadrangle, 1960, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Records Review
Previous surveys: Lloyd Wilford's investigation of sites in Jackson County, 1956; MnSAS survey 1978.

Known sites: this project area is within the recorded boundaries of **21JK3**, a Woodland habitation site initially recorded on the basis of information given to Lloyd Wilford by a local collector. Wilford's memo dated May 20, 1956 notes:

> *Visited with [Alvin] Glaser a village site on the east shore of Round Lake, where there was once a resort. This is about on the dividing line between sections 8 and 17, T. 101, R. 38. A Mr. Hurley owns this and has lived here for some time. Arrowheads and sherds have been found here, and a burial was found when a basement was dug for the house. On the whole the site does not look very promising.*

Wilford did not conduct any investigations of his own at this site. It was visited in 1978 by MnSAS crew members, who interviewed a local collector about areas on Round Lake at which artifacts had been found. That collector indicated that lithics and ceramics could be found by walking plowed fields, cutbanks and beaches along the east side of Round Lake. No definition of precise collection areas was done, and no fieldwork was undertaken at 21JK3 by the MnSAS crew.

The present site area definition for 21JK3 apparently is based on information obtained in 1978 from the local collector. It seems likely, however, that the large area shown on the map may encompass several discrete habitation areas, since it covers a variety of landforms, including a large wetland.

Field Review
Methods: examination of surface exposures along shoreline, ice ridge and edges of township road; 15-meter interval shovel test grid in proposed construction area (see Figure 31).

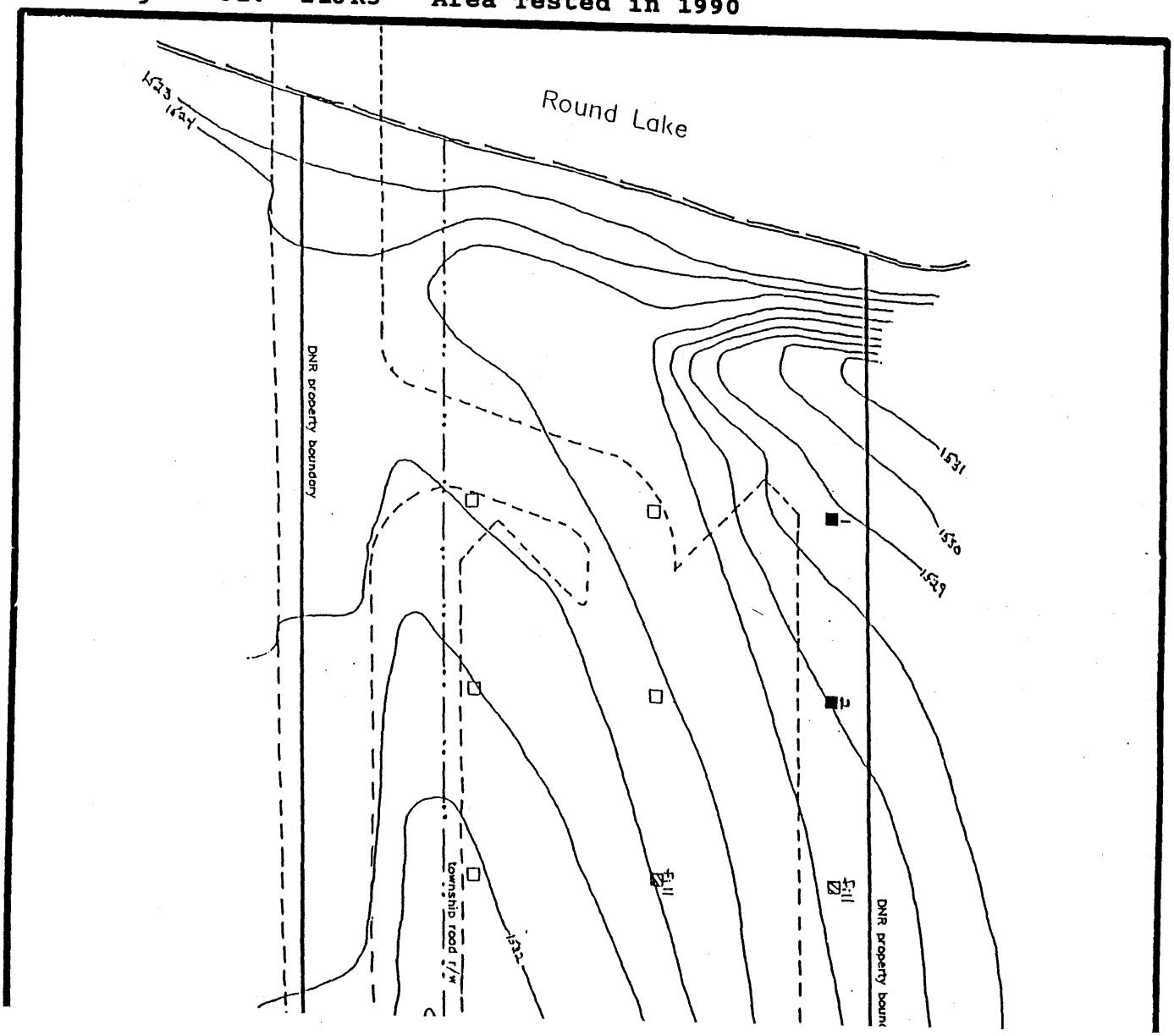
Results: The present owners of the campground (who purchased the property from the Hurleys in 1983) live out-of-state, and the current caretakers had just moved onto the property in the spring of 1990. They did not know anything about archaeological materials that might have been found on the property in the past. The house that stands on the crest of the knoll (c. 50' north of the State property) may be the house noted by Wilford in his 1956 memo.

Recent disturbance to the property was evidenced in about half of the shovel tests by a layer of coarse fill and/or gravel overlying natural strata. In some of the tests, the A horizon was mostly intact under the fill; in other cases, it had been removed before fill had been added. Impenetrable fill from the old township road grade was encountered in shovel tests in the center of the property.

Cultural materials other than recent trash were recovered from two shovel tests, both in the northwestern corner of the property. In ST #1, two lithic flakes were found in association with fragments of glass, wire nails and other metal fragments, at depths above 30 cm. In ST #2, 15 meters to the east, 3 flakes and 1 ceramic crumb were recovered from strata that included similar evidence of recent disturbance.

Management Recommendations
It appeared that DNR's property does include a very small portion of the occupation area recorded as 21JK3. However, it has been substantially disturbed in the past by

Figure 31. 21JK3 - Area Tested in 1990



road construction and other activities, and does not include a major portion of the cultural deposit. It is likely that the bulk of the habitation debris is located on the crest of the knoll, on the campground property. Given the minimal effect that the proposed access expansion will have on the site as a whole, it was recommended that DNR proceed with construction as planned, with the condition that final plans include a specific notification to the contractor of the existence of the cultural deposit adjacent to the construction area. The Project Engineer was to inform the Contractor that care should be taken to avoid disturbing any ground outside the construction zone. The contractor was also notified that the Project Engineer and Program Archaeologist were to be alerted immediately if any additional cultural materials came to light during the project.

Lyon County

Wood Lake (SHPO Ref. #90-1749)

Location

Northwest corner of Wood Lake, about 14 miles southwest of the City of Marshall, MN (see Figure 32).

Funding/Permit Status

This project was to be funded in part through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region

Coteau des Prairies, Outer Part (Wright 1972)/Ivanhoe-Worthington Coteau (Minnesota Soil Atlas Project, New Ulm Sheet, 1977).

Description of Project Area

In order to provide public access to Wood Lake, DNR purchased a small parcel of field/pasture, bounded by a township road on the north, a farmstead on the east and a small wetland/drainage on the west. Most of the project area is on the crest of a level upland ridge which is bordered along the lakeshore by a very steep, c. 15' cutbank. In recent years, Wood Lake has risen to a level about 6 feet higher than the "ordinary" high water mark defined by DNR.

Scope of Project

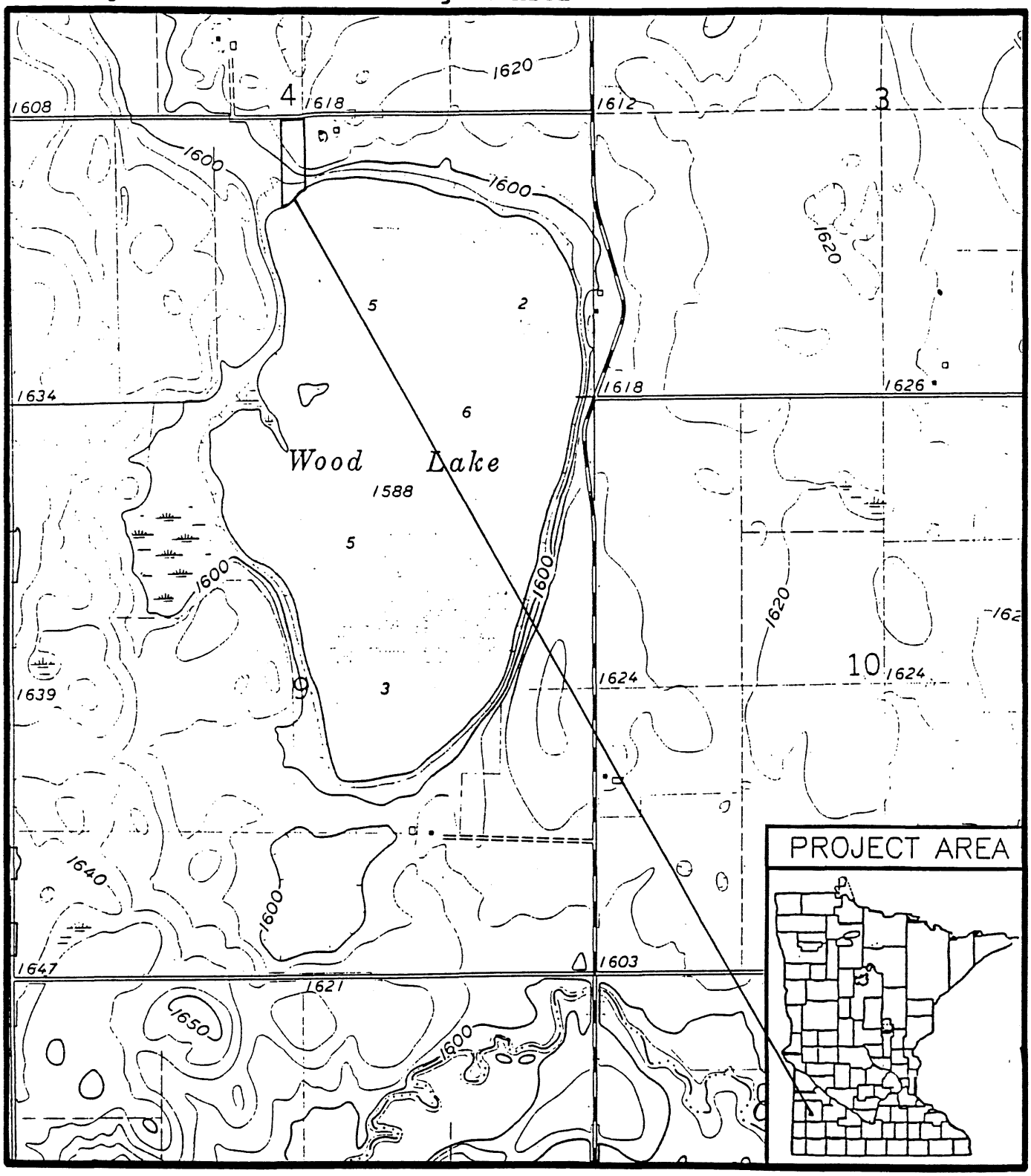
Development of a new Public Water Access facility. DNR planned to construct a 15-unit parking lot, new entry road, turn-around loop and concrete plank ramp. Because most of the project area is at an elevation about 15' above the lake level, a substantial cut was necessary to construct the ramp approach. The remainder of the construction was to be at or near existing grade.

Records Review

Previous surveys: no evidence was found that there have been any formal cultural resource surveys in the vicinity of Wood Lake. The closest known survey areas are in Camden State Park, about 5 miles to the east of DNR's property.

Known sites: a review of state site files indicated that the the nearest formally recorded resource is a habitation site (21LY6) on Island Lake, c. 1.5 miles northeast of the project area. The Trygg compilation of GLO survey information also shows a single mound at the north end of Black Rush Lake, about 6 miles to the west. This mound has apparently never been authenticated or officially recorded.

Figure 32. Wood Lake Project Area



USGS Dead Coon Lake Quadrangle, 1963, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Field Review
Methods: 15-meter interval grid of shovel tests on upland in construction area; surface examination of exposures along field road, cutbank and shoreline.

Results: past cultivation of the project area was evidenced by still-visible plow furrows, and a well-defined plow zone that appeared in all shovel tests to depths ranging from 25 to 30 cm below the surface. Except for this, no evidence of disturbance of natural stratigraphy was encountered. Soils were consistent sandy silt loams. Surface exposure along the cutbank was moderate to good; there is some vegetation in this area, but the steepness of the slope has caused considerable slumping along the higher part of the bank. No cultural materials were found anywhere in the project area.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

McLeod County

Hook/Echo Lakes (21MC4) (SHPO Ref. #90-2198)

Location
Between Hook Lake on the northwest and Echo Lake on the southeast, on both sides of County Road #61, about 7 miles north-northeast of the City of Hutchinson, MN (see Figure 33).

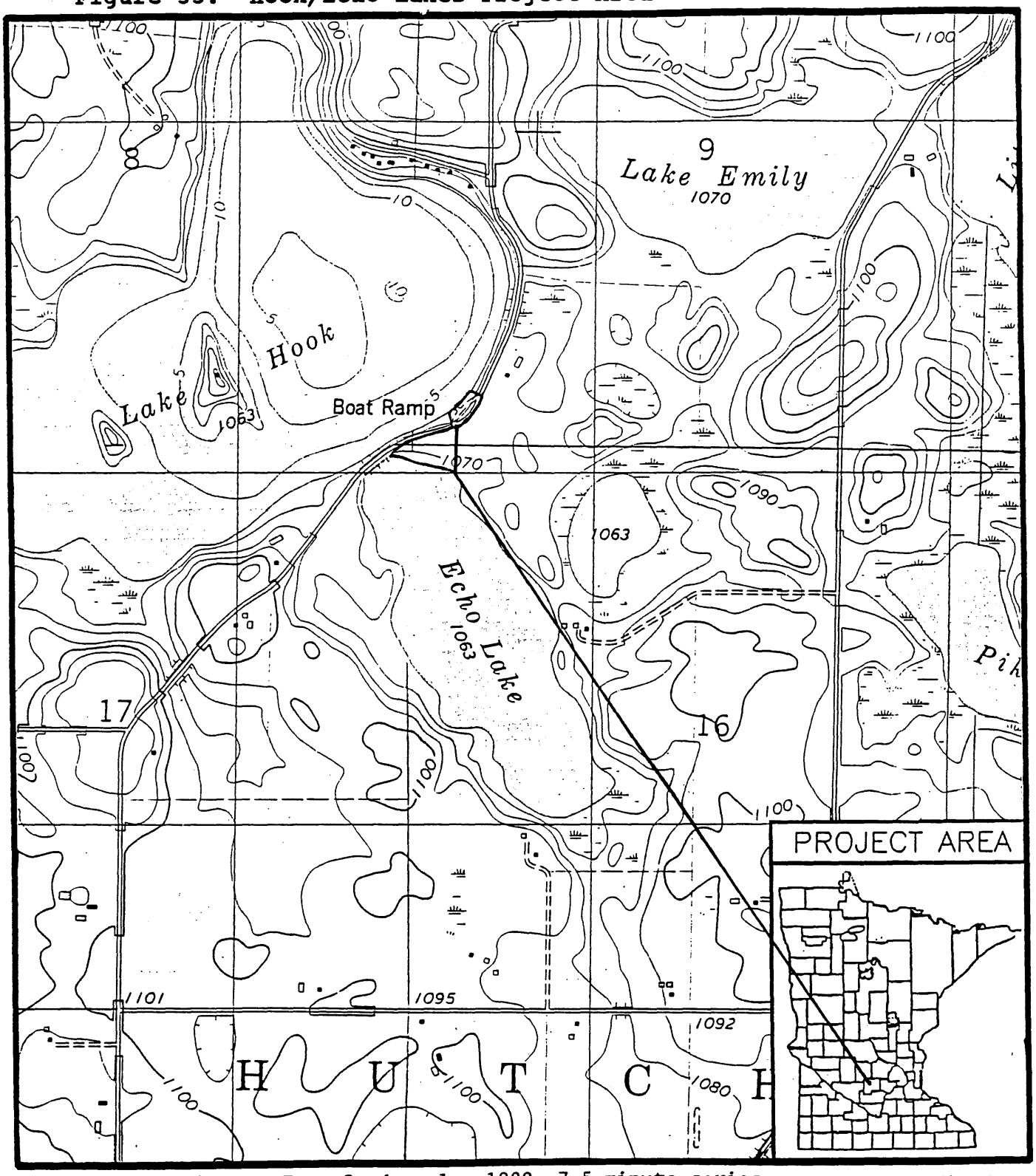
Funding/Permit Status
Development costs for this project were to be used as State match for Federal funds received through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Alexandria Moraine Complex, with Owatonna Moraine Complex to east (Wright 1972)/Waconia-Waseca Moraine (Minnesota Soil Atlas Project, New Ulm Sheet, 1981).

Description of Project Area
County Road #61 runs along a narrow peninsula between Hook Lake to the northwest and Echo Lake to the southeast. Most of the land south of the road is under cultivation, except for a small meadow and wooded area in the narrowest part of the peninsula. It appears that the two lakes were previously connected by a channel that has been mostly filled in by the road grade.

DNR has had an access to Hook Lake on the north side of the road for a number of years. That facility consists of a narrow gravel parking area between the road right-of-way and the lakeshore. In 1986, DNR purchased a triangular parcel of land on the south side of the road in order to provide additional parking area. Most of this property lies in a pronounced swale between two small knolls, and also includes a large area of wetland on the margin of Echo Lake. The eastern boundary of the property includes a portion of a field that was under cultivation until 1990.

Figure 33. Hook/Echo Lakes Project Area



USGS Hutchinson East Quadrangle, 1982, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Scope of Project

This project had two segments: rehabilitation of an existing access facility on Hook Lake, and construction of a new access to Echo Lake. The existing access is situated on a narrow strip of land between County Road 61 and the shore of Hook Lake. DNR also purchased a triangular parcel of land on the opposite (south) side of the road in which to construct a new parking area. This property was to be used to provide access to Echo Lake.

The proposed construction involved resurfacing of the existing access on the north side of the road, construction of a 12-unit parking lot adjacent to the road right-of-way on the south side, and installation of a concrete ramp on the Echo Lake shore at the end of a short entry road. Portions of this parking area and road were to be built on fill over filter fabric.

Records Review

Previous surveys: no evidence was found that there have been any formal cultural resource surveys in the immediate vicinity of the project area.

Known sites: in 1987, when DNR published Public Notice of intent to purchase the Echo Lake parcel, a Hutchinson resident contacted the Regional Office to inform DNR that he had, in the past, collected artifacts from cultivated fields between Hook and Echo Lakes. This information was communicated to the Water Access Program Archaeologist, and plans were made for preliminary survey before the State completed the acquisition. No detailed property maps were available at the time, so survey was based only on a verbal description of the location of the property lines.

Initial survey was done in the spring of 1987, at which time the cultivated lands south of the county road were bare of vegetation. Surface reconnaissance focused on a small knoll overlooking Echo Lake. Close-interval transects across the crest of the knoll yielded a small assemblage of habitation debris, including 2 grit-tempered body sherds with indistinguishable surface treatment. Other artifacts included waste flakes of Swan River Chert, Shakopee oolitic chert, and one unifacially modified Knife River Flint flake. The knoll was surface collected on two occasions, yielding a total collection of 19 items recovered from an area about 6,400 square meters (80 m by 80 m) in size. Artifacts were found only on the northeast sideslope just below the top of the knoll and on the eastern side of the crest. The artifacts collected in 1987 are as follows:

2 grit body sherds, surface treatment indistinct
1 flake tool: oolitic chert
1 flake tool, unifacially worked: Knife River Flint
1 shatter fragment: chert
1 core fragment: Swan River Chert
1 core fragment, utilized: chert
4 primary flakes: chert
1 primary flake: Swan River Chert
4 secondary flakes: oolitic chert (3 thermally altered)
1 secondary flake: quartz
1 tertiary flake: oolitic chert (thermally altered)
1 tertiary flake: Swan River Chert

DNR's efforts to purchase the Echo Lake property were somewhat delayed due to the need for a boundary survey to resolve questions about the precise location of the property lines. Therefore, no additional survey of the area was done until 1990, by which time detailed property maps were available. It was then discovered that the cultivated area from which artifacts were retrieved is on private property, just outside the boundaries of the parcel now owned by the State.

Field Review

Methods: initial survey conducted in 1987 is described above. In 1990, additional

survey consisted of a combination of surface reconnaissance and shovel testing in the area to be affected by the proposed construction. The far eastern edge of the State property, which had been plowed but not planted, was subjected to intensive surface reconnaissance (transects were less than 5 meters apart and were each walked twice). Shovel tests were dug in the higher-lying portions of vegetated areas west of the field edge. Most of the central part of the construction zone is very low and had some standing water in it at the time of survey. No subsurface testing was done in this part of the property. The small wooded knoll on the far western side of the State property, which would not be affected by the proposed project, was not surveyed (see Figure 34).

Results: topsoil loss in the cultivated portion of the survey area was evidenced by the presence of large quantities of pebble to cobble-sized glacial materials on the field surface. Soil stratigraphy in the vegetated part of the property was consistent and appeared to be relatively undisturbed. Saturation of soils became pronounced as shovel testing moved to lower elevations in the center part of the construction area. No additional cultural materials beyond those recovered in 1987 were found on the field surface or during shovel testing.

Management Recommendations

The archaeological site identified during preliminary survey of this project area appeared to be confined to the northeastern sideslope and crest of a small knoll that lies entirely outside the construction area. Materials recovered from this site do not allow for any temporal definition except a generalized Woodland affiliation, based on the presence of grit-tempered ceramic sherds. It does appear that the site has been degraded by long-term cultivation and the resulting downslope movement of the organic horizon. The cultural deposit appears to have been completely plowed through. The plow zone clearly extends into the subsoil, as evidenced by the lack of organic soil and the quantities of glacial till on surface at the crest of the knoll and the quantities of glacial till and very lit. Because of the level of past disturbance, the site does not appear to qualify for consideration of NRHP eligibility.

The area that was to be affected by DNR's proposed construction does not overlap with the site area as defined by reconnaissance survey. No evidence of the presence of additional cultural resources was found within the construction zone. It was therefore recommended that the project proceed as planned with no additional review.

Nicollet County

Swan Lake/Poor Farm Bay (SHPO Ref. #90-2428)

Location

North shore of Poor Farm Bay on Swan Lake, about 3 miles northwest of the City of Nicollet, MN (see Figure 35).

Funding/Permit Status

This project was to involve funding from the U.S. Coast Guard Boating Safety Grant Program.

Physiographic Province/Geomorphic Region

Olivia Till Plain (Wright 1972)/Waconia-Waseca Moraine (Minnesota Soil Atlas Project, New Ulm Sheet, 1981).

Figure 34. 21MC4 - Area Tested in 1987/1990

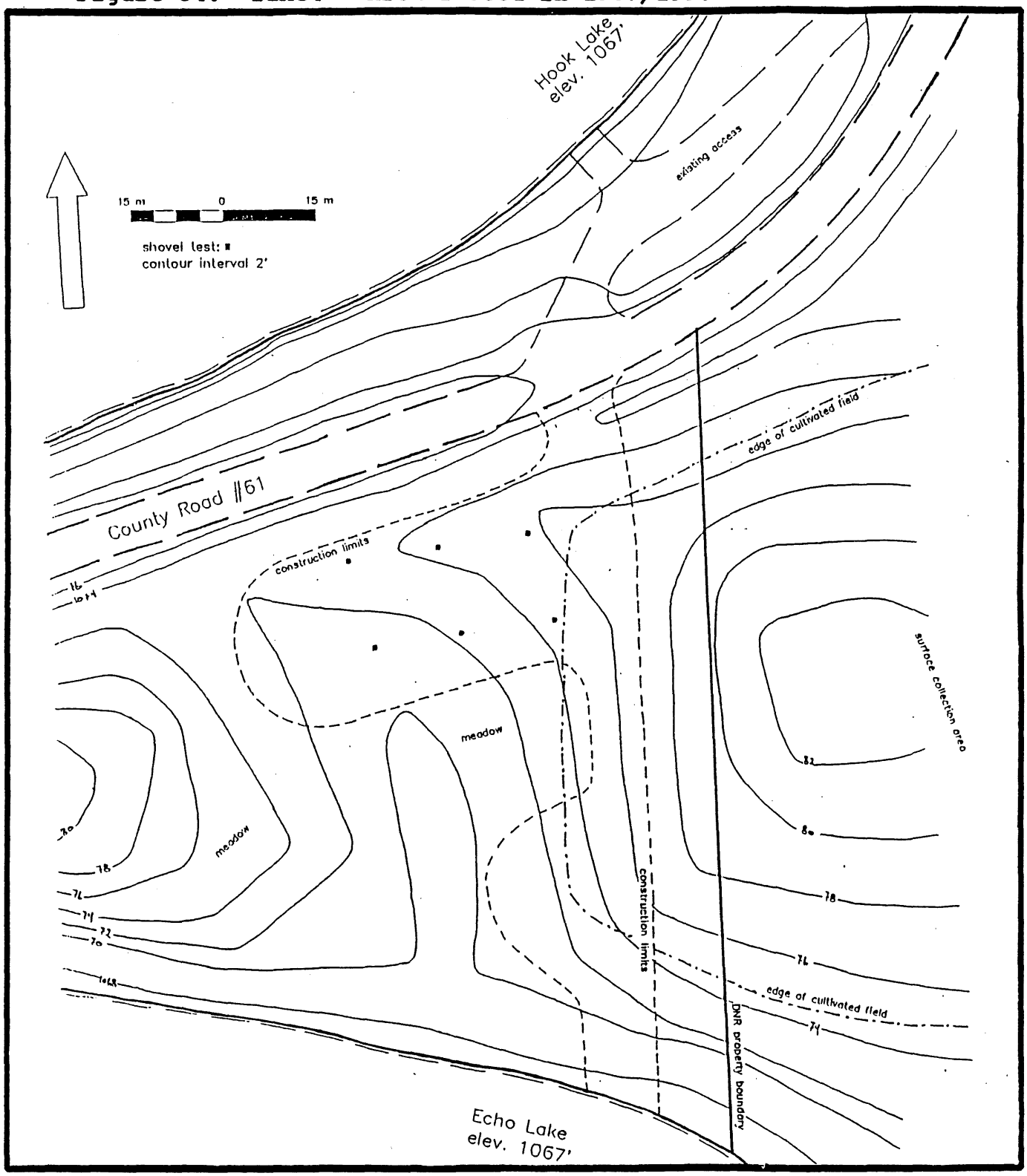
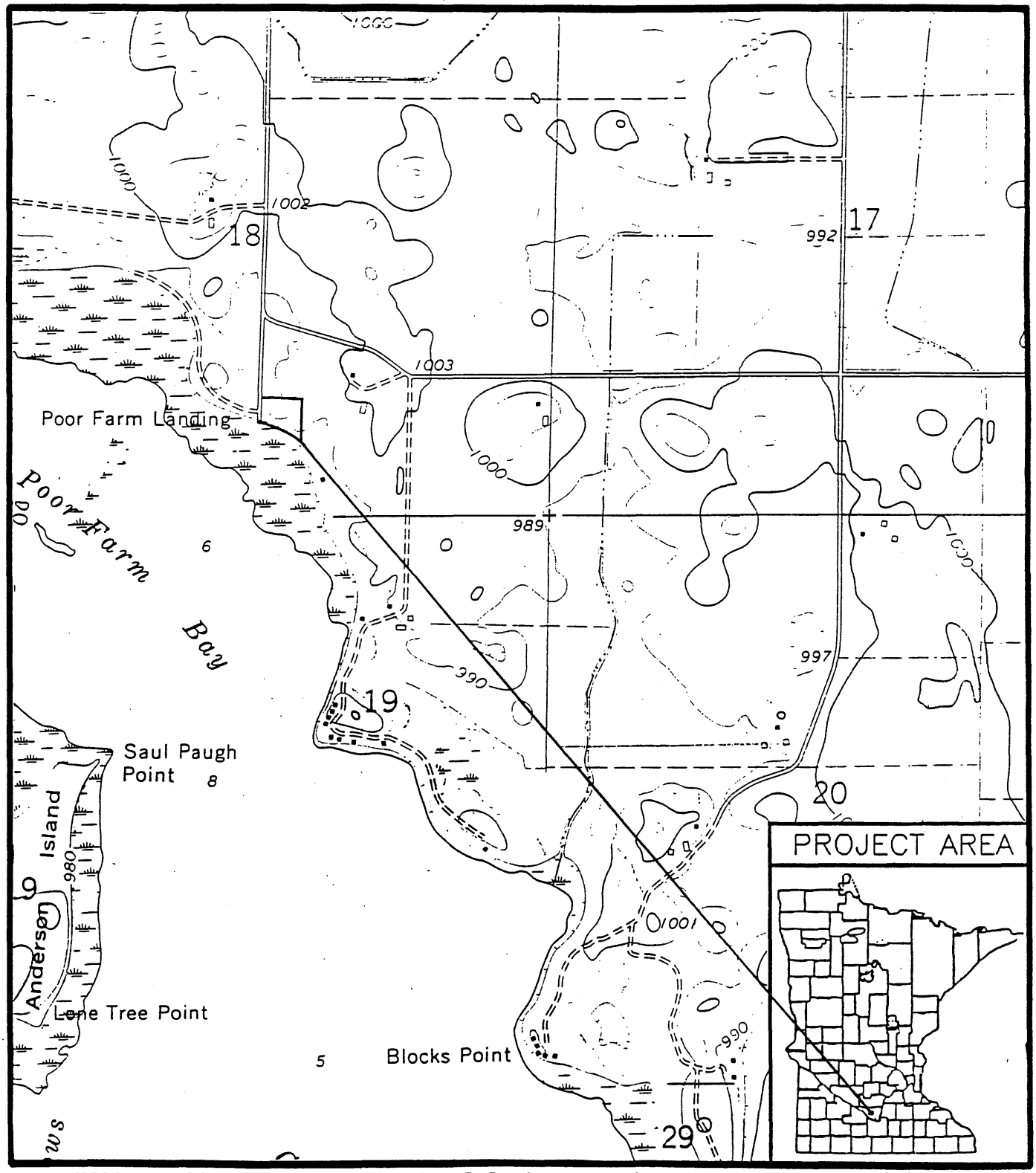


Figure 35. Swan Lake/Poor Farm Bay Project Area



USGS Nicollet Quadrangle, 1965, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Description of Project Area
DNR recently purchased a parcel of land from a private landowner in order to expand the old Poor Farm Bay access facility. The proposed parking lot location was formerly part of a cultivated field. At the time of survey, it had been fallow for several years and was covered with fairly dense growth of grasses, clover and alfalfa.

The proposed construction area is separated from the lakebed by a pronounced beach ridge that marks a former high-water level. (Currently, Swan Lake is several feet below its official "normal" elevation, due to a combination of agricultural drainage and low precipitation levels during the past 5 years.) The project area has a slight slope upward to the north and east, where it is bordered by cultivated fields.

Scope of Project
Rehabilitation of an existing access to Swan Lake and construction of a new parking area adjacent to the in-place facility. The original access consisted of a small gravel turn-around and parking area at the end of a township road. DNR planned to construct a 13-unit gravel-surfaced parking lot, grassed overflow parking for an additional 27 units, replace the existing concrete ramp and dredge a 1500' channel from the ramp to the current water's edge.

Records Review
Previous surveys: Mankato State University surveys in the Swan Lake locality; survey of the lake outlet in 1988 (Stemper 1988); survey of TH #14 upgrade on the south side of the lake (Peterson, Yourd & Gonsior 1988). No survey is known to have been done in the immediate vicinity of DNR's property.

Known sites: numerous habitation and burial sites are known to be present on the shores of Swan Lake as well as on former islands within the lakebed. The only documented sites within 1 mile of the project area are 21NL18, a Woodland habitation site situated on a hilltop about 1/8 mile north-northwest of DNR's property, and an unnumbered habitation site, reported by the landowner, on a knoll just northeast of the project area. Neither of these sites will be affected by the proposed construction.

Field Review
Methods: 15-meter grid of shovel tests over proposed construction area; surface examination of field edges along the north and east property lines.

Results: although formerly cultivated, the construction area had been overgrown to the extent that there was virtually no surface visibility within DNR's property boundaries, although old plow furrows were still noticeable. Margins of the cultivated fields adjacent to the property were visually inspected; crops were small and surface visibility was fair to moderate. A grid of shovel tests was dug over the entire construction area except the existing parking area immediately adjacent to the township road. Soil profiles were consistent in all shovel tests, showing a plow zone ranging in depth from roughly 19 to 41 cm below the surface. No cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed project would not affect any significant cultural resources. It was recommended that construction proceed as planned with no additional review.

REGION V - SOUTHEAST

Wabasha County

Lake Pepin/Roschen Park (SHPO Ref. #90-1748)

Location

East shore of Lake Pepin, adjacent to northbound TH #61, within the City of Lake City, MN (see Figure 36).

Funding/Permit Status

Development costs for this project were to be used as State match for Federal funds received through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Because the project area is on land owned by MnDOT, the work required a limited-use permit from that agency.

Physiographic Province/Geomorphic Region

Rochester Till Plain (Wright 1972)/Mississippi Valley Outwash (Minnesota Soil Atlas Project, St. Paul Sheet, 1972).

Description of Project Area

The project area is an existing park, located on a fill section between the shore of Lake Pepin and the northbound lane of TH #61. Discussions with the Trunk Highway Archaeologist have confirmed that the project area is entirely artificial, and was created by MnDOT during construction that took place prior to initiation of the Trunk Highway Survey.

Scope of Project

Rehabilitation of existing Public Water Access facility on the shore of Lake Pepin. The project area is located within Roschen Park, which is operated by Lake City on property owned by MnDOT. The original facility consisted of two gravel-surfaced parking areas, entry roads and double launch ramps in an area adjacent to the grade of northbound TH #61 at the south edge of Lake City. DNR planned to slightly expand the parking areas, pave them and install new ramps.

Management Recommendations

Information received from the Trunk Highway Archaeologist indicated that all of the planned construction would be within an artificial fill section. No formal field survey of the construction area was therefore done. It was recommended that the project proceed as planned with no additional review.

Goose Lake/Pritchard's Landing (SHPO Ref. #90-2035)

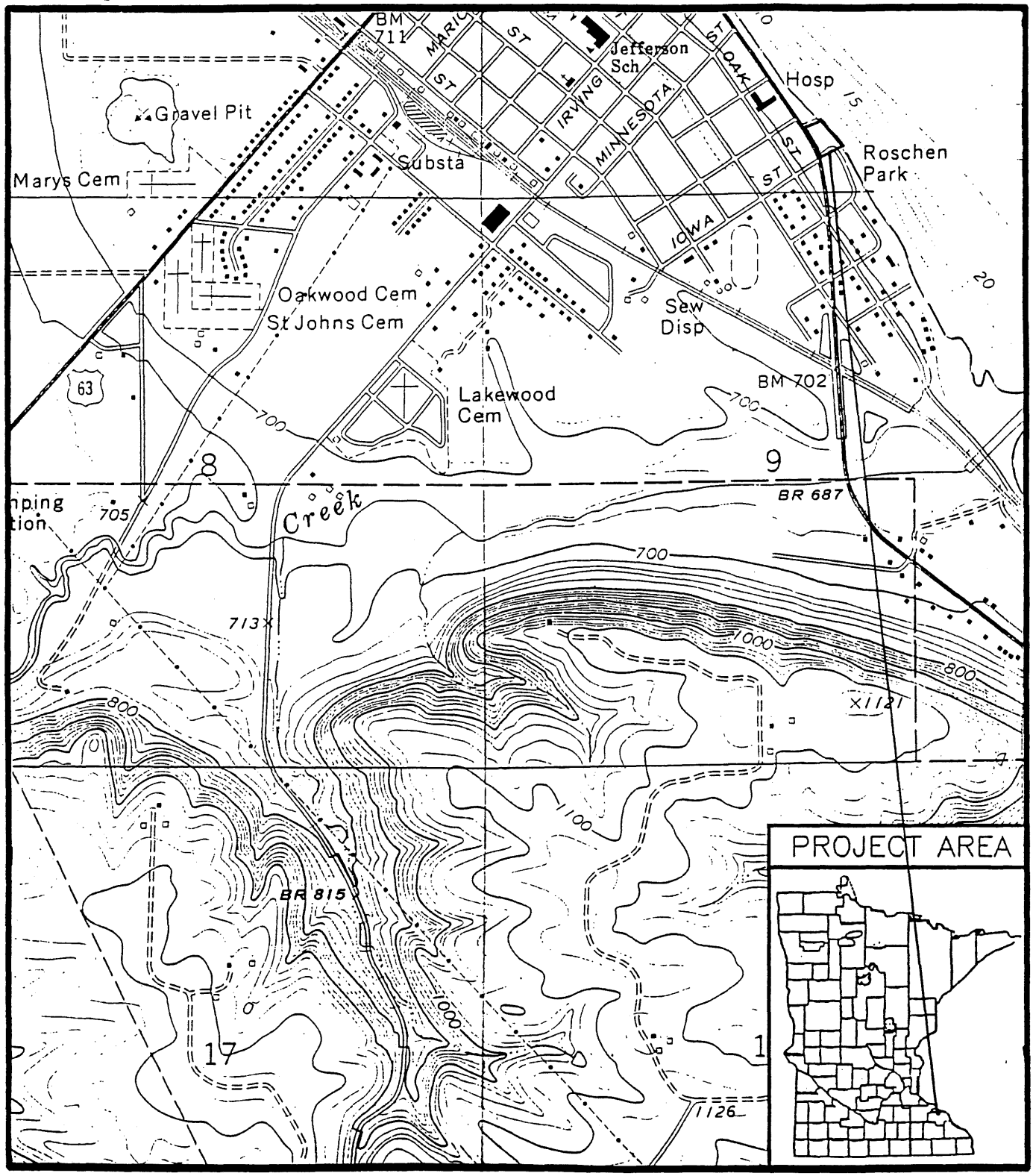
Location

Northwest shore of Pritchard Lake, about 4 miles north-northeast of the City of Weaver, MN (see Figure 37).

Funding/Permit Status

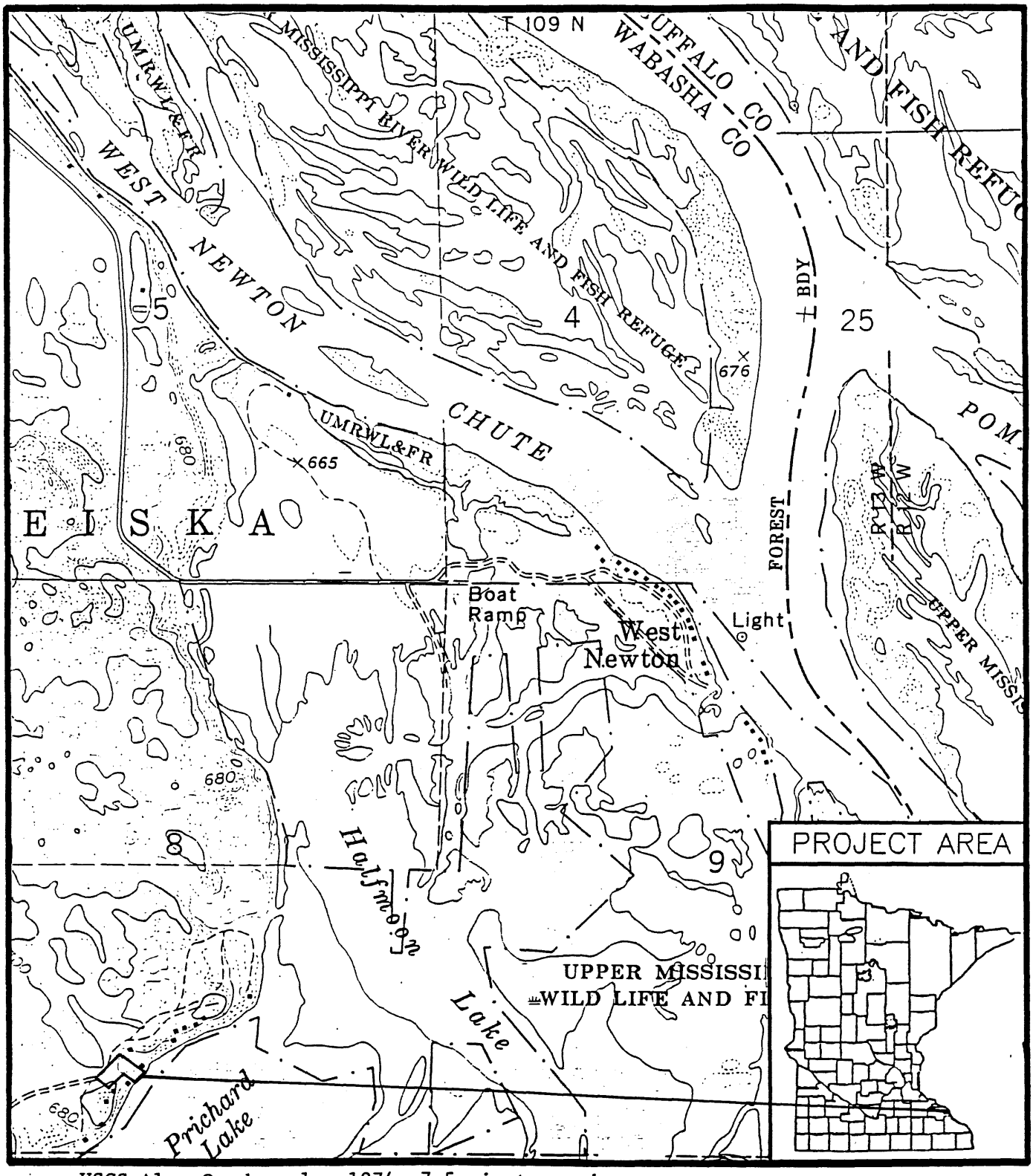
Development costs for this project were to be used as State match for Federal funds received through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Figure 36. Lake Pepin/Roschen Park Project Area



USGS Lake City Quadrangle, 1974, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Figure 37. Goose Lake/Pritchard's Landing Project Area



USGS Alma Quadrangle, 1974, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Physiographic Province/Geomorphic Region
Rochester Till Plain (Wright 1972)/Mississippi Valley Outwash (Minnesota Soil Atlas Project, St. Paul Sheet, 1972).

Description of Project Area
The project area is on the margin of a broad outwash plain at the western edge of the Mississippi River floodplain. Just west of the project area there is a large dune field created by Early Holocene aeolian activity; a portion of this is the Weaver Dunes Scientific & Natural Area managed by DNR.

The project area consists of two irregularly-shaped parcels that sit among developed residential lots. They are connected by a narrow strip of land that crosses a steep slope between them. The main parking area, on a low terrace at the lakeshore, is at the base of the slope. The secondary parking area is located on a slightly rolling plain above the slope. This area is traversed by several private driveways leading from the adjacent township road to a nearby residential area.

Scope of Project
Rehabilitation of an existing Public Water Access facility. DNR planned to expand the size of an existing gravel parking area on the northwest shore of Pritchard Lake (also known as Goose Lake), a backwater of the Mississippi River. Fill was to be added around the edges of the existing parking lot to improve traffic flow and provide additional parking spaces. A second parking area located on a terrace about 20' above the main lot would also be rehabilitated. The original crushed rock surface of this parking area had become overgrown with grass, which was to be poisoned before additional coarse fill is added to define the lot edges.

Records Review
Previous surveys: no evidence was found that there have been any formal cultural resource surveys in the vicinity of the project area.

Known sites: there are no known cultural resources within 1 mile of the project area.

Field Review
Methods: examination of exposed surface along the lakeshore and edges of the existing parking areas and driveways; shovel tests in accessible portions of lower construction area.

Results: virtually all of the construction area on the upper terrace was covered with crushed rock when the original facility was constructed. Attempts to dig shovel tests around the perimeter of this area were unsuccessful. In the lower parking lot, the planned expansion area included a few small areas that had not been covered by coarse surfacing material. Shovel tests in these areas showed uniform very sandy soils with well-developed organic horizons. No cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Winona County

Mississippi River/Minneiska (SHPO Ref. #91-0173)

Location

South bank of a small unnamed stream, north of County Road #25 and west of southbound TH #61, within the city limits of Minneiska, MN (see Figure 38). [Note: most of the City of Minneiska is in Wabasha County. The project area is just across the county line, on the south edge of town, in Winona County.]

Funding/Permit Status

Development costs for this project were to be reimbursed from the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region

Mississippi Valley (Wright 1972)/Rochester Till Plain (Minnesota Soil Atlas Project, St. Paul Sheet, 1973).

Description of Project Area

DNR owns a parcel of floodplain on the south bank of a small stream which enters the Mississippi River in Minneiska. This property was used by MnDOT as a fill source during construction of the adjacent TH #61 alignment; after fill removal, the property was used as a temporary storage location for excess construction materials from the highway construction project. (This information was confirmed in a letter to DNR from the Winona County Highway Department). Part of the proposed construction was to be within the right-of-way for CSAH #25; DNR established an agreement with MnDOT to use the culvert under TH #61 for access to the river from the launch point.

Recent disturbance to the construction area was evidenced in part by local vegetation differences: the parcel just west of DNR's property was covered by mature floodplain forest, but the construction area itself showed evidence of having been recently cleared. It was covered with relatively dense brush and softwood saplings. Remnants of a road bed constructed when the property was being used for fill disposal were apparent along the southeastern side of the construction area. On the floodplain itself, scattered piles of trash (old appliances, tires, construction debris) were common.

Scope of Project

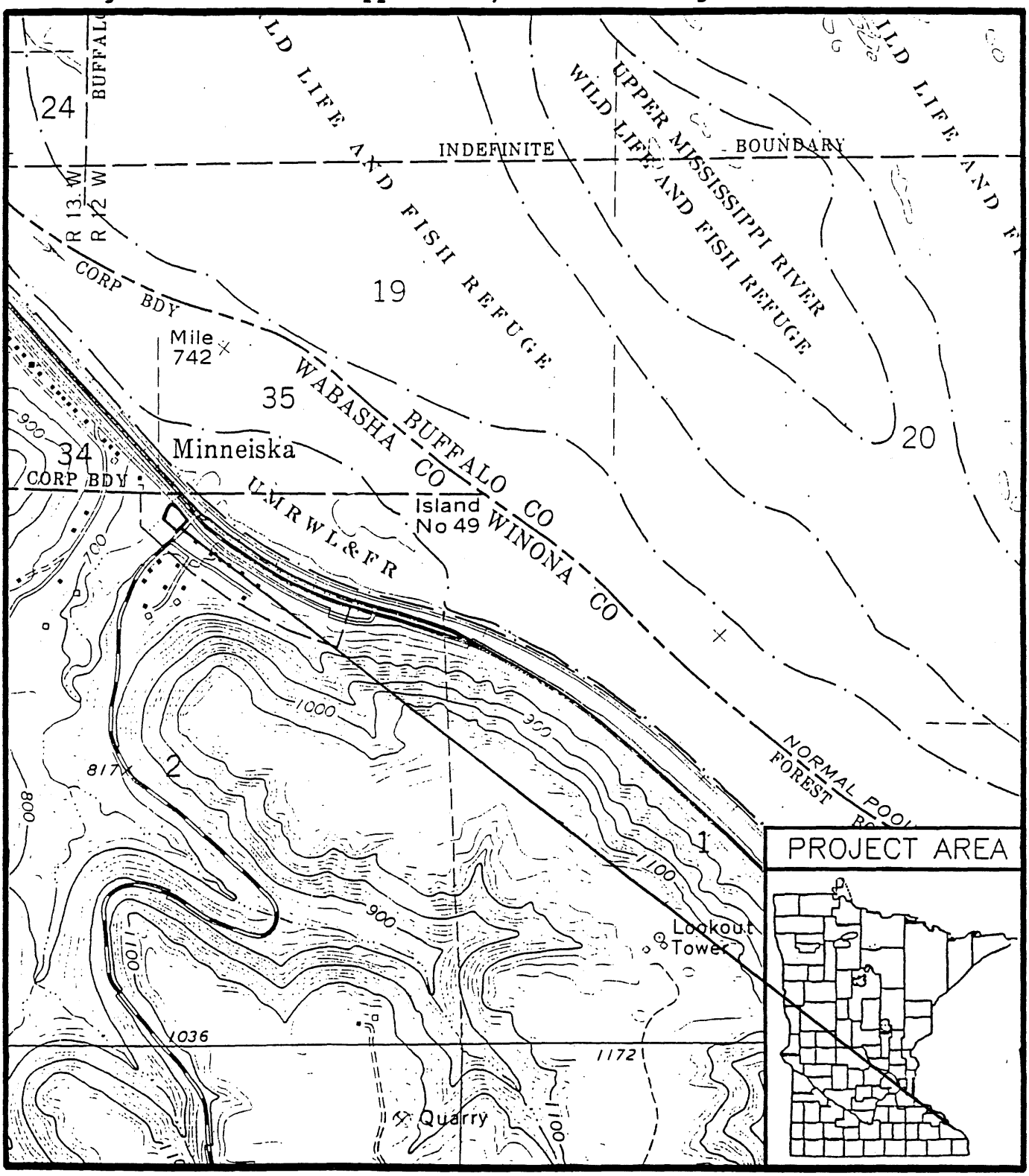
Development of a new Public Water Access to the Mississippi River. DNR planned to construct a 28-unit parking area adjacent to the stream bank, and build an access road from CSAH #25. Access to the Mississippi would be achieved via a dredged channel passing through a MnDOT culvert that runs under divided TH #61 and drains into the river. The project involved cutting along the southern side of the property, adjacent to CSAH #25, and placement of fill in the lower-lying portions of the construction area.

Records Review

Previous surveys: no evidence was found that there have been any formal cultural resource surveys in the immediate vicinity of the project area. Re-alignment of current TH #61 took place prior to the start of the Trunk Highway Survey.

Known sites: there are currently only two formally recorded resources near this project area. One is a habitation site, located to the southwest of town, which has

Figure 38. Mississippi River/Minneiska Project Area



USGS Cochrane Quadrangle, 1972, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

never received any intensive investigation. The other is a single mound, mapped by T. H. Lewis in the late 1800s, located on a high terrace overlooking the river just north of the town of Minneiska. Neither will be affected by the proposed construction.

Field Review

Methods: surface reconnaissance along stream bank; shovel tests at varying intervals within the construction area. The length of the stream bed within DNR's property was examined and found to be composed primarily of coarse gravel and cobble-sized rock.

Results: about 40% of the floodplain portion of the construction area had standing water on it at the time of survey. Drier areas were shovel tested in an irregular pattern due to the presence of large piles of recent trash and occasional patches of impenetrable vegetation. Tests close to the CSAH #25 grade showed a very thin organic horizon over clean sand, underlain by gleyed sandy clay. Near the creek bed, the organic horizon was thicker, but was similarly underlain by coarse materials. Except for recent debris, no cultural materials were found anywhere in the project area.

Management Recommendations

Although there is a possibility that buried surfaces containing cultural deposits exist within the project area, the presence of coarse sediments close to the current surface suggests that lateral migration of the stream channel may have removed any previous terrace formations. Also, the scope of this project was relatively small, consisting primarily of placement of one to two feet of fill over the present surface. It appeared unlikely that the work would cause any significant damage to cultural deposits that may be present in deeply buried deposits. The field survey that was conducted provided no evidence that there are any significant cultural deposits within the upper part of the soil profile. It was therefore recommended that the project proceed as planned with no additional review.

REGION VI - METRO

Scott County

Fish Lake (SHPO Ref. #90-1464)

Location

Northwest side of Fish Lake, about 5 miles southwest of the City of Prior Lake, MN (see Figure 39).

Funding/Permit Status

Development costs for this project were to be reimbursed from the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region

Owatonna Moraine Area (Wright 1972)/Waconia-Waseca Moraine with Prior Lake Moraine on east side of lake (Minnesota Soil Atlas Project, Twin Cities-Metro Area Sheet, 1974).

Description of Project Area

The access property is a low-lying triangular parcel that sits inside a curve of adjacent CSAH #81. It is bordered by wetlands in both directions along the lakeshore; to the northwest there is a series of ridges that crest about 50 feet above the present lake level. About two-thirds of the present parking lot area lies below the 1854 meander line. Engineering data received from DNR suggested that the existing parking area was created by placing fill in a wetland area, although no plans from the original construction were available.

Scope of Project

Rehabilitation of an existing access facility which was built in the late 1950s. The original access parking lot was gravel-surfaced and had uncontrolled traffic circulation. DNR planned to resurface the lot, add traffic control posts and install a new concrete plank ramp. All work was to be within the boundaries of the existing facility.

Records Review

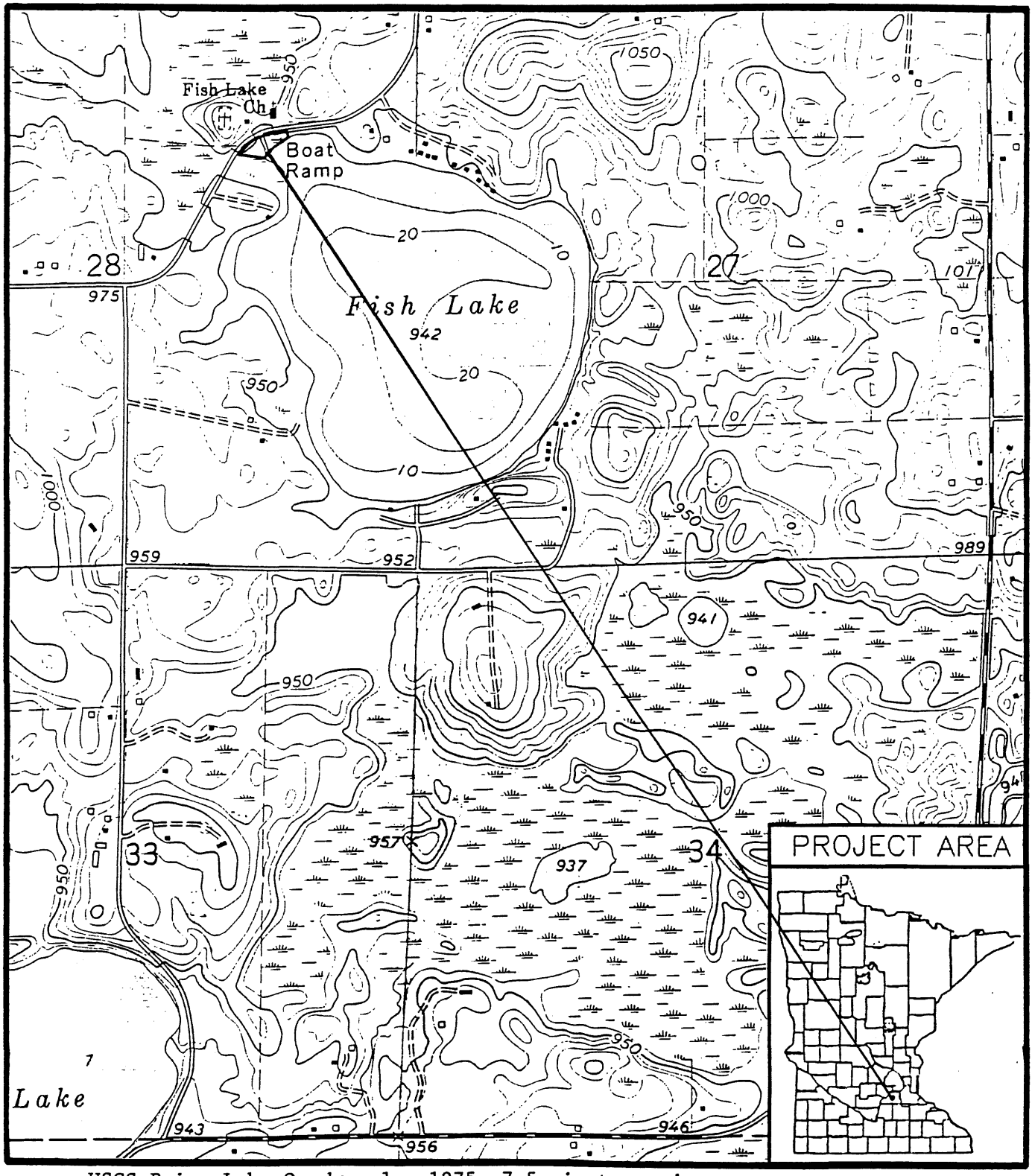
Previous surveys: the closest formal cultural resource surveys have been done on the shores of Prior Lake, 3 miles or more to the northeast. Apparently there has never been any survey of the present CSAH #81 alignment.

Known sites: there are no known cultural resources within a 1-mile radius of Fish Lake; the closest site is the Prior Lake Effigy Mound group, located about 1-1/2 miles to the northeast.

Field Review

Methods: most of the proposed construction area was an existing gravel parking lot. No subsurface testing was done in this area; a few shovel tests were done around the perimeter of the original parking lot. These tests confirmed that the existing access was built on a layer of fill approximately 1 foot thick over saturated wetland soils. No additional testing was undertaken.

Figure 39. Fish Lake Project Area



USGS Prior Lake Quadrangle, 1975, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Management Recommendations
It appeared that the proposed project would not affect any cultural resources; it was recommended that development proceed as planned with no additional review.

Stearns County

Clearwater Lake (SHPO Ref. #90-1794)

Location
Western end of Clearwater Lake, about 3 miles southeast of the City of Fairhaven, MN (see Figure 40).

Funding/Permit Status
Development costs for this project were to be used as State match for Federal funds received through the U.S. Coast Guard Boating Safety Grant Program.

Physiographic Province/Geomorphic Region
Western St. Croix Moraine (Wright 1972)/St. Croix Moraine Complex at west end of lake, Mississippi Outwash at east end (Minnesota Soil Atlas Project, St. Cloud Sheet, 1969).

Description of Project Area
The project area is the site of an existing access facility, located on a level, low-lying piece of property bordered by lake to the east and south, marshy ground to the north and a township road to the west. From here, boaters can reach the narrows between Clearwater and Augusta Lakes, through which the Clearwater River flows. The river, which also marks the boundary between Stearns and Wright Counties, lies about 1/8 mile south of DNR's property.

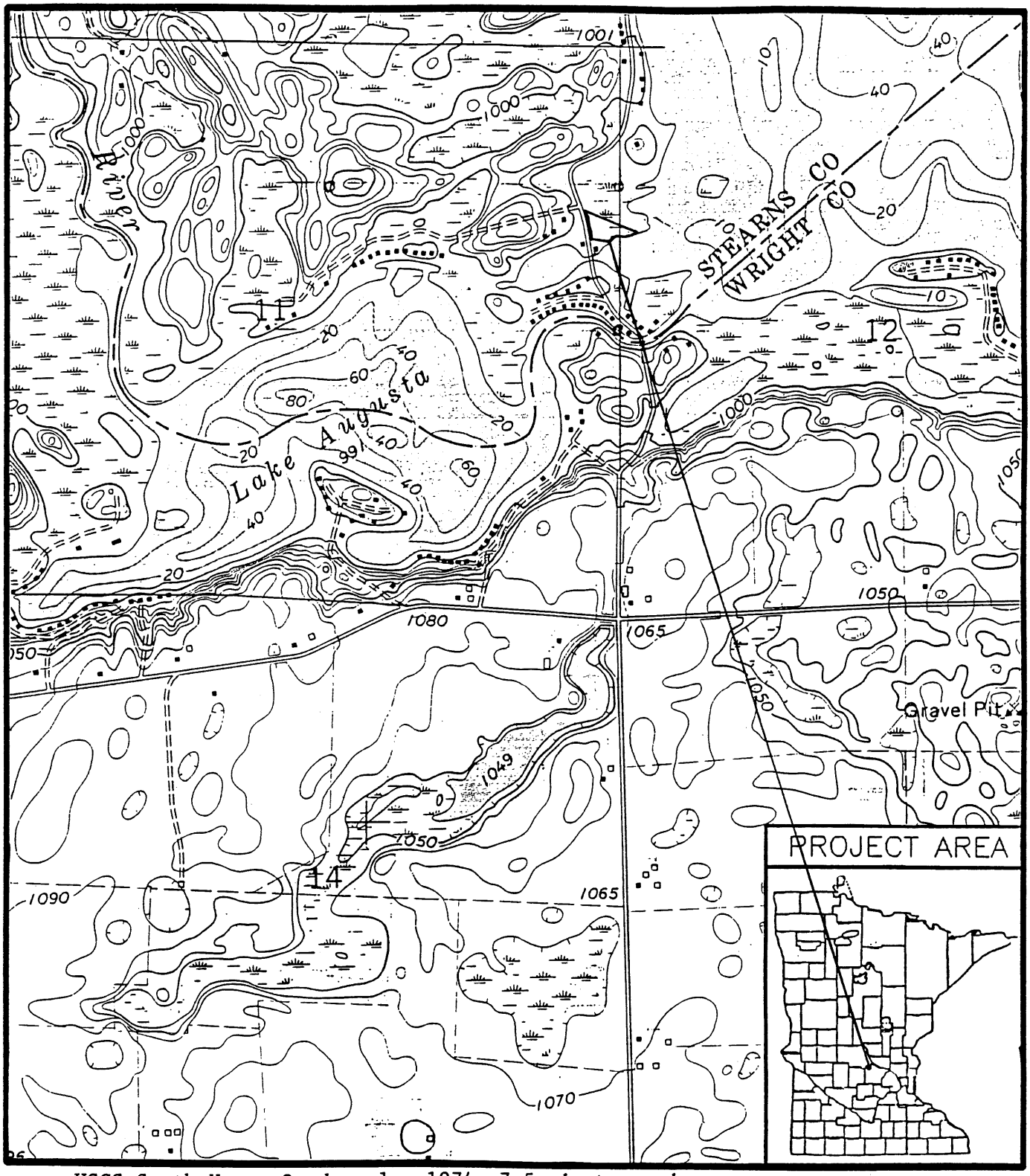
Scope of Project
Rehabilitation of an existing Public Water Access facility. DNR planned to change the alignment and pave the existing parking lot to improve traffic circulation and drainage and move the existing double ramps to a slightly different location. The proposed work was to be done at or near existing grade.

Records Review
Previous surveys: 1979 County-Municipal Highway Survey of work in progress along Co. Rd. 135 just south of the project area (Anfinson 1980); no other known surveys in the immediate vicinity.

Known sites: two sites (21WR36 and 21WR37) were recorded as a result of the County Highway Survey investigation; the first is the location of an enclosure reported by Lewis (which was not relocated) and also yielded habitation materials. 21WR37 is a burial mound group documented by Lewis. Both are located south of the Clearwater River. An additional site, reported by local residents as yielding habitation materials but never formally investigated, is apparently located along the north bank of the river, slightly south of DNR's property.

Field Review
Methods: information received from DNR's Bureau of Engineering indicated that the entire project area had been disturbed by construction of the existing access (which took place prior to the start of the Water Access Program Survey). Visual inspection of the facility confirmed that the entire area that is to be affected by

Figure 40. Clearwater Lake Project Area



USGS South Haven Quadrangle, 1974, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

the proposed rehabilitation was previously graded and gravelled. No formal field survey was conducted at this project area.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Wright County

Sylvia/Twin Lakes (SHPO Ref. #90-2353)

Location
West side of Twin Lake, which is connected to Lake Sylvia by a small channel, about 5 miles southwest of the City of Annandale, MN (see Figure 41).

Funding/Permit Status
At the time of survey, State bonding revenue had been allocated to cover projected development costs for this project. It is anticipated that the project did not involve any Federal funding or permitting.

Physiographic Province/Geomorphic Region
Western St. Croix Moraine (Wright 1972)/Mississippi Valley Outwash (Minnesota Soil Atlas Project, St. Cloud Sheet, 1979).

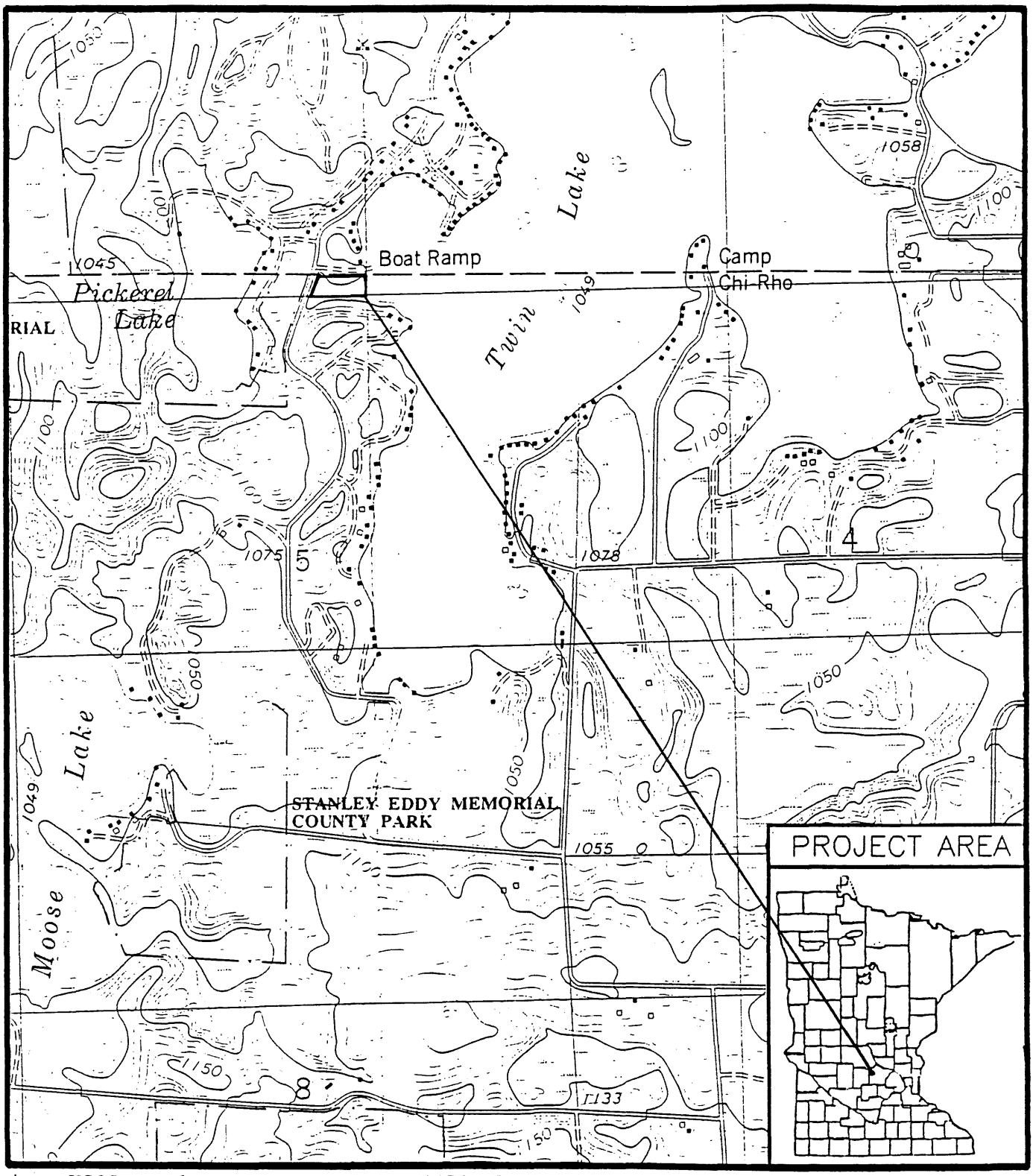
Description of Project Area
DNR's property is bordered on the west by a township road, and consists mostly of wetlands between steep-sided hills to the north and south. The northern property line (which follows the township line) runs across the crest of the knoll to the north. The side slopes and crest of this hill are wooded except for a small cleared area on the crest which is being used for storage by the adjacent private property owner. (Note: the location of the access ramp is not shown correctly on the 1982 French Lake Quadrangle. It is actually located just south of the mapped location.)

Scope of Project
Rehabilitation of an existing access on the west side of Twin Lake. The original facility consisted of a small gravel parking area and concrete ramp. The road that connects the parking lot to the ramp approach skirts the base of a steep slope, which crests about 22' above the current lake level.

The existing parking lot was constructed by partially filling the wetland between the two hills. In order to expand the facility, DNR planned to remove a portion of the sideslope on the north side of the property. Backsloping beyond the edge of the new parking area would bring the top of the slope to a point about 45 feet beyond the present edge of the slope. Additional fill would then be placed around the perimeter of the existing parking area to create a total of 32 parking spaces.

Records Review
Previous surveys: no evidence was found that there have been any formal cultural resource surveys in the immediate vicinity of the project area.

Figure 41. Sylvia/Twin Lakes Project Area



USGS South Haven Quadrangle, 1974, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Known sites: the only formally recorded cultural resource in the vicinity is 21WR35, a habitation and mound site located at the north end of Lake Sylvia. Nineteen mounds were mapped by Lewis at this location in 1887; in 1978 MHS staff relocated the mounds and observed habitation materials nearby.

Field Review

Methods: visual examination of the existing parking area and ramp approach; transect of shovel tests along crest of ridge on the north side of the property.

Results: visual inspection of the present parking area confirmed that it consists of 2 to 3 feet of granular fill material over wetland. There was no visibility on any intact natural surface within the property boundaries. A transect of 15-meter interval shovel tests was dug along the crest of the ridge on the north side of the property, at what would be approximately the top of the proposed new sideslope. These tests showed sandy to sandy clay soils which did not appear to have been significantly disturbed. No cultural materials were found in the shovel tests.

Management Recommendations

It appeared that the proposed work would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

III. RIVER RECREATION PROGRAM DEVELOPMENT PROJECTS

Cass County

Crow Wing River/Fisherman's Bank (SHPO Ref. #91-0585)

Location

North bank of the Crow Wing River, just downstream from its confluence with the Gull River, about 12 miles west-southwest of the City of Baxter, MN (see Figure 42).

Funding/Permit Status

This project may involve funding from the U.S. Coast Guard Boating Safety Grant Program.

Physiographic Province/Geomorphic Region

Brainerd-Automba Drumlin Area (Wright 1972)/Crow Wing Outwash Plain (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

Description of Project Area

The project area is located just downstream from Sylvan Dam, a hydroelectric facility presently operated by Minnesota Power & Light Company (MPL). The dam is on the Crow Wing River, just downstream from its confluence with the Gull. Construction of Sylvan Dam was completed in 1913, and created an impoundment (Sylvan Reservoir) with a surface area of 1,220 acres and a maximum depth of 31 feet.

DNR maintains public access to downstream reaches of the Crow Wing River under the terms of a long-term conservation lease from MPL. The access which will be upgraded by the proposed construction is located on a series of narrow terraces and moderately steep terrace breaks between the Crow Wing River and the rolling uplands surrounding it. The project area was cleared in the past, but has revegetated with saplings and a thin understory. A transmission line from the generating plant and a tramway cable that crosses the river run through the construction area. A portion of the proposed parking lot also appears to have been used as a borrow source.

Scope of Project

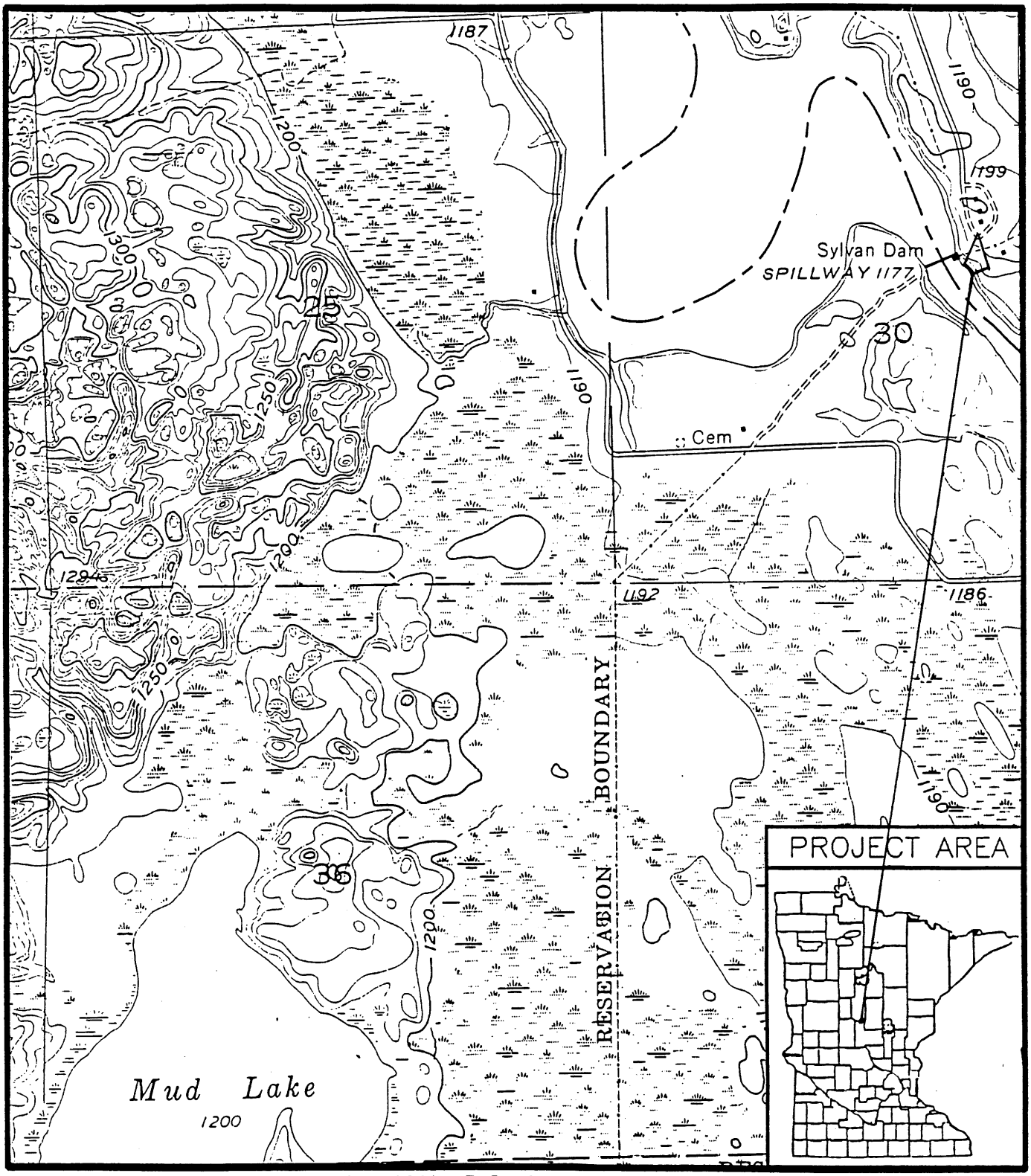
DNR plans to rehabilitate and expand an existing access, which consists of a dirt ramp with a small turn-around and parking area on a narrow terrace above the cutbank at the river's edge. The proposed construction would include creation of an 8-unit parking area for trailered vehicles, a parking lot with 10 head-in spaces, timber steps from that lot to the river (for carry-in canoe access and shorefishing), and installation of a concrete plank launch ramp. The existing entry road would be rerouted to reduce its slope and remedy current erosion problems. Most of the upgraded facility will be located on the sideslopes above the river.

Records Review

Previous surveys: there have been no formal cultural resource surveys in immediate proximity to the project area, although there have been a number of surveys in nearby areas: along the shores of the Gull River to the northwest; in Camp Ripley Military Reservation immediately south across the river, and along the shores of a number of nearby lakes.

Known sites: the closest known sites are contained with the Chippewa Agency National Historic District (21CA55), which is located on the west side of the Gull-

Figure 42. Crow Wing River/Fisherman's Bank Project Area



USGS Pillager Quadrangle, 1954, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Crow Wing River confluence, about 3/4 mile from this project area (see discussion of Crow Wing River/Fisherman's Bridge project, following.)

Field Review
Methods: surface reconnaissance along existing entry road, dirt ramp cut and exposed portions of construction area; shovel tests in staggered grid pattern on level portions of proposed parking lot area.

Results: much of the area that will be affected by this project appears to have been altered in the past by earth-moving activities associated with construction of the dam, the tramway and the transmission line. Fill was removed from one area; other portions of the property appear to have been graded and recontoured. Erosion of the very sandy soils in this area has been severe, and the existing entry road is marked by numerous deeply-incised gullies.

Shovel tests showed erratic stratigraphy; in some places, no organic horizon except for recent litter was present. Other parts of the construction area were somewhat more intact, but no cultural materials were found in any test location.

Management Recommendations
It appeared that this project would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Crow Wing River/Fisherman's Bridge (21CA55) (SHPO Ref. #91-0599)

Location
Both banks of the Gull River, at its confluence with the Crow Wing River, about 12 miles west-southwest of the City of Baxter, MN (see Figure 43).

Funding/Permit Status
This project may involve funding from the U.S. Coast Guard Boating Safety Grant Program.

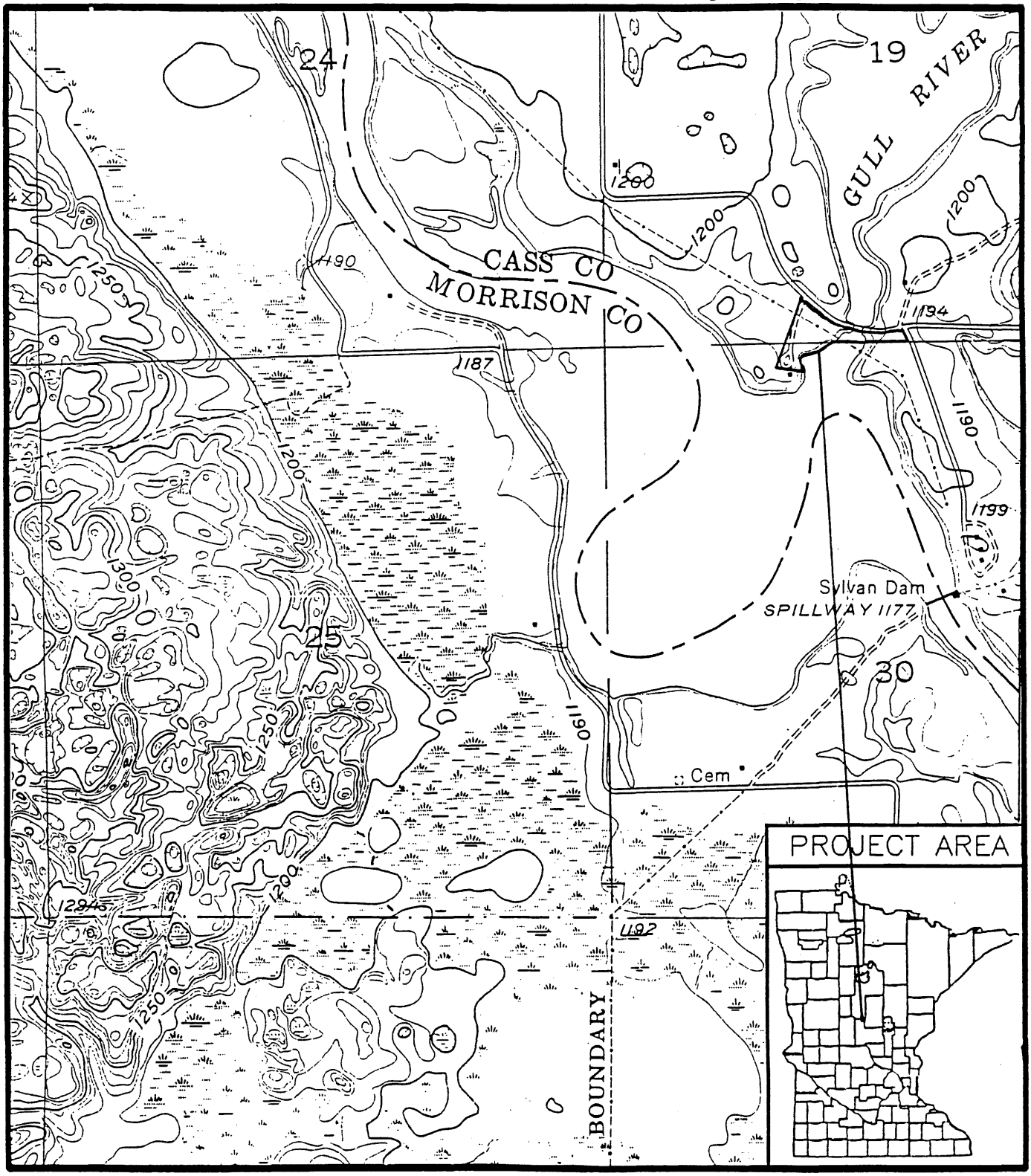
Physiographic Province/Geomorphic Region
Brainerd-Automba Drumlin Area (Wright 1972)/Crow Wing Outwash Plain (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

Description of Project Area
The project area encompasses land on both banks of the Gull River, at the point where it joins the Crow Wing River. Presently, this confluence is part of Sylvan Reservoir, an artificial impoundment created in 1913 by construction of Sylvan Dam, a hydroelectric facility currently operated by Minnesota Power & Light Company.

This area is one of moderately rolling sandy outwash. Modern vegetation consists of mixed coniferous and hardwood forest, with large clear-cut areas now used mostly as pasture. The areas that will actually be affected by construction are adjacent to Cass County Road #36, which crosses the Gull River just upstream from the Crow Wing River confluence.

Scope of Project
The proposed undertakings consist of rehabilitation of two existing access facilities and construction of one entirely new facility. All of this work will be done on land that belongs to Minnesota Power & Light Company (MPL), under the terms of a lease granted to DNR for recreational development.

Figure 43. Crow Wing River/Fisherman's Bridge Project Area



USGS Pillager Quadrangle, 1954, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

The three project segments are:

#1: construction of a new 24-unit parking lot and concrete launch ramp on the north shore of Sylvan Reservoir, just below the mouth of the Gull River.

#2: rehabilitation of an existing parking lot in the southwest quadrant of the Cass County Road #36 bridge crossing over the Gull River. The in-place ramp will be removed and shorefishing pads will be constructed at the river's edge.

#3: construction of a new 15-unit parking lot and shorefishing facility in the southeast quadrant of the Cass County Road #36 bridge crossing over the Gull River.

Records Review

Two of the three project segments are within the boundaries of the Chippewa Agency National Historic District, which was entered on the National Register of Historic Places in 1973 (also recorded as 21CA55). The district boundaries follow MPL's property lines and encompass several discrete properties. The district also includes lands that have never been formally surveyed for cultural resources. The identified resources in the district are (see Figure 44):

a) the Crow Wing Chippewa Agency, established in 1851 to replace the previous Indian Agency at Sandy Lake and in operation until 1869. The agency site was examined and mapped by Douglas Birk of MHS in 1972; his work formed the basis of the NRHP District nomination (Birk 1972). Currently, the site is in a very good state of preservation; cellar depressions and other indications of structure locations are readily apparent on the surface and disturbance of potential subsurface deposits has been minimal.

b) the Crow Wing-Otter Tail road: the military road established in the 1850s, leading west from the town of Crow Wing to the agency and then on to the Otter Tail River, can be traced in several segments across the district. Both cut and fill segments are identifiable, as are the remnants of a corduroy segment built across a slough just east of the agency site.

c) a group of aboriginal burial mounds, first documented in 1898 by Jacob V. Brower. Brower identified three linear and two circular mounds on the north bank of the Crow Wing River; additional research in 1972 identified a third conical mound on the north side of County Road #36, and a possible additional mound that had been partially obliterated by road construction. None of these mounds have been precisely mapped or authenticated according to procedures established for implementation of Minn. Stat. 307.08. (Additional disturbance to these mounds was discovered in September of 1990, when grading of County Road #36 was done by the Cass County Highway Department. This project had not been submitted to the County-Municipal Highway Archaeologist for review. When discovered by the Water Access Program Archaeologist, it appeared that widening of the road shoulders along the south side of the road had damaged one mound.)

d) Woodland habitation site: on the north shore of the Crow Wing River in the vicinity of the mounds. Artifacts collected in this area in 1972 included dentate-stamped and net-impressed ceramic sherds and a variety of debitage and lithic tools.

e) Euro-American farmstead: located on the west side of the Gull River at its confluence with the Crow Wing. This farm included lands now inundated by Sylvan Reservoir; it is referred to in Brower's 1898 journal as "Anderson's farm", upon which he found evidence of Woodland habitation. The farmstead, a barn and other outbuildings were demolished by MPL, but several foundations remain intact.

Field Review

Field review of Area #1 consisted of 15-meter interval shovel tests over the parking lot construction area and a transect of tests adjacent to the existing entrance road, which will be widened and raised as part of this project. This initial shovel

Figure 44. Chippewa Agency National Historic District (21CA55)

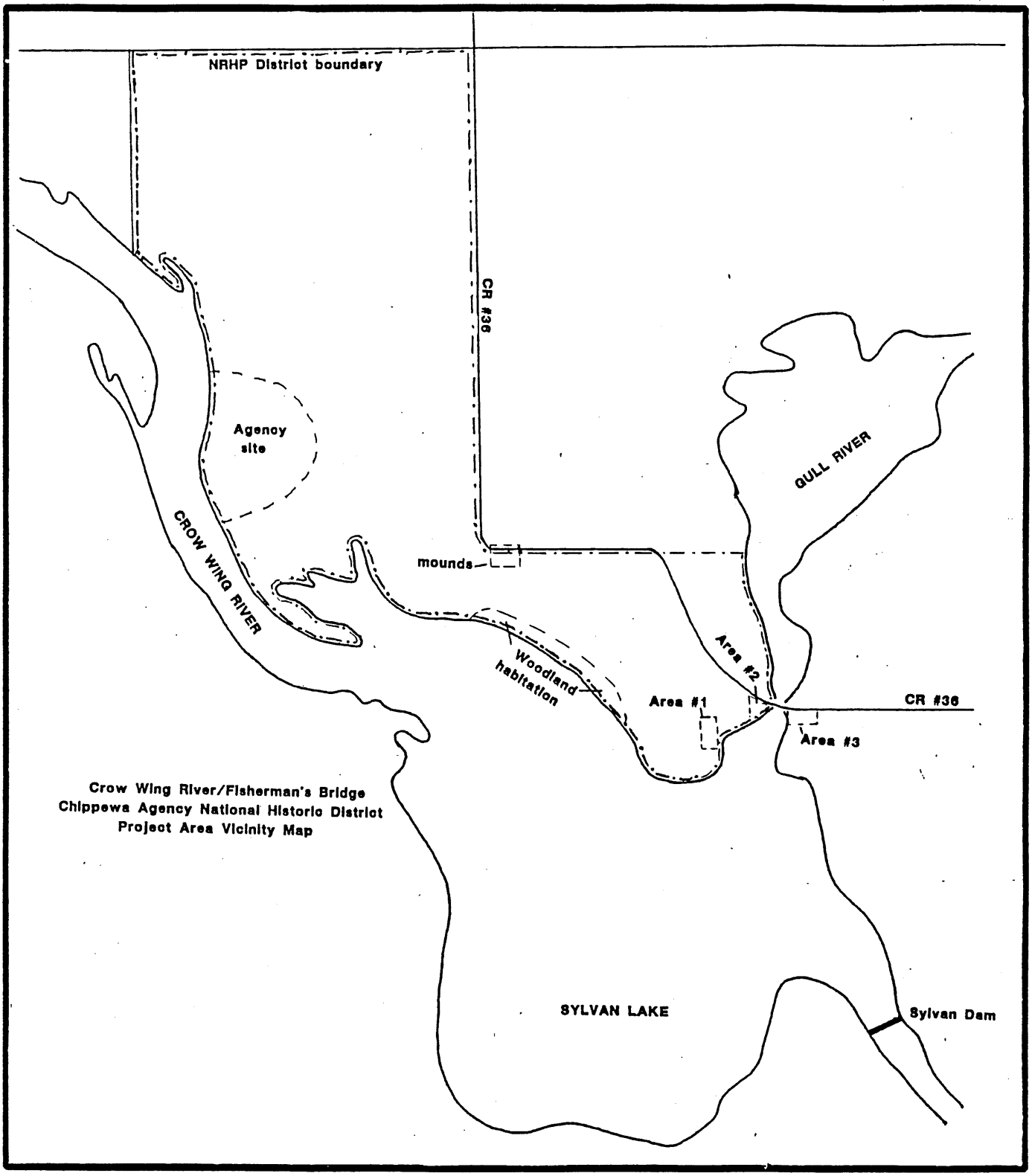
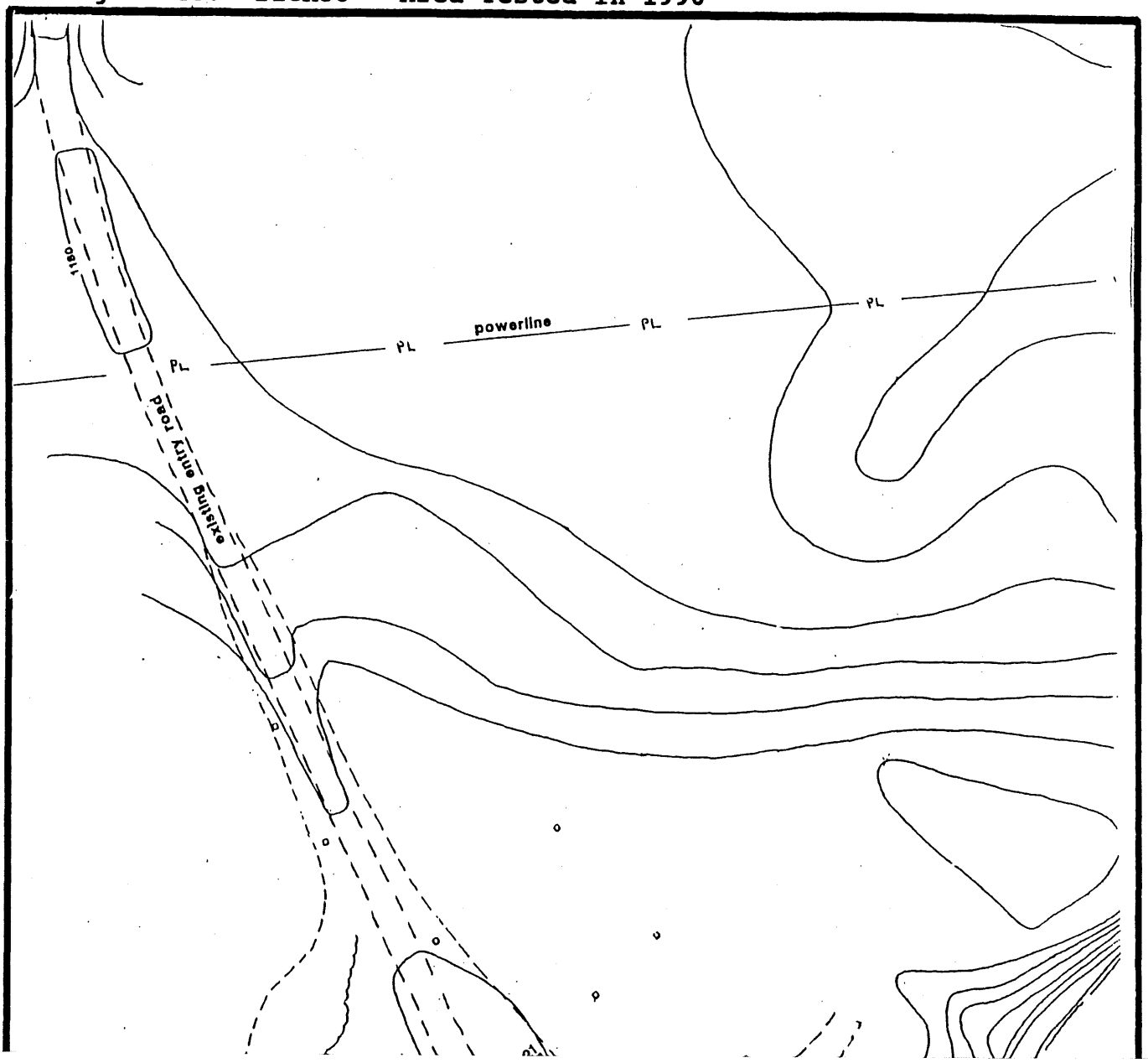


Figure 45. 21CA55 - Area Tested in 1990



test grid was supplemented by closer-interval tests near artifact loci. Unvegetated areas along existing dirt roads and at the cutbank were visually examined for cultural materials on several occasions.

For Area #2, all proposed work will be within the boundaries of the existing facility. DNR plans to add fill around the edges of the present gravel lot to improve drainage and remove the existing ramp. Walkways under the County Road #36 bridge and steps leading from the road to the shore will all be built on the in-place bridge approach fill section. This area was visually inspected to confirm that the entire construction zone has been previously disturbed.

Area #3 also involves construction of a parking lot and shorefishing areas. Work along the riverbank will consist of adding rip-rap along the shoreline under and adjacent to the bridge. A portion of the parking lot will be within the county road right-of-way, presently occupied by a ditch. Cutting will be needed along the far southern edge of the lot. A transect of shovel tests was dug along the crest of the ridge that borders the existing county road ditch, in the area that will be affected by backsloping.

Field review of Areas #2 and #3 indicated that there are no significant cultural resources in these areas that will be affected by the proposed construction. Shovel testing in the proposed Area #1 parking lot yielded cultural materials:

ST 2, 24 cm: clear glass shards
ST 4, 15-20 cm: clear glass shards
ST 14, 0-10 cm: clear glass shards
20-30 cm: 1 grog?-tempered body sherd, cr
1 projectile point, triangular, unnotched: gray chert
ST 21, 10-20 cm: 1 grit body sherd, cr
ST 22, 0-5 cm: 1 grit body sherd, cr
ST 23, 0-10 cm: wire nail
ST 31, 0-10 cm: clear glass shards
10-20 cm: clear glass shards
20-25 cm: wire nail

About half of these materials relate to the 19th century Euro-American farmstead that once occupied this location. The remainder of the artifacts reflect a Native American occupation with a probable Late Woodland cultural affiliation, based on the triangular unnotched projectile point recovered from ST #14.

Additional closer-interval shovel tests in the vicinity of the positive tests did not yield any further materials. However, the positive tests are adjacent to a concrete slab foundation about 6 by 11 meters in size, which may cover a portion of the cultural deposit.

Management Recommendations

Impoundment of waters behind Sylvan Dam has inundated a large acreage, including much of the area shown in Brower's 1898 sketch. At present, it is difficult to determine the precise relationship between the sites Brower observed and the proposed construction locations. However, it does appear likely that the cultural deposit identified adjacent to Area #1 relates to the portage trail illustrated in the sketch map. It appears to be of limited size and density, consistent with short-term occupations of the type that would be expected along such a trail. Portions of the deposit are probably underneath the in-place concrete slab foundation and therefore currently inaccessible for examination.

DNR will proceed with the proposed undertakings only after receiving approval of final project plans from MPL. The information contained in this report therefore

was provided to Douglas Birk, who recently completed a cultural resource overview of Sylvan Reservoir under contract with MPL. That work was to include recommendations for further research or actions needed to protect resources on MPL's lands. Birk indicated that he will recommend approval of proposed construction contingent on conditions delineated in this report. Resources identified within or near the proposed construction areas are discussed individually below, with management recommendations as needed.

A) Chippewa Agency site: this resource is the site of the actual Agency buildings. As documented by Birk in 1972, the site consists of well-preserved cellar depressions, landing areas and (probably) substantial subsurface deposits. Because this site is located at least a mile west of any of DNR's proposed construction, it will not be affected by these undertakings. The developments will not be visible from the Agency site. In fact, development of a larger formal access may enable DNR to close an existing "user-created" access adjacent to the Agency site. This would have the effect of reducing traffic in the area and thus reduce the probability of intentional or incidental damage to the site. MPL has indicated a willingness to block the powerline maintenance road that leads to the Agency site once the new access is ready for use; coordination of this work with DNR's construction is being considered.

B) Crow Wing-Otter Tail road: there are no visible remnants of this road in the areas that will be affected by DNR's proposed construction. Based on Birk's research, it appears that the road followed an alignment slightly north of the proposed construction zones. Segments of road that can be identified are all within wooded areas that will not be disturbed by heavy equipment traffic or other aspects of construction.

C) burial mounds: some of the mounds documented by Brower in 1898 are still visible about 1/2 mile west of the Gull River crossing. As Brower noted, there is a good probability that there are additional, undocumented mounds in the immediate vicinity. Recent road construction has apparently damaged one such mound. While survey results indicate that DNR's construction *per se* will not affect any mound or other unplatted cemetery, increased traffic on CR #36 resulting from access improvements might lead to further road rehabilitation projects that would have the potential to damage these cemeteries. The Cass County Highway Department should be notified of the presence of these mounds and the potential for additional undocumented mounds in the area. Condition assessments should also be conducted periodically to ensure that the mounds are not being damaged by road maintenance or public use of the area.

D) Woodland habitation site: as identified by Birk in 1972, this site is located along the Crow Wing River about 700' west of project area #1. The construction will not affect this particular site.

E) Peter Anderson farmstead: structural remnants related to this occupation will be affected by proposed construction in Area #1. The farmstead location will not be affected, but current construction plans indicate that at least a portion of the concrete-block barn foundation is within the limits of the proposed parking lot, on its western edge, and another concrete slab foundation on the eastern side of the parking lot may be affected by ditching or re-contouring. Discussions will be held with DNR's Project Engineer on the feasibility of leaving the foundations in place and modifying project specifications to "fill only".

F) Late Woodland habitation site: this cultural deposit was identified during the 1990 field season, and is immediately adjacent to the area that will be directly impacted by the proposed access construction. It is recommended that the following actions be taken in regard to this site:

1) additional shovel testing in proximity to positive tests to further define the boundaries of the deposit;

2) if warranted by additional shovel tests, excavation of no more than 4 square meters within the site area;

3) implementation of construction restraints by DNR. Discussions will be held with the Project Engineers regarding "fill only" restrictions (as noted above), limitations on heavy equipment traffic in the construction area, and other specifications that will reduce the potential for adverse effect to this deposit.

4) construction monitoring conducted by the Program Archaeologist.

G) additional habitation sites as noted by Brower: much of the area described by Brower as containing cultural materials is now underwater. A portion of this cultural deposit could be affected by installation of ramps in Area #1, if dredging is required. Examination of the ramp installation area will be conducted during reservoir drawdown in the spring of 1991. (Drawdown generally occurs every spring, and should lower the pool level enough to expose the area that would be affected during ramp installation.) This work will be coordinated with MPL through Douglas Birk.

Pine River/Norway Lake (SHPO Ref. #90-2153)

Location

Southwest shore of Norway Lake, within the City of Pine River, MN (see Figure 46).

Funding/Permit Status

This project was to involve funding from the U.S. Coast Guard Boating Safety Grant Program.

Physiographic Province/Geomorphic Region

Brainerd-Automba Drumlin Area (Wright 1972)/Crow Wing Outwash Plain (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

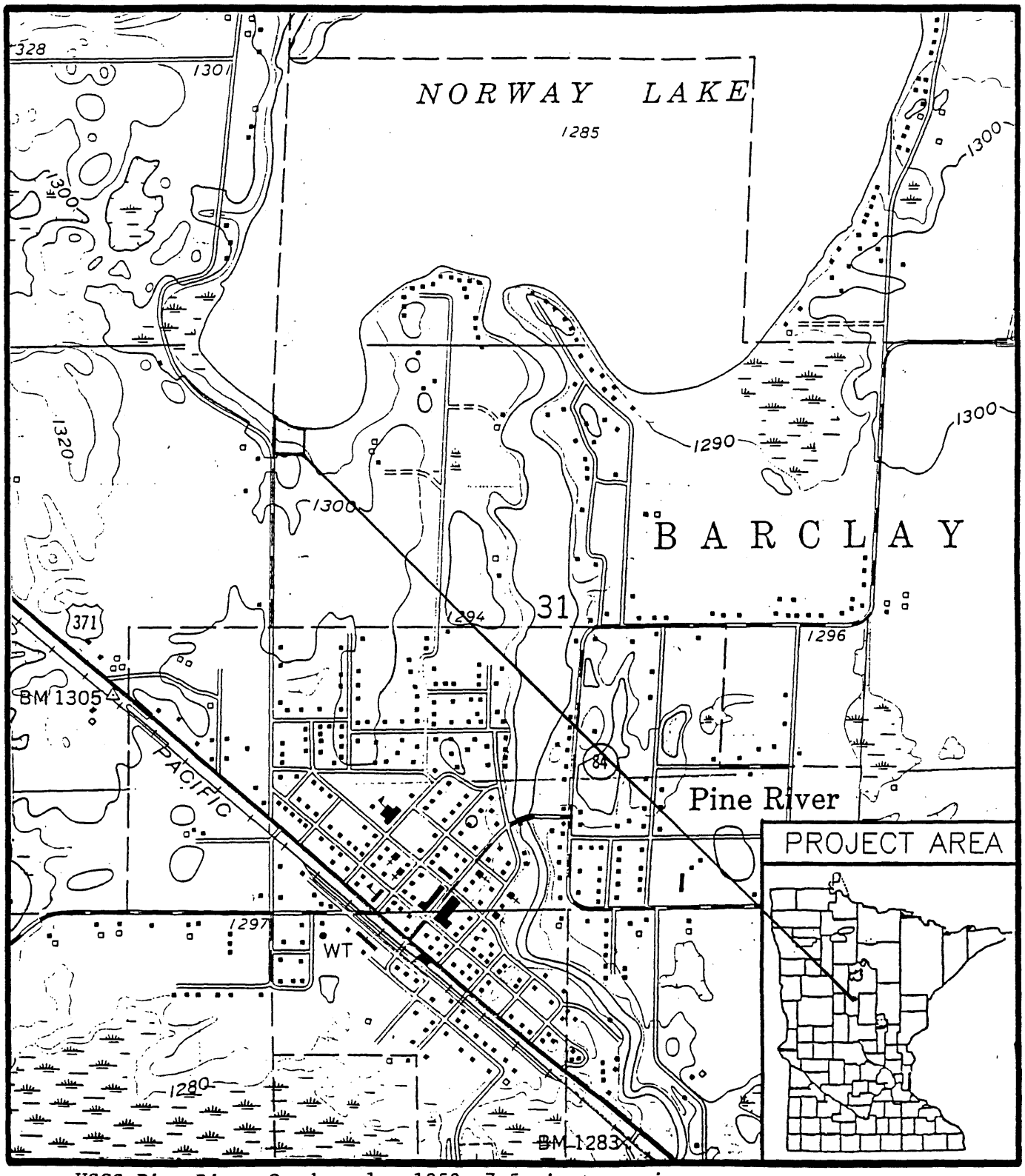
Description of Project Area

The project area is located on the sideslope and at a base of a sandy, north-south tending ridge overlooking the south shore of Norway Lake. The original parking lot covered most of the area at the base of the slope and a portion of the sideslope just below the crest. Except for a line of trees along the shoreline, DNR's entire property was meadow at the time of survey.

Scope of Project

Rehabilitation and expansion of an existing Public Water Access facility to provide access to Pine River via Norway Lake. DNR owns a parcel of land adjacent to an abandoned township road, just off CSAH #42. The original facility consisted of a concrete ramp and gravel parking area. Improvement was to consist of installation of a concrete plank ramp and construction of a 10-unit parking area that would incorporate the original parking lot and additional land to the east. Recent low lake levels necessitate a 150' dredge through floating bog to open water.

Figure 46. Pine River/Norway Lake Project Area



USGS Pine River Quadrangle, 1959, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Records Review
Previous surveys: the only formal cultural resource survey of the Norway Lake area was apparently a 1981 survey of areas to be affected by installation of sewer mains and connectors in residential developments around Norway Lake (Birk 1981). Other research has been done at sites in the area, particularly at 21CW22, the Sandy Lake type site, which is located on the north shore of the lake.

Known sites: Birk's 1981 report includes a map of cultural resources around Norway Lake that shows a symbol for archaeological site adjacent to the project area. When contacted, Birk indicated that this information came from a former resident of Pine River, who had collected artifacts along road ditches in the late 1960s. It appears that the area of collection was along CSAH #42, which was reconstructed in the 1960s (Douglas Birk, personal communication). No additional information about the location or nature of this reported site was available.

Recorded sites around Norway Lake include 21CW22 and a number of other aboriginal habitations and sites related to Euro-American logging operations. None of these is within 1 mile of the project area.

Field Review
Methods: examination of surface exposures around perimeter of existing gravel lot; 15-meter interval grid of shovel tests in construction area.

Results: vehicle traffic beyond the perimeter of the gravel parking area caused substantial rutting in the very sandy soils on the sideslope of the ridge. These areas were examined for surface artifacts, and a grid of shovel tests was dug over the ungravelled portions of the construction area. Recent debris consisting of broken brown bottle glass was found just below the surface in several tests. Soils were consistently well-developed very sandy loams with high proportions of pebbly till. Except for the glass shards, no cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed construction would not affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Dakota County

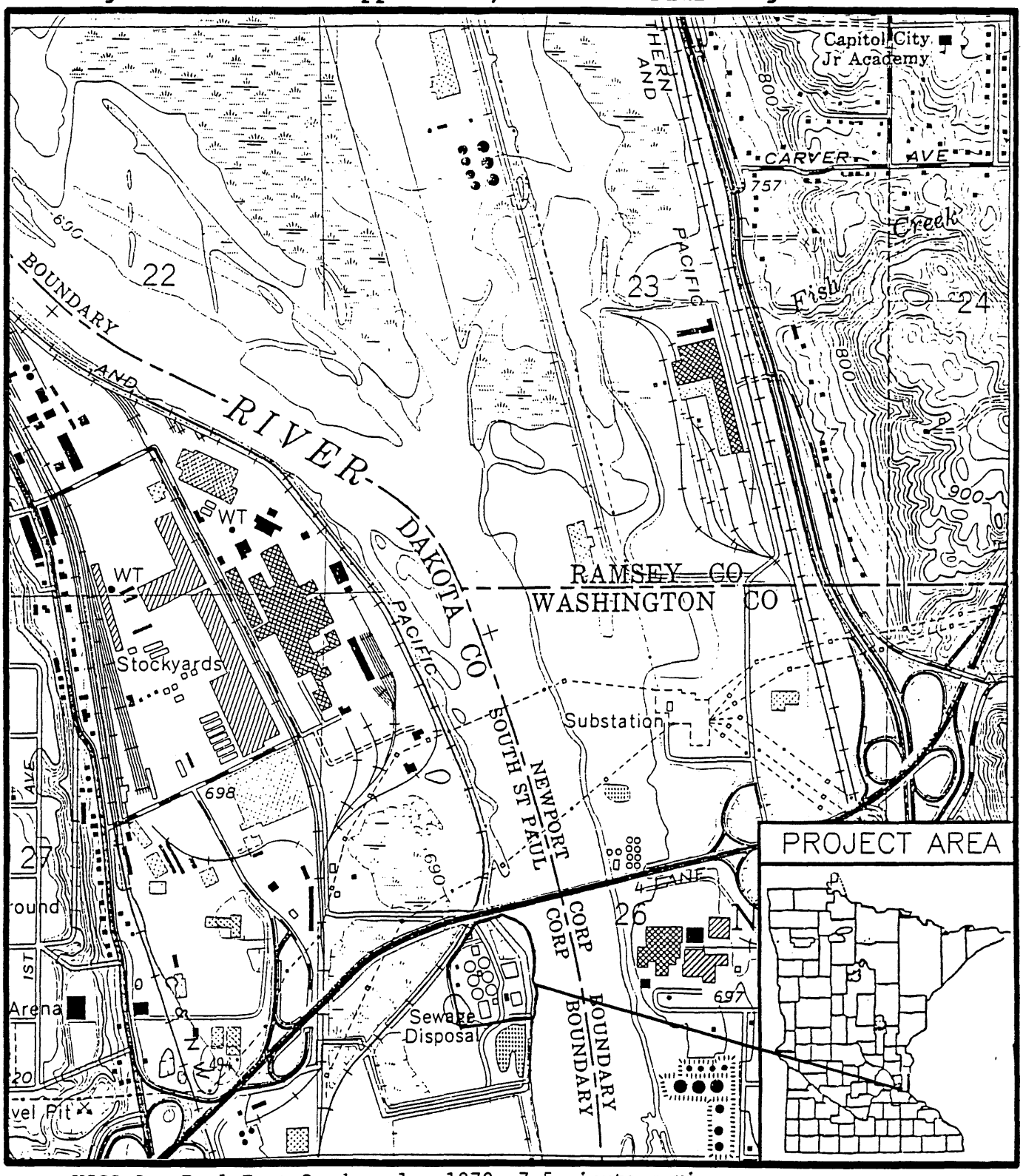
Mississippi River/South St. Paul (SHPO Ref. #91-0138)

Location
West bank of the Mississippi River, in the southwest quadrant of the I-494 bridge crossing in South St. Paul, MN (see Figure 47).

Funding/Permit Status
This project was to involve funding from the U.S. Coast Guard Boating Safety Grant Program. It required a Special Permit from the Corps of Engineers for work in the floodplain of the Mississippi River.

Physiographic Province/Geomorphic Region
Eastern St. Croix Moraine (Wright 1972)/Mississippi Valley Outwash (Minnesota Soil Atlas Project, St. Paul Sheet, 1973).

Figure 47. Mississippi River/South St. Paul Project Area



USGS St. Paul East Quadrangle, 1972, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Description of Project Area
The project area is within the floodplain of the river, on property that was formerly part of South St. Paul's wastewater treatment facility (shown on the 1972 USGS quadrangle). The main parking lot was to be situated in a former settling pond; the launch area was to located be on the river side of the dike, in an area previously disturbed by sewer installation and some filling.

Scope of Project
Development of a new Public Water Access facility on the west bank of the Mississippi River. The project area was owned by the City of South St. Paul, which donated it to the State for access purposes. DNR planned to construct a 50-unit main parking lot and an overflow lot for another 15 to 25 vehicles. The parking areas were to be on the landward side of a 15' flood-control dike; a ramp approach road would also be constructed across this dike to connect the parking lots and the launch area. Access to parking is available via an existing paved city street.

Management Recommendations
No formal field review of this project area was done, since the proposed work was to be contained within areas previously disturbed by construction and operation of the City wastewater treatment plant. The magnitude of past disturbance is such that it is unlikely that there are intact archaeological deposits within the construction zone. It was therefore recommended that construction proceed as planned with no additional review.

Nicollet County

Minnesota River/Eckstein Landing (SHPO Ref. #90-2026)

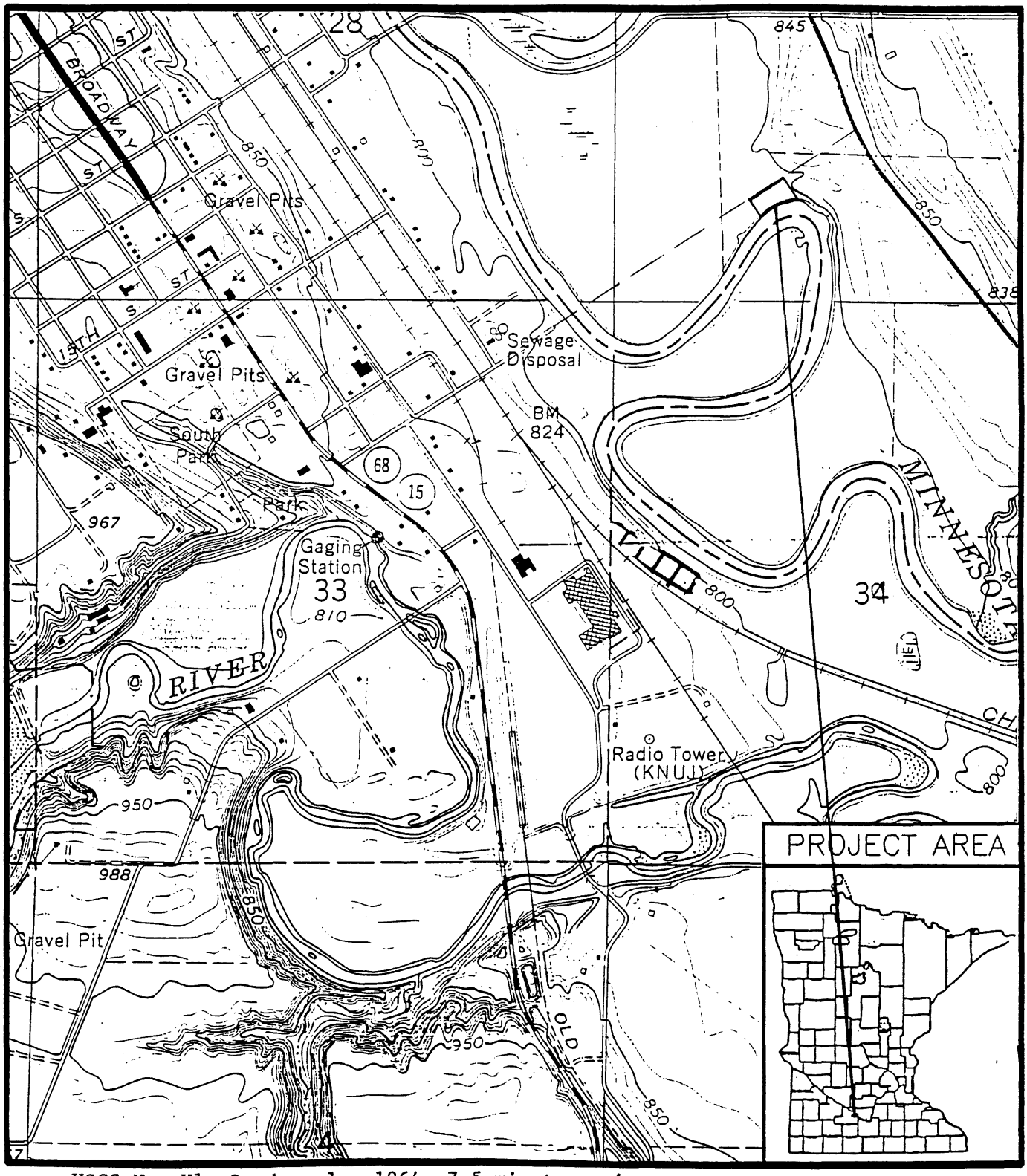
Location
Floodplain terrace on the left (north) bank of the Minnesota River, just outside the city limits of New Ulm, MN (see Figure 48).

Funding/Permit Status
Development costs for this project were to be used as State match for Federal funds received through the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service.

Physiographic Province/Geomorphic Region
Minnesota River Valley (Wright 1972)/Minnesota Valley Outwash (Minnesota Soil Atlas Project, New Ulm Sheet, 1981).

Description of Project Area
The project area is a roughly rectangular parcel on the outside bank of a large meander of the Minnesota River, bounded on the northwest by CSAH #77. The entire property lies within the current floodplain of the Minnesota River. CSAH #77 project maps provided by DNR show that Nicollet County had a 220'-wide construction right-of-way to the southeast of the centerline. To reduce the frequency of inundation of the roadbed, almost the entire width of the right-of-way was covered with 3 to 4 feet of fill, and the road grade proper was then elevated an additional 8 to 10 feet above the fill surface. The edge of the fill section is marked by a line of heavy brush that separates the floodplain forest on the lower ground from the tall grass that now covers the county road right-of-way. Several right-of-way stakes are also still in place along the base of the fill section.

Figure 48. Minnesota River/Eckstein Landing Project Area



USGS New Ulm Quadrangle, 1964, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

DNR Bureau of Engineering staff did a series of soil borings in the project area during project planning; cores taken from locations within the right-of-way show mixed sandy and clay fill to depths of at least 42". Only one boring in the fill section reached what appears to be natural strata, which are composed of interlayered sand and silty clay.

Scope of Project

Development of a new Public Water Access to the Minnesota River. DNR proposed to construct a 15-unit parking area and install a concrete plank ramp to facilitate access to the Minnesota River downstream from New Ulm. The parking area is accessed by a new entry road leading from adjacent CSAH #77, which was built in 1978 (this alignment is not shown on the 1964 New Ulm Quad). Much of the construction zone was to be within the limits of the fill section placed by the county as part of the road construction project; the remainder of the work involved placement of filter fabric and fill on the current floodplain surface.

Records Review

Previous surveys: the CSAH #77 construction project was reviewed by the County-Municipal Highway Survey in 1978; details of survey methods or areas examined were not available (Anfinson 1979). In 1988 and 1989, proposed re-construction of TH #14 between New Ulm and Nicollet was reviewed by the Trunk Highway Survey (Peterson Yourd & Gonsior 1989).

Known sites: the 1978 CSAH #77 survey identified one archaeological site (21NL35 - described as a lithic scatter) in a cultivated field about 1/8 mile east of the project area. Additional sites were identified during the TH #14 survey in 1988 and 1989; these include 21NL55, 57 and 59, all located along the edge of TH #14 near the CSAH #77 junction. A number of other sites were identified further to the northwest and southeast in the highway corridor. Most of these sites have been determined not eligible for nomination to NRHP; the exception is the Heyman's Creek site (21NL??), located about 1 mile southeast of DNR's property. Data recovery was conducted at this site in late 1990 by the Trunk Highway Survey.

Field Review

Methods: heavy rains caused the Minnesota River to overflow its banks in May of 1990. At the time of survey, late spring flooding of the unfilled portion of DNR's property was reflected by dead vegetation and a surface layer of mixed silt and organic matter. No surface reconnaissance was conducted; 15-meter interval shovel tests were dug in the area to be affected by construction on the lower (unfilled) part of the floodplain.

Results: shovel tests on the floodplain were dug to depths of about 125 cm. In most of the tests, a layer of well-sorted, coarse yellowish sand was noted just below the recent flood deposits. Such sediments usually reflect deposition by fast-moving water, and probably relate to lateral channel migration. This coarse layer is underlain by a thick deposit of very fine materials, reflecting the accumulation of overbank sediments during flooding. No well-developed paleosols were noticeable in the shovel tests, and no cultural materials were found in any test.

Management Recommendations

In a floodplain setting such as this project area, there always exists a possibility that there are deeply-buried cultural deposits. The scope of this survey, however, does not allow for testing to depths beyond those that can be reached with hand tools. In the present case, no indication of an intact archaeological deposit was

found in the upper 125 cm of the current solum. This does not guarantee that there are no cultural materials contained in deeper sediments. If such deposits are present, however, they should not be affected to any great extent by access construction, which was to consist almost entirely of the placement of fill over filter fabric. Thus, it appeared that the proposed construction would not adversely affect any significant cultural resources. It was recommended that the project proceed as planned with no additional review.

Sibley County

Minnesota River/Henderson

Location

West bank of the Minnesota River, within the City of Henderson, MN (see Figure 49).

Funding/Permit Status

This project did not involve any Federal funding or permitting; most of the work was done by the Regional Maintenance Crew. Regional Force Account funds were used to hire the dragline operator.

Physiographic Province/Geomorphic Region

Minnesota River Valley (Wright 1972)/Minnesota Valley Outwash (Minnesota Soil Atlas Project, St. Paul Sheet, 1973).

Description of Project Area

The project area is a City-owned parcel of land situated between the river and a flood-control dike constructed in the mid-1980s as part of the Army Corps of Engineers' Minnesota River Flood Control project. The property is in the northwest quadrant of the TH #19 bridge crossing over the river on the east edge of town.

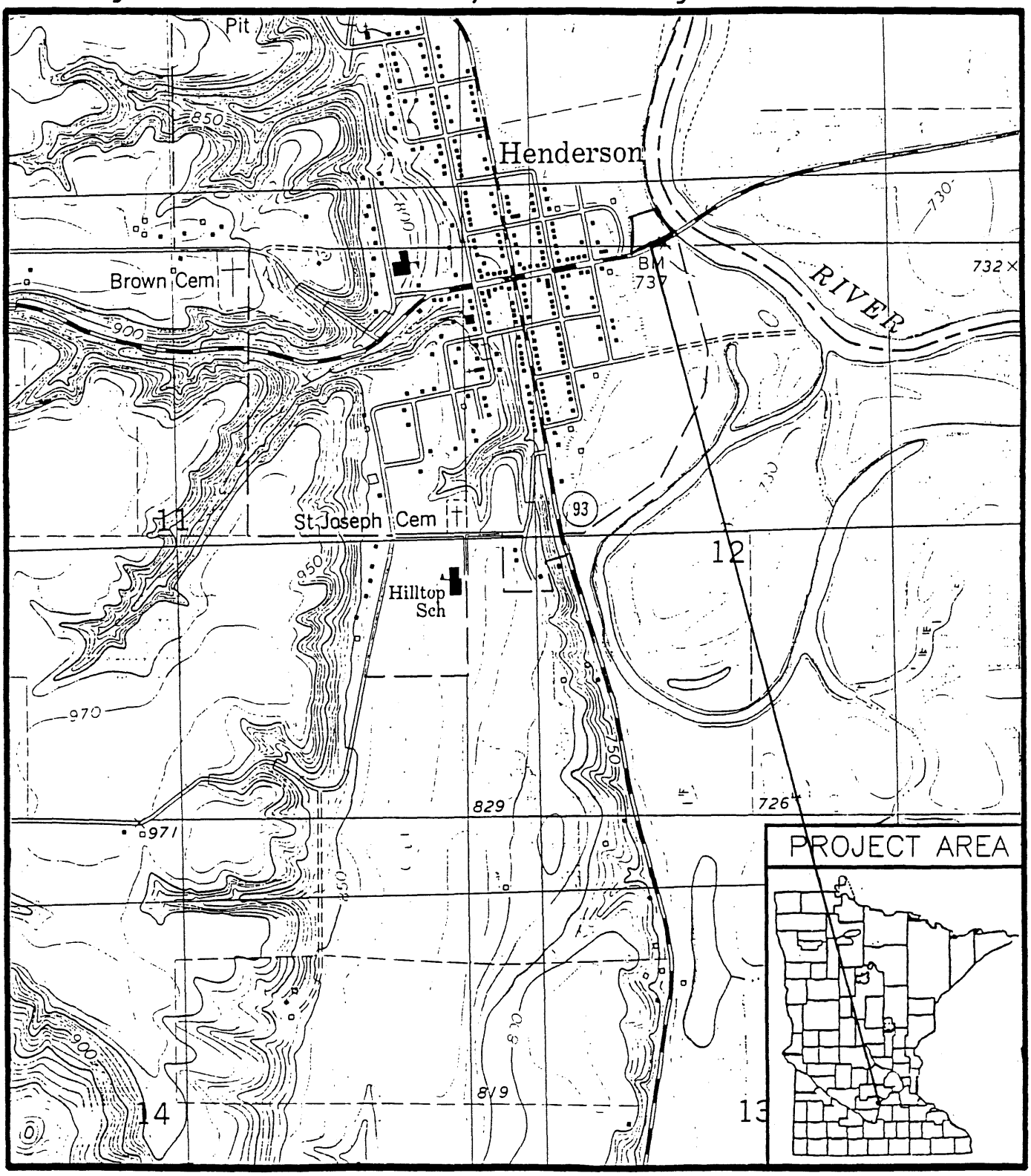
This property is part of the current floodplain of the Minnesota River; it is at an elevation about 14' above the typical fall level of the river. It is, however, below the 5-year, 10-year, 20-year and 100-year flood levels determined by the Corps of Engineers. DNR anticipates that the facility will be inundated on a yearly basis but will be usable for river access the remainder of the year.

Scope of Project

Rehabilitation of an existing unimproved access to the Minnesota River in the City of Henderson. DNR planned to enlarge an existing cut in the riverbank that was used for boat launching, install a concrete plank ramp in the new cut, and construct a gravel-surfaced parking lot. The new parking lot was to be built in an area used by local residents as parking for bank fishing, and also used by the City of Henderson for occasional storage of heavy equipment, fill material, and excess snow removed from city streets during the winter. The parking area is accessed via an existing road that runs along the top of the flood-control dike.

This project was originally on DNR's FY91 development priority list. Due to funding limitations, it was dropped from the list in June of 1990. The Area Manager later received permission to do the rehabilitation as a Regional project using Force Account funds. A contractor was hired to excavate a ramp cut in the riverbank; the remainder of the parking lot upgrade was completed by Regional staff.

Figure 49. Minnesota River/Henderson Project Area



USGS Henderson Quadrangle, 1981, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Records Review

Previous surveys: the only formal cultural resource survey known to have been done in the vicinity of the project area is the 1979 Trunk Highway Survey review of MnDOT's proposed replacement of the TH #19 bridge over the Minnesota River at Henderson. That survey identified no evidence of cultural resources within 100' of the bridge centerline (Peterson & Pfutzenreuter 1980:199-200); it did not include any subsurface testing.

Known sites: the only resource known to be present in the Henderson area is a mound group recorded as 21SB1, the High Island Mounds, located on High Island Creek, about 4 miles north of the project area.

Field Review

Methods: this project was removed from DNR's development priority list for FY91 before detailed project plans were received, so no thorough field survey of the project area had yet been conducted. A brief visual examination of the project area had been done, which raised the question of whether there might be buried surfaces within the floodplain that might contain cultural deposits. Inspection of the cutbank in the ramp cut area showed thin bands of silts and silty clays interbedded with fine to medium-textured sands. These dark-colored horizons appear to reflect brief periods of landscape stability during which organic materials accumulated on floodplain surfaces.

When the Program Archaeologist was notified that the project would be completed during the late summer of 1990 using Regional funds, the contract had already been advertised. Arrangements were therefore made for earthwork to be monitored for the purpose of examining floodplain stratigraphy and determining if there are, in fact, any cultural deposits within the organic horizons visible in the cutbank. This monitoring took place in September of 1990. Removal of fill for the ramp cut was done with a dragline; removed sediments were used as part of the fill for the expanded parking lot area.

Results: materials removed from the ramp cut were examined for evidence of cultural deposits. The sideslopes of the cut itself and the surrounding cutbank were also inspected after the earthwork was completed. The organic horizons visible in the bank are generally very narrow (less than 5 cm thick) and are separated from the coarser materials by very abrupt boundaries. None of the exposed silty horizons shows evidence of long-term soil formation. No cultural materials were found during examination of the river bank. Since parking lot construction was to consist of placement of fill material on top of a previously graded and filled surface, no additional testing was done in the remainder of the project area.

Management Recommendations

No evidence of intact cultural resources was identified during monitoring of ramp excavation at this project area. Although there certainly is a possibility that such resources do exist somewhere within the property, the small scope of the project suggests that the magnitude of potential effect should be relatively limited. No additional field examination was done after monitoring of earthwork was completed.

Washington County

St. Croix River/Oak Park Heights (SHPO Ref. #91-0564)

Location

West bank of the St. Croix River, on the north edge of the City of Oak Park Heights, MN (see Figure 50).

Funding/Permit Status

Because development of this access will not take place before FY92, funding sources have not yet been identified. It is anticipated, however, that some form of Federal funding will be used to cover construction costs. The project area is within the St. Croix National Scenic Riverway and will be developed in accordance with applicable NPS guidelines. A Special Permit may be required from the Corps of Engineers for filling of wetlands.

Physiographic Province/Geomorphic Region

Eastern St. Croix Moraine (Wright 1972)/Mississippi Valley Outwash (Minnesota Soil Atlas Project, Stillwater Sheet, 1980).

Description of Project Area

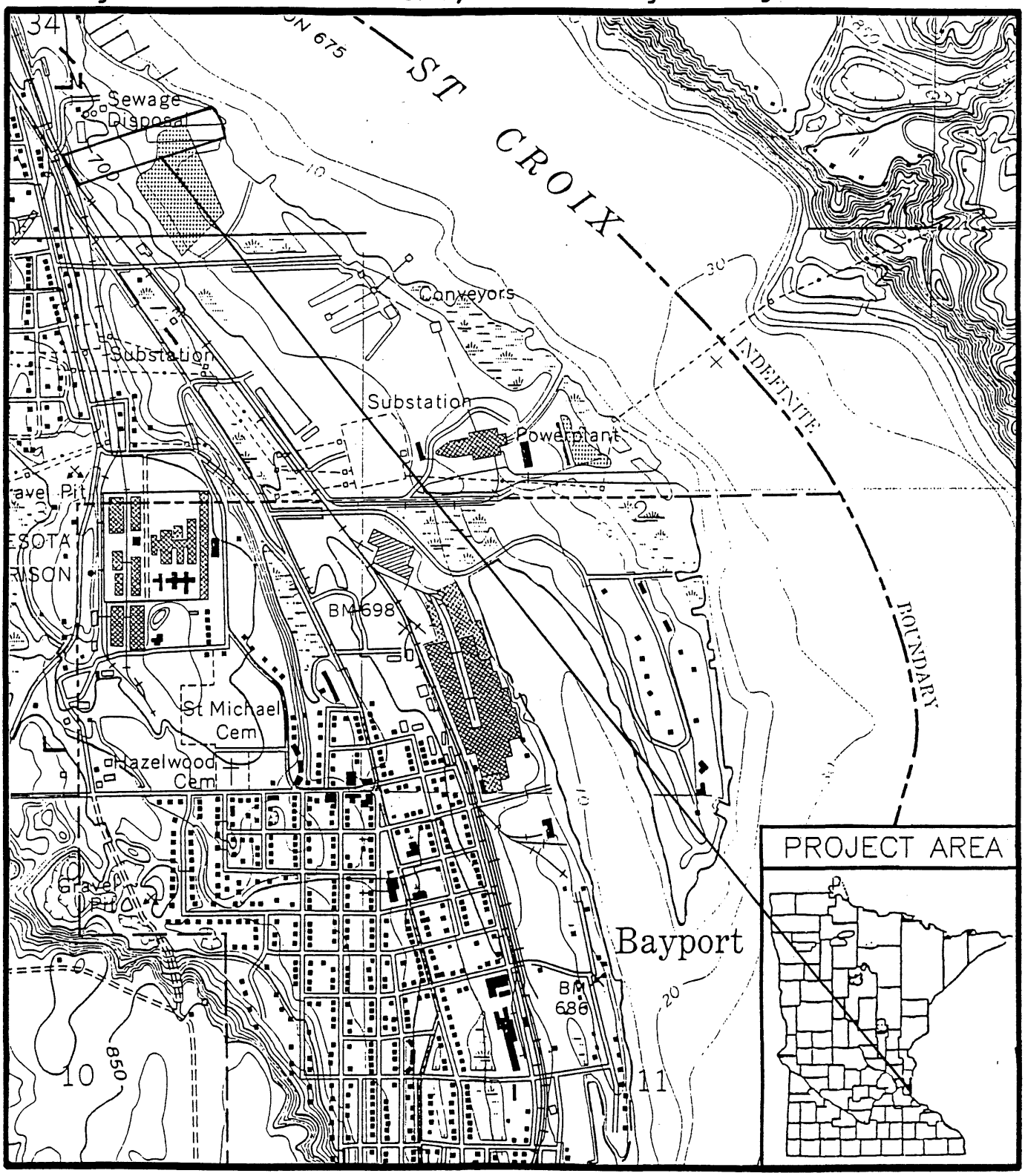
The project area traverses a series of mostly level river terraces that gradually "step" down from the TH #95 grade to the floodplain of the St. Croix River. The 1951 USGS Stillwater Quadrangle shows that a substantial portion of the project area was wetland prior to filling by NSP during construction of the adjacent generating plant in the 1960s. The filled area has since been used as a disposal site for ash from the coal-burning plant. NSP also used part of its property for disposal of topsoil removed from a parking area it constructed on the south side of the generating plant. Other portions of the project area have been graded off, probably at the time that NSP filled the wetlands.

Surface conditions are somewhat variable within the project area as a whole. Most of the property is covered with a layer of coal slag ranging in depth from a few inches to several feet. This deposit is underlain by coarse, non-organic materials, some of which is fill and some of which is the subsoil portion of an in-place soil from which the organic horizon has been removed. The wooded areas close to the shoreline contain mostly young trees with virtually no understory; they had undoubtedly been cleared at some time in the past 30 years. The only portion of the project area that appeared to have been left relatively undisturbed is a thin strip of floodplain forest at the river's edge. A well-defined terrace break forms the edge of this wooded area and separates it from the next terrace.

Scope of Project

Development of a new Public Access to the St. Croix River. In 1990, DNR completed the process of acquiring title to 5 separate parcels of land located between TH #95 and the river, on the northern edge of the City of Oak Park Heights. Landowners included the Metro Waste Control Commission, NSP, the City of Stillwater, and a private party. Agreements were also being negotiated with Burlington Northern Railroad and MnDOT for ingress/egress rights across the railroad and highway rights-of-way. The acquired properties will be used for construction of a 75-unit parking area and about 550 feet of entry road from TH #95. Most of the construction will involve placement of fill on the existing surface. A small amount of cutting may be done at the river's edge for ramp installation.

Figure 50. St. Croix River/Oak Park Heights Project Area



USGS Stillwater Quadrangle, 1967, 7.5 minute series
enlarged x 1.50; scale approximately 1:16,000

Records Review

Previous surveys: there have not been any formal cultural resource surveys in the immediate vicinity of the project area. The current alignment of TH #95 was in place before the start of the Trunk Highway Survey.

Known sites: there are no known cultural resources within the project area itself. The closest recorded sites are several miles to the north.

Field Review

Methods: in the fall of 1990, the Program Archaeologist met on-site with DNR's Trails & Waterways Area Manager to review the boundaries of the proposed acquisition and discuss probable development plans. At that time, it was noted that the surface of the western half of the project area was covered with a layer of coal slag from the adjacent NSP generating plant. This slag layer ranges from about two inches to more than two feet in depth. DNR staff have indicated that NSP recently removed larger piles of slag that had been "stockpiled" over the past 20 years. The only portion of the project area that has not been severely disturbed is the proposed ramp location at the shoreline. This area was visually inspected on two occasions; several shovel tests were also dug in at varying intervals within DNR's property boundaries to determine the nature of the soil stratigraphy on this landform.

Results: about 90% of the area to be affected by the proposed development has already been severely affected by filling, ash disposal and subsequent removal, and other ground-disturbing activities. Shovel tests within the small area that appears intact showed that this feature is of relatively recent origin; it is composed of a shallow stratum of organic materials underlain by alternating strata of saturated coarse sand and muck. No cultural materials except for a scatter of recent debris were observed within the project area.

Management Recommendations

A substantial portion of the area that will be affected by this project has been thoroughly disturbed by past use as an ash disposal site. Additional segments were created by filling of wetlands when the NSP generating plant was built. The small portion of the construction area that appeared to be intact was tested, and no evidence of cultural deposits was recovered. It was therefore recommended that the project proceed with no additional review.

APPENDIX I. REFERENCES

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APPENDIX II. SUMMARY OF FEDERAL AND STATE CULTURAL RESOURCE MANAGEMENT STATUTES AND REGULATIONS

FEDERAL STATUTES AND REGULATIONS

The National Historic Preservation Act of 1966 (P.L. 89-665):
- establishes Advisory Council on Historic Preservation;
- prescribes procedures to be followed when Federal undertakings may affect cultural resources.

The National Environmental Policy Act of 1969 (P.L. 91-190):
- incorporates consideration of cultural resources into overall environmental assessment process for Federal undertakings.

The Archaeological and Historic Preservation Act of 1974 (P.L. 93-291):
- expands cultural resource management requirements to all Federally funded, licensed or permitted activities;
- authorizes including costs of cultural resource management activities in overall project budget.

Procedures for the Protection of Historic and Cultural Properties (36CFR60; 36CFR800):
- establish specific process to be followed for identification and evaluation of significant resources;
- define criteria for determining significance of identified properties;
- delineate procedures to be followed for nomination of properties to the National Register of Historic Places.

Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (Federal Register, 9/29/83):
- define historic preservation planning process as it is to be carried out by the State Historic Preservation Office;
- broadly delineate various phases of the resource identification and evaluation process;
- establish minimum professional qualifications for personnel carrying out preservation activities.

STATE STATUTES AND REGULATIONS

The Outdoor Recreation Act of 1975 (MN Statutes, Chapter 86A):
- establishes the state's interest in the preservation and proper utilization of "cultural and historic resources" for recreational and educational purposes;
- charges DNR, in cooperation with MHS and other agencies, with establishment and maintenance of a registry of all entities that comprise the "Minnesota Outdoor Recreation System", including state historic sites, scientific and natural areas, and other facilities that include cultural resources.

APPENDIX II, continued

Minnesota Environmental Rights Act (MN Statutes, Chapter 116B):
- defines the state's interest in protecting historic resources;
- allows individuals to sue for suspension of activities causing damage to resources covered under the Act.

The Field Archaeology Act of 1963 (MN Statutes, Chapter 138.31-138.42):
- defines state archaeological sites as publicly-owned land or water areas "where there are objects or other evidence of archaeological interest";
- requires state agency cooperation in protecting state archaeological sites;
- establishes licensing requirements for archaeological research on state lands;
- requires review of project information by MHS, SAO and MIAC;
- charges MHS and SAO with the right and responsibility to enforce the provisions of the law and establish necessary regulations.

The Historic Sites Act of 1965 (MN Statutes, Chapter 138.51-138.66):
- defines "state historic sites" as land or water areas containing historic or archaeological value;
- lists properties on the State Registry of Historic Sites;
- requires state agency cooperation in "the preservation of historic and archaeological sites".

The Private Cemeteries Act (MN Statutes, Chapter 307.08):
- establishes legislative mandate regarding treatment of human interments outside of platted cemeteries;
- requires review of projects that have the potential to disturb human interments outside platted cemeteries;
- charges SAO with the right and responsibility to enforce provisions of the law and establish necessary regulations in cooperation with MIAC.

Policies and Procedures of the State Archaeologist's Office Regarding Implementation of Chapter 307.08:
- establish procedures for identification and treatment of human interments in unplatted cemeteries;
- define preferred strategies for protecting unplatted interments or, when necessary, for mitigating unavoidable disturbance;
- define responsibilities for determination of appropriate treatment.

Archaeological Survey Standards for Minnesota (Council for Minnesota Archaeology, 1977):
- establish minimum standards for performing compliance-oriented field research;
- provide guidelines for professionally-acceptable documentation of survey results.

APPENDIX III. PROJECTS REVIEWED, 1985-1990, BY DNR REGION

REGION I

COUNTY	PROJECT NAME	SURVEY RESULTS; SITE NUMBER	SHPO REF. #	YEAR(S)
Becker	Acorn Lake	negative	90-2463	1990
	Big Detroit Lake	negative	89-2761	1989
	Big Floyd Lake	negative	88-0864	1987
	Height-of-Land Lake	negative	89-2749	1989
	Long Lake	negative	88-0863	1987
	Lake Melissa	negative	88-1657	1988
	Pearl Lake	negative	90-1680	1990
	Lake Sallie	21BK33	DD-529	1986,87
Beltrami	Campbell Lake	negative	EE-641	1987
	Gilsted Lake	negative	USFS	1988
	Grace Lake	negative	DD-240	1986
	Pimushe Lake	USFS	USFS	1989
Clay	Red River/Moorhead	negative	90-0412	1989
Douglas	Lake Christina	21DL46	89-0972	1988,90
	Lake Geneva/West	negative	DD-244	1986
	Lake Mary/South	negative	90-1575	1990
	Turtle Lake	negative	89-2753	1989
Hubbard	Big Sand Lake	negative	88-1079	1987
	Blue Lake	negative	DD-234	1986
	Eagle Lake	negative	DD-934	1987
	East Crooked Lake	negative	EE-723	1987
	Lake Hattie	21HB21	88-0653	1987
	Island Lake	negative	EE-722	1987
Kittson	Red River/TH #75	negative	90-0652	1989
Marshall	Red River/Oslo	negative	EE-355	1987
Otter Tail	Anna Lake	negative	90-1574	1990
	Big Pine Lake	negative	90-2001	1990
	Franklin Lake	negative	DD-249	1986
	Lake Marion	21OT97	88-0628	1987
	Murphy-Silver Lakes	negative	89-2748	1989
	Lake Lida/North	negative	89-2752	1989
	Otter Tail Lake/Riverside	21OT99	88-1739	1988
	Pelican Lake	negative	90-0025	1989
	Star Lake	negative	88-1675	1988
	West Silent Lake	negative	89-2762	1989
Pope	Lake Leven	negative	EE-357	1987
	Lake Minnewaska	negative	89-0561	1988
Red Lake	Red Lake River/Huot Park	negative	90-0692	1989

APPENDIX III, continued

REGION II

COUNTY	PROJECT NAME	SURVEY RESULTS; SITE NUMBER	SHPO REF. #	YEAR(S)
Aitkin	Esquagamah Lake	negative	88-0906	1987
	Hammel Lake	negative	89-2519	1989
	Hanging Kettle Lake	21AKFS09	AA-925	1986
	Mississippi R./Aitkin	negative	89-2747	1989
	Mississippi R./Ferry Landing	negative	88-0606	1987
	Section 10/Section 12 Lakes	negative	89-2520	1989
Cass	Portage Lake	USFS	USFS	1989
	Winni/Richards	USFS	USFS	1990
	Winni/Birches	negative	USFS	1990
Cook	Elbow Lake	negative	90-0339	1989
	Big Fork River/Hafeman	negative	USFS	1989
	Bowstring Lake/South	negative	90-2568	1990
	Deer Lake	negative	EE-642	1987
	Johnson Lake	negative	88-1575	1987
	Mississippi/Leech Lake R.	USFS	USFS	1989
	Mississippi R./Blackberry	negative	89-2751	1989
	Lake Pokegama/Sherry Arm	negative	89-1714	1990
	Sucker Lake	negative	DD-361	1986
	West Winni	negative	USFS	1990
	Winni/Mosomo Point	negative	USFS	1990
	Winni/Plug Hat Point	21IC17	USFS	1990
Koochiching	Big Fork R./Big Falls	negative	EE-192	1986
	Big Fork River #1	negative	88-1659	1988
	Big Fork River #2	negative	88-1658	1988
	Little Fork R./TH #11	21KC2	Y-644	1986
	Little Fork R./Lofgren Park	negative	DD-528	1986
Lake	White Iron Lake	negative	DD-524	1986
St. Louis	Armstrong Lake	negative	EE-643	1986,87
	Ash River	negative	88-2063	1988
	Brighton Beach	negative	89-1080	1988
	Crane Lake	negative	90-2009	1990
	Elephant Lake	negative	88-1665	1988
	Floodwood River	negative	EE-21	1987
	Shagawa Lake	negative	AA-924	1986
	St. Louis R./Rice's Point	negative	89-0602	1988

APPENDIX III, continued

REGION III

COUNTY	PROJECT NAME	SURVEY RESULTS; SITE NUMBER	SHPO REF. #	YEAR(S)
Aitkin	Snake River/TH #65	negative	EE-356	1987
Benton	Little Rock Lake	21BN8	89-0894	1988,89
Cass	Big Thunder Lake	negative	89-2228	1989
	Boy Lake	negative	DD-239	1986
	Crow Wing R./Fish. Bank	negative	91-0585	1990
	Crow Wing R./Fish. Bridge	21CA55	91-0599	1990
	Lake Inguadona	negative	DD-362	1986
	Leech Lake/Sugar Point	21CA10	89-1588	1987,89
	Long/Pickeral Lake	negative	EE-354	1987
	Pine River/Norway Lake	negative	90-2153	1990
	Sanburn Lake	21CA161	EE-191	1987
	Woman Lake	negative	90-0341	1989
Crow Wing	Bass Lake/Mission Twp.	negative	90-0411	1989
	Borden Lake	21CW101	AA-841	1985,86
	Camp Lake	negative	89-2518	1989
	Cross/Duck Lakes	negative	89-2760	1989
	Emily Lake	negative	90-1747	1990
	Lower Cullen Lake	negative	90-0340	1989
	Lower Hay Lake	negative	89-2750	1989
	Mississippi River/TH #6	negative	AA-926	1986
	Nokasipi River	21CW65	AA-839	1986
	Pelican Lake/Halverson Bay	negative	DD-527	1986
	Round Lake	negative	89-0491	1988
	Whipple Lake	negative	89-0490	1988
Douglas	Lake Osakis	negative	90-0376	1989
Kanabec	Snake River/Co. Rd. 11	negative	DD-526	1986
Mille Lacs	Shah-bush-kung Bay	negative	90-0670	1989
Morrison	Stalky Oats/Motley	negative	90-0735	1988,90
Pine	Snake River/Cross Lake	21PN57	89-0745	1988
	Grindstone R./Hinckley	21PN58	88-1916	1988
	Lake Pokegama	21PN9	90-0852	1989
	Sturgeon Lake	negative	89-0492	1988
	Upper Pine Lake	negative	90-2179	1990
Stearns	Big Fish Lake	negative	DD-247	1986
	Big Watab Lake	negative	DD-246	1986
	Clearwater Lake	negative	90-1794	1990
	Grand Lake	negative	89-2227	1989
	Lake Koronis	negative	88-1913	1988,90
	Pearl Lake	negative	Z-271	1985
	Pleasant Lake	negative	88-1914	1988
	Rice Lake	90TW-3-2	91-0542	1990
Todd	Latimer Lake	21TO8	89-0805	1988
	Mill Lake	negative	89-0523	1988
Wadena	Crow Wing R./Marsh's Landing	negative	90-0395	1989
	Stocking Lake	negative	88-1077	1987

APPENDIX III, continued

REGION IV

COUNTY	PROJECT NAME	SURVEY RESULTS; SITE NUMBER	SHPO REF. #	YEAR(S)
Big Stone	Artichoke Lake	negative	DD-237	1986
Blue Earth	Le Sueur River	negative	Z-269	1985
	Loon Lake	21BE71	88-1080	1987
	Madison Lake	negative	EE-359	1987
Brown	Clear Lake	21BW20	89-0953	1988
	Lake Hanska	negative	91-0407	1990
Cottonwood	Bean Lake	negative	91-0461	1990
Chippewa	Minn R./Fredrickson Landing	negative	DD-236	1986
Kandiyohi	Lake Calhoun	negative	88-1884	1988
	Point Lake	negative	89-0522	1988
Jackson	Fish Lake	negative	90-1497	1990
	Independence Lake	21JK19	N/A	1989,90
	Little Spirit Lake	negative	90-1522	1990
	Round Lake	21JK3	90-1630	1990
Lincoln	Hendricks Lake	negative	88-1078	1987
Lyon	Wood Lake	negative	90-1749	1990
Martin	Big Twin Lake	negative	88-1336	1988
	Budd Lake	negative	DD-530	1986
	Sisseton Lake	21MR23	DD-530	1986
McLeod	Hook/Echo Lakes	21MC4	90-2198	1987,90
	Stahls (Stahlis) Lake	negative	DD-244	1986
Meeker	Lake Arvilla	negative	89-2027	1989
	Belle Lake	negative	EE-360	1987
	Hoff Lake	negative	89-0560	1988
	Little Mud Lake	negative	EE-362	1987
	Lake Manuella	negative	88-1140	1987
	Richardson Lake	negative	89-2028	1989
	Round Lake	negative	EE-361	1987
Nicollet	Mn River/Eckstein	negative	90-2026	1990
	Swan Lake/Poor Farm Bay	negative	90-2428	1990
Sibley	Minnesota R./Henderson	negative	N/A	1990
Yellow Medicine	Minnesota R./Kinney	negative	88-1912	1988
	Spellman Lake	negative	89-0893	1988

APPENDIX III, continued

REGION V

COUNTY	PROJECT NAME	SURVEY RESULTS; SITE NUMBER	SHPO REF. #	YEAR(S)
Freeborn	Albert Lea Lake	negative	88-2582	1988
Goodhue	Mississippi R./Hok-Si-La	negative	89-2004	1989
Rice	Circle Lake	negative	DD-243	1986
	Fox Lake	negative	EE-189	1986
	French Lake	negative	88-1548	1988
	Horseshoe Lake	negative	EE-358	1987
	Shields Lake	negative	EE-190	1986
Wabasha	Lake Pepin/Rochen Park	negative	90-1748	1990
	Goose Lake/Pritchard's Landing	negative	90-2035	1990
Winona	Mississippi River/I-90	negative	90-0706	1989
	Mississippi River/Minneiska	negative	91-0173	1990

REGION VI

COUNTY	PROJECT NAME	SURVEY RESULTS; SITE NUMBER	SHPO REF. #	YEAR(S)
Anoka	Coon Lake	negative	88-1551	1988
Chisago	Comfort Lake	21CH55	89-0921	1988
	South Center Lake	negative	88-1788	1988
	Spider Lake	negative	89-2026	1989
	West Rush Lake	negative	88-0907	1987
Dakota	Mississippi/So. St. Paul	negative	91-0138	1990
Hennepin	Christmas Lake	negative	DD-235	1985
	Little Long Lake	negative	DD-238	1986
	Lake Minnetonka/Kings Point	negative	Z-270	1986
Scott	Cedar Lake	negative	DD-241	1986
	Fish Lake	negative	90-1464	1990
	Lower Prior Lake	negative	89-0559	1988
	Thole Lake	negative	Z-273	1986
Washington	Big Carnelian Lake	negative	EE-721	1987
	Big Marine Lake	21WA46	88-0655	1987
	Bone Lake	21WA53	AA-840	1986
	Clear Lake	negative	DD-242	1986
	Jane Lake	negative	89-2005	1989
Wright	Buffalo Lake	negative	EE-96	1987
	Cokato Lake	negative	DD-525	1986
	French Lake	negative	DD-363	1986
	Granite Lake	negative	DD-248	1986
	John Lake	negative	89-2224	1989
	Pleasant Lake	negative	89-2226	1989
	Ramsey Lake	negative	Z-272	1985
	Sylvia/Twin Lakes	negative	90-2353	1990

APPENDIX IV. PROJECTS REVIEWED, 1985-1990, BY COUNTY

County	Project Name	Survey Results; Site Number	SHPO Ref. #	Location	Year(s)
Aitkin	Esquagamah Lake	negative	88-0906	T. 49N-26W, Sec. 18; W2 SW NW SW.	1987
	Hammal Lake	negative	89-2519	T. 46N-27W, Sec. 10; NW NW SW SE.	1989
	Hanging Kettle Lake	21AKFS09	AA-925	T. 46N-27W, Sec. 14; NE.	1986
	Mississippi/Aitkin	negative	89-2747	T. 47N-27W, Sec. 23; W2 SW SE NE & NE SE SW NE.	1989
	Mississippi/Ferry Crossing	negative	88-0606	T. 49N-24W, Sec. 9; NW NE NW SW & N2 NW NW SW.	1987
	Section 10/Section 12 Lakes	negative	89-2520	T. 46N-26W, Sec. 11; N2 SW SW NE.	1989
	Snake River/Highway 65	negative	EE-356	T. 44N-23W, Sec. 32; E2 NE SE SE.	1987
Anoka	Coon Lake	negative	88-1551	T. 33N-23W, Sec. 25; W2 E2 SW SW SW & E2 W2 SW SW SW.	1988
Becker	Acorn Lake	negative	90-2463	T. 138N-40W, Sec. 28; SW SW NE NW & NE NE SW NE	1990
	Big Detroit Lake	negative	89-2761	T. 138N-41W, Sec. 15; SE NW NE NE & NW SW NE NE.	1989
	Big Floyd Lake	negative	88-0864	T. 139N-41W, Sec. 15; W2 SE NW SW NW & E2 SW NW SW NW.	1987
	Height-of-Land Lake	negative	89-2749	T. 139N-39W, Sec. 10; NE NW SE.	1989
	Long Lake	negative	88-0863	T. 139N-41W, Sec. 29; SE NW SE SW & S2 N2 SE SE SW.	1987
	Lake Melissa	negative	88-1657	T. 138N-41W, Sec. 21; S2 NW SW NW SW.	1988
	Pearl Lake	negative	90-1680	T. 138N-42W, Sec. 13; E2 NW SW NW.	1990
	Lake Sallie	21BK33	DD-529	T. 138N-41W, Sec. 8; NE.	1986,87
Beltrami	Campbell Lake	negative	EE-641	T. 148N-34N, Sec. 24; C3 S2 NE NE SW & C3 N2 SE NE SW.	1987
	Grace Lake	negative	USFS	T. 146N-32W, Sec. 32; SW SW SE SE.	1986
	Gilsted Lake	negative	DD-240	T. 148N-30W, Sec. 6; SW NE SE.	1988
	Pimushe Lake	USFS	USFS	T. 147N-30W, Sec. 17; N2 NE NE SW.	1989
Benton	Little Rock Lake	21BN8	89-0894	T. 37N-31W, Sec. 15; NE.	1988,89
Big Stone	Artichoke Lake	negative	DD-237	T. 121N-44W, Sec. 1; S2 SE SE NE.	1986
Blue Earth	LeSueur River	negative	Z-269	T. 107N-27W, Sec. 12; SE SE SE SE.	1985
	Loon Lake	21BE71	88-1080	T. 107N-28W, Sec. 3; SW & Sec. 10; NW.	1987
	Madison Lake	negative	EE-359	T. 108N-25W, Sec. 2; SW NE SE NW.	1987
Brown	Clear Lake	21BW20	89-0953	T. 109N-31W, Sec. 14; NE.	1988
	Lake Hanska	negative	91-0407	T. 108N-31W, Sec. 33; E2 SE SW SW.	1990
Cass	Big Thunder Lake	negative	89-2228	T. 140N-26W, Sec. 16; NW NW SE SE.	1989
	Boy Lake	negative	DD-239	T. 142N-28W, Sec. 25; SE SE NE SE & NE NE SE SE.	1986
	Crow Wing R./Fish. Bank	negative	91-0585	T. 133N-29W, Sec. 30; SW SE SW NE.	1990

APPENDIX IV, continued

County	Project Name	Survey Results; Site Number	SHPO Ref. #	Location	Year(s)
Cass	Crow Wing R./Fish. Bridge	21CA55	91-0599	T. 133N-29W, Sec. 19; SE & Sec. 30; NE.	1990
	Inguadona Lake	negative	DD-362	T. 140N-27W, Sec. 8; N2 NE SE NW.	1986
	Leech Lake/Sugar Point	21CA10	89-1588	T. 143N-29W, Sec. 36; NE & Sec. 25; SE.	1987,89
	Long/Pickeral Lake	negative	EE-354	T. 140N-29W, Sec. 33; S2 SE SE SE.	1987
	Pine River/Norway Lake	negative	90-2153	T. 138N-29W, Sec. 31; NW SW NW NW.	1990
	Portage Lake	USFS	USFS	T. 145N-29W, Sec. 26; NE.	1989
	Sanburn Lake	21CA161	EE-191	T. 139N-30W, Sec. 22; SE.	1986
	Winni/Richards Twp.	USFS	USFS	T. 145N-28W, Sec. 20; NE.	1990
	Woman Lake	negative	90-0341	T. 140N-29W, Sec. 11; S2 SW SW NE.	1989
Chippewa	Minnesota R./Fredrickson	negative	DD-236	T. 115N-39W, Sec. 13; NE NE SE SE NW.	1986
Chisago	Comfort Lake	21CH55	89-0921	T. 33N-21W, Sec. 27; SW.	1988
	South Center Lake	negative	88-1788	T. 33N-20W, Sec. 4; SW SE SE NE.	1988
	Spider Lake	negative	89-2026	T. 33N-20W, Sec. 22; SW SW NE SE.	1989
	West Rush Lake	negative	88-0907	T. 37N-22W, Sec. 16; NW NE NW SE & N2 NW NW SE.	1987
Clay	Red River/Moorhead	negative	90-0412	T. 140N-48W, Sec. 29; S2 NE SE NE & N2 SE SE NE.	1989
Cook	Elbow Lake	negative	90-0339	T. 62N-1E, Sec. 14; approx. NW NW NE.	1989
Cottonwood	Bean Lake	negative	91-0461	T. 107N-38W, Sec. 14; S2 SW SW NW.	1990
Crow Wing	Bass Lake/Mission Twp.	negative	90-0411	T. 136N-27W, Sec. 33; SW SW NW NW.	1989
	Borden Lake	21CW101	AA-841	T. 44N-28W, Sec. 11; NE.	1985,86
	Camp Lake	negative	89-2518	T. 43N-28W, Sec. 10; W2 SW NW NE & E2 SE NE NW.	1989
	Cross/Duck Lakes	negative	89-2760	T. 137N-27W, Sec. 30; S2 NE SW SW.	1989
	Lower Cullen Lake	negative	90-0340	T. 135N-29W, Sec. 1; E2 NE NW SW.	1989
	Lower Hay Lake	negative	89-2750	T. 137N-29W, Sec. 25; NE NE NE.	1989
	Lake Emily	negative	90-1747	T. 138N-26W, Sec. 34; E2 SW SW SE & T. 137N-26W, Sec. 3; NW NW NE.	1990
	Mississippi R./Highway 6	negative	AA-926	T. 47N-29W, Sec. 24; NW NE SW NW.	1986
	Nokasippi River	21CW65	AA-839	T. 43N-32W, Sec. 27; SE.	1986
	Pelican Lake/Halvorsen Bay	negative	DD-527	T. 136N-28W, Sec. 12; NW NW SE NW.	1986
	Round Lake	negative	89-0491	T. 44N-28W, Sec. 1; NW NE NW NE.	1988
	Whipple Lake	negative	89-0490	T. 133N-29W, Sec. 2; W2 NW NE SW.	1988

APPENDIX IV, continued

County	Project Name	Survey Results; Site Number	SHPO Ref. #	Location	Year(s)
Dakota	Mississippi/So. St. Paul	negative	91-0138	T. 28N-22W, Sec. 26; SW NE SW.	1990
Douglas	Lake Christina	21DL46	89-0972	T. 130N-41W, Sec. 13; E2 & T. 130N-40W, Sec. 18; W2.	1988,90
	Lake Geneva/West	negative	DD-244	T. 128N-37W, Sec. 9; SE SW NE NE.	1986
	Lake Mary/South	negative	90-1575	T. 127N-38W, Sec. 18; NW SW NE SE.	1990
	Lake Osakis	negative	90-0376	T. 128N-36W, Sec. 25; SW NE SE NW.	1989
	Turtle Lake	negative	89-2753	T. 127N-38W, Sec. 35; NE NE SE NE.	1989
Freeborn	Albert Lea Lake	negative	88-2582	T. 102N-21W, Sec. 26; SW NE NE.	1988
Goodhue	Mississippi/Hok-Si-La	negative	89-2004	T. 112N-12W, Sec. 30; NW NE NE SW.	1989
Hennepin	Christmas Lake	negative	DD-235	T. 117N-23W, Sec. 35; SE NE SW NE.	1986
	Little Long Lake	negative	DD-238	T. 117N-24W, Sec. 10; NW NW SW SW.	1986
	Minnetonka/Halstead's Bay	negative	Z-270	T. 117N-24W, Sec. 27; E2 SE SE NW.	1985
Hubbard	Big Sand Lake	negative	88-1079	T. 141N-34W, Sec. 27; E2 SW SW SE & Sec. 34, E2 NW NW NE.	1987
	Blue Lake	negative	DD-234	T. 141N-34W, Sec. 20; NW NE NW NE.	1986
	Eagle Lake	negative	DD-934	T. 141N-35W, Sec. 22; N2 S2 SW NW.	1987
	East Crooked Lake	negative	EE-723	T. 141N-33W, Sec. 14; N2 NE NW NW.	1987
	Lake Hattie	21HB21	88-0653	T. 144N-35W, Sec. 25; NE.	1987
	Island Lake	negative	EE-722	T. 141N-35W, Sec. 5; NW SE SW NE.	1987
Itasca	Big Fork/Hafeman Landing	negative	USFS	T. 149N-25W, Sec. 1; E2 NE SE SE.	1989
	Bowstring Lake/South	negative	90-2568	T. 146N-25W, Sec. 6; SE NW NE NW & NW SE NE NW.	1990
	Deer Lake	negative	EE-642	T. 56N-26W, Sec. 6; NE NE SE SW.	1987
	Johnson Lake	negative	88-1575	T. 57N-26W, Sec. 13; S2 SE NE SW.	1987
	Mississippi/Blackberry	negative	89-2751	T. 54N-24W, Sec. 8; N2 NE NE SW & N2 NW NW SE.	1989
	Mississippi/Leech Lake R.	USFS	USFS	T. 144N-26W, Sec. 12; SE.	1989
	Lake Pokegama/Sherry Arm	negative	89-1714	T. 54N-26W, Sec. 26; NE NE NE.	1990
	Sucker Lake	negative	DD-361	T. 57N-23W, Sec. 33; NW NE NW SE.	1986
	Winni/Plug Hat Point	21IC27	USFS	T. 146N-27W, Sec. 26; NE.	1990

APPENDIX IV, continued

County	Project Name	Survey Results; Site Number	SHPO Ref. #	Location	Year(s)
Jackson	Fish Lake	negative	90-1497	T. 104N-35W, Sec. 4; N2 SW NW SW.	1990
	Lake Independence	21JK19	N/A	T. 104N-35W, Sec. 33; S2.	1990
	Little Spirit Lake	negative	90-1522	T. 101N-36W, Sec. 26; SW SW SW SE.	1990
	Round Lake	21JK3	90-1630	T. 101N-38W, Sec. 8; SE.	1990
Kandiyohi	Lake Calhoun	negative	88-1884	T. 121N-33W, Sec. 28; W2 SE & SE SW NE & SE NW SW NE.	1988
	Point Lake	negative	89-0522	T. 120N-35W, Sec. 24; SE NE NW NE.	1988
Kanabec	Snake R./Co. Rd. 11	negative	DD-526	T. 38N-23W, Sec. 6; C SW SW NW.	1986
Kittson	Red River/TH #175	negative	90-0652	T. 161N-50W, Sec. 8; NE SE NW NE.	1989
Koochiching	Big Fork R./Big Falls	negative	EE-192	T. 155N-25W, Sec. 35; N2 NE SE SE & N2 NW SE SE.	1986
	Big Fork River #1	negative	88-1659	T. 63N-27W, Sec. 14; NE NW SW NE & NE SW NW NE.	1988
	Big Fork River #2	negative	88-1658	T. 64N-27W, Sec. 13; E2 NW NE SW.	1988
	Little Fork R./Highway 11	21KC2	Y-644	T. 70N-25W, Sec. 29; SW.	1986
	Little Fork R./Lofgren Park	negative	DD-528	T. 68N-25W, Sec. 9; S2 SW NE NW.	1986
Lake	White Iron Lake	negative	DD-524	T. 63N-11W, Sec. 31; SW NE NE SW.	1986
Lincoln	Lake Hendricks	negative	88-1078	T. 112N-46W, Sec. 19; SW SW SW SW.	1987
Lyon	Wood Lake	negative	90-1749	T. 110N-43W, Sec. 4; E2 NE NE SW.	1990
Marshall	Red River/Oslo	negative	EE-355	T. 154N-50W, Sec. 6; NW NW NW NE.	1987
Martin	Big Twin Lake	negative	88-1336	T. 103N-33W, Sec. 12; S2 SE SE SE SE.	1988
	Budd Lake	negative	DD-530	T. 102N-30W, Sec. 17; SW SW NW SW.	1986
	Sisseton Lake	21MR23	DD-530	T. 102N-30W, Sec. 8; SW.	1986
McLeod	Hook/Echo Lakes	21MC4	90-2198	T. 117N-29W, Sec. 9; SW & Sec. 17; NW.	1987,90
	Stahlis (Stahls) Lake	negative	DD-244	T. 117N-30W, Sec. 11; SW SW SW SW.	1986

APPENDIX IV, continued

County	Project Name	Survey Results; Site Number	SHPO Ref. #	Location	Year(s)
Meeker	Lake Arvilla	negative	89-2027	T. 119N-29W, Sec. 3; N2 NW NW NE.	1989
	Belle Lake	negative	EE-360	T. 118N-30W, Sec. 35; NE NW SE SW.	1987
	Hoff Lake	negative	89-0560	T. 117N-31W, Sec. 1; SE SE SW SW & SW SW SE SW.	1988
	Little Mud Lake	negative	EE-362	T. 121N-30W, Sec. 22; NW NE NW SE & NE NW NW SE.	1987
	Lake Manuella	negative	88-1140	T. 118N-30W, Sec. 3; N2 SE NW SW.	1987
	Richardson Lake	negative	89-2028	T. 120N-30W, Sec. 33; S2 SW NE SE & NE NW SE SE.	1989
	Round Lake	negative	EE-361	T. 119N-31W, Sec. 36; NW NW NW NE.	1987
Mille Lacs	Shah-bush-kung Bay	negative	90-0670	T. 43N-27W, Sec. 21; SE NW NE SW & NE SW NE SW.	1989
Morrison	Stalky Oats/Motley	negative	91-0735	T. 133N-31W, Sec. 7; NW SE SW.	1990
Nicollet	Mn River/Eckstein	negative	90-2026	T. 110N-30W, Sec. 27; SW NW SE SW & SE NE SW SW.	1990
	Swan Lake/Poor Farm Bay	negative	90-2428	T. 110N-28W, Sec. 18; N2 NW SW SE.	1990
Otter Tail	Anna Lake	negative	90-1574	T. 133N-41W, Sec. 17; N2 NW NE NE & N2 N2 NW NE.	1990
	Big Pine Lake	negative	90-2001	T. 136N-38W, Sec. 6; SW SW SE.	1990
	Franklin Lake	negative	DD-249	T. 137N-42W, Sec. 22; NW SW SE SW.	1986
	Lida Lake-North	negative	89-2752	T. 136N-42W, Sec. 10; NE SW NW SW & NW SE NW SW.	1989
	Lake Marion	210T97	88-0628	T. 135N-39W, Sec. 7; SE.	1987
	Murphy-Silver Lakes	negative	89-2748	T. 137N-39W, Sec. 6; W2 NE SE SW.	1989
	Otter Tail Lake/Riverside	210T99	88-1739	T. 133N-40W, Sec. 4; SW.	1988
	Pelican Lake	negative	90-0025	T. 137N-43W, Sec. 11; N2 NW NW SE.	1989
	Star Lake	negative	88-1675	T. 135N-40W, Sec. 6; SW NW SW SW & T. 135N-41W, Sec. 1; NE SE SE.	1988
	West Silent Lake	negative	89-2762	T. 136N-41W, Sec. 32; SE NW NE SE.	1989
Pine	Grindstone R./Hinckley	21PN58	88-1916	T. 41N-21W, Sec. 24; SE.	1988
	Lake Pokegama	21PN9	90-0852	T. 39N-22W, Sec. 35; SE.	1989
	Snake River/Cross Lake	21PN57	89-0745	T. 39N-21W, Sec. 27; NE.	1988
	Sturgeon Lake	negative	89-0492	T. 45N-19W, Sec. 9; SW SW SE NE.	1988
	Upper Pine Lake	negative	90-2179	T. 43N-21W, Sec. 21; SW SW SW NW.	1990
Pope	Lake Leven	negative	EE-357	T. 126N-37W, Sec. 13; SE SE NW NW & SW SW NE NW.	1987
	Lake Minnewaska	negative	89-0561	T. 125N-38W, Sec. 11; NE NW SE NE & NW NE SE NE.	1988

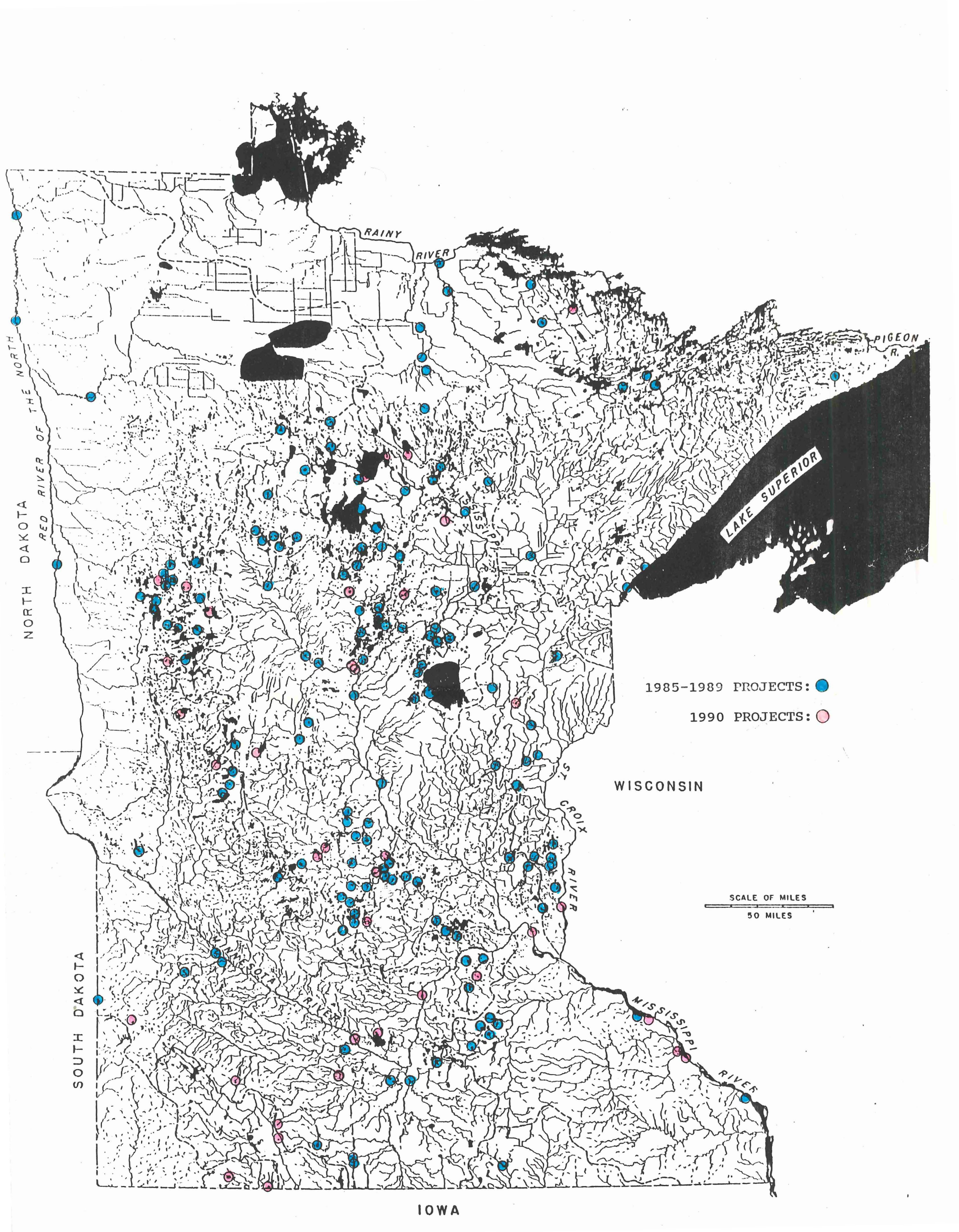
APPENDIX IV, continued

County	Project Name	Survey Results; Site Number	SHPO Ref. #	Location	Year(s)
Red Lake	Red Lake River/Huot Park	negative	90-0692	T. 151N-45W, Sec. 33; S2 NW NE.	1989
Rice	Circle Lake	negative	DD-243	T. 111N-21W, Sec. 16; S2 SW NW NW.	1986
	Fox Lake	negative	EE-189	T. 111N-21W, Sec. 27; E2 SE SW SE &	1986
				Sec. 34, E2 NE NW NE.	1990
	French Lake	negative	88-1548	T. 110N-21W, Sec. 17; W2 N2 SW NW SW.	1988
	Horseshoe Lake	negative	EE-358	T. 109N-22W, Sec. 7; NE SW SW SW & NW SE SW SW.	1987
	Shields Lake	negative	EE-190	T. 111N-22W, Sec. 35; SW NE NW.	1986
St. Louis	Armstrong Lake	negative	EE-643	T. 62N-14W, Sec. 15; SE SW NE SE & SE NE SE.	1986,87
	Ash River	negative	88-2063	T. 68N-19W, Sec. 5; SW NE NW & W2 SE SE NW.	1988
	Brighton Beach	negative	89-1080	T. 50N-13W, Sec. 4; E2 SW NE & SW SW NE & NW NW SE.	1988
	Crane Lake	negative	90-2009	T. 67N-17W, Sec. 24; E2 NE NW SW & W2 NW NE SW.	1990
	Elephant Lake	negative	88-1665	T. 66N-19W, Sec. 24; NE SE NW SW & N2 SW NE SW.	1988
	Floodwood River	negative	EE-21	T. 51N-20W, Sec. 6; SW SE NW SE & SE SW NW SE.	1987
	St. Louis River/Rice's Point	negative	89-0602	T. 49N-14W, Sec. 3; N2 SE SE SW & S2 NE SE SW.	1988
	Shagawa Lake	negative	AA-924	T. 63N-12W, Sec. 27; SW SW NE NW & NW NW SE NW.	1986
Scott	Cedar Lake	negative	DD-241	T. 113N-22W, Sec. 18; E2 SW NW SE.	1986
	Fish Lake	negative	90-1464	T. 114N-22W, Sec. 28; S2 SE SE NW NE.	1990
	Lower Prior Lake	negative	89-0559	T. 115N-22W, Sec. 25; S2 SW SW NE.	1988
	Thole Lake	negative	Z-273	T. 115N-23W, Sec. 25; N2 NW NE NW SE.	1985
Sibley	Minnesota R./Henderson	negative	N/A	T. 112N-26W, Sec. 1; E2 SW SE SW.	1990
Stearns	Big Fish Lake	negative	DD-247	T. 124N-30W, Sec. 20; E2 NE SE SE.	1986
	Big Watab Lake	negative	DD-246	T. 124N-30W, Sec. 9; NW NW SE SE.	1986
	Clearwater Lake	negative	90-1794	T. 121N-28W, Sec. 11; SE NE SE NE.	1990
	Grand Lake	negative	89-2227	T. 123N-29W, Sec. 29; N2 SW SE SE.	1989
	Lake Koronis	negative	88-1913	T. 122N-32W, Sec. 35; SE SW SW SE.	1988
	Pearl Lake	negative	Z-271	T. 122N-29W, Sec. 3; E2 NW NW SE.	1985
	Pleasant Lake	negative	88-1914	T. 123N-29W, Sec. 1; N2 NW NW NW.	1988
	Rice Lake	90TW-3-2	91-0542	T. 122N-31W, Sec. 19; SW.	1990
Todd	Latimer Lake	21T08	89-0805	T. 128N-33W, Sec. 4; SW.	1988
	Mill Lake	negative	89-0523	T. 130N-32W, Sec. 32; N2 N2 NW NW NW.	1988

APPENDIX IV, continued

County	Project Name	Survey Results; Site Number	SHPO Ref. #	Location	Year(s)
Wabasha	Miss/Rochen Park	negative	90-1748	T. 111N-12W, Sec. 4; SW SE SW SE & NE SW SW SE.	1990
	Pritchard/Goose	negative	90-2035	T. 109N-9W, Sec. 8; SE NE SE SW.	1990
Wadena	Crow Wing/Marsh's Landing	negative	90-0395	T. 134N-32W, Sec. 33; W2 SW NW NW & SW NW NW NW.	1989
	Stocking Lake	negative	88-1077	T. 138N-35W, Sec. 23; N2 NE SE NE.	1987
Washington	Big Carnelian Lake	negative	EE-721	T. 31N-20W, Sec. 34; NE NE NW NE SE & E2 SE SW SE NE.	1987
	Big Marine Lake	21WA46	88-0655	T. 32N-20W, Sec. 20; SE.	1987
	Bone Lake	21WA53	AA-840	T. 32N-20W, Sec. 5; NE.	1986
	Clear Lake	negative	DD-242	T. 32N-21W, Sec. 18; SE NE SE NW.	1986
	Lake Jane	negative	89-2005	T. 29N-21W, Sec. 10; NE NW SW.	1989
	St. Croix/Oak Park Hts.	negative	91-0564	T. 30N-20W, Sec. 34; NE SW SE & E2 NW SW NE&N2SW SW SE.	1990
Winona	Mississippi River/I-90	negative	90-0706	T. 105N-4W, Sec. 33; W2 SE NE.	1989
	Miss R./Minneiska	negative	91-0173	T. 108N-9W, Sec. 2; SW NW NW NE.	1990
Wright	Buffalo Lake	negative	EE-96	T. 120N-26W, Sec. 25; S2 SW NW NE & N2 W SW NE.	1987
	Cokato Lake	negative	DD-525	T. 119N-28W, Sec. 14; NE NW SE SE.	1986
	French Lake	negative	DD-363	T. 120N-28W, Sec. 11; N2 SE SW SW.	1986
	Granite Lake	negative	DD-248	T. 120N-27W, Sec. 30; NW NW NE NE.	1986
	Lake John	negative	89-2224	T. 121N-28W, Sec. 35; SW SW NW NE & NW NW SW NE.	1989
	Pleasant Lake	negative	89-2226	T. 121N-27W, Sec. 19; N2 SW NE NE.	1989
	Ramsey Lake	negative	Z-272	T. 120N-26W, Sec. 18; SE SE SE NE.	1985
	Sylvia/Twin Lakes	negative	90-2353	T. 120N-28W, Sec. 5; NE NW NW NE & NW NE NW NE.	1990
Yellow Medicine	Minnesota River/Kinney	negative	88-1912	T. 115N-39W, Sec. 15; SW NE NW NE & N2 S2 NW NW NE.	1988
	Spellman Lake	negative	89-0893	T. 114N-41W, Sec. 22; SE NE NW & SW NE NW & Sec. 33; NW NW.	1988

APPENDIX V. MAP OF PROJECT LOCATIONS, 1985-1990


NORTH DAKOTA
RED RIVER OF THE NORTH
RAINY RIVER
LAKE SUPERIOR
PIGEON R.
MISSISSIPPI R.
WISCONSIN
ST CROIX RIVER
MINNESOTA RIVER
MISSISSIPPI RIVER
SOUTH DAKOTA
IOWA
1985-1989 PROJECTS:
1990 PROJECTS:
SCALE OF MILES
50 MILES