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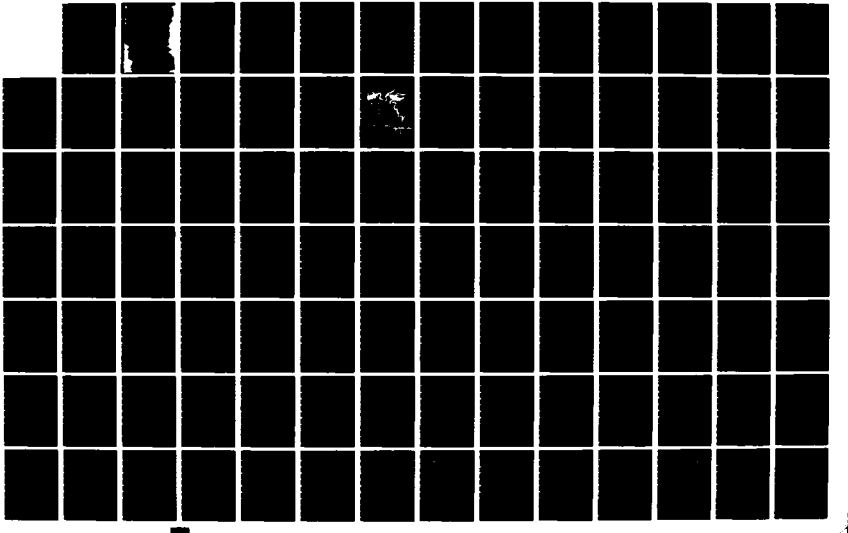

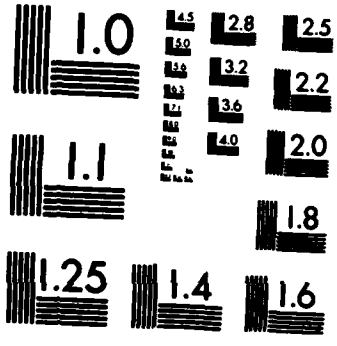

THE CULTURAL RESOURCES AND GEOMORPHOLOGY OF CORALVILLE LAKE JOHNSON COUNTY, IOWA

VOLUME I
TECHNICAL REPORT

Prepared Under the Supervision of
Patricia M. Emerson, Principal Investigator
With the Assistance of
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IMPACT SERVICES INCORPORATED
P.O. Box 3224 • Mankato, Minnesota

APRIL 1984

Submitted to
U.S. Army Corps of Engineers
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This report presents the results of an investigation of the cultural resources and geomorphology of Coralville Lake, a U.S. Army Corps of Engineers' flood-control reservoir located on the Iowa River in Johnson County, Iowa. Work for this project was conducted in three phases which focused, respectively, on prehistoric resources, historic resources, and geomorphology. Literature review conducted for this contract resulted in the compilation of a rather large body of documentation related to prehistoric

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and historic resources at Coralville Lake. Geomorphic investigation led to formulation of a preliminary model of landforms in the project area. This information was synthesized, summarized, and critically evaluated, and a number of gaps in the data base were identified. A set of recommendations for further cultural resource and geomorphic research was formulated. Several months after the original contract went into effect a modification added a program of testing at two recorded sites located in Sugar Bottom Recreation Area at Coralville Lake. This testing was intended to define the size, composition, and cultural affiliation of these sites, and to determine their eligibility for nomination to the National Register of Historic Places.

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FINAL REPORT

IMPACT SERVICES, INC.
MANKATO, MINNESOTA

APRIL, 1984

SUBMITTED TO
U.S. ARMY CORPS OF ENGINEERS
ROCK ISLAND DISTRICT
ROCK ISLAND, ILLINOIS
CONTRACT NO. DACW25-83-C-0065

ABSTRACT

This report presents the results of an investigation of the cultural resources and geomorphology of Coralville Lake, a U. S. Army Corps of Engineers' flood-control reservoir located on the Iowa River in Johnson County, Iowa. This work was performed by Impact Services, Inc. of Mankato, Minnesota, under the terms of USACE Contract No. DACW25-83-C-0065.

The original Scope of Work for the project called for a review and synthesis of existing documentary information about prehistoric and historic resources within the boundaries of the Coralville Lake Project Area. This synthesis was then to be integrated with the results of an examination of the geomorphology of the project area. Other than necessary geomorphological investigations, field research was to be limited to a brief examination of a sample of recorded sites, as a means of evaluating the current condition and research potential of sites in the project area. An addition was made to the Scope of Work several months after the original contract went into effect, to add a program of testing at two recorded sites located in the Sugar Bottom Recreation Area at Coralville Lake. This testing was intended to define the size, composition and cultural affiliation of these sites, and to determine their eligibility for nomination to the National Register of Historic Places.

Work for this project was conducted in three phases which focused, respectively, on prehistoric resources, historic resources, and geomorphology. Literature review conducted for this contract resulted in the compilation of a rather large body of documentation related to prehistoric and historic resources at Coralville Lake. Geomorphic investigations led to formulation of a preliminary model of landforms in the project area. This information was synthesized, summarized and critically evaluated, and a number of gaps in the data base were identified. Finally, a set of recommendations for future cultural resource and geomorphic research was formulated.

EXECUTIVE SUMMARY

The work performed for the Corps of Engineers under the terms of Contract No. DACW25-83-C-0065 was intended to aid the Corps in meeting its obligation for proper management of cultural resources within the Coralville Lake Project Area. To this end, the project focused on summarizing the existing information about those resources, and evaluating the adequacy of that information for planning purposes. Another objective of the project was to formulate a preliminary model of the geomorphology of the project area, which could be used as a framework for examining patterns of prehistoric and historic settlement at Coralville Lake.

A small sample of recorded sites in the project area was field-checked, with the intention of briefly evaluating the size, composition and present condition of those sites. This process revealed that most sites located on lakeshore terraces and alluvial fans have been disturbed by erosion and inundation. However, some potential does exist for finding relatively undisturbed sites in upland areas, tributary valleys and portions of the floodplain.

The Scope of Work for this project was modified several months after initiation, to include a testing program at two prehistoric sites in the Sugar Bottom Recreation Area. Surface manifestions suggested that these sites might qualify for nomination to the National Register of Historic Places, but were threatened with imminent destruction by wave action, inundation and recreational activities. The results of testing showed that the site areas had already been badly disrupted by a variety of natural and human forces, and that not enough of either site remains intact to warrant a recommendation for nomination to the NRHP.

The documentation compiled during literature search included state site files, reports of various survey and testing projects performed for Federal agencies and other entities, and legal records of historic-period settlement in the Iowa River Valley. This information suggested the presence of a large number of prehistoric sites representative of a wide temporal and functional range. For the most part, however, the documentation on prehistoric resources is of a rather cursory nature, and is in need of clarification and augmentation before the data could be used to construct a model of settlement patterns in the Coralville Lake Project Area. Examination of historic-period references showed that this portion of Iowa River Valley was not of major importance to early settlers, and holds little potential for further historic research.

Geomorphic investigations at Coralville Lake included a

review of existing knowledge about the soils and landforms of the project area, followed by field investigations of selected landforms and soil associations. Deep testing at various locations was helpful in delineating the processes which created the present landscape of the project area. This work resulted in formulation of a preliminary model of landforms at Coralville Lake, which was then used to help generate recommendations for further cultural resource research.

After the research on these specific topics was completed, the collected data were synthesized and evaluated. This analysis was then used as a framework for identifying topics which warrant future research and approaches to be used in that research. This report can now be used as a baseline document for designing further research at Coralville Lake so that it will result in generation of a comprehensive picture of the cultural resources of the area.

TABLE OF CONTENTS

TABLE OF CONTENTS, continued

TABLE OF CONTENTS, continued

LIST OF FIGURES

LIST OF FIGURES, continued

LIST OF FIGURES, continued

LIST OF PLATES

FOREWORD

This report on the cultural resources and geomorphology of Coralville Lake is divided into four volumes. Volume I presents the objectives, methods and results of the research conducted during this project. Volume II contains public appendices, including site descriptions, artifact catalog, personnel vitae, the Scope of Work and Technical Proposal. Volume III is confidential documentation: site-specific locational information, time and personnel logs. Volume IV is the non-technical (popular) report.

Several people share responsibility for the information and interpretation contained herein. Patricia M. Emerson supervised the research on prehistoric resources, and also coordinated the overall progress of this project. Dr. Frederick W. Lange conducted the historic research, and Dr. Harlan R. Finney was in charge of geomorphological investigations. David S. Radford did much of the necessary evaluation of reference materials, and wrote several sections of this report. The artifact catalog was compiled by Wanda A. Watson, who also updated state site forms. Maps and artifact photographs were done by Thor Olmanson.

A number of individuals deserve acknowledgement for the help they provided to members of the research team. At the Iowa State Historical Society, Nancy Craft was especially helpful in locating old maps and documents. At the Office of the State Archaeologist, Dr. Joseph Tiffany made available the historic collections related to Shirley Schermer's fieldwork; Deb Zieglowski and Sara Behrman were extremely cooperative in providing copies of site forms and research reports, and in allowing us access to artifact collections. Lake Manager Gary Thompson and other Corps of Engineers personnel were always ready to provide information and opinions.

I. INTRODUCTION

This report presents the results of a study of the cultural resources and geomorphology of Coralville Lake, a U. S. Army Corps of Engineers' flood-control reservoir in Johnson County, Iowa (see Figure 1). Coralville Dam is located on the Iowa River approximately 7 miles above Iowa City, and inundates an area, at maximum flood pool level, of 24,800 acres. The lake itself, at normal conservation pool level, extends upstream from the dam for roughly 22 miles (see Figure 2).

Approximately 200 prehistoric and historic sites are presently known to exist within the boundaries of Corps land at Coralville Lake. In past years, a variety of survey and testing projects ranging from reconnaissance-level survey of road corridors to exhaustive site excavation have been carried out around the lake. There was, however, no single source within which all the extant data relating to the cultural resources of the project area could be found. Proper management of those resources was thus impeded by the lack of synthesis of the relevant information. The primary objective of the present project was to generate such a synthesis, in order to provide the Corps with a document upon which management and research decisions could be based.

PROJECT OBJECTIVES

The specific objectives of this project were as follows:

a) to review and summarize existing documentary evidence relating to the cultural resources of the project area;

b) to critically evaluate that evidence, in order to identify data gaps, biases and inadequacies;

c) to generate a preliminary model of the geomorphology of the project area, which could then be integrated with existing knowledge about prehistoric and historic land-use patterns;

d) to conduct limited field-checking of a sample of recorded sites in the project area, in order to evaluate the probable research potential of the area;

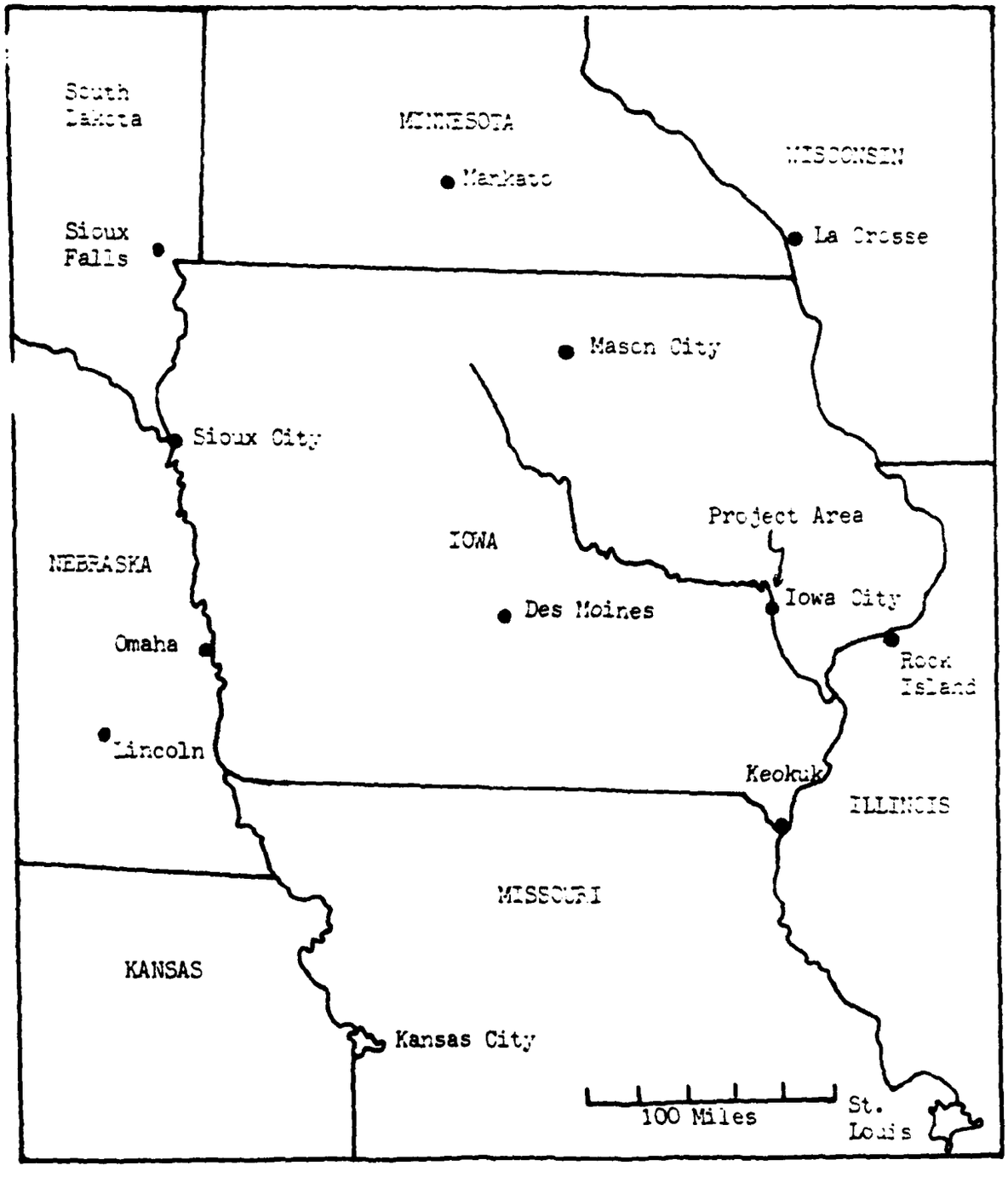
e) to conduct intensive testing at recorded sites in the Sugar Bottom Recreation Area (13JH55, 13JH117 and 13JH422), in order to obtain basic descriptive data and to determine their eligibility for nomination to the National Register of Historic Places;

f) to relate the results of this research to the study units and objectives of the draft document, Resource Protection Planning Process for Iowa (Henning 1982);

g) to present these results in a comprehensive report which the Corps of Engineers could use in planning for management and study of the cultural resources of Coralville Lake.

Because this project involved research in three distinct

Figure 1. Location of Project Area



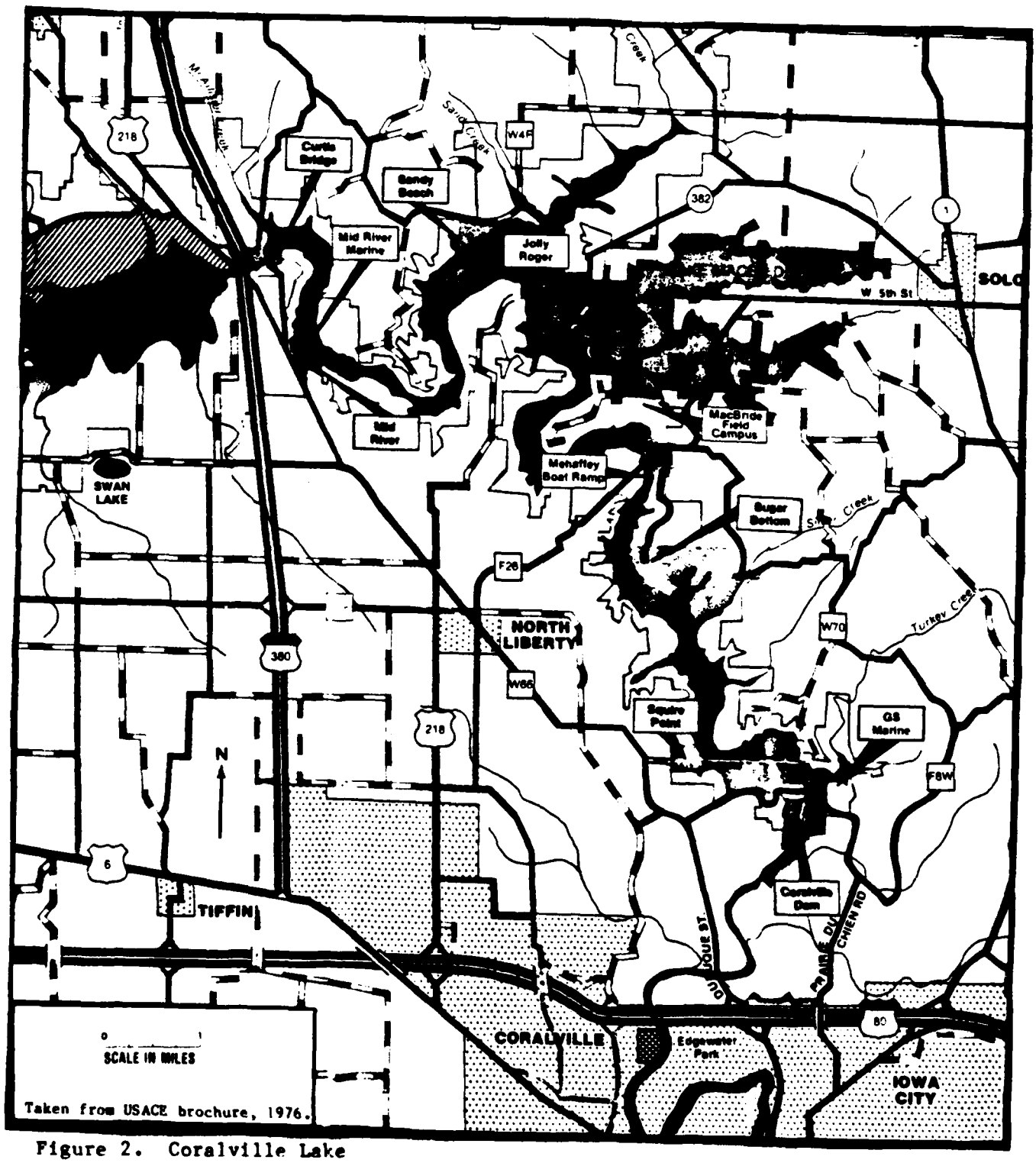


Figure 2. Coralville Lake

disciplines - prehistoric archaeology, history/historic archaeology, and geomorphology - a research team composed of professionals in each of those disciplines was assembled, and the required work was conducted in three phases. Each principal member of the research team was responsible for conducting one segment of the research. Patricia M. Emerson supervised the research on prehistoric resources, and, as Principal Investigator, also served as over-all project coordinator. Dr. Frederick W. Lange was responsible for the historic research, and Dr. Harlan R. Finney conducted the necessary geomorphic investigations.

Since the ultimate goal of this project was to produce a report which integrated the results of prehistoric, historic, and geomorphic research, the actual conduct of the project required continual consultation among project personnel in an attempt to fit data of quite disparate types into a coherent picture. No single objective, as defined above, could be fully addressed without reference to the other project goals.

Taken as a whole, the individual tasks listed above resulted in the compilation of a very large body of information. In order to produce a cohesive and usable report, it was necessary to make some generalizations. For instance, the site-summary tables found in Appendix I do not include full details of testing procedures carried out in the past at particular sites. Appropriate references are provided, however, so that the interested researcher may obtain that information when it is needed. Similarly, the landform model presented herein is not intended to be an exhaustive study of the project area. It is, instead, a starting point from which more detailed research can proceed.

DISCUSSION OF SCOPE OF WORK

The Scope of Work for this project can be found in Appendix III, Volume II. It differs from many federally-administrated projects, in that emphasis is placed upon the review of existing information, rather than the compilation and analysis of new data generated during field investigations. (The obvious exceptions, which are discussed below, are the geomorphological research and the testing at Sugar Bottom Recreation Area.)

When the Scope of Work was written, its authors had only a cursory understanding of the nature and quality of the work that has been done at Coralville Lake. Thus, some of its specifications were rather more ambitious than the existing literature could support. However, the SOW also contained sufficient latitude to facilitate reasonable decisions about what could and could not be accomplished, given the time and budgetary limitations of the contract.

There are two main areas in which the actual performance of this project did not correspond closely to the Scope of Work.

The first of these relates to the requirement that the prior owners of what are now USACE lands be contacted and interviewed about their knowledge of cultural resources in the area. Land acquisition for Coralville Lake took place in the 1930s and 1940s; at the present date, attempts to find these persons and compile 40-year-old memories did not seem to be an efficient way to gather information.

The second area of difference involves the summary site-description outline contained in Section 4.9 of the SOW. This outline was obviously intended to be as comprehensive as possible. As it turned out, it was based on a rather optimistic view of the quality of existing documentation. In very few cases was it possible to provide most of the data called for by this specification. Fortunately, the SOW also includes a provision indicating that the Corps was aware that this problem might arise.

Description of the geomorphological investigations to be conducted is brief (Section 4.7), but sufficiently detailed to define appropriate limits on time and budgeting. The proposed investigations which became part of the contract were completed within the anticipated timeframe.

The modification to the SOW which called for testing of two sites at the Sugar Bottom Recreation Area did not specify particular testing procedures or time limits. These details were, for the most part, worked out during consultation between Corps personnel and the Contractor. When it became apparent during preliminary testing that more intensive investigations would not produce any useful information, the remaining time allocated for this purpose was added to the time to be spent in field-checking selected sites in the project area.

A few other minor modifications and clarifications to the SOW were made during the project, because of problems that were encountered as work progressed. One of these modifications involved the requirement that UTM coordinates be provided for all recorded sites in the project area. Most existing site descriptions, many of which were based only on surface inspection, did not already include this information. Additionally, a number of contradictions in recorded site locations were observed in the literature. Thus, the nature of the available locational data simply did not appear to justify spending time compiling UTM coordinates. This process would be more appropriate to future research, after exact site locations can be confirmed.

Even though it was not possible to provide all of the information requested by the Corps, the problems encountered during performance of this project were not insurmountable. It is the opinion of the Contractor that, overall, the objectives of the Scope of Work were reasonably well-met.

DESCRIPTION OF PROJECT AREA

ENVIRONMENTAL SETTING

The Coralville Lake Project Area lies entirely in the Dissected Till Plains Section of the Central Lowland Province of the Interior Plains Major Physical Division of the U.S. (Fenneman 1946). Prior (1976) identifies 7 landform regions in Iowa. Two of these regions, namely, the Iowan Surface and the Southern Iowa Drift Plain, are in the Coralville Lake area. The former is an erosion surface that was cut into pre-Illinoian glacial sediments in the Wisconsinan glacial stage. The latter, also, has erosional surfaces, but in addition, it has distinct ridgetops with paleosols of considerable antiquity underlying a mantle of loess. Further, the Coralville Lake area has considerable local relief. The lowest part is about 198 meters above mean sea level, where the Iowa River leaves the area. The highest part, about 266 meters above sea level, is on a ridgetop about 2 kilometers southeast of the village of Swisher. All streams in the area flow into the Iowa River (or Coralville Lake).

The general soil map (scale of 1:20,000,000) of the U.S. (Soil Survey Staff 1975) shows that the Coralville Lake area lies in a large unit of Udalfs (soils formed under forest). This unit roughly parallels the Mississippi River. Both to the west of it in Iowa and to the east of it in Illinois are extensive areas designated as Udolls (soils formed under prairie). In more detail, three soil associations comprise most of the area (Iowa Soil Survey Staff 1978). They are: 1) gently sloping to steep (2-25%) forest-derived soils developed from loess or pre-Wisconsinan till; 2)nearly level to moderately sloping (0-9%) prairie-derived soils developed from loess over pre-Wisconsinan till or from pre-Wisconsinan till on the Iowan Surface; and 3)nearly level and gently sloping prairie-derived soils developed from alluvium.

OPERATION OF CORALVILLE LAKE

The Coralville Lake Project was begun in the 1930s, when Congress authorized the construction of a dam and reservoir on the Iowa River upstream from Iowa City. The major purpose of this project was to regulate the flow of the Iowa River so as to eliminate seasonal fluctuations. The lake's name was taken from the nearby town of Coralville, which in turn was named for the abundant fossil coral formations found in the region.

The first phase of the project focused on acquisition of lands that would be affected by construction of the dam. This process took over 10 years, and was not completed until after World War II. It resulted in outright purchase of 24,118 acres of land by the Corps of Engineers. Flood easements were secured for an additional 9,567 acres which lay above the normal conservation pool level.

Construction of the dam and associated structures began in the late 1940s, but was delayed by manpower shortages during the Korean Conflict. The dam was finally completed and went into operation in 1958. Since that time, there have been numerous additional construction projects in the area, most of which have provided recreation and access areas for the public. The Coralville Lake area presently encompasses 18 different public-use areas, variously managed by the Corps of Engineers, the Iowa Conservation Commission and several private concerns. A large portion of the western end of the lake (13,000 acres) is leased to the ICC, which manages it as the Hawkeye Wildlife Area, providing habitat for both game and non-game species.

Presently, the lake itself covers an area of 4,900 acres at its normal summer pool elevation of 680′ NGVD. The lake level varies during the year, in order to serve a variety of purposes. During the fall, it is increased to 683′ to provide additional waterfowl habitat. Over the winter, the pool level is decreased to approximately 670′, to provide storage for spring runoff. Spring and summer pool levels are variable, dependent upon the quantity of meltwater and precipitation received, up to a maximum flood-control pool level of 712′. The highest water level that has occurred since the dam went into operation was 711.84′ in July of 1969.

Federal lands at Coralville Lake above the normal pool elevation total approximately 19,218 acres. When land acquisition took place, an effort was made to place boundary lines as close as possible to the maximum pool elevation of 712′. This has resulted in property lines that tend to follow topography rather than section lines. In some parts of the project area, surveying and marking of Federal boundaries has not been completed, and there have been occasional disputes with local landowners over the placement of these boundaries.

Because Federal boundary lines at Coralville do not follow easily-recognizable land divisions, there was some initial confusion about which recorded sites were inside the project area. This confusion was augmented by some site forms which contain vague, conflicting or imprecise site location information. The manner in which this problem was approached is described in the following section.

RESEARCH DESIGN

THEORETICAL ORIENTATION

The specifications and objectives of this project are based within a legislative framework, per the requirements of the National Historic Preservation Act, Executive Order 11593, and Title 36 of the Code of Federal Regulations. However, in order to completely address the scientific and ethical requirements of professional cultural resource research, the performance of the project had to relate to a much broader set of general and specific research concerns. In particular, this report makes an effort to deal with the cultural resources of the project area not as isolated entities, but with a multi-tiered approach that emphasizes cultural phenomena existing in a physical environment and possessing both spatial and behavioral dimensions.

A "site" can be defined as a collection of tangible components (artifacts and ecofacts), bound together in a particular spatial relationship, which comprises the behavioral component of the site. This spatial relationship exists in a matrix of natural phenomena - on certain landforms, in certain soils - and therefore is affected by the same physical forces that affect those phenomena. Thus, this component, which makes the greatest contribution to our understanding of past human behavior, is most fragile and least likely to remain unchanged over time.

When one approaches the study of cultural resources from this perspective, it becomes imperative to understand the geomorphic history and characteristics of the area being examined. Processes of erosion and deposition, which operate continuously, can alter the original configuration of a site so that it no longer reflects the behaviors which once created it. For this reason, geomorphic investigations were an important part of this project. The results of those investigations facilitated the process of evaluating existing site-specific information and formulating recommendations for future research in the Coralville Lake Project Area.

The research design for this project included the synthesis of site-specific data into a generalized view of the cultural resources of the entire project area. This was an important task, since inter-site relationships are as important as internal site characteristics in deciphering large-scale patterns of cultural interaction. Unfortunately, the present state of knowledge about Coralville Lake did not allow for much in-depth analysis. Considerably more investigation of recorded sites and unsurveyed areas will have to be done before enough data is available to make any reliable synthesis feasible.

In the sense used herein, historic locations that were partially removed and then inundated at the time of land acquisition and dam construction are archaeological sites. At

the moment they are inaccessible beneath the water, but at some time in the future they may remain as one of the few 19th century cultural records of the typical life in the middle Iowa River Valley. As Esarey (1982:4-5) has noted:

> Recent archaeological studies. . .show an interest in how lower and middle class Americans lived and how they effected and were effected (sic) by events, ideas, and social and economic conditions. Following in this interest, none of the eleven sites. . .in this thesis fall within the still prevalent tradition of studying people or locations of obvious individual economic, political, or social importance. Accordingly, written information concerning the sites and their occupants is scant.

Likewise, written data about the earlier and subsequent displaced resident of the middle Iowa River Valley is scant. Nonetheless, they are typical of many early settlers in the region and should be considered a primary potential cultural resource. This is particularly true if we consider the problem of cultural resource management to be a dynamic one (Smith & Lange 1981). (The locations of these middle Iowa River Valley sites, and copies of government photographs where available, are included in Appendix IV of this report.)

METHODS

Literature Review

Geomorphology

The geomorphic investigations for this project included a review of literature pertaining to the general geomorphology of the Coralville Lake area. The project geomorphologist conferred with a total of 10 scientists at Iowa State University, Iowa Geological Survey, USDA Soil Conservation Service, and the Iowa Department of Transportation. These scientists were most helpful in providing both personal information on the area and in noting pertinant literature. The review of literature took several days, and aided in developing a conceptual understanding of the area. The references consulted during this work were then added to the annotated bibliography.

Historic Resources

Research strategies were designed to maximize the return from examination of historical documents and these efforts formed the foundation for the historical overview and synthesis. Literature review focused on published atlases and county histories and review of regional histories placing the project area and Iowa in a broader regional context.

Although not representing published sources, the literature

search also included examination of county legal documents such as deed records which were useful in detailing initial European settlement patterns and development. In this same category are National Register forms (State Historical Society) and state archaeological site files (Office of the State Archaeologist) that provided a context for identifying known historic sites in the area.

The map collection of the Iowa State Historical Society was examined for the project area. The "Checklist of Printed Maps of the Middle West to 1900" (G.K. Hall & Co. 1981) was utilized as a guide to the cartographic resources. Map coverage was generally excellent beginning in 1836, but little positive historical information was obtained from the cartographic sources. (The portion of the checklist relevant to the project research is included in this report as Appendix V, and those specific maps reviewed are marked on it.) Oral interviews were limited to Gary Thompson at the Coralville Corps of Engineers Office and persons at county courthouses and county historical societies.

The county courthouses of Iowa, Johnson, and Linn counties were visited, while historical society visits were limited to Linn and Johnson Counties and the State Historical Society in Des Moines. While Benton County was originally included in the research design and strategy because it borders the northern periphery of the project area, it soon became apparent that it was not integrally involved with the history of the Coralville Reservoir area and no emphasis was put on specific historic data from that county.

Based on preliminary results of the literature review, recommendations were made to the project geomorphologist to conduct brief studies to determine levels of historic period alluviation/erosion in the project area. Known historic sites in the Sugar Bottom area were selected as the focus of this research. This recommendation meshed conviently with the decision to test two prehistoric sites at that location.

Sampling was employed in the historic research for this project to the extent that not all courthouse records for the project area were examined. Courthouse deed records in Linn and Iowa Counties were arranged chronologically and in these two instances deed records for only the first 20-30 years after territorial status was achieved were tallied to determine rates and density of habitation. These deed records were cross-checked against available maps in the collection of the Iowa State Historical Society. For subsequent time periods of the 19th century, county atlases and other cartographic data were examined to evaluate settlement pattern and density. The Johnson County records were in order of filing, which made access to specific locational data difficult. The manner in which this problem was dealt with is discussed in the presentation of the Johnson County historic data.

Prehistoric Resources

A majority of the work performed for this project involved the review of existing documentation about cultural resources at Coralville Lake. There were a few sources that were of significant assistance in compiling the entire body of relevant literature. The Iowa Office of the State Archaeologist maintains a large library from which copies of many survey reports were obtained. OSA was also the source for state site forms and maps showing the location of recorded sites in Johnson County. The early historic accounts listed in the bibliography were reviewed at the Iowa State Historical Society Archives in Iowa City.

After all of the relevant documents were obtained (or reviewed in archives, as was the case with some unpublished materials and early historic documents that are not available for general distribution), the process of data synthesis began. The first step was to compile a chronological summary of work done in the project area and associated documentation. Then, a master list of sites within the project area was put together. This list included summaries of all references to each site found in the literature. (As this master list was being compiled, a number of discrepancies were noted, consisting mainly of conflicting site-location definitions. In most cases, it was possible to resolve the discrepancies and identify the correct location of the site. For a few sites, however, the available information was not sufficient to make a reasonable judgement about where a site is actually located. These cases are noted in Appendix IX.) Finally, each document (or class of documents, as in the case of state site forms) was described for the annotated bibliography, and then critically evaluated in light of the overall objectives of this project.

Field Investigations

Geomorphological Field Methods

After a review of relevant references was completed by the project geomorphologist, two other phases of work were conducted: preparation of a draft landform map, and field investigations to refine the map and to collect substantiating data.

The detailed soil survey of Johnson County, Iowa (Schermerhorn 1983) was the primary source of information for preparing a draft map of physical environments. The mapping units of that soil survey were combined into units of physical environments, based on their kind of landform and kind of soil, as influenced by native vegetation and parent material. Boundaries were drawn between these units on the soil survey map sheets, and then transferred to the USGS 7-1/2 minute topographic maps.

The project geomorphologist and field assistant then spent about 3 weeks in field investigations. The main purpose of these investigations was to test and refine the legend and boundaries between units. Many observations were made of soils, underlying materials, and landforms, using a hand-operated soil probe. Many

eroded bluffs around the lake were also examined. Also, numerous observations were made on the amount of post-Coralville Lake sedimentation and erosion, and on the amount of post-settlement erosional sediments on floodplains. In addition, 14 sites were selected for detailed examination. Twelve of them were examined to depths of as much as 8 meters with a Giddings power probe. Soils and underlying materials were described and classified according to the standards of the National Cooperative Soil Survey. Also, a total of 73 samples were collected for laboratory analysis by the University of Minnesota Soil Survey Investigations Laboratory. This laboratory uses the standard procedure of the National Cooperative Soil Survey (Soil Survey Staff 1972). (See Appendix III for the results of the laboratory analyses.)

The mapped area includes some lands outside the boundary of Federal property. This was done in order to give a more thorough portrayal of the complexity of environments in the Coralville Lake area. However, soils and underlying materials in these areas were not examined, although landforms were observed from the roads. Thus, the boundaries drawn in those areas were based primarily on interpretation of Schermerhorn's (1983) detailed soil map. Further, not all of the delineations on the map within Corps lands were physically examined. Some of those, too, were extrapolated from Schermerhorn's map and the topographic map.

Historic Field Methods

While most of the historic research was archival in nature, a trip was made to the project area to note the nature of standing architectural features on farms and in communities around the lake. Two local cemeteries were also checked for dates, to see how closely they matched with known dates of deed filing and other settlement records, and also to determine the ethnicity of persons buried in them.

Archaeological Field Methods

With the exception of intensive testing at Sugar Bottom Recreation Area, archaeological fieldwork for this project was quite limited in scope. The work was to consist of field-checking a sample of recorded sites in the project area, in order to obtain an understanding of the current condition and research potential of the full set of sites at Coralville Lake. Because this process was not intended to constitute formal site testing, an effort was made to do no more work at each site than was absolutely necessary in order to determine the current condition of the site and evaluate its potential for further research. In some cases, no subsurface testing was done. At other sites, very limited subsurface testing was done, primarily to evaluate the effects of erosion and inundation on the site area. No attempt was made to formally define site boundaries during this process.

As each site was visited, an attempt was made to answer a set of questions about the site: does the site still exist? How has this area been affected by inundation, wave action, recreational activities, cultivation, etc.? Is there an intact

vertical site component? Does this site seem to hold any potential for further research? Is it in immediate danger of disturbance or destruction? How do present conditions compare with site descriptions in the literature?

The methods that were used during field-checking are described below. Their application at specific sites is discussed in Section II of this report.

Ground Surface Reconnaissance: Surface reconnaissance was conducted at every site that was examined. No standard interval was employed, since conditions varied widely from site to site, but in no case was an interval greater than 10 meters used. In most cases, site areas were small enough to allow for virtual "shoulder-to-shoulder" examination. Cultural materials observed on surface were collected, and notes were made as to the distribution of those materials over the site area. At most of the sites, it was apparent that surface distributions had been affected by inundation, cultivation, or other forces, and thus were not necessarily accurate reflections of subsurface distributions.

Shovel Testing: After surface reconnaissance was conducted at a site, a decision was made as to whether subsurface testing would be necessary. When shovel testing was applied, the placement of tests was determined primarily on the basis of topography; that is, shovel tests were placed in areas which appeared to retain the most integrity in terms of soil stratigraphy. Each test was a minimum of 30 cm by 30 cm in size, dug in 10-cm artificial levels. All of the backdirt from each level was processed through 1/4" wire mesh screens. As artifacts were recovered, they were bagged according to location by specific test and level. Shovel tests were dug to sterile soil, and a description of soil stratigraphy was done before tests were backfilled.

Laboratory Procedures

Geomorphological Procedures

The procedures used for analysis of soil samples collected in the field are described in the publication, Soil Survey Laboratory Methods and Procedures for Collecting Soils Samples (USDA-SCS Investigative Report No. 1, Soils Survey Staff, 1972.) The results of the analytical process are presented in Appendix III, along with an explanation of the kinds of analyses performed.

Historic Procedures

Correlation of known historic locations and the geomorphological divisions of the landscape was undertaken to determine if any settlement preference was indicated.

Archaeological Procedures

Artifact Inventory: In the laboratory, all of the artifacts recovered during fieldwork were first cleaned in a manner

suitable to the particular material. Each artifact was then assigned a unique catalog number. As artifacts were numbered, artifact inventory forms were filled out. These forms indicate site number, individual catalog number, a brief description of each artifact, the location and depth of recovery, and the date on which it was recovered. Because of the limited scope of this project, no additional analysis of recovered cultural materials was performed.

Curation: The Scope of Work requires that cultural materials collected during this project be curated by the Contractor, at the discretion of SHPO and the Corps of Engineers. Presently, all artifacts recovered and documentation generated during the project are in temporary curation by the Contractor, pending final disposition.

Updated state site forms were filled out for each site visited during the course of this project. Copies of these forms have been forwarded to the Iowa Office of the State Archaeologist for their files, and can also be found in Appendix X.

II. RESEARCH RESULTS

GEOMORPHOLOGY OF CORALVILLE LAKE

The primary purpose of the geomorphic investigations conducted as part of this project was to provide an overview of the physical environments on lands adjacent to Coralville Lake. Physical environments defined in this report are an integration of landform and kind of soil as influenced by native vegetation and parent material. Fifteen environments are recognized, and their locations are shown on an accompanying map at a scale of 1:24,000.

The general setting of the area has been described in Section I. In the following pages, the complex geomorphic history of the area is reviewed and the relative age of land surfaces is considered. Detailed descriptions and results of laboratory analysis of soils and underlying materials at 14 sites are included. Finally, an annotated bibliography is provided as a base for those who desire additional information applicable to the area.

GEOMORPHIC HISTORY

The lands adjacent to Coralville Lake have an interesting and complex geomorphic history. Their surface form almost entirely reflects events occurring in the Pleistocene epoch. These events comprise periods of continental glaciation and associated deposition of sediments, mainly till, and interglacial periods when these sediments were exposed to weathering and erosion. One of the latter events that profoundly affected the area was the deposition of aeolian sediments, mostly loess. The following paragraphs will review the geomorphic history of the area as reported in the literature and substantiated by field observations.

Continental glaciers covered the area in the earlier part of the Pleistocene. Hallberg (1980) refers to them as Pre-Illinoian stages. In earlier literature (Prior 1976, for example), they commonly were called Nebraskan and Kansan glacial stages. Nebraskan was the oldest stage. These stages, or glacial advances, probably occurred prior to 600,000 years before present ("YBP" hereafter) (Prior 1976). No later continental glaciers, namely those of the Illinoian and Wisconsinan stages, covered the area (Hallberg et. al. 1980). Interglacial stages occurred between each of those glacial stages. They are, from oldest to youngest: Aftonian and Yarmouth of Pre-Illinoian age, Sangamon between the Illinoian and Wisconsinan stages, and the Holocene following the Wisconsinan stage.

An excellent exposure of some sediments of the Pleistocene

that occur in at least parts of the Coralville Lake area is at a quarry in Sections 32 and 33, Range 6W, Township 80N (about 1 km north of the city of Coralville). Here, Pre-Illinoian glacial sediments, mostly glacial till, overlie limestone bedrock of the Cedar Valley Formation of the Devonian system (Iowa Geological Survey Staff 1978). At least 3 glacial tills are there. Further, a well-developed soil has formed in the upper part of the uppermost (youngest) till. This soil is buried by loess, and therefore is called a paleosol. A modern, well-developed soil has formed in the upper part of the loess.

Aeolian sediments, which mantle much of the Coralville Lake area, are a simplifying factor in regard to age of landforms. The period of deposition of these sediments began about 29,000 YBP and terminated about 14,000 YBP (Ruhe 1969). Thus, land surfaces in the area can be no older than the time that the last increment of loess fell on them, and that is no more than 14,000 YBP. However, some landforms buried beneath the loess are much, much older than that.

Even though this mantle of aeolian sediments is in excess of 6 meters in many parts of the area, the form of the land surface in most places reflects land-forming processes that occurred prior to their deposition. These paleo-processes, basically, have given the area its characteristic form. However, the area does have some surficial forms reflecting aeolian activity such as sand dunes. Also, floodplains and some lower terraces result from land-forming processes in the Holocene.

Now, consider the general development of the landscape of the area after the last glacier receded. Glacial till was the dominant surficial deposit. Its surface form probably was an undulating plain (Miller 1974 and others). Soils began to form, and concurrently, a surficial drainage sustem began to develop. Some interstream areas - interfluves - apparently had little erosion. Thus, deep soils developed there. With the passing of time and continuing erosion, these interfluves became rather isolated as higher-lying, nearly level, narrow ridgetops which are common around parts of Coralville Lake. Thus, today, these ridgetops have a modern soil developed in aeolian sediments. However, beneath those sediments in places is a deep, well-developed soil that formed primarily in glacial sediments. Such a condition is characteristic of the landform region called the Southern Iowa Drift Plain (Prior 1976).

The Wisconsinan glacial stage had profound effects on the area even though the terminus of its glacial ice was several 10's of kilometers to the north. It was a period of severe erosion in this area. Soils and underlying sediments in many parts of the area were being eroded, whereas the ridgetops noted above were isolated from erosion and were receiving deposits of aeolian sediments. However, erosion apparently subsided during the latter part of this period, and this eroded area, too, received a thin increment of loess. Thus, today these formerly eroded areas have a modern soil that formed in the thin mantle of loess and in

the underlying calcareous till. They lack paleosols beneath the loess. Such a condition is characteristic of the landform region called the Iowan Surface (Prior 1976).

The Iowa River Valley is another, intimately related story (Bicki 1981). This valley has a system of terraces. The higher lying terraces are mantled with aeolian sediments, whereas the lower terraces lack a mantle of such sediments. The higher terraces, thus, were formed prior to or during the Wisconsinan. However, the lower terraces were formed after 14,000 YBP. Further, Lutenegger (1980) considers this valley to be an important source of aeolian sediments.

PHYSICAL ENVIRONMENTS

Kinds of physical environments recognized in this investigation are here defined. Their locations are shown on the accompanying map (Figures 3 and 4). These environments are an integration of 3 basic components, namely, landform and kind of soil, as influenced by parent material and native vegetation.

The Iowan Surface and the Southern Iowa Drift Plain are in the Coralville Lake area (see Plate 1). Delineations of these two regions form the basic fabric of the map. The Southern Iowa Drift plain is further subdivided into two landform components, namely ridgetops and hillsides, because of their distinctive properties.

Some landforms occur continuously or nearly so through the two landform regions. These are floodplains and terraces. Therefore, they are considered as landform entities separate from the two landform regions.

Additional subdivisions of all landform units, except floodplains, are made on the basis of soil parent material and native vegetation dominant during soil formation. The major kinds of parent material are aeolian sediments (mostly loess), glacial till, and alluvium. The kinds of native vegetation are tall grass prairie, deciduous forest, and savannah. Soils dominated by prairie have dark colored, nutrient-rich A horizons in excess of 25 cm in thickness. Soils dominated by forest have moderately dark colored, acid A horizons that typically are 6 to 12 cm thick. Soils dominated by savannah, or perhaps alternating encroachment by prairie and forest, have properties intermediate between soils that formed under forest and those that formed under prairie.

Words of caution are in order here. The individual mapping units of physical environments do not equate with geomorphic surfaces. For example, the lower lying parts of the mapping unit PHA (soils formed under forest on valley slopes, hillsides, and interfluves in the Southern Iowa Drift Plain) probably has the same geomorphic surface as at least part of the mapping unit SFA (soils formed under forest in thick aeolian sediments on the Iowan Surface). A geomorphic surface (Ruhe 1969) is a mappable

Figure 3. Map Legend - Physical Environments of Coralville Lake

NAME	SYMBOL
Iowan Surface	
Soils formed under forest:	
- in thick aeolian sediments	SFA
- in glacial till or a thin mantle of aeolian or erosional sediments and in underlying glacial till	SFT
Soils formed under savannah in a thin mantle of aeolian or erosional sediments and underlying glacial till:	SST
Soils formed under prairie in a thin mantle of aeolian or erosional sediments and in underlying glacial till:	SPT
Southern Iowa Drift Plain	
Soils formed under forest on valley slopes, hillsides, and interfluves:	
- in thick aeolian sediments	PHA
- in a thin mantle of aeolian sediments and in underlying glacial till or entirely in glacial till	PHT
Soils formed under forest in thick loess on prominent high lying ridgetops:	PSA
Physical environments occurring in both of the above landform regions	
Floodplains, alluvial fans, and footslopes:	F
Terraces:	
- lacking a mantle of aeolian sediments with soils formed under:	
- forest	TLF
- prairie	TLP
- savannah	TLS
- having a thick mantle of loess with soils formed under forest:	TAF
- having a thick mantle of aeolian sediments with soils formed under prairie:	TAP
- having at least a thin mantle of aeolian sediments with soils formed under savannah:	TAS
- undifferentiated in valleys of small streams:	TU
Altered Lands	
Limestone quarry:	XQ
Cut and fill:	XC
Sample site:	S

portion of the landscape that is specifically defined in space and time. Designing mapping units based on geomorphic surfaces, especially buried surfaces, was beyond the scope of this investigation. It would have required much more time, including many more deep borings, and would probably not have been too meaningful to the potential users for which this report was designed.

Iowan Surface (S - first entity in map symbol)

The Iowan Surface landform region here is characterized by having rather subdued relief compared to the Southern Iowa Drift Plain. Slopes are mostly in the range of 2 to 14 percent. Interfluves have convex crests that slope downward in the form of subtle steps. Interfluves are at lower elevations than ridgetops in adjacent areas of the Southern Iowa Drift Plain. A well developed dendritic drainage system drains the area. Local relief commonly is only a few meters. The mapping units within this region are described in the following paragraphs.

Soils formed under forest in thick aeolian sediments (map symbol SFA)

Some slopes in this unit are steeper than is characteristic of most other units in the Iowan Surface landform region. Their common range is 5 to 25 percent. Only a small area of this mapping unit is on Corps land. It is north and northwest of Lake McBride State Park. Major soils in this unit are the well drained Fayette which formed in loess, and the well drained Lamont which formed in loamy aeolian sediments, and the excessively drained Chelsea soils which formed in sandy aeolian sediments.

Soils formed under forest in glacial till or in a thin mantle of aeolian or erosional sediments and underlying glacial till (map symbol SFT)

Slopes in this unit are steeper than is characteristic of most other units in this landform. This unit is of small extent and primarily is on hillsides adjacent to streams. Only one delineation of it is on Corps land. It is in the Hawkeye State Wildlife Area. The moderately well drained loamy Lindley soils which formed in glacial till are dominant in this unit.

Soils formed under savannah in a thin mantle of aeolian or erosional sediments and in underlying glacial till (map symbol SST)

Slopes in this unit mostly range from 5 to 14 percent. No delineations of this unit are on Corps land. The moderately well drained loamy Bassett soils are dominant in this unit. They formed in a thin mantle of erosional sediments and in underlying glacial till. Also, the moderately well drained Waubeek and somewhat poorly drained Franklin soils are significant components. They formed in a mantle of loess and in underlying glacial till.

Soils formed under prairie in a thin mantle of aeolian or erosional sediments and in underlying glacial till (map symbol SPT)

This mapping unit is by far the dominant one of the Iowan Surface in the mapped area. It typifies that surface in the mapped area. Slopes mostly are in the range of 2 to 5 percent and relief is quite subdued. None of this unit is on Corps land. Dominant soils in this unit are the well drained Dinsdale, the somewhat poorly drained Klinger, and the poorly drained Maxfield soils. These soils formed in a mantle of loess and in underlying glacial till. The moderately well drained Kenyon which formed in a mantle of loamy erosional sediments and in underlying glacial till (see Plate 1) is a significant soil in some areas.

Southern Iowa Drift Plain (P - first entity in map symbol)

The Southern Iowa Drift Plain landform region here is characterized by having distinct, high lying, nearly level to gently sloping ridgetops. These ridgetops descend mainly to steep hillsides (see Plate 2). Local relief typically is 30 to 40 meters. Further, these ridgetops grade in the form of subtle steps to lower lying interfluves. The dominant parent material is loess. The loess in this region is as thick as 8 meters. Mapping units of this region follow.

Soils formed under forest on valley slopes, hillsides, and interfluves in thick aeolian sediments (map symbol PHA)

This mapping unit is by far the dominant one in this landform region. Further, most of the Corps land east of Interstate Highway 380 is in this unit. Forested hillsides with slopes of 10 to 40 percent are the dominant component (see Plate 2). However, interfluves with slopes of 2 to 10 percent are significant. The dominant soils in this unit are the well drained Fayette which formed in loess. Other important soils are the well drained Lamont and the excessively drained Chelsea. Lamont formed in loamy aeolian sediments and Chelsea formed in sandy aeolian sediments. Outcrops of limestone are an obvious though minor component of this unit. These outcrops are common around Coralville Lake where this mapping unit abuts the lake. They commonly extend from the water level upslope for as much as about 5 meters.

Soils formed under forest on valley slopes, hillsides, and interfluves in a thin mantle of aeolian sediments and in underlying glacial till or entirely in glacial till (map symbol PHT)

This mapping unit is on hillsides adjacent to drainageways. It mostly has slopes of 18 to 40 percent. It is of minor extent and is not on Corps land. The moderately well drained loamy Lindley soils which formed in glacial till are dominant in this unit.

Soils formed under forest in thick loess on prominent high-lying ridgetops (map symbol PSA)

This mapping unit is diagnostic for the Southern Iowa Drift

Plain landform region. These ridgetops are fairly narrow, commonly 30 to 80 meters in width, and mostly have convex slopes with gradients of 1 to 9 percent (see Plate 2). These ridgetops commonly are not continuous at a given elevation. They commonly have 2 or 3 different levels. These different levels grade one to another with gently sloping or sloping subtle steps. The diagnostic property of this unit is a modern soil formed in loess that is, in turn, underlain by unweathered or slightly weathered loess. Under this loess is a paleosol that formed in glacial till or related sediments. Descriptions of Sugar Bottom Site 3, Radio Towers Ridgetop Site, and MacBride Field Campus Sites 2 and 3, found in Appendix III, provide details of this stratigraphic sequence of soils and sediments. The well drained Fayette soils which formed in loess are by far dominant in this unit. A few small areas of the nearly level, somewhat poorly drained Stronghurst soils, also, are in this unit.

Floodplains, alluvial fans, and footslopes (map symbol F)

Floodplains of the Iowa River are a major component of this mapping unit. A few small areas of these floodplains emerge from the 207 meter normal pool level of Coralville Lake about 1.5 km downstream (southeast) of the Interstate Highway bridge. They are fully emerged from that pool level a short distance west of that bridge. Soils there were included in one broad mapping unit (1316 - Fluvaquents, ponded) on Schermerhorn's (1983) map. These soils mostly comprise silty, loamy, and clayey, poorly to moderately well drained soils. The floodplain has been sufficiently stable, at least in some places, for soils to have formed a well expressed B horizon (argillic). These soils mostly have a thin mantle of post-Coralville Lake sediments (see pp. 24-25 for further discussion of these sediments).

Numerous small streams and drainageways enter the Iowa River Valley. Floodplains in the Southern Iowa Drift Plain have discrete boundaries to adjacent higher lying terraces. However, floodplains that enter the low terraces (map symbol TLP) south of the Iowa River on the Amana Quadrangle have very diffuse boundaries to adjacent slightly higher lying terraces.

A significant amount of post-settlement alluvium is on many floodplains (see Plate 3). Refer to pp. 26-27 for a discussion of this alluvium.

Alluvial fans and footslopes comprise a few areas in this map unit.

Terraces (T - first entity in map symbol)

How many terraces are in the Iowa River Valley in the study area? (The term "terraces" here is used to mean a landform that has a riser and a tread and that has underlying alluvial sediments which may be mantled with aeolian sediments.) That was a question that we attempted to answer in our investigations because terraces typically are prime areas for archaeological site location.

The morphology of the Iowa River Valley greatly changes at about the Interstate highway bridge. To the west, the valley is quite broad. The combined width of the floodplains and terraces there is as much as 5 km and commonly 4.0 to 4.5 km. Slopes above the terraces are mostly glacial drift. However, downstream from that bridge, to the end of the mapped area, the lower parts of the valley slopes are commonly armored with bedrock. There, the valley above the lake level ranges from as narrow as about 0.5 km with no terraces to as wide as about 1.5 km with terraces (above the lake level). Why does the valley change morphology near the bridge? Perhaps it is because it was carving a valley in bedrock downstream from there and in glacial drift upstream from there. Much more energy is required to carve a valley in the former material than in the latter.

First, we will consider terraces downstream from the bridge. (This area received more emphasis than the area upstream from the bridge.) There appear to be 3 terraces in the area. The lower one is only downstream from the dam in Sections 22 and 27, Range 6W, Township 80N. It lacks a loess mantle. The other two occur discontinuously from the Interstate Highway bridge to the dam. Both are mantled with loess. They occur side by side at only two places, namely the Jolly Roger and Sugar Bottom areas. The escarpment separating them is rather diffuse. Further, both terraces are dissected and have undulating surfaces. At Jolly Roger, for example, the lower terrace is at an elevation of 210 to 216 meters and the higher one is at an elevation of 222 to 225 meters. The upper terrace has about 3.3 meters of loess over about 3.2 meters of slightly weathered aeolian or alluvial sediments. A paleosol appears to be below that. The lower terrace has about 3.0 meters of loess over slightly weathered alluvial or aeolian sediments with no paleosol. Another example of the higher terrace is at the MacBride Field Campus in the SE 1/4, Section 31, Range 6W, Township 81N. It is at an elevation of about 219 to 223 meters. It has about 5.1 m of loess over about 1 m of sandy aeolian sediments. Further, a well developed paleosol in alluvial sediments beneath the loess is on an eroded lake-facing bluff about 0.4 km north-northwest of that site. (Refer to Figure 5 and to Jolly Roger Sites 1 and 2, Sugar Bottom Sites 1 and 2, MacBride Field Campus Site 1 in Appendix III for additional information.)

These two loess mantled terraces were not separated on the landform map for several reasons. First, they are mantled with loess and their present surfaces, therefore, are contemporaneous. Second, the higher terrace is very small in extent. Third, more deep borings are needed to substantiate their stratigraphy and the presence or absence of paleosols. These two terraces are shown on the map by the symbol TAF.

Next, let us consider the terraces upstream from the bridge. Two apparent levels occur between the floodplain and the loess mantled uplands. The lower one is at an elevation of about 213 to 219 meters at the Iowa-Johnson County line, and at about 210 to 213 meters about 1/2 km west of the Interstate highway. It

Figure 5. Summary of Soil Properties

Site	Physical environment (map symbol)	Soil series	Elev. (m)	Kinds and depth (cm) of sediment: Loess	Other aeolian	Alluvium	Glacial till or pedisediment	Paleosol
Hawkeye State Wildlife Area: 1	TAP	Tama	218	0-154	154-185	---	---	---
2	TAP	Tama (?)	218	0-183	183-213	213-823	---	---
3	TAP	Sparta (?)	230	---	0-518	---	---	---
Hoosier Creek Terrace	TLS	Sattre (?)	214	---	---	0-175	---	---
Jolly Roger: 1	TAF	Fayette	216	0-314	314-415	415-445	445-475	---
2	TAF	Fayette	224	0-335	---	335-664	---	649-664(?)
MacBride Field Campus: 1	TAF	Fayette	221	0-512	512-610	---	---	---
2	PSA	Fayette	228	0-808	---	---	---	---
3	PSA	Fayette	248	0-808	---	---	---	---
Radio Tower Ridgetop	PSA	Fayette	248	0-820	---	---	820-838	820-838
Rock Shelter Floodplain	F	Arensville	211	---	---	0-175	---	75-180
Sugar Bottom: 1	TAF	Fayette	210	0-338	---	338-384	---	---
2	TAF	Fayette	212	0-402	402-440	440-488	---	---
3	PSA	Fayette	233	0-686	---	---	686-710	671-710

(Detailed descriptions and results of laboratory analysis are in Appendix III.)

lacks a mantle of aeolian sediments. It is shown on the map by symbol TLP. The other terrace has a distinctly undulating surface. Its range in elevation is about 216 to 231 meters. No distinct downstream trend in elevation is noticable. Borings in the Hawkeye State Wildlife Area (refer to Sites 1, 2 and 3 in that area in the Appendix and to Figure 5) indicate that it has a mantle of aeolian sediments and underlying alluvial sediments. However, its surface features, i.e. undulating surface, dunes, and depressions (blow-outs), indicate that it has been modified by wind. Perhaps it should be called a "wind-sculptured alluvial plain". This terrace is shown on the map with symbols TAS and TAP.

A distinct terrace is in the valley of Hoosier Creek. It is identified on the map with symbol TLS.

Terraces are also in the valleys of several streams that enter the Iowa River Valley from the north in the portion of that valley west of the Interstate highway. They are included in one unit because they are not on Corps land and are of small extent. They are shown with the map symbol TU.

A listing, summary, and some additional information on these terraces follow.

Terraces lacking a mantle of aeolian sediments with soils formed under forest (map symbol TLF)

This map unit is only downstream from the Coralville Lake Dam. Slopes are mostly nearly level. The well drained Bertrand soils are dominant. They formed in alluvium consisting of a silty mantle and in underlying sandy sediments. Also, the somewhat poorly drained Koszta soils which formed in silty alluvium are common.

Terraces lacking a mantle of aeolian sediments with soils formed under savannah (map symbol TLS)

This unit primarily is along Hoosier Creek. However, some small delineations of it are in the Iowa River Valley west of the Interstate highway. Slopes are mostly nearly level. Dominant soils there are the well drained Sattre and the somewhat poorly drained Udolpho soils. These soils formed in alluvium consisting of a loamy mantle and underlying sandy sediments. (Refer to the Hoosier Creek Terrace Site in the Appendix for additional information.)

Terraces lacking a mantle of aeolian sediments with soils formed under prairie (map symbol TLP)

This mapping unit is only in the Iowa River Valley west of the Interstate highway. Slopes are mostly nearly level, gently undulating and gently sloping. A variety of soils which formed in alluvial sediments are in this unit. Examples are: 1) the well drained Waukee, the somewhat poorly drained Lawler, and the poorly drained Marshan soils, all of which formed in a loamy mantle and underlying sandy sediments; 2) the excessively drained Sparta and somewhat poorly drained Watseka soils which formed in

sandy sediments; and 3) the well drained Raddle soils which formed in silty sediments.

Terraces having a thick mantle of loess with soils formed under forest (map symbol TAF)

This mapping unit is only in the Iowa River Valley downstream from the Interstate Highway bridge. Slopes on the treads are nearly level and gently sloping. Slopes on the risers are sloping to steep. The well drained Fayette soils are dominant. The poorly drained Stronghurst soils occur on some nearly level parts. Also, the sandy Chelsea and loamy Lamont soils, which formed in aeolian sediments, are in a few places. (Refer to Sugar Bottom Sites 1 and 2, MacBride Field Campus Site 1 and Jolly Roger Sites 1 and 2 in the Appendix for additional information. Also, refer to Plates 4 and 5.)

Terraces having a thick mantle of aeolian sediments with soils formed under prairie (map symbol TAP)

This mapping unit is only west of the Interstate Highway bridge. It mostly has undulating slopes. Local relief is as much as 10 meters in places. Major soils are: 1) the well drained Tama soils which formed in loess; 2) the well drained Waukegan soils which formed in a mantle of loess and underlying sandy aeolian sediments; 3) the excessively drained Sparta soils which formed in sandy aeolian sediments; 4) the well drained Dickinson soils which formed in loamy aeolian sediments; and 5) the poorly drained Walford soils which formed in loess. (Refer to Hawkeye State Wildlife Area Sites 1, 2 and 3 in the Appendix. Also refer to Plate 6.)

Terraces having at least a thin mantle of aeolian sediments with soils formed under savannah (map symbol TAS)

Only a few small areas of this unit are mapped. They are in the southwest part of the Amana Quadrangle. Slopes in this unit are nearly level to gently sloping. Representative soils are the well drained Whittier soils which formed in a mantle of loess and in underlying sandy sediments and the well drained Raddle soils which formed in loess.

Altered Lands (X - first entity in map symbol)

Altered lands comprise two mapping units. One is limestone quarries (map symbol XQ). The other is areas where soils and underlying material have been removed or where fill materials have been placed (map symbol XC).

RECENT EROSION AND SEDIMENTATION

Post-Coralville Erosion and Sedimentation

The lands adjacent to Coralville Lake between elevations of 207 meters, normal pool, and 217 meters, spillway elevation, are periodically inundated. A number of archaeological sites are located on these lands. Therefore, the lands in that range of elevation were examined to determine the amount of erosion and

sedimentation since Coralville Lake was formed in 1958.

Severe post-Coralville erosion has occurred on some lake-facing bluffs. Severe erosion, as used here, means that erosion has progressed at least into the B horizon (subsoil). However, the extent of areas with severe erosion is not nearly as great here as at Saylorville Lake, another USACE reservoir located on the Des Moines River in central Iowa. Areas with severe erosion at Coralville Lake are almost entirely east of the Interstate highway. Major areas noted having significant amounts of severe erosion include:

a) Jolly Roger: bluffs facing north, northeast and east.

b) Sandy Beach: bluffs facing southwest at the campgrounds and extending northeast to the confluence of the valleys of the Iowa River and Hoosier Creek.

c) MacBride Field Campus: bluffs facing northwest, west and southwest (in Sections 31 and 32).

d) Mehaffey Boat Ramp: bluffs of terraces facing northwest, north and northeast (in Section 32).

e) Sugar Bottom: bluffs facing west, southwest and south. The north-facing and east-facing bluffs of the Jolly Roger area have more severe erosion than any other area that was observed. In many places there, nearly vertical eroded bluffs are as high as 2 to 4 meters. (They are excellent places to observe soils and underlying materials.)

Post-Coralville sediments primarily are on nearly level slopes on terraces and floodplains that lie only a few meters above the 207 m level. Their thickness on such slopes ranges from as little as a trace to as much as 75 cm. The former thicknesses are on some low convex rises, whereas the latter are in drainageways and swales near eroding bluffs. A common range in thickness on other nearly level linear areas is 5 to 20 cm. These sediments are finely stratified in color and are easily identified in most places from the underlying soils. (Note the description of Sugar Bottom Site 1 in the Appendix.) They are typically silt loam in texture. Most areas having a few centimeters or more of these sediments are identified with the symbol "1316" on Schermerhorn's (1983) detailed soil survey maps.

Post-Settlement Alluvium on Floodplains

The thickness of post-settlement alluvium on floodplains was specifically checked in the lower reaches of five drainageways in Sections 3 and 4, Range 6W, Township 80N. These drainageways are east of the Sugar Bottom Campground. These floodplains in our area of study ranged from about 15 to 75 m in width. Twenty measurements of the thickness of post-settlement alluvium were made. This alluvium ranged from as little as 20 cm to more than 110 cm in thickness. A common range of thickness is 50 to 75 cm.

The soils underlying the post-settlement alluvium have prominent A and B horizons. Also, the post-settlement alluvium is markedly stratified in color. Thus, its thickness can be measured rather accurately. (Note the description of the Rock Shelter Floodplain Site in the Appendix.)

In general, the greater amounts of post-settlement alluvium are on floodplains in and adjacent to the Southern Iowa Drift Plain landform region. Schermerhorn's (1983) detailed maps rather precisely delineate floodplains with more than 50 cm of post-settlement alluvium. His map symbols "133" (Colo series, overwash phase), "220" and "1220" (Nodaway series), "320" (Avenzville), "430" (Ackmore series), and "729" (Nodaway and Avenzville series) designate such floodplains.

RELATIVE AGE OF LAND SURFACES

How the various land surfaces relate one to another in age is important in evaluating the pattern of archaeological sites in an area. An attempt is made here to fit the various units of physical environments into a sequence based on their relative age (see Figure 6). Post-Coralville Lake sediments have been excluded in this consideration.

No land surface in the area can be older than the day that the last increment of loess fell on it. That is about 14,000 YBP (Ruhe 1969). Perhaps the nearly level parts of the aeolian mantled terraces and the ridgetops in the Southern Iowa Drift Plain have undergone essentially no erosion since then. Thus, those surfaces could be that old.

The lower lying terraces lack a mantle of aeolian sediments. Therefore, they must have formed after 14,000 YBP. The problem then, is: how long after that? They have well developed soils which must have taken a few thousands of years to develop.

Erosion during the Wisconsinan produced the primary form of the Iowan Surface and at least part of the hillsides in the Southern Iowa Drift Plain. However, Ruhe (1969) notes two periods of erosion during the Holocene at least in some parts of Iowa. These periods occurred in the time span of 7,000 to 13,000 and 3,000 to 7,000 YBP. Thus, these parts of the Coralville Lake area might, too, have undergone some erosion during those periods. Therefore, they might be as young as about 3,000 YBP. Further, perhaps the lower lying terraces discussed in the paragraph above formed sometime in the first period of erosion, namely 7,000 to 13,000 YBP.

The modern floodplains (map symbol F) perhaps developed most of their present morphology during the period of 3,000 to 7,000 YBP. However, their surfaces undoubtedly have received periodic depositions of sediment since then. Thus, they are the youngest surfaces in the area.

Figure 6. Surface Age Estimates, Physical Environments, Coralville Lake

PHYSICAL ENVIRONMENTS

MAP SYMBOL	LANDFORM	AGE
PSA, TAF, TAP, TAS	Ridgetops in Southern Iowa Drift Plain and aeolian mantled terraces.	Wisconsinan (no older than 14,000 YBP)
TLF, TLS, TLP, TU	Low terraces lacking an aeolian mantle	Early Holocene
SFA, SFT, SPT, PHA, PHT	Iowan Surface and hillsides in the Southern Iowa Drift Plain	Mid or Late Holocene
F	Floodplains	Present

GEOMORPHOLOGY AND ARCHAEOLOGICAL SITE LOCATION

The geomorphological model presented on the preceding pages is, of necessity, preliminary in nature. It does, however, outline the general character and sequence of land formation and alteration processes that have affected the Coralville Lake Project Area. It can thus be used as a framework for determining the probability of finding archaeological sites in various localities, especially on former land surfaces which are now covered by sediments of some kind. In the following paragraphs, some details of the model will be discussed in light of the implications they hold for the location of archaeological sites.

As shown in Figure 6, the oldest surfaces in the project area are the ridgetops and terraces which bear a loess mantle (map symbols PSA, TAF, TAP, TAS). Deposition of these aeolian sediments ceased approximately 14,000 years ago, and it is assumed that these surfaces were accumulating sediments until that date. Therefore, the only sites which could possibly be found within or underneath the loess mantle (that is, below the modern soils which have developed in the loess) are those which predate 14,000 BP. Two factors are relevant to the probability of locating such buried sites: 1) the age of the paleosol upon which the loess was deposited; and 2) the nature of the loess mantle itself in terms of rates and consistency of deposition.

Deep borings in the project area, as in other localities, have shown that the loess mantle overlies very old paleosols - in some cases, these buried surfaces have been identified as being of Sangamon age. In any case, the period of loess deposition is thought to have begun approximately 29,000 years ago. Based on present knowledge, it seems highly unlikely that East-Central Iowa was occupied by human beings prior to that time. Thus, one can effectively eliminate the paleosols which underlie the loess mantle from consideration in site location surveys.

The next question that arises relates to the possibility of human presence in the area during the time loess was accumulating - the period between 29,000 BP and 14,000 BP. Although existing evidence of human activity in East-Central Iowa during this time is extremely tentative, the possibility of that occurrance cannot be completely discounted. If people were living in the project area at this time, evidence of their presence would be contained somewhere within the loess mantle.

The environment of the project area would not have been particularly hospitable to humans while the loess was actively accumulating. If, however, accumulation took place sporadically, the area could have been occupied on a temporary basis, between episodes of aeolian activity. In this model, the loess mantle could be viewed as a series of land surfaces, each buried by a subsequent depositional episode. Any one of these buried surfaces could hold some potential for site location. But such

intermittent accumulation should have left evidence in the form of buried soils or eroded surfaces. Examination of the loess mantle through deep borings has yielded no evidence of soil development or erosion at any point within the mantle. This suggests that the rate of loess accumulation was relatively consistent through time; the mantle can be viewed as a single geomorphological entity, and the probability of its containing any buried archaeological sites can be evaluated as negligible. Testing for site locations in those areas bearing a loess mantle therefore need concentrate only on the soil strata which have developed on top of the aeolian deposits.

The remaining physical environments in the project area are not as easily defined in terms of their potential for locating buried archaeological sites. The low terraces along the river valley which lack an aeolian mantle (map symbols TLF, TLS, TLP, TU) formed no earlier than the Early Holocene, and therefore have some potential for containing archaeological sites dating as far back as the very end of the Paleo period. The stratigraphy of this terrace system is not yet well-defined, so the possibility of the terraces overlying culture-bearing surfaces of Late Wisconsinan age is problematical.

The next-oldest surfaces in the project area are portions of the Iowan Surface and eroded hillsides in the Southern Iowa Drift Plain (map symbols SFA, SFT, SPT, PHA, PHT). Some of the soils found in these areas formed in a thick loess mantle, and some formed in a thin loess mantle over glacial till (of pre-Illinoian age) or exclusively in glacial till. However, they have all been affected by erosional processes which went into operation after the depositional processes of the Wisconsinan ceased, and thus are estimated to be of Mid to Late Holocene age. These landforms may well represent a loss of archaeological data; that is, they may be viewed as remnants of earlier surfaces from which soils and, possibly, associated cultural materials have been removed by erosion. (Since those soils and cultural materials were transported to lower-lying surfaces, the possibility that sites found below the eroded surfaces are actually secondary deposits must be considered.) These landforms do not appear likely to overlie buried surfaces which would contain archaeological sites, because of the age of the parent materials in which their soils developed.

The final category of surfaces in the project area is referred to herein as "floodplains" (map symbol F), but does contain small areas of alluvial fans and footslopes. These are the lowest-lying surfaces in the area, and have been affected to the greatest degree by recent depositional episodes. These areas therefore are most likely to include buried surfaces upon which archaeological sites may be found.

In discussing these landforms, it is convenient to divide Coralville Lake into two segments on the basis of topography. The portion of the lake lying between Coralville Dam and the Interstate Highway bridge is characterized, as has been stated,

by a narrow, bedrock-controlled valley. Only a few small portions of the Iowa River floodplain remain above the normal pool level in this area. The stratigraphy of these floodplain segments reflects the continuing accumulation of depositional and erosional sediments. Because such sediments accumulate at varying rates through space and time, it is not possible at present to estimate the depth at which an archaeological site of any given age might be encountered in a certain part of the floodplain. A site may be buried under several meters of sediment, or may be within a few centimenters of the present floodplain surface. In terms of survey procedures, such a situation obviously calls for careful subsurface testing, in conjunction with a detailed examination of soil stratigraphy. (The existence of Coralville Lake does present some practical problems in this regard: subsurface tests in the floodplain will rapidly encounter saturated soils which are difficult to work with unless specialized techniques are employed. The most efficient approach would probably be to conduct site survey in the floodplain during drawdowns or periods of drought, when high water tables would be less of a problem.)

A small part of the "floodplain" mapping unit consists of alluvial fans. Such formations have been identified in many other localities as overlying older surfaces which contain cultural materials. Because alluvial fans comprise a very small part of the project area, the preliminary geomorphological model presented herein does not include a detailed description of their stratigraphy. At present, we do not know the nature or age of the buried landforms underlying the fans. Future research at Coralville Lake should therefore include more intensive examination of fan stratigraphy, with emphasis on the identification of buried surfaces, which could then be tested for evidence of human occupation.

The depositional processes which created these alluvial fans are estimated to have begun about 8,500 BP. Based on information from other parts of Iowa, it is possible that the fans overlie sites of the late Paleo period. Examination of alluvial fans at Coralville Lake thus has some potential for clarifying our understanding of the very early occupation of the project area.

Another portion of the "floodplain" landform category at Coralville Lake consists of small drainages, mostly intermittent streams, which flow into the Iowa River Valley. As discussed on pp. 30-31, many of these stream valleys contain considerable amounts of recent sediment. In one valley examined during this project, 75 cm of post-settlement alluvium have been deposited on top of a paleosol. (The term "paleosol" does not necessarily refer to a soil of great antiquity, but to any soil now buried by younger materials.)

In terms of availability of resources, it appears that these small stream valleys would have been desirable locations for prehistoric occupation. The present lack of recorded sites in these areas probably relates primarily to survey biases. They

should be considered to have good potential for site location, if the presence of recent sediments is taken into account when designing survey strategy.

The segment of Coralville Lake to the west of the Interstate Highway bridge has a different configuration, and presents a somewhat different set of problems vis-a-vis the location of buried archaeological sites. This portion of the lake is characterized by a very broad, level floodplain bordered by a series of low-lying terraces. Prior to the creation of Coralville Lake, the floodplain received frequent increments of sediment, while the adjacent terraces received sediments less often. Presently, both the floodplain and the terraces are subject to deposition of sediments during periods of high water.

The present lack of recorded sites in this part of the project area appears unusual when compared to site densities in the floodplains of other major rivers in Iowa. One assumes, therefore, that sites do indeed exist here, although buried beneath some (greater or lesser) accumulation of sediment. The Iowa River has changed its course over time, meandering across the valley, but some portions of the floodplain do still exhibit characteristics of stable, undisturbed soils beneath the younger sediments. They therefore hold considerable potential for site location.

Although a number of questions remain to be answered about the geomorphology of Coralville Lake as it relates to archaeological site location, the present model does provide some direction for future research. If the factors discussed here are taken into account in future site-location surveys at Coralville Lake, it will be possible to formulate a more precise and refined picture of prehistoric settlement in the Iowa River Valley than presently exists.

CULTURAL RESOURCES OF CORALVILLE LAKE

CULTURAL OVERVIEW

Prehistory

The prehistoric resources of the Coralville Lake Project Area are part of the larger picture of the prehistory of the East-Central Iowa region, and specifically, the valley of the Iowa River. The broad outlines of that picture have been established through the efforts of many researchers. However, the specific characteristics of cultural adaptation to the environment of the Iowa River Valley are not yet fully understood. The following overview will briefly discuss the present state of knowledge about prehistoric resources in the project area, especially as they relate to the concerns of the document entitled Implementation of the Resource Protection Planning Process (RP3) in Iowa (Henning 1982:draft).

The earliest period of human occupation in this area, referred to as the Paleo-Indian period, covers the time from the first entrance of humans into the area to approximately 8,000 years before the present. This timeframe represents an apparently generalized cultural complex, which, based primarily on isolated surface finds of artifactual materials, bears great similarity to the Paleo-Indian complex as it appears in the archaeological record in most of North America (RP3, pp. 21-26). (All page citations below, unless otherwise noted, refer to the RP3 document.) Although artifacts which appear to date from this time period have been found in the project area, they have all occurred in disturbed contexts, and no sites have yet been identified which contain undisputable Paleo-Indian components.

Similarly, the beginning of the next major temporal division of prehistory, the Early-Middle Archaic (pp. 27-30), is not yet well enough understood to allow for the delineation of regional variants in cultural patterns. Here again, a generalized cultural complex can be discerned which at present shows no distinctive regional differences.

When one moves to consideration of the Late Archaic, however, it becomes possible to tentatively define some variations in social and economic patterns defined on geographic bases (pp. 31-34). At present, it appears that the immediate area of Coralville Lake probably contains Archaic manifestations most closely related to the foraging cultures of the Eastern Woodland. However, the sites at Coralville Lake which appear to have Archaic components have not been studied in enough detail to allow for identification of the social or economic patterns they represent. Thus, the exact nature of local cultural patterns of this age is far from clear.

The Woodland period which follows the Archaic appears to represent a proliferation of regional variations in cultural

patterning. At sites dating to the Woodland, regional variations based mainly on differential utilization of resources can be clearly observed. These variations are thus defined geographically, and can be further subdivided along temporal lines. These divisions serve to create overlapping study units, as defined in the RP3 document (pp. 35-44). Additionally, some areas which have not yet yielded firm evidence of the presence of certain Woodland cultural manifestations are anticipated to contain such evidence, on the basis of environmental similarities to other regions.

The Coralville Lake Project Area lies in a region contained within the geographic boundaries of the Woodland complex defined in the RP3 as "Mississippi Basin Woodland" (pp. 42-44), and thus would be expected to most clearly reflect contact with cultural manifestations which arose in the major river valleys to the east. For the Middle Woodland temporal division, especially, the presence of ceramics suggestive of the Havana tradition would be expected. Additionally, the project area borders on the territory of the "North Central Woodland" (pp. 38-39). Thus, one may also find some evidence here of the apparently transient nature of settlement along the fringes of this cultural division.

None of the major manifestations of the Middle or Upper Mississippian traditions are currently clearly present at recorded sites in the project area, even though it lies in an intermediate position between Great Oasis, Correctionville-Blue Earth, and Orr phase sites to the west, north, and southeast, respectively (pp. 45-47, 53-58). The possibility that this perceived absence is the result of survey bias is suggested by the fact that a few sherds of recognizable Mississippian ceramics have been recovered at Coralville Lake. The present project provided an opportunity for exploring this possibility, as well as addressing the question of whether there may be geomorphological factors which made the valley less attractive to these groups than other nearby regions.

Existing data summaries indicate that more sites dating to the Late Woodland period than any other temporal division have been identified in the project area. During the course of this project, an attempt was made to determine the reasons for this circumstance. Was it the result of researcher bias or lack of intensive testing of sites in the project area? Are there features of the physical environment which would have made utilization of the river valley during earlier time periods undesirable? Addressing these questions helped to determine the most profitable directions for future research on the prehistory of the Coralville Lake area.

The site-specific information contained in this report follows the general temporal framework outlined above. The designations of cultural affiliation which appear herein are thus based upon this standard model of prehistoric cultural diversity, as it is presently applied in the Upper Midwest.

History

Utilizing general historical data and the RP3 document, the following framework was developed for synthesizing historical data from the Coralville Project Area. This framework encompasses the pattern of European frontier expansion and settlement of North America.

Historical Period/Events	Sites in Project Area
Mid-1700's to 1832: French still searching for the Northwest Passage up the Des Moines River. This period encompasses the "Early Contacts", "Adventure and Exploitation", and initial part of the "Frontier Safety" stage in the RP3.	NO KNOWN SITES
1832: Lands belonging to the Sacs, Foxes, and Ioway change hands after the Black Hawk War.	NO KNOWN SITES
1835: Col. Stephen Watts Kearney makes first well drawn and documented map of Iowa.	NO KNOWN SITES
1838: Admitted to the Union as a territory. Beginning of the RP3 stage "Early Settlement". Settlement was strongly influenced by water courses. This period was critical to town growth and survival. This also ended the RP3 stage "Initial Occupance" (1821-1838) during which pre-emptive homesteading and speculation took place. Because any such activities were illegal, little documentary information is available. (Such illegal trading activities were seemingly identified by Overstreet (1983) at 11JD126 in Jo Daviess County, Illinois.)	NO KNOWN SITES NO KNOWN SITES
1840: Beginning of the stage "Nation Divided" and the events leading up to the Civil War in the RP3. Iowa's agricultural markets at this time were strongly tied to the south via the Mississippi River, GLO map of project area.	"Indian Farm" shown on Washington Twp. GLO (Iowa County).
1846: Sacs and Foxes moved to Kansas; Iowa achieves statehood. Only the eastern 1/3 of the state is well-mapped and documented.	NO KNOWN SITES

1846/47: About 700 Pottawattamies remain in area. This is the approximate end of the RP3 stage "Frontier Safety". Within 30 years Indian lands had become a thing of the past.	NO KNOWN SITES
1850: End of the RP3 stage "Early Settlement". Beginning of the stage "Settlement Boom". Intensification of patterns from preceding "Early Settlement" stage.	NO KNOWN SITES
1857: Railroads began building along the Des Moines River. 1860: Reliance on railroads increases. Civil War greatly disrupts settlement process, but cements agricultural developments and relationship to eastern markets. The year 1865 also marks the beginning of the RP3 stage "Urban and Industrial Development". 1866: Further reliance on railroads after Civil War.	An 1856 map (Colton) shows the project area as outside established railroad and road networks.
1870: Increased settlement of area begins. Beyond this date, the area begins to participate in broader regional patterns. Agricultural development directly affected the area, while urban and industrial growth were significant indirect impacts. This marked the end of the principal aftermath of the Civil War.	Farmstead expansion; dispersal pattern.
1890: End of the stages "Urban and Industrial Development", "Agricultural Change", and "Mineral Development". Increased elaboration of differences between urban and rural dwellers, the latter of which have been better delineated after this research. After this time Iowa was totally integrated into the national socio-economic structure, but significant regional distinctions remained.	Extractive mining was extensive in the Des Moines River Valley and almost non-existent in the Iowa River Valley.
Post-1890: Internal migration affected mainly urban areas, and agriculture became more specialized during the RP3 stage of "Economic Change" from 1890-1914. The period of World War I and its aftermath (1914-1930) showed a marked increase in farm	

	commodity prices. Rural populations began to decline. The period of the Great Depression saw a continuing loss of rural population and increase in urban problems. This was the beginning of rural consolidation. From 1940 to the present the trend has been toward farm consolidation, monocropping, and rural population loss. These activities have had a detrimental effect (along with major impoundment programs) on preservation of historic resources.	The overwhelming majority of rural farmsteads in the project area were settled during this stage.

(Appendix V lists the maps pertaining to Iowa. Those with call numbers beside them were examined during archival research, and can be found in the archives of the State Historical Society of Iowa.)

PREHISTORIC RESOURCES

The objectives and methods of the prehistoric cultural resource research done as part of this project have been discussed in Section I of this report. In the following pages, the results of that research will be presented.

Summary of Previous Investigations

The following section of the report summarizes the previous archaeological investigations of the Coralville Lake area and more generally Johnson County, Iowa. Excellent summaries of the early archaeological accounts have already been completed by Weichman & Tandarich (1974), and Zieglowsky & Zalesky (1981). Those early investigations will be summarized here as well, but emphasis will focus on more recent projects in the Coralville Lake vicinity. In some cases, the narrative will include limited evaluation of the work, aimed at indicating cases of survey or testing bias and problems with inconsistencies within reports. (A more detailed evaluation and critique of previous research at Coralville Lake can be found in Section III.) The narrative will discuss research at Coralville Lake in chronological order. (References cited here can be found in Section IV, Annotated Bibliography.)

I. Early Historic Accounts (1843 - 1883)

During the years that the Iowa Territory (and, after 1846, the State of Iowa) was being settled by those of European descent, travellers, traders and others who passed through the east-central portion of the territory occasionally made note of evidence that the area had been previously inhabited. The earliest such account is found in the travel journal of James L. Scott, a minister who undertook a missionary tour through a number of newly-established states and territories of the Central United States (Scott 1843). Reverend Scott's journal mentions the existence of a mound site near Fredonia in Washington County, near the confluence of the English and Iowa Rivers. (This site apparently corresponds to the mound group now designated 13WS1.) Scott viewed these mounds on May 31, 1842, and noted in his journal entry for that day that "the place somewhat resembled in its location and arrangement, our grave yards" (Scott 1843:135).

In 1868, Captain F. M. Irish published a history of Johnson County from the time of its initial settlement by Europeans (Irish 1868). He noted the presence of two American Indian sites in the county: one an historic Mesquakie village (Poweshiek's village), two miles south of Iowa City, and the other a mound site located on a hilltop overlooking the river (Irish 1868:23-31). Because of a lack of detailed locational data, it is not clear which recorded mound site Irish was referring to in his article.

II. Early Scientific Investigations (1883 - 1900)

As the settlement of Johnson County proceeded, more than passing notice began to be paid to the antiquities of the area. Although the discipline of anthropology was still in its infancy in America, researchers did attempt to approach cultural phenomena in a detailed, scientific manner, in some cases applying the "Mound Builders" hypothesis which prevailed in the late 1800's to explain the presence of conspicuous earthworks. An example is the chapter entitled "Mound Builders and Indians" in the History of Johnson County, Iowa published by M. W. Davis and A. C. Trowbridge (1883). This document records the existence of four extensive mound sites along the Iowa River. (All of these sites are outside the current project area, south of Coralville Lake.) It also notes the locations of three historic Mesquakie villages: Poweshiek's village (the same one mentioned by Irish), Wapashashiek's village and Tolokonock's village, all situated along the Iowa River south of the present location of Coralville Dam.

By the end of the 19th century, the cultural resources of Johnson County were being investigated by researchers from outside Iowa. The first Annual Report published by the Smithsonian Institution included a discussion of about 100 mound sites identified in Johnson County (Webster 1888). This document contains the earliest account of formal excavations at sites in the county. These excavations consisted of testing at five mounds in a group of 18, presently designated 13JH1. Two of these mounds, which are located just south of Coralville Dam, yielded human remains. Only one other site mentioned in this report is within the boundaries of the Coralville Lake Project Area: 13JH3, a single conical mound which lies near the mouth of Turkey Creek. (This site was more recently documented by Caldwell [1961].)

The research conducted by the Smithsonian Institution was later cited in Proceedings of the Davenport Academy of Natural Science, as part of an article by Frederick Starr summarizing the state of knowledge about the archaeology of Iowa (Starr 1895). Starr describes Webster's (1888) account of locating at least 100 mounds along the Iowa River in Johnson County. Davis (1883) is also referenced in the report as having excavated mounds at the site now designated 13JH1. Starr notes several additional mound sites discovered by Webster, including 13JH3. White (n.d.) is mentioned in the report as having observed mounds "along the Iowa River between Iowa City and Columbus Junction (Louisa County)", with specific reference to a mound group at the mouth of the English River (currently designated 13WS1) in Washington County. This site was apparently also mentioned by Scott (1843).

For the purposes of modern archaeological research, the value of these early accounts is limited, due to the sketchy nature of locational data, the cursory manner in which sites were investigated, and the overriding emphasis on easily-identified earthworks. They do, however, exemplify the formative years of

American anthropology. Their primary importance thus lies not so much in what they tell us about the cultural resources of Johnson County as in what they tell us about the perspectives and methods of early inquiries into the prehistory of the area.

III. Systematic Investigations (1900 - 1961)

In the early years of the 20th century, those interested in the archaeology of Johnson County attempted to apply the perspectives of the growing discipline of anthropology in their study of prehistoric sites. In contrast to the somewhat opportunistic surveys that had been done in the 1800's, efforts were focused on more systematic methods of identifying and explaining cultural phenomena. The Reverend Duren J. H. Ward was perhaps the first to apply an explicitly anthropological research design. In a series of articles published in the Iowa Journal of History and Politics, Ward discusses the nature and objectives of the science of anthropology, and explains the methods and results of a systematic survey of sites along the Iowa River. In an article published in 1903, he includes a map of the state of Iowa, showing the locations of known mounds and mound groups (see Weichman & Tandarich 1974 for a detailed discussion of Ward's work).

The scientific approach initiated by Ward was carried on by Charles R. Keyes, who can be considered the father of modern archaeology in Iowa. For over thirty years, starting in 1922, Keyes directed the Iowa State Archaeological Survey, which focused on the identification of the full range of prehistoric sites in the state. In an article published in 1920, Keyes refutes the "Mound Builder" hypothesis, and warns against placing too much emphasis on the investigation of burial sites, as other types of sites are also important to the reconstruction of Iowa's prehistory (Keyes 1920:361-363). He expresses his opinion that sites in Iowa have the potential for yielding significant information about the prehistoric inhabitants of North America, if they are studied in the proper scientific manner. (It is interesting to note that Keyes refers in this article to several prehistoric earthworks on the Upper Iowa River, which were already, in 1922, "nearly cultivated out of existence" [Keyes 1920:363].)

Much of the information collected by Keyes during the years of the Archaeological Survey was never published, and is presently in curation, along with artifacts collected during the Survey, in the Archives of the State Historical Society. Recently, Joseph A. Tiffany of the Iowa Office of the State Archaeologist conducted a research project aimed at organizing the considerable amount of data contained in Keyes' unpublished notes. This project, which was funded by the National Endowment for the Arts, resulted in the publication of a "Finder's Guide" to Keye's notes (Tiffany 1981), which summarizes the content of the existing material by county.

The first major research project which explicitly focused on

the Coralville Lake Project Area was instituted when the U.S. Army Corps of Engineers began planning for the construction of Coralville Dam and associated structures. At that time, the Smithsonian Institution's River Basin Survey undertook a preliminary assessment of the archaeology of the project area. The initial research was conducted in 1946 by Richard P. Wheeler, who noted the existence of nine sites in the area to be affected by the creation of the lake (Wheeler 1949). A followup to this work was done in 1956 by Warren W. Caldwell, again under the auspices of the River Basin Survey (Caldwell 1961). Caldwell returned to the sites located by Wheeler, and also conducted additional locational survey.

Caldwell's report is a detailed account of the inspection of a number of important sites in the current project area, including mound and rock shelter sites. It presents the results of six weeks of fieldwork done prior to the impoundment of Coralville Lake. Aside from the fact that sites were going to be destroyed by the creation of the lake, Caldwell expressed interest in this region of Iowa because it is situated between the well-documented Mississippi Valley and the increasingly important Plains region. The following sites in the project area were tested and/or excavated by Caldwell: 13JH2 (Crosheck or Sweeeney Mound Group), 13JH3 (Turkey Creek Mound Group), 13JH202 (Woodpecker Cave Site, formerly 13JH11), 13JH203 (formerly 13JH20), 13JH204 (formerly 13JH21), 13JH205 (formerly 13JH27), 13JH206 (formerly 13JH25), and 13JH207 (formerly 13JH24). In addition, 13JH6 (Big Bend Mound Group, formerly 13JH54) and 13JH208 (formerly 13JH23) were surface examined.

The most intensive excavation took place at the Woodpecker Cave site, a small rock shelter situated in limestone bedrock overlooking a small tributary to the Iowa River. The rock shelter was almost totally excavated, revealing the presence of two components at the site, referred to by Caldwell as Strata A and B. The lower Stratum (A) contained mostly lithic material and was attributed to the Archaic or Early Woodland period. Stratum B yielded ceramic and lithic material very similar to the artifact assemblage at Minott's Rock Shelter, and was considered to be affiliated with the Middle to Late Woodland periods. Human bone (mostly skull and jaw fragments representing at least two individuals) was also recovered from the site, although no formal burial was discernable as the bone was scattered throughout the shelter deposits. A variety of additional faunal materials were present, including the remains of deer (most common), dog and beaver. Mollusk and vegetational analyses were also conducted.

Concerning survey procedure and the location of new sites, Caldwell mentions no survey methodology or survey parameters other than substantially limiting the survey to the elevation of the conservation pool. Cultural affiliations of sites examined by Caldwell range from the Archaic through the Woodland periods, while several sites were identified as having Oneota components. Several mound sites were also examined during this project, none of which yielded human remains. Caldwell concludes by stating

that "the aboriginal occupation of the Coralville Reservoir was not intensive". Today, in light of subsequent survey and artifact exposure along the shoreline of Coralville Lake, this statement can not necessarily be considered a valid assessment of the cultural resources of the project area.

In general, the archaeological research conducted during this time reflected the state of the discipline as a whole, in its increasing concern with precision and thorough analysis of recovered materials. Keyes' work, while somewhat frustrating in its present unpublished state, undoubtedly is the only source of data about some sites which are no longer in existence due to continuing cultivation and other recent modifications to the landscape. The excavation of the Woodpecker Cave site and other sites by Caldwell was conducted in a very comprehensive manner, even for today's standards, with the possible exception of looser provenience controls.

IV. Cultural Resource Research (1961 - present)

With the expansion of legislation regulating the management of historic and prehistoric sites on federal lands during the 1960's and 1970's, a new perspective towards investigations at Coralville Lake became evident. This new perspective is reflected in the increased frequency of recommendations for additional research at various sites in the project area. Even those investigators not directly involved in formal compliance projects expressed continuing concern with the proper management of the cultural resources of Coralville Lake.

After Warren Caldwell completed his work at Coralville Lake in 1956, no formal examination of prehistoric sites in the project area was undertaken for over 10 years. Then, in the late 1960's, students from the University of Iowa participated in summer field schools at various sites in the project area. This work was performed under the supervision of Adrian D. Anderson (presently Iowa's State Historic Preservation Officer). Anderson presented the results of this work in two articles which were published in Prehistoric Investigations, edited by Marshall McKusick (Anderson 1971a, 1971b).

The first article, "Review of Iowa River Valley Archaeology", focuses on the culture history and ceramic styles of sites located in the river valley, including sites within the project area. This information is compared with the archaeology of adjacent major river valleys (the Illinois River valley in particular). Anderson concludes that an intensive survey program must be initiated in the Iowa River valley before meaningful conclusions can be drawn concerning settlement distributions. The review is concise, and helps pull together current knowledge of ceramic styles of the area.

A second segment of this report, included as an Addendum, presents the results of a survey which recorded 10 sites along the Coralville Lake shoreline (sites 13JH43 through 13JH52;

13JH51 and 13JH52 were formerly 13JH122 and 13JH121, respectively). Completed in 1970, the survey field-checked site locations, as reported by local collectors, which were undergoing shoreline erosion or being disturbed by construction. Subsurface testing was conducted, apparently, at only two of these sites (13JH43 and 13JH49), with limited results. (Anderson's report does not explain field procedures and in some cases it is unclear how much work was done at a site. Additionally, most of the site descriptions are quite brief and do not include any estimation of site size or function.) Anderson concluded that the 10 sites were in large part little more than thin artifact surface scatters and that they did not warrant further work because they were disturbed.

In his second article, Anderson discusses the Walters site (13JH42), which was excavated in 1967 and 1968. The site was positioned on a 700' terrace south of the junction of Hoosier Creek and Coralville Lake near Lake MacBride. It appeared to be affiliated with the Late Woodland period, based on diagnostic ceramic material and projectile points. Other artifacts recovered from the site included 35 lithic tools (knives, scrapers, choppers, abraders, and grinding stones) and ceramics characteristic of Weaver and Madison Wares. Anderson considers the site an occupation, since excavation revealed a feature interpreted as a house structure of apparent wattle and daub construction (referred to in the report as a possible "field house"). No additional features were located. Excavation was conducted with shovels and trowels, occasionally checking the fill with screens. Overall, Anderson's reporting of the Walters site excavation is comprehensive. Ceramics are well described and analyzed in relation to pottery recovered from other important sites in the area, including Woodpecker Cave and Minott's Rock Shelter.

The next two major research projects to take place at Coralville Lake were conducted on a contract basis, and were directed by Michael S. Weichman of the Environmental Research Center. Weichman's first publication is essentially a review of literature relevant to the prehistoric resources of the Iowa River Valley between Coralville Dam and the Cedar River (Weichman & Tandarich 1974). Fifty-two recorded sites in Johnson County are discussed, most of which lie in the immediate vicinity of Coralville Lake. The project did not involve any fieldwork, but was conducted by consulting existing documentation and site files. This report represents the first contract-oriented archaeological investigation of the Coralville Lake area.

The report begins with Tandarich's background study of earlier archaeological investigations of this section of the Iowa River valley. Annotations cover the early travelers and explorers of the mid-1800s, who were interested primarily in mound sites, through the extensive work of Dr. Charles Keyes, the Smithsonian River Basin Surveys, and Adrian Anderson's excavations at the Walters site on Coralville Lake. An inventory of documented sites along the Iowa River valley is presented.

Charts summarize pertinent information, describing site type, location, cultural affiliation, material collected, potential impact by Coralville Lake, and recommendations. (Thirty-three of the sites described in this report are within the boundaries of the current project.) A brief culture history of eastern Iowa is presented, as is a very generalized predictive site location model based on cultural affiliation. Recommendations of the report call for comprehensive survey and site testing of the Coralville Lake shoreline, an archaeological assessment of the Iowa River valley below Coralville Dam and a long-term cultural resource management program for the Coralville Lake area.

As a final note, Weichman and Tandarich made a concerted effort to clear up discrepancies and inadequacies within state site files. A number of sites had been assigned two site numbers (when reported to OSA by different investigators), resulting in some confusion in regard to exact site locations. The site description section of the report addresses this problem, and recommends re-assignment of duplicate numbers. (The present condition of state site files demonstrates that this recommendation was implemented by OSA some time between 1974 and 1983. Because the duplicate numbers have been re-assigned to new sites, some care must be taken when working with pre-1974 references to determine exactly what location is referred to by a particular site number.)

Weichman's second Coralville Lake project was undertaken when the Johnson County Highway Department decided to make improvements to several roads in the vicinity of the lake (Weichman 1975). This project involved reconnaissance-level survey of corridors which would be affected by those improvements. The areas surveyed included a stretch of County Road E which parallels the northern shoreline of Coralville Lake in the Hawkeye State Wildlife Area and a segment of proposed road construction in the Sandy Beach area.

Much of the first half of Weichman's survey report is identical to portions of Weichman & Tandarich (1974): essentially, the account of previous archaeological work at Coralville Lake and pertinent culture history. The explanation of field methods is fairly comprehensive, although the spacing between surveying crew members and exact survey parameters are not specified. Weichman recognized the problems of locating sites respective to certain landforms (ie. deeply buried sites in alluvial deposits), but did not deal directly with it, since surface reconnaissance was the only method employed during the survey. The project located five new sites (13JH107 through 13JH111) and one previously recorded site (13JH43). Each site is described in some detail, and recommendations for further research are presented. Weichman also mentions several sites which are peripheral to the survey area proper, and cautions that they may also be affected to some extent by the proposed road improvements.

Weichman's 1975 survey represents the only systematic

fieldwork done to date in the Hawkeye State Wildlife Area, in contrast to the narrow portion of the lake to the east of Interstate Highway 380, which has received more attention from past researchers. Thus, the comparatively lower site frequency in the Wildlife Area may relate primarily to a lower survey frequency, and it may be premature to assume that this section of the valley was occupied to a lesser extent during prehistoric times.

During the time that professional archaeologists were conducting sporadic survey and excavation projects at Coralville Lake, the depletion of artifactual materials by amateur collectors was proceeding at what appears to have been a rapid pace. An illustration of the range and quantity of materials removed from the project area in this manner can be found in the manuscript entitled A Collection of Surface Finds from East Central Iowa (Zalesky 1977).

This report, which was initiated as coursework for a class at Iowa State University, consists essentially of descriptions of artifacts found on surface by Zalesky and other collectors during informal survey of sites in several Iowa counties (including Johnson County). Zalesky presents his own numerical designations for these sites, many of which had already been assigned site numbers in the OSA files. The introduction of the report describes the lithic categories referred to in the site descriptions (i.e. point types defined on the basis of form) and the general context of the investigation. A total of 134 sites in Johnson County are mentioned in the report, 67 of them located within the current project area.

Each site is briefly described in terms of general setting, elevation and legal description. Ceramic and lithic materials from each site are then listed and described, as is the present condition of the site. Cultural affiliations assigned to sites containing diagnostic artifacts are considered tentative by Zalesky. A problem is seen in Zalesky's determination of site types, as no criteria are provided for establishing them. The vast majority of sites are designated as "habitations", either in the report or on site forms filled out on the basis of information contained in the report. Frequently, no data are presented which suggest any justification for this functional designation. Repercussions of this problem are apparent in Shirley Schermer's thesis (1982) on settlement patterns in the Iowa River valley, in which she uses only Woodland "habitation" sites as supporting data, many of them recorded by Zalesky.

The artifacts described by Zalesky in his report apparently are all in private collections and not readily available for in-depth analysis. Despite these (and other) short-comings, this project recorded more sites at Coralville Lake than any other single project, and Zalesky's report is the only documentation available regarding a number of sites in the project area.

Because the bulk of the construction work at Coralville Lake

was completed prior to enactment of rigorous federal antiquities legislation, no compliance-oriented surveys were conducted in the areas affected by that work. It was not until 1979 that any formal reconnaissance-level survey was done in connection with proposed construction. At that time, Richard Lewis of the Corps of Engineers-Rock Island District undertook a preliminary survey of an area to be affected by construction of a sewage lagoon (Lewis 1979). Lewis conducted a reconnaissance survey of the proposed lagoon site, one-half mile southeast of Coralville Dam. The results of surface examination and 16 subsurface test units indicated that cultural material was present, and the designation 13JH253 was given to the site. Lewis recommended further testing of the site.

The additional testing recommended by Lewis was completed in 1980 by Impact Services, Inc., a private contracting firm. Intensive testing was conducted at the site, with the objective of collecting data upon which a determination of eligibility for nomination to the National Register of Historic Places could be based. Testing procedures included surface reconnaissance, excavation of 14 test units (50 cm by 50 cm), and excavation of a 1 m by 1 m test unit. Some auger testing was also done. All fill was screened through one-eigth inch mesh and samples were obtained for flotation and chemical analyses. Laboratory methods included micro-edgeware analysis, pH and phosphate soil testing, and flotation analysis. A literature review and environmental description of the area are included in the project report (Roetzel & Strachan 1980).

Test units were placed within the site based on phosphate testing results. Site boundaries were delimited as were artifact concentration areas within the site. A thin scatter of flakes and tools were recovered in the test units and no diagnostic artifacts were obtained. Roetzel and Strachan concluded that 13JH253 did not appear to meet the eligibility criteria for nomination to the National Register of Historic Places, and the Iowa State Historic Preservation Office concurred. (This project represents one of the few occasions upon which a site in the Coralville Lake Project Area has been tested for National Register eligibility.)

After the completion of this testing project, research emphasis at Coralville Lake again returned to projects not directly related to compliance with federal cultural resource management guidelines. In 1981, the Office of the State Archaeologist initiated a project, under the direction of Shirley Schermer, which utilized volunteer labor (mostly members of the Iowa Archaeological Society) to survey a corridor along the shoreline of Coralville Lake. The objectives of the Coralville Reservoir Shoreline Survey were: 1) to investigate the effectiveness of a stratified, random sampling procedure; 2) to locate and map archaeological sites impacted by flooding and wave action; 3) to assess erosional impact; and 4) to locate and sample lithic sources in the area. The survey was restricted to Corps property surrounding Coralville Lake and the fieldwork

included only surface examination, with no subsurface testing performed. In general, the survey was designed as an initial step in conducting a comprehensive survey of the Iowa River valley. The procedures and results of this survey project, as summarized below, are described in detail in Coralville Reservoir Shoreline Survey, published by the Office of the State Archaeologist (Schermer 1983).

Initially, the Coralville Lake shoreline was divided into four large segments, designated Units I through IV. Unit I extended from Coralville Dam upstream to Mehaffey Bridge, Unit II extended from Mehaffey Bridge to a point 2.5 miles east of U.S. Highway 218, Unit III extended from that point to the U.S. Highway 218 bridge across the lake, and Unit IV extended from the highway bridge west to the end of the lake (Schermer 1983:39-40). Schermer states that because the topography of Unit IV is drastically different from the configuration of Units I, II and III, a different survey strategy would be required in that unit. It was thus removed from further consideration in the sampling procedure. (Although not explicitly stated, one assumes that Schermer is referring here to the less eroded nature of the shoreline in Unit IV, which would make subsurface testing a necessity in any site-location survey.)

Units I, II and III were then each divided into a series of 1000'-long segments, and a stratified random sampling technique was used to select enough individual 1000'-long segments from each unit to comprise a 20% sample of the unit. Schermer notes that field survey in Unit III was not completed at the time her report was published, so she presents the results of fieldwork done only in Units I and II. (Note that this sampling strategy did not include the portion of Coralville Lake which lies west of Highway 380 in the sampling universe. Thus, Schermer's statement that 20% of two-thirds of the lake was surveyed is misleading. The area surveyed actually constituted 20% of two-thirds of roughly one-half - or about 7% - of the total perimeter of Coralville Lake.)

Survey coverage was intensive, with pedestrian transects spaced at five meters. When surface artifacts were encountered, additional inspection was done in the vicinity of the artifacts, in an attempt to define preliminary site boundaries. Two important survey details are not specified in the report, however: the definition of a "site" versus a "find spot", and delineation of the width of the survey corridor along the shoreline. The results of the survey show that 13 sites were located in Unit I and 18 sites in Unit II. Based on the number of sites located within each 20% unit sample, Schermer extrapolated and determined that 153 sites could be expected to exist along the shoreline of the combined units.

As well as presenting the methods and results of the shoreline survey, Schermer's report also addresses a number of collateral issues: differences in the number of river-oriented versus tributary-oriented sites, definition of degrees of erosion

relative to landform position, and the correlation between site density and the "meander belt" area along a river. Schermer also notes that a large gap exists in the archaeological record because of the inundation of unrecorded sites by Coralville Lake and expresses the need for a better understanding of landforms and how they are affected by erosional forces. Recommendations are made for further work on sites undergoing severe erosion and for additional survey on portions of the lakeshore which have not been systematically examined. The report includes a recommendation that the areas immediately above and below Coralville Dam and the lakeshore vicinity itself be considered for nomination to the National Register of Historic Places as an Archaeological District. (Because of the lack of detailed data from sites in the project area, no National Register nomination has been submitted.)

As an Appendix to Schermer's report, Toby Morrow describes the lithic resources of the Coralville Lake area. Morrow notes that lithic material could be obtained either from raw material inclusions in bedrock or from glacial till and stream deposits. The exposure of these sources in prehistoric times remains unclear, but Morrow feels that few primary deposits would have been available and till deposits were more likely sources of raw material. Different types of cherts and other materials are described. Morrow concludes by stressing that high quality raw materials are generally lacking in the project area, and that high quality cherts were probably imported into the river valley in prehistoric times.

The next research project to take place at Coralville Lake was, again, performed under the aegis of the Office of the State Archaeologist. In 1980, Debby Zieglowsky and James Zalesky of that office compiled a "status report" on the known prehistoric and historic resources of the project area (Zieglowsky & Zalesky 1981). The purposes of this report were to outline previous archaeological work in the Coralville Lake area, to assess the present condition of selected sites, and to make recommendations for site management. The report contains a very good summary of previous work at Coralville Lake, including lists of sites recorded by a number of major investigations.

This project included field-checking of 79 moderately to severely eroded sites at Coralville Lake. Sites were surface examined and photographed; however, no artifactual material was collected and no subsurface testing was conducted. Numbers and types of artifacts observed on surface were recorded, and diagnostic artifacts were photographed. General observations were made regarding the extent to which the sites have been disrupted by erosion and other forces, and the research potential of each site was estimated. Thirty-one sites were determined to be in poor condition and thus of low research potential, twenty-two sites retained enough integrity to warrant limited testing, and twenty-six sites appeared to hold good research potential and be the most promising sites for future excavation. (It should be noted that in a number of cases, sites and their corresponding

research potentials as referenced in the text [1981:235] differ from those presented in a summary chart [Appendix A].) In closing, the development of a long-range problem-oriented management plan is recommended for Coralville Lake.

Up to this time, most of the research done at Coralville Lake had been site-specific, and did not deal to any great extent with problems of inter-site relationships or settlement patterning. In 1982, Shirley Schermer of OSA attempted to address these questions in her M.A. Thesis for the University of Iowa's Department of Anthropology (Schermer 1982). This work examines the relationship between a variety of environmental factors (ie. landform, aspect, distance to water, etc.) and the location of 108 Woodland period habitation sites in the Iowa River valley. (Most of the sites in the data base are located in the Coralville Lake Project Area.) Statistical tests of hypotheses (t-test and chi-square) were used to determine the correlation between site location and individual environmental factors. The results of the statistical analysis indicated that the following environmental variables do have an effect on the location of Woodland sites: amount and type of environmental diversity, landform, elevation, exposure, soil-drainage capabilities, proximity to a water source, and proximity to a forest vegetation zone. Conversely, proximity to lithic sources, upland marshes, prairie, and mixed prairie zones were not recognized as having any influence on site location. Based on these results, Schermer suggests that floodplain, high terrace, and upland sites are more likely to represent short-term specialized or seasonal campsites. Low terrace sites are viewed as longer term, multi-seasonal occupations.

In discussing her site location model, Schermer explains several assumptions upon which her research was predicated, including the assumption that the 108 Woodland habitation sites which comprise the data base constituted a representative sample of the universe of Woodland sites in the river valley. This assumes that no survey bias is present, which is doubtful. In addition, the term "habitation site" implies the presence of a house structure or similar manifestation. Very few Woodland sites in the Coralville Lake area have yielded such information. A second assumption noted by Schermer is that floodplain sites may be under-represented due to alluvial deposition. Certainly inundation of the Iowa River floodplain by Coralville Lake created a gap in the identification of such sites.

In closing, this thesis describes a number of important factors which influenced the positioning of Woodland sites in the Coralville Lake area. The assumptions that were made during this study reflect a chronic difficulty in constructing site location models. Much archaeological data is, unfortunately, not of the quality needed to provide well established projections of settlement patterning. This is especially true in the Coralville Lake area, where most sites have not been documented in a systematic manner.

Overall, the cultural resource research that has been done at Coralville Lake in the past two decades has resulted in creation of a rather large body of basic site-description information. (Over 80% of the recorded sites in the project area were first formally recorded just within the past 15 years.) By and large, this information is of a preliminary nature, and does not carry the support of detailed data derived from intensive investigations. Some attempts have been made to apply statistical sampling techniques in site location survey projects, but these attempts have still concentrated on just a portion of the full range of landforms in the project area.

Increased concern with mitigation of threatened sites can be clearly seen in the general and site-specific recommendations made by various researchers. Some sites have been recommended for intensive testing or excavation on more than one occasion. However, the implementation of actual mitigation efforts at Coralville Lake has been extremely limited up to the present time.

Summary of Known Prehistoric Resources

As of October 1983, 198 sites were recorded within the boundaries of Federal land at Coralville Lake. As presently understood, these sites represent occupations ranging from the earliest period of human presence in North America to Euro-American settlements less than 100 years old. Detailed information about each of these recorded sites can be found in Appendix I, Volume II. In this section, summaries of that information will be presented. These summaries are intended to present a very general overview of the nature of the recorded sites at Coralville Lake, based upon information available in the literature. It is important to remember that the vast majority of that information was initially derived from surface survey conducted by various parties, and has not been verified during the course of this project.

A series of tables follows. These tables summarize the recorded sites at Coralville Lake according to several different criteria: cultural affiliation, site function, and geomorphic position. Each table is discussed below.

Figure 7 shows the designated cultural affiliations of all recorded sites at Coralville Lake. This information was taken primarily from state site forms. For some sites, several cultural affiliations are listed in various references. Those descriptions were combined for the purposes of this summary, to create multi-component designations. If the designation of cultural affiliation included the words "probable" or "possibly", a question mark has been added to the site number to indicate that uncertainty.

A total of 66 sites presently have assigned cultural affiliations, leaving 132 of indeterminate temporal classification. Note that less than 50% of those 66 sites are single-component; most of them have been assigned at least two different cultural affiliations. It is also interesting to note the fact that most sites which have been assigned cultural affiliations were initially recorded by private collectors. The sites located during authorized surveys in the past few years apparently contained far fewer diagnostic artifacts, and therefore have not been temporally defined. This may be an indication of the loss of data that results from removal of artifacts from sites by private collectors.

On the basis of this information, it appears that the Coralville Lake Project Area was occupied, at least minimally, during every major period of prehistory. The Paleo-Indian and Oneota periods are least well represented in the sample. As discussed in the RP3 document (Henning 1982:20-25), the Paleo-Indian period is not really well understood in any portion of Iowa. Henning suggests, however, that some potential does exist for locating very early sites on landforms similar to some of those found at Coralville Lake.

Figure 7. Recorded Sites by Cultural Affiliation

CULTURAL AFFILIATION	RECORDED SITES
Archaic	13JH334, 13JH326
Early Woodland	13JH27
Middle Woodland	13JH145
Late Woodland	13JH42, 13JH45, 13JH46?, 13JH47?, 13JH140, 13JH144, 13JH146, 13JH263, 13JH304, 13JH360, 13JH361, 13JH377, 13JH380, 13JH381
Woodland (generalized)	13JH3, 13JH6?, 13JH117, 13JH138?, 13JH206, 13JH273, 13JH303, 13JH307, 13JH308
Historic	13JH364, 13JH392
Paleo/Archaic/Early/Middle	13JH53
Archaic/Early	13JH143, 13JH171, 13JH172
Archaic/Early/Middle	13JH31
Archaic/Early/Middle/Late	13JH37, 13JH49, 13JH51, 13JH202
Archaic/Early/Late	13JH36
Archaic/Middle	13JH128
Archaic/Middle/Late	13JH137
Archaic/Early/Middle/ Late/Oneota	13JH2
Archaic/Late	13JH30, 13JH55, 13JH122, 13JH127, 13JH142, 13JH370, 13JH372, 13JH395
Archaic/Woodland	13JH44, 13JH362
Early/Middle	13JH141
Early/Middle/Late	13JH43, 13JH208
Early/Oneota	13JH26
Early/Late	13JH52
Middle/Late	13JH33, 13JH106
Middle/Late/Historic	13JH391
Middle/Protohistoric	13JH108
Late/Historic	13JH157, 13JH371, 13JH379
Woodland/Oneota	13JH205
Prehistoric/Historic	13JH278
No designation	13JH8, 13JH29, 13JH50, 13JH107, 13JH109-111, 13JH115, 13JH116, 13JH123-126, 13JH150-156, 13JH158, 13JH159, 13JH173, 13JH180, 13JH187, 13JH191-193, 13JH195-198, 13JH200, 13JH203, 13JH204, 13JH207, 13JH211, 13JH212, 13JH226-228, 13JH231, 13JH232, 13JH234, 13JH238, 13JH240, 13JH243, 13JH244, 13JH247, 13JH248, 13JH252, 13JH253, 13JH256, 13JH257, 13JH259-262, 13JH264, 13JH268, 13JH270, 13JH272, 13JH274-277, 13JH279, 13JH281, 13JH282, 13JH298, 13JH300-302, 13JH305, 13JH306, 13JH309, 13JH310, 13JH312-325, 13JH327-331, 13JH333, 13JH338-340, 13JH354, 13JH355, 13JH359, 13JH363, 13JH365-369, 13JH373-376, 13JH378, 13JH384-386, 13JH389, 13JH390, 13JH393, 13JH394, 13JH396-399, 13JH409, 13JH422, 13JH425, 13JH428, 13JH434-436

The scarcity of recorded Oneota sites at Coralville Lake is problematical; various Oneota manifestations are known to exist in river valleys to the north, south, east and west of the Iowa River (Henning 1982:45-60). It may well be that the sharp relief and narrow valley which characterize the river channel from Coralville Dam upstream to Highway 380 made this area unsuitable for long-term settlement by floodplain agriculturalists. (This does not preclude the possibility that the area was utilized intermittently during that time for resource procurement, a circumstance which could account for the presence of diagnostic Oneota lithics at some sites.) However, the broader portion of the river valley west of Highway 380 seems to be an ideal location for occupation by Oneota peoples. This portion of the project area has been sorely neglected in the past in terms of survey efforts, which suggests that the lack of known Oneota sites may be in large part an artifact of research bias.

Figure 7 shows that sites dating to the Late Woodland period predominate among affiliated sites in the project area. This pattern, however, may also be at least partially reflective of biases in research strategies and typological assumptions (see p. 3, Appendix I). Another point of interest is the apparent frequency of multi-component Archaic-Late Woodland sites. If these classifications are correct, further research at such sites could yield useful information on similarities in settlement/subsistence strategies during these two periods.

Figure 8 classifies the recorded sites at Coralville Lake according to function. Once again, most of this information was taken from state site forms, and in a few cases from other references. The most commonly used designation is "habitation": this term was apparently applied in a very general way (as a synonym for "occupation"), since many of these so-called "habitations" are sites from which nothing more than lithic debitage has ever been recovered. Thus, this term should not be assumed to refer to sites that are known to contain features. Certain other inconsistencies in terminology have been noted: some localities from which single artifacts were recovered are termed "find spots", and in other cases they are designated "habitations".

Including those designated as habitations, a total of 157 of the recorded sites at Coralville Lake have an established function; only 41 have not been defined in terms of site type. Of the sites that have had at least some subsurface testing (including those tested during the present project), 10 are designated "habitation", 3 "habitation/camp", 3 "rock shelter", and 1 each "village & mounds", "single house", "village/camp", "camp", "chipping station", "lithic scatter" and "find spot".

It is clear that more research must be done before any generalizations about prehistoric utilization of the project area could be made. At present, there are only suggestions of the types of activities that took place at the recorded sites. More site testing and/or excavation augmented by in-depth analysis of

Figure 8. Recorded Sites by Function

FUNCTION	RECORDED SITES
Habitation	13JH26, 13JH27, 13JH30, 13JH31, 13JH33, 13JH36, 13JH37, 13JH43, 13JH44, 13JH47, 13JH49, 13JH50, 13JH53, 13JH55, 13JH107-111, 13JH115, 13JH116, 13JH122, 13JH123, 13JH127, 13JH137, 13JH138, 13JH143, 13JH150, 13JH151, 13JH187, 13JH227, 13JH257, 13JH259-262, 13JH264, 13JH268, 13JH270, 13JH272-275, 13JH277-13JH279, 13JH298, 13JH300-304, 13JH307, 13JH308, 13JH310, 13JH313?-315, 13JH317-324, 13JH327-330?, 13JH333, 13JH338-340, 13JH354, 13JH355, 13JH359-363, 13JH365, 13JH367-370, 13JH372, 13JH373, 13JH377-381, 13JH384-13JH386, 13JH389-391, 13JH393-395, 13JH397-399, 13JH422, 13JH425, 13JH428, 13JH434, 13JH436
Camp	13JH45, 13JH46, 13JH124-126, 13JH141, 13JH191?, 13JH207, 13JH252, 13JH325?, 13JH326?
Habitation/Camp	13JH51, 13JH52, 13JH106, 13JH117, 13JH128, 13JH281, 13JH371
Village/Camp	13JH205, 13JH208
Village & Mounds	13JH2
Lithic Scatter	13JH253, 13JH409
Mound(s)	13JH3, 13JH6, 13JH8, 13JH331?
Village/Camp	13JH205, 13JHH208
Single House	13JH42
Hunting Area	13JH142
Quarry	13JH282?, 13JH309?
Chipping Station	13JH206
Historic Farmstead	13JH364
Rock Shelter	13JH202, 13JH203?, 13JH204?
Find Spot	13JH213, 13JH316, 13JH334, 13JH366, 13JH374-376, 13JH396, 13JH435
No designation	13JH29, 13JH140, 13JH144-146, 13JH152-159, 13JH171-173, 13JH180, 13JH192, 13JH193, 13JH195-198, 13JH200, 13JH211, 13JH212, 13JH226, 13JH228, 13JH231, 13JH232, 13JH234, 13JH238, 13JH240, 13JH243, 13JH244, 13JH247, 13JH248, 13JH263, 13JH305, 13JH306, 13JH392

tool assemblages, organic remains, etc. will help to clarify this aspect of the cultural resources of the area.

Figure 9 categorizes sites according to their geomorphic position. The landform categories were taken from the landform map generated during this project (Figure 4 in this report). The geomorphic position of each site was determined by comparing the site area, as plotted on the site location maps maintained by OSA, to the landform map. (Most of the plotted site areas have not been checked against the legal descriptions on the site forms.) Note that sites classified under "Floodplains" may actually lie on alluvial fans or footslopes, since these areas were not separately defined on the landform map.

The distribution of recorded sites among the landforms of the project area does not clearly show any particular patterning. Virtually every identified landform is known to contain at least one site. The frequency of sites on certain landforms such as forested terraces and forested interfluves in the Southern Iowa Drift Plain may simply relate to the greater proportions of the project area which fall into these landform categories. It also probably reflects the erosional forces which affect terraces and the cultivation of many upland areas, processes which result in the creation of surface artifact concentrations.

Figure 10 shows the relationship between cultural affiliation and geomorphic position, as these two characteristics are presently defined for the recorded sites in the Coralville Lake Project Area. No attempt was made to statistically analyze these data, because gaps and biases in the data base would make such efforts highly suspect. As the information stands, no clear pattern of temporal-geomorphic correspondance is discernable. This is not to say that such a relationship does not exist; the present state of knowledge about sites in the project area simply is not complete enough to allow for generation of a model of settlement patterning at the present time.

The tables presented here are, of necessity, generalizations. They were compiled from site definitions that were often based on the most tenuous of data. Many of these definitions are sure to be changed in the future, as additional data are compiled and existing information is re-analyzed. Before the information presented here could be used for any more intensive analysis of prehistoric patterns of behavior, it would require considerable clarification and supplementation through further research.

Figure 9. Recorded Sites by Geomorphic Position

GEOMORPHIC POSITION	RECORDED SITES
Iowan Surface:	
forest soils -	
interfluves	13JH45, 13JH111, 13JH259, 13JH275
hillsides	13JH198, 13JH380, 13JH436
Southern Iowa Drift Plain:	
forest soils -	
ridgetops	13JH6, 13JH8, 13JH180, 13JH193, 13JH314, 13JH325, 13JH326, 13JH359, 13JH425
interfluves	13JH3, 13JH49, 13JH144, 13JH145, 13JH154, 13JH203, 13JH204, 13JH205, 13JH207, 13JH240, 13JH243, 13JH252, 13JH253, 13JH256, 13JH257, 13JH270, 13JH272, 13JH308, 13JH315, 13JH316, 13JH317, 13JH318, 13JH320, 13JH321, 13JH322, 13JH329, 13JH331, 13JH366, 13JH367, 13JH393, 13JH394, 13JH428
hillsides	13JH42, 13JH47, 13JH107, 13JH110, 13JH123, 13JH137, 13JH140, 13JH150, 13JH155, 13JH173, 13JH192, 13JH195, 13JH196, 13JH197, 13JH200, 13JH206, 13JH208, 13JH212, 13JH226, 13JH231, 13JH234, 13JH273, 13JH279, 13JH282, 13JH298, 13JH309, 13JH310, 13JH323, 13JH324, 13JH333, 13JH338, 13JH340, 13JH360, 13JH361, 13JH362, 13JH369, 13JH370, 13JH374, 13JH375, 13JH378, 13JH386, 13JH389, 13JH409
Floodplains:	
Iowa River	13JH2, 13JH27, 13JH29, 13JH30, 13JH36, 13JH37, 13JH53, 13JH122, 13JH127, 13JH146, 13JH153, 13JH156, 13JH232, 13JH238, 13JH264, 13JH268, 13JH281, 13JH300, 13JH301, 13JH302, 13JH303, 13JH330, 13JH384, 13JH390
tributaries	13JH50, 13JH172, 13JH202, 13JH305, 13JH307, 13JH327, 13JH363
Terraces:	
prairie soils	13JH26
savannah soils	13JH108, 13JH109, 13JH187, 13JH228, 13JH274, 13JH276, 13JH306, 13JH354, 13JH355, 13JH391, 13JH398, 13JH399, 13JH434, 13JH435

Figure 9, continued

GEOMORPHIC POSITION	RECORDED SITES
Terraces:	
forest soils	13JH31, 13JH33, 13JH43, 13JH44, 13JH46, 13JH51, 13JH52, 13JH55, 13JH106, 13JH115-117, 13JH124-126, 13JH128, 13JH138, 13JH141-143, 13JH151, 13JH152, 13JH157-159, 13JH171, 13JH191, 13JH211, 13JH227, 13JH244, 13JH247, 13JH248, 13JH260, 13JH261, 13JH262, 13JH263, 13JH277, 13JH278, 13JH304, 13JH312, 13JH313, 13JH319, 13JH328, 13JH339, 13JH364, 13JH365, 13JH368, 13JH371-373, 13JH376, 13JH377, 13JH379, 13JH381, 13JH385, 13JH392, 13JH395-397, 13JH422
Altered Lands:	
cut & fill	13JH334

CULTURAL AFFILIATION	LANDFORM CATEGORY A	B	C	D	E	F	G	H	I	J	K	L	M	N	TOTAL
Archaic:									1					1	2
Early Woodland:	1														1
Middle Woodland:										1					1
Late Woodland:	1				5		1			1	5				13
Woodland(gen'l):	1	1			2				1	2	2				9
Historic:					2										2
Paleo/Archaic/Early/Middle:	1														1
Archaic/Early:		1			2										3
Archaic/Early/Middle:					1										1
Archaic/Early/Middle/Late:	1	1			1					1					4
Archaic/Early/Late:	1														1
Archaic/Middle:					1										1
Archaic/Middle/Late:											1				1
Archaic/Early/Middle/Late/Oneota:	1														1
Archaic/Late:	3				4						1				8
Archaic/Woodland:					1						1				2
Early/Middle:					1										1
Early/Middle/Late:					1						1				2
Early/Oneota:			1												1
Early/Late:					1										1
Middle/Late:					2										2
Middle/Late/Historic:				1											1
Middle/Proto-Historic:				1											1
Late/Historic:					3										3
Woodland/Oneota:										1					1
Prehistoric/Historic:					1										1
No designation:	14	4		12	32	3	2	1	7	24	31	2	1		133
Total:	24	7	1	14	60	3	3	1	9	30	42	2	1	1	198

Figure 10. Recorded Sites by Cultural Affiliation and Geomorphic Position

A = floodplain, Iowa River
B = floodplain, tributary stream
C = terrace, prairie soils
D = terrace, savannah soils
E = terrace, forest soils

Iowan Surface:
F = interfluves, forest soils
G = hillsides, forest soils
H = no loess mantle

Southern Iowa Drift Plain:
I = ridgetops, forest soils
J = interfluves, forest soils
K = hillsides, forest soils
L = rock shelters
M = valley slopes, forest soils
N = altered lands

Testing at Sugar Bottom Recreation Area

The Scope of Work for this portion of the project can be found in Appendix IV, Volume II. This modification to the original contract came about after Corps personnel visited the location of the subject sites, and observed large quantities of cultural materials apparently being eroded out of the terrace edges by wave action. During this and previous visits, a number of diagnostic artifacts suggestive of Archaic and Early Woodland occupations had been observed or collected by Corps personnel. After this project went into effect, it was decided that sufficient evidence existed to justify further examination of the sites.

The testing program formulated by the Corps of Engineers in consultation with the Contractor called for a two-stage approach. First, intensive testing of the site areas would be done, in order to determine their horizontal and vertical extent and the integrity of any remaining cultural components. If justified, several block excavations would then be done. The results of these procedures would be used to determine the eligibility of the sites for nomination to the National Register of Historic Places.

Note that the Scope of Work specifies two sites to be tested: 13JH55 and 13JH117. However, a check of site files at the Office of the State Archaeologist showed that a third site (13JH422) is recorded on a portion of the terrace remnant that was to be tested. Because exact site boundaries were problematical, and because surface materials had been collected by Corps personnel from the area designated 13JH422, the testing program included examination of this site area also.

The subject sites are located in the Sugar Bottom Recreation Area at Coralville Lake. They lay upon the remnants of a low, loess-mantled terrace, at the point where a small tributary stream flows into the lake. Presently, the terrace consists of a series of finger-like ridges which extend out into the flooded mouth of this stream (see Plate 7). These "fingers" are subject to continual erosion, which has drastically reduced their size in recent years (see the discussion of erosion in Section III).

The subject sites were recorded at three different times: 13JH55 was recorded in 1977 by Zalesky, 13JH117 was recorded in 1976 by Weichman, and 13JH422 was recorded in 1982 by Duane L. Miller, a private collector. In each case, the site area was defined on the basis of surface artifact distributions along the eroded edges of the finger ridges. However, this area is frequently inundated (almost every year), and flooding can make such distributions extremely variable. On the occasion of at least one visit by Corps personnel, surface material appeared as a virtually continuous scatter, and no particular distinctions among the recorded site areas could be observed. Also, since no subsurface testing was done when the sites were first located, it

was not clear if the three recorded sites were separate, overlapping, or actually represented just one large occupation area.

Artifacts found on surface at these sites prior to the present project included expanding-stemmed, contracting-stemmed and side-notched projectile points from 13JH55, an undescribed point from 13JH117, grit-tempered body sherds from 13JH117, and various non-diagnostic lithic materials from all three sites. Zalesky also noted that other private collectors had reported finding small notched triangular points at 13JH117. Corps personnel had collected body sherds, side-notched and corner-notched points from 13JH117.

During the summer of 1983, the water level at Coralville Lake was extremely high, and the entire area to be tested - indeed, most of the lower portion of Sugar Bottom Recreation Area - was under water until late in August. A preliminary visit to the area was made by the Contractor, the project geomorphologist, and Corps personnel on August 31, 1983, shortly after floodwaters receded. At that time, some cultural materials were collected from surface. However, the quantity of material was found to be much less than the quantity that had been observed by Corps personnel earlier in the year, before the area had been flooded. Virtually every artifact recovered in August was found along an eroded terrace edge - the level terrace tread yielded fewer than 10 artifacts.

During this visit, the project geomorphologist made preliminary observations on the soils and current condition of the terrace remnant. He noted that an estimated 20 to 30 cm of the original soil strata were eroded away along the fringes of the finger ridges. Erosion had also affected the level terrace tread: in many places, the A horizon was completely missing (see the detailed soils descriptions in Appendix III.) That eroded surface had then been covered by a thin layer of recent sediment, some of which had probably just been deposited by receding floodwaters.

Discussions with personnel at the Coralville Lake Office revealed that there were forces other than erosion that had affected the site areas. Before the land was acquired by the Corps of Engineers, it had been under cultivation for an unspecified number of years. Presently, the Corps tills and seeds the area in grasses roughly every two years, in an effort to retard erosion. A system of gravel roads, now abandoned, criss-crosses the site areas. Although not in active use at the present time, the graded road beds are still very much in evidence. Also, gravel from these roads covers a good portion of the terrace tread. Some recreational facilities have been constructed on the terrace; specifically, the sand beach and change houses of the Sugar Bottom swimming area, which may cover a part of the original area of 13JH55.

When site testing was conducted in late September and early

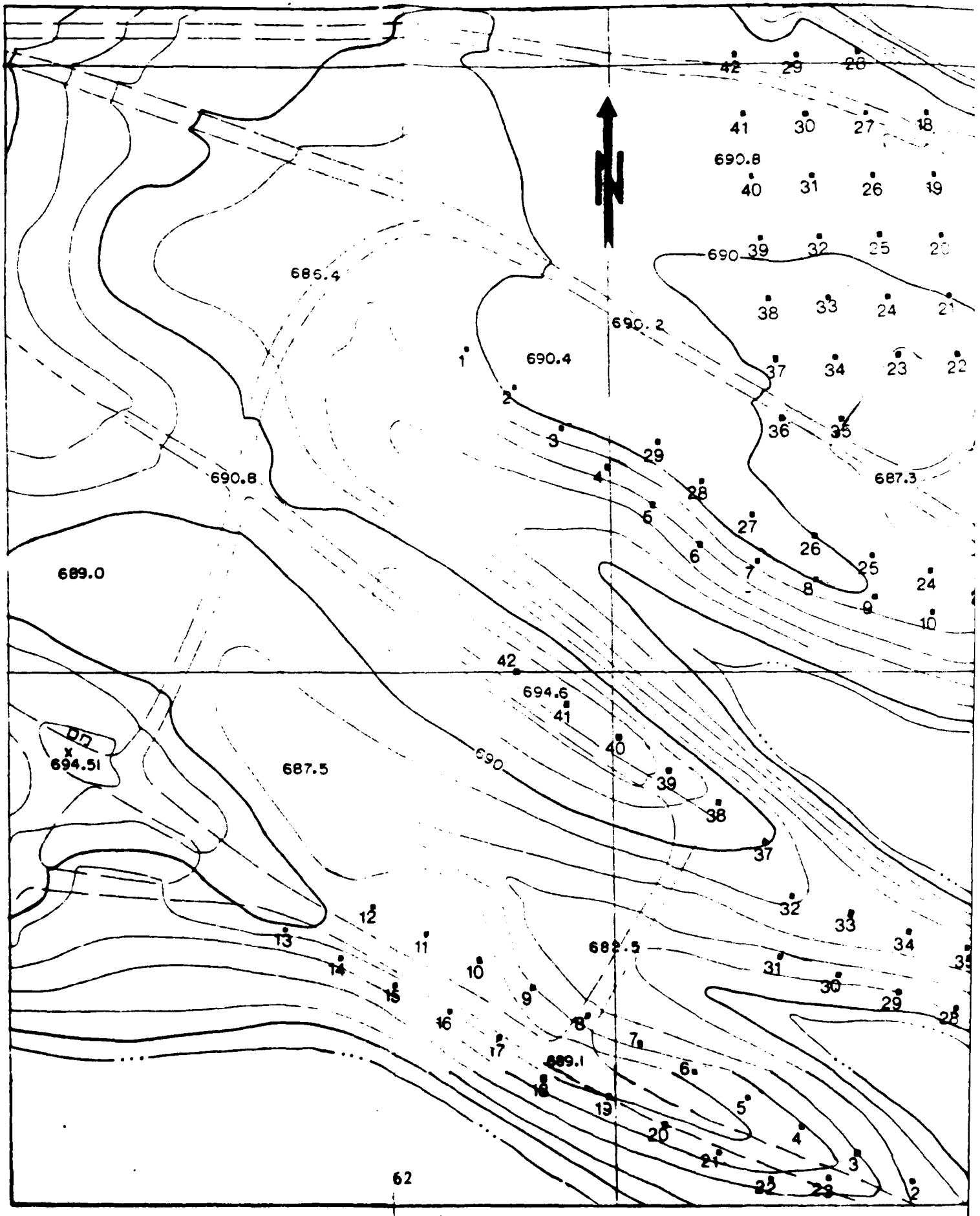
October, the lake was at its normal fall elevation of 683'. The first step in the testing process was to conduct surface reconnaissance over the entire terrace remnant. Because of the flooding earlier in the year, vegetation was fairly sparse in most places, consisting of scattered patches of grass. Ground surface visibility was thus variable, ranging from approximately 50% to 100% (see Plate 8). Surface survey was done at an interval of no more than 5 meters, and the locations of all surface artifacts were marked with pinflags.

Relatively little cultural material was found during surface reconnaissance, most of which was collected along the eroded sideslopes just above the waterline. This was the only noticable patterning of surface artifacts, and was assumed to relate primarily to inundation and wave action. The sporadic distribution of surface material did not appear to correspond to any degree with the three separate site areas as defined on state site forms. Because of the uncertainty about site boundaries, an arbitrary division of the terrace remnant into three site areas was made for the purpose of cataloguing. The two westernmost finger ridges were designated 13JH55, the next finger to the east was 13JH117, and the fourth finger was considered 13JH422. This division corresponds reasonably well to the official site definitions, although it does include some small areas which were not covered by any of the recorded legal descriptions of the sites.

After surface reconnaissance was completed, a 15-meter shovel test grid was laid out over the entire area. A total of 115 shovel tests were dug. (Figure 11 shows the placement of those shovel tests.) Each test was done according to the procedures outlined on pp. 12-13. Because of the severe erosion that has taken place along the terrace edges, no tests were done in these areas (see Plate 9).

Because the soils on the terrace remnant were developed in a mantle of Late Wisconsinan loess, it was not necessary to do any deep testing to check for buried cultural deposits. Each shovel test was dug until the B horizon was encountered. In some cases, this occurred within 10 centimeters of the surface. It was noted that gravel from road beds was found down to 10 cm in some shovel tests - a result of the recent tilling done by the Corps of Engineers. Also, a good portion of the westernmost finger ridge was covered with sand and silt deposited during flooding episodes. In Shovel Test 13JH55-14, alternating layers of sand and sandy yellow silt were found to extend to a depth of 50 cm below the present terrace surface.

The artifactual materials recovered during testing are listed below. (This list includes 95 artifacts collected by Corps personnel and turned over to the Contractor for curation.) No indication of an intact feature was found in any shovel test. (Note: In the following lists of recovered artifacts, "ceramic crumb" refers to a ceramic sherd, usually smaller than a dime, on which traits such as surface treatment are not identifiable.)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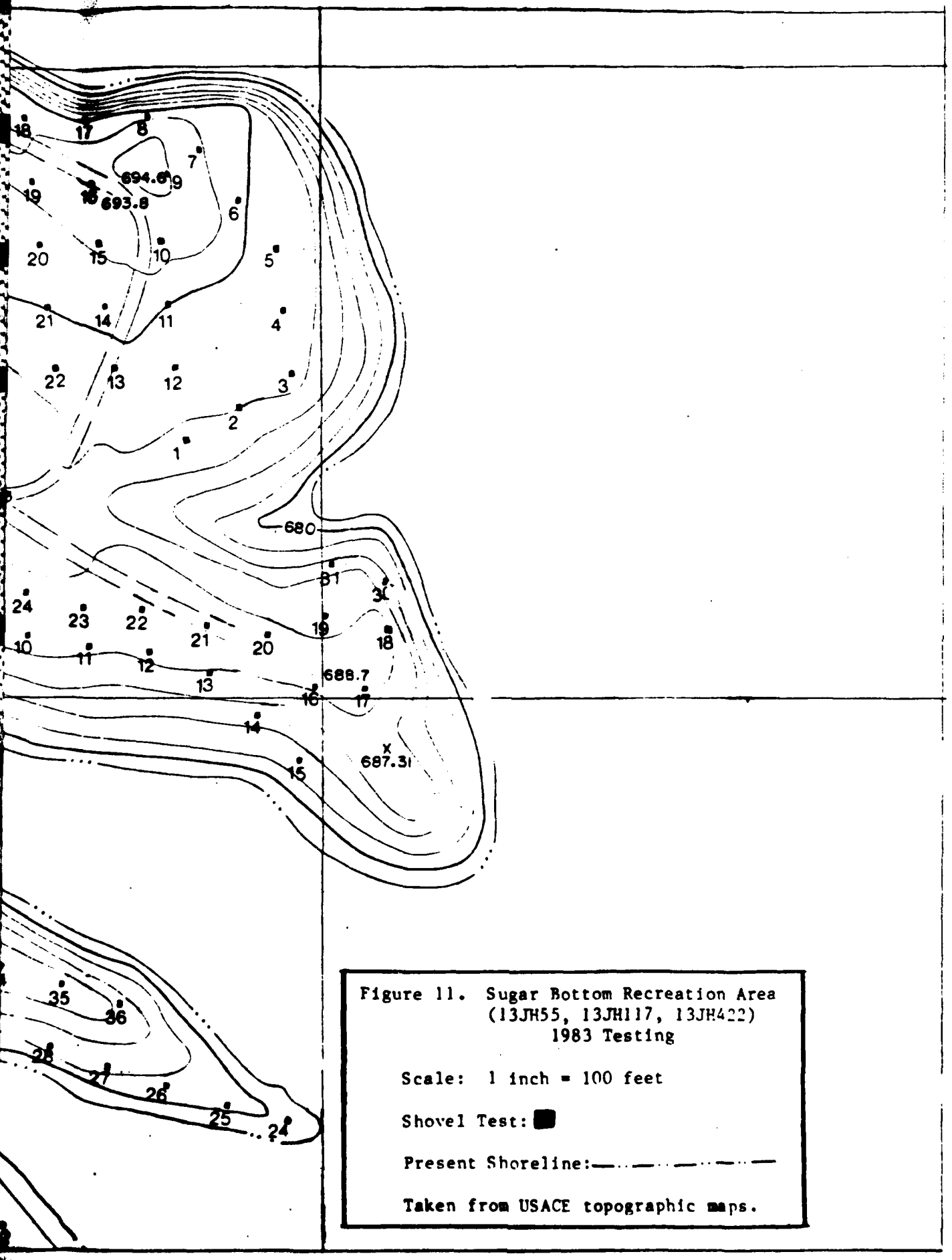

Figure 11. Sugar Bottom Recreation Area
(13JH55, 13JH117, 13JH422)
1983 Testing

Scale: 1 inch = 100 feet

Shovel Test: ■

Present Shoreline: —·—·—·—·—

Taken from USACE topographic maps.

Material Recovered - 13JH55

Surface:	1	tool tip
	2	projectile point bases, side-notched
	4	scrapers (1 endscraper, 1 sidescraper)
	1	possible abrader
	15	core fragments
	68	primary flakes (2 utilized)
	142	secondary flakes (15 utilized)
	2	retouch flakes
	4	body sherds, grit-tempered (cord-roughened)
	3	ceramic crumbs (cord-roughened)
ST 4, 0-10 cm:	1	secondary flake
ST 5, 10-20 cm:	1	ceramic crumb
ST 7, 0-10 cm:	1	secondary flake
ST 8, 10-20 cm:	1	ceramic crumb
ST 9, 0-10 cm:	1	secondary flake
ST 19, 0-10 cm:	1	secondary flake
	1	ceramic crumb
ST 22, 0-10 cm:	1	retouch flake
ST 28, 0-10 cm:	1	primary flake
ST 29, 0-10 cm:	1	secondary flake
ST 41, 10-20 cm:	1	retouch flake

Material Recovered - 13JH117

Surface:	3	projectile points (1 side-notched, 1 corner-notched, 1 missing base)
	5	scrapers
	4	tool fragments
	11	core fragments (1 retouched)
	91	primary flakes (1 retouched, 2 utilized)
	171	secondary flakes (5 utilized)
	1	retouch flake
	5	body sherds, grit-tempered (cord-roughened & eroded)
	1	ceramic crumb
ST 8, 0-10 cm:	1	primary flake
	2	secondary flakes
ST 16, 0-10 cm:	3	secondary flakes
ST 17, 10-20 cm:	1	secondary flake
ST 18, 0-10 cm:	1	secondary flake
ST 19, 0-10 cm:	1	primary flake
10-20 cm:	1	core fragment
20-30 cm:	1	primary flake
ST 20, 0-10 cm:	1	core fragment
	1	primary flake
ST 21, 0-10 cm:	1	secondary flake
10-20 cm:	1	secondary flake
ST 31, 0-10 cm:	1	secondary flake

Material Recovered - 13JH422

Surface:		1 core fragment
		2 primary flakes
		8 secondary flakes
		1 retouch flake
ST 3,	0-10 cm:	1 secondary flake
ST 12,	10-20 cm:	1 primary flake
ST 26,	20-30 cm:	1 secondary flake
ST 27,	0-10 cm:	1 secondary flake
	10-20 cm:	5 secondary flakes
	20-30 cm:	1 secondary flake
ST 28,	0-10 cm:	1 secondary flake
	10-20 cm:	1 primary flake

A few diagnostic artifacts were recovered: side-notched and corner-notched projectile points, and grit-tempered body sherds. Some of the sherds displayed cord-roughening, and some were too badly eroded to determine surface treatment. These artifacts are all similar to materials that had previously been collected from the sites by other individuals. The projectile point forms suggest a temporal classification of Early to Middle Woodland, but the body sherds are not distinctive enough to indicate any affiliation beyond a generalized Woodland classification. However, one hesitates to assign cultural affiliations to the individual sites on the basis of materials found on surface, because flooding and wave action can move artifacts from one site area to another.

Note that much of the material found in shovel tests came from the first 10 cm below surface. For the most part, these artifacts were actually contained in the layer of recent sediment that covers much of the terrace remnant. Thus, they could not be considered indicative of the presence of an intact, subsurface cultural component. The remaining subsurface materials may actually have been part of the level below what once was the occupation surface, which has since been eroded away.

Only one small part of the entire terrace remnant showed evidence of retaining any subsurface integrity: the locations of Shovel Tests 13JH422-26, 13JH422-27, and 13JH422-28. These tests were all located on a small knoll on the eastern edge of the terrace - the approximate area designated 13JH422, according to the existing site form. Apparently the slightly higher elevation and sheltered position of this knoll have afforded some protection from the erosive forces which have damaged the rest of the area, since at least a portion of the A and E horizons appeared to be still intact. However, the soil stratigraphy here did show some indications of cultivation, so it is possible that even this small site remnant has been disturbed to some extent. Also, the density and nature of the subsurface artifacts from this area do not suggest any real research potential.

When this portion of the testing program was completed, preliminary results were presented to Corps personnel, and the feasibility of additional testing was discussed. The Corps was

informed, first, that the entire terrace remnant had been badly disrupted by various natural and cultural forces, and, second, that the cultural materials found on surface were, in all probability, lag deposits created by inundation and erosion. The results of subsurface testing showed that there are no intact cultural deposits of any substance in the entire area.

Based on this information, it was decided that further testing of the three site areas was not likely to be a productive endeavor. Therefore, the remainder of the time alloted for the testing program was re-allocated to field-checking other recorded sites in the project area (see the following pages), and no further work was done at 13JH55, 13JH117, or 13JH422.

It is possible that surface materials will continue to appear at these sites after every flooding episode, and highly probable that artifacts will be found along the shoreline during periods of extremely low water. These are secondary deposits, however, and are of little value to detailed research.

The formal conclusions of this testing program can be stated as follows:

1) 13JH55, 13JH117, and 13JH422 have been severely disturbed by cultivation, erosion and inundation;

2) with the exception of a small portion of 13JH422, all three site areas are essentially destroyed;

3) recovered artifacts suggest that at least one of the recorded sites was of Early to Middle Woodland cultural affiliation. At this time, it is not possible to more completely define the exact nature (size, function), of the sites as they originally existed;

4) the sites hold no potential for further research;

5) the sites do not appear to meet the eligibility criteria for nomination to the National Register of Historic Places.

Field-Checking of Recorded Sites

In the following pages, the 19 sites which were field-checked during this project are described. The general setting, nature and present condition of each site are discussed, and summary lists of recovered artifacts are presented. (These lists include only the artifacts recovered during the present project. See Appendix I for descriptions of materials recovered by other investigators.) The potential each site holds for additional research is also evaluated, primarily in terms of the probability of locating intact subsurface cultural deposits.

The process through which these sites were selected for examination was rather subjective; the main purpose was to look at a cross-section of the whole set of recorded sites at Coralville Lake. That is, an attempt was made to choose sites which, based on available information, represented a variety of temporal and functional classifications, and also were located on a variety of landforms. Another important factor was ease of access, since the objective was to look at as many sites as possible in the allocated time.

These 19 sites, along with the 3 sites tested at Sugar Bottom Recreation Area, represent an 11% sample of the total set of recorded sites at Coralville Lake. One of the sites visited (13JH245) is actually located on private land, just outside the project area. Because Corps property lines are not clearly marked in some areas, this fact was not discovered until after the site had been visited.

Site maps are provided only for those sites which were shovel tested, in order to show the locations of those tests. These maps were based on aerial photographs of Coralville Lake taken in December of 1982 and provided by the Corps of Engineers.

Note that diagnostic artifacts were found at 11 of the 19 sites discussed below. However, in only one case did those artifacts come from subsurface context. Thus, the assignment of cultural affiliations on the basis of the diagnostic materials mentioned here must be considered tentative. (Selected artifacts from these sites are shown in Plates 10, 11 and 12.)

13JH26

	Material Recovered
Surface:	2 core fragments
	10 primary flakes
	133 secondary flakes (1 retouched, 1 utilized)
	26 retouch flakes
	1 body sherd, grit-tempered (eroded)

This site, known as the Swan Lake site, is located on the

northern tip of a narrow , sandy peninsula in the Hawkeye State Wildlife Area on the southern shore of Coralville Lake. The site was originally designated as 13JH48 by Anderson (1971a:7). Anderson received information from local collectors who had recovered a variety of ceramic types at the site, including Black Sand Incised, Sister Creeks Punctate and Madison Cord-Impressed wares. Additionally, the site form completed by Anderson indicates that Spring Hollow Incised pottery was recovered. Zalesky (1977:36), who recorded the site as 13JH26, collected one sand/grit tempered Woodland sherd and one post-Woodland (possibly Oneota) shell tempered rim sherd from the site. Lithic material recovered by Zalesky included a graver, scrapers, bifaces, retouched flakes and debitage. Zieglowsky and Zalesky (1981:244) visited the site in 1980 and observed (but did not collect) 450 flakes, fire-cracked rock, cores, and one hammerstone.

Current field checking located an extensive flake scatter on the northern extent of the peninsula. The flakes were exposed along the eroded shoreline and in blowout areas on top of the sandy peninsular ridge. The flakes were conspicuously small in size and made from a variety of cherts. Only a sample of this debitage was collected. One body sherd was also recovered; however, all surface treatment was eroded off. No tools were observed, suggesting that the area has been subjected to heavy collecting pressure since the time of Zalesky's visit.

It is apparent that much of the peninsula is inundated at periods of high lake level. When water levels are low, the shoreline is subjected to erosion from wave and wind action. Subsequent mixing of the sandy soils on the peninsula is apparently extensive, and the opportunity for locating intact soils is limited. As a result, no shovel tests were conducted at the site, which is considered to have low research potential due to disturbance by natural forces and diminished surface artifact content arising from local collecting activities.

The disparity concerning the change in site numbers from 13JH48 to 13JH26 is somewhat confusing. OSA files state that the present 13JH26 was "formerly 13JH48". However, the legal location recorded for 13JH48 by Anderson is different than that of 13JH26 as designated by Zalesky. The quarter-section descriptions are similar, but not identical, and two different Sections in the same Range and Township are specified in the two descriptions. (See the discussion of this problem in Appendix VIII.) For the purposes of this project, the assumption has been made that the section number was incorrectly entered on Anderson's site form for 13JH48, and that the two forms are indeed referring to just one site. It is recommended, however, that Anderson's site location be examined for evidence of the existence of a separate site.

13JH33

	Material Recovered
Surface:	1 projectile point tip
	1 core fragment
	1 primary flake
	9 secondary flakes
	35 body sherds, grit-tempered (cord-roughened & eroded)
	1 rim sherd, cord-impressed
	4 ceramic crumbs
ST 2, 0-10 cm:	1 secondary flake

This site is located on a broad, low terrace on a large bend of Coralville Lake about one-fourth mile upstream from Mehaffey Bridge. Collections from the site have been reported by Zalesky (1977:50) and Miller (1979:site form). Zalesky recovered eight projectile points, lithic tools, and three sherds. Based on the diagnostic points, Zalesky affiliates the site with the Middle Woodland and Late Woodland periods. Ceramics also had Woodland characteristics. Miller reports finding lithic tools, including two projectile point fragments, a large quantity of debitage and a dense scatter of ceramics. No attempt was made by Miller to define a cultural affiliation for the site. Zieglowsky and Zalesky (1981:244) observed about 300 flakes and 10 sherds as well as fire-cracked rock, and suggested that the site had high research potential.

Current field checking of this site began in August of 1983, during an on-site meeting between Corps personnel and members of the research team. At that time, moderate quantities of cultural material were observed in a discontinuous scatter along the terrace edge. When the site was revisited later in the year, more intensive surface examination revealed the presence of large quantities of debitage as well as scattered body sherds (most of which are badly eroded). Heavy vegetation restricted surface examination away from the exposed beachline. Three shovel tests were done to see if the site area extends from the lakeshore back onto the terrace (see Figure 12). The shovel tests were placed linearly, running east/west parallel to the northern shoreline. The shovel tests were situated in the central portion of the site at 30 m intervals at a distance from the shoreline of 15 m to 20 m. Heavy clay was encountered at 23 cm for the easternmost shovel test and 45 cm for the westernmost. These tests show that soil strata are relatively intact on the terrace, and are covered with 5 - 10 cm of recent sediment. (This conclusion was supported by examination of the area by the project geomorphologist.)

The few artifacts found in shovel tests suggest that this site may retain an intact subsurface component. Severe erosion is occurring along the entire shoreline of the site and it is apparent that most of the defined site area is periodically inundated. The site boundary as plotted on the OSA site map for the Coralville Lake area indicates that the site is very large.

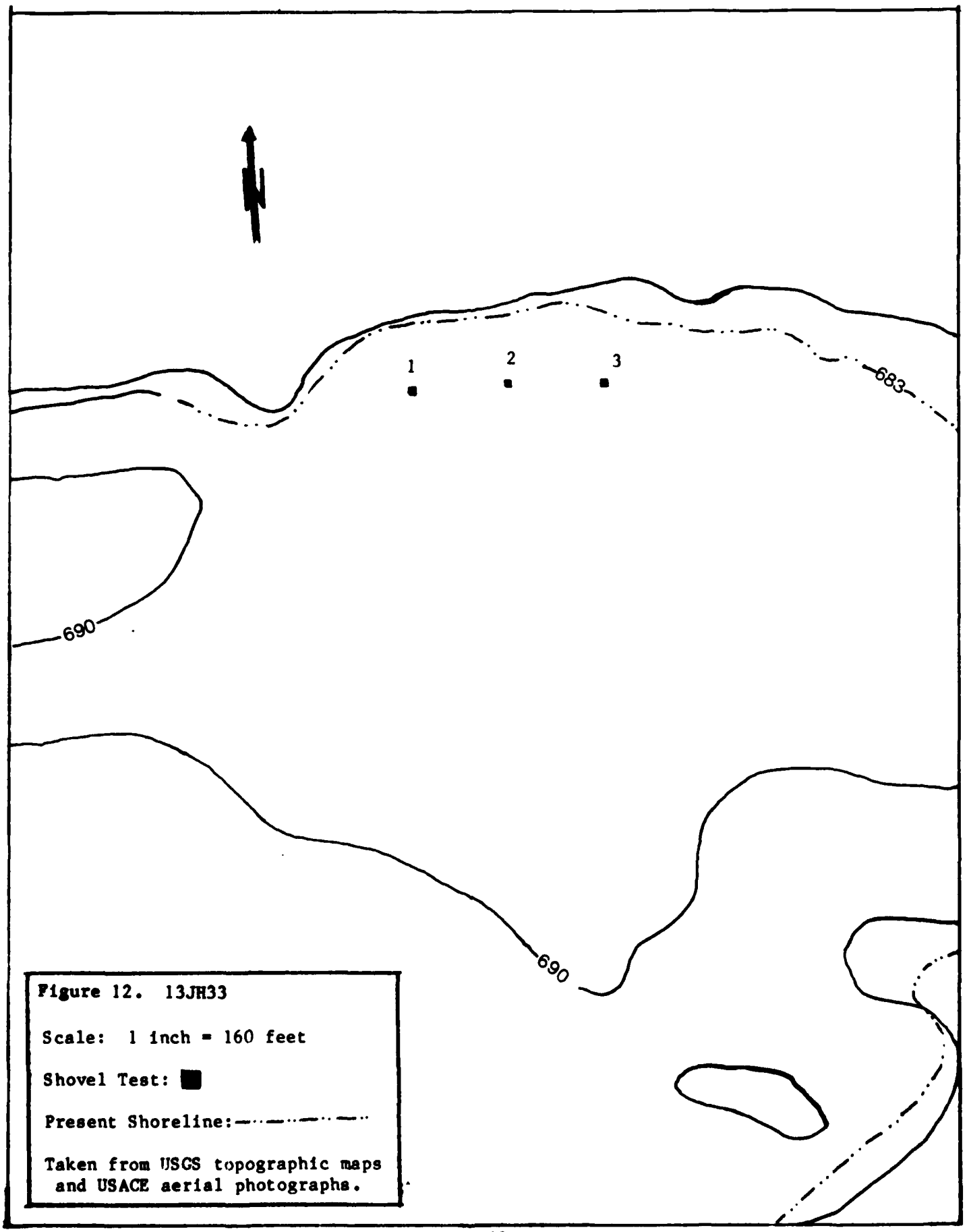

Figure 12. 13JH33

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline: ——·——·——

Taken from USGS topographic maps and USACE aerial photographs.

Current investigation could only test a small portion of this area (with limited results) and it would be premature to estimate its research potential at this time. A range of diagnostic materials, including triangular, side-notched and corner-notched projectile points, and single-cord-impressed rim sherds have been found at this site. Since it does not appear to be as badly disturbed as most of the sites at Coralville Lake, it appears to deserve further evaluation.

13JH43

	Material Recovered
Surface:	2 core fragments
	13 primary flakes
	61 secondary flakes (5 utilized, 1 retouched)
	2 retouch flakes
	15 body sherds, grit-tempered (cord-roughened & eroded)
	1 ceramic crumb

The site, known as the Sandy Beach site, lies east of the Sandy Beach Public Use Area near the mouth of West Hoosier Creek. Previous investigators at the site include McKusick (1967:site form), Anderson (1971a:5-6), Weichman (1975:36-38), and Zalesky (1977:43-44). Ceramic materials collected from the site represent Early, Middle, and Late Woodland cultural affiliations. Lithic material recovered from the site is also varied. Tools include a Middle Woodland corner-notched projectile point fragment, bifaces, scrapers, retouched flakes and a hammerstone. Cores and numerous flakes have been collected. Weichman reported finding three human toe bones (distal phalanges) on the site surface. In addition, Zieglowsky and Zalesky (1981:244) observed 77 flakes, one retouched flake, five sherds, and fire-cracked rock.

Current field checking involved only surface examination which revealed the presence of an extensive lithic scatter and several eroded grit-tempered body sherds. The southern portion of the site is being rapidly eroded by wave action while the sandy aeolian soils in the higher portion are being affected by wind action. Because of the site's location, it attracts recreational activity, which subjects it to unauthorized vehicular traffic and collecting pressure.

Although this site has been visited by a number of researchers in past years, there is considerable disagreement about its condition and research potential. According to Anderson, a portion of the sand dune that comprises the site area was removed in the 1960's for construction purposes. Examination in 1983 by the project geomorphologist indicated that a small part of the north side of the dune (away from the lake) does still remain intact and stable. Anderson is the only investigator who has conducted subsurface testing at the site.

Those tests revealed "typical dune action stratification" with no artifacts or features being recorded. A wide variety of surface artifacts, especially ceramics, have been collected in the area in past years. However, many of the items turned over to OSA by private collectors are of uncertain provenience. Thus, although there is a possibility that 13JH43 is (or was) multi-component, its actual nature is still far from clear.

13JH49

	Material Recovered
Surface:	1 projectile point base, side-notched
	5 primary flakes (1 utilized)
	18 secondary flakes (4 utilized)
	1 rim sherd, grit-tempered (eroded)
	5 neck sherds, grit-tempered (1 with punctates)
	64 body sherds, grit-tempered (cord-roughened)
	4 ceramic crumbs
ST 1, 0-10 cm:	1 primary flake
	5 secondary flakes
10-20 cm :	1 secondary flake
ST 3, 30-40 cm:	2 secondary flakes

This site, known as the Camp Daybreak site, is located on a southeast-facing interfluve situated between two prominent unnamed drainages on the western side of Coralville Lake. The site has been previously visited by Anderson (1971a:7), Zalesky (1977:46-48), Miller (1979, 1980:site form), Zieglowsky and Zalesky (1981:244), and Schermer (1983:87-88). Anderson reports only a single cord-impressed Late Woodland sherd from the site, although he mentions that local collectors had recovered additional Late Woodland ceramics. Anderson mentions that excavations were conducted, but no features were located. No specific details are given concerning the excavations. Zalesky recovered a variety of lithic tools from the site, including fourteen projectile points. Zalesky's analysis of the diagnostic points indicates that Archaic or Early Woodland, Middle Woodland and Late Woodland affiliations are represented. Zalesky also found Woodland ceramics at the site. Miller visited the site twice, each time collecting lithic tools, cord-impressed ceramics and numerous flakes. On one visit, two possible manos were recovered. Zieglowsky and Zalesky observed 100 flakes and three sherds as well as fire-cracked rock. In their opinion, the site has high research potential. Schermer describes Minott's Cord-Impressed and Madison/Minott ceramics from the site.

Current field checking showed a surface artifact scatter of moderate density. Several flakes, the base of a side-notched projectile point, numerous eroded cord-roughened and cord-impressed body sherds, one severely eroded rim sherd and five neck sherds (one with punctates) were recovered during surface survey. Three shovel tests were then placed in the northern

portion of the site which appeared to be less severely eroded than the southern extent (see Figure 13). Shovel Test 1 was located in the northeast portion of the site close to the eastern edge, Shovel Test 2 was placed in the north-central portion of the site, and Shovel Test 3 was placed in the northwest corner of the site. This testing indicated that the northern portion of the site, near the base of the south-facing slope leading to a higher ridge, contains intact soils with undisturbed cultural materials.

Based on the positive testing results and surface artifact scatter, the site appears to retain some research potential. However, the area within which soil strata remain intact appears to be quite small, and probably is only a fraction of the original site area. No testing was done on a slightly higher ridge which overlooks the site from the north. This area remains wooded and is not eroded. The lower area, where the site is currently documented, is undergoing severe erosion (especially along the lake shore) and most if not all of it shows evidence of periodic inundation. Based upon projectile point and ceramic typologies of surface artifacts, the site may be multicomponent, ranging from Archaic or Early Woodland to Middle Woodland to Late Woodland.

13JH52

	Material Recovered
Surface:	3 core fragments
	13 primary flakes (1 utilized)
	139 secondary flakes (3 utilized)
	3 retouch flakes
	12 body sherds, grit-tempered (smooth & eroded; 1 smooth with annular punctates)
	2 ceramic crumbs
ST 1, 10-20 cm:	1 secondary flake
20-30 cm:	1 secondary flake

The site is located on a terrace just east of the mouth of McAllister Creek, on the northern shore of Coralville Lake. Anderson (1971a:8; 1971:site form) reports non-diagnostic lithic material and Early and Late Woodland ceramics from the surface of the site. Miller (1976:site form) has collected projectile points, scrapers, grinding stones, flakes, cores and sherds from the site. A single, very small side-notched projectile point is the only diagnostic artifact illustrated or described. Zalesky (1977:38) collected five projectile points and one end scraper, and observed debitage on surface. The diagnostic projectile points have been classified by Zalesky to represent the Archaic or Early Woodland and the Late Woodland periods. Zieglowsky and Zalesky (1981:244) observed 75 flakes and fire-cracked rock at the site, and consider it to possess high research potential.

Current fieldwork located a dense scatter of flakes and

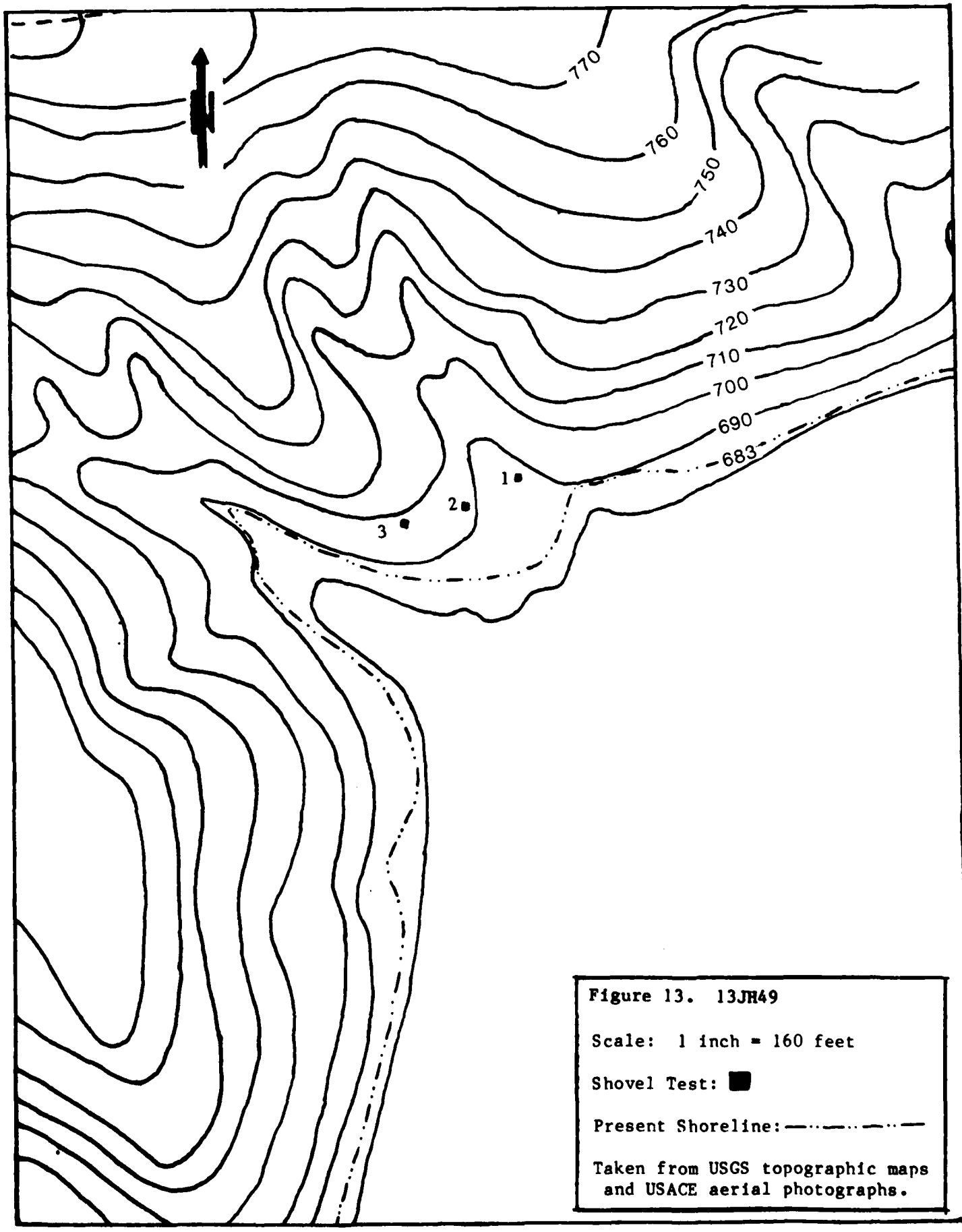

Figure 13. 13JH49

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline: —·—·—·—

Taken from USGS topographic maps and USACE aerial photographs.

several cores eroding from the beachline extending from old Highway 218 east to an unnamed drainage. Several eroded body sherds and one body sherd with annular punctates were also recovered from the surface. The punctated sherd, although rather small, appears quite similar to the Sister Creeks Punctate sherds (an Early Woodland type) illustrated in Anderson (1971a:17). The level terrace tread was heavily vegetated, restricting surface visibility in this area. One shovel test was placed in the west-central portion of the site about 30 m from the shoreline and was taken to a depth of 30 cm (see Figure 14). This test showed a reasonably intact soil stratigraphy, with a thin layer of recent sediment over it.

In summary, the site has yielded diagnostic artifacts affiliated with both the Archaic or Early Woodland and the Late Woodland periods. The surface artifact scatter is still dense in places within the site despite the fact that its location makes it accesible for intensive amateur collecting. Subsurface testing suggested that the site has some intact cultural deposits, although further testing is recommended to more accurately assess its research potential. Erosion is severe along the shoreline in this vicinity, and it is apparent that much of the site is inundated during periods of high water. The intact site area is thus in danger of being degraded in the near future.

13JH109

	Material Recovered
Surface:	3 secondary flakes
ST 1, 0-10 cm:	1 secondary flake
30-35 cm:	1 secondary flake
ST 3, 0-10 cm:	2 secondary flakes (1 utilized)
10-20 cm:	1 secondary flake
ST 4, 20-30 cm:	7 secondary flakes
30-40 cm:	2 secondary flakes
ST 5, 10-20 cm:	1 secondary flake

This site is located immediately south of Johnson County Road E, east of an unnamed tributary to Coralville Lake. It is one of the few recorded sites in the broad floodplain to the west of the Interstate Highway bridge. Weichman (1975:49-50) identified the site during his survey of areas to be affected by county road improvements. He reports finding several lithic tools, a core, and 33 flakes on the surface of the site. The site encompasses both cultivated and wooded areas and was recorded as about 20 m by 50 m in size. Weichman observed "what appeared to be relatively intact fire hearths" in the undisturbed wooded portion of the site to the north, but does not elaborate on this point in his report. Zieglowsky and Zalesky (1981:244) observed 82 flakes, several tools and cores as well as fire-cracked rock at the site, but make no mention of fire hearths.

Current field checking produced no evidence of anything

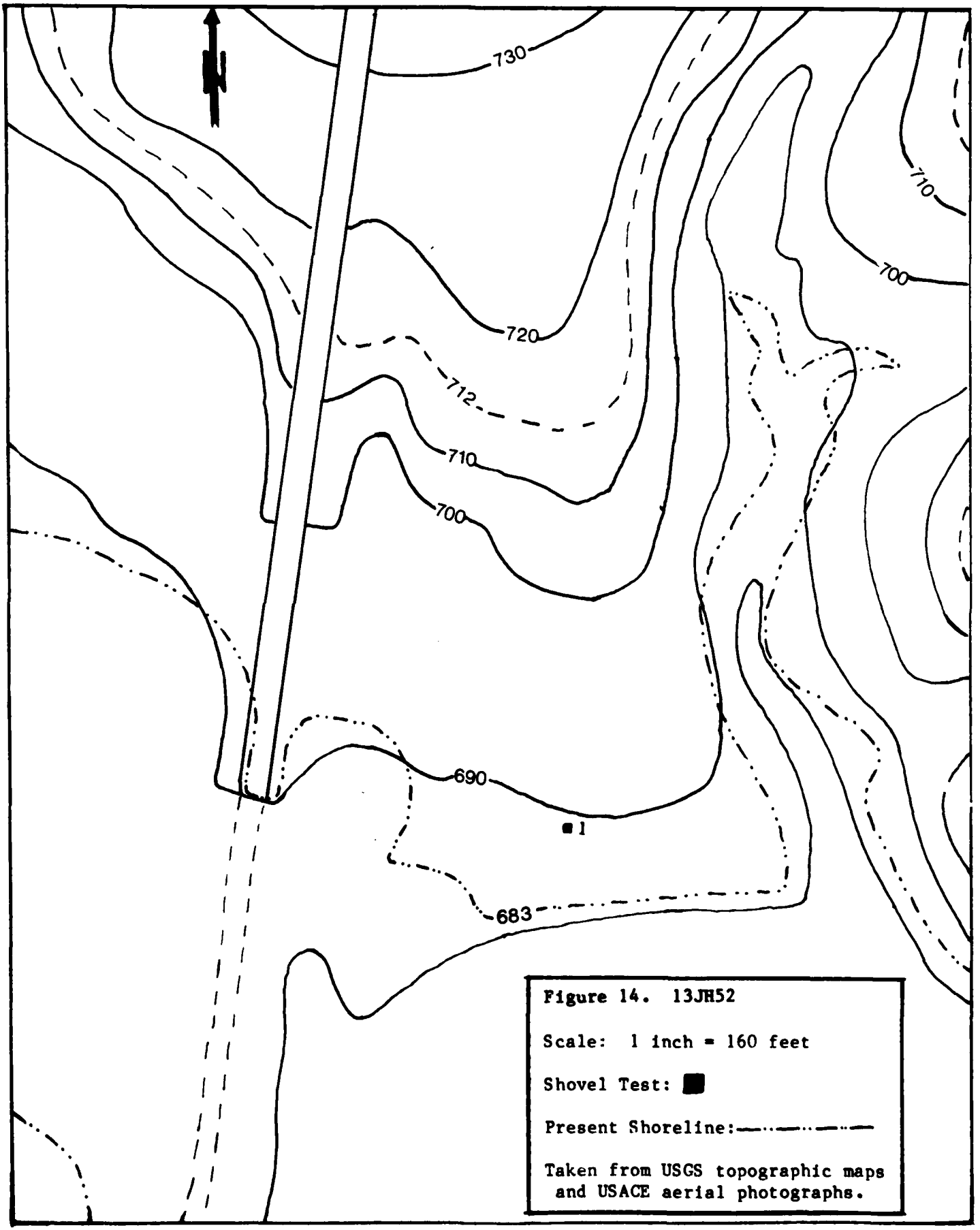

Figure 14. 13JH52

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline: —·—·—·—

Taken from USGS topographic maps and USACE aerial photographs.

resembling fire hearths. Three flakes were collected from the surface of the cultivated area in the southern portion of the site. Ground surface visibility in both the cultivated and wooded areas of the site was very poor.

Six shovel tests were placed in the western, wooded portion of the site. Two north/south transects of three shovel tests each were done (see Figure 15). Four of six shovel tests yielded lithic material recovered from depths ranging from 0 to 40 cm, concentrated between 10 and 30 cm below ground surface. Subsurface testing showed that soil strata in the wooded area remain intact and that in situ artifacts are present. Because of its location and the very level nature of the terrace, the site appears to be protected from inundation and erosion except at times of very high water. The dense vegetation which covers most of the site area also lessens the probability of erosion.

No cultural affiliation has been assigned to the site because of a lack of diagnostic artifacts. Weichman states that the site might be affected by improvements to Johnson County Road E, but it has not yet been determined exactly what impact that construction had on the northern extent of the site. (It should be noted that a cement foundation, not mentioned in Weichman's report, is present in the northwest corner of the site, just inside the wooded area.)

In summary, the site appears to retain good research potential based on subsurface testing of the wooded portion of the site where in situ artifacts have been documented. The southern portion of the site has been disturbed through cultivation, although the extent of the disturbance has not been tested. The wooded portion of the site has not been eroded and is the general location specified by Weichman as containing exposed fire hearths. Additional surface inspection, perhaps in the early spring, may help relocate these features.

13JH138

	Material Recovered
Surface:	1 scraper
	2 body sherds, grit-tempered (eroded)
	1 rim sherd, grit-tempered (bossed)

Site 13JH138, also known as the Boy Scout Cabin site, is located on an eroded west-facing slope at the terminus of a dirt road which originates near the apparent remains of an old Boy Scout camp. The site is situated on the northern side of the junction of a steep-sided unnamed drainage and Coralville Lake. Two investigators have previously visited the site. Zalesky (1977:67) reports finding one end scraper and one undecorated Woodland rim sherd. Miller (1979:site form) recovered a possible mano fragment, a possible core and debitage, exposed between the 690' and 700' contours.

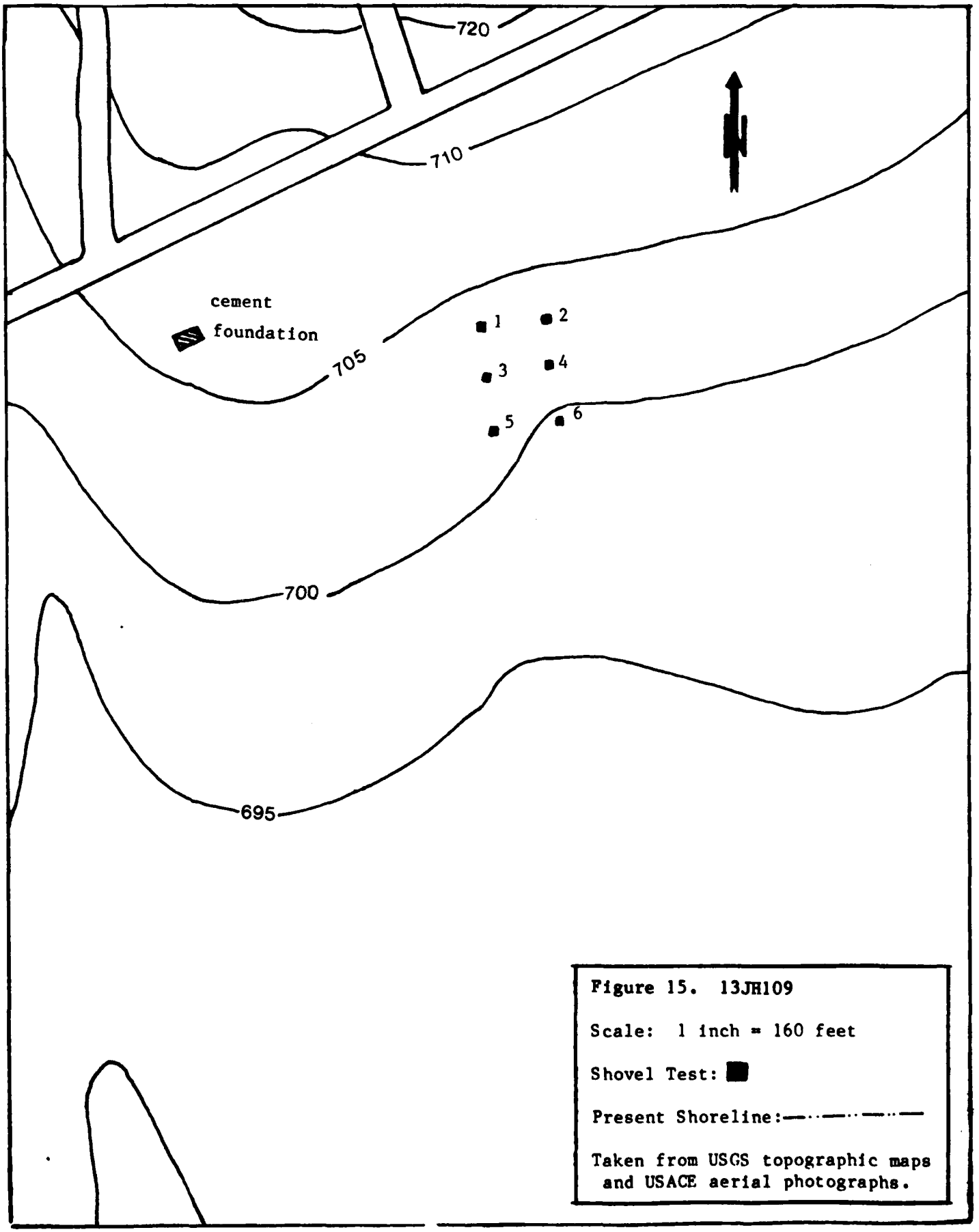

Figure 15. 13JH109

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline: —·—·—·—

Taken from USGS topographic maps and USACE aerial photographs.

Current field checking at the site located a few sherds and one scraping tool on the eroded steps above the lakeshore. The artifacts were concentrated at the point where the dirt road leads onto the eroded slope. One rim sherd was found. It was badly eroded, but appeared to have been bossed. It is interesting to note that not one waste flake was found, even though the area was thoroughly examined. This suggests that the recovered artifacts may have been lag deposits - heavier artifacts left behind while lighter objects were eroded into the lake by slopewash.

No subsurface testing was done here, because of the severely eroded condition of the entire site area. The slope on which the site is situated has been severely affected by inundation and wave action as well as recreational use as a motorcycle trail. It is believed that the site as currently designated has little research potential because of its eroded condition. It is suggested, however, that the dirt road leading to the site be blocked to recreational vehicle use, so as to restrict the potential for further disturbance of the area.

13JH245

	Material Recovered
Surface:	1 primary flake
	11 secondary flakes
ST 1, 20-30 cm:	1 secondary flake
40-50 cm:	1 primary flake
	2 secondary flakes
50-60 cm:	2 secondary flakes
60-70 cm:	1 secondary flake
ST 2, 0-10 cm:	1 primary flake
	2 secondary flakes
10-20 cm:	1 secondary flake
30-40 cm:	1 secondary flake
40-50 cm:	1 secondary flake
ST 3, 50-60 cm:	1 secondary flake

This site is located in an upland area overlooking Coralville Lake to the northeast. Zalesky (1977:118) reports finding "materials" in a cultivated field on the terrace and on the slope of a ridge in the field (to the southwest). Current field checking of the recorded site area located debitage only on the ridge area described by Zalesky. The ridge runs approximately east/west, and appears to be a large sand dune which has been stable long enough to develop mature soil strata. Three shovel tests were placed along the eastern crest of the ridge in the cultivated field immediately south of a small finger of woodland (see Figure 16). Shovel Test 1 was on the eastern side and was excavated to a depth of 84 cm. (Compact clay deposits were not reached at this depth.) Shovel Test 2 was located west of Shovel Test 1, and was taken to a depth of 80 cm. Shovel Test 3 was the last test unit at the western end of the transect, and was taken to a depth of 77 cm. Soil stratigraphy

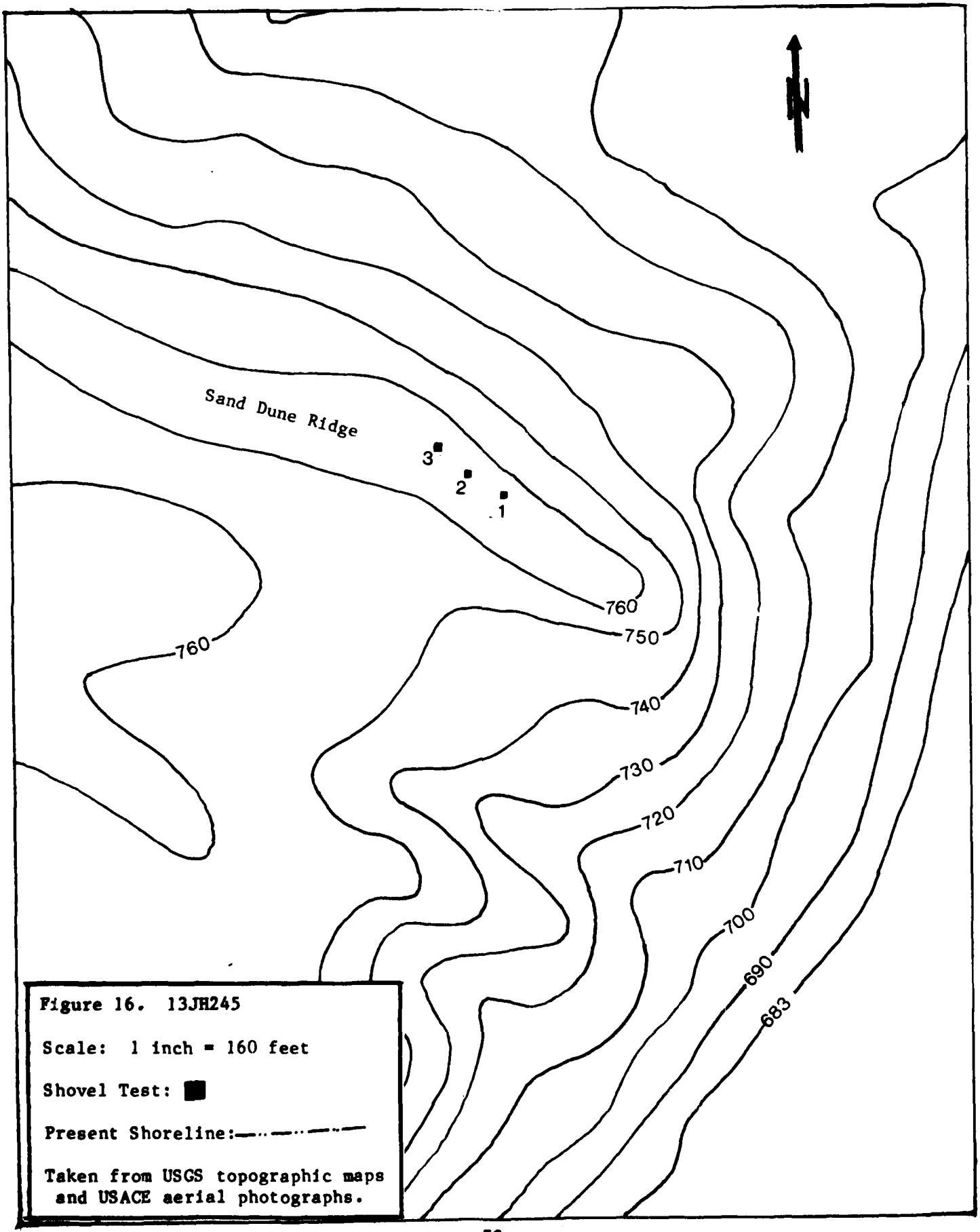

Figure 16. 13JH245

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline:—·—·—·—

Taken from USGS topographic maps and USACE aerial photographs.

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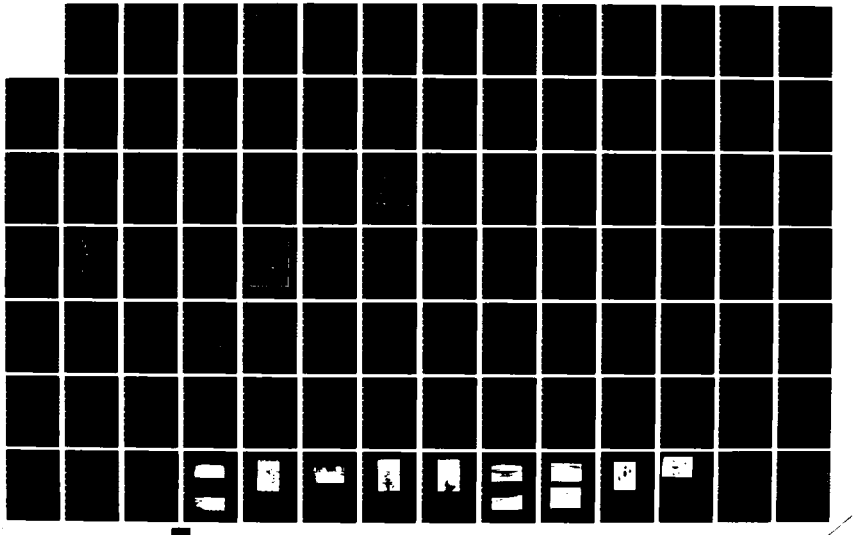
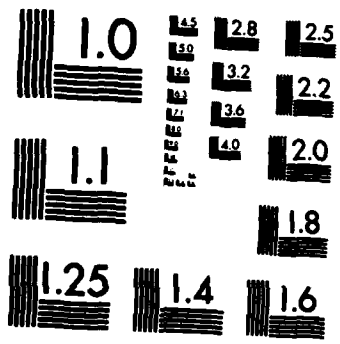




showed the presence of an apparent plow zone to a depth of approximately 25 cm, followed by intact strata of very sandy soils.

No diagnostic artifacts have been recovered from the site, so its cultural affiliation remains unknown. Subsurface testing indicated that the sand dune ridge area contains deeply stratified aeolian soils with artifacts located between 0 and 70 cm. The limited testing suggests that the site retains good research potential. The vertical distribution and nature of the recovered artifacts suggest that this site may have been occupied intermittently while the aeolian deposits were accumulating, which would postulate considerable antiquity for the lower portions of the cultural deposit. However, freeze/thaw cycles can move small objects readily through very coarse soils, a phenomenon which may be in part responsible for the observed vertical distribution of artifacts at this site.

13JH272

	Material Recovered
Surface:	3 core fragments
	11 primary flakes
	26 secondary flakes
	5 retouch flakes
ST 1, 0-10 cm:	5 secondary flakes
10-20 cm:	2 secondary flakes
	2 retouch flakes
	1 body sherd, grit-tempered (cord-roughened)
	1 ceramic crumb
20-30 cm:	2 secondary flakes
ST 2, 0-10 cm:	3 secondary flakes
10-20 cm:	1 secondary flake
ST 3, 0-10 cm:	2 secondary flakes
10-20 cm:	2 secondary flakes
ST 4, 0-10 cm:	9 secondary flakes
10-20 cm:	5 secondary flakes
ST 5, 0-10 cm:	1 primary flake
	2 secondary flakes
10-20 cm:	4 secondary flakes

This site appears to be in the best condition of all those visited during this project. It is located on a narrow upland ridge which expands slightly towards its southern extent, in the Sugar Bottom Recreation Area. The site has been visited by Miller (1979:site form) who reports finding debitage, a biface tool and a possible scraper. Schermer (1983:94) recovered only debitage from the site. Both investigators indicate that the artifacts were exposed along a trail cut which traverses the crest of the ridge. The trail comes to a small turnaround as the ridge expands, and a branch of the trail continues downhill to the southwest of the turnaround.

Current field checking at the site revealed the presence of a thin scatter of debitage exposed along a considerable length of the road cut (about 120 m). Artifacts were collected along a portion of the road cut starting approximately one-fifth of a mile southwest of its junction with the Sugar Bottom Road. The exposed artifacts continued southwest along the trail, past the turnaround, to its terminus on a bench surrounded by steep lakeshore slopes. Heavy vegetation severely reduced ground surface visibility in areas not exposed by the road cut.

Four shovel tests were placed on the eastern side of the road cut, beginning near the northernmost exposure of artifacts and continuing southwest to just northeast of the turnaround (see Figure 17). The shovel tests were dug one meter from the road cut, at 15 m intervals down its length. A fifth shovel test was done inside the turnaround. No subsurface testing was conducted along the west side of the road cut. The results of the testing indicate that a rather dense artifact distribution exists at a depths of 0 to 20 cm below ground surface. With the exception of the eroded road cut, this portion of the site has apparently not been recently disturbed by any natural or human forces.

This site is at an elevation which protects it from inundation by Coralville Lake. Shovel testing to one side of the trail showed that soil strata are intact, and subsurface cultural deposits maintain a consistent vertical distribution. The subsurface site component extends at least 60 m down the ridge, and may continue beyond the tested area in both directions. Because very few undisturbed upland sites have been identified in the project area, 13JH272 may be an excellent opportunity to add to knowledge of prehistoric settlement patterns in the Iowa River Valley.

13JH282

	Material Recovered
Surface:	31 core fragments
	7 secondary flakes
	1 tool tip, bifacially worked

This site was originally recorded by Zalesky (1980:site form) who observed chert cores and large waste flakes eroding from the west bank of a small tributary to Coralville Lake located about one-half mile upstream from Mehaffey Bridge. Zalesky considered the site a possible quarry. Current field checking located exposed glacial till deposits containing unworked chert gravels. The tip of a bifacially-worked tool (possible knife) was recovered from the site at about the 685' contour, just above the waterline as it was at that time. Several chert flakes and a number of core fragments were also collected. The exposed till and artifacts were eroding from an east-facing steep slope which is deteriorating rapidly as a result of high water levels and slope wash. The site is in poor condition with little or no topsoil present. A limestone outcrop

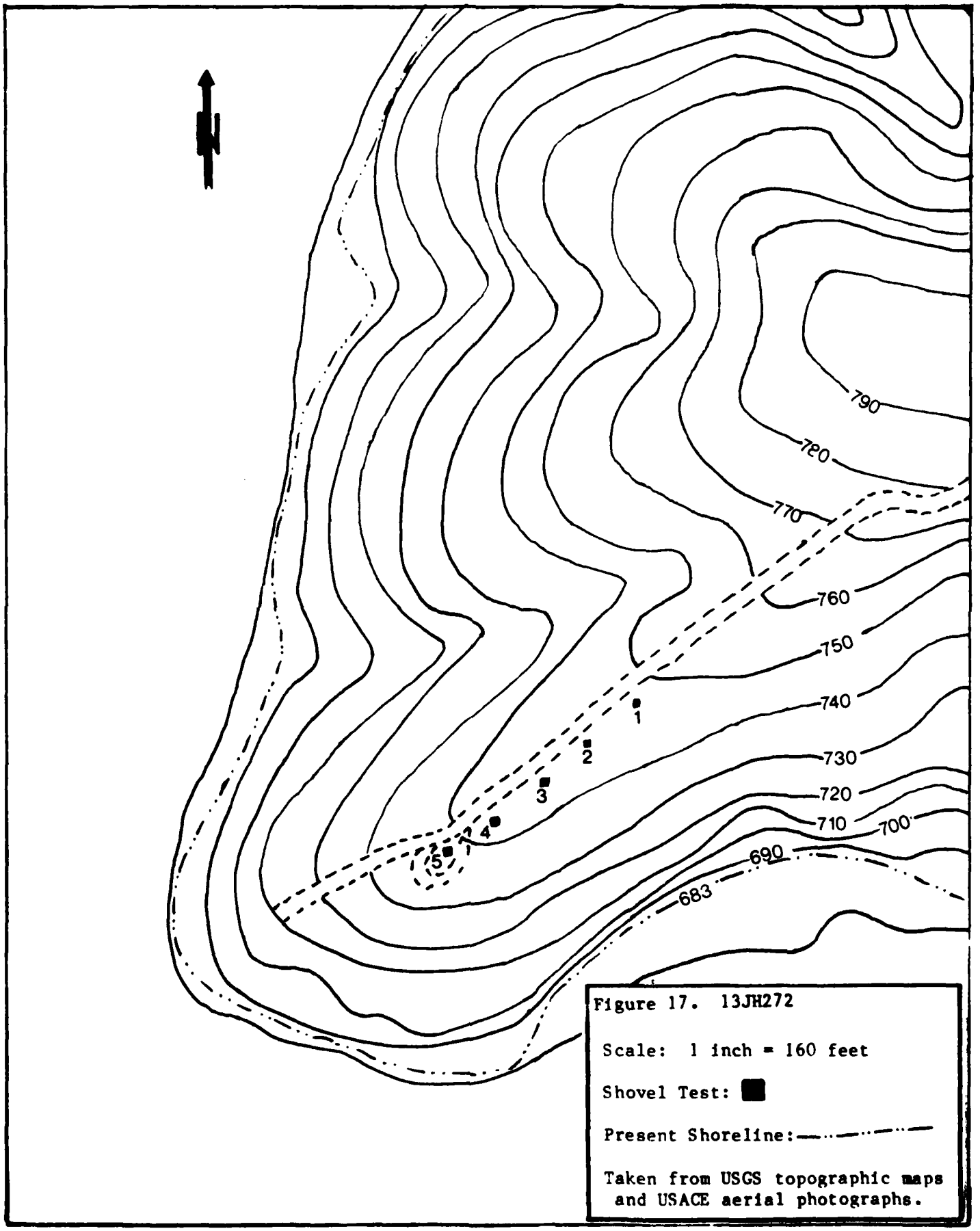


Figure 17. 13JH272

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline: —·—·—

Taken from USGS topographic maps and USACE aerial photographs.

is situated south of the exposed till at the point where the tributary inlet joins the lake. No chert inclusions were observed in the limestone bedrock.

It is apparent that the site does contain some workable raw chert and could have functioned as a minor secondary quarry. The presence of large rather coarse flakes could indicate testing of the raw material for its workability; however, the exposure of the till in prehistoric times remains unclear. The research potential of the site is limited, since there is no possibility of locating subsurface cultural deposits in the examined area.

13JH304

Material Recovered
- none -

This site is located on a low peninsular terrace east of the mouth of Hoosier Creek and just southwest of a small unnamed tributary to Coralville Lake. Zieglowsky and Zalesky (1981:244) report observing 63 flakes, fire-cracked rock, one retouched flake and one projectile point tip at the site. An old "farmstead foundation" is also present at the site (Zalesky 1977:site form). Schermer (1983:94) observed one flake and four Late Woodland body sherds from the site as well as historic china and metal material. Current field checking produced no additional prehistoric artifacts. Historic ceramics (recent cream colored Ironware), glass (clear and green fragments) and metal pieces were noted, as were several cement foundations.

The entire peninsula upon which the site is located is subject to inundation. When the site was visited in 1983, the lake level was 683', and the soils on the peninsula were saturated and very mucky. No shovel testing was done because of the condition of the ground. Heavy clay is present on the ground surface suggesting that topsoil has been eroded away. The prehistoric ceramics previously observed at the site indicate a Late Woodland affiliation. The historic material observed at the site appears to be very recent (less than 50 years in age) and the structure foundations are in a poor state of preservation. Also, the foundations do not appear to represent an unusual architectural form. Assessment of the research potential of the site's prehistoric component would depend on subsurface testing during a period of low water.

13JH308

Material Recovered
Surface: 1 secondary flake (retouched/utilized)

Originally, this site was recorded by Miller (1980:site form). During the course of this project, a discrepancy was noted concerning the location of the site. The legal description

given by Miller is different than the location plotted on the OSA site location map. While the site is in the same Section, Township, and Range, the quarter-quarter descriptions are different. This problem was not recognized until after the fieldwork was completed. Since copies of the OSA site location map were being used as field guides, only the location plotted on the OSA map was examined.

A single artifact (a retouched/utilized chert secondary flake) was recovered from the surface of the site area, just downslope from the crest of a small ridge in a cultivated field. One shovel test, placed on top of the ridge near the edge of the field, yielded no artifacts and indicated that the ridge had been plowed through to heavy clay at 22 cm (see Figure 18). Miller reports finding flakes and a core at the site. The verbal description of the site area recorded by Miller in 1980 seems to correspond more favorably with his legal location than with the location plotted on the OSA map. It is recommended that the site as designated by the legal description on the site form be examined, and adjustments be made to the OSA map if warranted. (If it is determined that Miller's 13JH308 is actually in a different location, the location examined during this project should be assigned a separate site number and recorded as a find spot.)

13JH309

	Material Recovered
Surface:	20 core fragments
	1 primary flake

This site is located on a north-facing slope along an inlet of Coralville Lake. The site was recorded by Miller (1980:site form), who recovered a mano fragment, a biface tool, and several flakes between the 680′ and 690′ contours. Miller also reports the existence of a large chert source 100 yards to the west of the site.

Current field checking did not locate any artifacts within the site area proper. One flake and several core fragments (some of which may have been heat treated) were collected near the area specified as the chert source. Numerous chert fragments were also observed; however, much of this material did not possess flaking characteristics. These fragments were scattered along most of the southern shoreline of the inlet, but did not appear to be cultural. The limestone outcrop referred to by Miller forms a prominent point on the shoreline, just east of the confluence of the inlet and Coralville Lake. Numerous chert inclusions were noted in the outcrop. The chert appears to be of rather low quality, ranging in color from cream to red. No subsurface testing was conducted at the site because of the steep slope, numerous rock outcrops and lack of soil in the area.

The exposure of this chert source in prehistoric times

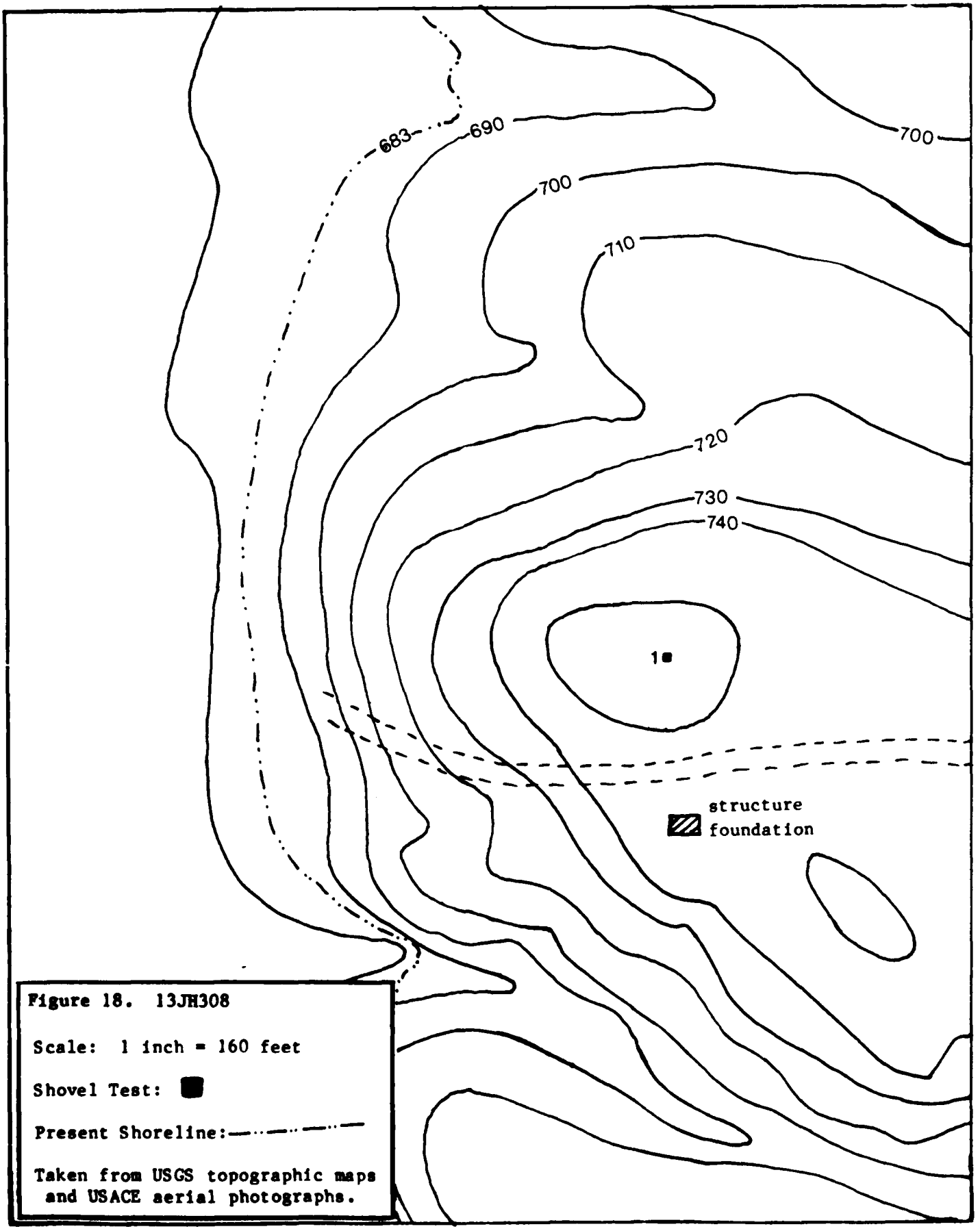


Figure 18. 13JH308

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline: ——·——·——

Taken from USGS topographic maps and USACE aerial photographs.

remains unknown. Some of the recovered core fragments do exhibit color and gloss which may have resulted from thermal pre-treatment, but their exact nature cannot be defined without further study of the characteristics of the chert found at this location. It is recommended that the site recorded by Miller and the chert source and flakes associated with it be considered a single site. The site's research potential lies in its possible function as a minor primary quarry.

13JH322

	Material Recovered
Surface:	1 projectile point, side-notched
	3 primary flakes
	13 secondary flakes (1 retouched)
ST 1, 0-10 cm:	3 secondary flakes
10-20 cm:	3 secondary flakes
20-30 cm:	1 secondary flake

This site is located on a knoll immediately west of and adjacent to the Sugar Bottom Road. Apparently much of the site has been disturbed by construction for the Sugar Bottom Road and recent grading of a small parking area. A trail cut with a blocked entrance departs to the southwest from the parking area. The site was recorded by Miller (1980:site form) who recovered flakes and cores from what is now the parking area. Tiffany (1981:89) investigated the site based on information supplied by Charles Keyes, who documented the site during his work with the Archaeological Survey of Iowa (Keyes' site number JO-2).

Current field checking confirmed that road construction activities have disturbed much of the site. Recent grading in the parking area exposed a moderately dense scatter of flakes as well as a side-notched projectile point, which suggests an Early to Middle Woodland cultural affiliation for the site. Vegetation restricted ground surface visibility in an undisturbed wooded area of the site adjacent to the graded right-of-way and parking area. Two shovel tests (see Figure 19) conducted in this area indicate that the site does extend south of the parking area into the woods; however, site boundaries to the south were not established. Shovel Test 1 yielded cultural material and was located 10 m east of the trail cut and 15 m south of the parking area. This test unit was taken to a depth of 30 cm. Shovel Test 2 was located due west of Shovel Test 1 and approximately 2 m west of the trail cut. This unit was taken to a depth of 33 cm and no artifacts were recovered. The soil strata in the wooded area appear to be intact and undisturbed.

Subsurface testing suggests that a portion of the site south of the small parking area remains intact and that artifact density is fairly high (in the vicinity of Shovel Test 1). Excluding further construction in the parking area and extensive erosion along the trail cut, the condition of the intact portion of the site appears to be stable. (It is recommended that the

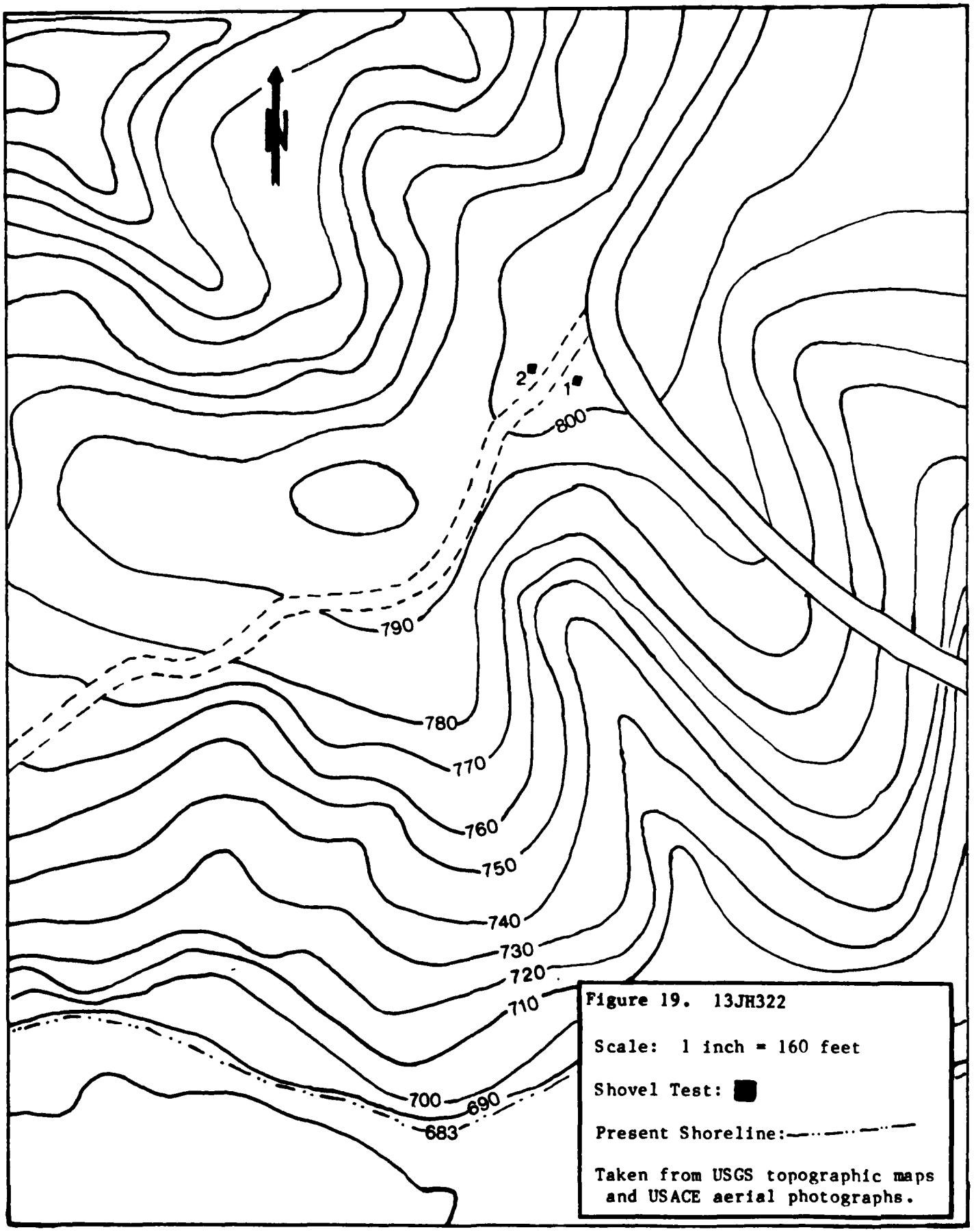


Figure 19. 13JH322

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline: —·—·—

Taken from USGS topographic maps and USACE aerial photographs.

District Archaeologist be notified of any further work to be done in the parking area.) This site requires more testing to determine its research potential and to further define the intact portions of the site.

13JH359

	Material Recovered
ST 1, 10-20 cm:	1 secondary flake

This site was originally recorded by Miller (1981:site form), who found flakes eroding from an overgrown dirt road which departs from the Sugar Bottom Road near the Sugar Bottom Campground registration area. Miller reports that the flakes were recovered from a section of the dirt road near the head of a drainage which extends in a southern direction.

Current field checking located the site based on Miller's description; however, no artifacts were observed on the surface. The only exposed surface area was along the road proper. Areas adjacent to the road were in pasture and surface visibility was zero. A single shovel test (see Figure 20), placed 2 m south of the dirt road and 30 m southwest of a gate across the road, yielded one flake between 10 and 15 cm below ground surface. Heavy clay was encountered at 15 cm. This subsurface test indicated that severe erosion of topsoil has occurred, probably during past cultivation activities. (The examined area is on the boundary of Corps' property, and it is possible that the site area extends to the east onto private land.) The potential for further research at this site appears to be low.

13JH360

Material Recovered
- none -

Site 13JH360 is located on an east-facing slope on the west bank of a gully formed at the mouth of an unnamed drainage north of the Linder Point campground. Schermer (1983:83-84) recovered a single grit-tempered sherd at this location during her 1981 shoreline survey.

No additional cultural materials were recovered at the recorded site location during field checking. The area appears unlikely for site location, since it lies on an extremely steep, eroded slope above an intermittent stream. The drainage through which this stream flows is narrow, and was saturated at the time of the present project. Therefore, no shovel testing was conducted at this location. The upland area west of the gully was also inspected, as recommended by Schermer. This area has apparently been badly disrupted by heavy machinery, probably by the construction of an old, built-up roadbed which crosses the drainage. No artifacts were observed on the surface in the uplands; however, ground surface visibility was limited due to

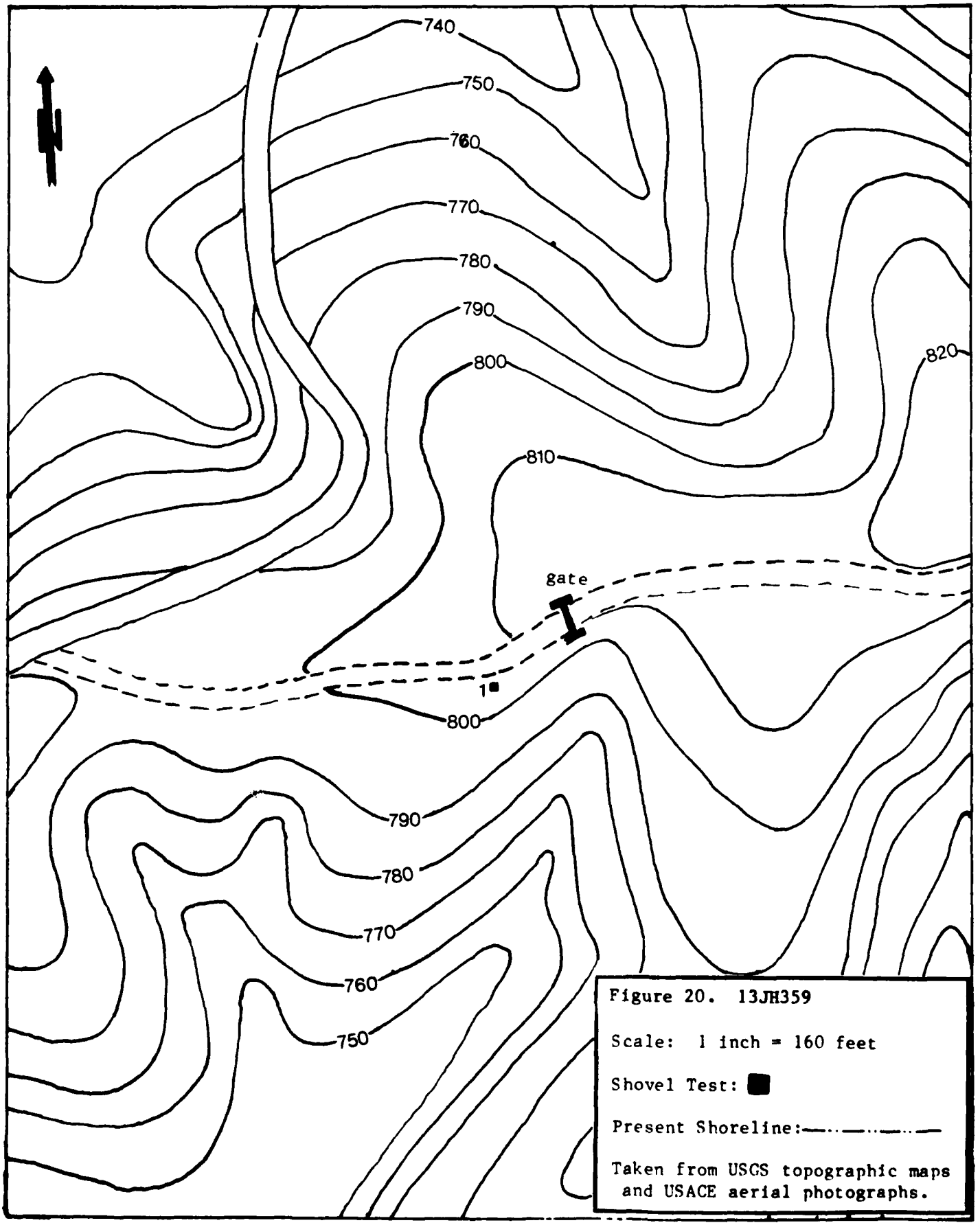


Figure 20. 13JH359

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline:—·—·—·—

Taken from USGS topographic maps and USACE aerial photographs.

vegetational cover. The appearance of the recorded site location suggests that the sherd recovered by Schermer may have been a secondary deposit. This location would thus perhaps better be termed a find spot.

13JH396

	Material Recovered
Surface:	1 projectile point, stemmed
	1 tool base, bifacially worked
	1 drill/punch
	5 core fragments
	10 primary flakes (1 utilized)
	66 secondary flakes (6 utilized)
	2 retouch flakes
	2 body sherds, grit-tempered (eroded)

This site is located on a broad south-facing terrace near the mouth of West Hoosier Creek. Schermer (1983:97) recorded the site as a find spot based on the recovery of a single projectile point tip from the western edge of a cultivated field. Current field checking revealed the presence of a large, Archaic-style stemmed projectile point, a bifacially worked drill or punch, the base of another bifacially worked tool, and a quantity of debitage. The debitage was scattered over much of the broad terrace, concentrated at an elevation of about 690'. The projectile point and biface were collected from the western portion of the terrace. Two eroded body sherds were also recovered. The site is bordered on the west by a drainage ditch and the edge of a wooded area to the east. The northern two-thirds of the site area are under cultivation. To the south, the site is in a badly eroded condition as a result of inundation by Coralville Lake. The results of current field checking suggest that the site is larger and extends further east than was previously recorded by Schermer, although the general site location as plotted on the OSA site map appears accurate.

Four shovel tests were placed in the northwestern portion of the site in the cultivated area (see Figure 21). No cultural material was recovered from the shovel tests, which were excavated to a depths of between 30 cm and 35 cm. A substantial portion of the A soil horizon has been eroded off due to cultivation and periodic inundation from the reservoir.

This site is currently represented by a thin scatter of cultural material spread across the surface of a broad terrace. Much of the southern portion of the site is badly eroded due to inundation, and the upper reaches are diminished from plowing. Although surface materials may continue to be exposed, very little research potential remains in the site area for the recovery of features.

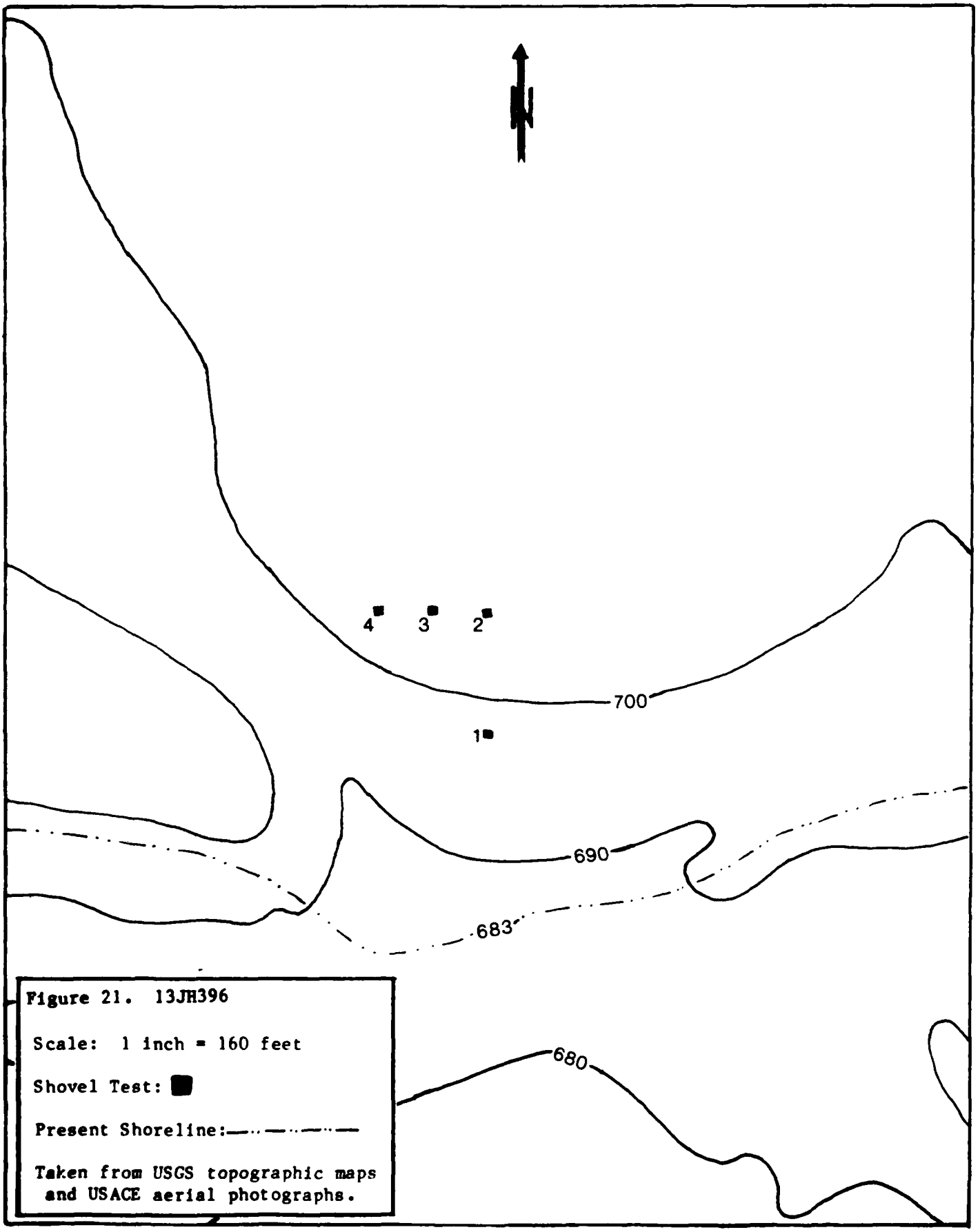


Figure 21. 13JH396

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline: —·—·—·—

Taken from USGS topographic maps and USACE aerial photographs.

13JH397

	Material Recovered
Surface:	1 projectile point, corner-notched
	1 tool base, bifacially worked
	4 core fragments
	17 primary flakes (1 utilized)
	118 secondary flakes (1 utilized, 1 retouched/utilized)
	6 retouch flakes
ST 2, 0-10 cm:	1 secondary flake

This site is located on a southeast-facing slope and terrace immediately west of a small unnamed tributary to Coralville Lake. The mouth of West Hoosier Creek lies to the west about one-half mile. Schermer (1983:97) originally recorded the site based on the observation of several flakes. Current field checking indicated a rather dense scatter of debitage eroding from the slope and the edge of the terrace (which is currently under cultivation) between the 685′ and 700′ contours. One corner-notched projectile point was also recovered. No ceramics were observed.

Two shovel tests were placed on the cultivated terrace portion of the site (see Figure 22). One flake was recovered in Shovel Test 2 between 0 and 10 cm below surface. Heavy sterile clay was encountered at a depth of 10 cm. Subsurface testing revealed that much of the A soil horizon has been eroded away. It is apparent that most of the site area has been disturbed by cultivation and erosion due to periodic inundation. Very little research potential appears to remain.

13JH409

	Material Recovered
Surface:	1 projectile point, side-notched
	1 projectile point tip
	1 secondary flake (utilized)

This site was originally recorded by Krizan (1981:site form) who reported finding a single projectile point (no description), five sherds (no description), and seven flakes. Krizan collected artifacts eroding out from a 40′ by 40′ area along a west-facing gully leading to Coralville Lake.

Surface inspection during the course of the current project produced one projectile point tip, one side-notched projectile point, and one utilized secondary flake, scattered along a steep west-facing slope at an elevation of about 690′. These were the only cultural materials observed, even though a 75-meter-long stretch of shoreline was thoroughly examined. This slope forms the tip of the southern ridge of the gully feature described by Krizan. The slope shows evidence of severe step erosion caused by fluctuating pool levels of Coralville Lake. No shovel

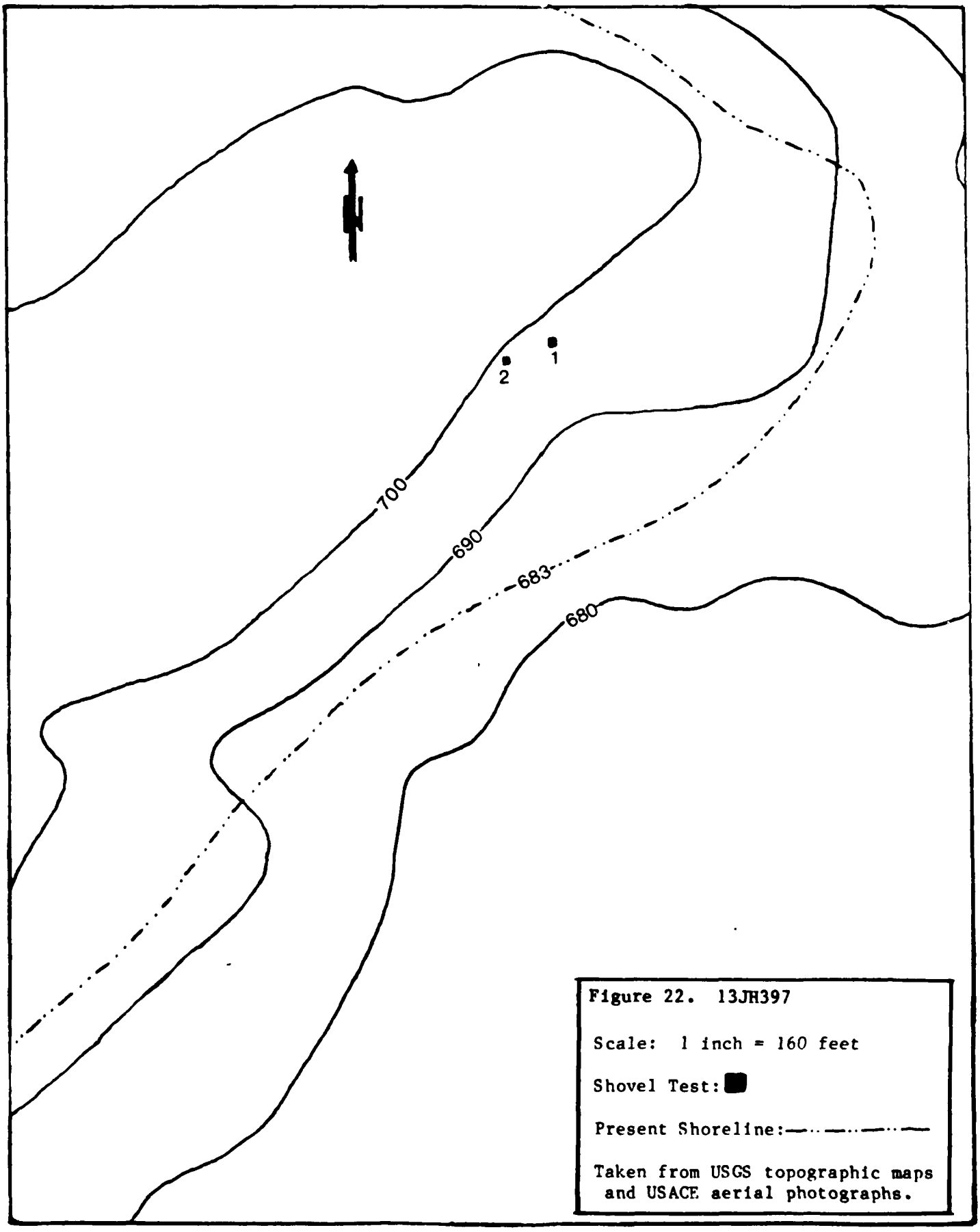


Figure 22. 13JH397

Scale: 1 inch = 160 feet

Shovel Test: ■

Present Shoreline: —·—·—·—

Taken from USGS topographic maps and USACE aerial photographs.

testing was conducted because of the steep slope and extensive disturbance of the site by erosion. As designated, the site has very little research potential. It is possible, however, that the site may actually be located north of the gully on a wooded upland ridge, and artifacts found on the slope were deposited by sheet erosion or inundation.

HISTORIC RESOURCES

Environmental Context

Present land use in the Coralville Lake Project Area is devoted either to recreational/vacation activities associated with the reservoir development, is still being farmed, or in cases of much of the timberland has simply been left to stand.

Comparing current conditions with early historic maps, it is apparent that a substantial percentage of the forest cover in the project area and along the Iowa River remains. Some was cleared for early agricultural development. Recreational development has had further recent impacts and there is significant secondary and tertiary impact around the actual project area. Some historic resources of a transient nature and some historic farmsteads were impacted and eliminated when the reservoir pool was flooded. The loss of these resources is obvious and irreversable. Other resources, which can only be identified through intensive pedestrian survey such as would be done for prehistoric remains, are almost certainly being destroyed through secondary impacts in the project area. However, it is doubtful that very many of such sites are actually to be found on government land. More likely they will be found on the adjacent bluffs and ridgetops, in much the same settings as the large number of prehistoric sites that has been reported.

Previous Investigations

The bulk of the historic cultural data on the Coralville area is available in published form, in data on file in county courthouses, and in State Archaeologist or State Historic Preservation files. The unpublished data contained in legal documents and other county records could be better interpreted following additional work on coordinating landownership patterns, but it is doubtful that such efforts would be very productive, given the overall lack of historic sites (other than typical farmsteads) in the area.

Previous investigations in the Coralville Lake Project Area (Weichman & Tandarich 1974, Schermer 1982c, 1982b) have focused almost exclusively on prehistoric and contact period Amerindian remains; very little attention was paid to cultural resources of the European period. Review of collections in the State Archaeologist's Office in Iowa City did show that Schermer had made efforts to collect historic cultural debris. All of it (3 sites) was from late 19th, early 20th century farm contexts. A site which had been listed as an historic site, 13JH22, was noted as being unlocated in 1971 (Smith & Eichorn 1982:Table 4).

Oral sources were found to be of almost no value in the research because of the long time lapse between initiation of the Coralville project, construction of the dam and filling of the pool, and the timing of the present study. Interviews with "knowledgeable people" at county historical societies, Coralville Corps of Engineers Office, and other agencies produced no leads

to persons who could provide information that was not otherwise available in written sources.

Numerous historic sites were destroyed without research or consideration of National Register eligibility at the time the Coralville Reservoir was constructed. However, at the present time there are no known historic sites in danger of impact from maintenance of the reservoir at its current levels.

Research Objectives

The objectives of the research, in accordance with the Scope of Work and discussions with the Contractor's Authorized Representative, were to review available historic data for the Coralville Lake Project Area, to place these data within a broader context of Iowan and Midwestern history, and to attempt to identify significant resources that should either be treated now or taken into consideration in future development and research plans at Coralville Lake. Fulfillment of the stated objectives was based on review of existing documents (cartographic and narrative), courthouse records, site files, National Register nomination files, conversations with local and government officials familiar with the project area, and visits to cemeteries and other locations in the project area.

Based on these investigations and the review of previous studies and reports, the potential for significant historic sites is seen as very low to minimal in the Coralville Lake area. Some early or mid-18th century European and historic Indian sites may be present, but these will need to be identified through intensive pedestrian survey. This is comparable to the results from the 408 highway project in Illinois (Bonath & Kissel 1982) in which it was found that pre-Civil War sites were not noted with locational specificity.

Site Inventory Results and Interpretive Analysis

All sites identified are noted in European legal terms as they are recorded in public legal documents. The vast number of historic sites in the project area consisted of various sized farmsteads with no individual site locational significance and most of these are not recorded individually. They are, however, shown on the atlas and other maps included as part of this report, or can easily be re-located on cartographic sources that are referred to and that are in the public domain. Those structures which were in the project area (and many of which were removed or destroyed) have also been assessed and are documented in Appendix IV. According to generally accepted criteria, only one or two of these structures might have been suitable for a determination of eligibility for nomination to the National Register of Historic Places.

Limitations on data recovery were caused by the absence of detailed cartographic coverage from the pre-mid-18th century and the lack of references in published records or in cartographic sources to non-permanent Amerindian or European site locations within the project area. Another major limitation on data

recovery was the lack of opportunity for historic field survey. As noted above, historic remains, if they are present in the Coralville project area, should occur along many of the same ridges and terraces where prehistoric remains are found. The overall lack of historic debris reported in previous surveys suggests that overall historic use of the area was relatively light and similar to settlement and utilization patterns seen at the time of government land acquisition in the 20th century. Late 19th century material culture remains may also have been ignored by earlier researchers.

The historic data for Coralville are so sparse that it is in some ways difficult to relate the observations to RP3 concerns. Other than the general expansion of farming and settlement into less than prime areas during the period 1850-1890, there were essentially none of the major shifts in transportation modes and networks, exploitation of natural resources such as coal, clay, or limestone, or technological shifts from small-scale to major-scale farming that characterize the rest of Iowa, and the Midwest in general. Data for each county and the individual townships in the project area are summarized in the following sections.

Benton County

According to Andreas (1875:445) the county was first settled in 1839 by Samuel Lockhart, who founded Marysville in the northeastern corner of the county. A small strip in the eastern part of the county was included in the Blackhawk Purchase of 1832 and was therefore opened to European settlement several years earlier than the rest of the county. Government Land Office surveys of the county were done in 1845, 1846 and 1847 and the county seat was established at Vinton near the Cedar River. Railroad service was begun in 1861-62 by the Cedar Rapids and Missouri River Railroad. There were few water power dams in the county, and Andreas classified those that had been developed as of "little value". He also noted that "the flow of the Iowa was much less than that of the Cedar, and its scenery much less attractive..." He continued that a "...fine quality of building stone is found in several portions of the county, but the best quarries are at Vinton and along the Cedar River....Coal has been found at...some...places, but not in quantity or quality to justify working." He did, however, declare the county the best in Iowa for stock raising.

St. Clair Township: No cultural features are shown in this township on any pre-GLO maps. Neither are cultural features shown on the GLO map, which was done in 1845. No cultural features of note are shown on the 1872, the 1885 (Warner & Foote 1885) or the 1901 (Ogle & Co. 1901) township maps. Andreas (1875:532) listed 48 patrons from this township, with the following indicated places of nativity: England (1), New Jersey (2), Germany (2), Massachusetts (1), Ireland (1), east Canada (1), Pennsylvania (6), New York (9), Ohio (11), Scotland (1), Vermont (1), Virginia (3), Indiana (4), Iowa (2), New Jersey (1), and Maine (1). (Note: the total number of patrons may not match with the individual counts by state in this and other sections

because some of the patrons were businesses, which naturally would not be listed by place of nativity.) The earliest that any of these people arrived in Iowa was 1836, with the great majority arriving in the 1850's or later.

Florence Township: No cultural features are shown on any of the pre-GLO maps for this township. Trails and numerous streams are shown on the GLO map drawn in 1845, but no other cultural features are represented. No cultural features of note are shown on the 1872, the 1885 (Warner & Foote 1885) or the 1901 (Ogle & Co. 1901) township maps. Andreas (1875:532) listed 31 patrons from this township, with the following listed places of nativity: Illinois (1), Sweden (1), Scotland (9), Norway (4), England (2), Ireland (3), Indiana (1), Pennsylvania (5), Ohio (2), New York (2), Germany (1), and west Canada (1). The earliest that any of these persons arrived in Iowa was 1853.

Benton County Summary: This county was somewhat peripheral to the project area, but was important because it provided the west "point" of the triangle of transportation networks and population centers that isolated the Coralville reservoir portion of the Iowa River valley. In addition to the township data summarized above, township maps in available county atlases were also examined and a density index of occupation was developed based on what percentage of the sections had structures shown in them. The following scale was developed:

0% = Absent
1% - 25% = Low Density
25% - 50% = Moderate Density
50% - 75% = Moderately High Density
75% - 100% = High Density

Density data for the GLO maps were also compiled for comparative purposes:

Township	GLO Map	1872	1885	1901	1917
Florence	1845-0%	100%	100%	100%	100%
St. Clair	1845-0%	94%	97%	100%	100%

This shows clearly the transition from non-settlement to high density farmstead pattern during the second half of the 19th century. (Note: Finer distinctions could be made between the four latter maps by calculating the density percentages in another fashion [for instance, by buildings per quarter section, rather than whole section], but that was not felt to be necessary for this research.)

Linn County

Fairfax Township: No cultural features are shown on any of the pre-GLO maps. On the GLO map drawn in 1842 no cultural features other than a couple of trail patterns are shown. According to Brewer & Wick (1911:272) "The first settlers...who came to this part of the country [came]...in the spring of 1841." This family, the Ures, were the forerunners of a significant Scottish influx over the next few years. No cultural features of any note are shown in the 1895 (Parsons, Treat & Wardle 1895),

1907 (Iowa Publishing Co. 1907) and 1914 (Barnes 1914) township maps. Andreas (1875:509) listed 15 patrons from this township, with the following nativity: Kentucky (1), Illinois (2), Pennsylvania (3), New York (2), Wales (1), Scotland (4), Belgium (1), New Brunswick (1), and New Hampshire (1).

For comparative purposes, deed recording patterns were noted for the sections both closest to, and farthest away from, the Iowa River and the Coralville project area (see Figure 23). This was done to test the hypothesis that the Cedar River and Cedar Rapids area had been a bigger magnet for population on the northern side of the river than had been the Iowa River Valley on the southern side of the Cedar River. The following data are relatively earlier than those available from Johnson County, since all Linn County deeds had been recorded chronologically rather than alphabetically.

Figure 23 shows that the sections closest to the Cedar River area did in fact have the earliest and longest history of deed filing. The sections farther away, and closer to the Iowa River, have a much later beginning; the totals are somewhat distorted by the large number of deeds filed in the Western College area by A. Shuey.

To further evaluate historic settlement patterns in Linn County and to further distinguish between the influence of the Cedar River and the Iowa River, data were also compiled which summarized pre-1856 deed filing by Section (see Figure 24). We again see a pattern of generally earlier and more numerous deed filings in the part of the township closest to the Cedar River and fewer and later filings in the sections closer to the Iowa River. This pattern is repeated throughout the northern side of the project area.

College Township: No cultural features are shown on any of the pre-GLO maps. On the GLO map drawn in 1842 an enclosure is shown on the boundary between the SW 1/4 and NW 1/4 of Section 11, relatively near the southern bank of the Cedar River and another is shown on the boundary between the SE and NE of Section 13. Other than a few trails, no other cultural features were shown. No cultural features of note were shown on the 1895 (Parsons, Treat & Wardle 1895), 1907 (Iowa Publishing Co. 1907) and 1914 (Barnes 1914) maps of the township. According to Brewer & Wick (1911:288), the first settlers did not enter this township until the early 1850's. Andreas (1875:509) listed 20 patrons from this township, with the following nativity: Maryland (1), Bohemia (2), Iowa (2), Pennsylvania (8), Austria (1), Ohio (1), New York (2), and Virginia (1). The earliest, an H.A. Dilling from Pennsylvania, is recorded as having arrived in the state in 1842.

Again, the deed recording patterns for the sections both nearest to, and farthest from, the project area are recorded (see Figure 25), and as with the other Linn County townships, the total number of deeds recorded prior to 1856 was also compiled

Figure 23. Fairfax Township Deed Filings

Year	(Closer to C.R.) Sections 1-6	Sections 31-36
1855	1	
1854	5	9
1853	19	29 (A. Shuey)
1852	6	17
1851	10	
1848	1	
1845	2	
Total:	44	55

Figure 24. Pre-1856 Deed Filing in Linn County

Section	Total pre-1856 deeds filed	Actual Year Span
1	11	1851-1853
2	8	1852-1853
3	9	1851-1853
4	6	1853-1855
5	7	1852-1854
6	14	1845-1854
7	13	1845-1854
8	7	1852-1854
9	9	1852-1854
10	13	1851-1853
11	12	1847-1852
12	9	1851-1853
13	5	1852-1853
14	8	1851-1853
15	10	1851-1854
16	NO DATA	
17	4	1853-1854
18	4	1850-1854
19	3	1854
20	7	1854
21	5	1854
22	4	1853-1854
23	10	1843-1854
24	5	1853
25	6	1843-1855
26	7	1853-1854
27	4	1853-1854
28	5	1853-1854
29	6	1854
30	5	1854
31	5	1853-1854
32	5	1853-1854
33	6	1853
34	9	1853
35	10	1853-1854
36	9	1852-1854

for each section (see Figure 26). The purchases by John Easley may represent land speculation. Those sections closest to the Cedar River again have the earliest and greatest number of deed filings.

Putnam Township: No cultural features are shown on any pre-GLO maps. The GLO map drawn in 1842 shows numerous enclosures on the northeast side of the Red Cedar River. One enclosure is shown in the NW 1/4 of Section 32 and a large enclosure is shown in the northern half of Section 27 and the NE 1/4 of Section 28; a trail runs from NW-SE past this larger enclosure. No cultural features of any note were found on the 1895 (Parsons, Treat, & Wardle 1895), 1907 (Iowa Publishing Company 1907), or 1914 (Wingert & Leefers 1914) maps of the township, Andreas (1875:509) listed 8 patrons with the following nativity: Ohio (3), Pennsylvania (1), Scotland (1), Prussia (1), New York (1) and Virginia (1). County deed records were treated in the same manner as those from Fairfax and College Townships and used for the same comparative purposes (see Figure 27). As with the other two townships, data were compiled which summarized pre-1855 deed filing by section (see Figure 28). The overall period of filing for deeds in this township was earlier than for Fairfax and College townships, but the general pattern of earlier and more in the sections closest to the Cedar River continued.

Linn County Summary: Early population centers in this county were clearly oriented toward the Cedar River and away from the Iowa River and the project area. Andreas (1875:438) noted that the first settlers came to Cedar Rapids in 1839, that the first dam across the river was built in 1842, in 1843 the first sawmill was opened, and the first flour mill was built in 1844 and the second in 1846; the almost immediate economic importance and dominance of this location is apparent. An 1859 map (McWilliams & Thompson) clearly demonstrates the disparity in population densities: Rapids township had a population of 2,837; Linn City had 673; and Franklin had 2,486 (including the population centers of Bertram, Mt. Vernon, and Lisbon, all north of the Cedar River). In contrast, Fairfax Township had a population of 227, Putnam Township of 511, and College Township of 765. To further illustrate the distribution, the number of structures shown on the map was recorded for the sections both closest to the Cedar River and to the project area (see Figure 29).

Density figures were also compiled for the structural data shown on various atlas maps:

Township	GLO Map	1895	1907	1914
Fairfax	1842-0%	100%	100%	(1)
College	1842-0%	100%	100%	(1)
Putnam	1842-0%	100%	100%	(1)

(1) domestic structures not shown, but still assumed to be 100%.

These figures show that the basic population of the three townships was accomplished between 1842 and 1895.

Figure 25. College Township Deed Filings

Year	(Closer to C.R.) Sections 1-6	Sections 31-36
1854	2	6 (all Section 33)
1853	4	13 (8 in Section 31)
1852	3	14 (7 in Section 32)
1851	13	2
1850	7	2
1849	10	2
1848	6	1
1847	1	1
1846	3	1
1845	1	
1844	1	
1843	1	
Total	52	42

Figure 26. Pre-1856 Deed Filings in College Township

Section	Total Number of Deeds Filed	Pre-1856 Range
1	10	1843-1856
2	11	1845-1854
3	8	1848-1852
4	8	1848-1853
5	7	1849-1853
6	8	1846-1851
7	7	1843-1853
8	7	1849-1853
9	7	1849-1851
10	5	1849-1851
11	6	1847-1851
12	9	1844-1852
13	7	1846-1852
14	5	1850-1851
15	4	1851-1852
16	ND	
17	5	1851-1853
18	7	1852-1853
19	6	1852-1853
20	4	1852
21	4	1852
22	7	1852
23	8	1851-1852
24	7	1849-1852
25	7	1843-1851
26	8	1852-1853
27	6	1852
28	5	1852
29	4	1852-1853
30	6	1852-John Easley
31	8	1853
32	7	1852-4 John Easley

Figure 26, continued.

Section	Total Number of Deeds Filed	Pre-1856 Range
33	7	1850-1852-3 John Easley
34	8	1848-1853
35	7	1851-1853
36	9	1846-1852

Figure 27. Putnam Township Deed Filings

Year	(Closer to C.R.) Sections 1-6	Sections 31-36
1856	This is the year in which the county changed from their old deed recording series to a new deed recording series. Most entries for 1856, and all subsequent entries, are in the new series records.	
1855	4	4
1854	1	11
1853	7	15
1852	2	16
1851	11	7
1850	2	2
1849	2	1
1848	9	
1847	2	1
1846	5	
1845	7	3
1844	11 (3 of these in Section 2)	1 (in Section 35)
1843	8 (3 of these in Section 2)	
Total	71	61

Figure 28. Pre-1855 Deed Filing in Putnam Township

Section	Total pre-1856 deeds filed	Actual Year Span
1	8	1843-1846
2	11	1843-1847
3	13	1843-1853
4	15	1843-1855
5	12	1844-1853
6	13	1844-1853
7	12	1846-1855
8	10	1843-1852
9	11	1845-1855
10	9	1847-1855
11	12	1843-1852
12	7	1843-1845
13	12	1843-1851
14	11	1843-1851
15	10	1845-1854
16	NO DATA for this or other Sections 16 in Linn County; reason(s) unknown	
17	11	1844-1853
18	12	1843-1852
19	8	1849-1852
20	7	1849-1852
21	11	1845-1854
22	14	1843-1853
23	10	1844-1856
24	10	1843-1856
25	12	1845-1856
26	8	1852-1856
27	12	1846-1852
28	7	1849-1852
29	13	1851-1853
30	10	1847-1853
31	10	1845-1853
32	6	1847-1851
33	10	1852-1855
34	10	1845-1853
35	12	1844-1854
36	12	1845-1855

Figure 29. Linn County Structures, 1859

Fairfax Township		College Township		Putnam Township
Sec.	Structures	Sec.	Structures	this township is
19	0	19	0	closest to the Cedar
20	0	20	0	River and there is at
21	0	21	1	least one structure in
22	1	22	3	almost every section.
23	3	22	ND	
24	0	24	3	
25	0	25	1	
26	0	26	5	
27	0	27	2	
28	0	28	0	
29	1	29	0	
30	0	30	0	
31	3	31	0	
32	0	32	0	
33	0	33	Western College	
34	1	34	Western College	
35	2	35	1	
36	0	36	3	

Johnson County

The first settler of Johnson County was a man by the name of John Gilbert, also known as John Prentice, who had been involved in trading among the Foxes (Andreas 1875:477). With the establishment of Iowa City in 1838-39, this county became the principal population and economic focus in the area and Iowa City was definitely the population center. This is clearly seen when one compares the 66 patrons listed in Andreas (1875:544) for Lucas Township (the location of Iowa City) to patrons listed for other townships in the county. The Johnson County quarries were located 8 miles above Iowa City on the right hand side of the river and were opened in June, 1839 to provide stone for the state capitol building (Iowa Writers Project W.P.A. 1941:19). In 1842 a new and better quarry was opened some 10 miles northeast of Iowa City which furnished a better grade of stone for continuation of work on the capitol (Iowa W.P.A. 1941:22). However, the building was not finished until the first third of the 20th century. The sites of these quarrying efforts are adjacent to the Coralville Lake Project Area.

Monroe Township: No cultural features were shown on any pre-GLO maps. On the GLO map drawn in 1842, trail systems are shown and some enclosures are located in the sections along the Iowa River, but no other cultural features are shown. Aurner (1912:164) noted that "After the Indians moved to the northwestern part of the county, within the limits of the present township of Monroe, they were located on the north side of the river, hence had no headquarters on the south side of the river." The settlement was supposedly near the Dupont Settlement in the northwestern corner of the township and is listed as site 13JH37 in the files of the State Archaeologist. No site has ever been verified on the ground (Weichman & Tandarich 1974:49).

The map from the 1870 atlas (Thompson & Everts 1870) shows four schools, and no crossing of the Iowa River in this township. Subsequent maps (Novak 1889, Huebinger Survey & Map Publishing Co. 1900) also fail to show any crossings.

Johnson County deed records are kept by alphabetical order (and then by date of filing) rather than directly by date of filing and no date of filing cross-indices exist prior to 1866. Therefore, the deed analyses recorded were done chronologically for the years 1866-1876 and in the period prior to 1866 deed volumes were only spot-checked randomly to search for early deed filings in the project area.

A complete inventory of early deeds would be extremely time-consuming to compile and perhaps not worth the effort. The deeds themselves contain no information (to the extent they were spot-checked) regarding physical property and it seems that overall landholding patterns are adequately represented by the available general data (see Figure 30).

Penn and Newport Townships: No cultural features are shown on any of the pre-GLO maps. On the GLO map drawn in 1841,

Figure 30. Monroe Township Deed Filings

YR/SEC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1858(1)																	
1865																	
1866	1	2					1	2		2	1	1	2	2		1	
1867	2				2			5		1		4	4	5	2	2	1
1868	3		1	2	1			6	3			5		3	4	8	1
1869		2			2		3	2	1	1	1	1	1	1	1	1	1
1870			2	1	1		4	2				2	1	1	4		1
1871		1			2			1	1	1	1	4	1		1	1	
1872	1	1	1	2	5		1			2	2	4	2	2	1	1	2
1873	1	1	1		2			2		3		2		2	3	1	3
1874		1	2		3		4	1		2	1	5	2		1		2
1875		2		3		1	1	1	3	1	1	3	4			2	1
1876							1		1		1		2			2	

YR/SEC	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1858														
1865														
1866	1			1	2	1	1	3	2	1	1	6		1
1867		1	5	5	5	6	1		3	1	1	3	1	2
1868		3		4	3	6		1	2			4		
1869	3	1	3	5	5	4			7	2	2	1		1
1870		1	3	1	2	4			2	3		2	3	
1871	1			3	4	3			3	3			1	5
1872	2			2	4	3		1	3	2	2	2	1	2
1873			4	1	4	4			1	4		3	1	2
1874	4		3	3	6	4		1	3	4				
1875	1		2	2	4	5		2	1	1	1	3	1	1
1876			1	2	2	5	1	3	4	1		2		1

YR/SEC	32	33	34	35	36
1866	3	1	1	1	5
1867	1	5	8	2	
1868	1	1	1	2	
1869	1	2	3		1
1870	1	1	4	5	2
1871		2		1	
1872	4		1	2	3
1873		2	2		
1874		1	3	2	2
1875			4	2	2
1876				2	1

(1) the pre-1866 data are very incomplete.

numerous roads and trails are shown, reflecting the proximity of this township to Iowa City. Enclosures are shown in Sections 17, 18, 19, 20, 34, and 35 but no other cultural features are indicated. An historic farmstead has been reported by Corps of Engineers personnel in the NW 1/4 of Section 9 in Newport Township. This appears to correspond to the farmstead formerly located in Tract A-54 of the Corps of Engineers real estate and land acquisition records.

The Thompson & Everts (1870) map shows the eastern edge of the township, along the Iowa River, to have still been heavily forested at that time; this level of detail is not shown on subsequent maps. A road crossing the river is shown in the SE 1/4 of Section 32 on the Huebinger Survey & Map Publishing Company (1900) map and another one is shown on the section line between Sections 21 and 24 on the 1917 map (Anderson 1917b).

On the 1870 map almost the entire township is again shown as being heavily forested, with the only clear areas being in the NE and SE corners. No river crossings show on any of the maps.

These two townships were originally separate, but are combined for record keeping purposes in Johnson County (see Figure 31).

Jefferson Township: No cultural features are shown on any of the pre-GLO maps. On the GLO map done in 1842, cultural features are also absent, with the exception of a road running NW-SE through Sections 27, 35 and 36 and various trails. Aurner (1912:159) noted that "Another pioneer who came into the northern part of the county, now Jefferson Township, in 1841, was Benjamin Swisher, who was also from Ohio. He purchased his claim from a 'homesick' pioneer..."

He also noted (1912:160) that "The village of Shueyville, in the same township as Swisher, has a local history that cannot be separated from that of 'church and school,' and therefore is kept in that connection". The last town in the township to be platted (Cou Falls) was done in 1905.

The earliest atlas map of this township (Thompson & Everts 1870) shows a ferry crossing for the Iowa River in the S 1/2 of Section 22. This ferry is not shown on the Novak map (1889) which is generally lacking in cultural detail, but does appear on the Huebinger Survey & Map Publishing Co. (1900) map and a 1917 map.

The 1866-1876 deed record totals are tabulated in Figure 32.

Big Grove Township: No cultural features are shown on any of the pre-GLO maps. On the GLO map done in 1842, enclosures are shown in the SE 1/4 of Section 21 and the SW 1/4 of Section 22, the SW 1/4 of Section 3, in the SE 1/4 of Section 28 and the SW 1/4 of Section 27, and along an early road system shown running NW-SE through Sections 4, 9, 10, 15, 14, 23, 24, 25, and 36.

Figure 31. Penn & Newport Township Deed Filings

YR/SEC	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1866	1	2	4	1	6	1			4		3	4	6	2
1867		3	14	4	7	4	1	1	5	2	3	3	5	5
1868	1	2	3	3		10	1		2	2	1	2	11	3
1869		4	5	1	6		3	2		3	3	3	9	4
1870	7	1	10	10	8	2		1	3	7	1	1	5	
1871	2	2	9	6	3	3		3	1	4	1	1	1	
1872		3	2	8	2	5	1	4	5	3	4		5	7
1873		3	3	1	12	3		5	8		4	1	7	
1874	1	1	2	5	5	2		1		5	2	1	5	2
1875			6	6	1	4	2	1		4	1	2	3	2
1876	2	1	7	11	3	1	1	3	1	2		2	8	4

YR/SEC	15	16	17	18	19	20	21	22	23	24	25	26
1866			3		2		2	2		3	1	1
1867	4	4	5		1	2	4	3	3	6	2	2
1868				1	1	1	2	2	6	3	6	1
1869	1	2		1	1	1	7	5	2	4	7	3
1870		1	2	1		2	2		4	4	2	
1871				1			4	3	3	2	4	1
1872	2	1	1			2	4		2	1	3	1
1873		3	1		1	1	1	2	1	3		1
1874						2	2	3	2			
1875	1		1					1	5		1	3
1876	3					1	4	2	3			2

YR/SEC	27	28	29	30	31	32	33	34	35	36
1866		1	1	1				2		1
1867		2	1	1	2	2	2	5	2	2
1868	5	3	2	1	1	1	4	1	1	
1869	4	4	2	1				3	2	
1870	5	1		1	1	2	1	2		1
1871	1		3				1		1	
1872	2	1	1		1	1		1		1
1873	3	1	1		3	1	3	3	1	1
1874			1			1	2	4	5	
1875	6	1		1	1			2	7	2
1876			1	2		1		1	3	4

Figure 32. Jefferson Township Deed Filings

YR/SEC	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1862				(S)	(S)					(S)	(S)			
1864														
1866		2	1	2					1	2	3	1		4
1867	6	1		1	1		4				2	2	3	11
1868		2	4	1		2		2		1	2	1	2	2
1869		1	3	2					5	2	1	2	1	3
1870					1		2		2		3	3		3
1871		1	3	1			1	1		4	2		4	3
1872	1						1					2	6	8
1873	9		3	1			1	3	2	5	2		1	1
1874			1					1	2		1	4	1	4
1875			3						1		1	2	2	3
1876			1	3				1	2			2	2	6

YR/SEC	15	16	17	18	19	20	21	22	23	24	25	26
1862	(S)	1						(AS)				
1864		1										
1866	2	1		3	1		2		2	1		
1867	3		2	5				1	5	2	3	
1868	6	2	3	3	1	2	1		7	4	1	4
1869	5	3		1	1				2	7	4	6
1870	7	4	1	1		2		6	7	3	1	5
1871	6	3	2	6	4	1		2	3	3	2	3
1872	3	3	1	4	2	5		2	1		4	1
1873	2	3	2			2	1	3	5	4	3	2
1874	5		2					5	2	3		1
1875	2	3		1	1			2	2	7	6	6
1876	2	1			1			2	2	5		3

YR/SEC	27	28	29	30	31	32	33	34	35	36
1862	(AS)									
1864										
1866	1		1	2	1				2	
1867	1	2		2	3	1	1		1	4
1868	1			1	1			2	2	
1869	1			1	1			3	3	1
1870		1	1				2	1	1	
1871	2			2				1		
1872	2	3		1		3	1	1		1
1873	2		2					1		
1874	1							2		8
1875	1					1		1	4	2
1876	1		1					3		

(S) = land belonging to the founder of Shueyville.
(AS) = land belonging to the Amana Society.

(see Figure 33). Numerous trails are also shown. Aurner (1912:164) recorded that "The first settlers in Big Grove township have been named as arriving in the years of 1838 to 1840. The sources were the states of Ohio, Indiana, Pennsylvania, New York, while England contributed one..." Andreas (1875:544) listed one patron from this township, who came to Iowa from Indiana.

The earliest atlas map (Thompson & Everts 1870) shows that the southwestern corner of this township, along the Iowa River, was still heavily forested; again, this kind of information is missing from the Novak map (1889) as well as the subsequent 1900 (Huebinger Survey & Map Publishing Co.) and 1917 maps. An apparent river crossing is shown in the SE 1/4 of Section 32 on a 1917 map but not on any of the previous ones. Patterns of deed recording are summarized in Figure 34.

Oxford Township: No cultural features are shown on any of the pre-GLO maps. On the GLO map done in 1841, no cultural features are shown other than trails and one enclosure in the NW 1/4 of Section 25. Andreas (1875:544) listed one patron from this township, who had come from New York in 1850. According to Aurner (1912:161) "The pioneers of Oxford township...came in 1839."

River crossings are shown on the 1900 (Huebinger Survey & Map Publishing Co.) map, but not on previous ones. These crossings are in Sections 28, 29, 34, and 35.

Patterns of deed recording are summarized in Figure 35.

Madison Township: No cultural features are shown on any of the pre-GLO maps. On the GLO map done in 1841 we find a road labeled "Road to Iowa City" shown in a position NW to SE, passing through Sections 5, 4, 3, 10, 11, 14, 23, 24, 25, and 36. A square enclosure is shown across the boundary in the NE 1/4 of Section 33 and the NW 1/4 of Section 34 on the north side of Clear Creek. A very small enclosure is shown in the NE 1/4 of the NW 1/4 of Section 35. A very small square which may represent a structure is in the SW of the NE of Section 31. No other cultural features are shown.

A river crossing is shown in Section 22 on the 1900 (Huebinger Survey & Map Publishing Company) map, but not on either of the two previous maps.

Patterns of deed recording are summarized in Figure 36.

A quick search was made of the alphabetical listings for the pre-1866 period and the superficial results obtained are summarized in Figure 37. These data generally reflect the 1839 beginning of settlement of Iowa City, and also support the conclusion that little habitation was begun in the surrounding area until after Iowa City had been established as a commercial and urban center.

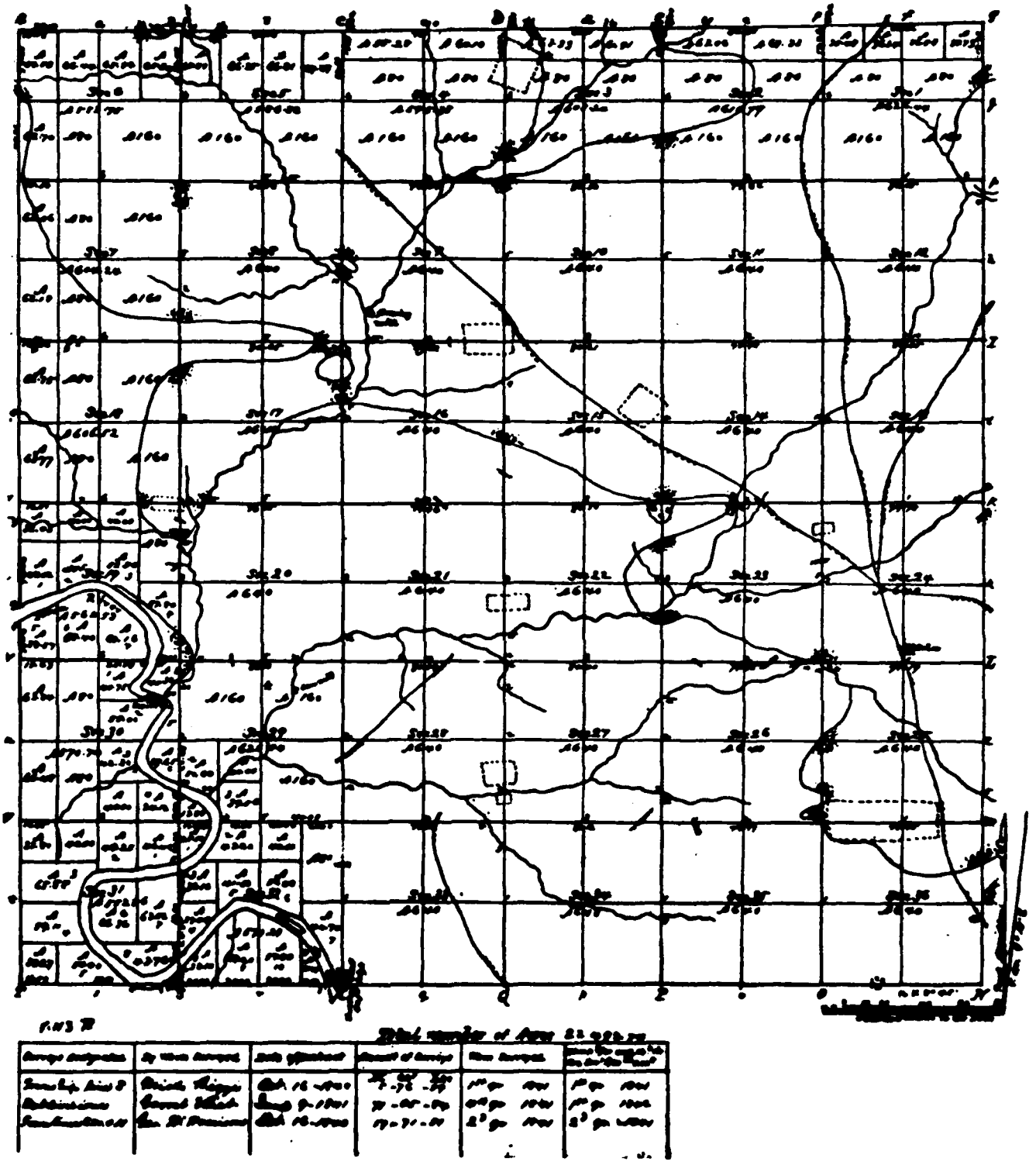


Figure 33. Big Grove Township Map, 1842

Figure 34. Big Grove Township Deed Filings

YR/SEC	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1866	3	1	5				1	1						
1867	3		4				1	2	1		2		1	
1868			1	1	5	1		1	2		1			1
1869	2	2			1	1	2		1					4
1870	2		1			1	1				1	1		
1871	2	1				1								
1872	1	1	2				1							1
1873	1	3					1			1			1	
1874	2	1	2		4	1	2						2	
1875		1	2		1	1		2	1			1	1	1
1876							2			1	2			1

YR/SEC	15	16	17	18	19	20	21	22	23	24	25	26
1866				1	1	1	1	2		2		1
1867				1	1			1	1	2	2	6
1868		3	2		1	4	4	1	1	3	2	2
1869	1				1	3	2	4	2	2	1	2
1870			2			1		1		7	2	5
1871	1	2			2		5	2		2		3
1872		3			2	2	3	2			1	
1873	1			1	1	1		3		2		5
1874						1		1	2	1		2
1875		1	3	2	3	1	2	1	2	3	1	
1876	3	3	1	1		1	4	4	3	2	3	8

YR/SEC	27	28	29	30	31	32	33	34	35	36
1866	2	1		1	2		3	1		
1867	6	6	8	3	7	1	7	5	4	2
1868	7	4	3	3	3	2	4	2	2	2
1869	5	4	6	2	2	2	5	1	1	3
1870	1	8	2	3	6	2	5	6		
1871	1	2	3	3	3	1	4	6	1	1
1872	1			1	1	4	2	1	2	
1873	4	5		2	3	9	4	1	2	1
1874	5	3			2		2	1	1	4
1875				5	2	1	2	4		
1876	2	2		3	1	1	3	1		2

Figure 35. Oxford Township Deed Filings

YR/SEC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1866	1	1		6	3		1	1	3			1	3	2	1	
1867	1	2	1	1	3	4	5	3	1	2	2		2	2	2	3
1868	8			1	1	1	5	2		1	1	2	1	4	2	1
1869	3		1		1	1	1	2	2	1	3	2	2	3	5	
1870	1	2	2	4	1	1		1	3		1	5	1	1	1	1
1871	2	1			5	4	2	4	1		1	1	2	1	1	
1872	2	2	1	1	2	2	1				1					1
1873	1	1	1	2	2	1	2	2			1				2	1
1874	2	1					2	3		4					3	1
1875	4	5	5	1	2	2	3			2	3	1	1			
1876					4	4	3	1				1			1	

Figure 36. Madison Township Deed Filings

YR/SEC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1855		SD														
1866				1	1		1	2		1		1				1
1867			1						1	1	2	4				4
1868	4	1	1	1		2	6			2	1	2	1	2	5	3
1869		1	1	1	3	7	4		2						1	1
1870			2	5	3		2			1	1					3
1871				4	3				1		1	4	2			
1872	1		3	1		1	2	2			1	3	1	5		1
1873	3		1				1		1				1			
1874		1	2	1	1		3	1		1	1					
1875	2	1	2	3			1	1		1	1	1				3
1876					1	1	3					4				

Figure 37. Alphabetical Deed Listings, Johnson County

LETTER	FIRST LISTING	LOCATION
A	June 29, 1842	Iowa City
B	Aug. 30, 1840	" "
C	Nov. 1, 1839	" "
D	May 13, 1840	T78N, R5W, Sec. 32
E	Oct. 28, 1841	Iowa City
F	June 16, 1840	" "
G	March 16, 1841	T79N, R5W, Sec. 5
H	May 1, 1839	T77N, R5W, Sec. 32
I	July 13, 1839	Iowa City
J	Nov. 21, 1840	" "
K	April 30, 1841	" "
L	June 29, 1840	" "
M	Aug 10, 1840	T78N, R5W, Sec. 32
N	Dec. 14, 1842	Iowa City
O	April 29, 1843	" "
P	Aug 22, 1842	" "
Q	March 9, 1844	T80N, R6W, Sec. 26
R	April 17, 1840	T79N, R6W, Sec. 1
S	Aug. 6, 1840	Iowa City
T	June 18, 1839	T78N, R5W, Sec. 30
U	Aug. 3, 1840	T79N, R6W, Sec. 13
V	Jan. 26, 1841	T77N, R7W, Sec. 5
W	May 5, 1840	Iowa City
X	Aug. 9, 1881	" "
Y	March 8, 1843	" "
Z	July 25, 1844	" "

As a further evaluation of the information contained in the alphabetical deed listings, volumes "A" and "D" were briefly examined and the first deed filed for each township in the project area was identified (see Figure 38).

National Register Properties in Johnson County: A check of the state inventory of National Register properties indicated a total of 28 in Johnson County; of these, 25 are in Iowa City, 2 are in Coralville, and 1 is in Kalona. This again demonstrates the focus on Iowa City historically and also perhaps reflects elite vs. inarticulate representation in National Register considerations.

Johnson County Summary: As with the other counties, population densities were calculated for the different townships, based on GLO and various atlas maps. These data are summarized here:

TOWNSHIP	GLO MAP	1870 MAP	1889 MAP	1900 MAP	1917 MAP
Monroe	1842	94%	This	100%	100%
Jefferson	1842	87%	does	87%	93%
Big Grove	1842	94%	not	100%	100%
Oxford	1841	94%	show	97%	97%
Madison	1841	91%	all	91%	91%
Penn/Newport	1841	72%	structures	91%	95%

The sections which did not fill up to 100% during the course of the second half of the 19th century are those adjacent to the Iowa River and primarily consisting of low-lying land.

Historic Indian sites were reported below Iowa City on the left hand side of the river (Andreas 1875:477). Poweshiek's village was located 2 miles below Iowa City, also on the river. In the files of the State Archaeologist the following historic Indian sites are listed: 13JH34, 13JH35, and 13JH36, all are south of the project area and appear to indicate a historic Indian preference for areas outside the more rugged sections of the Iowa River valley, supporting Weichman and Tandarich's (1974:82) observation that "Ethno-historic accounts note the location of these sites (i.e., Historic-Aboriginal) as mainly being on sandy ridges within the Iowa river floodplain." The Sauk and Fox apparently occupied such locations at the time of 19th century European contact (Weichman & Tandarich 1974:77).

Ethnic distribution and nativity patterns of the early historic European population are seen in the following summary taken from Aurner (1912:162):

> In 1856 the census of the township gave the sources of the population to that date, which indicates the interesting facts of states drawn upon in the settlement of a single one of the townships of the county, and which would,

Figure 38. Sample of Earliest Filings, Johnson County

NEWPORT/PENN TOWNSHIPS

A: June 19, 1847; Section 17

D: March 1, 1843; Section 27

MADISON TOWNSHIP

A: December 14, 1855; Section 14

D: January 10, 1846; Section 30

OXFORD TOWNSHIP

A: October 11, 1856; Section 26

D: December 9, 1852; Section 29

BIG GROVE TOWNSHIP

A: May 19, 1845; Section 13

D: September 8, 1847; Section 18

JEFFERSON TOWNSHIP

A: March 5, 1844; Section 36

D: July, 1853; Section 11

MONROE TOWNSHIP

A: June 6, 1846; Section 25

D: February 5, 1846; Section 26

> if followed out, make a study of great value (emphasis mine). From Ohio there were eighty-five citizens; Iowa natives, in that short time, fifty-one; Pennsylvania, forty; New York, thirty-three; Germany, twenty-three; Ireland, eighteen; Indiana, twelve; Kentucky, eight; Illinois, six; Canada, four; Michigan two; Vermont, Massachusetts, England, Scotland, North Carolina, Missouri, Tennessee, one each.

Iowa County

The county was organized in 1847. Andreas (1875:477) noted that it was more heavily timbered than most others in the state and that it had abundant natural water resources. He also commented on the great fertility of soils around Marengo. He noted that the Amana colonists quarried limestone for the houses and shops from along the Iowa River, and that clay suitable for making bricks was found throughout the county.

Washington Township: No cultural features are shown on any pre-GLO maps. On the GLO maps done in 1844 a location labeled "Indian Farm" is shown in the southern halves of Sections 27 and 28 and northern halves of Sections 33 and 34, and also extends into the SW 1/4 of Section 35. This location does not correspond to any recorded historic Indian sites and would be a good location to conduct ground survey. With the exception of trails, no other cultural features are shown.

Andreas (1875:557) listed 6 patrons from this township, with the following nativity distribution: Ohio (2), New York (1), Illinois (1), and Germany (2). The Union Historical Company (1881:657) stated that this township's history was intimately entwined with that of Marengo and Marengo township. The same publication went on to note (p. 658) that there was but one creek in the township and that George Titler, who arrived in 1849, was one of the earliest settlers; he moved into Washington Township in 1853.

According to the Union Historical Company history (1881:658), claims were filed in 1846 (2), 1847 (1), 1848 (1), and 1849 (2) in this township. These early deeds were not present in the files of the county recorder's office in Marengo. One of the 1846 dates is outside the area incorporated into the research from this township; the others have been added to Figure 39, which also shows the deed recording patterns for the period 1853-1863 (the columns marked "AS" indicate properties held by the Amana Society).

Marengo Township: According to the Union Historical Company (1881:542) the first settler came to Marengo City in 1845. Additional early settlement occurred from 1845-1849. People who arrived in the early 1850's were also considered to be among the

Figure 39. Washington Township Deed Filings

YR/SEC	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1846			1											
1847						1								
1848					1									
1849	1				1									
1853								1					AS	
1854				1										
1855														
1856			1		1		1							
1857				1				1	1					
1858														
1859														AS
1860							1				AS	AS		
1861					1									
1862				1									1	
1863			1	1										
1864														
1865							2	1	2					
1866	1		2	1	1	3	3	4		1				
1867	1	1	4	1	2	8	1	3	1	1	1		1	
1868			9	4	2	13	14	6	1	1	1			
1869	1	1	4	14	10	6	5	4	10	4				
1870	2	1	1	6	1	3	1	1	2	1	1			

YR/SEC	27	28	29	30	31	32	33	34	35	36
1853		AS	AS					AS		AS
1854									AS	
1855						1				
1856				1						
1857	AS									
1858										
1859										
1860										1
1861										1
1862	1									
1863						1				
1864						2				
1865	1	1		2		1	1			
1866			2	5		1		4		
1867	1	1	2	13	1		1	1		1
1868	1		2				2	1		
1869		2					3			
1870		1	4							1

"First Settlers" in the 1881 publication.

No pre-GLO maps show any cultural features in this township. Andreas (1875:556) listed 54 patrons from this township, the great majority of whom lived in Marengo, and who represented the following nativity patterns: Ohio (3), Germany (3), Illinois (3), Indiana (5), Tennessee(2), England (2), New York (6), Vermont (1), Massachusetts (1), Connecticut (1), Maine (2), Ireland (2), Germany (2), and Wales (1). The earliest of these is listed as having come to the state in 1844. The railroad reached here in 1859 and helped to create the triangular focus (in addition to Cedar Rapids and Iowa City) which served to isolate the project area from principal transportation, population, and economic networks. It is probably a reflection of the earlier settlers' and developers' impressions of the ruggedness of the Iowa River Valley (although there is no direct reference to this in any of the documents examined) that caused them to circumvent the area, rather than to transect it. County deed records were not recorded for this township.

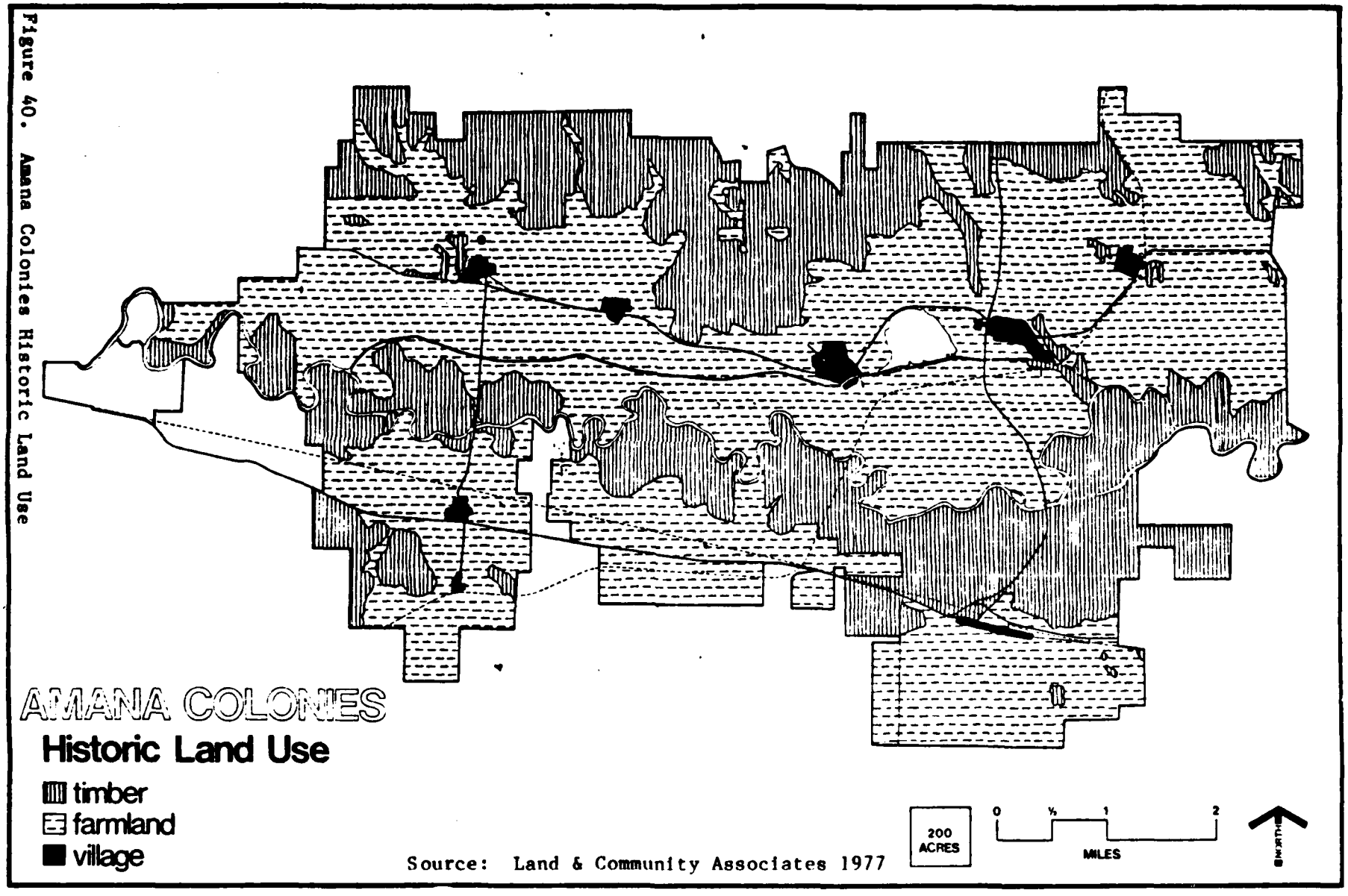
Lenox and Amana Townships: The people who eventually settled the Amana Colonies began arriving in the area in the early 1850's. Other early settlers apparently arrived in the township in 1851 (Union Historical Company 1881:771). For Lenox township the same publication noted that "Price Creek with two small branches constitute the only water-courses.", while of course Amana township enjoyed the benefits of the Iowa River.

Lenox Township: None of the pre-GLO maps show cultural features in this township, and on the GLO map drawn in [ ], only trails are shown. Andreas (1875:556) listed 11 patrons from this township, with the following nativity distribution: Pennsylvania (3), No data (1), Prussia (1), Ohio (1), and Germany (4). The earliest of these was listed as having come to the state in 1846.

Amana Township: No cultural features are shown on any pre-GLO maps. The seven Amana villages are peripheral to the Coralville project area proper and yet since 1855 their presence exerted an influence over the pattern of development of the entire region. Their largest impact was through the amount of land held by the Society and in the development of an economic concentration at the western end of the project area. No Amana Society land was impacted other than by flooding easements at the time the Reservoir project was developed and no historic elements of the Amana area were impacted directly by the original project.

Figure 40 shows the settlement pattern of the Amana colonies. The tight village clustering was in contrast to the dispersed farming pattern of the area around the colonies, including the Coralville area.

The entire 26,000 acre tract held by the Amana Colony is a National Historic Landmark, but no individual structures are highlighted (Land & Community Associates 1977:5).



Source: Land & Community Associates 1977

Figure 40. Amana Colonies Historic Land Use

Andreas (1875:556) listed only one patron from this township, who gave Germany as his birthplace, but had not arrived until 1870. Obviously the members of the Amana Society had not felt it necessary to support Andreas' atlas and this is an indication of the economic, religious, and political variables which influence the presence and absence of particular groups and/or activities from such vanity-based compilations.

The 1886 map (Warner & Foote 1886) clearly shows the amount of land in the hands of the Amana Society and the north-southwest route of the Chicago, Milwaukee, and St. Paul Railroad which linked the western end of the previously described "triangle" with cities and other transportation networks outside the project area.

Examination of the county deed records showed that for county record keeping purposes, Lenox and Amana Townships are combined. These data are summarized in Figure 41.

Hilton Township: According to the Union Historical Company (1881:749), although original claims were filed in 1852, this township was not settled until 1854-1855, apparently because "Hilton Creek is the only stream of water in the township. No other township in Iowa county has so few runs of water." No cultural features were shown on any pre-GLO maps and on the GLO map done in 1844 a few trails are shown. On the very northern edge of the NE 1/4 of Section 2, one enclosure also appears. The lack of surface water referred to in the county history is clearly reflected in the GLO map (see Figure 42). Andreas (1875:556) listed 24 patrons from this township, with the following nativity distribution: Norway (8), Ohio (3), Iowa (2), England (3), Delaware (1), Illinois (2), Virginia (1), Ireland (2), Wales (1), and Scotland (1).

Data derived from county deed records are summarized in Figure 43.

Iowa Township: Settlement began in the early 1850's (Union Historical Company 1881:732). No cultural features are shown on pre-GLO maps and on the GLO map done in 1844 only a few trails or rudimentary roads are shown through the northern tier of sections in this township. Andreas (1875:557) listed 9 patrons from this township, with the following nativity distribution: Virginia (1), New York (3), Ohio (1), Wales (2), England (1), Scotland (1).

The Chicago, Rock Island, and Pacific Railroad, which formed the sourthern arm of the triangle, is shown on the earliest atlas map for the area, reproduced in Figure 28 (Warner & Foote 1886). The extensive holdings of the Amana Society are also indicated. Data summarized from county deed records are shown in Figure 45.

Figure 41. Lenox & Amana Township Deed Filings

YR/SEC	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1853	1												AS		AS
1854															
1855														1	
1856															
1857															
1858											2				
1859										3	2			1	
1860															
1861							1			1					
1862															
1863										1					
1864															
1865															
1866									1	1	1				
1867		1			2		1		1	5	5	1		3	
1868			2	3	8	12					6	2		3	
1869					1						5	2		1	
1870	1		2	2		2				2	6	1		2	

YR/SEC	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1849			1	1											
1853	AS	AS	AS	AS	AS	AS	AS	AS	AS			AS		AS	AS
1854															
1855										1					
1856										2					
1857															
1858													2		
1859															
1860										1					
1861															
1862															
1863															
1864										1					
1865															
1866															
1867											2		1		
1868				1									3		
1869										2					
1870				1							3		3		

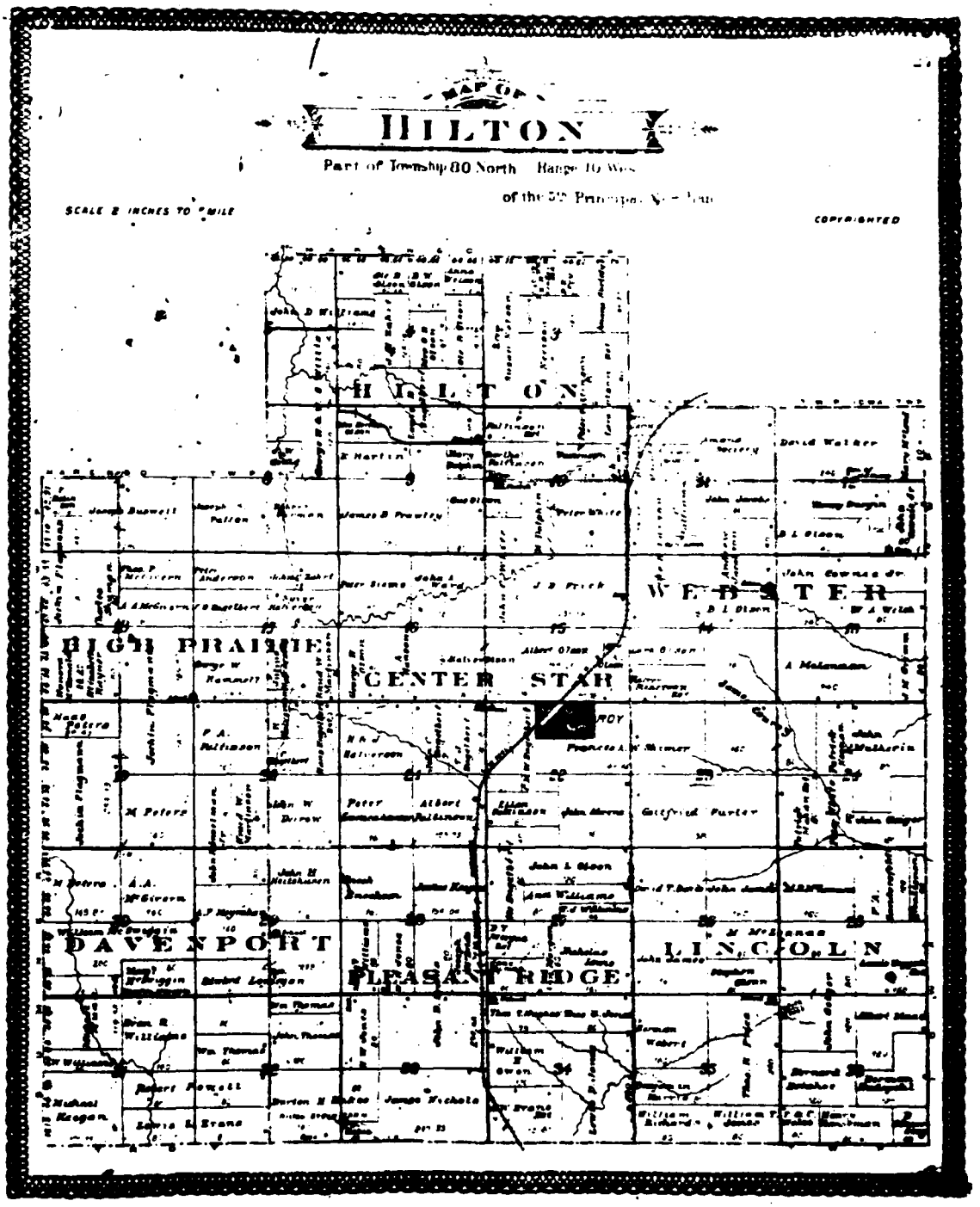


Figure 42. Hilton Township Map, 1900

Figure 43. Hilton Township Deed Filings

YR/SEC	1	2	3	4	5	6	7	8	9	10	11	12
1853		AS	AS									
1854	1					1		1				
1855								1	1			
1856				1								
1857					1							
1858									2			
1859	1											
1860			1									
1861												
1862			1									
1863					1							
1864			1			1						
1865			1	1	1			1		1		
1866			4	1	1		2	1				
1867	1				3	4	3	1	1	6	2	1
1868					4	4	1	6	1	1	1	1
1869				3	5	1	2	1		2	1	2
1870		3	1	2	3	3	2	3	1	1		

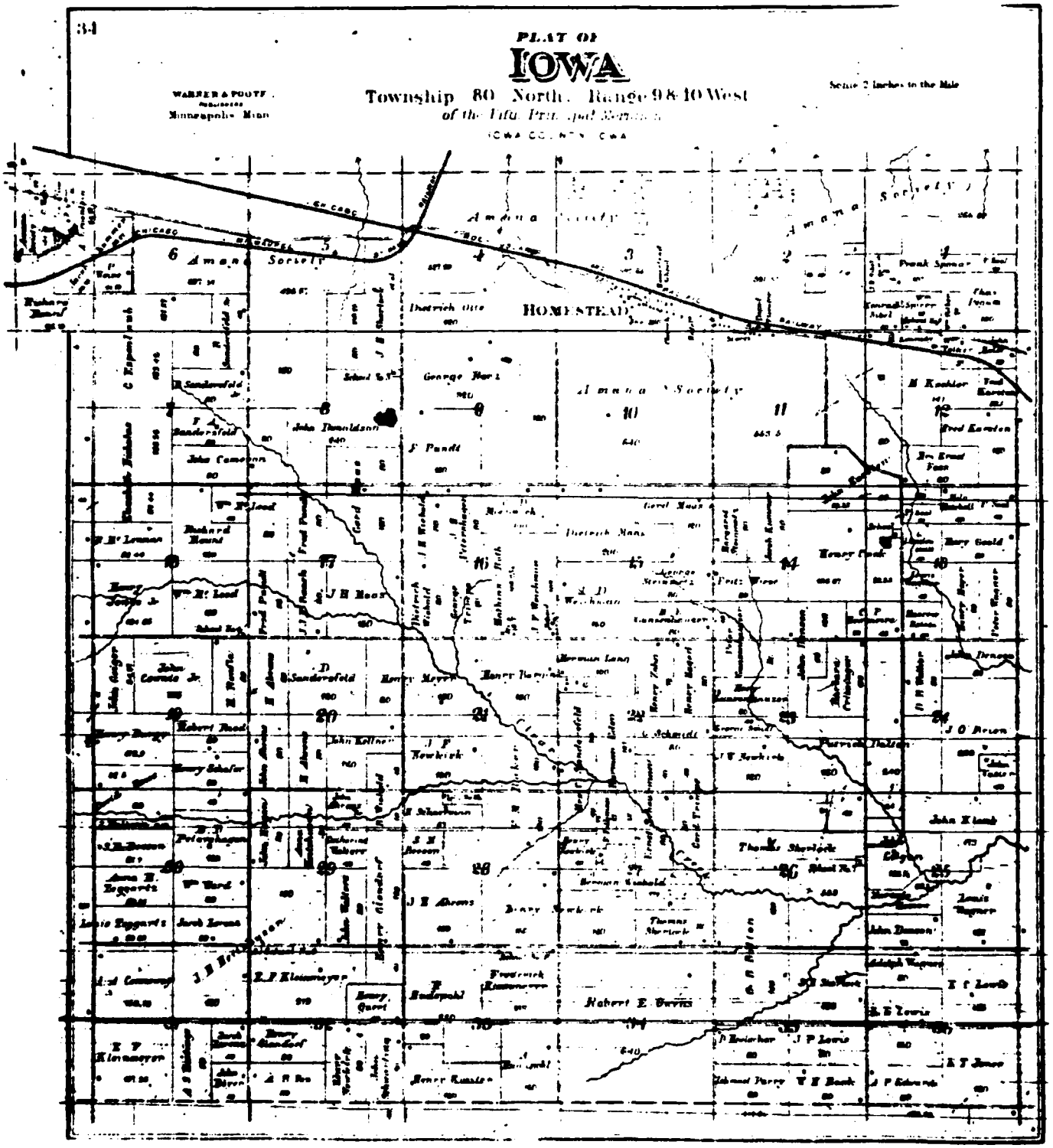


Figure 44. Iowa Township Map, 1886

Figure 45. Iowa Township Deed Filings

YR/SEC	1	2	3	4	5	6	7	8	9	10	11	12	13
1853				1							1	1	
1854													
1855				1									
1856			1										
1857		1	1		1				1				
1858		1	1										
1859		3	2										
1860			1										
1861	3		2			1						1	3
1862			1										
1863	1		1										1
1864	1	2		2	1								
1865												1	3
1866	2		2				1		2	1			1
1867	2	2		3	2	1	2				2	2	3
1868	2	3	1		5	3	2	4			5	3	3
1869	2				1		3	2				2	2
1870			4						2		1	2	2

Iowa County Summary: As with the other counties, a rough index to measure population growth was calculated and is presented below:

TOWNSHIP	GLO MAP	1886 MAP	1900 MAP	1917 MAP
Washington	1844	93%	93%	93%
Lenox/Amana		62%	ND	ND
Hilton	1844	97%	100%	100%
Iowa		92%	92%	100%

The low density of population, especially in Lenox/Amana township, reflects a combination of the extensive landholdings of the Amana Society and their tightly clustered living pattern in the seven communities. This settlement pattern contrasts with the dispersed distribution of farmsteads outside of the Amana Society area.

Settlement Patterns

Westward expansion by American pioneers began in earnest after the Revolutionary War; the lands of the Louisiana Purchase lay far to the west and first the prairies and then the Mississippi River were natural impediments to westward expansion. Except for very minor exploratory incursions, European occupation of lands west of the Mississippi (in the central valley) did not begin until the first decades of the 19th century.

When EuroAmerican settlers arrived in Iowa in the early 19th century, they encountered native American groups which had largely been displaced from their traditional lands farther to the east and northeast. Thus, territorial distribution of various Indian groups shifted rapidly. There are few direct mentions of encounters with Indians in the middle Iowa area and thus the subject is not dealt with extensively here; persons interested in more general discussions of Indian settlement of Iowa during the historic period are referred to a wide variety of available sources (Newhall 1841; Bishop 1970, 1974, 1976; Ohlerking 1975).

It is interesting to note, however, that just as in the historic period the middle Iowa valley seems to have been in between major settlement and cultural areas, so was the case in the early years of European settlement. As Smith and Eichhorn (1982:37) noted,

> By the 19th century, (the area that is now) Coralville Lake was at the southern edge of a unique exploitative zone that was shared by several historic tribes: the Fox to the south and east; the Sauk, Chippewa, and Potawatomie to the southwest; Siouan groups to the north and west; and Winnebagos to the northeast. This buffer zone apparently was not occupied or controlled by any particular

> group for an extended period of time, but rather served as a zone of common exploitation, as well as an area within which groups temporarily expanded during times of stress. This may explain why known habitation sites are few in number and small in scale. It is also likely that many historic period Native American sites were covered when the lake was filled.

It is clear the Smith and Eichhorn were speaking generally here, since no historic Native American sites are known to have been within the project area. It is interesting to speculate, however, that the area along the river may have provided the same relief of spatial stress for second and third generations of European settlers (Esarey 1980) as it did for the earlier Indian groups.

There seems to have been little direct contact, or problems, with the Indians, although Brewer and Wick (1911:287) described an incident in which

> Caleb Hendrix came, it is thought, in 1838. Of him it is said by John Lanning, that old Caleb used to say that he made a claim and spread his tent on what became Cedar Rapids, but that a lot of bloodthirsty and ferocious Indians camped on the other side of the river and by their acts and grimaces and the noise they made Caleb sized up the situation that this was a case where it would be better to be a live coward than a dead hero and he pulled up stakes and removed further north. . . .

Settlement began slowly in the 1840's and 50's and then increased steadily following the Civil War. Following Glassie's (1968:37) classification, the majority of the immigrants to Iowa were derived from the North Atlantic (New England), Mid-Atlantic, Upland South, and Lowland South England cultural source areas during the 19th century. As Smith et.al. (1981:17) noted,

> The Midwest was influenced by the North Atlantic (New England), Mid-Atlantic, Upland South, and Lowland South cultural traditions during the 19th century (Glassie 1968:38); (in west central Illinois [my addition]). . .Upland South and Mid-Atlantic influences predominated until nearly 1850. New Englanders from the North Atlantic region and foreign-born immigrants (Irish, German, English) eventually merged within this cultural milieu after mid-century.

The same general pattern seems to have pertained to eastern Iowa, with a 20-30 year time lag, although the middle Iowa valley seems to have received a higher number of eastern European immigrants (see ethnicity and place of origin data in conjunction with county and township analyses). The early Upland South migrants introduced trapping, trading, timbering, subsistence farming, and livestock raising in areas they re-settled (Glassie 1968:38-44; Smith et.al. 1981:17). Brewer and Wick (1911:272) described what must have been a typical pattern for many families:

> The first settlers, as far as is known, who came to this part of the country were Robert and Jane Ure with their family of grown children, in the spring of 1841.... The family had emigrated from Scotland in 1838 and gone west, locating in Ohio for a short time, removing to Iowa territory in search of land. . . . The Ures wrote back to Scotland to their friends, and for many years emigrants came. . .

Recombinations of these European peoples and their cultural baggage occurred as they moved westward. Many of them had also lived for periods of time on the east coast or in transit to the west, and we need to be cautious in our expectations of how much, if any, ethnicity may be identifiable through material culture.

The general configuration of the countryside had been established by 1870, and there was no change other than gradual population growth to the end of the century. As Smith and Eichhorn (1982:15) noted, "At the time of EuroAmerican settlement (19th century), Johnson County consisted primarily of rolling prairie; however, the Iowa River Valley provided a variety of nonprairie environments as well (emphasis mine)." Except for continuing growth of urban areas, improved transportation networks, and the impact of the Coralville impoundment, there have been no substantial changes in the 20th century. The term "peripheral prairie-riverine subsistence pattern" which Weichman and Tandarich (1974:77) applied to prehistoric and proto-historic aboriginal settlement in the area also seems applicable to the historic period. Many of the dwellings of the 19th century inhabitants remained only minimally accessible and without modern conveniences (electricity and indoor plumbing) up until the time the reservoir was developed.

Exactly who these late 19th century residents were and what, if any, their relationship was to earlier inhabitants could not be ascertained in the time available, but it would be interesting to test Esarey's model (1980) derived from western Illinois data of first, second, and third generation (and generally decreasing quality of land occupied) against the pattern that evolved in the middle Iowa valley. With more time and land data, it should be possible to correlate first, second, and third generation settlement with the geomorphological data and its implications for soil fertility.

One thing we need to keep in mind is that while the introduction of the steel plow had a significant impact on settlement on the prairies (Conner 1974), the area of the Coralville Reservoir is so restricted that farming potential was severely limited. Beyond the immediate limits of the project area, much different and more vigorous patterns of growth are evident. As Walters (in Ekberg et.al. 1981) has pointed out, we need to look not only at the drainage basin, but its position in the overall regional pattern. Thus, while historic development was retarded in the middle Iowa valley proper, this pattern is certainly not typical of the area as a whole.

Comparisons

The middle Iowa valley appears similar to the area of Tazewell and Logan counties in Illinois (Smith et.al. 1981) in that European settlement was somewhat later there than in surrounding areas. Lack of technical ability to cope with environmental conditions, absence of connecting transportation routes, and general cultural lag are features common to both areas.

Mansberger and Coleman (1982) reported on historic settlement patterns in the lower Rock River Valley of west-central Illinois. They noted any extensive mid- to late-19th century settlements and transportation networks that evolved along both sides of the river. Broad terraces were the loci of settlement and commercial development, while roads ran at the base of the bluffs. The gentle grade of the terraces also permitted numerous crossings near population centers. The above study details numerous favorable topographic features absent from the Coralville Lake Project Area.

The "Red House" tested during Highway 408 construction in Illinois (Phillippe 1981) might be similar to many of the houses previously within the Coralville project area. In this case it would be a cautionary tale to indicate that excavations at the Red House recovered material remains indicating a higher level of economic well-being than did the structure itself. With the former house-sites in the Coralville Reservoir, it would also be interesting to assess how they interacted with wider-spread regional economic patterns.

As noted elsewhere, Esary (1982) focused on 11 sites whose inarticulate and anonymous residents were probably very similar in status to those in the middle Iowa Valley. Mansberger, on the other hand, reported (1981) on two well-to-do historic homes and sites in Central Illinois. Such residences are not matched in the middle Iowa data. Both of these homes occupied key locations on the interface between the Illinois River valley and the adjacent flatlands. Further away from the river, the 408 survey (Bonath and Kissel 1982) showed a broad distribution of medium to large farms which took advantage of the flat Illinois farmland between the Illinois and the Mississippi Rivers. These were

certainly much more favorable transportation and agricultural conditions than those which prevailed in, but not necessarily all around, the middle Iowa valley.

Comparison with the Red Rock Reservoir area

Based on preliminary data provided by Roper et.al. (1984), some interesting comparisons can be made between the Red Rock and Coralville reservoir areas.

Their observation (p. 171) that "A scant number of Euro-Americans entered the central Des Moines valley before 1845..." closely parallels the conclusions for the middle Iowa valley, and further defines the differences in subsequent development between the two areas. Military involvement in the settlement of the central Des Moines valley (pp. 171-172) was by contrast absent from the middle Iowa valley. The former seems to have had a much higher level of strategic importance to U.S. perceptions of western expansion than did the latter. The military need for goods and services also influenced development in the Des Moines Valley.

Early development and prior existence in relationship to military matters gave the central Des Moines an advantage in subsequent development activities as settlers headed for known centers of population, transportation, and commerce (pp. 173-174). River towns sprang up along steamboat routes on the middle Des Moines (p. 175), while they could not reach above Iowa City on the Iowa and the Coralville project area was thus beyond the reach of this significant transportation link. The railroads eventually became the most important forms of transportation (p. 176), as in other parts of Iowa and the Midwest. In both the Coralville and Red Rock project areas, the railroads tended to focus, for the most part, on already established population centers.

The strong emphasis on hog and corn farming reported for the central Des Moines (p. 180) was not matched in the middle Iowa valley. The agricultural development in the Des Moines valley was seemingly initially tied to the early population centers, and subsequently greatly aided by the coming of the railroads and greater ease of access to markets (pp. 180-181).

Early mills are reported for both the middle Des Moines (p. 184) and the area just above Iowa City, as well as in Cedar Rapids; no such developments took place in the Coralville area. Large coal veins in the Des Moines valley also contrasted with their absence in the middle Iowa valley. Although many of the Des Moines coal mines were surface oriented and only lasted for a few years (p. 184), they nonetheless provided the basis for commercial development, settlement, and economic growth. The absence of such resources was crucial in the lagging development of the middle Iowa Valley.

Ethnically, there seems to have been a much larger

concentration of Dutch settlers in the middle Des Moines valley, while few people of this background were in the middle Iowa. Related to the problems of detecting ethnicity from purely archaeological remains, none of the artifact summaries from historic sites are indicative of particular ethnic backgrounds (pp. 186-194).

Comparison with Saylorville Reservoir Area

Comparison of the Coralville data with historic data from the Saylorville Reservoir area (Gradwohl 1975) shows similarities and differences in settlement patterns (see Figure 46).

More precise determination of the age of many sites at Coralville could not be made because resources were almost purely photographic and archival, and earlier occupations or architectural alterations usually could not be detected. Comparison of 1840's GLO maps from both the Saylorville and Coralville areas reveals a similar lack of occupation at that time. Approximately 70% of the historic sites at Saylorville were from either the late 19th century or the 19th/20th century, a situation apparently not unlike that in the Coralville area.

Many of the "sites" in the Saylorville area are unassociated with structural remains and may represent only dumping activities. A reduction in the number of sites at Saylorville would bring the area into a site density more comparable with that at Coralville, but still not as low.

Summary

In comparing developments in the Iowa River Valley to those others briefly summarized above, we see that being a waterway was not sufficient to bring about settlement and development. Gentle terrain that permitted crossing the waterway and the presence of desired raw materials and natural resources were also perquisites. In this respect, the Iowa River Valley in the general area of the Coralville Reservoir, generally from the end of the Amana Colonies to the borders of Iowa City, was lacking by comparison to the surrounding area. Once the pattern was set early in the 19th century, subsequent developments conspired to keep the area isolated from the evolution of transportation, economic, and settlement networks down to the middle years of this century.

Figure 46. Historic Sites, Saylorville Reservoir

Period	Number of Sites	Percentage
Early Historic	2	1.3
Early 19th century	1	0.7
19th century	13	8.8
Late 19th century	15	10.1
19th/20th century	75	50.7
Early 20th century	4	2.7
20th century	13	8.8
Undetermined	25	16.9
TOTAL	148	100.0

III. CONCLUSIONS & RECOMMENDATIONS

A number of problems in the use of existing documentation about cultural resources at Coralville Lake have been mentioned in previous pages. In this section, a more formal critique of previous research in the project area will be presented. A number of specific problems of theory and method will be identified and discussed, and means of designing future research so as to compensate for these problems will then be presented.

If the cultural resources of the project area are to be correctly evaluated, it is imperative that some attention be paid to the manner in which those resources are affected by natural and human-directed forces. To be sure, this is a consideration in any cultural resource research project, but is particularly crucial when dealing with localities where large-scale restructuring of the landscape has taken place.

In reservoir areas, the cultural resource data base can be particularly disrupted by the actions of physical forces which result in differential disturbance of various classes of resources. Among prehistoric resources, most susceptible are those which are of limited areal extent, or those situated on landforms which are rapidly altered by the processes of sheet erosion and bank slumpage. Unfortunately, these are also the resources most often ignored during the performance of research projects which define "significance" as a function of site size, density, and accessibility. Thus, entire classes of behaviors may be effectively eliminated from consideration due to their locational and physical nature.

Ironically, it is these same disruptive forces that make the identification of site locations in reservoirs much easier than in non-reservoir areas. Erosion of topsoil along the shoreline reveals the presence of cultural materials that might otherwise not be found without the application of subsurface testing procedures. Unfortunately, it has been the practice at Coralville Lake to record the presence of these surface artifact concentrations as formal site locations, with no consideration of the part that natural forces had to play in their existence and configuration.

As an example of the extent of erosional disturbance in reservoir areas, Figures 47, 48 and 49 show the changes in shoreline configuration that have taken place along selected portions of Coralville Lake in recent years. The solid lines represent the 680', 700' and 750' contours, as they are shown on U.S.G.S. topographic maps of the project area. These maps were drawn from aerial photography done in 1965 and planetable surveys done in 1968, with unchecked photorevisions done in 1975. The dashed line is the present shoreline (683') as it appears on

Figure 47. Recent Erosion at Coralville Lake - Sugar Bottom Recreation Area

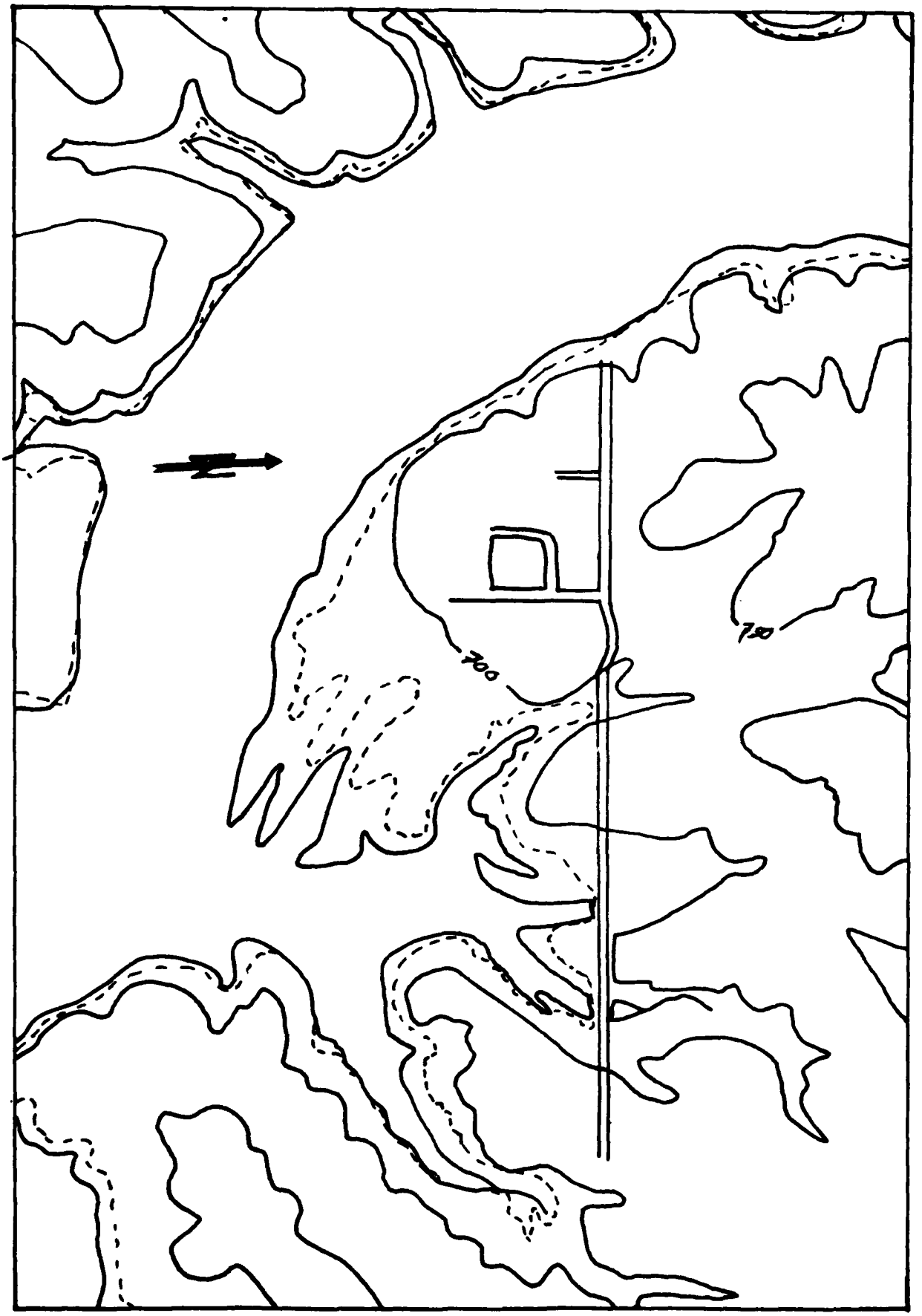


Figure 48. Recent Erosion at Coralville Lake - Mehaffey Bridge

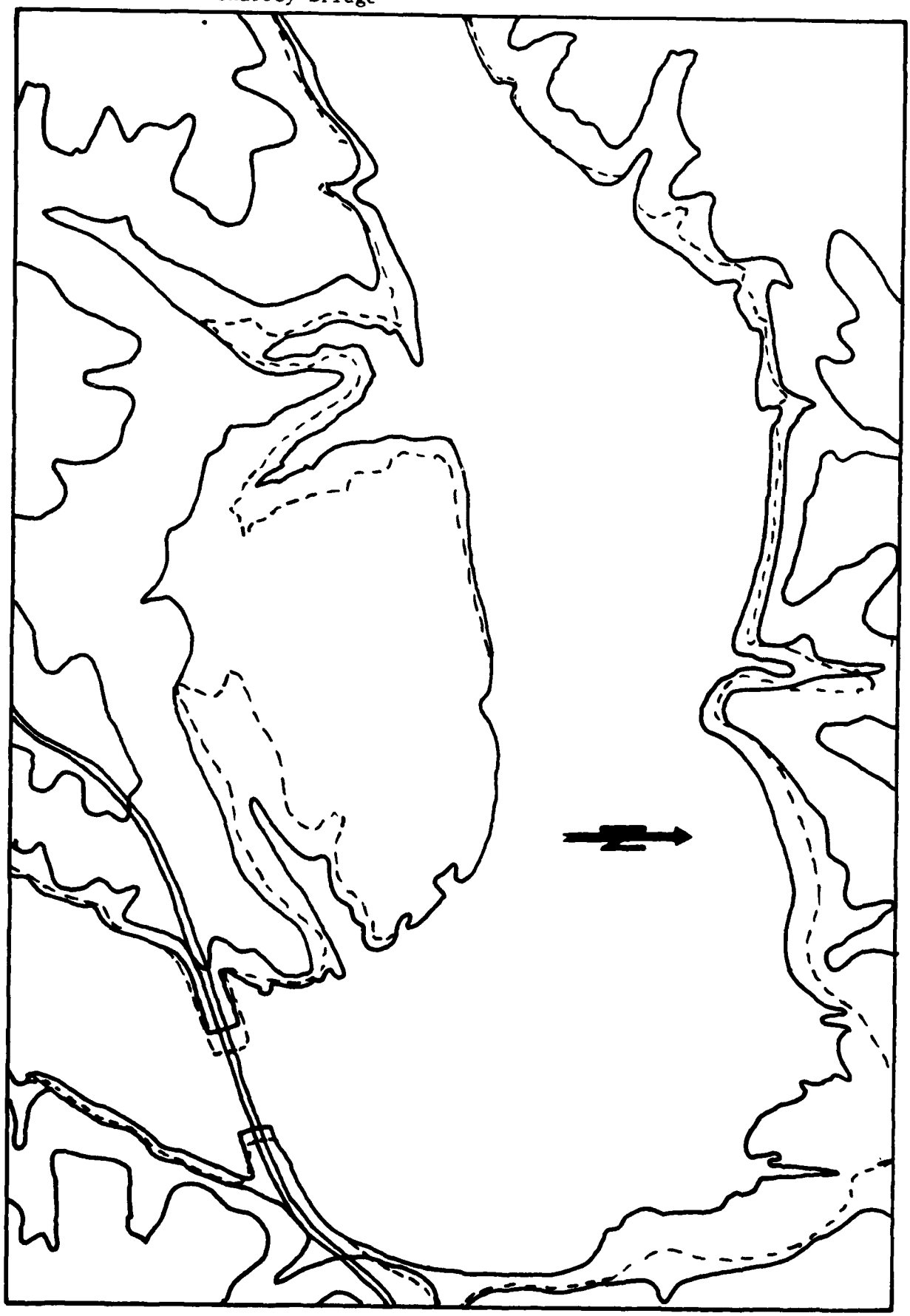
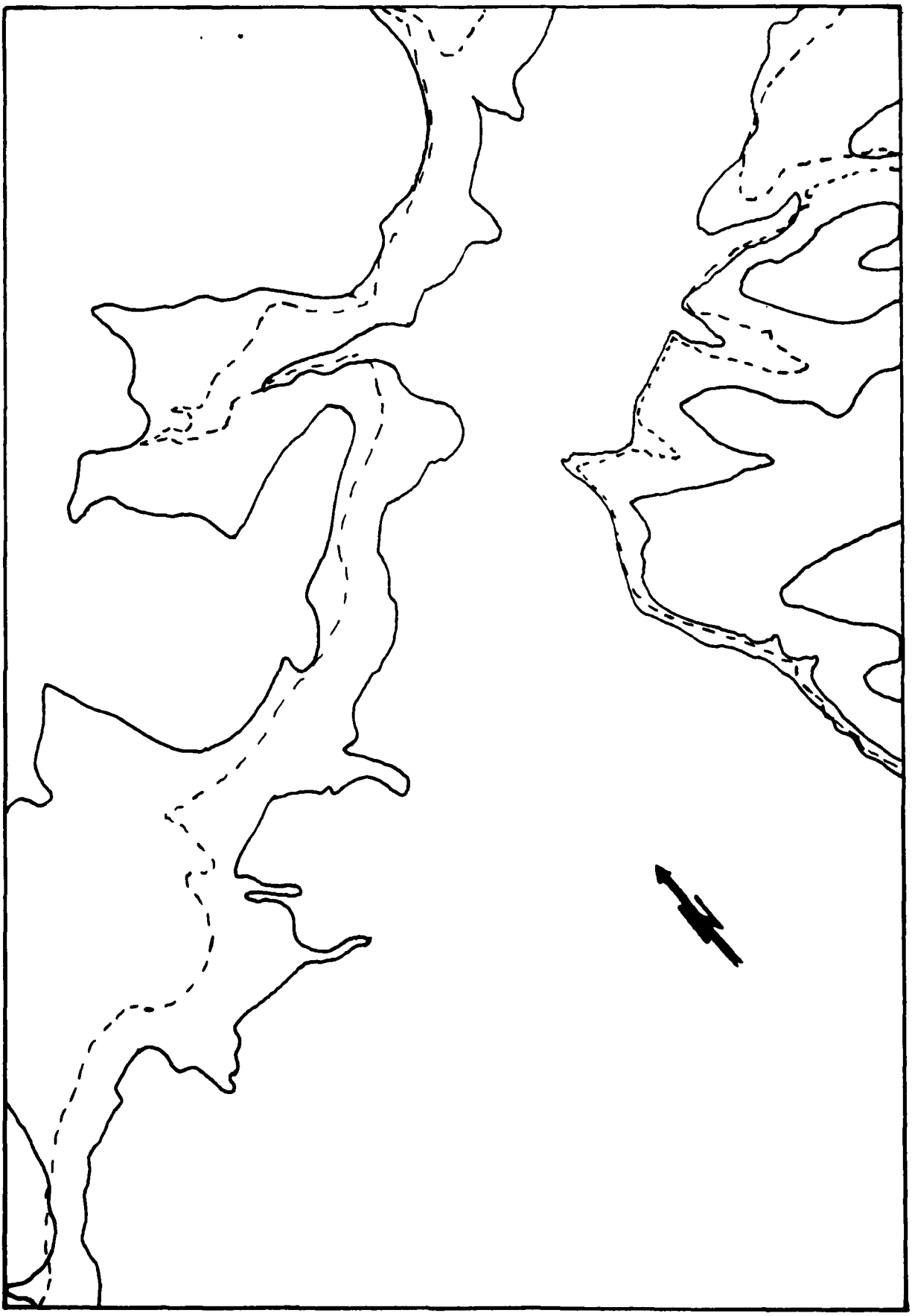


Figure 49. Recent Erosion at Coralville Lake - Hoosier Creek



aerial photographs done in December of 1982.

Even if the 3-foot elevation difference is taken into account, it is apparent that some sections of the lakeshore have undergone drastic changes in the past 7 years. Of particular interest is the configuration of the Sugar Bottom area: the finger ridges on the south side of the Recreation Area have been drastically reduced in size. These ridges, the remnants of a loess-mantled terrace, presently are bordered almost entirely by nearly vertical escarpments ranging in height from less than 1 foot to nearly 8 feet.

These figures also show a pattern of accelerated entrenchment of small tributary channels around the lakeshore. The valleys of these tributaries, few of which have been surveyed for site location, are being gorged out by floodwaters at the same time that they are being filled by sediments eroding down their sideslopes. The accumulation of these recent sediments in small stream valleys will make deep testing a necessity in any future cultural resource survey projects in the Coralville Lake area.

If one extrapolates from these relatively short-term modifications of the lakeshore to the amount of change that has probably occurred since the creation of the lake in 1958, some serious implications for cultural resource research can be recognized. It may be that there are certain classes of data that have been made inaccessible for study because of inundation, erosion, and sedimentation. This loss of data makes the generation of a truly complete picture of the cultural data base at Coralville Lake an extremely difficult task.

CRITIQUE OF PREVIOUS RESEARCH

In the past, the majority of the cultural resource research done in the vicinity of Coralville Lake has concentrated on the identification of sites in particular localities. In most cases, that research consisted of authorized and unauthorized reconnaissance-level survey, conducted within limited areas. A few summaries of available data about cultural resources in the river valley have been produced, but they have almost exclusively focused on reiteration of existing site-specific information, with no critical evaluation of the quality of that information, and little emphasis on how the recorded sites at Coralville Lake fit into the general picture of cultural resources in East-Central Iowa.

Although the boundaries of the project area are artifically defined, they do represent a geographic area which can be treated as a single entity in terms of its cultural resources. However, this approach requires an understanding of the range of potentially-identifiable temporal and cultural categories, in order to determine what is not known as much as what is known. The identification of research biases is an important part of the process of evaluating the quality of previous research in the

area. Without such an evaluation, interpretation of the significance of the resource base at Coralville Lake would be seriously skewed.

A number of specific problems noted in the existing literature are discussed below. It is actually very difficult to discuss these topics separately, because they tend to be closely entwined, as parts of an overall approach to cultural resource research. An attempt will be made to isolate each problem and explain how it has affected the present state of knowledge about cultural resources at Coralville Lake.

SURVEY BIASES

The term "survey" will be used here to refer to any form of cultural resource investigation, including the unauthorized surface inspection done by amateur collectors. Several general categories of survey bias can be identified in the existing literature. Each of these categories is described below, with examples of its occurrence in the literature and a discussion of the extent of bias which results.

Sampling Strategy

Since research in the realm of cultural resource management became common in the 1970s, considerable amounts of time and energy have been expended on developing appropriate schemes for sampling specified geographic areas. Even though there is still much debate about which approach is best, the archaeological community has come to a general agreement that meticulous research must include some formal strategy for identifying areas to be surveyed. Most often, these strategies involve the selection of a stratified sample, with strata defined in reference to various features of the physical environment.

No survey of Coralville Lake has yet been done which applied a sampling strategy to the entire project area. Indeed, only one project to date has had any explicit sampling strategy at all (Schermer 1983). The defined sampling universe for that project, however, was a shoreline corridor, and therefore touched on only some of the landforms in the project area. Other survey projects have been restricted to specific areas by virtue of their purpose (Weichman 1975) or have been "opportunistic" in nature, with no formal research design (Zalesky 1977).

The bias which has resulted from these approaches is apparent if one examines the distribution of recorded sites at Coralville Lake. The overwhelming majority of those sites are located along the lakeshore or in cultivated fields (popular areas for private collectors). In contrast, extremely few sites have been discovered in the broad floodplain to the west of Highway 380, or in the smaller, forested tributary valleys around the lake. At present, there is not enough information available to assess the validity of this site distribution pattern, although it seems highly unlikely that it is an accurate reflection of the true distribution.

Previous research in the project area also shows large gaps in attention to historic period resources. A few "historic sites" have been recorded, but they consist principally of locations at which historic debris (ceramics, glass, structural remnants) have been observed. No systematic study of historic settlement and land-use patterns at Coralville Lake has been done.

Survey Methods

A problem closely related to that of sampling strategy is that of method. Even a survey carefully designed to sample the full range of landforms in the project area will not yield useful results unless it includes subsurface testing. The almost total lack of subsurface testing at Coralville Lake in the past was perhaps the most disturbing aspect of the literature review conducted for this project. With the exception of the present project and the testing conducted at 13JH253 (Lewis 1979; Roetzel & Strachan 1980), the last project at Coralville Lake which included any subsurface testing was the brief site examination program conducted by Anderson in 1970 (Anderson 1971a). Excluding the 14 sites at which subsurface tests were done during this project, out of a total of 198 recorded sites in the project area, only 12 - 6% - have ever had any kind of subsurface testing.

Estimations of site size, density, cultural affiliation, function, and research potential have been based almost exclusively on surface inspection. This is an especially serious source of bias in a reservoir area. As discussed in the National Reservoir Inundation Study sponsored by the National Park Service (Lenihan 1979), surface artifact distributions in areas subject to inundation and wave action can be extremely deceptive. They may be secondary deposits, or may include artifacts that have moved from one site area to another, thus obscuring the true configuration of the sites.

The fact that cultural materials are presently observable on surface in certain areas is an artifact of recent events, and is irrelevant to the study of past patterns of human behavior. If one wishes to understand settlement patterning in a specific geographic region, it is just as important to know where sites are not located as it is to know where they are located. This is not the approach taken by researchers at Coralville Lake. Considerable emphasis has been placed on merely identifying and recording site locations - a "more is better" attitude towards cultural resource studies. Under the conditions prevalent at Coralville Lake, however, "more" is not necessarily "better". To add another 10 sites to the number of sites already recorded does not really add anything to our understanding of prehistoric behavior in the area.

This problem of method has created bias in two directions. First, lack of subsurface testing during reconnaissance survey has resulted in the definition of "site locations" that were in all likelihood secondary deposits of artifacts created by sheet

erosion, wave action or inundation. The pattern of site distribution in the project area which appears on present site location maps is thus misleading. Second, areas in which no surface artifacts were found have been assumed to be devoid of sites (to the extent that anyone has considered this question at all). This can be a dangerous assumption, especially when it is applied to areas that are in danger of disturbance by natural and cultural forces.

ADEQUACY OF DOCUMENTATION

Another difficulty in using the existing documentation about the cultural resources of Coralville Lake arises from the nature of that documentation. The major source of site-specific information contained in this report was the set of state site forms for Johnson County, which is maintained by the Office of the State Archaeologist. As is readily apparent from the site descriptions in Appendix I, many of these site forms are less than complete. The most serious shortcoming, in terms of evaluating the range of resources in the project area, is the lack of description of recovered artifacts. Many site forms do not even include an indication of the general types of cultural materials found at a site. (This problem is, perhaps, chronic; site forms from other Iowa counties and other states are also sometimes found to be lacking in detail.)

Certain other difficulties in interpreting reference materials were encountered during literature review. Most of these difficulties relate to omissions in explaining research designs and methods. Very few of the researchers whose works are reviewed in this report explained how the term "site" was defined for the purposes of their work. Does one diagnostic artifact constitute a site? Does one waste flake constitute a site? What is the difference between a "site" and a "find spot"? Some inconsistencies in terminology have also been noted - sites from which single artifacts were recovered are called "habitations" in some cases, and "find spots" in other cases.

A number of specific problems were noted during literature review. In Anderson's addendum to his review of Iowa River Valley archaeology (Anderson 1971a), he discusses a number of recorded sites that he visited and (perhaps) tested. Testing methods are nowhere described, and it is not made clear, for a number of sites, whether or not any subsurface testing was performed. For the purposes of this report, it has been assumed that the only sites at which Anderson did subsurface testing are those for which tests are specifically mentioned in his text. In Zalesky's report (1977), the presence or absence of non-diagnostic artifacts (i.e. lithic debitage) at particular sites is not always specified. Schermer (1983) does not specify the width of the 1000' survey segments which formed the basis of her shoreline survey.

These omissions have contributed to the difficulty of

evaluating the significance of the recorded sites at Coralville Lake. Lack of detail calls the reliability and accuracy of the existing documentation into question. Unfortunately, the scope of the present project did not allow for resolution of this problem, although some recommendations for approaching it are presented in the following pages.

RESEARCH POTENTIAL AT CORALVILLE LAKE

The information which has been presented in the preceding pages is, in a sense, of an introductory nature. It is intended to explain the present state of knowledge about cultural resources at Coralville Lake, so that reasonable and understandable evaluations of research potential and recommendations for future research projects can be made. A number of cautions regarding the interpretation of the existing documentary data have been put forth in this report. The implications of the noted problems with the data base will be further discussed here.

In 1961, Warren Caldwell stated: "In total, the aboriginal occupation of the Coralville Reservoir was not intensive" (Caldwell 1961:141). At present, it seems that Caldwell's judgement may have been premature. Even though detailed data are still lacking, the number and range of recorded sites in the project area show that this segment of the Iowa River Valley was the scene of at least moderate levels of human activity during all of prehistory. Assessing the region's potential for further cultural resource research, however, requires careful consideration of present landscape conditions which affect the reliability and nature of the information that can be recovered.

CURRENT CONDITIONS

Although erosive processes at Coralville Lake are not perceived to have been as drastic as they have been in other reservoir areas (at Saylorville Lake, for example), such a judgement must be viewed in relative terms. The loss of 10 cm of soil, which may not be considered severe erosion from some perspectives, may well represent the loss of a significant portion of the archaeological record. This is a problem which must be considered in any future cultural resource research at Coralville Lake.

The testing done at Sugar Bottom Recreation Area during this project demonstrates the manner in which inundation and wave action can create deceptive surface artifact distributions. The quantity and type of surface materials at the tested sites were not reflective of the actual nature of those sites. It can be assumed that this condition prevails at many of the recorded sites along the lakeshore. However, one cannot immediately dismiss any site from further consideration strictly on the basis of this assumption. The operation of reservoir processes is extremely complex and variable, so that some segments of shoreline are seriously affected while others may be only

minimally disrupted by erosion. This situation requires that geomorphic investigations be part of any future research project at Coralville Lake. Those investigations should, at minimum, enable the researcher to assess the extent of erosion and deposition in the area under study and will facilitate interpretation of any cultural data recovered.

There is also the question of non-recoverable data: information which is presently either lost or inaccessible. When the Iowa River Valley was inundated by the waters of Coralville Lake, a number of recorded prehistoric sites were, in practical terms, lost to the possibility of research. Because of the level of site-location efforts prior to that event, the possibility exists that additional, unrecorded sites suffered the same fate. Thus, there is a portion of the universe of sites in the project area which has been effectively removed from inclusion in the formulation of settlement pattern models. (It should be noted that at least part of that inaccessible portion of the project area is likely to become available for study at some time in the future, during draw-downs or periods of extremely low lake level. There is a possibility, therefore, of partially resolving this problem, if researchers choose to take advantage of such opportunities.)

The second category of non-recoverable data relates to the manner in which natural processes alter the configuration of the landscape. These processes include forces that operate exclusive of human intervention, as well as the accelerated forces of erosion and sedimentation that are "artificially" created in reservoir areas. Over long periods of time, they may result in the destruction of certain landforms. (An example would be the erosion of old alluvial fans by newly-incised drainageways.) Archaeological sites located on the affected landforms, of course, are also destroyed. The primary problem in dealing with this source of bias to the data base is the fact that it is not necessarily possible to determine what landforms - and sites - have been destroyed. This is a difficulty that is part of the nature of the archaeological record, and a factor which should be taken into account when evaluating site distribution patterns.

This discussion should not be taken to suggest that Coralville Lake retains no potential for fruitful research. The fieldwork done during this project showed that there are some sites in the project area which retain sufficient integrity to justify further investigation. Also, there is a strong possibility that additional sites can be located through the application of meticulous survey efforts. If present and past conditions of the physical environment are carefully considered while designing and executing future research projects, it should be possible to eliminate a considerable portion of the bias which presently exists in the data base.

HISTORIC RESOURCES

The conclusions which can be derived from the historic

research in the Coralville Lake area are that the simple presence of a relatively large waterway did not guarantee settlement and economic development in the historic period. In addition to water, raw resources of use to the pioneers (either for developing their own homes and public buildings, or else for supporting the development of economic enterprises through which they could interact with regional and national systems) were also required. While waterways offer transportation possibilities upstream or downstream, they are an impediment to travel and communication from bank to bank, unless there are locations suitable for fording. Such opportunities were scarce in the middle Iowa River Valley and those areas that were by-passed at the beginning continued to lag behind once transportation systems such as roads and railroads had become established. The section of the Iowa River Valley where Coralville Lake is located appears to have been a peripheral area from the very beginning of the historic period.

RECOMMENDATIONS FOR FURTHER RESEARCH

GEOMORPHOLOGY

Many extensive investigations have been made of the geomorphology and soils of the Iowan Surface and Southern Iowa Drift Plain. However, no detailed studies of the geomorphology of the Coralville Lake area have been made prior to this investigation. A modern detailed soil survey was recently published (Schermerhorn 1983). However, we perceive that some further research by these disciplines in the Coralville Lake area would be meaningful. Some ideas for such research follow.

Detailed location of archaeological sites on landform components of the various environments: for example, several sites are on hillslopes. On what component of the hillslopes are the sites? Are they on footslopes, backslopes, shoulders, coves, sideslopes or noseslopes? Also, what effect do slope gradient and aspect have on the location of sites?

Terraces: two loess-mantled terraces are perceived in the valley of the Iowa River east of Interstate Highway 380. The higher terrace appears to have a paleosol beneath the loess, but the lower terrace appears to lack such a soil. However, extensive deep borings are needed to adequately define that system of terrace.

Two terraces are in the valley of the Iowa River west of the Interstate Highway. The higher one is mantled with aeolian sediments, but the lower one appears to lack such a mantle. Whether the lower one is Holocene or of greater age is not known. Perhaps it was a source of aeolian sediments and thereby is contemporaneous with the higher terrace. Further investigations of the stratigraphic and age relationships of the two terraces would be meaningful.

Distribution of paleosols on hillslopes: paleosols are beneath the loess on ridgetops but their distribution on hillslopes in the area is unknown. Knowledge of their distribution there would be helpful in more fully understanding the evolution of the landscape.

Stratigraphic relationships of the forest-derived soils formed in aeolian sediments: Schermerhorn's (1983) detailed soil map has extensive areas of a mapping unit named Chelsea-Lamont-Fayette complex. The Fayette soil formed in loess whereas the other two soils formed in aeolian sediments coarser than loess. The stratigraphic and spatial relationships of these sediments and soils are not well understood. Some detailed investigations are needed to define the relationship. For example, are the coarser textured aeolian sediments in one specific part of the stratigraphic column, or are they in several parts of that column?

Thickness and source of aeolian sediments: the thickness of aeolian sediments in the project area varies greatly. Detailed studies to document sediment thicknesses would be meaningful, especially for gaining a better understanding of their source. Was the alluvium in the valley of the Iowa River a major source of these sediments?

Post-Coralville Lake erosion and sedimentation: further studies to quantify the amount of post-Coralville erosion by wave action would be most helpful in assessing future degradation of cultural resources and the life expectancy of the lake. The volume of material eroded could be rather precisely measured by the sophisticated techniques now used by some aerial survey companies.

Evolution of the Iowa River Valley: the character of the Iowa River Valley changes dramatically at about the Interstate Highway bridge. The valley west of that bridge is quite wide, as much as 5 km, but the valley east of that bridge is comparatively narrow. What are the reasons for this?

Detailed investigations of soils and geomorphic setting at key archaeological sites: such detailed investigations at key archaeological sites in each of the physical environments might provide meaningful insights into the significance and validity of the physical environments defined in this report.

HISTORIC RESOURCES

The recommendations resulting from the historic research done during this project are simple and straightforward. Documentary evidence has revealed no pre-1840 European or Indian sites, although the general pattern of historic development from central Iowa indicates such sites should be present. The general pattern in the Midwest suggests that cultural features from the pre-Civil War period will not be represented fully, if at all, in

documentary sources. We also know from the analyses of the social and economic categories of persons represented in county histories and atlases that those of lower status, or the oft-called "inarticulate", will often be under-represented or, even more frequently, ignored.

Therefore, it is recommended that any prehistoric survey planned for the Coralville Lake Project Area be expanded in scope to include intensive survey for pre-mid 19th century historic sites. They should be located in approximately the same locations as prehistoric sites, and therefore their discovery should not require any additional efforts, but rather only sensitivity to the potential presence of the resource.

PREHISTORIC RESOURCES

Research Objectives

The overall objectives of future research in the Coralville Lake Project Area should not differ to a marked degree from the objectives of cultural resource research conducted in any area of the Midwest. Within the boundaries of the general concerns of the discipline, however, there are specific research topics that appear to be most suitable to the nature and present condition of the area in question.

Further research regarding the prehistoric resources of Coralville Lake can proceed in two directions. Efforts can focus on further location and description of individual sites, or emphasis can be placed on investigating a set of more general research problems which have applicability to the broader concerns of the discipline. Given present conditions in the project area, it seems that the second approach may be the more profitable (with a few exceptions, discussed below).

A number of potential research questions can be identified, based upon the information that has been presented thus far. General relationships between the geomorphology of the project area and the distribution of prehistoric sites are unclear, but appear to hold some implications in terms of general behavioral patterns, especially in comparison to settlement distribution in other nearby river valleys. Did the rugged nature of the valley between the present locations of Coralville Dam and Highway 380 affect its prehistoric usage, as it did historic occupations? Were prehistoric settlements in the area mostly of short duration, perhaps focused on exploitation of nearby resources, with more permanent habitation concentrated in other vicinities?

Another question involves the possible interaction of the inhabitants of the Iowa River Valley and peoples living in regions outside of the project area. Lithics and ceramics found in the valley show strong relationships to types found in eastern Iowa, the Mississippi River Valley, and western Illinois. What type of interaction do those relationships reflect? What role did the Iowa River play in trade and transportation networks

throughout the Midwest, and how did that role influence the diffusion of technology?

A related question is that of the formulation of temporal lithic and ceramic sequences. Evidence recently obtained from regions outside Coralville Lake (Mississippi River Pool 12 and Saylorville Lake) suggests that the traditional chronologies may be skewed. The perceived trend is one of certain lithic tool types appearing earlier in the archaeological record than would be expected, according to existing typological sequences. If lithics and associated ceramics can be found in reliable provenience at Coralville Lake, some light may be shed on this problem.

These are just a few of the general directions in which cultural resource research at Coralville Lake can proceed. Other topics are sure to be defined as new research questions arise from the results of research in other areas. Some additional research concerns are discussed below.

Integration of RP3 Guidelines

The RP3 document provides a framework for designing future cultural resource research at Coralville Lake so that it can be integrated into the larger picture of the prehistory of Iowa. The document specifies a number of topics that can be addressed, both at the basic level of site location and on the level of more detailed investigations of particular research questions. In terms of reconnaissance-level survey, there are at least two objectives that can be drawn from the study units and research problems defined in the document. The first of these relates to the potential presence of humans in the project area during the Paleo-Indian period. Diagnostic artifacts from this era have been found in the project area. Thus, a survey project which emphasizes examination of landform types which have some potential for containing evidence of very early human occupation may yield useful information about such occupation of the Iowa River Valley.

The second possible objective for additonal survey in the project area concerns the presence or absence of Oneota sites at Coralville Lake. As was discussed previously, the existing evidence of such occupation is minimal, perhaps primarily as a result of biases in survey methods. Coralville Lake is located in a region that is geographically intermediate among several different Oneota manifestations. Thus, identification and analysis of Oneota sites in the project area could have significant implications for studying the growth and change of that particular cultural tradition.

In regard to more detailed investigations, there is a virtually limitless series of topics that can be drawn from the document and used as a basis for designing research. There are, however, certain topics that would be especially appropriate to research at Coralville Lake. One such topic is the question of

regional specialization during the Woodland period. The RP3 document defines a number of subdivisions of the Woodland period along geographic and temporal lines. Two of the geographic units (the North Central Woodland and the Mississippi Basin Woodland), as defined in the document, are spatially proximate to the Coralville Lake project area. The lake's location actually appears to be a "tension zone" between the two regions. If the recorded Woodland sites in the project area can be more closely delineated and their affiliations in terms of the RP3 study units defined, it may be possible to examine the interaction of these two cultural groupings and clarify the nature of cultural contact and change during the Woodland period.

The RP3 document also discusses the tentative nature of its defined Archaic period study units. Here again, Coralville Lake lies in the midst of several different subgroups: Old Copper Archaic to the northeast, Eastern Archaic to the east and south, and Lakes Archaic to the northwest. There is already considerable evidence of an Archaic presence at Coralville Lake, but further research is necessary in order to delineate the particular settlement and subsistence systems represented in the project area.

Regardless of the specific directions taken by future research at Coralville Lake, the guidelines set forth in the RP3 document should be used as a general framework for designing and executing research projects. This will aid the interpretation of research results, provide consistency in terminology, and facilitate the generation of large-scale studys.

IV. ANNOTATED BIBLIOGRAPHY

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The cultural history and ceramic styles of archaeological sites located in the Iowa River Valley (including the Coralville Lake Project Area) are discussed. As an addendum, descriptions of 10 recorded sites located along the shoreline of Coralville Lake are presented.

"The Late Woodland Walters Site". In Prehistoric Investigations, Marshall McKusick, ed. Report No. 3. Iowa City: Office of the State Archaeologist.

The 1967 and 1968 excavations of the Walters Site are discussed. The site, located on Coralville Lake, contained both lithic and ceramic material attributable to the Late Woodland period. A single house structure was identified.

Anderson Publishing Company

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Bicki, T.J.

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The area investigated primarily comprises the area called Lake Calvin and adjacent uplands. The area is downstream from Coralville Lake. A map of the Lake Calvin

region is included, and low and high terraces are delineated. The high terrace mostly has a mantle of loess which overlies aeolian sand and, perhaps, is stratified with alluvial sands. A well developed paleosol formed in alluvium underlies the sands. The lower terrace lacks a loess mantle and has no paleosol. Bicki found that soils that formed in loess with underlying sandy sediments have thicker and more developed sola than those that formed in loess with no underlying sandy sediments.

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Caldwell, Warren W.

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Under the auspices of the Smithsonian River Basin Surveys, Caldwell recorded 9 archaeological sites in the Coralville Lake area. Six of these sites were tested, two surface examined only, and one was totally excavated (Woodpecker Cave, 13JH202). Cultural affiliations ranged from Archaic to Late Woodland. In addition, several sites contained Oneota components. The fieldwork, conducted in 1956, represents the last examination of the Iowa River Valley prior to inundation by Coralville Lake.

Connor, W.
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Daniels, R.B., E.E. Gamble and J.G. Cady.
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Davis, M.W. and A.C. Trowbridge
1883 "Mound Builders and Indians". In History of Johnson County, Iowa. Pp. 289-290. Iowa City: Johnson County History Company.
Davis and Trowbridge observed four extensive mound sites on the Iowa River in Johnson County. All of these sites are outside the project area, south of Coralville Lake. Three historic Indian villages (Mesquakie) were noted. The villages were also south of Coralville Lake and include Poweshiek's village, Wapashashiek's village, and Tolokonock's village.

Ekberg, C., C. Smith, W. Walters, Jr. and F. Lange
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This map is the accepted general standard for naming physical divisions of the U.S. Its scale is 1:7,000,000. A legend accompanies the map. The legend is arranged hierarchically into 3 categories, namely 8 major divisions, 25 provinces and 86 sections.

Fenton, T.E.
1966 Soils, weathering zones, and landscapes in the upland loess of Tama and Grundy Counties, Iowa. Ph.D. Thesis, Iowa State University.

The study area, which is about 80 km to the northwest of the Coralville Lake area, has some soils and landscapes similar to it. Fenton found that the Wisconsinan loess there has three distinct zones. The upper zone has less sand and more silt than the lower two zones. The upper zone loess is present on most all landscapes, but the lower zones are lacking on some. The Tama soils series, for example, is mapped on several different upland landscape levels. Based on detailed laboratory analysis, Fenton found those Tama soils to be very similar. However, paleosols were present beneath the loess on the higher lying levels but not on the lower lying levels.

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Gradwohl, David
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Comparative study containing historic sites in an adjacent Iowa river valley. Many of the sites appear to be scatters and not actual habitations. Overall settlement density appears similar to that in Coralville.

Hallberg, G.R.
1980 Pleistocene Stratigraphy in East-central Iowa. Iowa Geological Survey Technical Information Series, No. 10.

This landmark publication reports investigations of the entire sequence of Pleistocene deposits for several counties including a part of Johnson County. Most of the previous investigations examined only the upper 10 m or so, whereas this investigation examined the entire sequence, which comprise as much as an additional 90 m of

sediments. The author redefines sediments previously referred to as Kansan and Nebraskan as undifferentiated pre-Illinoian stages for their time stratigraphic classification. These sediments have been subdivided into the Alburnett and Wolf Creek formations. In addition, he defines two strongly developed paleosols as soil stratigraphic units. The complications of post-glacial erosion on interpreting stratigraphic relationships of these old glacial deposits, also, are considered.

Hallberg, G.R., T.E. Fenton and C.A. Miller.
1978 "Standard weathering zone terminology for the description of Quaternary sediments in Iowa". In Standard Procedures for Evaluation of Quaternary Materials in Iowa, G.R. Hallberg, ed. Iowa Geological Survey Technical Information Series, No. 8. Pp. 75-109.

This paper defines shorthand phrases and symbols used to describe Quaternary sediments, exclusive of soil horizons. The basic terms are: "oxidized", "deoxidized", "unoxidized", "leached", and "unleached". (Some of these terms are used in the text of this report.) A discussion of the reasons for various weathering zones is presented.

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This publication is a valuable supplement to the publication of Ruhe et.al. (1968). It gives new information and ideas on the Iowan Surface. The concept of multiple stepped-erosion surfaces, which occur in many areas, including the Coralville Lake area, are lucidly explained. Further, their age-relationships are reviewed. Also, the Iowan Surface covers a larger area than previously thought, and some parts of it have a thick mantle of loess.

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Sediments of the Illinoian glaciation occur only in extreme southeast Iowa, and are southeast of the Coralville Lake area. Extensive data are presented on Illinoian and pre-Illinoian sediments.

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provide consistency and comparability in the evaluation of cultural resources. The RP3 document for Iowa applies an inter-disciplinary approach to the definition of research objectives within study units. Tentative study units have been established on spatial and temporal bases for both the prehistoric and historic periods. The draft document includes suggestions for specific research topics within each study unit so defined.

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Iowa Geological Survey Staff.
1969 Geologic Map of Iowa. Iowa Geological Survey.
This map is at a scale of 1 inch = 8 miles (1:500,000) and it shows the kind and distribution of (Pre-Pleistocene) bedrocks in the state. A legend accompanies the map. The bedrocks shown range from as young as Cretaceous to as old as Precambrian. The Cedar Valley Limestone (formation), Middle Devonian Series, is dominant in the area of Coralville Lake.

Iowa Publishing Company
1907 Atlas of Linn County, Iowa. Davenport, Iowa.

Iowa Soil Survey Staff.
1978 Iowa Soil Association Map. Iowa Agriculture and Home Ecomonics Experimental Station, in cooperation with USDA-Soil Conservation Service, Cooperative Extension Service and Iowa Department of Soil Conservation.
This map is at a scale of 1 inch = 8 miles (1:506,880). The legend has 88 mapping units to define the soils of the state. Also, the brief description of the units has information on slope, native vegetation, parent material, and dominant soil series. Further, the scheme of colors used on the map gives an excellent overview of the relationships among major factors of soil formation in Iowa. This map is a good reference for those desiring a general overview of the soils of Iowa.

Iowa Writers Project WPA
1941 Johnson County History.
Particularly detailed on the quarrying of limestone for, and architectural problems of, the State Capitol building.

Irish, Capt. F.M.
1868 "History of Johnson County, Iowa". In Annals of Iowa, Series 1, Vol. 6:23-331. Iowa City.
In this report, Irish notes the presence of two sites along the Iowa River in Johnson County. The sites noted are an historic Mesquakie Indian village (Poweshiek's village) two miles south of Iowa City, and a mound site

located on a hilltop overlooking the river.

Keyes, Charles R.
n.d. Unpublished County Notes for Iowa, Johnson, Washington, and Louisa Counties, Iowa. Iowa City: State Historical Society Archives.

This work represents a collection of unpublished notes by Keyes, who attempted to compile a county-by-county summary of Iowa's archaeological sites, including a number of sites located along the Iowa River Valley in Johnson County.

1920 "Some Materials for the Study of Iowa Archaeology". Iowa Journal of History and Politics 18:357-370.

This article emphasizes the importance of site types other than mounds (i.e. village or camp sites) which were neglected by past archaeological investigations of the Iowa River Valley.

1925 "Progress of the Archaeological Survey of Iowa". Iowa Journal of History and Politics 23:339-352.

This report summarizes the progress of the Archaeological Survey of Iowa which began in 1922. A general discussion of preliminary archaeological work, statewide survey plans, and specific site types is presented.

1951 "Prehistoric Indians of Iowa". The Palimpsest 32:285-344.

Keyes summarizes Iowa's archaeological patterns, focusing on Woodland and Mississippian traditions, and discusses previous research and general locations of sites on a statewide basis.

Land and Community Associates
1977 A Conservation Handbook for Amana Villages. Charlottesville, Virginia.

This handbook was helpful in its summarizing of the settlement pattern specific to the Amana Colonies part of the project area.

Lenihan, Daniel J. et. al.
1981 Final Report of the National Reservoir Inundation Study. Volumes I and II. Santa Fe, New Mexico: Department of the Interior, National Park Service, Southwest Cultural Resources Center.

This report discusses the results of a series of research projects sponsored by the National Park Service. These projects explored the effects of inundation and other reservoir processes on cultural resources. Volume I is a summary of the conclusions of the studies, and Volume II presents the methods and actual findings of each study in detail. A number of recommendations to researchers working in reservoir areas are presented.

Lewis, Richard

1979 Archaeological Reconnaissance Survey: Proposed Sewage Lagoon, Dam Site Recreation Area, Coralville Lake, Iowa River, Iowa. Rock Island: U.S. Army Corps of Engineers-Rock Island District.

A reconnaissance survey of a proposed sewage lagoon area southeast of Coralville Dam is discussed. A single archaeological site (13JH253) was recorded. A recommendation for further site testing was made.

Lutenegger, A.J.

1980 "Some observations of the loess in the southeast study area". In Yarmouth Revisited, G.R. Hallberg et.al. Iowa Geological Survey Guidebook, 27th Field Conference, Midwest Friends of the Pleistocene. Pp. 118-122.

The major source of loess in southeastern Iowa is the Mississippi River Valley. However, the Iowa River valley was a significant source of loess. Further, the Des Moines and Skunk Rivers, for example, are important sources locally. The determination of relationships between proportions of coarse silt and fine silt and distance from source show a systematic decrease in coarse silt and increase in fine silt with increasing distance.

Mansberger, F.

1981 An Ethnohistorical Analysis of Two Nineteenth Century Illinois Farmsteads. M.A. Thesis, Department of History, Illinois State University.

Comparative analysis of well-to-do 19th century residences which are poorly represented or absent from the Coralville Lake Project Area.

Mansberger, F. and R. Coleman

1982 Literature Search and Analysis for Cultural Resources in Areas 1 through 5 of the Rock River, Illinois. Normal: Illinois State University.

Comparative data showing importance of river valley topographys for attracting settlement, population nodes, and multiple crossings.

Miller, G.A.

1974 Soil parent material stratigraphy and soil development, Cedar County, Iowa. Ph.D. Thesis, Iowa State University.

This reports the investigation of soils and landscapes in Cedar and northwestern Scott Counties. Cedar County is immediately northeast of Johnson County. Detailed analysis of soils and underlying geologic materials are reported. The area studied is similar in parts to the Coralville Lake area. Figure 50 in the report shows stratigraphic relationships on the Iowa surface and the southern Iowa Drift plains. Paleosols are beneath the loess in the latter areas but not in the former area. The Iowan surface there was mostly formed (cut) from 17,800 to 21,150 years before present. Also, a significant amount of the micro-relief on the Iowan surface is related to

sandy aeolian sediments of variable thickness which are between the overlying loess and the underlying glacial till.

Newhall, J.
1841 Sketches of Iowa or the Emigrant's Guide. New York: Merchant's Exchange.
One of the earliest published accounts of historic Iowa. Designed to stimulate migration and therefore not entirely accurate in details on environmental and mineral potential.

Novak, J.
1889 Novak's New Map of Johnson County, Iowa. (No publication data).

Office of the State Archaeologist, Iowa
State Site Forms, Johnson County, Iowa
These site forms contain basic locational and descriptive information about prehistoric and historic sites, and are maintained by OSA on a county-by-county basis. For many sites, there are supplemental sheets which contain additional information, obtained after the site was initially recorded. The completeness and accuracy of the information contained on these site forms varies widely, but for the purposes of most cultural resource research, they must be considered the primary source of site-specific data.

Ogle, G. and Co.
1901 Standard Atlas of Benton County, Iowa. Chicago.

Ohlerking, D.
1975 An Overview of Mid-Iowa's History: A Common Beginning. Fort Dodge, Iowa: MIDAS.
An important compendium of 19th-century architecture. Does not touch upon the project area and is of relatively limited comparative value because it touches primarily on more "elite" private and public architecture.

Overstreet, D.
1983 Intensiver Survey at 11-Jd-126, Jo Daviess, County, Illinois. Reports of Investigation No. 125 (Volume 1). Waukesha, Wisconsin: Great Lakes Archaeological Research Center, Inc.
Provided example of probable illegal penetration of Indian territory by early European traders and the chance nature of finding such sites.

Parsons, S., W. Treat, and J. Wardle
1895 Atlas of Linn County, Iowa. (No publication data).

Phillippe, J.
1981 The Red House Site (St-162): A Small Euro-American Farmstead. M.A. Thesis, Department of History, Illinois State University.

Comparative data for rural Illinois farmstead in which the material culture exceeded the expectations derived from documentary assessments.

Prior, J.C.
1976 A Regional Guide to Iowa Landforms. Iowa Geological Survey Education Series, No. 3.

This publication gives an excellent description of the nature and origin of the landform regions of Iowa. Figures, mostly photographs, nicely support the text. The two landform regions in the Coralville Lake area are the Iowan Surface and the Southern Iowa Drift Plains. The surficial glacial till in both regions are pre-Wisconsinan. However, the Iowan surface region was severely eroded during the Wisconsinan, and thus, lacks any soils older than Wisconsinan in age. Conversely, the southern Iowa Drift plain has higher lying summits that essentially were uneroded during the Wisconsinan. Thus, they have soils that began to form prior to the Wisconsinan. Such soils, however, are mostly mantled with aeolian sediments in which modern soils have formed.

Roetzel, Kathleen A. and Richard A. Strachan
1980 An Archaeological Investigation of the Proposed Lagoon Site, Dam Site Recreation Area, Coralville Lake, Iowa. Report submitted to U.S. Army Corps of Engineers, Rock Island District.

An account of intensive testing of 13JH253 (southeast of Coralville Dam) is presented. This testing established that the site, a lithic scatter, was not eligible for nomination to the National Register of Historic Sites.

Roper, D. et. al.
1984 A Cultural Resource Reconnaissance at Lake Red Rock, Iowa. Report prepared for the U.S. Army Corps of Engineers-Rock Island District. (Draft.)

Demonstrates the influence of early military/economic development of the Red Rock area on subsequent settlement patterns and economic growth.

Ruhe, R.V.
1969 Quaternary Landscapes in Iowa. Ames: Iowa State University Press.

This book summarizes the work of Ruhe and his colleagues, among others. Chapter 2 has a particularly good discussion of Wisconsinan loess. Included is a discussion of fauna in loess. Identification of the kinds of snail in loess definitely proved that this silty sediment is aeolian. Chapter 4 deals with geometric and geomorphic components of the landscape. It describes the relationship of soil properties to position on the

landscape. Although now somewhat dated, it is an excellent reference for those desiring a basic understanding of the Quaternary of Iowa.

Ruhe, R.V., W.P. Dietz, T.E. Fenton and G.F. Hall.

1968 Iowan Drift Problem, Northeastern Iowa. Iowa Geological Survey Report of Investigations, No. 7.

This publication basically settles the long controversy over the Iowan drift. For years, many workers considered part of northeastern Iowa (including part of the Coralville Lake area) to have a surficial till and related sediments (excluding the mantle of loess) that was early Wisconsin in age. These sediments were called Iowan drift. However, this part of Iowa had features that are not common to other Wisconsin drifts. These include the lack of end moraines and extension of sublobes great distances beyond the main drift border. This publication summarizes comprehensive and systematic investigations in the Iowa Drift area, across its border to the Kansan drift area, and in that latter area. It convincingly shows that the Iowa Drift area consists of erosional surfaces cut into pre-Illinoian drifts during the Wisconsinan. These erosional surfaces in many places are mantled with Wisconsinan loess.

Schermer, Shirley

1982 Environmental Variables as Factors In Site Location: A Study of Woodland Sites in the Iowa River Valley. Master's Thesis, University of Iowa, Iowa City.

Relationships between Woodland habitation sites and environmental variables are evaluated through hypothesis testing. Schermer concludes that several variables influence site positioning: amount and type of environmental diversity, landform, elevation, exposure, soil drainage and proximity to water and forest resources. She also notes that other variables, including proximity to lithic sources and upland marshes, appear to have no significant affect on settlement location.

1983 Coralville Reservoir Shoreline Survey. Research Papers, Volume 8, Number 2, Office of the State Archaeologist. Iowa City: University of Iowa.

A 20% sample of two large stretches of Coralville Lake shoreline was surveyed. Thirty-one new archaeological sites were located in the surveyed areas. Extrapolation from these results suggests that a total of 153 sites could be expected to exist within the survey universe. Makes mention of historic resources, but this definitely was not a focus of the report. As an appendix to the survey report, Morrow presents a discussion of the lithic resources of the Coralville Lake area.

Schermerhorn, E.J.
1983 Soil Survey of Johnson County, Iowa. USDA-Soil Conservation Service.
This publication describes the origin, nature and behavior of the soils of the county. Also, the detailed location of the soils is shown on aerial photographs at a scale of 4 inches = 1 mile (1:15,840). Their general distribution is shown on a colored map at a scale of 1 inch = 3 miles (1:190,080). Seventy-six soil series are used to identify mapping units in the county. Soils that formed in loess are dominant.

Scott, Reverend James L.
1843 A Journal of a Missionary Tour Through Pennsylvania, Ohio, Indiana, Illinois, Iowa, Wisconsin, and Michigan. Providence: Privately Published.
Reverend Scott's travel journal mentions a mound site near Fredonia in Washington County, Iowa, near the confluence of the English and Iowa Rivers. The site apparently corresponds to 13WS1.

Smith, C., R. Deiss, and W. Walters, Jr.
1981 Phase I Archaeological Reconnaissance and Historical Investigation of the FAP 406 Highway Corridor, Tazewell and Logan Counties, Illinois. Research Report No. 3, Illinois State University.
Comparative study of western Illinois farmland region.

Smith, C. and R. Eichhorn
1982 Iowa River, Iowa, Coralville Lake Recreation Facilities. Draft portion of report on vegetation and culture history, U.S. Army Corps of Engineers-Rock Island District.
Draft of report on environmental and cultural background of the Coralville Lake area.

Smith, C. and F. Lange
1981 "Historic Sites: Managing a Dynamic Resource." Paper presented at the 47th Annual Meeting of the Society for American Archaeology, Minneapolis.
Discusses diachronic changes in significance and value of cultural resources and the need for 'anticipatory mitigation". In the current report, this concept has been applied to submerged sites.

Soil Survey Staff.
1975 Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys. USDA-Soil Conservation Service Agricultural Handbook No. 436. Washington, D.C.: U.S. Government Printing Office.
This publication provides guidelines for classifying soils in the National Cooperative Soil Survey. Its size need not be overwhelming. It has general descriptions of each taxon in nontechnical and in technical terms. Also, it has 48 color plates of soils. One appendix gives pertinent physical and chemical data for 108 soils.

Starr, Frederick
1895 "Summary of the Archaeology of Iowa", In Proceedings of the Davenport Academy of Natural Science. Vol 6: 53-124.
Starr describes archaeological accounts of Webster (1887-1888), Davis & Trowbridge (1883) and White (n.d.), who investigated archaeological resources along the Iowa River.

Thompson & Everts
1870 Combination Atlas Map of Johnson County, Iowa. Geneva, Illinois.

Tiffany, Joseph A. (compiler)
1981 The Keyes Archaeological Collection: A Finder's Guide. Des Moines: Iowa State Historical Department.
This document presents the results of a project funded by the National Endowment for the Arts. The purpose of the project was to analyze and organize the documentary and artifactual evidence compiled by Charles Keyes between 1922 and 1948. The report presents an explanation of the manner in which the work was conducted, and includes a county-by-county summary of Keyes' material, which is presently in curation at the State Historical Society Archives.

Union Historical Company
1881 The History of Iowa County, Iowa. Des Moines.
Basic historical sketches of the county; early environmental descriptions and overview of settlement patterns in individual townships.

USDA Staff.
1976 Iowa-Cedar Rivers Basin Study. Des Moines, Iowa: USDA-ERS, Forest Service and Soil Conservation Service.
The purpose of this report is to provide basic resource data and to develop a plan for conservation and development of land and water resources of the two river basins. It gives data on the climate and physiography and land, water, wildlife, forest and recreational resources of the two river basins. Also, problems in the utilization and conservation of those resources are noted. This report is a good reference for basic resource data on the Iowa River basin.

Ward, Reverend Duren J.H.
1903 "Historic-Anthropological Possibilities in Iowa". Iowa Journal of History and Politics 1:47-77.
A discussion of anthropology as a science is presented, as are segments on "Mound Builders" and the Sac & Fox historic Indian tribe.

1904 "Some Iowa Mounds: An Anthropological Survey". Iowa Journal of History and Politics 2:34-68.
Specific mound groups along the Iowa River are discussed and thoroughly mapped. Ward describes

conducting surveys along the Iowa River, from Iowa City to the Big Bend of the river in Jefferson Township.

1905 "The Problems of the Mounds". Iowa Journal of History and Politics 3:20-40.

Ward notes that 300 conical mounds and many elongated mounds were observed between Iowa City and West Amana. He discusses the question of who built these mounds, and also mentions "auger tests" that were done at some of the mounds.

n.d. Unpublished Letters to the State Historical Society, State Historical Society Archives.

In a series of letters to the Iowa State Historical Society, Ward describes how he surveyed areas adjacent to the Iowa River, north of Iowa City and near the Amanas. A total of twenty-eight mound groups are cited.

Warner, G. and C. Foote

1885 Plat Book of Benton County, Iowa. Minneapolis.

1886 Plat Book of Iowa County, Iowa. Minneapolis.

Webster, Clement

1887-

1888 Ancient Mounds in Johnson County, Iowa. Smithsonian Institution Annual Report 1:593-604. Washington, D.C.

Webster describes locating about 100 mounds along the Iowa River in Johnson County. Two of the mound sites - 13JH1 and 13JH3 - are in the vicinity of Coralville Lake. 13JH3 has been documented more recently by Caldwell (1961).

Weichman, Michael S.

1975 The Johnson County - Coralville Reservoir Road Improvement Project. Environmental Research Center, Research Report No. 20.

The results of an archaeological reconnaissance survey of segments of Johnson County Road E on the north side of Coralville Lake, and a section of road near Sandy Beach, are presented. The survey located five new sites and one previously recorded site. The report includes a summary of previous archaeological investigations of the south-central Iowa River Valley, taken from Weichman & Tandarich (1974).

Weichman, Michael S. and John Tandarich

1974 An Overview of Known Archaeological Sites Within the Iowa River Valley: Coralville Reservoir to the Cedar River. Environmental Research Center, Research Report No. 10.

All archaeological sites recorded prior to 1974 in the south-central portion of the Iowa River Valley are described, including 52 sites in Johnson County. The report contains a summary of previous archaeological investigations and makes a recommendation for the

preparation of a cultural resource management program for Coralville Lake. While this report did not focus on historic resources, some of the discussion of protohistoric environmental conditions was of use in reconstructing the contact-period setting.

Wheeler, Richard P.
1949 Appraisal of the Archaeological Resources of the Coralville Reservoir, Iowa River, Iowa. Washington, D.C.: Smithsonian River Basin Surveys.

Wheeler conducted the initial Smithsonian River Basin Survey of the projected conservation pool for Coralville Lake. The survey was completed in the winter of 1946. Nine prehistoric sites were located, some of which were further investigated by Caldwell in 1956.

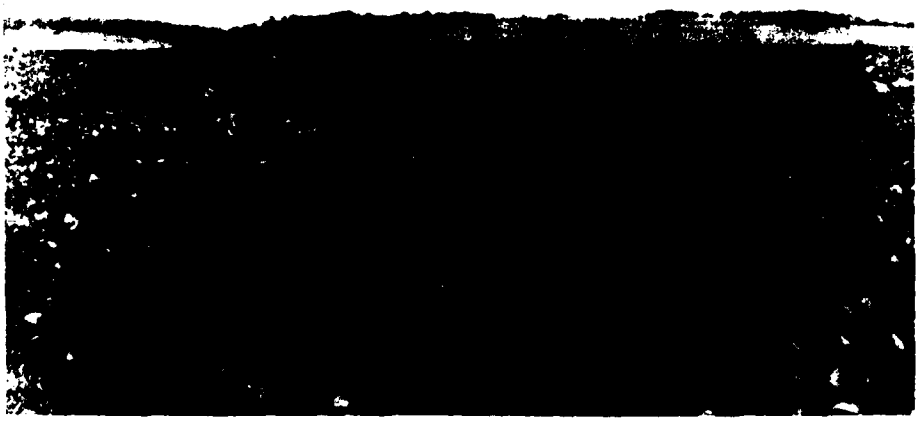
Zalesky, James
1977 A Collection of Surface Finds from East Central Iowa. Manuscript, Iowa State University, Ames.

Zalesky describes 158 archaeological sites in Johnson, Linn and Iowa Counties from which he or other private collectors had recovered cultural materials. Sixty-seven of these sites, many of which had already been assigned state site numbers, are located on the shore of Coralville Lake.

Zieglowsky, Debby and James Zalesky
1981 The Coralville Reservoir: A Status Report, 1980. Research Papers, Volume 6, Number 4, Office of the State Archaeologist. Iowa City: University of Iowa.

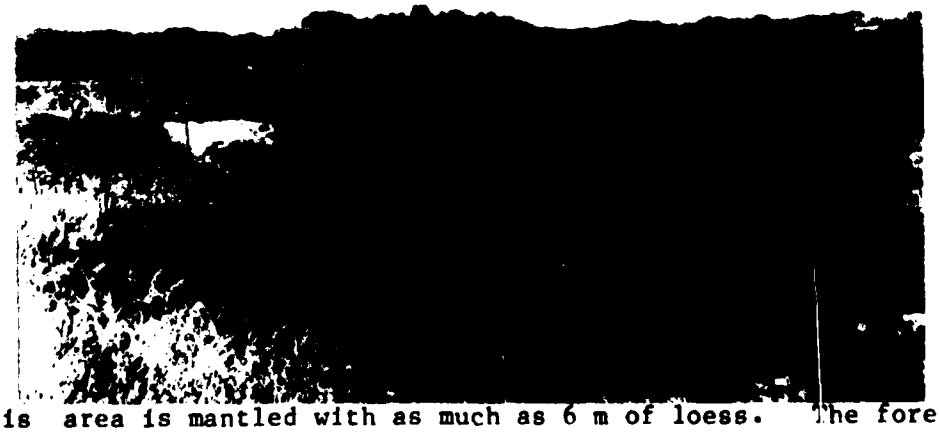
This report outlines previous archaeological work at Coralville Lake, and briefly describes field-checking of 79 previously recorded sites along the lakeshore. A "no collection" policy was maintained, and no subsurface testing was performed. Site conditions and research potential were evaluated. A recommendation was made to develop a long-range, problem-oriented cultural resource management plan for Coralville Lake.

Plate 1. View of Iowan Surface and Southern Iowa Drift Plain



A landscape beginning about 1 km north of North Liberty, Iowa and extending to the northeast. Map unit STP (prairie-derived soils formed in less than 1 m of loess and in underlying glacial till on the Iowan Surface) is in the foreground. The hill in the background is map unit PHA: forest-derived soils formed in loess on the Southern Iowa Drift Plain. The loess is more than 6 m thick on the top of that hill.

Plate 2. Map units in the Southern Iowa Drift Plain.



This area is mantled with as much as 6 m of loess. The forest-derived Fayette soils dominate this area. Map unit PSA comprises the ridgetop, and PHA the hillsides.

Plate 3. Soil profile at the Rock Shelter Site.

A soil on the floodplain at the Rock Shelter Site. (Tick marks are 25 cm apart.) The upper 75 cm consists of stratified, silty post-settlement alluvium. Below that is a dark colored, moderately well developed soil.

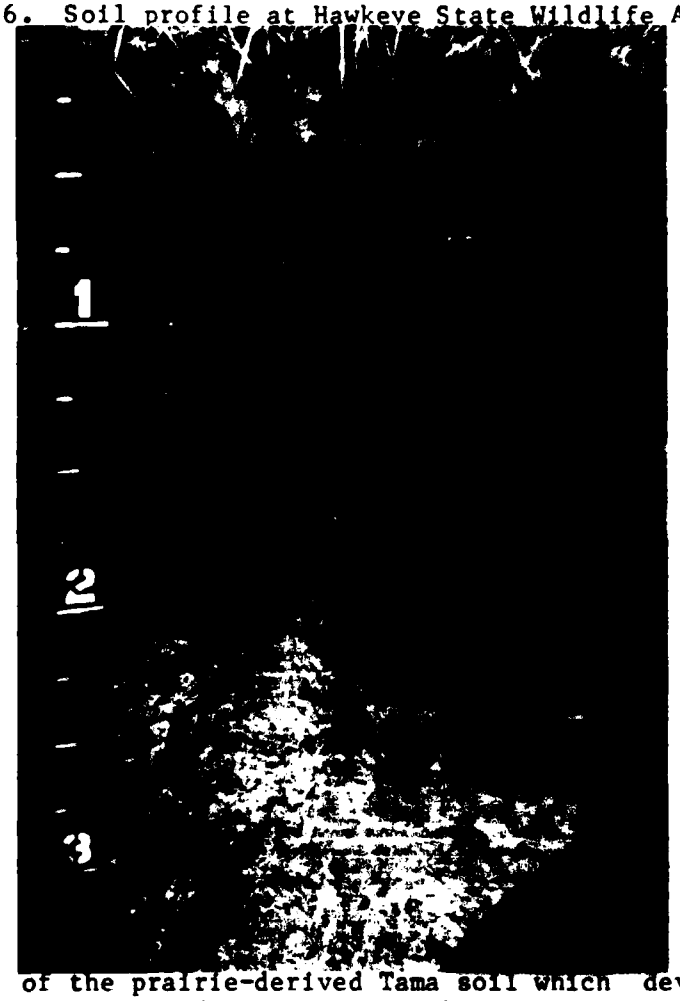
Plate 4. Map unit at Sugar Bottom Campground

A scene of map unit TAF, forest-derived soils formed in thick loess, at Sugar Bottom Campground. The sloping escarpment rising to the higher terrace is in the foreground. Beyond that and extending to the lake is the low terrace. Map unit PHA, forest-derived soils formed in loess on hillsides, is across the lake.

Plate 5. Soil profile near Jolly Roger Campground.

A profile of the forest-derived Fayette soil on an eroded bluff near the Jolly Roger Campground. The loess here is about 4 m thick and it overlies loamy and sandy alluvium. The map unit here is TAF. (Tick marks on tape are 25 cm apart.) Note that the thin dark colored A horizon is about 5 cm thick. The E horizon is below it and it extends to about 20 cm. The part of the B horizon with subangular blocky structure begins there and extends to about 60 cm. The part of the B horizon with prismatic structure begins there and extends to about 170 cm.

Plate 6. Soil profile at Hawkeye State Wildlife Area.



A profile of the prairie-derived Tama soil which developed in loess on a terrace (map symbol TAP) at the Hawkeye State Wildlife Area. (Numerals on tape are feet.) The dark colored A horizon terminates at about 1.75 ft (54 cm). The B horizon begins there and extends a few cm below the base of the photograph.

Plate 7. 13JH55, view to the south.

View is of a finger ridge which comprises part of the site area of 13JH55.

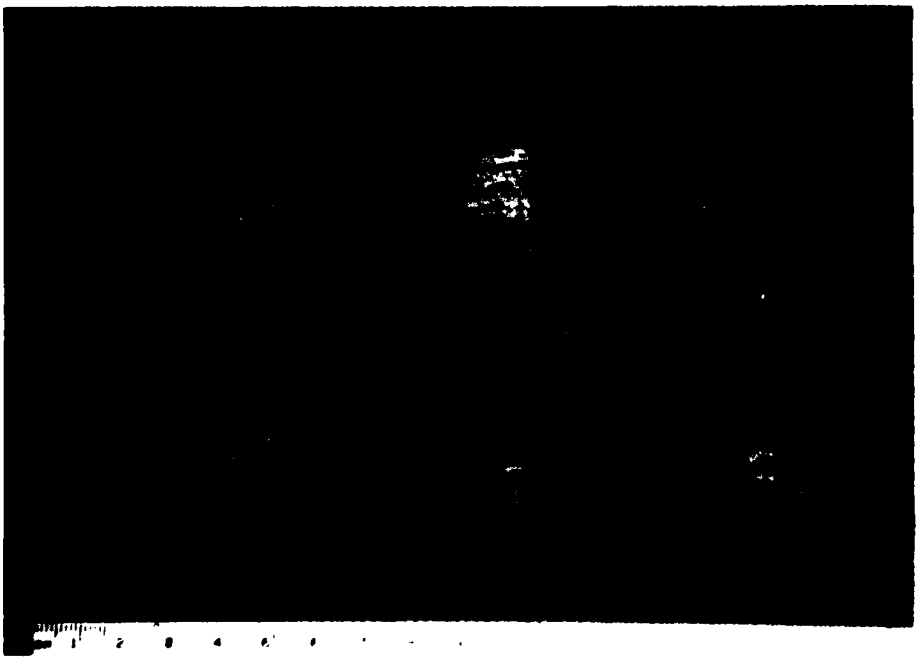
Plate 8. 13JH117, view towards the west.

View is of a portion of the level terrace remnant upon which 13JH117 is located. (Sugar Bottom Beach changing house is in background.)

Plate 9. Eroded side slope at 13JH55, view towards the east.

This is typical of the eroded condition of the terrace remnant at Sugar Bottom Recreation Area.

Plate 10. Ceramics from Coralville Lake.



Top row, left to right: 13JH43-79; 13JH33-1; 13JH55-94.

Bottom row, left to right: 13JH52-159; 13JH49-30; 13JH33-14.

Plate 11. Projectile points from Coralville Lake.

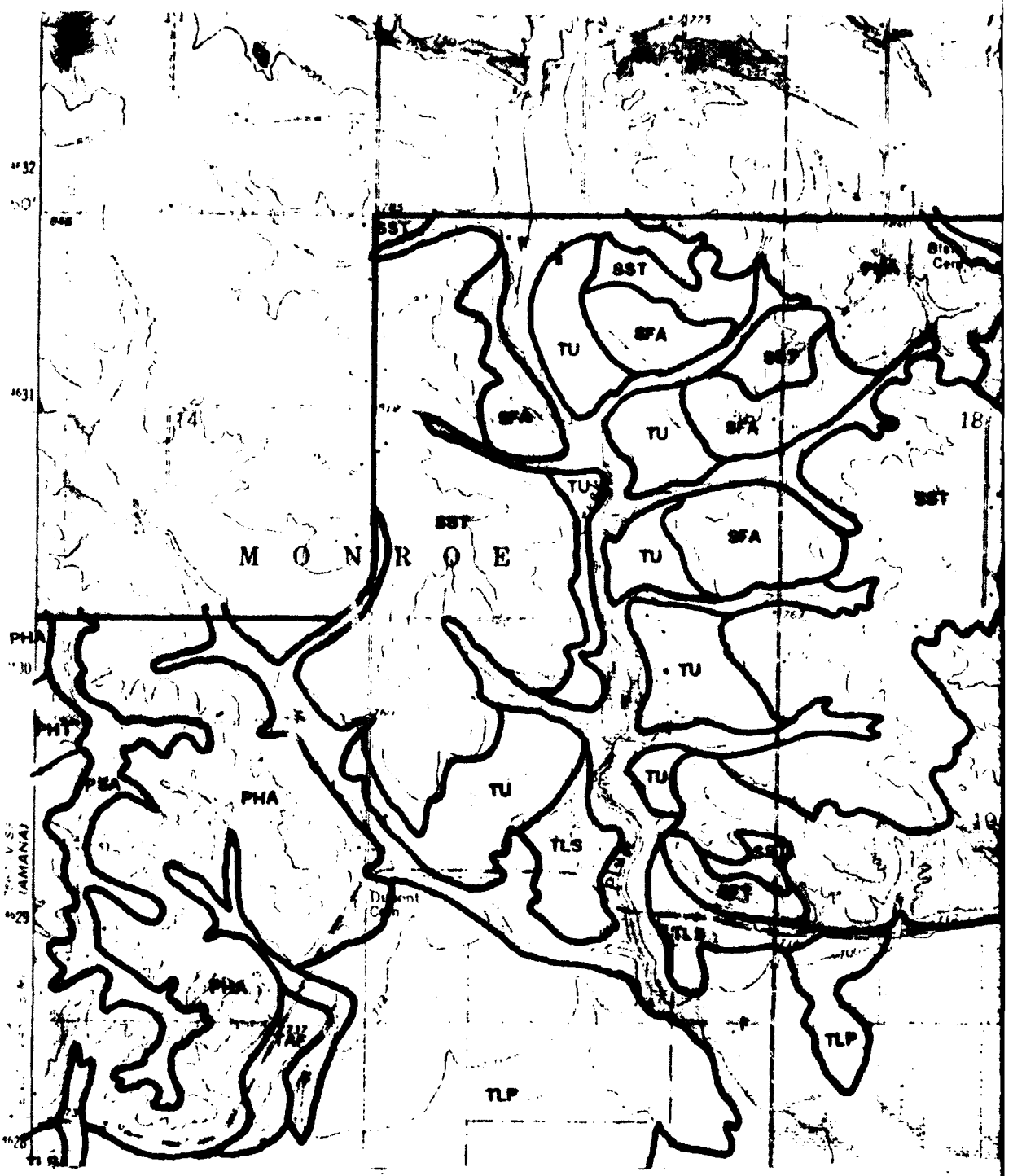
Left, top to bottom: 13JH397-147; 13JH409-2.
Center, top to bottom: 13JH55-91; 13JH396-76; 13JH49-1.
Right, top to bottom: 13JH322-1; 13JH117-86.

Table 12. Lithic tools from Coralville Lake.

Top, left to right: 13JH55-133; 13JH49-7; 13JH282-39; 13JH117-84.

Center: 13JH396-77.

Bottom, left to right: 13JH33-1; 13JH409-1; 13JH396-78; 13JH117-85.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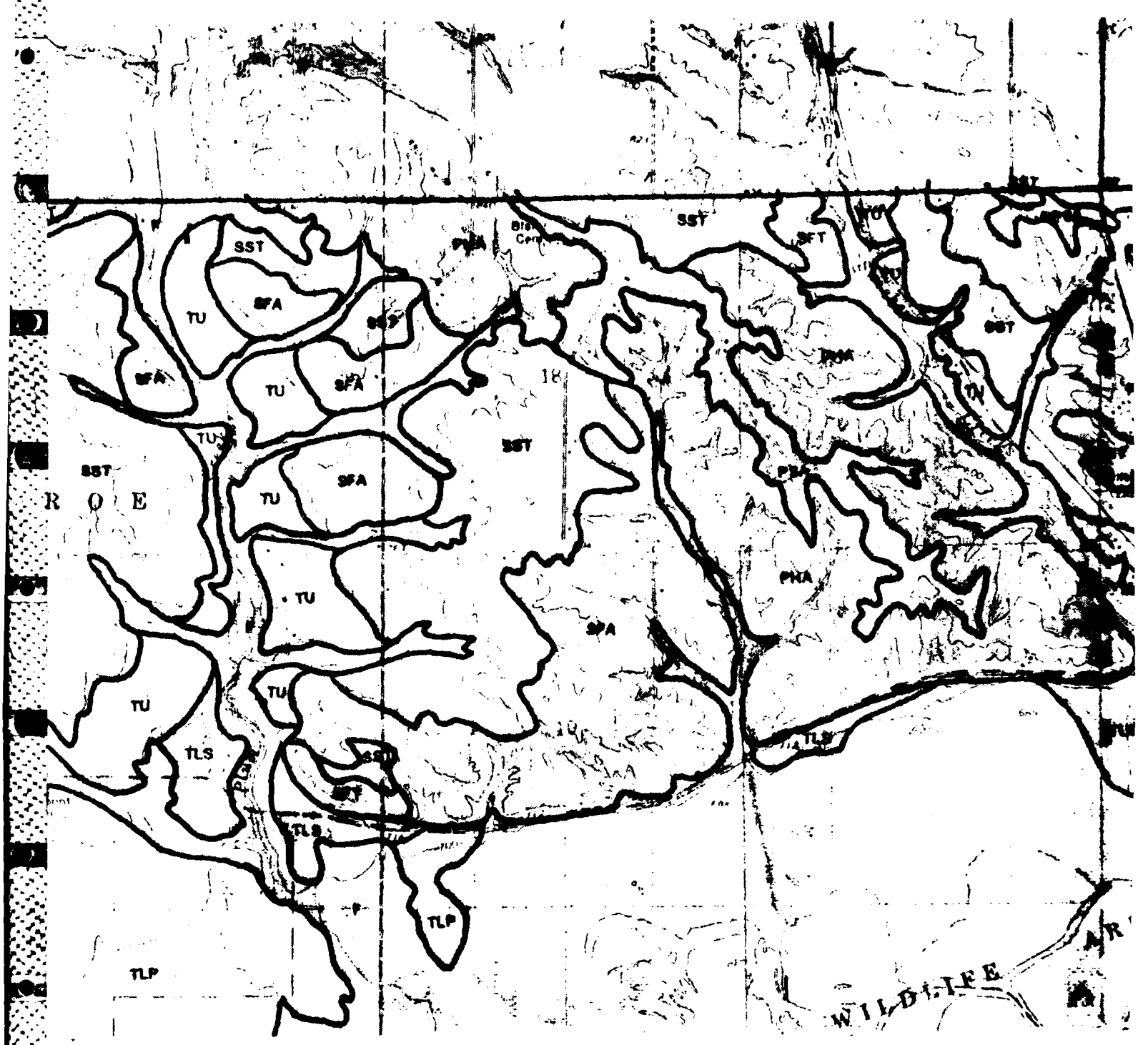

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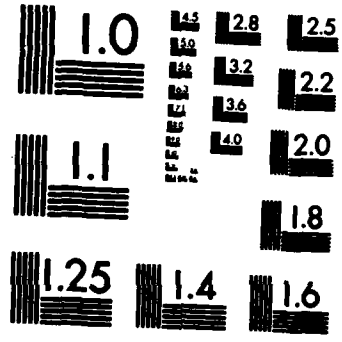


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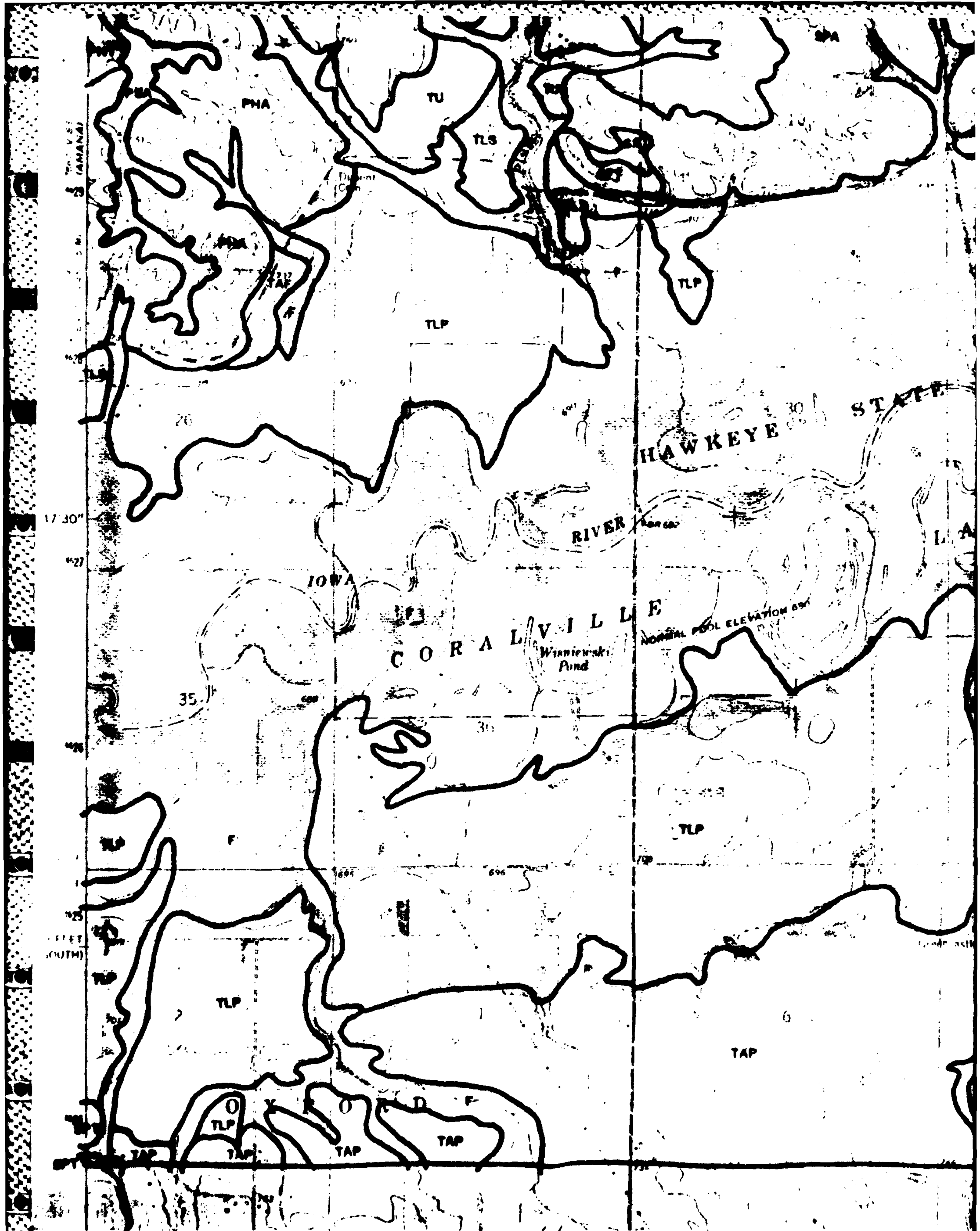
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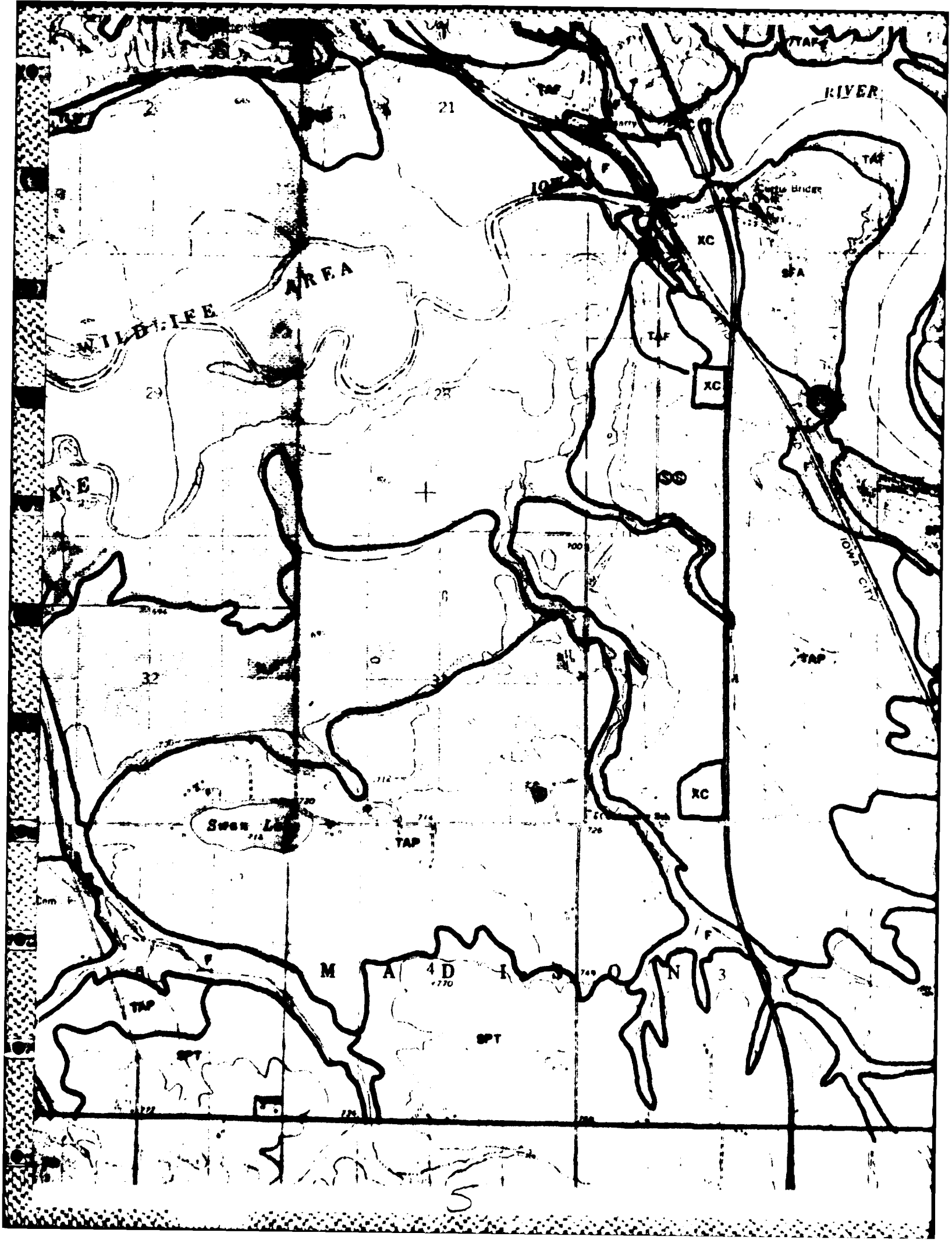
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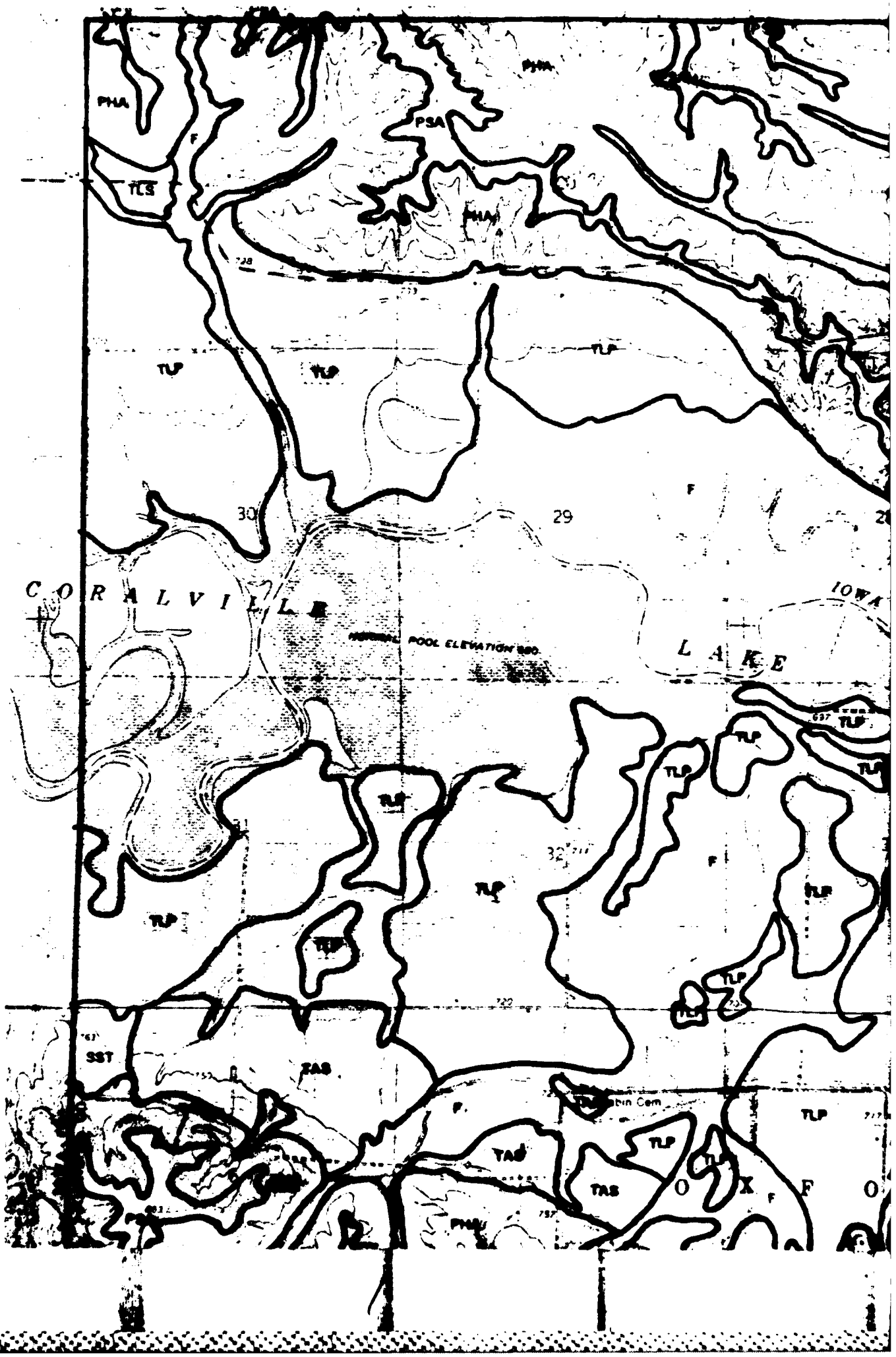
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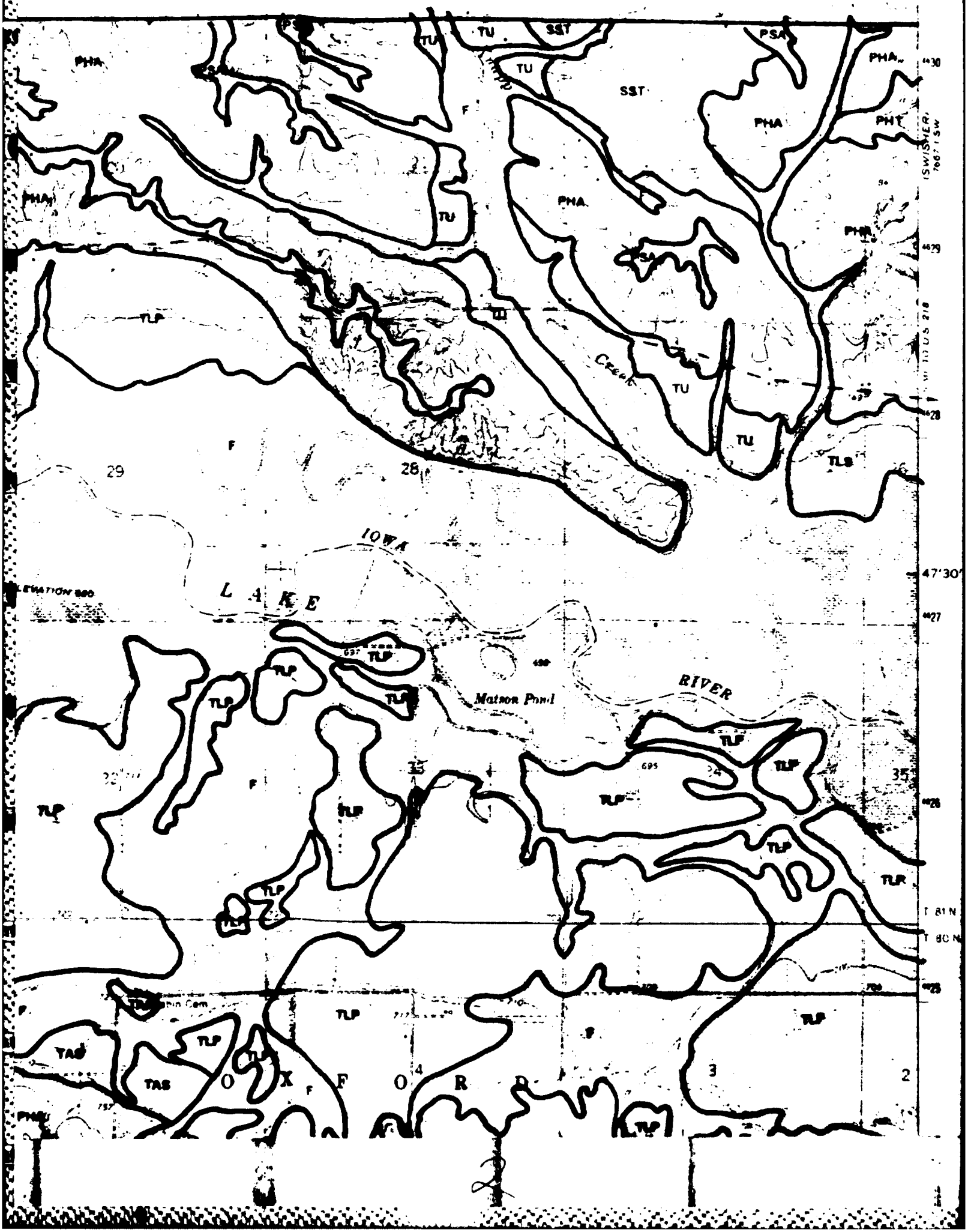
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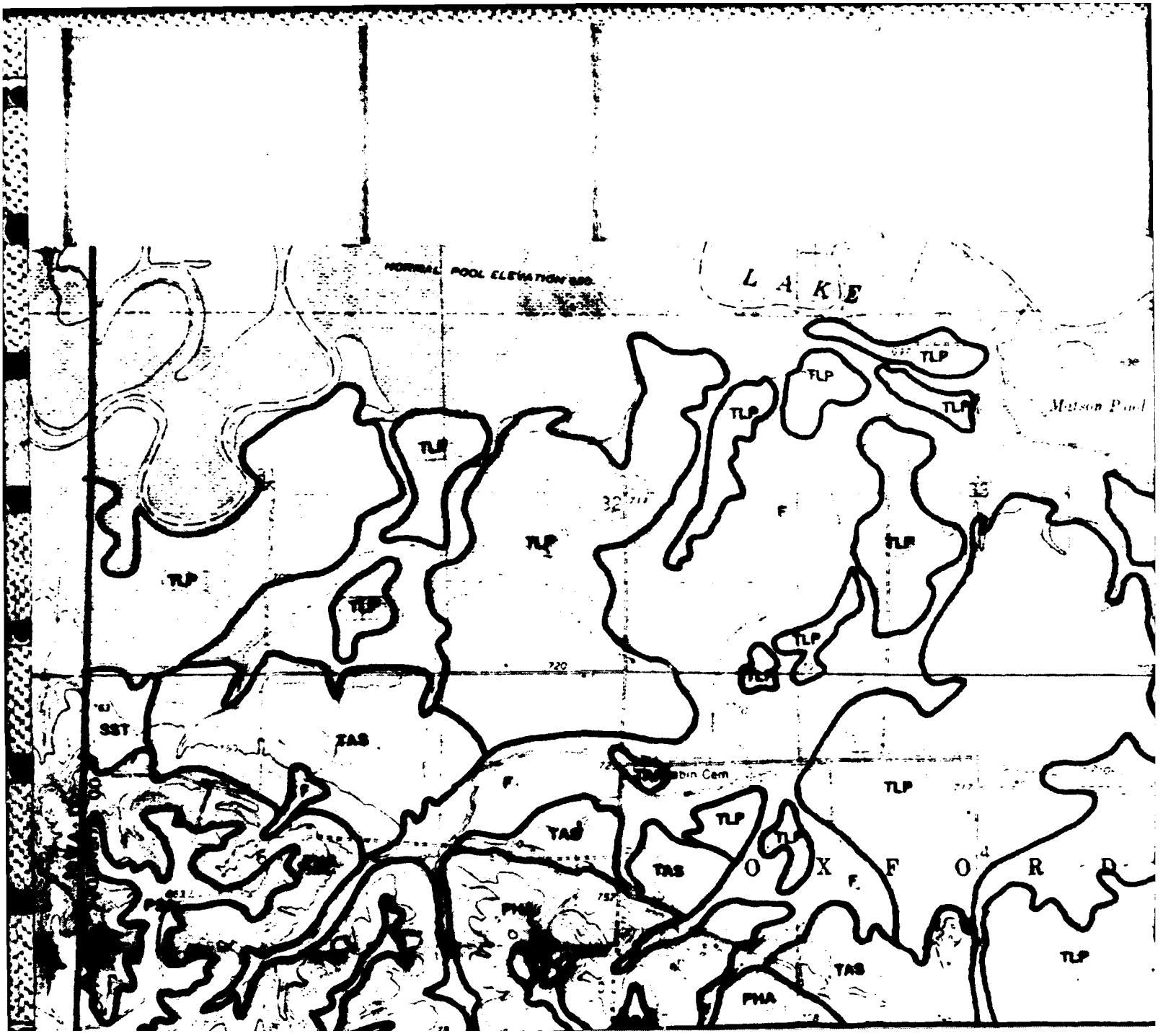
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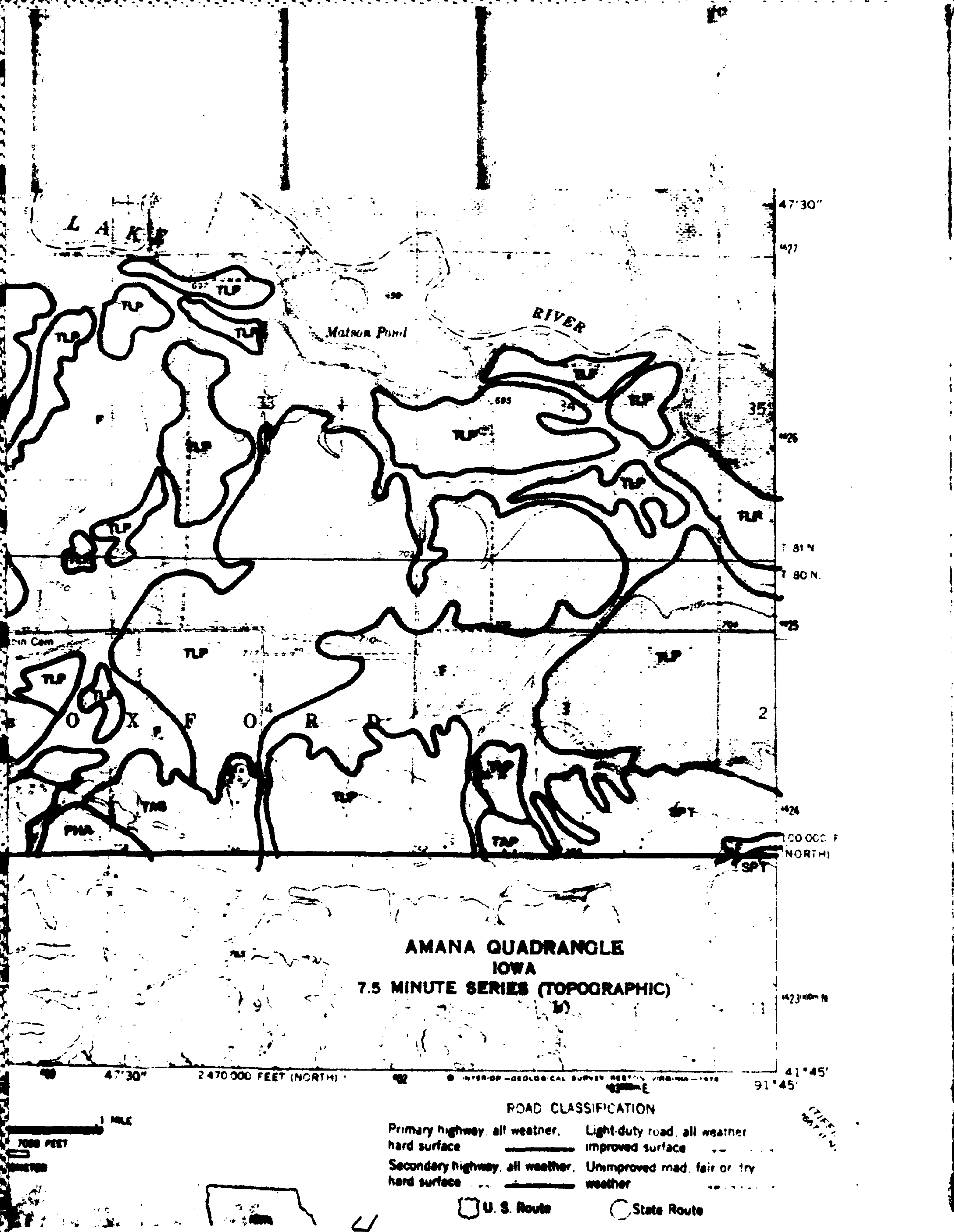
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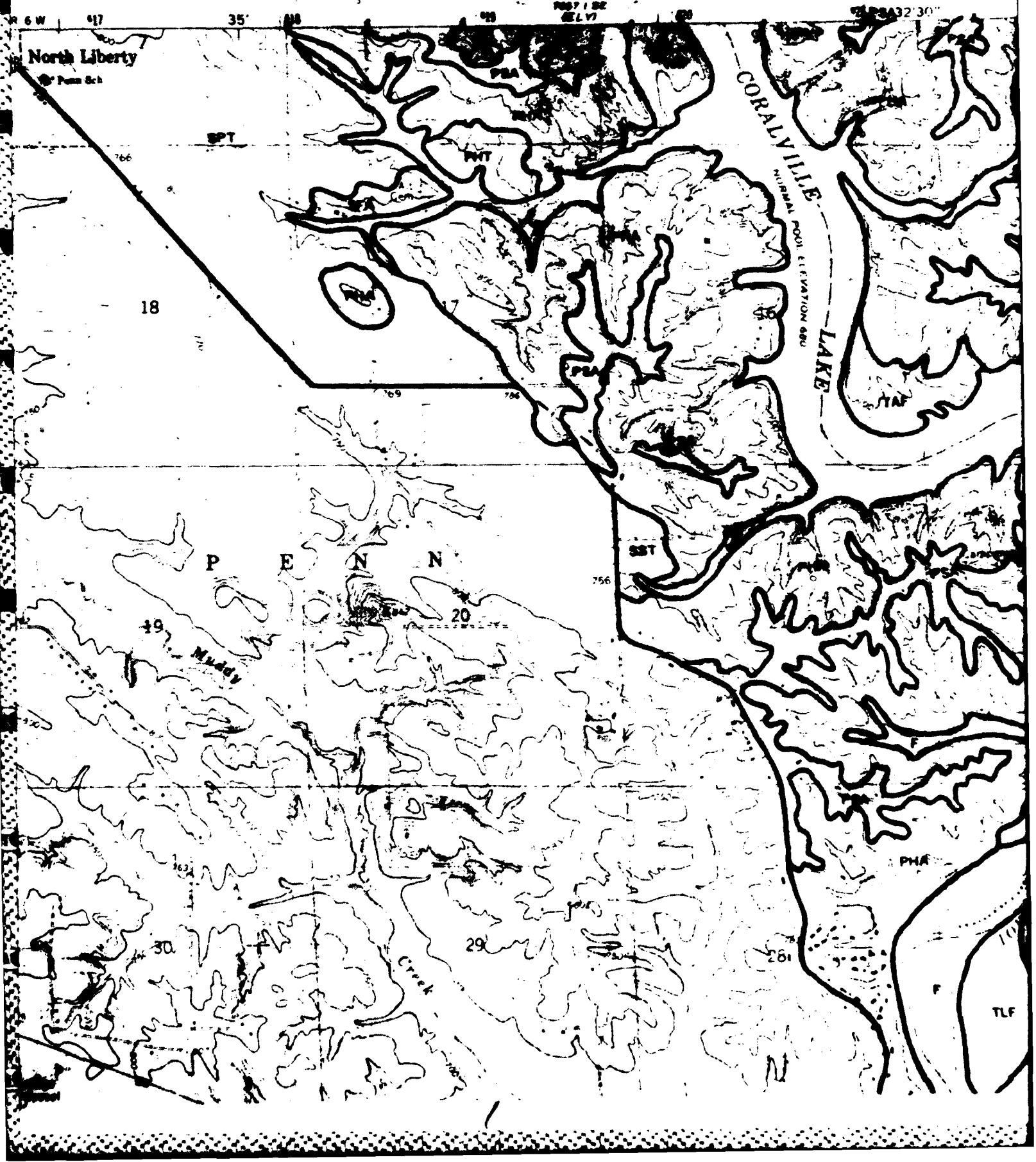
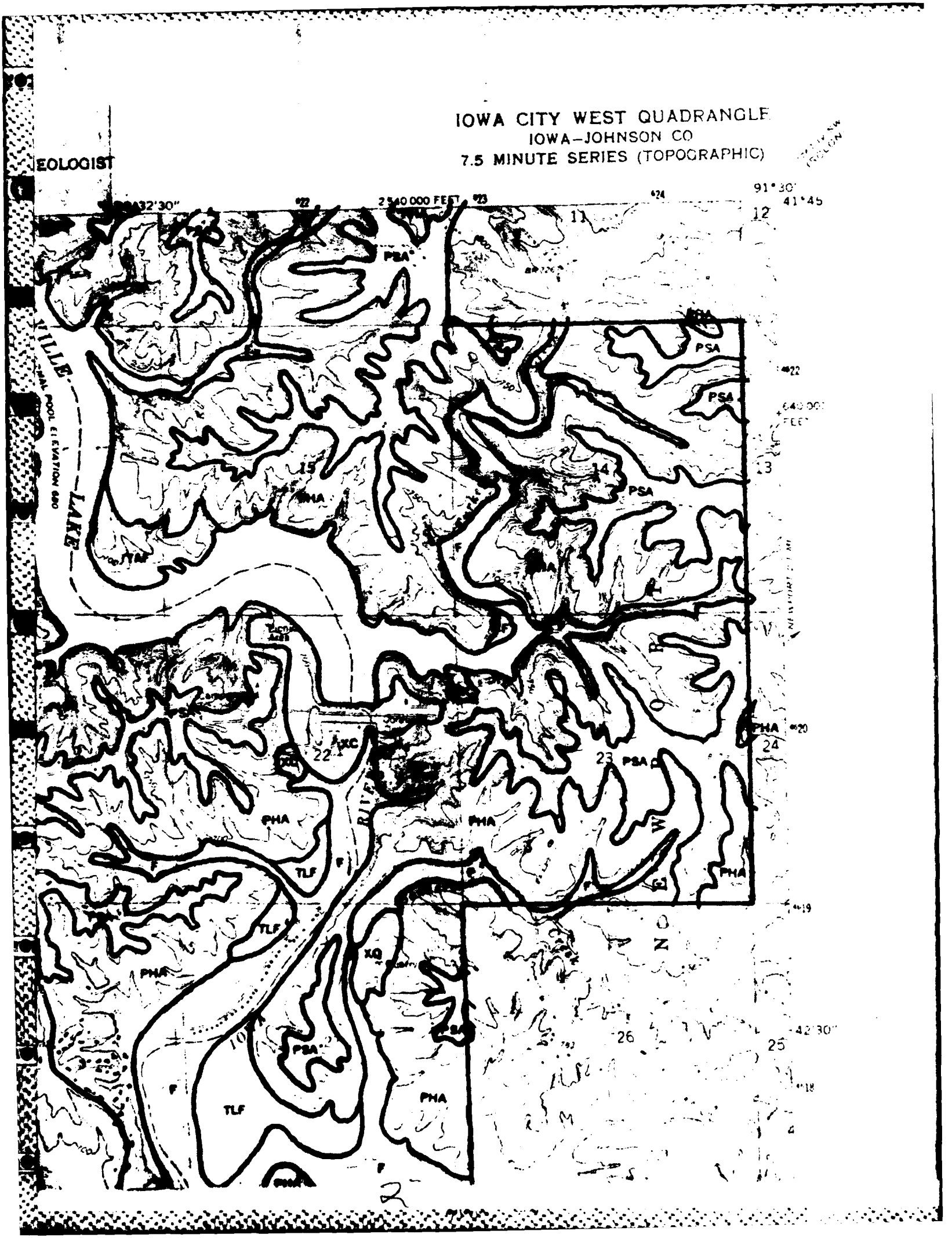
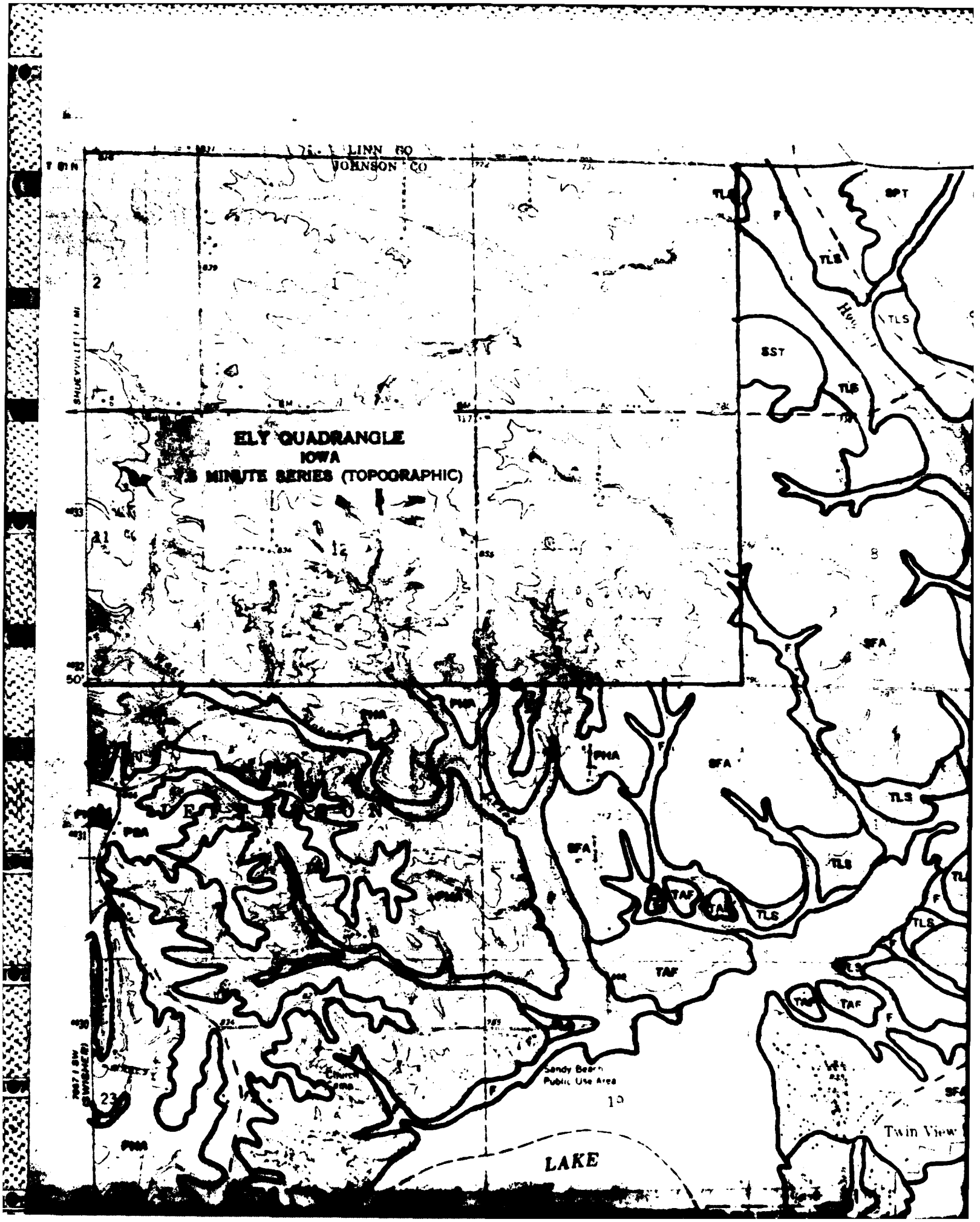
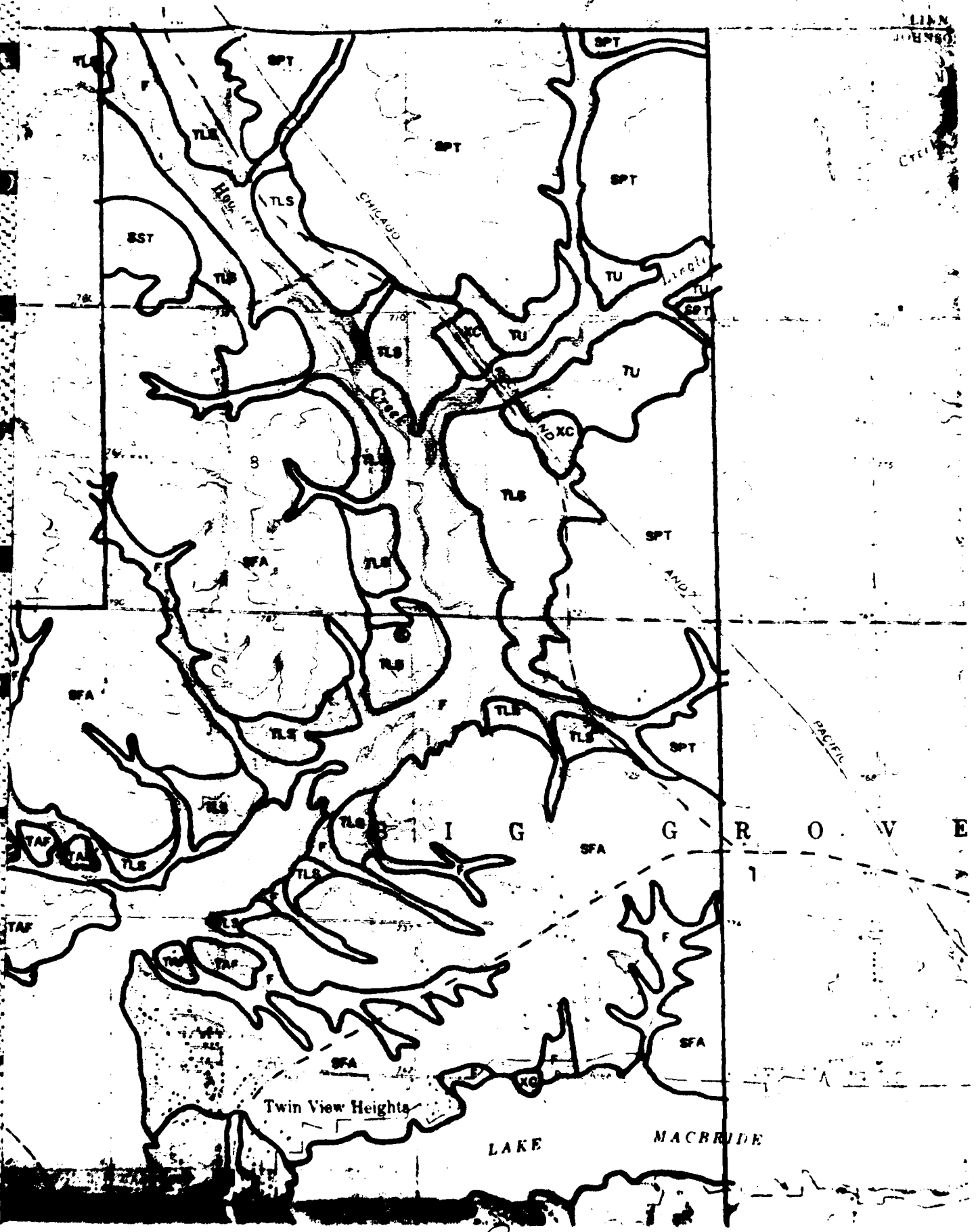
TAG
PHA
TAP
OXFORD
T 81 N
T 80 N.
47'30"
41°45'
91°45'
2 470 000 FEET (NORTH)
100 000 FEET (NORTH)
AMANA QUADRANGLE
IOWA
7.5 MINUTE SERIES (TOPOGRAPHIC)
ROAD CLASSIFICATION
Primary highway, all weather, hard surface
Light-duty road, all weather improved surface
Secondary highway, all weather, hard surface
Unimproved road, fair or dry weather
U. S. Route
State Route
1 MILE
7000 FEET

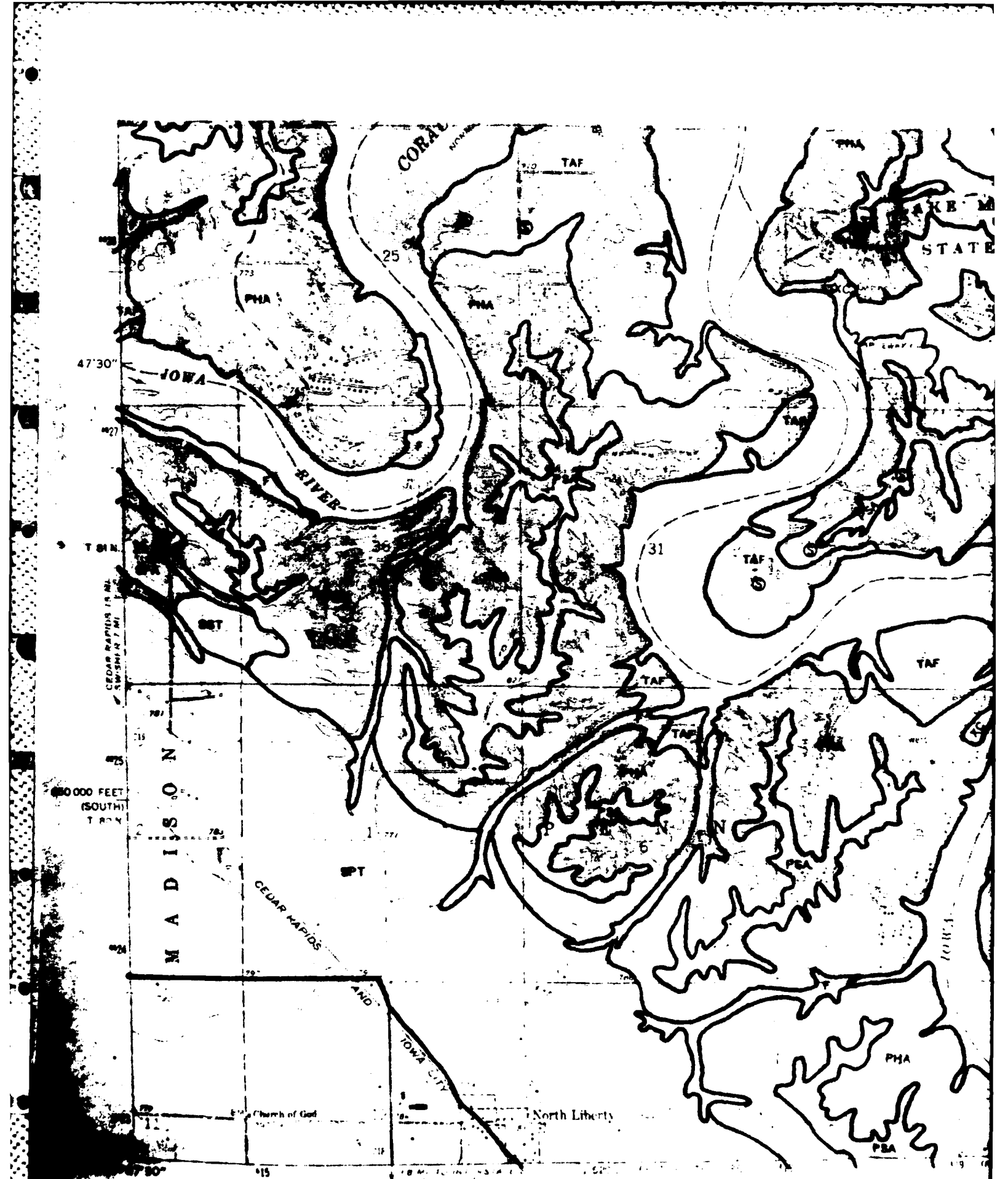
STATE OF IOWA
GEOLOGICAL SURVEY, H. GARLAND HERSHEY, STATE GEOLOGIST
IOWA CITY, IOWA




IOWA CITY WEST QUADRANGLE
IOWA–JOHNSON CO
7.5 MINUTE SERIES (TOPOGRAPHIC)
EOLOGIST
91°30'
41°45
2540 000 FEET
11
12
13
14
15
22
23
24
26
25
10
PSA
PHA
TLF
AXC
XLO
LAKE


LINN CO
JOHNSON CO
ELY QUADRANGLE
IOWA
7.5 MINUTE SERIES (TOPOGRAPHIC)
Sandy Beach
Public Use Area
LAKE
Twin View


SPT
TLS
F
BST
TU
XC
SFA
TAF
CHICAGO
PACIFIC
Creek
Twin View Heights
LAKE
MACBRIDE
8
1



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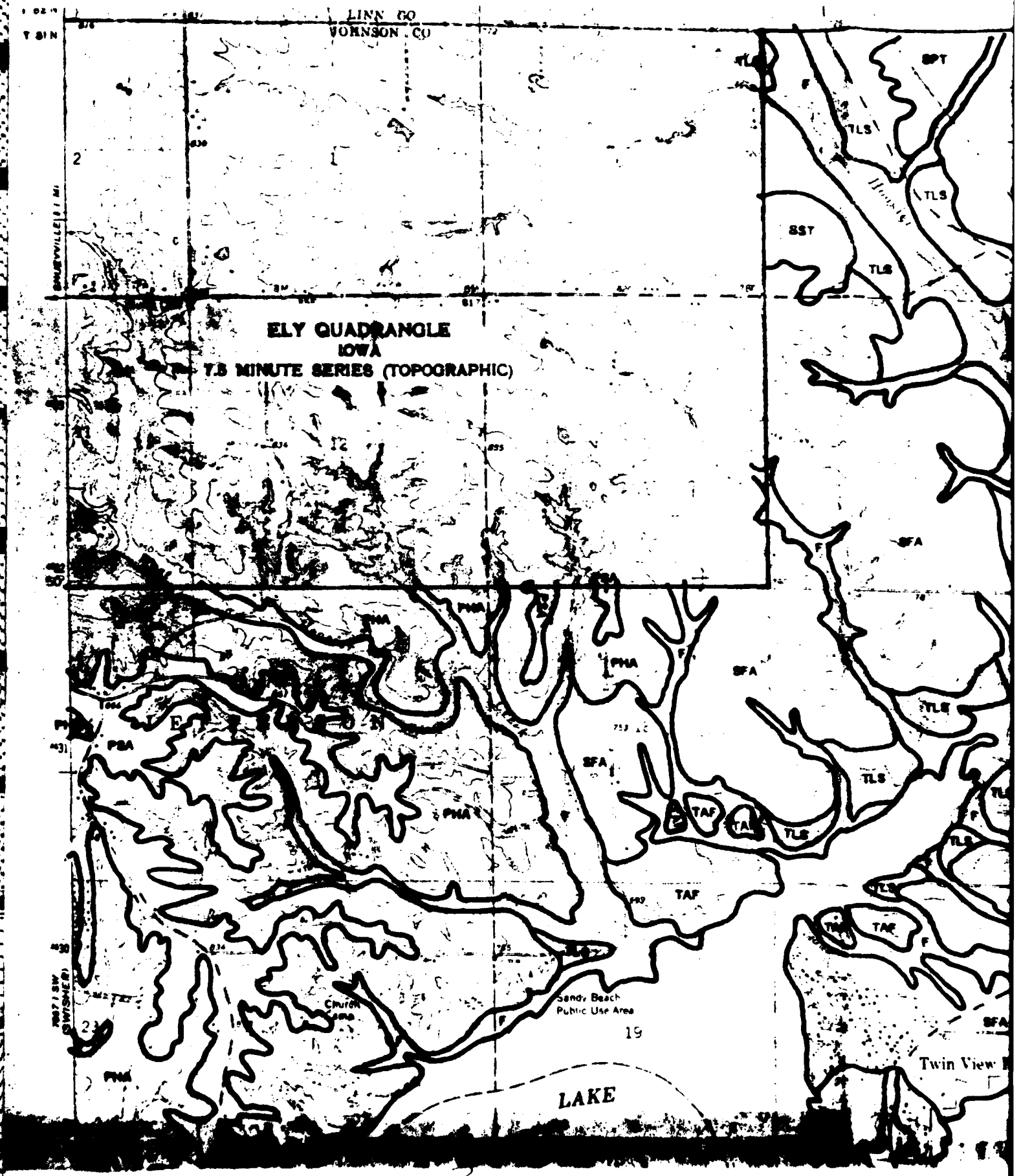
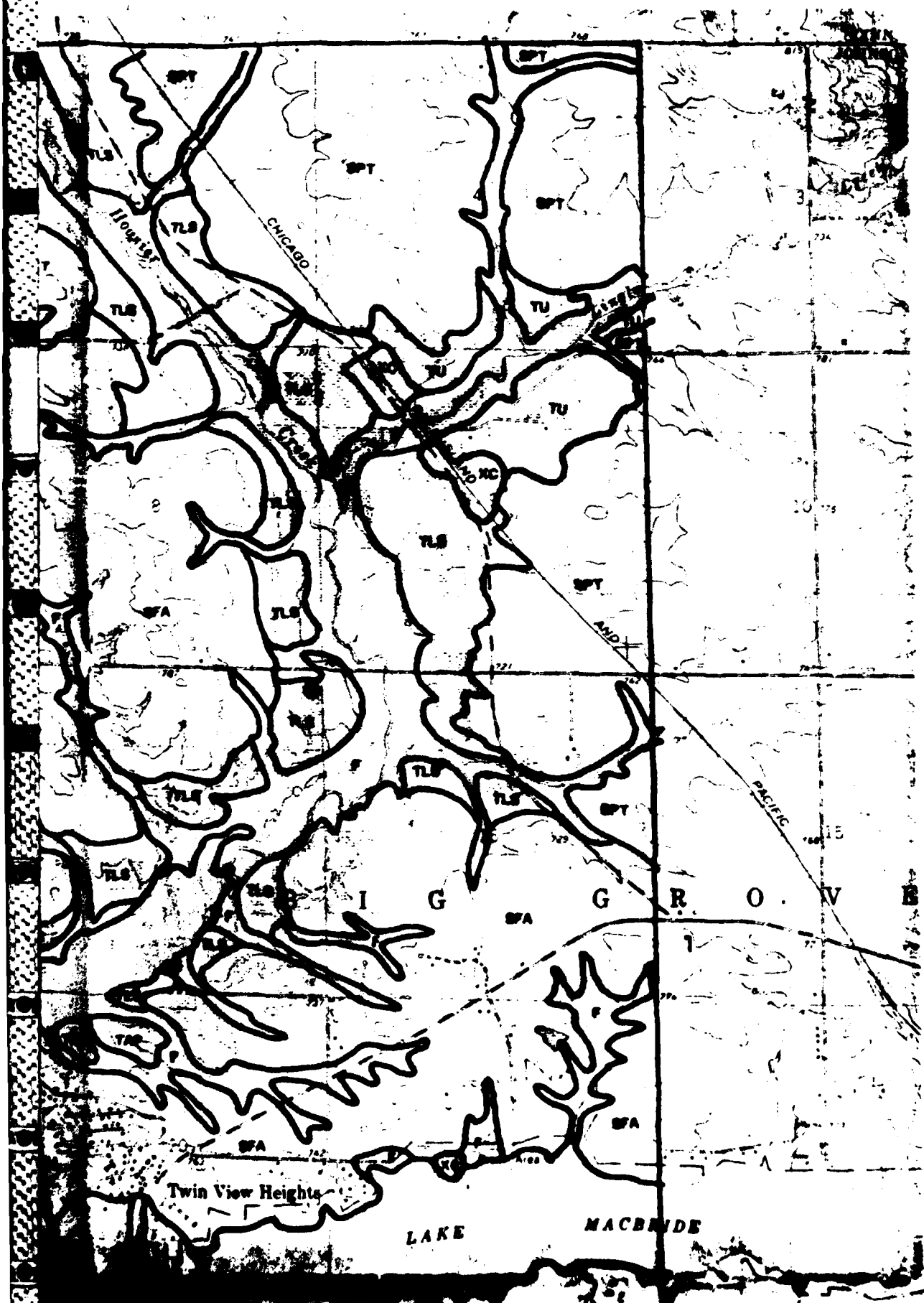
STATE PARK
LAKE MACBRIDE
28
29
Campground
Gravel Pit
34
33
3
IOWA RIVER
PHA
PSA
TAF
Sugar Bottom
Public Use
IOWA CITY WEST
2 840 000 FEET (NORTH)
SCALE 1:24 000
ROAD CLASSI
Primary highway, all weather
hard surface

Mapped edited and published by the Geological Survey


STATE PARK
29
28
27
LAKE MACBRIDE
BM 719
TAF
PHA
RIVER
IOWA
N E
IOWA CITY WEST
SCALE 1 24 000
FEET (NORTH)
ROAD CLA
Primary highway

2.


LINN CO
JOHNSON CO
ELY QUADRANGLE
IOWA
7.5 MINUTE SERIES (TOPOGRAPHIC)
Sandy Beach
Public Use Area
LAKE
Twin View
PHA
SFA
TAF
TLS
SST
SPT


CHICAGO
Creek
AND
PACIFIC
I G G R O V E
Twin View Heights
LAKE
MACBRIDE

END

FILMED

8

DTIC