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Appendix 3.2-15

Archaeological and Geoarchaeological Investigations of the Proposed Route of a Waste Water Discharge Corridor, Forest and Oneida County, Wisconsin

Archaeological and Geoarchaeological Investigations of the Proposed Route of a Waste Water Discharge Corridor, Forest and Oneida Counties, Wisconsin

Prepared By: John D. Richards, Ph.D.
Senior Research Associate

Michael F. Kolb, P.G.
Senior Research Associate

Principal Investigator: John D. Richards, Ph.D.

Great Lakes Archaeological Research Center, Inc.
P.O. Box 17767
Milwaukee, WI 53217 (414) 276-9791

Prepared For: Foth & Van Dyke
2737 S. Ridge Road
Green Bay, Wisconsin 54307-9012

ATTN: Gerald Sevick, P.E.

GLARC Projects 95.0043, 96.0043, 96.0013

SHSW 82-0335

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Management Summary

This report details the results of a three part cultural resource inventory of the route of a proposed wastewater discharge pipeline extending from the Crandon Project site in Forest County to a proposed Wisconsin River discharge station below Hat Rapids Dam in Oneida County. The study was conducted during 1995 and 1996 by Great Lakes Archaeological Research Center, Inc. at the request of Foth & Van Dyke, consultants to Crandon Mining Company.

The surveyed construction easement is designed to coincide with: (1) the previously surveyed right-of-way of the Crandon Project's site access road; (2) various existing state and county highway right-of-way; and (3) existing right-of-way coincident with the alignment of Old USH 8 (currently in use as a snowmobile trail) that parallels the northern half of the existing USH 8 right-of-way from CTH S to CTH V.

Three separate but related studies were undertaken. Initial efforts were designed as an archaeological and historical literature search and visual reconnaissance of the proposed route. A second study provided a detailed geoarchaeological assessment of the preferred route's potential to harbor buried archaeological deposits. The final investigation included additional pedestrian archaeological reconnaissance and subsurface sampling of selected locales. Sampling techniques included excavation of soil test pits and recovery of machine extracted soil borings.

Results indicate that no previously reported archaeological sites or cemeteries are located within or adjacent to the proposed alignment. A single archaeological site associated with the structural remains of a former dam keeper's residence was encountered at the westerm terminus of the proposed route. However, the former residence has been moved from its original location to a new, nearby site. Shovel test data suggests that the original archaeological context has likely been disturbed by activities associated with moving the structure and with the recent

construction of the adjacent Hat Rapids Road bridge over the Wisconsin River. Geoarchaeological data suggests that the project route is almost entirely restricted to extensively disturbed locales associated with former or existing highway and utility corridor right of way. In addition, soils along the proposed route are predominantly truncated, buried beneath massive fill deposits, or hydric in character. Finally, subsurface sampling of targeted locales failed to provide evidence of buried archaeological deposits or buried soils potentially capable of harboring in situ archaeologial deposits anywhere along the proposed alignment.

Table of Contents

Management Summary i
List of Figures vii
List of Tables ix

PART I: PROJECT BACKGROUND

Introduction 3
Report Organization 3
Project Description 4
Crandon Project 4
Waste Water Discharge Corridor (WWDC) 4
Project History 5
Archival Review and Visual Reconnaissance 5
Stage 1 9
Stage 2 Geoarchaeological Assessment 9

PART II: PROJECT SETTING

Physical Setting 13
Geology and Landforms 13
Soils and vegetation 15
Soils 17
Vegetation 18
Cultural Setting 18
Prehistory 18
Paleoindian 19
Fluted Point Traditions 19
Lanceolate Point Traditions 21
Flambeau Phase 21
Minoqua Phase 22
Summary: Paleoindian 23
Archaic 23
Early Archaic 23
Middle Archaic 24
Late Archaic 25
Summary: Archaic 26
Woodland Traditions 26
The Nokomis Phase - Early & Middle Woodland 27
Late Woodland—The Lakes Phase 28

Summary: Woodland Traditions 29
Historic and Protohistoric Indians 30
The Fur Trade 31
The Logging Industry 31
Pioneer Settlement 32
Current Landuse 33

PART III: METHODOLOGY

Methods and Techniques 37
Archival and Literature Search 37
Archaeology and History 37
Stage 1 Geoarchaeological Assessment 39
Archaeological Reconnaissance Techniques 40
Simple Visual Reconnaissance 40
Shovel Probing 41
Geomorphological Investigations 41
Visual Inspection 41
Subsurface Sampling 43

PART IV: RESULTS

Archival Research and Visual Reconnaissance 47
Archival Research 47
Visual Reconnaissance 47
Segment 1 (Plant site to STH 55) 53
Segment 2 (STH 55) 53
Segment 3 (STH 55) 59
Segment 4 (CTH S) 59
Segment 5 (USH 8/Snowmobile Trail) 60
Segment 6 (USH 8/Snowmobile Trail) 60
Segment 7 (USH 8/Snowmobile Trail) 61
Segment 8 (USH 8/Snowmobile Trail) 61
Segment 9 (USH 8/Snowmobile Trail) 61
Segment 10 (USH 8) 62
Segment 11 (USH 8) 62
Segment 12 (USH 8) 63
Segment 13 (USH 8) 64
Segment 14 (Route 3) 64
Segment 15 (Route 3) 64
Segment 16 (Route 2) 65
Segment 17 (Route 2) 65

Segment 18 (Route 2) 66
Segment 19 (Route 1) 66
Segment 20 (Route 1) 67
Segment 21 (Route 2) 67
Stage I Geoarchaeological Assessment 68
Soil Assessment 68
Landscape Morphology Assessment 81
Northern Wisconsin Landscapes and Site Locations 81
Soils 82
Geomorphological Assessment 84
Geoarchaeological Assessment of the Segments 84
Segment A (Figures 9 and 10) 84
Segment B (Figures 10 and 11) 85
Segment C (Figures 11 and 12) 85
Segment D (Figures 12, 13, and 14) 86
Segment E (Figures 14, 15, 16, and 17) 87
Segment F (Figures 17 and 18) 87
Segment G (Figures 18 and 19) 88
Segment H (Figure 19) 88
Stage 2: Geoarchaeological Assessment 89
Geoarchaeological Field Investigations: Visual Inspection of Corridor Segments 89
Segment B: STH 55 (7,575 ft) 89
Segment B: CTH S (12,350 ft) 90
Segment C: USH 8 (3200 ft) 90
Segment D:USH 8 (1000 ft) 92
Segment E: USH 8 (4900 ft) 92
Segment G: STH 17 (7370 ft) 93
Segment H: Hat Rapids Road (2100 ft) 94
Soil Borings 94
Subsegment C1 95
Subsegment C2 96
Subsegment G4 100
Subsegments H1a amd H1e 102
Additional Investigation 104
Hat Rapids Dam Shovel Probing 104

PART V: CONCLUSIONS

Summary and Conclusions 111

Recommendations 113
References Cited 114

APPENDICES

Appendix I: Project Correspondence 123
Appendix II: Permit to Conduct Archaeological Survey 143
Appendix III: Archival Sources Consulted 147
Appendix IV: Soil Horizon Nomenclature 153
Appendix V: Soil Borings 157
Appendix VI:Lot Check Inventory 185
Appendix VII: Bibliography of Archeological Reports 189

List of Figures

Figure 1: Crandon Project proposed WWDC route alignment 6

Figure 2: Landforms in the WWDC project area 14

Figure 3: Project route relative to Wisconsin's natural divisions 16

Figure 4:Flow chart for decisions on the degree of disturbance for the geoarchaeological assessment 42

Figure 5:Previously reported archaeological and burial sites 51

Figure 6: Survey segments at time of initial reconnaissance, part 1 55

Figure 7: Survey segments at time of initial reconnaissance, part 2 57

Figure 8: Index to Stage 1 route and survey segment maps 69

Figure 9: Stage 1 survey segments, Map 1 70

Figure 10: Stage 1 survey segments, Map 2 71

Figure 11: Stage 1 survey segments, Map 3 72

Figure 12: Stage 1 survey segments, Map 4 73

Figure 13: Stage 1 survey segments, Map 5 74

Figure 14: Stage 1 survey segments, Map 6 75

Figure 15: Stage 1 survey segments, Map 7 76

Figure 16: Stage 1 survey segments, Map 8 77

Figure 17: Stage 1 survey segments, Map 9 78

Figure 18: Stage 1 survey segments, Map 10 79

Figure 19: Stage 1 survey segments, Map 11 80

Figure 20: USGS topographic map of subsegment C1 soil borings 97

Figure 21: USGS topographic map of subsegment C2 soil borings 98

Figure 20: Stratigraphic cross section Wolf River, subsegment C2 99

Figure 23: USGS topographic map of subsegment G4 soil borings 101

Figure 24: USGS topographic map of subsegment H1 soil borings 103

Figure 25: Shovel probe survey on WPSC property, Hat Rapids Dam 106

List of Tables

1 Generalized Archaeological Sequence for Northern Wisconsin 20

2 Previously reported archaeological sites within One mile of the project area. 48

3 Previously reported burial sites within one mile of the project area. 49

4 WWDC Segments for geoarchaeological assessment 68

5 Onieda County Soils Present within the WWDC 82

6 Forest County Soils within the WWDC 83

7 Segment A Geoarchaeological Assessment Categories 85

8 Segment B Geoarchaeological Assessment Categories 85

9 Segment C Geoarchaeological Assessment Categories 85

10 Segment D Geoarchaeological Assessment Categories 86

11 Segment E Geoarchaeological Assessment Categories 87

12 Segment F Geoarchaeological Assessment Categories 87

13 Segment G Geoarchaeological Assessment Categories 88

14 Segment H Geoarchaeological Assessment Categories 89

15 Length and Condition of Segment B Subsegments along STH 55 Designated for Field Inspection. 90

16 Length and Condition of Segment B Subsegments along CTH S Designated for Field Inspection. 90

17 Length and condition of Segment C subsegments along USH 8 designated for field inspection. 91

18 Length and condition of Segment D subsegments along USH 8 designated for field inspection 92

19 Length and condition of Segment E subsegments along USH 8 designated for field inspection 92

20 Length and condition of Segment G subsegments along STH 17 designated for field inspection 93

21 Length and condition of Segment H subsegments along Hat Rapids Road designated for field inspection 94

22 Soil Borings, SubsegmentLocation and Location of Descriptions in Report 95

23 Summary of geoarchaeological assessment categories by segment 110

Part I: Project Background

INTRODUCTION

This report describes the results of a Phase I archaeological and geoarchaeological reconnaissance of a proposed Waste Water Discharge Corridor (WWDC) designed to serve Crandon Mining Company's (CMC) Crandon Project development in Forest County. The study was conducted by Great Lakes Archaeological Research Center, Inc. (GLARC). Phase I investigations included archival research, field investigations, and laboratory analysis.

The study was conducted for Foth and Van Dyke, Inc., consultants to CMC, to partially fulfill requirements of Section 106 of the National Historic Preservation Act of 1966 (P.L. 89-665) as amended and 36 CFR, part 800 which serves to implement the act. The Compliance Section, State Historical Society of Wisconsin assigned the project SHSW ID# 82-0335. Archaeological investigations conducted pursuant to this undertaking were assigned GLARC project ID #s 95.0043, 96.0013 and 96.0043. Project related correspondence is included as Appendix I. Appendix II is the approved *Application For Permit to Conduct Field Archeology Under S.44.47.* Wis. Stats. Archaeological materials, field notes, and supporting documentation are currently curated at Great Lakes Archaeological Research Center, Inc. located at 1659 N. Jackson street in Milwaukee, Wisconsin.

Report Organization

Report organization follows the general guidelines outlined in the Wisconsin Archaeological Survey *Guidelines for Conservation Archaeology* in Wisconsin. The report is presented in six parts. Part 1, Project Background, provides an introduction to the sponsoring undertaking, a description of the archaeological and geoarchaeological work, and a review of project development relative to agency consultation. Part 2, Project Setting outlines the physical and cultural context of the project area. Project methodology is described in Part 3, Methods and Techniques. Part 4, Results, details the outcome of the archival research and field work. Conclusion and recommendations are reported in Part 5. Part 6 is comprised of a series of appendices including project related corrrespondence, appropriate permits, a bibliography of archival sources, and BAR reporting data.

Project Description

Crandon Project

The Crandon ore body was discovered in 1975 by researchers affiliated with Exxon Coal and Minerals (ECMC). The ore body consists of an enriched zone of sulfide deposits containing both zinc and copper ores. Initial permitting activities pursuant to constructing and operating an underground mine were conducted by ECMC from 1975 through 1986. However, in December of 1986 ECMC withdrew all permit applications and suspended project development due to economic forecasts predicting low prices for processed ores.

In September of 1993, Crandon Mining Company was formed as a Wisconsin General Partnership by affiliates of ECMC and Rio Algom, Ltd. In 1994, CMC filed a Notice of Intent to Collect Data and Detailed Scope of Study (Foth and Van Dyke 1994). Crandon Mining Company then re-opened the permitting process and began implementing plans to develop an underground mine projected to extract 5,500 tons of ore per day. Initial plans call for crushing the extracted ore in an underground facility prior to concentrating the crushed ores in a surface concentrator. Concentrates targeted for recovery include zinc, copper and lead. Lesser amounts of gold and silver will be recovered also. Tailings generated by the concentrator facility will be disposed of in mined-out areas underground or in lined basins in the tailings management areas. Ground water pumped from the mine as a result of dewatering operations will be treated and discharged; water used in ore processing will be reused. Mine-related support facilities include offices, warehousing, storage facilities, and utility corridors. In addition, an overland access road and railroad connection to the nearby Wisconsin Central Railroad mainline are planned.

Waste Water Discharge Corridor (WWDC)

The Crandon Project's proposed WWDC extends from the wastewater treatment facility at the Crandon Project site west to the Wisconsin River. The proposed construction easement is currently designed to coincide with: (1) the previously surveyed right-of-way of the Crandon Project's site access road (2) various existing state, county, and township highway right-of-ways; (3) existing right-of-way coincident with the snowmobile trail in the northern half of the existing USH 8 right-of-way from

CTH S to CTH V; and (4) a portion of WPSC land along the Wisconsin River just below the Hat Rapids Dam. The proposed route alignment is shown in figure 1.

The route originates at the Crandon Project site in Forest County and follows the previously surveyed (Overstreet 1982) right-of-way of the North Access Road to the intersection of the North Access Road and STH 55. At this point, the proposed route extends north along the west side of STH 55 to the intersection of STH 55 and CTH S. The proposed easement is situated 7.6 m (25 ft) from the edge of the STH 55 pavement. The route continues north along the top of the roadside ditch on the west side of CTH S to the intersection of CTH S and USH 8 . From this point, the pipeline route is situated within the northern right-of-way of USH 8 coincident with the old USH 8 road bed (now used as a snowmobile trail) to the intersection of USH 8 and CTH V in Oneida County. At this intersection, the route crosses to the south side of USH 8 and continues, 7.6 m (25 ft) from the pavement edge, west to the Rhinelander Beltline. It then follows the Rhinelander Beltline (USH 8) west, 7.6 m (25 ft) from the north pavement edge, to the intersection of the Beltline and STH 17. From this intersection the proposed route is 7.6 m (25 ft) west of the pavement edge of STH 17 south to the intersection of Hat Rapids Road and STH 17. At this point the proposed route parallels the south (eastbound) lane of Hat Rapids Road west to the Wisconsin River. At the east bank of the Wisconsin River the proposed route turns north along the river bank to a discharge point at the Hat Rapids Dam.

Project History

This report presents the result of three separate but related studies focused on inventorying cultural resources within the WWDC right-of-way. Initial efforts were designed as an archaeological/historical literature search and visual reconnaissance of the project route. A second study provided a more detailed review of pertinent geomorphological and engineer's design data. The final effort was directed to subsurface sampling of areas targeted as a result of both earlier studies.

Archival Review and Visual Reconnaissance

Prior to submittal of Crandon Mining Company's *Environmental Impact Report* (Foth and Van Dyke 1995a), Great Lakes Archaeological Research Center, Inc. (GLARC) was asked by Foth and Van Dyke to conduct an archival and literature search

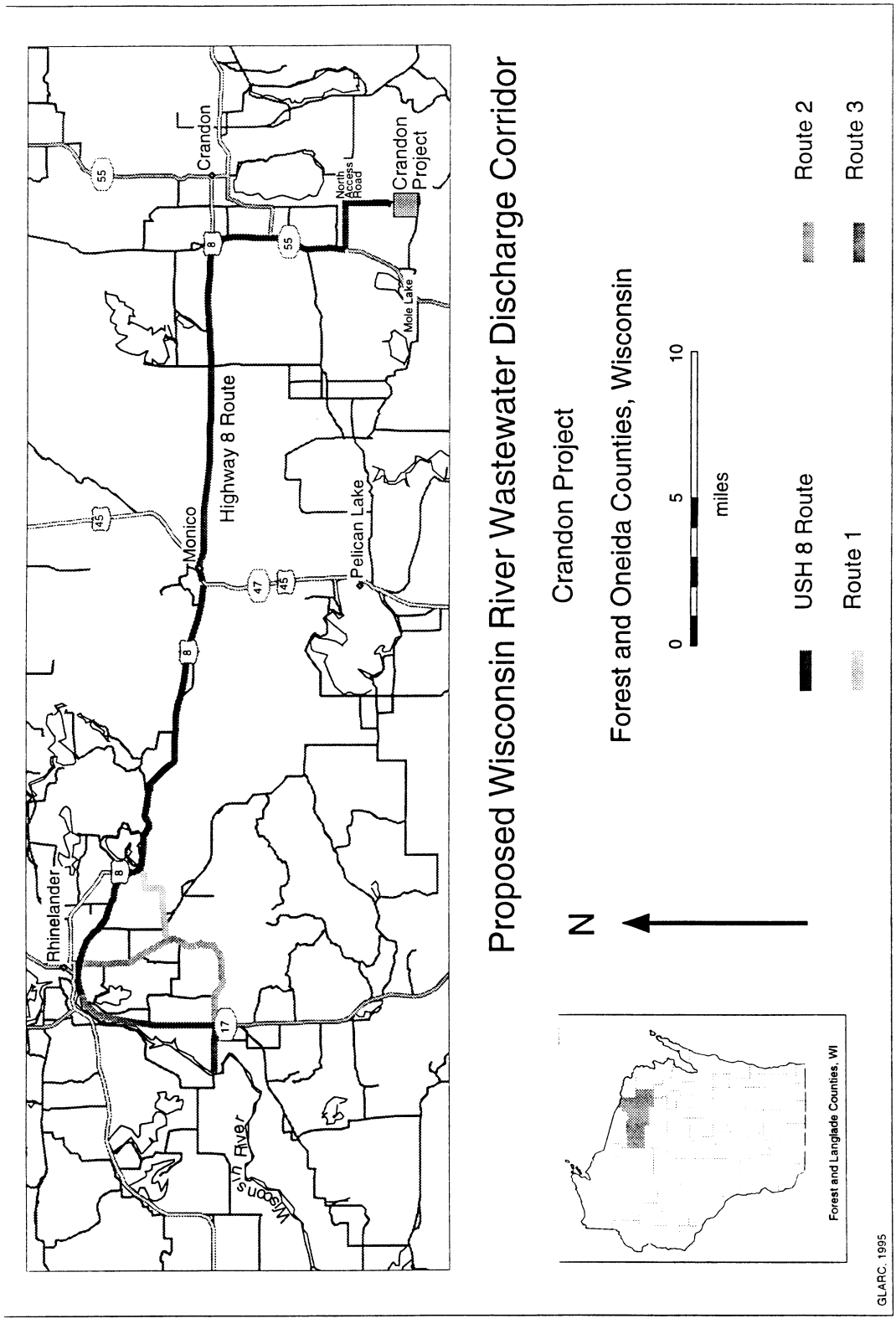


Figure 1: Crandon Project proposed WWDC route alignment

in conjunction with a visual reconnaissance of the route of the WWDC. Results of this study were reported in Richards (1995) and included in the submitted *Environmental Impact Report* (EIR). Project findings were summarized as follows:

> If the construction easement associated with development of the proposed wastewater discharge corridor is restricted to that portion of the existing right-of-way between the pavement and the limits of the existing slope intercept project development should have no effect on project area cultural resources. However, additional archaeological investigations may be warranted in any of the following three instances. Scenarios in which additional archaeological investigations may be warranted include: (1) construction easements extending beyond the existing slope intercept, (2) staging areas for underground borings at road intersections and waterways located beyond the existing slope intercept, and (3) pipeline excavation which penetrates below the existing slope intercept deposits.
>
> Investigation is recommended at two locations since alteration of the existing right-of-way appears to be less severe than is typical of other portions of the proposed route. Hence, it is possible that undisturbed archaeological sites are present within the existing highway right-of-way in these locales. Locales where additional archaeological investigations may be warranted include the Mud Creek lowlands within Segment 8 and the eastern portion of Segment 10 west of the USH 8/USH 45 intersection south of Venus Lake. These areas should be further investigated in order to determine the degree of prior disturbance since Richards and Overstreet (1990) have reported truncated archaeological deposits within shallow roadside ditches elsewhere in Wisconsin (Richards 1995: 22-23).

Subsequent to submittal of the EIR, Wisconsin's State Historic Preservation Officer (SHPO), commented as follows:

> Prior to receiving this document, we were unaware that the proposed undertaking included a thirty seven mile wastewater pipeline. Contrary to what was stated in Volume I of the report or Appendix 3.2-1, we did not approve any plan to complete an archeological survey for the pipeline. We recommend that you submit a survey proposal for the wastewater pipeline right of way to our office for review and comment. The results of the wastewater pipeline survey could also be included in the combined archeological survey report discussed in the previous paragraph. (Letter of 18 July 95 from Sherman Banker to Don Moe; see Appendix A).

Mr. Banker provided a more detailed review of GLARC's WWDC study in a letter to Don Moe dated 14 September 95 (see Appendix A). Mr. Banker commented as follows regarding SHPO's concerns:

> It is difficult to determine the depth of the slope intercept deposits prior to construction without subsurface testing. As a result, these areas need to be tested prior to construction to determine if there are any buried soils below the slope intercept deposits. In addition, construction easement areas extending beyond the existing slope intercept need to be tested prior to construction to determine if the project area is disturbed. Given the difficulties just discussed, we believe that these areas should be subjected to subsurface testing and an archeological survey to determine if there are any historic properties that may be effected by this undertaking if there are intact soil horizons under the slope intercept or outside the slope intercept. Areas that have already been subjected to an archeological survey, obviously do not need to be surveyed again.

Mr. Moe responded to Mr. Banker in a letter of 25 January 96 (see Appendix I). Mr. Moe commented:

> It was not Crandon Mining Company's intent to imply that SHPO had reviewed GLARC's preliminary study of the proposed WWDC. The technical memorandum detailing GLARC's study was included in the EIR to provide background information to the various agencies responsible for reviewing the EIR. Subsequent to submittal of the EIR, CMC provided your office with a copy of GLARC's technical memorandum along with additional engineering information. As I noted at that time, the memorandum was intended to provide your office with information to facilitate recommendations regarding the necessary levels of investigation.

Following a series of conversations between John Richards (GLARC), Sissel Johannesen (USACOE), Sherman Banker (SHPO), and Don Moe (CMC), GLARC developed a plan designed to address the concerns shared by SHPO and the USACOE with regard to archaeological survey of the WWDC. CMC submitted GLARC's plan as outlined in a 6 March 96 letter (see Appendix A) from Don Moe to David Ballman (USACOE). The proposal was based on the assumption that:

> ...it is neither feasible nor necessary to conduct a conventional archaeological survey along the entire route since major portions of the proposed WWDC can be demonstrated to have little potential to harbor archaeological sites. In

lieu of a conventional archaeological survey we propose a program of investigation that includes: (1) initial geoarchaeological assessment of the WWDC route; (2) limited subsurface sampling where necessary; and (3) archaeological monitoring during pipeline installation.

A two-stage program of geoarchaeological investigations was subsequently designed. Stage 1 efforts were restricted to archival research while Stage 2 work was intended to provide field investigation of Stage 1 results.

Stage 1

Stage 1 studies were designed to identify those portions of the WWDC route that could be confidently determined to be areas of low potential to harbor archaeological deposits and therefore should require no additional evaluation. The study relied on existing information such as USGS topographic maps, USDA soil charts, WDNR wetland delineations, and WisDOT and county highway design sheets and roadbed cross-sections. Results of the Stage 1 study were used to identify specific locales that might require additional field investigation.

Stage 2 Geoarchaeological Assessment

Areas which could not be confidently asserted to exhibit little potential to harbor archaeological sites and those areas identified as locales potentially capable of containing archaeological deposits were subjected to subsurface sampling. Sampling methods included manual extraction of soil bores, hand excavation of soil test pits, and machine-aided extraction of solid soil bores. Field investigation was designed to test for the presence of buried soils that might harbor archaeological deposits. Buried soils encountered during Stage 2 sampling were assessed as to the soil's potential to support human occupation.

It should be stressed that the geoarchaeological assessment of the proposed WWDC was designed to function as an inventory or identification level survey of the project area intended to supplement previous work. However, unlike conventional terrestrial archaeological surveys which typically focus on surface and near-surface deposits, the geoarchaeological assessment was designed to locate deeply buried, subsurface contexts. Nonetheless, decisions on where to conduct sub-surface sampling must be based on both archaeological and geomorphologic data. For example, a num-

ber of studies (cf. Bruhy et al. 1987; Griffin and Lehman 1986; Lovis 1976; Overstreet and Brazeau 1982; Ryden et al. 1983) focusing on northern woodland environments similar to that of the project area have demonstrated a consistent correlation between geomorphic variables such as well-drained soils and proximity to lakes or rivers, and prehistoric archaeological settlement patterns. The general model derived from these studies suggests that in northern forested environments, the locales with the highest potential to harbor archaeological deposits are those located on well drained, reasonably undisturbed soils situated in relative proximity to water bodies. While archaeological sites are of course found on other parts of the landscape, associated deposits are often scanty and site densities are typically low. Locating these resources is often problematic during conventional archaeological reconnaissance of northern woodland environments; identifying all such sites which may be present in any given subsurface context is currently not practical.

Part II: Project Setting

PHYSICAL SETTING

The following narrative is intended to provided the reader with a general overview of the Crandon Waste Water Discharge corridor project area environs. General information on the geology, landforms, soils, and vegetation of the project locality may be found in Chamberlin (1877), Martin (1965), Curtis (1959), Hole (1976), and Paull and Paull (1977). Regional and local literature pertaining to the project area is summarized in the following paragraphs.

Geology and Landforms

The project area is located on the southern Canadian Shield in Forest and Oneida Counties. Bedrock is mostly metavolcanic and metasedimentary rocks of Early Proterozoic age (Precambrian) (Simpkins et al 1987). Specifically the WWDC crosses (from east to west): felsic meta-volcanic rocks, mafic lavas and meta sedimentary rocks; gniess, amphibolite and foliated granitoid rocks; and metamorphosed mafic intrusive rocks (Morey et al 1982). The bedrock surface is undulating and and irregular and therefore is at varying depth below the surface. The regional bedrock slope is to the east and southeast. Bedrock is overlain by glacial deposits with some out crops occurring in the Monico area.

Landforms along the WWDC are predominately the result of processes that occurred during glaciation and deglaciation 22,000 - 12,000 years ago by Langlade Lobe glacial ice (Simpkins et al 1987) (figure 2). Deposits of the Langlade Lobe are tills and sand and gravel of the Nashville Member of the Copper Falls Formation (Simpkins et al 1987, Clayton et al 1992; Mickelson et al 1984). The till is a reddish brown (5YR), yellowish red (5YR) or dark brown (7.5YR) pebbly, cobbly sandy loam (Mickelson et al 1984).

Three different terrain types are crossed by the WWDC: (1) hummocky ice contact terrain, (2) drumlinized ground moraine, and (3) meltwater stream terraces. Ice-contact terrain is formed in areas where sediments are deposited in the presence of disintegrating glacial ice during deglaciation. Drumlinized ground moraine is formed subglacially as the glacier advances. And meltwater stream terraces are formed by sediment-laden meltwater streams during deglaciation.

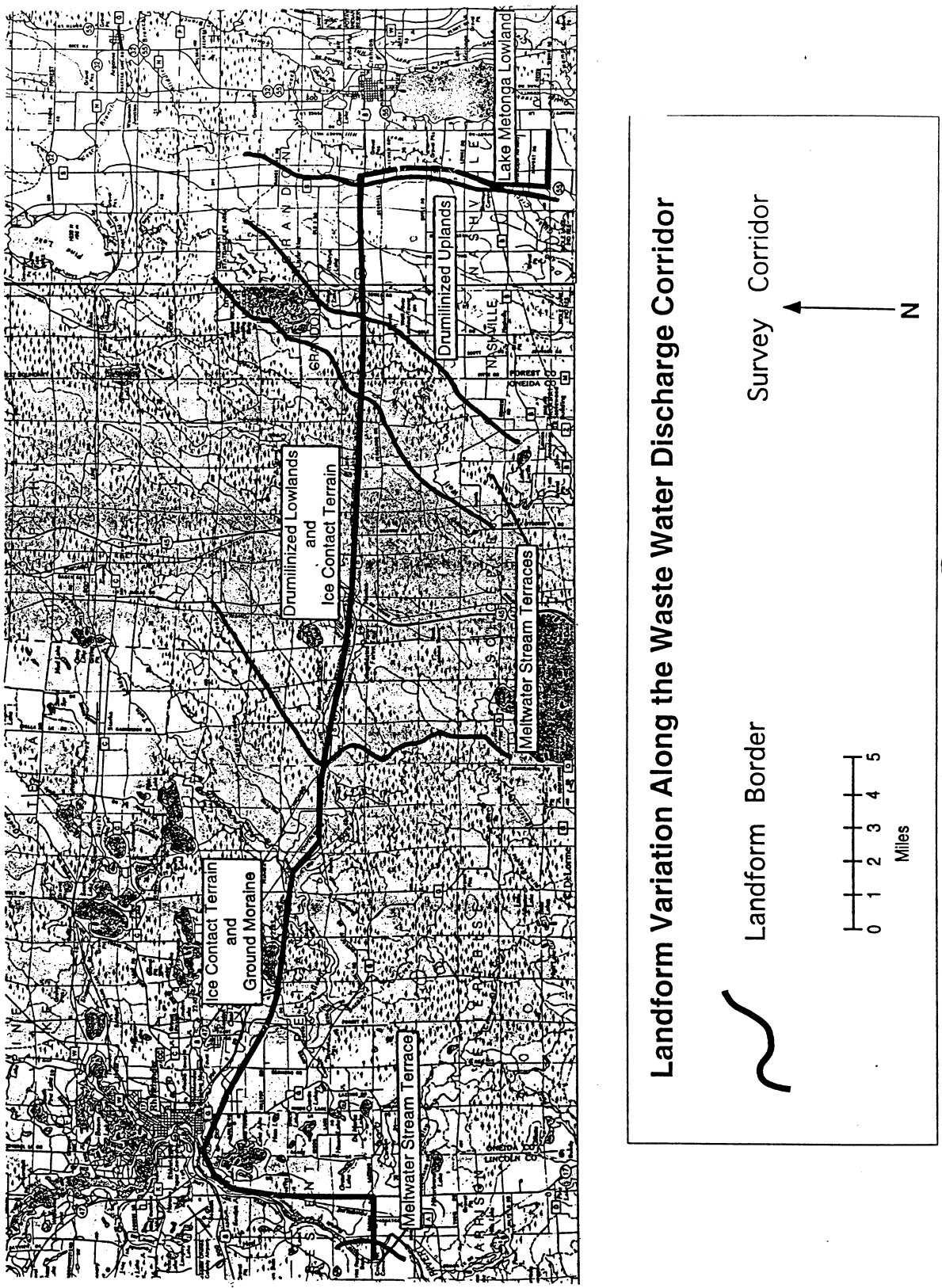


Figure 2: Landforms in the WWDC project area

At the east end of the WWDC where the corridor trends north the landscape consists of drumlins and patchy ice-contact landforms at the western edge of the Lake Metonga lowlands. At the junction of CTH S and USH 8 the corridor starts east across drumlinized ground moraine uplands. The landscape consists of drumlin ridges with inter-drumlin lows generally occupied by wetlands. The drumlinized terrain ends abruptly at the Wolf River/Little Rice Lake lowland. Immediately adjacent to the Wolf River are well drained meltwater stream terraces. A half mile west of the Wolf River the meltwater stream terraces become poorly drained and support wetland vegetation. From the Wolf River/Little Rice Lake lowland the WWDC traverses low wet drumlinized ground moraine with patches of superimposed ice-contact deposits. The drumlin ridges and ice-contact deposits form the high better drained ground with extensive surrounding lowlands that support wetlands. The reminder of the WWDC up to the Wisconsin River valley is a mosaic of hummocky ice-contact terrain, small meltwater stream terraces, patches of undrumlinized ground moraine and narrow post-glacial floodplains on the inside (up-ice side) of the Summit Lake Moraine (Mickelson et al 1974). In the Wisconsin River valley along Hat Rapids Road the landscape consists of meltwater stream terraces right up to the edge of the present channel just below Hat Rapids Dam.

The landscape morphology created by glacial and deglacial processes has been little altered by post-glacial geomorphic processes. Post-glacial deposits are present in the form of peats that have accumulated in the low wet areas of the landscape and alluvium that occurs on the narrow wet floodplains of the larger streams.

Soils and vegetation

Soils and vegetation are combined to delineate the natural Divisions of Wisconsin (Hole and Germain 1994). The project area is located in Division 2 the Northern Wisconsin Highlands: Deciduous and Coniferous Forest (figure 3). The WWDC is located completely with in subdivision 2b which is (Hole and Germain 1994):

> sugar maple-hemlock-yellow birch-white pine forest; podzolized stony loams over acid outwash and till; undulating to rolling landscape. Moraines, drumlins, ice-contact features and outwash plains with lakes and bogs.....complex slopes are common in the rough moraine; simple slopes occur on drumlins, unpitted moraines, and outwash plains.

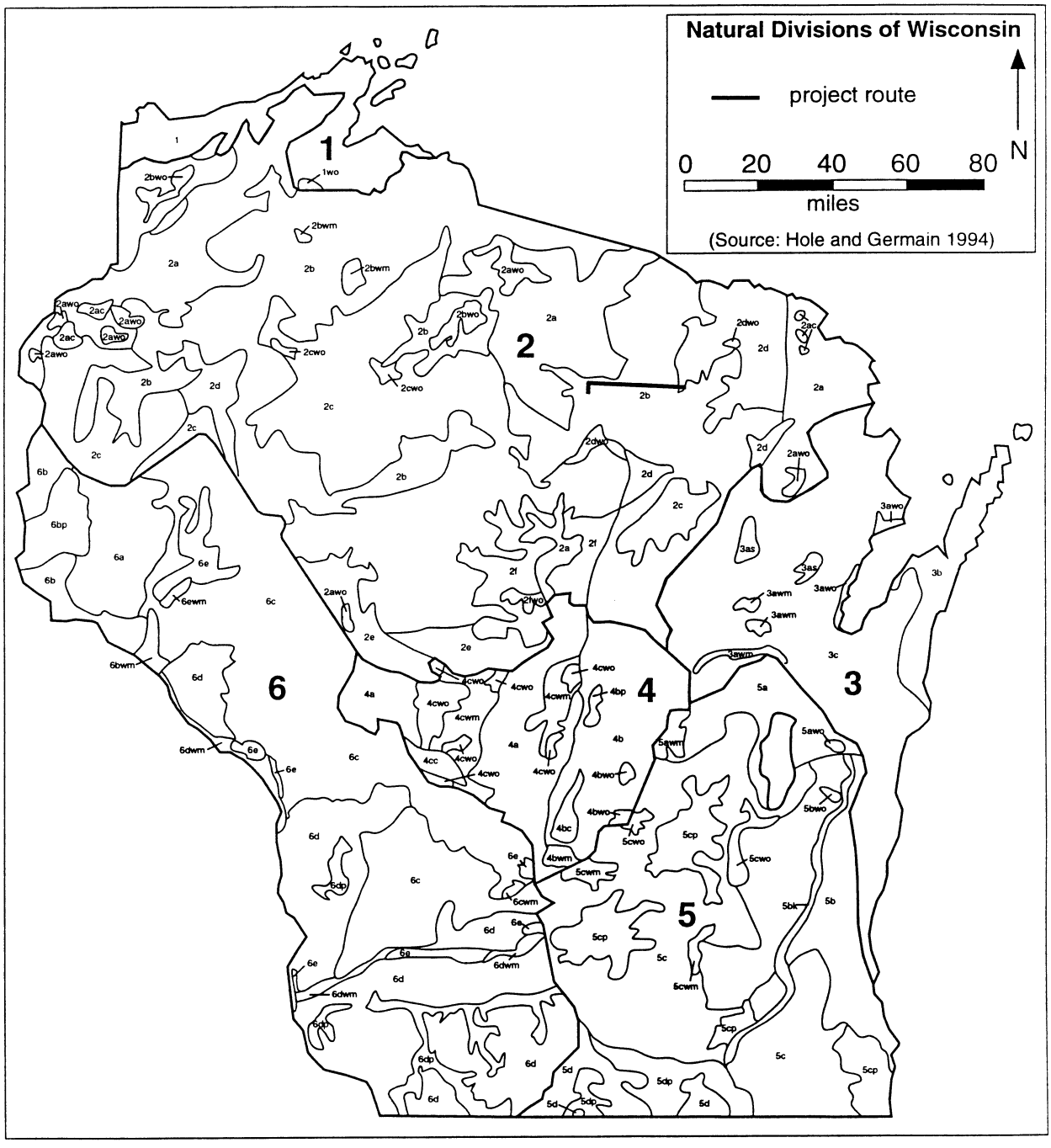


Figure 3: Project route relative to Wisconsin's natural divisions

Subdivision 2d, which consists of sugar maple-basswood- yellow birch forest growing on silt loam over outwash sands, is immediately east and northeast of the WWDC. Subdivision 2a, which consists of pine-oak forest and barrens growing in podzolized outwash sands, is just northeast and west of the west end of the WWDC.

Soils

Soils of the project region are those developed on sandy glacial till and acid outwash sand and gravel (Hole 1976). These soils occur in Soil Region G in the Kennan, Padus and Pence associations, both alfisols and spodosols (Hole 1976). Immediately north of the west half of the WWDC is Soil Region H which is predominately sandy soils that is subject to summer drought and high incidence of fire (Hole 1976).

Mapped soil associations are not available for Forest County but are available for Oneida County (Boelter 1993). A soil association describes a distinct pattern of soils on the landscape and is named for the major soil series in the association (Boelter 1993). Often the soils occur on a slope from the top of the slope to the base of the slope, a toposequence, and from better drained at the top of the slope to the more poorly drained at the base of the slope and adjoining lowland, a hydrosequence. Conceptually the USDA soil associations can be considered, at the slope scale, as a hydrotoposequence. In Oneida County the WWDC crosses six soil associations. They are as follows.

1) Goodman-Monico-Cable Association (#2): nearly level to moderately steep, well drained to poorly drained, silty loamy, to mucky soils on drumlins and moraines. This association located around Monico extending 3 miles to the east and 2 miles to the west of Monico.

2) Greenwood-Dawson-Carbondale Association (#3): nearly level, very poorly drained, peaty and mucky soils on outwash plains and moraines. This association is locates along the eastern Oneida County line in the lowland drained by Mud Creek.

3) Padus-Goodman Association (#4): nearly level to steep, well drained and moderately well drained, loamy and silty soils on drumlins, moraines, and outwash plains, and in areas of pitted outwash. This association occurs east of Lake Julia along the Rhinelander belt line and southwest of Lake Julia along USH 17.

4) Au Gres-Croswell-Kinross Association (#5): nearly level and gently sloping, moderately well drained to poorly drained, sandy and mucky soils on outwash plains. This association is located in the lowlands along Monico Creek around Monico and predominately east of Monico.

5) Padus-Pence Association (#7): nearly level to steep, well drained and moderately well drained, loamy soils on outwash plains and in areas of pitted outwash.

6) Keweenaw-Vilas Association (#8): nearly level to steep, moderately well drained, well drained and excessively drained, loamy and sandy soils on drumlins, water-worked moraines, and outwash plains and in areas of pitted outwash. This association is located on the higher ground around the fringe of the lowland drained by Mud Creek and along STH 17 and Hat Rapids Road in the Wisconsin River valley.

Vegetation

Original vegetation as mapped by Finley (1976) was a mixed coniferous-hardwood forest with varying dominant tree species occurring in discrete communities. The route traverses four such communities: (1) hemlock, yellow birch, white pine, and red pine forest (2) white pine and red pine forest, (3) aspen, white birch, and pine forest, and (4) swamp conifer forests with white cedar, black spruce, tamarack, and hemlock. Minor areas of sedge meadow also occur in open lowland settings. The components of these original forest communities have been greatly altered by historic and recent logging activities and highway construction.

CULTURAL SETTING

Prehistory

The following brief account of the prehistoric sequence is not intended to furnish a detailed overview specific to the Waste Water Discharge Corridor. Rather, the discussion draws heavily on trends apparent throughout northern Wisconsin. Nonetheless, the general patterns noted are broadly applicable to the present study area and environs.

Substantial information regarding most aspects of the regional prehistory has been compiled by Salzer (1969, 1974). Segments of the historic period, particularly

those related to the logging industry have also been addressed (Overstreet 1983a, 1983b; Stiles 1994). Others, while not necessarily complete, may be developed from guidance provided by the State of Wisconsin Historic Preservation Plan and the detailed guidelines compiled by the State Historical Society of Wisconsin entitled *Cultural Resource Management in Wisconsin—A Manual for Historic Properties* (Wyatt 1986). Additional information relating to prehistoric sites may be found in Volume 67 (1-2) of *The Wisconsin Archeologist* which provides a broad contextual overview of the state and regional archaeology. Table 1 adapted from Volume 67 (1-2) of *The Wisconsin Archeologist*, provides a graphic portrayal of the range and extent of prehistoric cultural history of Northern Wisconsin.

PALEOINDIAN

The Paleoindian traditions are subdivided into two major sequential categories: (1) Early Paleoindian, generally demonstrated by the chipped stone tool technologies associated with fluted points dating to between approximately 11,500-9,500 B.P.; and (2) Late Paleoindian, recognized by changes in chipped stone tool technology wherein fluted points were replaced by large lanceolate forms between 9,500-7,500 years B.P.

Fluted Point Traditions

The first prehistoric residents of the state of Wisconsin occupied the region at the close of the Pleistocene, coincident with the wasting of glacial ice which began 12,000 to 14,000 years ago. Environmental conditions in northern Wisconsin were sub-Arctic to periglacial and the landscape was at least initially colonized by tundra-like vegetation which quickly gave way to closing spruce forest. Detailed study units have been provided for various regions of Wisconsin (Dudzik 1991; Boszhardt 1991; Overstreet 1991a, 1991b; and Stoltman 1991). Broader regional perspectives have been synthesized by Mason (1981, 1986).

A number of complexes, Clovis, Folsom, Gainey, and Chesrow, are both regional and possibly temporal variations in the manufacture of these diagnostic type fossils. However, aside from the southeastern most portion of Wisconsin (Overstreet 1992) little is known of early Paleoindian lifeways in Wisconsin. Any fluted point tradition

Table 1

Generalized Archaeological Sequence for Northern Wisconsin

(after Green, Et Al. 1986)

B.C./A.D.	B.P.[1]	Stages and *Phases*		
2000	NA	**Historic**		
1634	216			*Sandy Lake*
		Oneota	*Green Bay*	*Black Duck*
				Lakes
1000	950	**Late Woodland**		*ClamRiver*
			Heins Creek	*Red Cedar*
A.D.		**Middle Woodland**		*Nokomis*
B.C.		**Early Woodland**		?
1000	2950		*Old Copper*	*Burnt Rollways*
2000	3950	**Archaic**		
3000	4950			*Squirrel River*
4000	5950			
5000	6950			
6000	7950			*Minoqua*
7000	8950	**Late Paleoindian**		
8000	9950			*Flambeau*
9000	10050			
		Early Paleoindian ?		
10000	11050	**GLACIATION**		

1. B.P. = Years Before Present conventionally figured from A.D. 1950

sites in the WWDC locality should be considered significant owing to a void in the existing regional archaeological data base.

Lanceolate Point Traditions

Two lanceolate projectile point styles have been identified and classified as Late Paleoindian (ca. 9,500-7,500 B.P.) (Mason 1963). Overstreet (1991a, b) has placed these two divisions within the broader context of the Plano and Cody Complexes. For north central Wisconsin in general, two specific regional variants, the Flambeau phase and the Minoqua phase, are anchored by stratigraphic contexts identified in excavated sites (Salzer 1969, 1974).

Flambeau Phase

The Flambeau phase is the regional analog of the Plano complex. It is identified by the presence of large lanceolate projectile points with collateral flaking, lenticular cross-section, and grinding of lateral and basal margins. In most respects these are similar to those styles identified from the Great Plains as Agate Basin.

In north central Wisconsin, the Flambeau phase is known from surface collections at the Doering Site (47 Pr 3) in Price County and the Gypsy Villa Site (47 On 44) in Oneida County . Stratigraphically anchored examples are known from the Squirrel Dam Site (47 On 21) (Salzer 1969, 1974: 43). Of the Flambeau phase components Salzer states:

> Flambeau phase sites are apparently quite small in size; the total remains at each site could have been produced by a group of individuals about the size of a nuclear family or perhaps a small extended family. Two of the identified components (at the Doering and Squirrel Dam sites) are situated along stream banks at lake outlets; the remaining example (at the Gypsy Villa site) was located on the west shore of a lake (1974: 43).

Since the time of Salzer's excavations numerous Late Paleoindian specimens have been reported from sites in northeastern Wisconsin and the Upper Peninsula of Michigan. However, the number of excavated components remains very small, most examples being recovered from surface or disturbed contexts such as reservoir bottoms.

Minoqua Phase

The Minoqua phase is the regional analog of the Cody complex, known from numerous western sites and sites throughout the central and northern portions of Wisconsin. Technological/stylistic changes that serve to separate Minoqua phase specimens from Flambeau phase specimens include large broad stems, often with projections ("ears"). Stylistically Minoqua phase projectile points are similar to (with the exception of the eared projections) types defined as Scottsbluff, Eden, and Alberta. In central and northern Wisconsin, components related to the Cody complex often include trihedral adzes manufactured from rhyolite or other durable stone.

In characterizing the Minoqua Phase Salzer noted:

> The Minoqua phase is recognized on the basis of excavations of a stratigraphically isolated component at the multicomponent Robinson site (47 On 27) [located on Lac du Flambeau in Oneida County] in the lakes district (Salzer 1969a). Additional data are provided by surface collections from two other multicomponent sites, one of which also produced characteristic Flambeau phase artifacts.

Like the Flambeau phase components, Minoqua phase sites are small in size and located along streams at lake outlets and on the shores of modern lakes. The excavated component is situated on a high ridge overlooking the confluence of the Little Rice and Tomahawk Rivers and Little Rice Creek at a point where a small lake existed prior to the recent construction of a dam [Map 1, Salzer 1974].

Small population aggregate size is indicated. The Robinson component consists of two concentrations of chipping debris and represents a workshop and temporary camp. One cluster of debris consisted of more than 400 waste flakes in an area almost completely contained within the limits of a 5-foot square. The second workshop area is larger and produced more abundant chipping debris and a series of finished and broken artifacts, some of which showed signs of use (1974: 44).

Lanceolate point tradition sites in the WWDC locality should also be considered significant owing to a void in the existing regional archaeological data base.

Summary: Paleoindian

Early Paleoindian components are unknown in the WWDC locality. This may be a function of the landscape being unsuitable (ice-covered or recently free of ice) for human habitation coincident with the Early Paleoindian traditions. Late Paleoindian occupation is demonstrated throughout the region. Regional expressions of the Plano and Cody complexes are anchored by stratigraphic context resulting in the definition of the Flambeau and Minoqua Late Paleoindian phases (Salzer 1969, 1974, Mason 1986).

Archaic

The Archaic Traditions span the years from approximately 9,000-3,000 B.P. The term "Archaic" is most frequently employed to delineate the changing lifeways from Late Pleistocene-Early Holocene Big Game Hunting, which was a highly mobile existence, to more settled habitation patterns. In part this is correlated with changing regional climate at the end of the Pleistocene and into the early Holocene. Among the hallmarks of the Archaic traditions are the establishment of a strong regionally consistent material culture, development of base camps (often seasonally occupied by relatively large numbers of people), scattered seasonal extraction camps occupied by smaller population segments, and the development of communal mortuary areas often placed on prominent landscape features such as knolls or ridges. The Archaic Tradition is subdivided into Early, Middle and Late units. These subdivisions often are based on the occurrence of specific artifact styles.

Early Archaic

By about 9,000 B.P. Late Paleoindians were being replaced in the archaeological record of the upper Midwest by people who manufactured a series of large notched and stemmed bifaces. Such well-known types as Thebes Corner Notched, St. Charles, and Nebo Hill, along with a variety of bifurcate-based projectile points, serve to identify the Early Archaic presence. While this holds true for the southern one-half of Wisconsin these Early Archaic forms are not known from northern Wisconsin.

The reasons for this absence in northern Wisconsin are not well understood. However, it may simply be a function of sampling error. With the exception of the Beloit College North Lakes Project carried out in the 1960s, systematic excavation of

sites in northern Wisconsin has been rare. At the same time, it may be that Early Archaic populations found the early Holocene landscapes unsuitable for their adaptive strategies which were developed to the south of the region.

Middle Archaic

After approximately 7,000 B.P. northern Wisconsin, particularly the northeastern portion of the state, was inhabited by prehistoric cultures who made extensive use of native copper to fashion a number of utilitarian and decorative implements. This constellation of Middle Archaic cultures has often been referred to as the "Old Copper Culture" but the term applies to a number of Middle Archaic groups who fashioned copper tools, some of which were disposed of as mortuary goods in communal cemeteries.

Chipped stone tools most typically associated with Middle Archaic regional manifestations are relatively large side-notched bifaces identified by such type names as Raddatz Side Notched, Osceola, Matanzas, and Godar. These forms, however, are rare in the North Lakes region. Salzer (1969, 1974) has identified an ephemeral Early-Middle Archaic presence in the region and has designated this prehistoric manifestation as the Squirrel River phase. According to Salzer:

> For reasons which are unclear, Archaic assemblages in the lakes district are apparently rare. A single distinctive assemblage was excavated at the Squirrel Dam site and constitutes the sole representative of the Squirrel River phase. The areal extent of this stratigraphically distinct component is small, covering less than an acre, but it is slightly larger than that of the Flambeau and Minoqua phases. Similarly it is situated along the bank of a small stream at the outlet of a lake (Map 2 [Salzer 1974]).

The assemblage includes a few very small corner-notched and side-notched projectile points roughly triangular in outline (Fig. 3 [Salzer [1974]). Grinding occurs at the edges of the base and is usually slight if present. Nearly half of the artifacts can be identified as scraping tools, including end scrapers (both with and without short "spurs"), side scrapers, end-and-side scrapers, hafted scrapers, disc scrapers, and scraper-knife combinations. Other tools include drills, bifacially retouched flake knives, large bifacial multipurpose tools, medium-sized bifaces (preforms?), small asymmetrical

triangular bifacial knives, gravers, spokeshaves, wedges, bipolar cores, utilized flakes, and a series of copper tools (1974: 46)

The absolute chronology of the Squirrel River phase has not been established. Salzer's estimate, however, is based on inter-regional comparisons. He notes: "Dating the Squirrel River phase is not possible in the absence of direct radiocarbon assays and in view of the meager comparative data from adjacent areas. The estimated range for the Itasca [?] occupation from 6000 B.C. to 5000 B.C. can probably be taken as maximum dates for this phase" (1974: 46).

Late Archaic

Late Archaic assemblages, those dating between about 5000-3000 B.P., are also quite rare in the region. The Burnt Rollways phase (Salzer 1969, 1974) stands as the sole regional representative anchored by excavated stratigraphic contexts. The data are meager and Salzer readily notes these limitations:

> At this point in the analysis, we can tentatively define another preceramic manifestation in the lakes district called the Burnt-Rollways phase. Its definition rests largely on excavations at the Burnt-Rollways site (47 On 41; Salzer 1969a), a habitation site located on the high bank of a stream (Nine Mile Creek) as are the other two components tentatively included in this phase—the Kapitz site (47 On 17) and the Cookstove Point site (47 Vi 32)(Map 2 [Salzer 1974]).

Small, well-made corner-notched projectile points with slight basal grinding, particularly at the corners of the base are typical, although they are not commonly found in the occupation debris. Expanding stem and small side-notched forms are also present (Fig. 4 [Salzer 1974]), but are even more rare. Other lithic artifacts include straight drills or perforators, a wide variety of scraper forms including end, side, end-and-side, disk, hafted, and denticulate, small bifaces (preforms used as knives), flake knives, large crudely done unifaces, wedges, bipolar cores, and utilized flakes. There is also a developed copper industry (1974: 46).

Salzer suggests, although the absolute chronology is uncertain, that Burnt-Rollways phase is intermediate between the Squirrel River phase and the initial Woodland occupation of the region, the Nokomis phase. Salzer, notes, however: "It seems likely that this phase will ultimately be dated about 2000-1000 B.C., although the

apparent local continuities with the preceding phase and with subsequent developments may make dating somewhat arbitrary" (1974: 47).

Summary: Archaic

Archaic tradition sites are poorly represented in the Crandon Project area. This has also been noted for the Upper Peninsula of Michigan (Fitting 1970) but it is premature to accept this generalization at face value. Any Archaic period sites, particularly those with datable organic remains, would fill a major void in the regional archaeological data base.

Woodland Traditions

The Woodland traditions are differentiated from the preceding Archaic traditions by two primary factors: (1) the appearance of ceramic technologies; and (2) a shift from mortuary programs carried out at natural prominent landscape features such as ridges and knolls to the construction of earthen mounds, most of which are conical or linear in form. Later in the Woodland period some groups built mounds in the form of animal effigies but these are rare in northern Wisconsin and usually are restricted to so-called "catfish" forms. Like the Archaic, the Woodland period is subdivided into Early, Middle, and Late Woodland segments. These segments vary from region to region and state to state, but typically there are recognizable criteria that allow for differentiation of one from the other. This is not the case in northern Wisconsin. Again, it is likely that this is more a function of the limited number of excavated components and the paucity of detailed comparisons rather than discrete cultural distinctions.

Archaeologists working in northern Wisconsin, Michigan, Minnesota, and also in Ontario have had difficulty defining discrete Early and Middle Woodland subunits. As a result, the Early and Middle Woodland segments are often lumped into a spatial-temporal unit referred to as "Initial Woodland." Salzer has followed this approach in the northern Wisconsin locality (1969, 1974).

The Nokomis Phase - Early & Middle Woodland

Sometime after approximately 3,000 B.P. there was a significant increase in population density in northern Wisconsin. Sites yielding ceramics of native clays along with stemmed and notched projectile points are quite common. Assemblages are highly varied and serve to demonstrate ties to the north, east, and south. Local residents apparently were influenced by new technologies from each of these three broader geographic regions. Salzer states:

> While earlier manifestations in the lakes district are not documented by large numbers of sites, the subsequent horizon does not suffer from this problem. The Nokomis phase (Salzer, 1968, 1969a) is known from extensive excavations at two key sites (Robinson and Squirrel Dam), from testing operations at three other sites, and from surface collections at eleven other single and multiple component localities (1974: 47).

Nokomis sites have yielded a variety of ceramic wares; "...generally small, crude affairs made of sandy clays and tempered with crushed granitic rock. The shape is that of a small jar with a slightly constructed neck and thick wall with a square or flat lip" (Salzer 1974: 47). Stylistic ties have been noted for the North Bay culture to the southeast (Mason 1966), Point Peninsula to the east, Havana and Black Sand to the south. Laurel-like analogs, ostensibly representing northern influences from Ontario and Minnesota are also cited (Salzer 1969, 1974: 47-48).

Projectile points, including a variety of stemmed and notched styles, are almost always rendered from exotic cherts indicating a lively long-distance system of exchange. Copper implements continue to represent a significant element of the tool assemblage, a pattern established in earlier Squirrel River and Burnt-Rollways phases. Semi-subterranean house structures and storage pits are indicative of a relatively sedentary life style. In his interpretation of the Nokomis phase Salzer stated:

> Nokomis phase deposits appear to reflect an increase in aggregate population size, more intensive utilization of the area, a heavy reliance upon trade for exotic ceramics and lithic raw materials, and an important copper industry. The sources of the foreign items and commodities seem to lie primarily to the south and east, although limited trade with the Laurel complexes in northern Minnesota may also be indicated. While no finished artifacts of obsidian were found, the presence of a very few waste flakes of this material documents widespread trade relations. The role of the Nokomis phase in the

Hopewell Interaction Sphere in Illinois and Ohio is still unclear, but the frequent and extensive use of copper in those southern areas and the presence of both southern lithic and ceramic materials in the Nokomis phase to the north suggest cultural contact.

The Nokomis phase can be cross-dated by means of the foreign items and the chronological position of the source cultures. The North Bay culture, the Havana-related styles, and the Havana Tradition trade vessels would place the Nokomis phase in about the first two centuries of the Christian era. The presence of Early Woodland Black Sand styles may be interpreted as representing a slightly earlier beginning for this distinctive northern complex (1974: 49).

Late Woodland—The Lakes Phase

After about 800 A.D. cultural developments throughout the region, to the south, and to the east become very complex. This may be related to the growing influence of complex societies emerging in the Middle Mississippi River valley and to the innovation in subsistence strategies involving corn, beans, and squash as keystones of diet in many areas of the Midwest. Population growth is dramatic and prehistoric residents begin to occupy many regions that were heretofore used only on transitory or seasonal bases. There also seems to have been set in motion the relocation of many groups, perhaps budding off to establish new settlements as villages grew beyond the carrying capacity of their local habitats, but also perhaps for political and economic reasons. In any event, we witness significant changes in human demography, technologies, and social organization.

In northern Wisconsin these complex developments have been placed within the context of the Lake Woodland Lakes Phase:

Cultural developments in the lakes district after the Nokomis phase become complex. For the present and until more detailed studies can be conducted, these developments are being collectively termed the Lakes phase (Salzer 1969a). Sites with components of this phase are numerous and include habitation units varying greatly in size and abundance of debris. Some of the components cover less than an acre while others range up to more than forty acres in extent. Many sites have thick, rich, midden accumulations while others consist only of a thin scatter of debris. Although some 35 components can be identified among the 82 sites located, 11 of 12 sites tested produced

> Lakes phase materials. Eighty per cent of the known sites are found in lacustrine situations, with eastern lakeshores, lakeshores near outlets, peninsulas, and islands being preferred. Other localities were selected only rarely, and utilization of riparian settings is largely restricted to situations at rapids or at the junctions of two or more streams (Map 1 [Salzer 1974]).

For the first time in the history of the district, burial mounds were constructed during this phase. These usually consist of groups of conical, linear, and tapering linear (catfish effigy) forms, although a few single mounds are recorded. The excavated mounds produced a variety of interment procedures including ossuaries, individual flexed burials, birch-bark-wrapped bundle burials, and cremations. Open cemetery burials are also known. Grave goods are rare (Salzer 1974: 49).

Ceramics at Lakes phase sites are dominated by thin-walled vessels decorated by cord impression similar to the Madison wares produced by Late Woodland effigy mound builders to the south. These sites, however, also include collared wares, shell-tempered Oneota-like pottery, and a few examples of Mississippian wares like Ramey Incised and Powell Plain. Mackinac ware is also present. These are generally attributed by Salzer (1974) to vessels brought into the area as items of exchange.

Lithic assemblages at Lakes phase sites are dominated by small triangular projectile points. Raw materials are heavily dominated by locally available sources, specifically quartz. Salzer (1974: 49) notes that the debris frequencies of quartz on Lakes phase sites ranges from 80 to 99 per cent. Copper remains a minor but persistent source for the manufacture of both utilitarian and decorative items.

Summary: Woodland Traditions

The Woodland traditions in the project area maintain a highly localized character, but the assemblages throughout indicate relatively intense interaction with other regions. The onset of the Woodland tradition is not certain but appears to be recognizable by about 100 B.C. The tradition persists through about A.D. 1400 (Salzer 1974) at which time the area appears to have been abandoned, although this too may be a matter of sampling error.

Historic and Protohistoric Indians

If Salzer is correct in his assumption that the area was abandoned by about 1400 A.D. it becomes very difficult to trace, from the archaeological record, the remains of those groups who later become identified in the ethnohistoric literature. There is some information that the Ojibwa began to move into the region shortly after the Lakes phase abandonment, but the initial Ojibwa entrada would have been along the Lake Superior shores in a westerly direction (Hickerson 1970). The protohistoric ancestors of the Menominee and perhaps the Ottawa may well have been habitual residents here. Finally, with the Wars of the Iroquois beginning in the early 17th century, many groups from the eastern Great Lakes moved west with the downfall of the Huron on the Bruce peninsula. Considerable numbers of refugees including the Potawatomi, Huron, Ottawa, Kickapoo, Miami, Illinois, and others were known to have been in the locality at various times during the 17th and 18th century (see for example Mason 1986).

No archaeological sites in the region have been specifically identified with any known protohistoric or historic group. Archaeological identification of historic groups with their specific antecedents is very difficult. In cases where a protohistoric material culture has been tentatively identified (as for instance for the Potawatomi (Mason 1986), Fox-Sauk (Wittry 1963), Ioway (Wedel 1981), and Winnebago (Overstreet 1993) interpretations and conclusions stemming from such identifications remain controversial.

Within the project locality late historic remains have been lumped into the John Badger phase. Salzer ties these post-1870 settlements to the Ojibwa, but they could also have been the result of Potawatomi and Menominee occupation. Salzer states:

> This period is represented by six identified components, all located in lacustrine settings. [Note: None of the John Badger phase sites are located on Crandon Mining Company lands.] The Badger (47 On 20) and Strawberry Island (47 Vi 25) sites provide the largest series of excavated material culture remains of this phase. These two sites produced abundant metal and glass artifacts. A varied series of rifle and shotgun shells is common in both assemblages. The larger calibers (e.g., .38, .38-.55, .38-.56) suggest big game hunting (deer and bear) and were best represented in the lakeshore occupation at the Badger site. The assemblage from Strawberry Island lacks the larger calibers and is consistent with the presence of small game in insular situations, although deer do occasionally wander onto islands across the ice in winter (1974: 50-51).

In addition, Salzer notes:

> There is little question concerning the dates of these assemblages. Coins and local informants clearly place both excavated occupations at or slightly before A.D. 1900 —a time when reservation life was becoming an established pattern and a period of cultural stress and rapid change. Documents from missionaries, schools, Indian agencies, health services, commercial businesses, and other sources could be utilized to establish the nature of the stress and the cultural responses, but these sources have their own biased perspectives. A careful study of the archaeological data, using standard techniques of analysis, might provide additional insights (1974: 51).

The Fur Trade

The fur trade dominated economic interests of Europeans, and later Americans, for more than two centuries. Initially the French and Spanish, later the British, and ultimately American interests were served by procurement of furs for the dictates of European fashion. Furs from the region collected by the Menominee, Ojibwa, Potawatomi, Dakota, and others made their way, through Indian intermediaries such as the Fox and Ottawa or through European traders themselves to regional depots. Such notable locations as La Pointe, La Baye, Prairie du Chien, Duluth, and Michilimackinac processed furs collected in the region for shipment to ports and ultimately European destinations.

No known posts, forts, depots, or other fur trade era sites that can be identified with the French, Spanish, British, or American fur concerns are specifically identified for the project area. This does not mean, however, that sites of this context do not occur for there was a substantial number of unlicensed or outlaw traders who carried out a vigorous black market trade. Such sites may, in fact, occur in the region which would have been a rich fur-bearing territory for considerable periods during the trade.

The Logging Industry

The fur trade played out with the collapse of John Jacob Astor's American Fur Company in the mid-19th century. Shortly thereafter the regional raw material attracting interest was the virgin stands of white pine. Small saw mills and shingle

factories were established prior to formal Indian land cessions, sometimes by formal agreement and sometimes without any agreements at all (Overstreet 1983, Rohe 1985, Stiles 1994). For the most part these were minor commercial ventures established on major river systems like the Mississippi, Wisconsin, Wolf, and Fox. The large stands of timber, however, soon drew the more focused attention of logging concerns who had depleted much of the timber in the northeast.

Logging industry-related sites have been summarized from archaeological and historical perspectives (Overstreet 1983, Lusignan 1986). The early years of exploitation, 1830-1870 were characterized by small ventures. Subsequent to this time, from about 1870-1910 larger concerns exploited the pineries, moving logs to mills along the region's major waterways, often modifying them for spring log drives. The pine was essentially cut-out by the turn of the century. With the advent of rail systems in the region, attention was turned to hardwoods which could not be floated to processing sites along the river courses. The hardwoods era extends from approximately 1910 to 1945. Finally, even rail camps gave sway to more modernized and less labor-intensive logging after World War II at which time the industry more or less took on its current characteristics of mixed pulp and lumber production.

Sites of the pineries era, hardwoods/rail camps, and post World War II era are all known from the project locality. A single pineries camp has been subjected to detailed study (Overstreet 1983).

Pioneer Settlement

Demands for labor during the early pineries era was intensive. Much of this labor was supplied by Scandinavian, Irish, and German immigrants. As lands were cut over they were often sold with the intent of establishing agricultural development. A few succeeded in eking out a living on generally poor lands with disappointing crop yields. Those who did make their living by farming and raising mixed livestock generally supplemented their incomes by working in the woods in the winter months. Scandinavians, particularly the Finns, Swedes, and Norwegians, had fair success at the mixed farming and logging economic pattern.

Remains of abandoned farmsteads dot the northern Wisconsin landscape and provide ample testimony to the difficulties of farming that terrain. Several such sites have been identified in the Crandon project locality, but none has been determined eligible for the National Register of Historic Places.

Current Landuse

All of the WWDC proper excapt a 90 m (300 ft) section between Hat Rapids Road and Hat Rapids Dam, is contained within federal, state, county and township highway right-of-ways. With the exception of the Old USH 8 road bed, which is used as a snowmobile trail, the remainder of the proposed route is on grass covered slopes that are regularly mowed by the various government entities in charge of highway maintenance. Land-use adjacent to the right-of-way is detailed in the description of each survey segment.

Part III: Methodology

METHODS AND TECHNIQUES

The following methods, techniques, and procedures were employed during the course of the Phase I archaeological survey and geoarchaeological assessment of the proposed Waste Water Discharge Corridor (WWDC) in Oneida and Forest Counties, Wisconsin. These methods and techniques are consistent with current professional standards relating to historic and archaeological conservation and preservation, geoarchaeology and geomorphology. Furthermore, standards promulgated in *Guidelines for Conservation Archaeology in Wisconsin*, jointly endorsed by the Historic Preservation Division, State Historical Society of Wisconsin and The Wisconsin Archaeological Survey, Inc., a statewide professional organization, was utilized during the reconnaissance. Finally, these investigations were designed to fulfill the mandate of section 106 of The National Historic Preservation Act of 1966 (P.L. 89-665) as amended and 36 CFR, part 800 which serves to implement the Act.

Three distinct phases of work were conducted prior to preparation of the written report: (1) archival and literature search; (2) archaeological reconnaissance; and (3) geomorphological investigations. The archival and literature search included all pertinent sources on archaeology, history, geology, soils, and road construction. The archaeological reconnaissance consisted of a simple field inspection of the WWDC to assess disturbance within the ROW. The geomorphological investigations consisted of visual field inspection to check and add detail to the Stage 1 Geoarchaeological Assessment developed from archival and literature sources, and subsurface investigations in areas where buried undisturbed soils may be present. Specific methods, techniques, and sources are detailed in the following narrative.

Archival and Literature Search

Archaeology and History

Great Lakes Archaeological Research Center, Inc.'s pre-field research entailed a comprehensive review of the data housed at Great Lakes Archaeological Research Center, Inc. and at the State Historical Society of Wisconsin at Madison. Archives and serial file systems were also searched for site-specific information. Published literature sources consulted include: *The Wisconsin Archeologist,* a quarterly journal published since 1901; *The Wisconsin Magazine of History,* the journal of the State Histori-

cal Society of Wisconsin; *The Wisconsin Historical Collections* consisting of 20 volumes published between the years 1903 and 1920; and the *Bulletin of the Public Museum of the City of Milwaukee*, several of which detail archaeological investigations conducted in various Wisconsin localities.

Unpublished sources subjected to scrutiny are represented by four different formats: (I) serial entry files; (2) map files; (3) manuscript files; and (4) archaeological survey reports. Two serial file systems were consulted. The first of these is the Wisconsin Archaeological Site Codification File, copies of which are housed at the Anthropology Section, Milwaukee Public Museum and the Museum Division, State Historical Society of Wisconsin. This file consists of an inventory of previously reported archaeological sites from both historic and prehistoric times and provides information relating to site locations, cultural affiliation, artifacts, and literature sources. The second file consulted is the Historic Preservation Division inventory file housed at the Historic Preservation Division, State Historical Society of Wisconsin. This file includes both archaeological sites and standing structures that have been identified as possessing architectural and/or historical significance.

Several map files were reviewed. They include: (1) The Charles E. Brown Archaeological Atlas; (2) the Government Land Office survey records; (3) the Trygg map files; and (4) local plat and deed maps. The Charles E. Brown Archaeological Atlas provides the locations of sites on county plat maps. The prehistoric and historic sites include camps, villages, mounds, springs, rock art, workshops, quarries, cemeteries, trails and various other types of archaeological manifestations reported to Brown during his long tenure as Secretary of the Wisconsin Archeological Society and as an employee of the State Historical Society of Wisconsin. The Government Land Office records consist of plats and survey notes that may provide information regarding presettlement vegetation, topography, and aquatic features, all important variables in determining potential site locations. In addition, dependent on the interests of individual land surveyors, cultural information such as the locations of Indian trails, camps and villages, maple sugar processing stations ("sugar bushes"), pioneer settlements, and early industrial improvements such as mills, roads, and early homes and farmsteads are frequently noted on these maps. Both map files are housed at the Archives Division, State Historical Society of Wisconsin and the latter is available on microfilm at various repositories.

The Trygg map file is a privately published composite of the GLO land survey records. While the Trygg maps are less detailed in scale than the GLO plats, the file is an important source for understanding the chronology and magnitude of regional development during the late historic period (ca. 1850). Finally, early plats and topographic maps were reviewed to assess historical settlement and development of the project environs.

Manuscript files investigated include the Charles E. Brown manuscript files and the State Archaeologist's county files. Both of these are housed at the Museum Division, State Historical Society of Wisconsin. The Brown manuscripts consist of 50 years of notes, correspondence, sketches, maps, and other data relating to historic and prehistoric archaeological sites. The county files include reports (unpublished), photographs, sketch maps, letters, and information derived from the Museum's highway archaeology program.

Stage 1 Geoarchaeological Assessment

The purpose of Stage 1 investigations was to determine the potential of the sub-fill surface for containing *in situ* archaeological deposits given the condition of the soil and the regional landscape context. Stage 1 investigations were restricted to archival studies; no fieldwork was conducted.

Stage 1 investigations included a preliminary appraisal of WWDC soils and an assessment of landscape morphology. Geomorphologic and engineering sources reviewed include topographic maps, soil maps, published and unpublished USDA soil data, and WisDOT and county highway construction plans. Specific sources include:

- EIR Supplement: Wisconsin River Wastewater Discharge Pipeline (Foth and Van Dyke 1995b)
- 7.5' USGS Topographic Maps (1:24,000)
  Mole Lake (1973), Crandon (1982), Nashville (1981), Monico (1965), George Lake (1982), Rhinelander (1982), Lake Julia (1982).
- USDA Soil Surveys
  Forest County (unpublished working document)
  Oneida County (Boelter 1993).
- Highway construction design sheets
  - STH 17 (1958) from the Oneida/Lincoln County line north to Rhinelander Road (WisDOT 50189 4)
  - USH 8 (1976) Lake George east toward Monico 3.069 miles

(WisDOT 591-3-70)

- USH 8 (1959) from 1273.3 feet east of the common corner of sections 19, 20, 30, 29 east to Lake Venus in Monico (WisDOT 436, A3, C3, D3)
- USH 8 (1963) from CTH "V" east of Monico to the Oneida/Forest County line (WisDOT FO21-2-40)
- USH 8 (1962) from the common corner of sections 19, 20, 30, 29 east to the Oneida/Forest County line (WisDOT T021-2-17)
- USH 8 (1959) from the Oneida/Forest County line east to Crandon (WisDOT F021-3-17)
- STH 55 (1991) from the Forest/Langlade County line north to Crandon (WisDOT 9155-02-76)
- CTH S (1991) from STH 55 to USH 8 (Ayres Associates 9339-06-70)

These sources were used to determine where cut and fill activities had removed the former surface and where hydric soils might underlie the fill. Portions of the corridor where the former land surface was cut and the soil removed, and areas where hydric soils underlie the road fill are characterized by a very low potential to harbor archaeological deposits.

Archaeological Reconnaissance Techniques

Methods and techniques of archaeological inventory are determined primarily by ground cover conditions and surficial geology of a particular project area. Two different pedestrian survey techniques were employed during the course of this project: (1) simple visual inspection; and (2) shovel probing. These techniques are briefly described below.

Simple Visual Reconnaissance

This technique is commonly employed to provide an initial assessment of the project area. Attempts are made to identify those portions of the project area not surveyable by conventional means. Such areas may include massively disturbed construction sites, heavily developed commercial or residential zones, paved surfaces, surfaces covered with thick fill or gravel, inundated locales, and ditched roadsides. All of the project route was subjected to simple visual reconnaissance.

Shovel Probing

Shovel probing is a technique utilized to sample areas where the landscape surface is covered by vegetation (less than 20% surface visibility). It is a labor-intensive technique which results in only a small fraction of an area being sampled for cultural remains and thus has serious limitations. In spite of these limitations, shovel probing is a cost-effect technique for small tracts where vegetation, thin fill, or thin sediments cover older surfaces. The technique consists of digging a series of small excavation units placed along predetermined transects, or in grids, of 15 m intervals. Intervals are decreased to 10 m in areas adjacent to water bodies. Pits of approximately 35-45 cm in diameter are dug and the excavated soil is screened through 1/4" mesh hardware cloth to determine the presence or absence of cultural debris. Upon examination of the soil and inspection of the screen contents, the pits are immediately backfilled. Depth will vary at given locations, however, units are dug to penetrate the modern plow zone (Ap horizon) or an unplowed A horizon and into the B horizon. Shovel probing was utilized in WWDC right-of-way adjacent to Hat Rapids Dam near the western terminus of the route.

Geomorphological Investigations

Visual Inspection

Prior to implementation of subsurface sampling, those portions of the corridor designated as having potential to harbor archaeological deposits were visually inspected to identify additional areas where cutting and removal of the original soil may have occurred. It was expected that some such areas would not be detectable on topographic maps due to scale and contour interval limitations. Likewise, undocumented cuts not shown on WisDOT construction plans were suspected to be present in the WWDC also. Moreover, WisDOT highway construction plans are not available for the alignment of Old USH 8, which is now utilized as a snowmobile trail. Consequently, pedestrian reconnaissance of this portion of the WWDC was required. Finally, river crossings were examined to record the spatial relationships of fluvial landforms to the channel in order to target buried landforms which might require subsurface sampling. Subsurface investigation was planned in any areas not eliminated as a result of the visual inspection.

Visual inspection was accomplished by walking those portions of the WWDC that were designated for field investigations during the Stage 1 Geoarchaeological Assessment. Surveyors focused on identifying topographic discontinuities providing evidence of cultural fill activities. During the visual inspection decisions were made as to the condition of the surface soil and the potential for that soil to contain *in situ* archaeological deposits according to the flow chart in figure 4. Obvious discontinuities were defined as deeply cut thickly filled areas. In the case of a deep cut the soil surface has been removed and with the soil any archaeological deposits that may have been present. Conversely, where thick fill deposits are present the excavation for the WWDC pipe emplacement will not penetrate the fill and will therefore not disturb the sub-fill surface. Consequently, these areas were mapped as having low potential to harbor archaeological deposits.

In other portions of the WWDC the degree of cutting or filling is not obvious or the fill was less than 1.4 m (4.5 ft) thick. To aid in assessing fill thickness or depth of cut, leveling was used to determine the elevation of the WWDC relative to undisturbed soil surfaces on both sides of the road. In areas where the elevation differences were not obvious to the unaided eye a hand held Abney level was used to determine the relative elevation differences. If the WWDC elevation was positive, relative to the adjacent soil surface, fill was assumed to be present. If the WWDC elevation was

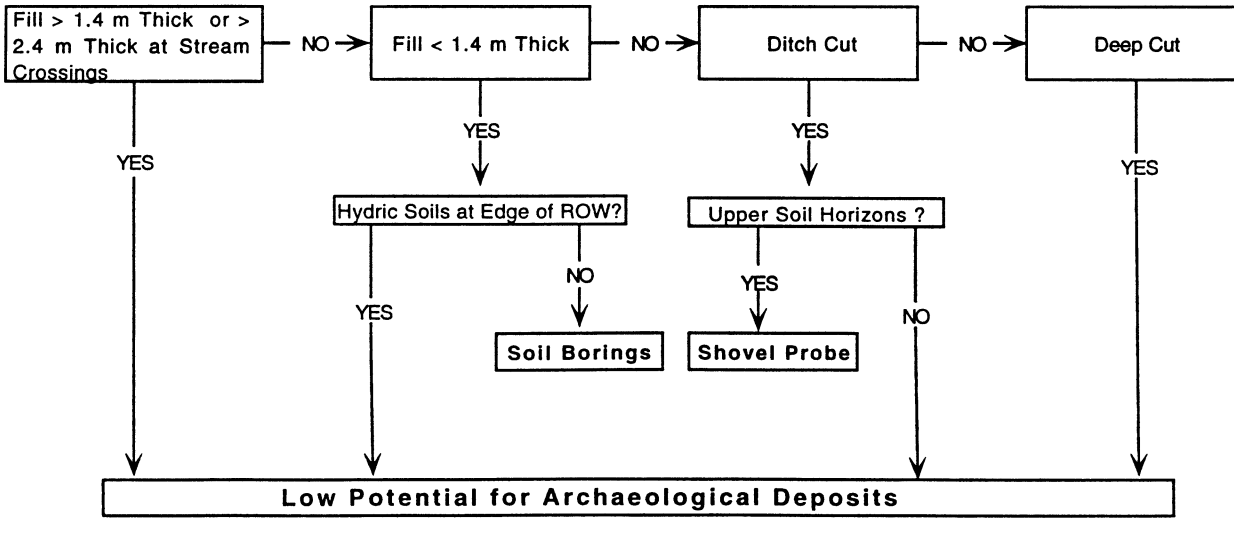


Figure 4: Flow chart for decisions on the degree of disturbance for the geoarchaeological assessment

negative relative to the adjacent soil surface cutting was assumed have taken place. In most cases the presence of a cut or a fill was obvious; however, in some areas determining if the WWDC right-of-way had been cut or filled was difficult due to very small elevation differences.

If fill or road bed deposits less than 1.4 m thick was observed and the soils outside the ROW were not hydric, the area was targeted for soil borings to determine if an undisturbed soil was present. If the soils outside the ROW were hydric the area was designated as having a low potential to contain archaeological sites.

In those instances were a ditch cut was present a shallow soil pit was excavated to determine if the upper soil horizons were missing or disturbed. If missing or disturbed the area was designated as having low potential for archaeological deposits. If the upper soil was present and not disturbed the area was shovel probed.

The location of the WWDC was determined for each survey segment and that side of the highway was inspected in detail following the procedures listed above (figure 4). If both side of the road are similar with regards construction techniques then the degree of soil disturbance is considered similar and the whole ROW can be eliminated or designated for subsurface investigations.

Subsurface Sampling

Stage 2 geoarchaeological investigations consisted of subsurface sampling conducted along the corridor in areas <u>not</u> designated as low probability for archaeological deposits during the earlier stage of the investigations. If intact soils were located, soil attributes were examined to determine the degree of wetness, general disturbance or horizon sequence disruption. Hydric soils and organic soils were considered to have low potential for containing archaeological deposits. Other soils may have moderate or high potential depending on the proximity of a specific location to lakes or rivers. At river crossings, landforms at the modern landscape surface within the alluvial valley were examined with regards to position relative to the channel in order to "target" landforms potentially buried beneath road fill.

Soil attributes associated with buried soils marking former landscape surfaces provide data on the environment during soil formation. Landscape position and/or environment of formation can be inferred from soil morphological attributes. In general, buried surfaces characterized by the presence of moderately well drained to well

drained upland soils have an elevated potential to support human occupation. Likewise, the presence of moderately well drained to well drained soils which formed in alluvial bottom lands also indicates a higher potential for human occupation.

Soil boring were taken using a Geoprobe® direct percussion probe which recovered a 4 cm (1.5 in) diameter core. The borings were located in the proposed WWDC. All soil borings were logged in the field according to standard terminology for soils (Soil Survey Staff 1975 and 1981; Munsell Soil Color Charts 1992) and sediments (Folk 1974; Collinson and Thompson 1982) and core samples were discarded. Depth of the soil borings varied depending on the soils and stratigraphy encountered but generally varied from 1 m to 2 m in extent.

Buried soils were identified in the core samples by the presence of soil horizon(s). The condition of the soil was used to determine the degree of disturbance of the soil horizons and/or the soil horizon sequence. Human activities such as road construction, farming and timber cutting mix the upper soil horizons and/or truncate the soil horizon sequence. Soil horizon expression in the profiles of the soils along the pipeline right-of-way were quite distinctive and were easily detectable in core samples.

Part IV: Results

ARCHIVAL RESEARCH AND VISUAL RECONNAISSANCE

Archival Research

Previous cultural resource investigations pertinent to the WWDC route include the various studies conducted in association with the Crandon Project development (cf. Salzer and Birmingham 1978; Overstreet and Brazeau 1982; Overstreet 1983a, 1983b; Richards 1994, 1995). Highway related investigations include Bleed (1968), Buck (1962), Fritzemeier (1974), Nepton (1992), Penman (1977a, 1977b), Porter (1959), Riggs (1990a, 1990b), Salzer and Birmingham (1977), and Stoltman (1981).

Background information pertinent to the proposed wastewater discharge pipeline route indicates that no previously reported prehistoric or historic period archaeological sites are coincident with the route. In addition, no reported burial sites are within the project right-of-way. Previously reported sites within one mile of the proposed route include 15 archaeological sites and six burial sites. These sites are inventoried in tables 2 and 3. Site locations are plotted in figure 5.

Prehistoric archaeological sites within the study area include Woodland period campsites (Fr-152, On-249, On-31), unknown prehistoric campsites (Fr-119, On-30, On-32), and a cache of prehistoric copper implements (On-57). Historic period sites include Euro-American, Historic Indian, or unknown historic homesteads (Fr-271, Fr-144, Fr-150, FR-185, On-237, On-247, On-95), in addition to Fr-658, a sugar bush, a documented locus for tapping sugar maple trees.

Burial sites include the Titus Burial site (BFr-26), the Crandon Cemetery (BFr-6), St. Mary's Cemetery (BOn-9), Forest Home Cemetery (BOn-42), and the St. Germain Homestead and Cemetery (On-247/BOn-36/BOn-37). The St. Germain Homestead and Cemetery site is the site of a nineteenth century Chippewa family homestead and cemetery situated approximately 150 m west of the proposed pipeline route. No descriptions are available for the remaining cemeteries.

Visual Reconnaissance

GLARC implemented a visual reconnaissance of all affected highway and snowmobile trail right-of-ways in order to determine: (1) the degree of ground alteration; and (2) the potential of each to harbor archaeological deposits. At the time the reconnaissance was conducted, several alternate routes were under consideration. Subse-

TABLE 2

PREVIOUSLY REPORTED ARCHAEOLOGICAL SITES WITHIN ONE MILE OF THE PROJECT AREA.

Site #	Site Name	Description	Location
Fr-0152	Sokaogon Chippewa Housing Authority I	Late Woodland/Middle Woodland campsite/village	T35N,R12E SE,SW,SW,SW,SW Sec. 23 Mole Lake Quad
Fr-0271	Locus # 4856	Historic Euro-American/near logging road remnant	T35N,R12E SE,NE,NE Sec. 25 Mole Lake Quad
Fr-0119	Titus	Unknown prehistoric campsite/ village, cemetery/ burial	T35N,R12E SE,NW,NW & SW,NE,NW Sec. 26 Mole Lake Quad
Fr-0144	Skunk Lake Structure and Midden	Unknown Historic cabin/ homestead	T35N,R13E SE,SE,NW,SE Sec. 30 Mole Lake Quad
Fr-0150	Plant Site Midden and Structure	Unknown Historic cabin/ homestead	T35N,R13E SW,NW,SW Sec. 30 Mole Lake Quad
Fr-0658	Locus 5854	Historic Euro-American sugar bush	T35N,R13E SW,SE,SW,SW Sec. 30 Mole Lake Quad
Fr-0185	Schallock	Historic Euro-American cabin/ homestead	T36N,R12E SE,SE,SE,NE Sec. 36 Crandon Quad
On-0237	McDermott Site	Historic Euro-American cabin/ homestead	T36N,R8E SE,NE,NE Sec. 11 Rhinelander Quad
On-0249	Denny Nordquist Site	Historic Indian/Woodland campsite/village	T36N,R8E SW,NE,NW,NW Sec. 26 Lake Julia Quad
On-0030	Pelican River	Unknown Campsite/Village	T36N,R9E S1/2,SW,SE,SW,SW Sec. 6 N1/2,NE,NW,NW Sec. 7 Rhinelander Quad
On-0031	Koszarek	Late Woodland campsite/village	T36N,R9E NW,NE,SE Sec. 14 George Lake Quad

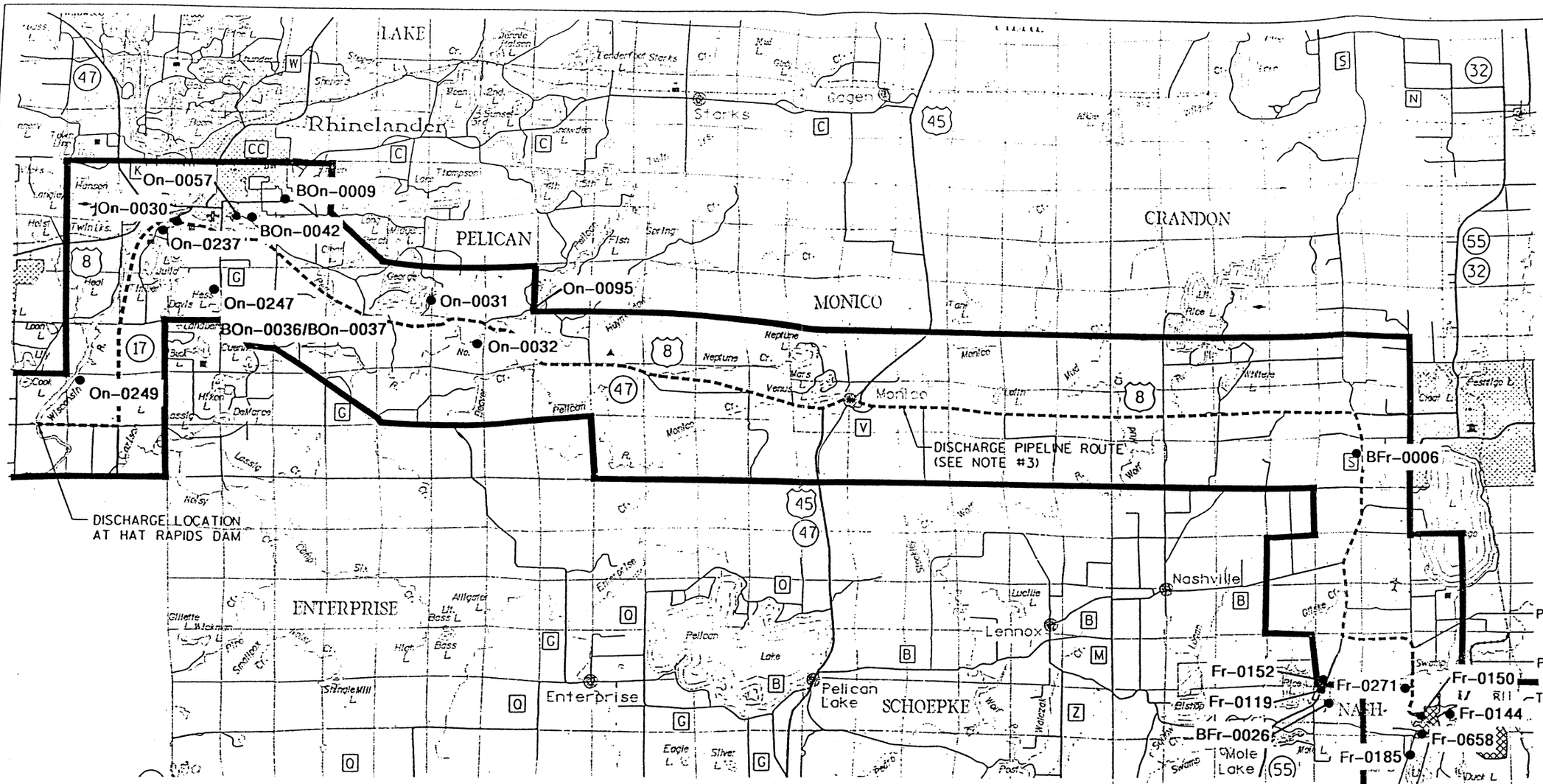
TABLE 2 (CONTINUED)

Site #	Site Name	Description	Location
On-0247	St. Germain Homestead and Cemetery	Historic Indian cabin/ homestead, cemetery	T36N,R9E NE,SE,NE & NW,SE,NE Sec. 18 Lake Julia Quad
On-0032	Harris	Unknown campsite/village	T36N,R9E SE,NE Sec. 24 George Lake Quad
On-0095	Pelican Lake Foundation	Recent Historic Euro-American cabin/homestead	T36N,R10E SE,SE,SE Sec. 18 George Lake Quad
On-0057	Hubbard	Unknown cache/pit/hearth	T36N,R9E SE,SW,SW Sec. 5 Rhinelander Quad

TABLE 3

PREVIOUSLY REPORTED BURIAL SITES WITHIN ONE MILE OF THE PROJECT AREA.

Site #	Site Name	Description	Location
BFr-0026	Titus Burial Site	unknown	T35N,R12E SE,NW,NW & SW,NE,NW Sec. 26 Mole Lake Quad
BFr-0006	Crandon Cemetery	unknown	T36N,R12E SE,NE,NE Sec. 35 Crandon Quad
BOn-0009	St. Mary's Cemetery	unknown	T36N,R9E SW,NW,SW & NW,SW,SW Sec. 4 Rhinelander Quad
BOn-0037	St. Germain Homestead and Cemetery	Chippewa/Ojibwa family cemetery	T36N,R9E NE,SE,NE & NW,SE,NE Sec. 18 Lake Julia Quad
BOn-0036	St. Germain Homestead and Cemetery	Chippewa/Ojibwa family cemetery	T36N,R9E NE,SE,NE & NW,SE,NE Sec. 18 Lake Julia Quad
BOn-0042	Forest Home Cemetery	unknown	T36N,R9E SE,SW & W,SW,SW,SE Sec. 5 & NW,NW,NE Sec. 8 Rhinelander Quad



LEGEND

- LAKES
- U.S. OR STATE HWY
- COUNTY TRUNK ROAD
- TOWN ROAD
- SECTION LINE
- CORPORATE LIMITS
- (8) U.S. HWY NO.
- (47) STATE HWY NO.
- [W] COUNTY HIGHWAY LETTER
- PROPOSED WASTEWATER PIPELINE
- ● Location of Archaeological or Burial Site

NOTES:

1. BASE MAP DERIVED FROM COUNTY MAPS PREPARED BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION.
2. ORE BODY OUTLINE IS REPRESENTATIVE OF THE SUBCROP AT THE BASE OF THE OVERBURDEN.
3. THE DISCHARGE PIPELINE ROUTE BEGINS AT THE CRANDON PROJECT SITE, FOLLOWS THE PROPOSED PLANT SITE ACCESS ROAD TOWARD THE NORTHWEST TO STATE TRUNK HIGHWAY (STH) 55, APPROXIMATELY ½ MILE SOUTH OF AIRPORT ROAD, THEN NORTH ON STH 55 TO COUNTY TRUNK HIGHWAY (CTH) S, THEN NORTH ON CTH S TO U.S. ROUTE (USR) 8, THEN WEST ON USR 8 TO STH 17. FROM THE INTERSECTION OF USR 8 AND STH 17, THE ROUTE FOLLOWS STH 17 SOUTH TO HAT RAPIDS ROAD AND THEN WEST ON HAT RAPIDS ROAD TO THE HAT RAPIDS DAM.

Archaeological and Burial Sites Within a One Mile Distance of the Proposed Wisconsin River Waste Water Discharge Corridor

(After Figure 1-1; Foth and Van Dyke 1995b)

Foth & Van Dyke

REVISED	DATE	BY	DESCRIPTION

CHECKED BY:	JKSI	DATE:	AUG.'95
APPROVED BY:	JBH	DATE:	AUG.'95
APPROVED BY:	PAE	DATE:	AUG.'95

Crandon Mining Company

Scale: 0 6000 12,000 Date: MAY, 1995

Prepared By: Foth & Van Dyke By: GAM

93C049

3.2-15-59

Figure 5: Previously reported archaeological and burial sites

quent to the completion of this initial study, the proposed alignment was restricted to a single preferred route (Route 3). Consequently, segment descriptions listed below are more extensive than those required by later, geoarchaeological studies. Segment locations are illustrated in figures 6 and 7. Results of the visual reconnaissance were initially reported in Grandon Mining Company's previously submitted Environmental Impact Report (Foth & Van Dyke 1995a). Accompanying recommendations have been revised to reflect results of the later geoarchaeological investigations reported in this volume.

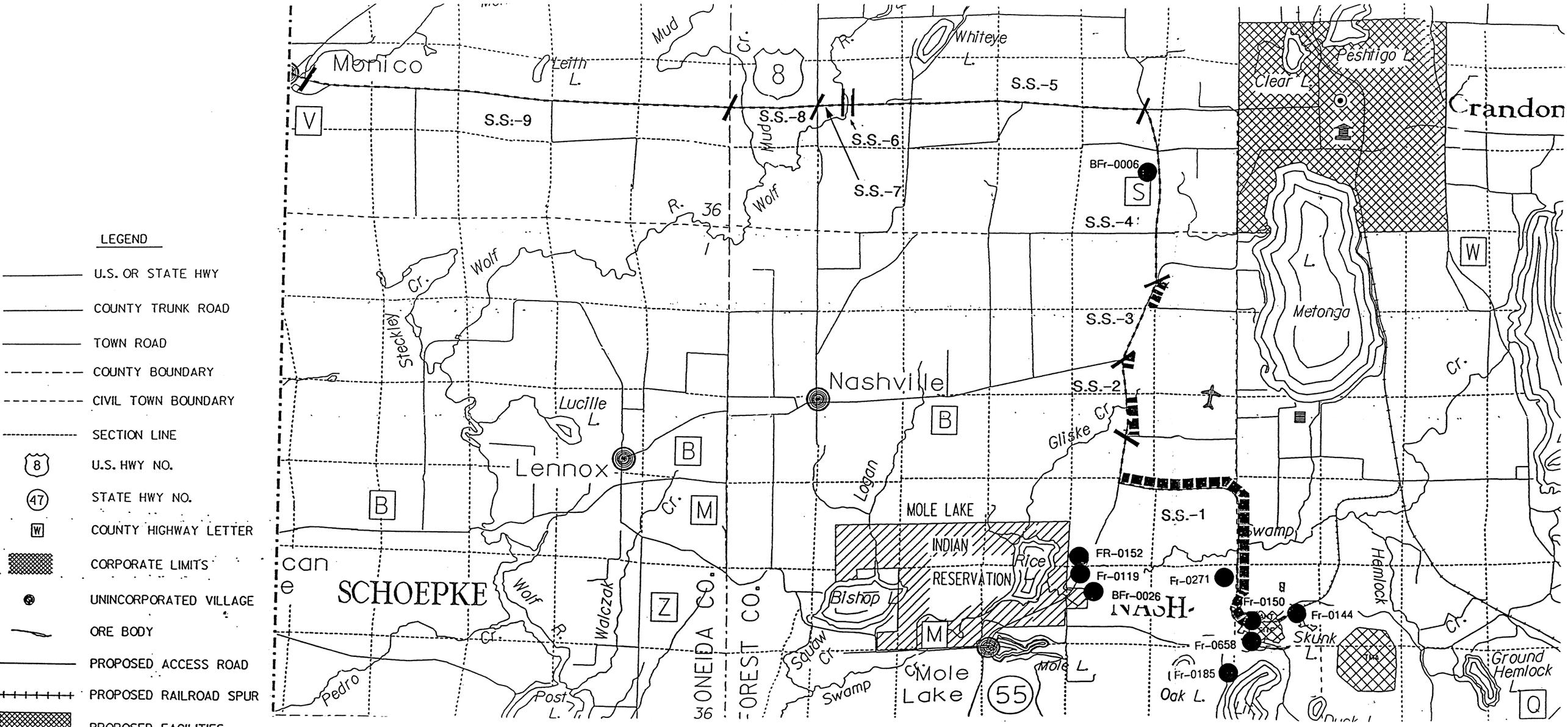
Segment 1 (Plant site to STH 55)

Segment 1 is 5.6 km (3.5 mi) in length originating at the Crandon Mining Company plant site. Segment location is mapped on figure 6. It continues cross country for three miles before joining STH 55 south of Airport Road in the Town of Nashville. The route continues north along STH 55. Segment 1 terminates at the Airport Road intersection. The route traverses an undulating pitted outwash plain. The area is comprised of open fields to the east and second growth forest to the west along STH 55. The previously surveyed portion of the route is coincident with the alignment of the proposed North Access Road (Overstreet 1982). This portion of the pipeline route crosses Swamp Creek north of the plant site, continues north, then turns due west within and adjacent to the Swamp Creek lowlands to intersect with STH 55. No sites were located during the survey of the North Access Road.

No previously reported sites are present within or adjacent to the proposed route. The highway right-of-way is altered and the slope intercept is coincident with the highway right of way. No additional survey is recommended as long as the proposed pipeline construction is restricted to the existing right-of-way, and to the previously surveyed corridor of the off-road portion, from the plant site to STH 55.

Segment 2 (STH 55)

Continuing north on STH 55, Segment 2 is 1.6 km (1 mi) in length, commencing at the Airport Road intersection and ending at the CTH B intersection at Sherman Corners. Segment location is mapped on figure 6. With the exception of a narrow conifer swamp drained by Gliske Creek, the terrain is an undulating upland, supporting a second growth forest of poplar, birch, and conifers.



LEGEND

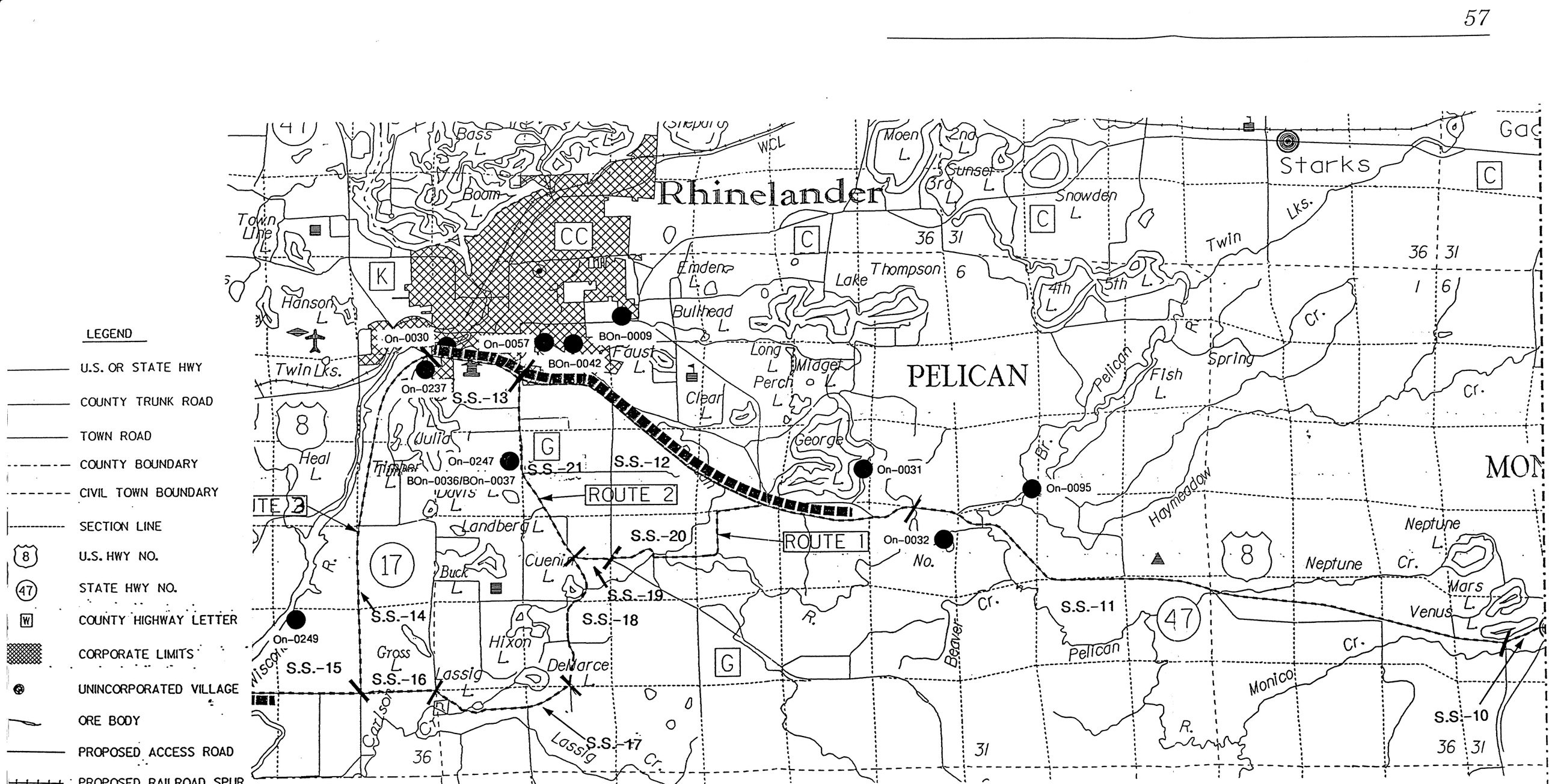
- U.S. OR STATE HWY
- COUNTY TRUNK ROAD
- TOWN ROAD
- COUNTY BOUNDARY
- CIVIL TOWN BOUNDARY
- SECTION LINE
- (8) U.S. HWY NO.
- (47) STATE HWY NO.
- [W] COUNTY HIGHWAY LETTER
- CORPORATE LIMITS
- UNINCORPORATED VILLAGE
- ORE BODY
- PROPOSED ACCESS ROAD
- PROPOSED RAILROAD SPUR
- PROPOSED FACILITIES
- PROPOSED WASTE WATER PIPELINE
- S.S. Survey Segment (GLARC)
- Survey Segment Boundary
- Previously Reported Sites
- Previously Surveyed Areas

NOTES:

1. BASE MAP DERIVED FROM COUNTY MAPS PREPARED BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION.
2. ORE BODY OUTLINE IS REPRESENTATIVE OF THE SUBCROP AT THE BASE OF THE OVERBURDEN.

Figure 6: Survey segments at time of initial reconnaissance, part 1

3.2-15-62



LEGEND

- U.S. OR STATE HWY
- COUNTY TRUNK ROAD
- TOWN ROAD
- COUNTY BOUNDARY
- CIVIL TOWN BOUNDARY
- SECTION LINE
- (8) U.S. HWY NO.
- (47) STATE HWY NO.
- [W] COUNTY HIGHWAY LETTER
- CORPORATE LIMITS
- UNINCORPORATED VILLAGE
- ORE BODY
- PROPOSED ACCESS ROAD
- PROPOSED RAILROAD SPUR
- PROPOSED FACILITIES
- PROPOSED WASTE WATER PIPELINE
- S.S. Survey Segment (GLARC)
- Survey Segment Boundary
- Previously Reported Sites
- Previously Surveyed Areas

NOTES:

1. BASE MAP DERIVED FROM COUNTY MAPS PREPARED BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION.
2. ORE BODY OUTLINE IS REPRESENTATIVE OF THE SUBCROP AT THE BASE OF THE OVERBURDEN.

Figure 7: Survey segments at time of initial reconnaissance, part 2

3.2-15-63

No previously reported sites are present within or adjacent to the route. A previous archaeological survey of the Gliske Creek crossing (SHPO Compliance No. 88-1328) and another separate archaeological survey at Sherman Corners (SHPO Compliance No. 88-1328) did not encounter archaeological sites. The STH 55 right-of-way is altered and the slope intercept is coincident with the highway right-of-way. No additional survey is recommended if construction is restricted to the existing highway right-of-way.

Segment 3 (STH 55)

Segment 3 follows STH 55 from CTH B north to the CTH S intersection, a linear distance of 1.6 km (1 mi). Segment location is mapped on figure 6. The terrain is an undulating upland. Fallow agricultural land, some of which is planted in spruce, is characteristic of the southern portion. Land use in the north portion of the segment is characterized by second growth maple forest with a sparse hemlock understory.

A previous archaeological survey of the northern portion of Segment 3 (SHPO Compliance No. 88-1328) did not locate any archaeological sites. Furthermore, no previously reported sites are present within or adjacent to the route. The STH 55 right-of-way is altered and the slope intercept is coincident with the highway right-of-way. Therefore no additional survey is recommended if construction is restricted to the existing highway right-of-way.

Segment 4 (CTH S)

Continuing north on CTH S from the STH 55 intersection, Segment 4 terminates at USH 8, a linear distance of 3.2 km (2 mi). Segment location is mapped on figure 6. The terrain is an undulating upland with small knolls along the south portion. Second growth forest abuts both sides of the right-of-way along the south portion with a new growth of poplar on the west side, and more diverse second growth on the east side. Approximately 1 km (0.6 mi) north of Sherman Corners the route leaves Nashville Township to enter the Town of Crandon. The second growth forest gives way to fallow agricultural land interspersed with woodlots.

While no prehistoric sites have been reported adjacent to Segment 4, The Crandon Cemetery (BFr-0006) is situated directly west of the highway right-of-way. If construction is limited to the existing highway right-of-way no additional survey is recommended since the slope intercept is coincident with the right-of-way.

Segment 5 (USH 8/Snowmobile Trail)

Segment 5 originates at the intersection of CTH S and USH 8. Segment location is mapped on figure 6. The route is in the northern portion of the USH 8 right-of-way and extends due west a distance of 5.6 km (3.5 mi). This segment is restricted to a snowmobile trail which follows the abandoned route of Old USH 8. Segment 5 terminates within the Wolf River lowlands 161 m (530 ft) east of the Wolf River channel. The route traverses a drumlinized upland landscape supporting a second growth forest of poplar, birch, and sparse hemlock on northeast-southwest trending elevations. Willow, red osier, sedges, and grasses occupy the interlying lowlands. Remnants of abandoned asphalt roadway are still visible in portions of this alignment. Much of the original USH 8 alignment appears to have been built on cut grades rather than filled roadbed. In addition, the northern boundary of the right-of-way is coincident with the right-of-way of an electric transmission line corridor.

No previously reported sites are present within 2.4 km (1.5 mi) of the proposed route. No additional archaeological investigations are warranted as long as construction is confined to the snowmobile trail/Old USH 8 right-of-way

Segment 6 (USH 8/Snowmobile Trail)

Segment 6 is 321 m (1053 ft) in length commencing 158 m (520 ft) east of the Wolf River. Segment location is mapped on figure 6. The segment ends 163 m (533 ft) west of the Wolf River. Here, the snowmobile trail alignment traverses a willow lowland which rises west of the river to open agricultural land on an elevated terrace.

No previously reported sites are present. However, the potential for either near surface, or shallowly buried archaeological deposits adjacent to the corridor is high due to its position on a terrace along the Wolf River. (Note: for details see Geoarchaeological Assessments Stages 1 and 2 sections in this report.) Nonetheless, the snowmobile trail route is coincident with the heavily disturbed alignment of former USH 8 and no additional survey is recommended if construction is restricted to the snowmobile trail/Old USH 8 right-of-way.

Segment 7 (USH 8/Snowmobile Trail)

This segment is coincident with an elevated terrace west of the Wolf River traversed by the proposed route for a distance of 483 m (1580 ft). Segment location is mapped on figure 6. The west terminus of the segment is at the Cole Road/USH 8 intersection, east of a conifer swamp. The route is flanked by existing USH 8 right-of-way to the south and existing utility corridor to the north.

No previously reported sites are present. No additional survey is recommended if construction is restricted to the heavily disturbed and altered snowmobile trail/Old USH 8 right-of-way.

Segment 8 (USH 8/Snowmobile Trail)

Segment 8 continues due west following the snowmobile trail right-of-way and traversing the Wolf River-Mud Creek lowlands. Segment location is mapped on figure 6. This segment, one mile in length, originates at the Cole Road intersection and terminates at the Forest County line coincident with the east side of an elevated peninsula which juts out into a black spruce lowland drained by Mud Creek. Open areas are populated by red osier and sedges. The route is flanked by existing USH 8 right-of-way to the south and existing utility corridor to the north.

No previously reported sites are present. Nonetheless, no additional survey is recommended if construction is restricted to the heavily disturbed and altered snowmobile trail/Old USH 8 right-of-way.

Segment 9 (USH 8/Snowmobile Trail)

Continuing due west on USH 8 for 8 km (5 mi) Segment 9 commences at the Forest-Oneida County line, enters the Town of Monico, and terminates at the intersection of USH 8 and CTH V east of Monico Creek. Segment location is mapped on figure 6. The route traverses a drumlinized landscape of northeast-southwest trending drumlin ridges and inter-ridge wetlands. Vegetation is primarily black spruce, poplar, birch, and sedges in the lowlands and second growth poplar and conifers in the upland forest. Campbell's Training Center at the intersection of Slizenski Road occupies an area of open agricultural land. The route is flanked by existing USH 8 right-of-way to the south and existing utility corridor to the north.

No previously reported sites are present adjacent to Segment 9. No additional survey is recommended if construction is restricted to the heavily disturbed and altered snowmobile trail/Old USH 8 right-of-way.

Segment 10 (USH 8)

Continuing westward on USH 8, Segment 10 originates at the intersection of USH 8 and CTH V east of Monico, crosses Monico Creek, passes through Monico on the south side of Venus Lake, and terminates at the USH 8 and USH 45 intersection west of town. Segment location is mapped on figure 7. This is a distance of 1.6 km (1 mi). The road grade rises high above the Monico Creek floodplain before descending to grade in residential portions of Monico. Ditched roadsides are characteristic of this portion of Segment 10. The route skirts the prominent south bank of Venus Lake. Lowland vegetation consists of willow, sedges, and Labrador tea.

While no previously reported sites are present the potential for prehistoric sites is high due to the presence of Venus Lake. (Note: for details see the Geoarchaeological Assessments Stages 1 and 2 sections in this report.) However, the slope intercept is coincident with the highway right-of-way and unless construction should occur outside of the altered right-of-way, no additional survey is recommended.

Segment 11 (USH 8)

Segment 11 begins at the USH 8/USH 45 intersection west of Monico and continues west on USH 8 approximately 11.2 km (7 mi). Segment location is mapped on figure 7. The segment terminates at the North Branch of the Pelican River. This segment originates in a residential area on the high south bank of Venus Lake. Westward the landscape is drumlinized ground moraine with northeast-southwest trending elevations supporting a maturing second growth, along with new growth forest consisting of hardwoods and conifers. The lowlands support black spruce. West of the Neptune Creek crossing in the Town of Pelican, the route traverses an outwash plain which is also supports second growth forest.

No previously reported sites are present within or adjacent to the existing USH 8 right-of-way. The potential for prehistoric sites is high due to the presence of open water bodies including Venus Lake, Neptune Creek, and the North Branch of the Pelican River. (Note: for details see the Geoarchaeological Assessments Stages 1 and

2 sections in this report.) However alteration of the right-of-way is complete and the slope intercept is coincident with the right-of-way. No additional survey is recommended if the construction is restricted to the heavily disturbed and altered right-of-way.

Segment 12 (USH 8)

Continuing westward on USH 8, Segment 12 extends for a distance of 9.6 km (6 mi). Segment location is mapped on figure 7. This segment originates at the North Branch of the Pelican River, skirts the south side of George Lake, and terminates at the USH 8 /CTH G intersection. The route traverses a pitted outwash plain supporting a second growth forest of poplar, birch, and conifers on the upland areas, and black spruce in lowland areas. An unnamed outlet of George Lake crosses the USH 8 alignment approximately 1.1 km (0.7 mi) west of the North Branch of the Pelican River. The Pelican River crossing is 5.1 km (3.2 mi) west of the North Branch. Here, the 800 m (2625 ft) wide Pelican River valley floor lies about 15 m (50 ft) below the upland plain.

Four previously reported sites are located within the Segment 12 literature search corridor, but well outside of the existing USH 8 right-of-way. Two Euro-American burial sites, including St. Mary's Cemetery (BOn-9) located 1.8 km (1.1 mi) north of Segment 12, and Forest Home Cemetery (BOn-42) located 1.2 km 0.8 mi) north of Segment 12. The third reported site, the Koszarek site (On-31), is a Late Woodland campsite situated on the east shore of George Lake. The fourth archaeological site is the Hubbard site (On-57), the reported location of a cache of prehistoric copper artifacts recovered from a garden on the east bank of the Pelican River.

The probability that archaeological sites are present is high for sites on lands adjacent to Segment 12. (Note: for details see the Geoarchaeological Assessments Stages 1 and 2 sections in this report.) However, the slope intercept is coincident with the existing highway right-of-way, and no additional survey is recommended if construction is restricted to the altered right-of-way. If staging areas for boring operations associated with tunneling beneath waterways are located outside of the altered right-of-way, these areas should be subjected to archaeological survey.

Segment 13 (USH 8)

Continuing northwest on USH 8 for 2.1 (1.3 mi), Segment 13 originates at the USH 8 /CTH G intersection and terminates at the intersection of USH 8 /STH 17 in the Town of Crescent. Segment location is mapped on figure 7. The route traverses a pitted outwash plain which supports a second growth forest south of the Pelican River-Wisconsin River confluence.

One prehistoric archaeological site (On-30) is located 500 m (1640 ft) north of the Segment 13 right-of-way. However, a previous survey (Penman 1977) of this portion the USH 8 alignment failed to identify any unreported site locations. In any case, the slope intercept is coincident with the existing highway right-of-way; and no additional survey is recommended if construction is restricted to the existing right-of-way.

Segment 14 (Route 3)

Segment 14 originates at the USH 8 /STH 17 intersection and continues 7 km (4.35 mi) southward along the STH 17 alignment parallel to the Wisconsin River. Segment location is mapped on figure 7. Segment 14 terminates at the intersection of Hat Rapids Road and STH 17. The terrain is pitted outwash with knolls, swales, and river terraces supporting a mix of second growth poplar and spruce. Areas of Jack pine and black spruce are present in wet swales. Minor areas of cleared land are present as well.

No previously reported archaeological sites are present within or adjacent to the existing STH 17 right-of-way. The nearest reported archaeological site, the Denny Nordquist site (On-249), inventoried as a Woodland and Historic Indian campsite is situated 1.4 km (0.9 mi) west of the proposed route on the southeast bank of the Wisconsin River. Within the project right-of-way, however, the slope intercept is coincident with the highway right-of-way and no additional survey is recommended if construction is restricted to the altered right-of-way.

Segment 15 (Route 3)

At the Hat Rapids Road/STH 17 intersection the proposed route follows Hat Rapids Road 2.9 km (1.8 mi) due west to the planned discharge station at the Wisconsin River. Segment location is mapped on figure 7. Segment 15 terminates on the summit of the west terrace of the Wisconsin River. The terrain is pitted outwash plain

with knolls and swales and river terraces. The land supports a second growth forest of white pine and Jack pine on upland areas, and black spruce in the lowlands. Forested land is interspersed with open agricultural land in upland areas.

No previously reported sites have been inventoried adjacent to Segment 15 even though the Wisconsin River crossing was subjected to formal survey in the past (Stoltman 1981). The potential is nonetheless quite high for unreported prehistoric sites to be present on lands adjacent to the Wisconsin River. (Note: for details see the Geoarchaeological Assessments Stages 1 and 2 sections in this report). However, the slope intercept is coincident with the highway right-of-way and no additional survey is recommended if construction is restricted to the altered right-of-way.

Segment 16 (Route 2; note – route was eliminated prior to geoarchaeological assessment)

Originating at the intersection of Lassig Road and STH 17, Segment 16 follows Lassig Road for 1.5 km (0.95 mi) east to the intersection of Range Line Road. Segment location is mapped on figure 7. The terrain is a pitted outwash plain consisting of knolls and swales supporting new growth poplar and sparse white pine. No previously reported sites occur near the route and potential in the surrounding area is low. The slope intercept extends approximately four meters on either side of the road. If construction is restricted to the existing altered right-of-way, no additional archaeology survey is recommended.

Segment 17 (Route 2; note – route was eliminated prior to geoarchaeological assessment)

Continuing eastward along Lassig Road in the Town of Pelican, the 2.9 km (1.8 mi) segment traverses a pitted outwash plain, crosses Carlson Creek, and leaves a new growth forest of poplar and white spruce to enter open agricultural land. Segment location is mapped on figure 7. A tamarack swamp borders Lassig Lake. Open land is present north of the road, and forest borders the south side of the road east of Sugar Bush Road. Segment 17 terminates at the Lassig Road /CTH EZ Road intersection.

No previously reported sites are present although the potential for unreported archaeological sites to be present is high along lakes and streams. The existing slope

intercept is coincident with the highway right-of-way. Therefore, no additional survey is recommended if construction is restricted to the altered right-of-way.

SEGMENT 18 (ROUTE 2; NOTE – ROUTE WAS ELIMINATED PRIOR TO GEOARCHAEOLOGICAL ASSESSMENT)

Continuing north along Lassig Road from the Lassig Road /CTH EZ intersection, the route traverses an outwash plain for a distance of 2.6 km (1.6 mi). Segment location is mapped on figure 7. Segment 18 terminates at the Lassig Road/CTH G intersection. The route skirts the southeast side of Cuennin Lake and crosses Cuennin Creek approaching the north terminus. A second growth forest of poplar, red pine, and birch is interspersed with open agricultural land.

No previously reported sites are present within or adjacent to the existing right-of-way; however the potential is high for unreported archaeological sites to be present in this area of lakes and streams. The existing slope intercept is coincident with the right-of-way, extending for approximately four meters on either side of the highway. Therefore, no additional survey is recommended if construction is restricted to the altered right-of-way.

SEGMENT 19 (ROUTE 1; NOTE – ROUTE WAS ELIMINATED PRIOR TO GEOARCHAEOLOGICAL ASSESSMENT)

Segment 19 continues east along CTH G and terminates 0.7 km (0.45 mi) eastward at the CTH G and Germond Road intersection. Segment location is mapped on figure 7. The terrain is a pitted outwash plain supporting a second growth forest of white pine, birch, and poplar.

No previously reported sites are present within or adjacent to the existing highway right-of-way although the potential for unreported archaeological sites to be present in the immediate vicinity is high given the close proximity kettle lakes and streams. However, the slope intercept is coincident with the right-of-way. Therefore, no additional survey is recommended if construction is restricted to the altered right-of-way.

SEGMENT 20 (ROUTE 1; NOTE – ROUTE WAS ELIMINATED PRIOR TO GEOARCHAEOLOGICAL ASSESSMENT)

From the CTH G and Germond Road intersection, the route follows Germond Road a short distance to River Bend Road. Segment location is mapped on figure 7. Segment 20 then follows River Bend Road eastward to USH 8, a distance of 4.5 km (2.5 mi). The terrain is pitted outwash plain supporting a second growth forest. Open areas are interspersed along the way. Cuennin Creek and the Pelican River are both crossed by Segment 20. River Bend Road also skirts the west edge of a wetland.

No previously reported sites are present within or adjacent to the existing highway right-of-way although the potential for unreported archaeological sites to be present is high due to the close proximity to the Pelican River and small streams. However, the slope intercept is coincident with the existing right-of-way. Therefore, no additional survey is recommended if construction is restricted to the altered right-of-way.

SEGMENT 21 (ROUTE 2; NOTE – ROUTE WAS ELIMINATED PRIOR TO GEOARCHAEOLOGICAL ASSESSMENT)

Commencing at the Lassig Road /CTH G intersection, Segment 21 traverses a pitted outwash plain northward to USH 8, a distance of 3.2 km (2 mi). Segment location is mapped on figure 7. Second growth forest of poplar, birch, and red pine is interspersed with fallow agricultural land and other open areas occupied by private residences and commercial buildings.

No previously reported archaeological sites are present within or directly adjacent to the existing CTH G right-of-way. The St. Germain Homestead and Cemetery site (On-247/BOn-37) is situated approximately 150 m (493 ft) west of the proposed route. Potential for unreported sites is low given the distance to large Rivers and lakes. However, the existing slope intercept is coincident with the highway right-of-way. Therefore, no additional survey is recommended if construction is restricted to the altered right-of-way.

STAGE I GEOARCHAEOLOGICAL ASSESSMENT

For purposes of the geoarchaeological assessment the WWDC was divided into eight survey segments. Segment intervals were modified from those employed in the initial visual reconnaissance and were designated with upper case letters as opposed to the numbers used in the initial visual reconnaissance. In most cases, geoarchaeological assessment segments are more inclusive. Geoarchaeological segment descriptions and corresponding archaeological segments are listed in Table 4 below. Segment locations are mapped in figures 8 through 19.

TABLE 4

WWDC SEGMENTS FOR GEOARCHAEOLOGICAL ASSESSMENT

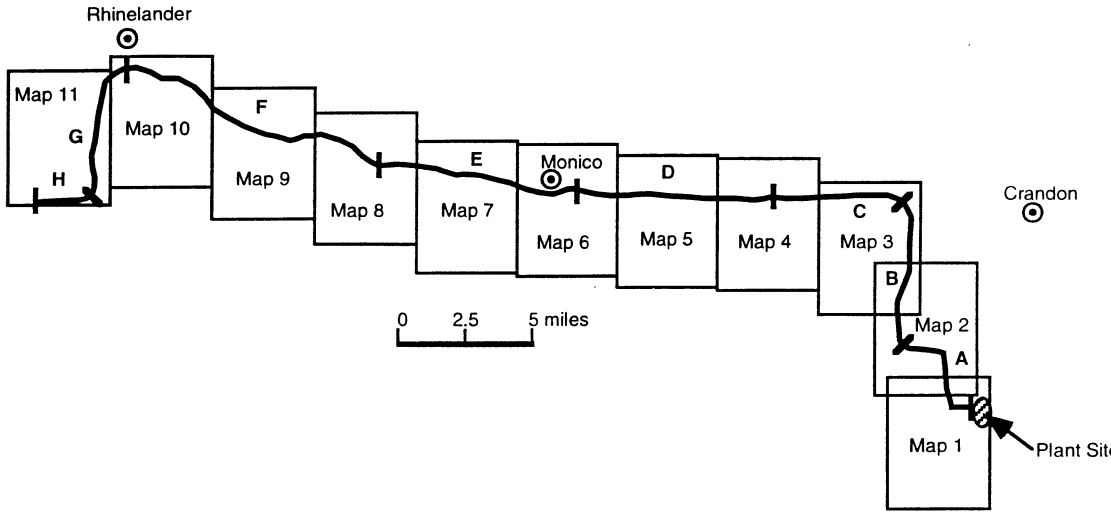
Geoarchaeological Segment	Archaeological Segment	Description
A	1	Proposed access road from the Crandon Mine plant site to STH 55
B	2,3,4	From intersection of proposed access Road and STH 55, along STH 55 and CTH "S" to USH 8.
C	5,6,7,8	Old USH 8 from CTH "S" to the Oneida/Forest County line (along snowmobile trail).
D	9,10	Old USH 8 Oneida/Forest County line to Monico (along snowmo bile trail)
E	11	USH 8, Monico to George Lake
F	12,13	Rhinelander Beltline (USH 8) George Lake to STH 17
G	14	STH 17 from Rhinelander Beltline to Hat Rapids Road
H	15	Hat Rapids Road from STH 17 to the Wisconsin River

Soil Assessment

Soil maps are available for the entire length of the corridor (unpublished Forest County data sheets and maps; Boelter 1993). Soils in low areas, mapped as: (1) very poorly drained; (2) poorly drained; (3) and/or formed in organic sediments (mucks and peats) were considered low potential with regard to the probability that such areas might harbor archaeological deposits. Consequently, these areas were eliminated from further consideration even if no land altering activities had taken place.

Geoarchaeological Assessment of the Proposed Crandon Mining Company Wastewater Discharge Pipeline Corridor

Index and Legend for Route Maps



Legend

- Cut below original surface
- Hydric soils
- Low archaeological potential*
- Areas to be subjected to visual inspection and/or sub-surface sampling
- Previously surveyed
- **A-H** Survey Segments

N

*Based on landscape position, distance from water and soil characteristics.

Figure 8: Index to Stage 1 route and survey segment maps

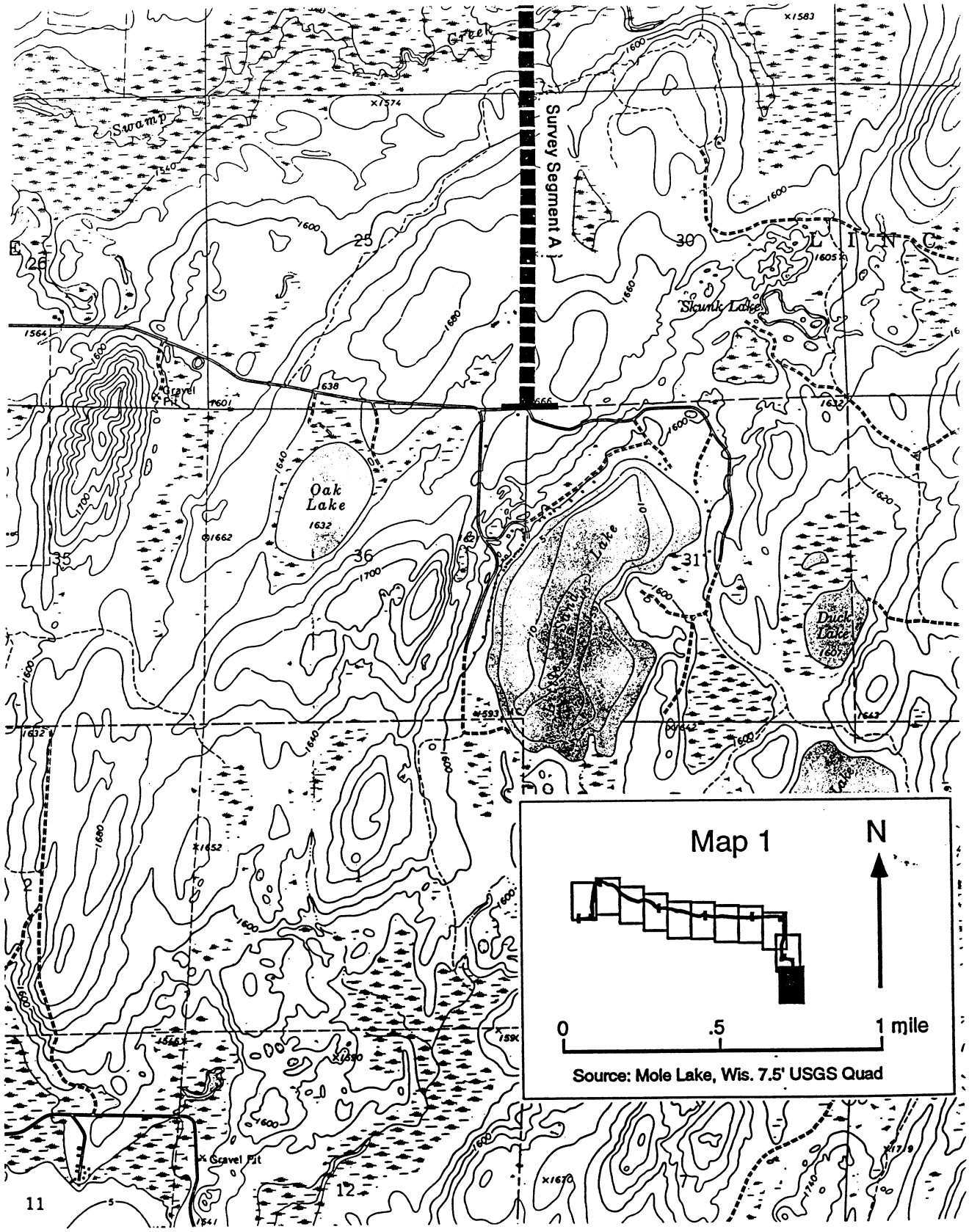


Figure 9: Stage 1 survey segments, Map 1

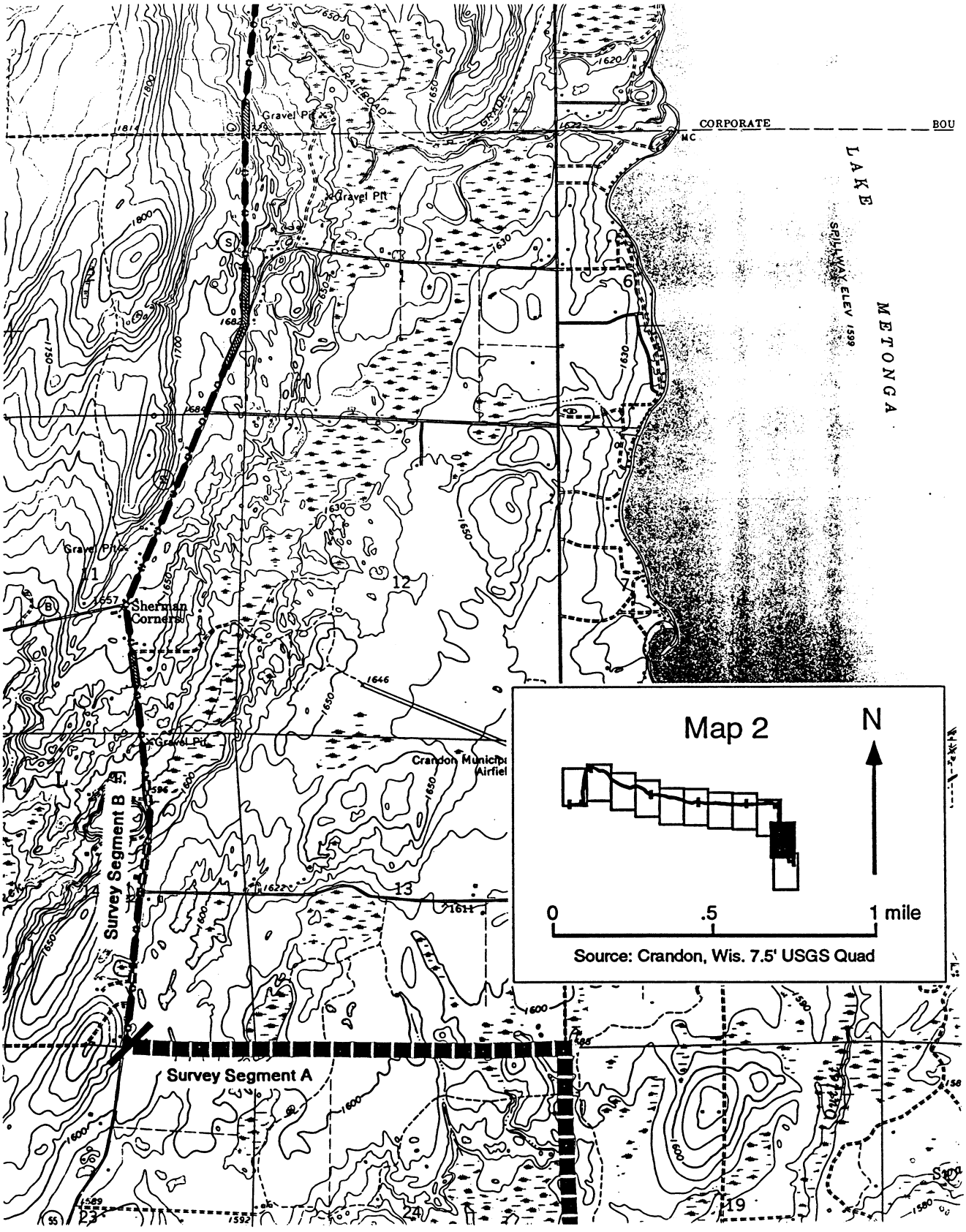


Figure 10: Stage 1 survey segments, Map 2

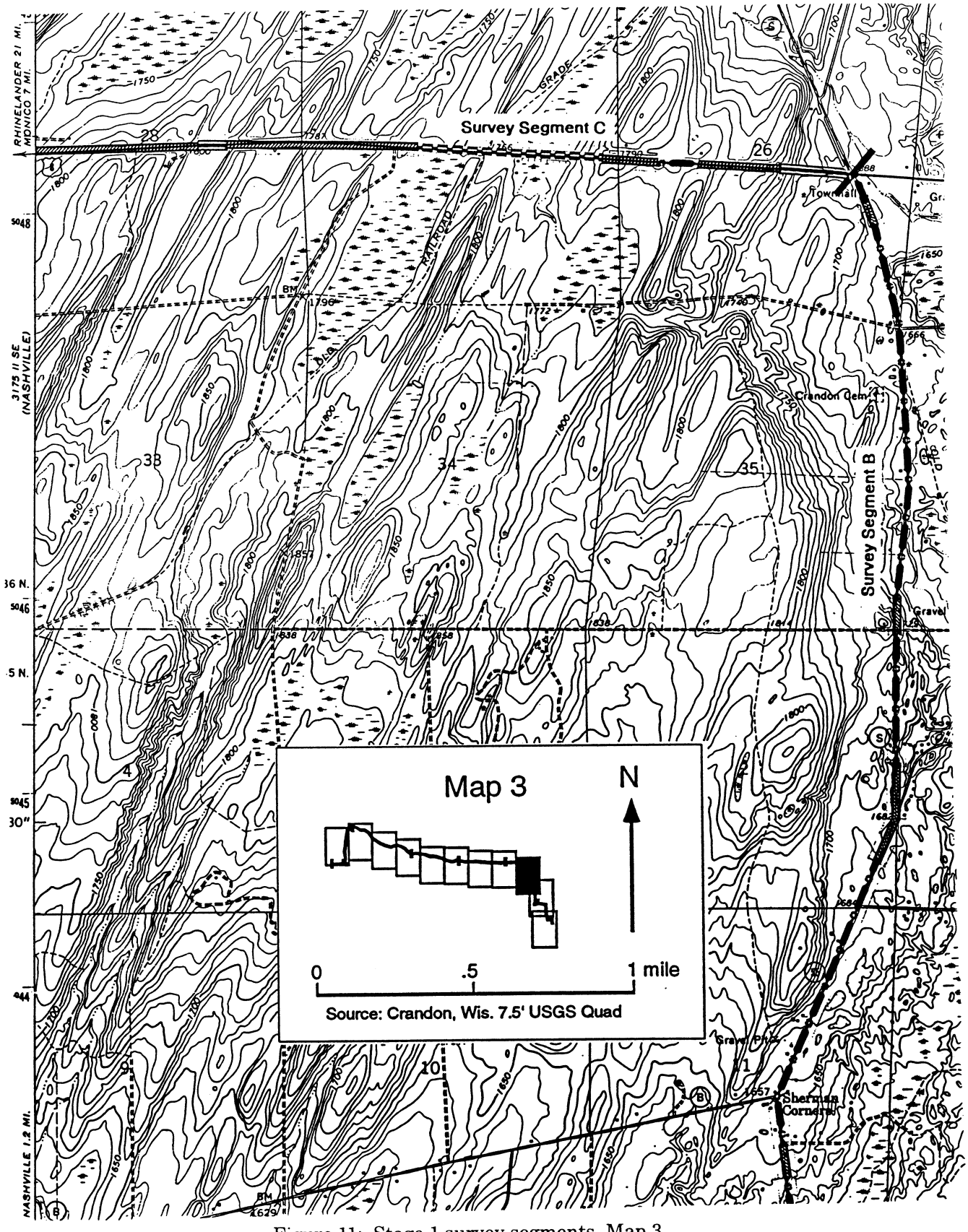


Figure 11: Stage 1 survey segments, Map 3

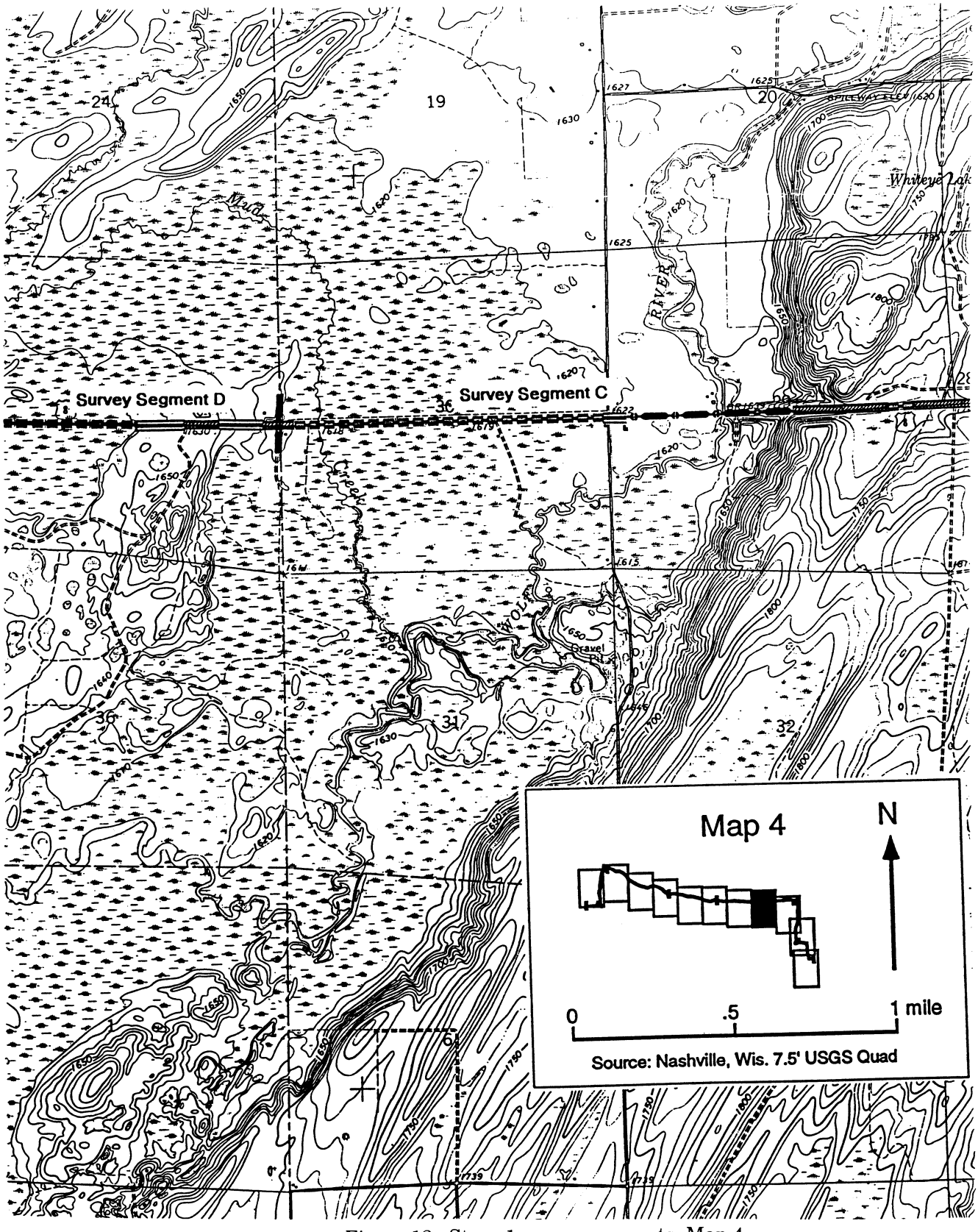


Figure 12: Stage 1 survey segments, Map 4

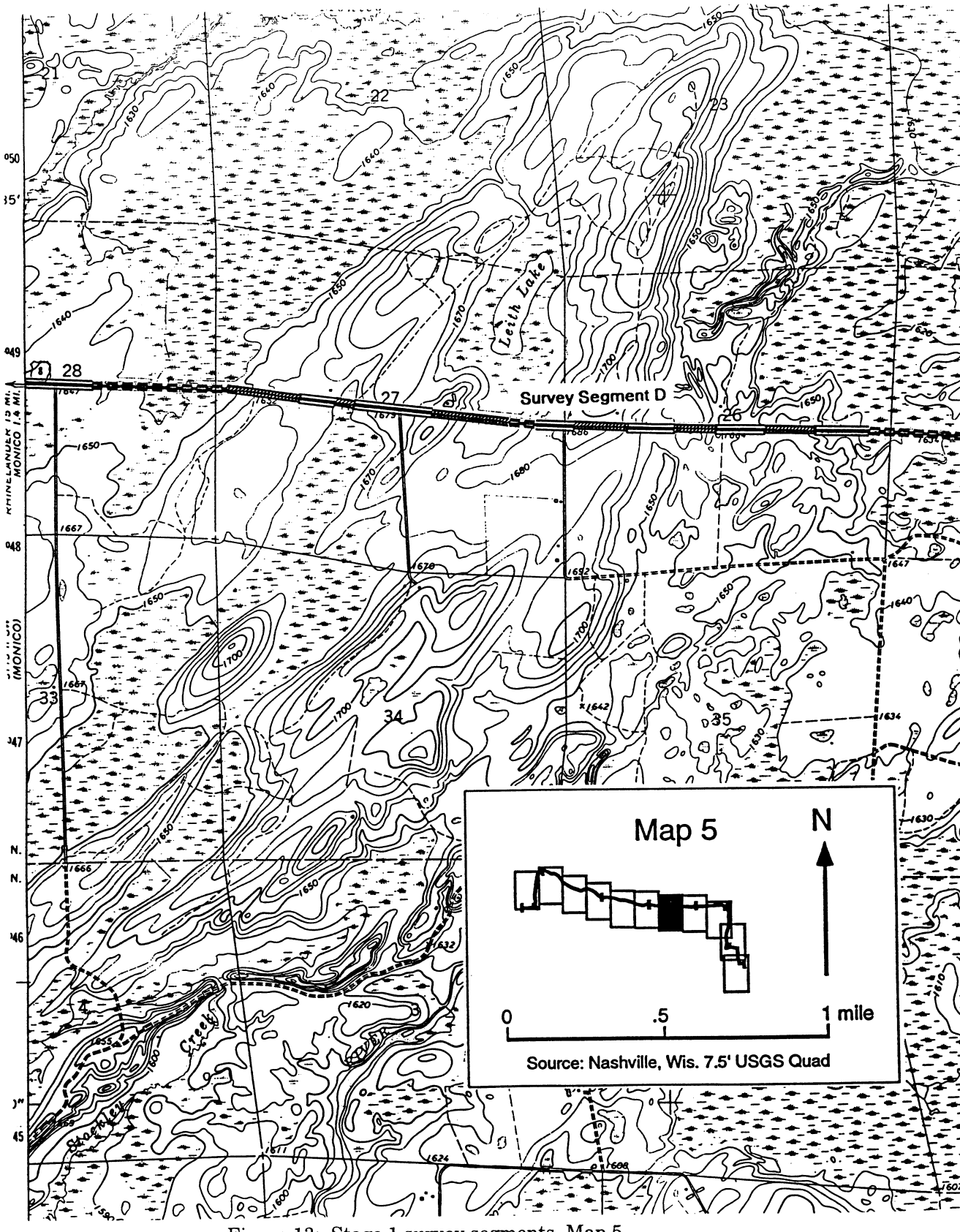


Figure 13: Stage 1 survey segments, Map 5

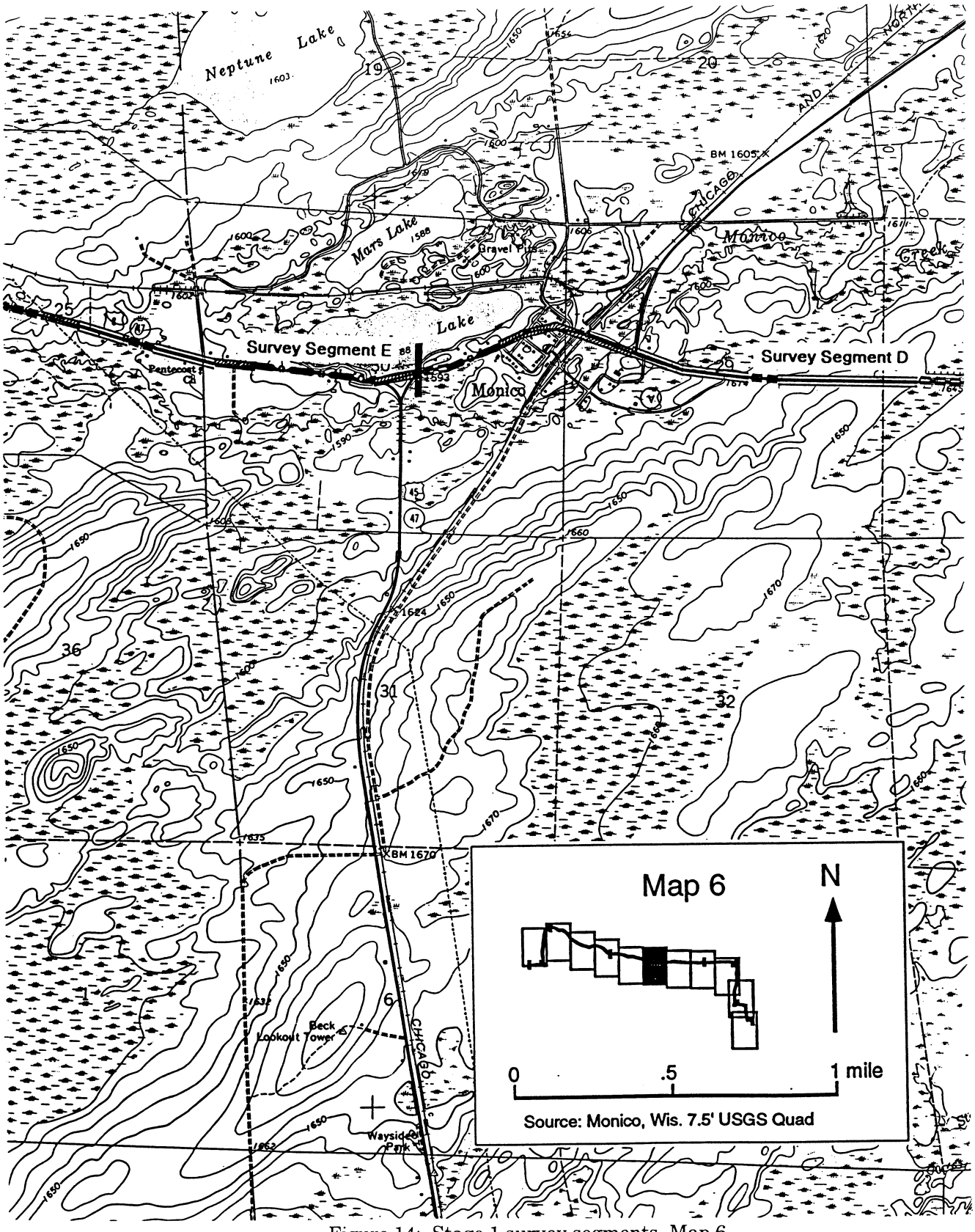


Figure 14: Stage 1 survey segments, Map 6

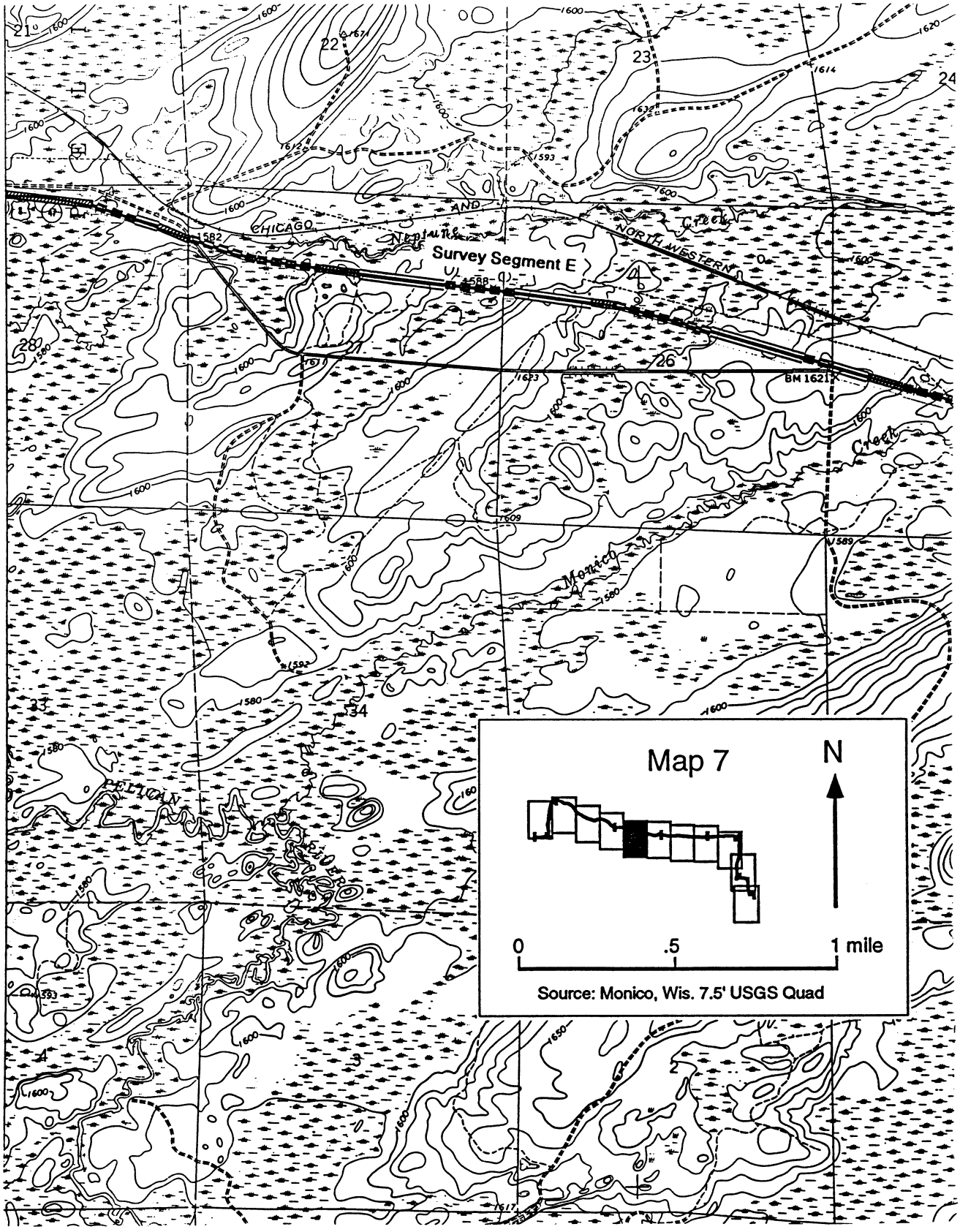


Figure 15: Stage 1 survey segments, Map 7

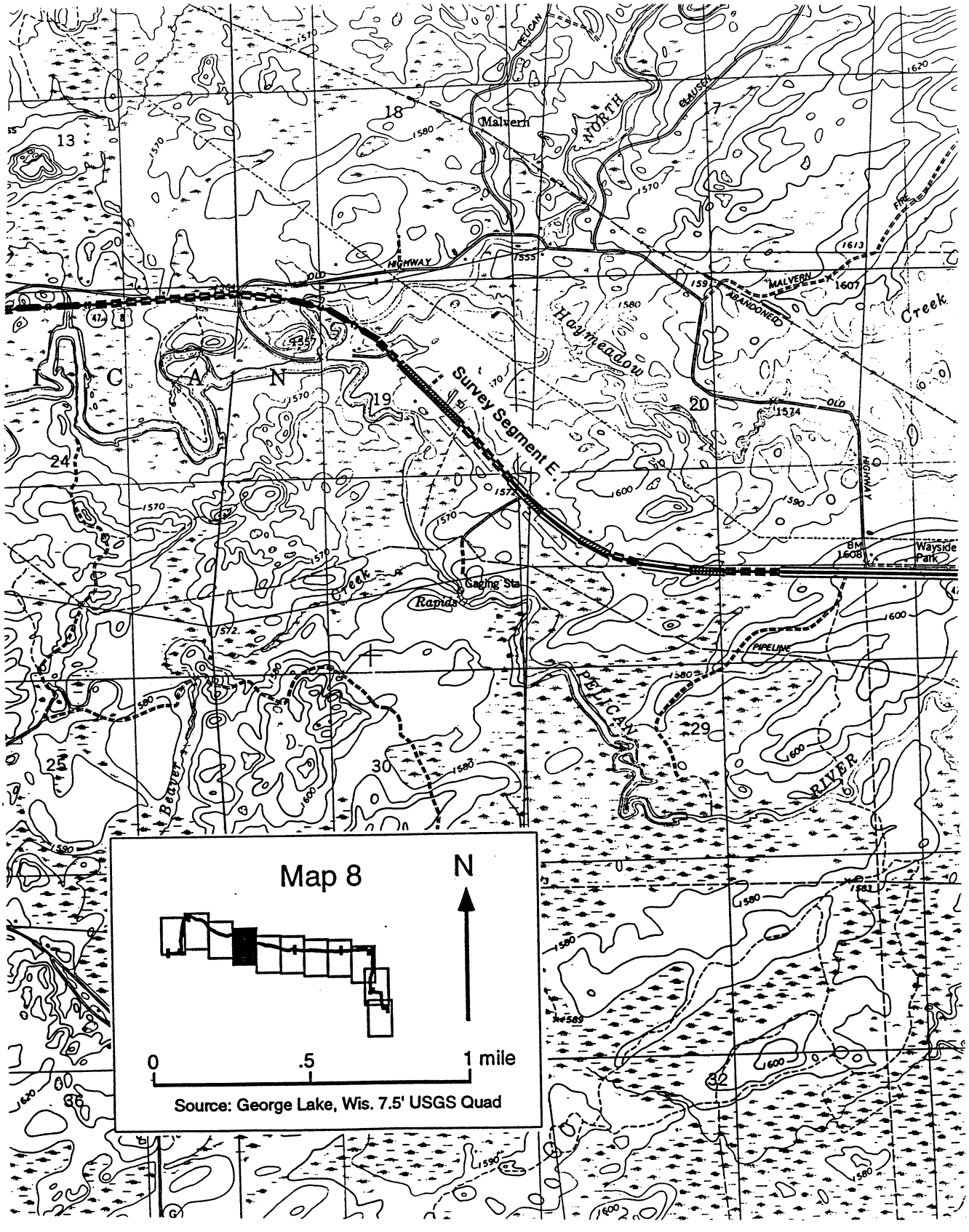


Figure 16: Stage 1 survey segments, Map 8

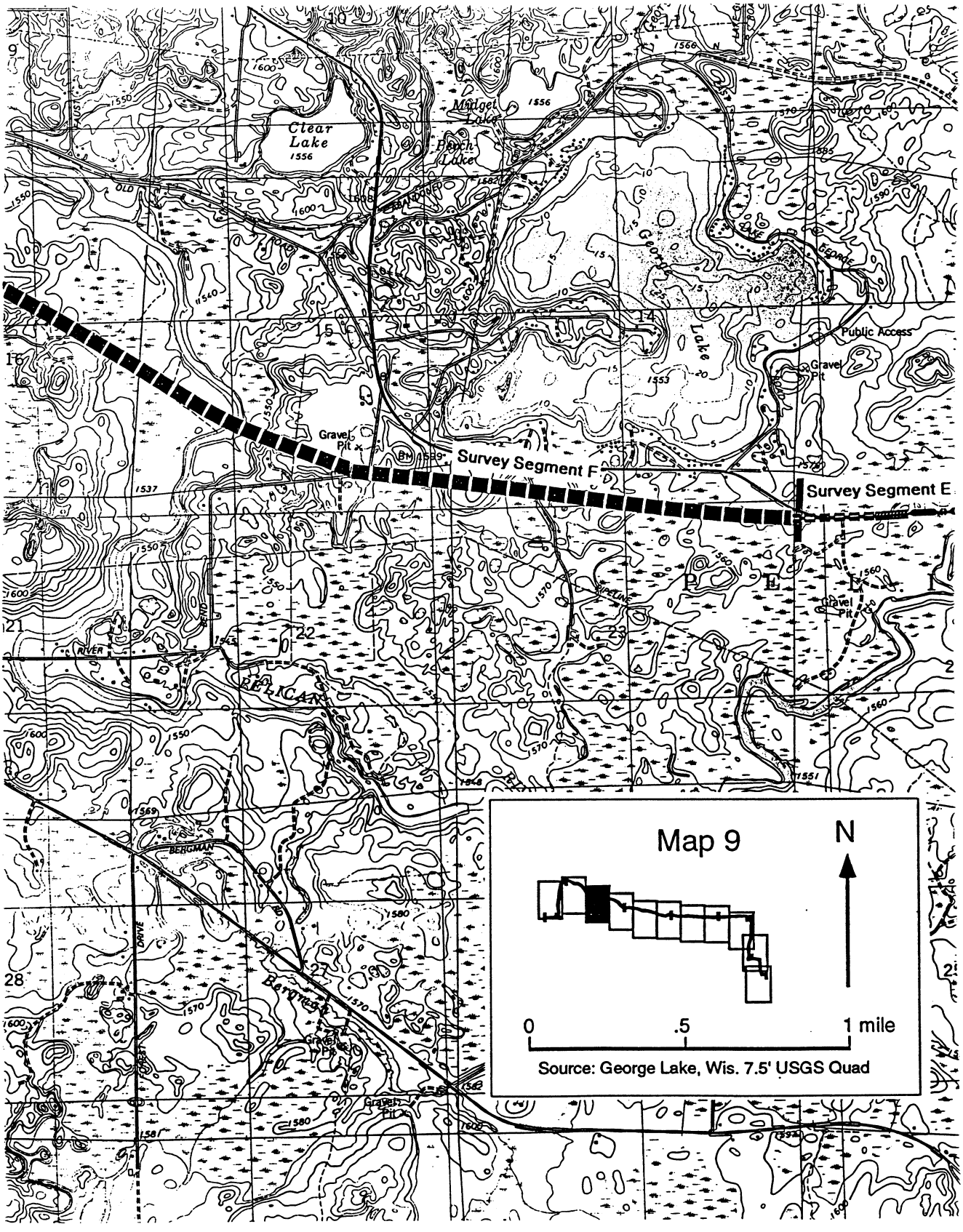


Figure 17: Stage 1 survey segments, Map 9

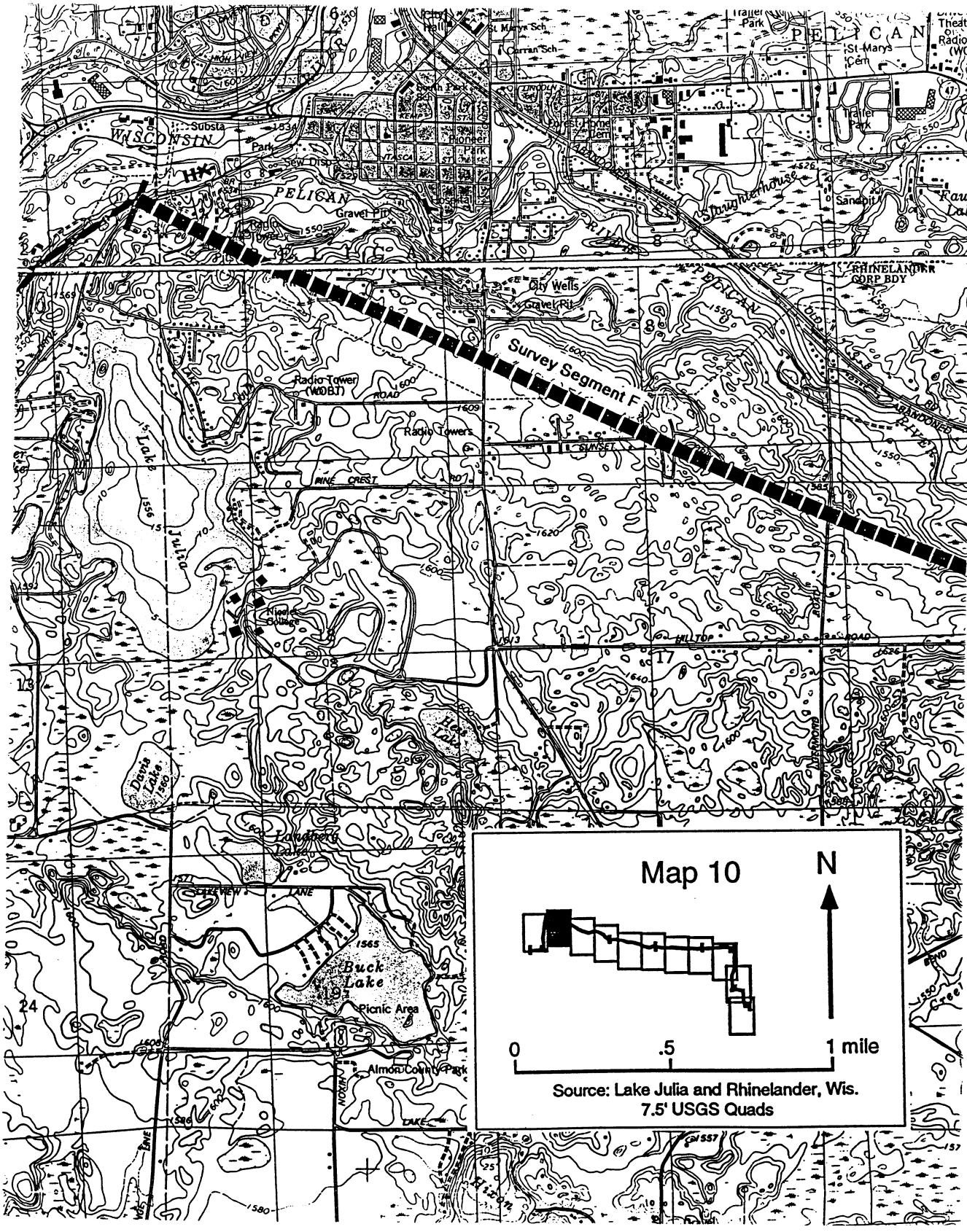


Figure 18: Stage 1 survey segments, Map 10

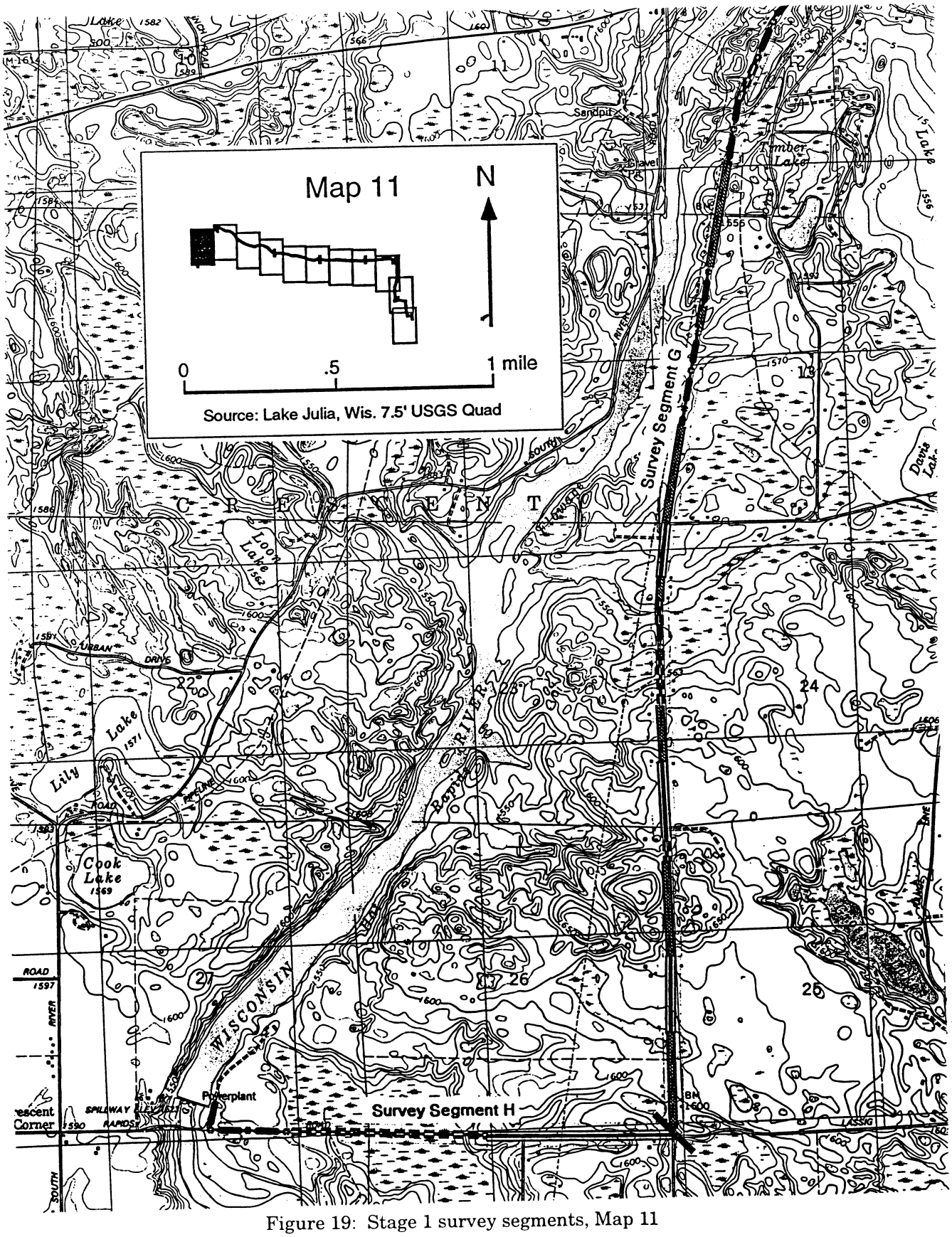


Figure 19: Stage 1 survey segments, Map 11

Landscape Morphology Assessment

Topographic maps (1:24000 scale) were examined to identify portions of the WWDC corridor where landforms have been cut creating an obvious incongruity. In many cases, this kind of landform alteration in readily evident on 1:24000 scale mapping. For example, drumlins typically exhibit smooth longitudinal slopes. However, if sharp breaks in slope are evident the drumlin was likely cut during a former construction episode probably related to road building. As a result, the soil and any archaeological deposits in that soil will have been removed. Consequently, any obviously cut areas may be eliminated from further consideration.

WisDOT highway construction plans were also examined to identify portions of the WWDC corridor where cut and/or fill activities have occurred. Cut areas are those where the original land surface or old roadbed has been removed destroying any archaeological deposits that may have been present. Fill areas are those where material was added to the original landscape surface or over an existing road bed. The original soil surface may be preserved beneath filled areas depending on the way in which the fill was emplaced. An exception to this is the case of wetland areas characterized by the presence of organic soils. In these instances, organic soils are removed prior to emplacement of the fill material. Thus, the original soil surface and associated archaeological deposits are no longer present. Consequently, areas identified as cuts, and areas noted as filled wetlands may also be eliminated from further consideration.

It should be noted that WisDOT highway construction plans provide only the most conservative estimate of the degree of ground disturbance. Minor changes in design and excavation below subgrade (EBS) may occur at the discretion of the field engineer. Consequently, actual cuts are often deeper and more extensive than shown on the WisDOT plans. In addition, movement of heavy equipment over the project areas during construction also disturbs and/or removes the soil.

Northern Wisconsin Landscapes and Site Locations

As indicated earlier, previous research on archaeological site distributions in northern woodland environments suggests that most archaeological sites are located on well drained soils in proximity to water bodies such as rivers or lakes. Accordingly, areas of the corridor not in proximity to water or in proximity to water but in poorly

drained landscape positions are also considered to have low potential to harbor archaeological deposits. No field investigations are recommended in areas designated as low probability. Areas of the corridor that were archaeological surveyed prior to highway construction or improvement have been eliminated from further consideration also.

Soils

Table 5 lists the various soils present within the WWDC alignment which passes through Oneida County. Forest County soils are listed in Table 6. Tables 5 and 6 list the map symbol, series name, USDA taxonomic classification, drainage class, texture of the surface horizon and the horizon sequence of the type profile. All of these data are useful for characterizing landscapes and for determining the types and appearance of soils along the WWDC. Drainage class was assigned to a soil series based on the slope gradient and the slope position, as well as the inherent permeability of the soil materials. The horizon sequence is the vertical order of the layers (horizons) in the soil profile. Sequences listed in tables 5 and 6 occur in the upper 1 m to 1.5 m of the

TABLE 5
ONEIDA COUNTY SOILS PRESENT WITHIN THE WWDC

Map Sym	Series	Classification	Drainage Class	Texture	Horizon Sequence
Au①	Au Gres	entic haplaquod	spd	loamy sand	O-A-E-Bhs-Bs-BC
Ca①	Cable	typic haplaquepts	pd&vpd	muck	O-A-Eg-Bg-2BC
Cb①	Carbondale②	terric borosaprists	vpd	muck	Oa-Oe
Cs	Croswell	entic haplorthod	mwd	sand	O-E-Bs-BC
Em	Emmit	typic udorthent	ed	gr. sand	A-Bw-C
Fh①	Fordum	mollic fluvaquent	pd&vpd	sandy loam	A-Cg
Go	Goodman	alfic haplorthod	wd&mwd	silt loam	O-E-Bs-E'-2B/E
Gr①	Greenwood②	typic borosaprists	vpd	muck	Oi-Oe
Ke	Keweenaw	alfic haplorthod	mwd&wd	sandy loam	O-A-E-Bs-E/B-B/E
Kn	Keweenaw②	haplorthods	ed-mwd	sandy loam	③
Kr	Keweenaw②	haplorthod	ed-mwd	sandy loam	③
Ks①	Kinross	typic haplaquod	pd	muck	O-E-Bhs-Bs-BC
Mo①	Monico	entic haplaquods	spd	loam	A-E-Bs-E'-2Bw-BC
Pa	Padus	alfic haplorthod	wd&mwd	sandy loam	A-E-Bs-B/E-Bt-2Bt
Pe	Pedus②	alfic haplorthod	wd&mwd	sandy loam	A-E-Bs-B/E-Bt-2Bt
Pb	Padus	alfic haplorthod	wd&mwd	sandy loam	A-E-Bs-B/E-Bt-2Bt
Pr①	Pequaming	alfic haplaquod	spd	loamy sand	O-E-Bs-E/B
Pt①	PITS				

TABLE 5 (CONCLUDED)

Map Sym	Series	Classification	Drainage Class	Texture	Horizon Sequence
Sa	Sayner	entic haplorthod	ed	loamy sand	A-E-Bs-BC-C
Rs	Rousseau	entic haplorthod	ed	loamy sand	O-E-Bs-BC-C
Vs	Vilas	entic haplorthod	ed	loamy sand	O-A-E-Bs-BC
Ud①	udorthents	udorthents	_____	_____	_____

Notes: ① soils with low potential for archaeological deposits.

② complexes of soil series with soil bodies too small to differentiate individually.

③ horizonation varies depending on parent material.

vpd = very poorly drained; pd = poorly drained; spd = somewhat poorly drained; mwd = moderately well drained; wd = well drained; ed = excessively drained

TABLE 6

FOREST COUNTY SOILS WITHIN THE WWDC

Map Sym	Series	Classification	Drainage Class	Texture	Horizon Sequence③
2①	Fordum	mollic fluvaquents	pd&vpd	alluvium	na
17①	Captlola	typic haplaquepts	pd&vpd	muck	na
18①	Mud Lake	entic haplaquods	spd	silt loam	na
19	Wabeno-Monico	alfic fragiorthods-entic haplaquod	mwd	loam	na
20	Wabeno-Goodman	alfic fragiorthods -alfic haplorthods	mwd	loam	na
22	Sarona-Wabeno	alfic haplorthods-alfic fragiorthods	mwd	loam	na
27①	Minoqua	typic haplaquepts	pd&vpd	muck	na
100	Stambaugh	entic haplorthods	wd	silt	na
103	Worchester	aqualfic haplorthod	spd	loam	na
106	Padus-Pence	alfic & entic haplorthods	wd	loam	na
107	Pence-Vilas	entic haplorthods	wd	loam	na
109	Stambaugh	alfic haplorthods	mwd	silt	na
111	Pence	entic haplorthods	wd	loam	na
124①	Kinross	typic haplaquads		muck	na
127	Croswell	entic haplorthods	wd	outwah	na
151①	Gaastra	alfic haplaquods	spd	silt	na
707①	Mucks②	typic borosaprists	vpd	muck	na

Notes: ① soils with low potential for archaeological deposits.

② numerous series names.

③ Horizon data not available for Forest County soils.

vpd = very poorly drained; pd = poorly drained; spd = somewhat poorly drained; mwd = moderately well drained; wd = well drained; ed = excessively drained

soil. If no soil horizons or only some of the soil horizons are present the soil may be disturbed. See Appendix IV for soil horizon nomenclature. Soils that are somewhat poorly drained (spd), poorly drained (pd) and very poorly drained (vpd) and/or have upper horizons (O horizons) formed in peat or muck (organic sediments) are characterized by a low potential to harbor archaeological deposits. These soils are marked by a superscript ① in Tables 5 and 6. All such soils are hydric (Wetland Training Institute, Inc., 1995) and constitute unlikely landscape settings for prehistoric human occupation. Consequently, WWDC locales characterized by the presence of these soils may be eliminated from further consideration.

Geomorphological Assessment

Results of the investigations are briefly discussed with regard to each individual segment of the WWDC. The study corridor is divided into five categories: (1) areas eliminated due to the presence of hydric soils (hydric soils); (2) areas eliminated because the soil surface has been cut away (cut); (3) areas that have been archaeologically surveyed and therefore excluded from the present study (previously surveyed); (4) areas which could not be eliminated by Stage 1 research and which require coring or visual inspection (fieldwork required); and (5) areas eliminated due to low archaeological potential because they are not in close proximity to a water body (low potential). Categorizations are mapped on the 7.5' USGS quad maps shown on figures 8-19.

The actual pipeline alignment is restricted to one or the other side of the various highway right-of-ways involved. However, the geoarchaeological investigations are designed to investigate either side of each highway right-of-way in order to allow maximum flexibility with regard to final design of the installation.

Geoarchaeological Assessment of the Segments

Segment A (Figures 9 and 10)

Segment A (Table 7) is coincident with a proposed access road extending from the Plant Site to STH 55. The proposed road alignment was previously surveyed by GLARC (Overstreet 1982) and was excluded from the geoarchaeological assessment.

Table 7

Segment A Geoarchaeological Assessment Categories

	Cut	Hydric Soil	Low Potential	Previously Surveyed	Fieldwork Required	Total
miles	0	0	0	3.36	0	3.36
%	0	0	0	100	0	100

Segment B (Figures 10 and 11)

Segment B (Table 8) begins at the intersection of the proposed access road and STH 55 and ends at the intersection of CTH "S" and USH 8. The pipeline corridor is on the west side of both CTH "S" and STH 55. This segment traverses low ice-contact deposits along the east side of a series of drumlins. Most of the segment is probably best characterized as low potential for archaeological deposits due to the absence of any nearby water bodies. However, this portion of the proposed alignment will require visual inspection and/or coring to confirm this assessment. Remaining portions of Segment B are also unlikely to harbor archaeological deposits as a result of the presence of hydric soils or due to cutting during road construction.

Table 8

Segment B Geoarchaeological Assessment Categories

	Cut	Hydric Soil	Low Potential	Previously Surveyed	Fieldwork Required	Total
miles	0.85	0.24	0	0	3.47	4.56
%	19	5	0	0	76	100

Segment C (Figures 11 and 12)

Segment C (Table 9) begins at the intersection of CTH "S" and USH 8 and ends at the Oneida/Forest County line. The WWDC is located on the north side of the road coincident with the road bed of Old USH 8. Old USH 8 is currently in use as a snowmobile trail.

Table 9

Segment C Geoarchaeological Assessment Categories

	Cut	Hydric Soil	Low Potential	Previously Surveyed	Fieldwork Required	Total
miles	2.34	1.64	0.55	0	0.31	4.84
%	48	34	11	0	7	100

Segment C traverses a drumlin field which consists of NE trending drumlins with wetlands present in the inter-drumlin lows. The wetlands are small and very localized with no open water or perennial channels present. The old road, as well as modern USH 8, cuts nearly perpendicular to the NE trending drumlins. Highway construction has resulted in deep cuts through the drumlins and fill emplacement in the inter-drumlin lows. The Wolf River flows parallel to the drumlins near the west end of the segment. Between the Wolf River and the Oneida/Forest County line is a larger, more extensive wetland. Most of Segment C was eliminated from further consideration due to the presence of hydric soils or road cuts. A minor portion was designated low probability due to the lack of nearby water bodies.

Coring is recommended at the Wolf River crossing since: (1) the crossing area has been heavily filled; (2) the soils are well drained; and (3), The Wolf River is a major regional drainage known to have been an important prehistoric and historic transportation route. The west side of the river crossing may be minimally disturbed and thus exhibits a higher potential to harbor archaeological deposits.

Segment D (Figures 12, 13, and 14)

Segment D (Table 10) begins at the Oneida/Forest County line and ends at the intersection of USH 45 with the southern right-of-way of USH 8 in Monico. The WWDC is situated along the north side of the road coincident with the snowmobile trail/Old USH 8 to the intersection of CTH "V". At this point, the route crosses USH 8 to extend along the south side of the highway.

Table 10

Segment D Geoarchaeological Assessment Categories

	Cut	Hydric Soil	Low Potential	Previously Surveyed	Fieldwork Required	Total
miles	1.11	1.29	2.84	0	0	5.24
%	21	25	54	0	0	100

Segment D traverses drumlins, ground moraine, ice-contact deposits, and extensive wetlands. The entire segment may be eliminated from further consideration because of the extensive cuts through high ground, wetlands in low areas, and the absence of open water bodies.

Segment E (Figures 14, 15, 16, and 17)

Segment E (Table 11) begins at the intersection of USH 45 and the southern right-of-way of USH 8 in Monico and ends at the start of the Rhinelander Beltline just southeast of George Lake. The WWDC extends along the south side of USH 8 approximately 25 ft. from the edge of the pavement.

Table 11
Segment E Geoarchaeological Assessment Categories

	Cut	Hydric Soil	Low Potential	Previously Surveyed	Fieldwork Required	Total
miles	1.64	1.77	2.2	0	0.61	6.22
%	26	29	35	0	10	100

Most of Segment E may be eliminated from further consideration because of the extensive cuts through high ground, wetlands in low areas, and the absence of open water bodies. Two areas are recommended for coring and/or visual inspection. First, portions of the southern shoreline of Venus Lake where well drained and relatively undisturbed soils may exist in proximity to the lake should be subjected to subsurface sampling. Second, soils data and the WisDOT highway construction plans indicate that the west bank of the North Branch of the Pelican River is characterized by the presence of well drained soils covered by fill. Consequently, the location of the WWDC crossing of the North Branch of the Pelican River should be investigated also.

Segment F (Figures 17 and 18)

Segment F (Table 12), the Rhinelander Beltline, was surveyed by archaeologists (Penman 1977) prior to road construction. Therefore, this portion of the WWDC route was excluded from the present study.

Table 12
Segment F Geoarchaeological Assessment Categories

	Cut	Hydric Soil	Low Potential	Previously Surveyed	Fieldwork Required	Total
miles	0	0	0	8.21	0	8.21
%	0	0	0	100	0	100

Segment G (Figures 18 and 19)

Segment G (Table 13) begins at the intersection of the Rhinelander Beltline (USH 8) and STH 17 and ends at the intersection of STH 17 and Hat Rapids Road. The WWDC extends along the west side of STH 17 and is situated 25 ft. from the edge of the pavement.

Segment G traverses hummocky ice-contact terrain. Only the larger hummocks are visible on the topographic map. However, the WisDOT construction plans show short segments of alternating cut and fill which is consistent with terrain consisting of small hills and shallow depressions. Areas in the northern half of the segment that have not been eliminated on the basis of archival data or archaeological criteria should be visually inspected.

Table 13

Segment G Geoarchaeological Assessment Categories

	Cut	Hydric Soil	Low Potential	Previously Surveyed	Fieldwork Required	Total
miles	1.59	0.39	0.67	0	1.58	4.23
%	38	9	16	0	37	100

Segment H (Figure 19)

Segment H (Table 14) begins at the intersection of STH 17 and Hat Rapids Road and ends at the Hat Rapids Dam on the Wisconsin River. The WWDC extends along the south side of the road at the edge of the pavement.

No highway construction plans are available for this segment so morphological data is limited. Areas designated as having low potential for archaeological deposits are based on the distribution of hydric soils and the absence of nearby water sources. Additional areas within the WWDC can likely be eliminated by visual inspection during the field investigations. Any areas within 500 m of the Wisconsin River which cannot be eliminated during the initial field inspection should be cored to obtain samples from beneath the road fill. That portion of the WWDC situated adjacent to the Wisconsin River between Hat Rapids Road and the dam is not under pavement and should be archaeologically surveyed. It is included under the fieldwork required column in Table 14.

Table 14
Segment H Geoarchaeological Assessment Categories

	Cut	Hydric Soil	Low Potential	Previously Surveyed	Fieldwork Required	Total
miles	0	0.64	0.60	0	0.4	1.64
%	0	39	37	0	24	100

STAGE 2: GEOARCHAEOLOGICAL ASSESSMENT

Geoarchaeological Field Investigations: Visual Inspection of Corridor Segments

Based on Stage 1 results, Segments A and F were eliminated from this study. All of Segment A is on Crandon Mining Company land and was previously surveyed for archaeological sites (Overstreet 1982) and therefore no areas needed further field inspection. Segment F is coincident with the route of the Rhinelander Bypass portion of USH 8. This right-of-way was archaeologically surveyed prior to construction of the road (Penman 1977a, 1977b) and therefore was not subjected to further field inspection.

Portions of the WWDC in segments B, C, D, E, G, and H were visually inspected to determine conditions relative to the potential for undisturbed or relatively undisturbed soils to be present at the surface or buried beneath fill or road bed. Areas requiring visual inspection were determined during the Stage 1 geoarchaeological assessment described earlier. Results of the visual inspection are detailed below. In order to discriminate between different conditions within segments, subsegments were defined corresponding to changes in segment character.

SEGMENT B: STH 55 (7,575 FT)

Segments B1 - B5 are located along STH 55. The WWDC is situated on the west side of the road, 7.6 m (25 ft) from the edge of the pavement. The WWDC is generally coincident with the outside ditch slope, down slope of the slope intercept. Soil pits placed at selected locations along the WWDC indicated the soil was truncated (Table 15). Results suggest that the ditch was engineered and landscaped and in the process the upper soil was removed or reworked.

TABLE 15
LENGTH AND CONDITION OF SEGMENT B SUBSEGMENTS ALONG STH 55 DESIGNATED FOR FIELD INSPECTION.

Subsegment	Length	Condition
B1	259 m (850 ft)	ditch cut and deep cut
B2	488 m (1600 ft)	ditch cut
B3	114 m (375 ft)	ditch cut and deep cut
B4	495 m (1625 ft)	ditch cut
B5	953 m (3125 ft)	ditch cut

SEGMENT B: CTH S (12,350 FT)

Segments B6 - B8 are located along CTH S. The WWDC is located on the west side of the highway at the top of the outside ditch slope (west edge of the ditch). Soil pits placed at selected locations along the WWDC indicated the soil was truncated (Table 16). Results suggest that the ditch has been engineered and landscaped and in the process the upper soil was removed or reworked. An abandoned railroad grade also parallels the west side of the road and in places is immediately adjacent to the ROW. In general, the west side of CTH S has been severely disturbed by recent improvements to the ditch and by earlier railroad construction and abandonment.

TABLE 16
LENGTH AND CONDITION OF SEGMENT B SUBSEGMENTS ALONG CTH S DESIGNATED FOR FIELD INSPECTION.

Subsegment	Length	Condition
B6	640 m (2100 ft)	ditch cut
B7a*	0-183 m (0-600 ft)	ditch cut and bermed
B7b*	183-488 m (600 ft-1600 ft)	ditch cut and abandoned RR grade
B7c*	488-1890 m (1600-6200 ft)	ditch cut
B8	107 m (350 ft)	ditch cut and abandoned RR grade

*measured from north end of subsegment

SEGMENT C: USH 8 (3200 FT)

Segment C is located along USH 8. The WWDC is located in the center of the old road bed on the north side of USH 8. The old road is presently used as a snowmobile trail. The road was constructed some time in the early part of the 20th century prior to 1924 (State Highway Commission of Wisconsin and Public Road Administra-

tion Federal Works Agency 1947). Early road construction techniques did not involve extensive engineering of the subgrade. Therefore, the chances of a preserved soil remaining beneath the road bed are greater than is the case with modern roads. For example, a former construction technique that may preserve a soil beneath early 20th century road bed, is called "turnpiking" (personal communication, Mike Hess, WisDOT). The procedure involved initial excavation of roadside ditches prior to construction of the roadbed. Spoil from the ditch excavation was piled between the ditches where it was graded flat and the roadbed constructed on the graded surface.

Two subsegments were visually inspected. Subsegment C1 is located in the uplands between two drumlins. Stage 1 investigations were unable to determine if the subsegment was cut or filled. Even though the area is in the uplands and not in proximity to modern water bodies the subsegment was employed as a field test case of decisions regarding treatment of the remainder of the drumlinized uplands east of the Wolf River. Results of the visual inspection indicated the area would require boring in order to conclusively determine if a soil was preserved below the road bed.

Subsegment C2 comprises a planned crossing of the Wolf River. Subsegment C2a traverses a flat meltwater stream terrace on the west side of the Wolf River. The old road bed is almost level with or slightly higher than the surrounding terrace surface and the presence of cuts or filling could not be conclusively determined. Visual inspection suggested that subsegment C2a was a classic example of a road constructed by the turnpiking technique (Table 17). Accordingly the subsegment was targeted for later boring.

TABLE 17
LENGTH AND CONDITION OF SEGMENT C SUBSEGMENTS ALONG USH 8 DESIGNATED FOR FIELD INSPECTION.

Subsegment	Length	Condition
C1	198 m (650 ft)	upland, cut, *soil borings necessary*
C2a*	0-427 m (0-1400 ft)	old road bed, *soil borings necessary*
C2b*	427-521 m (1400-1710 ft)	hydric soil beneath fill
C2c*	521-777 m (1710-2550 ft)	thick fill

*measured from west end of subsegment

Subsegment C2b is situated east of the Wolf River and is comprised of fill over hydric soils (Table 17). Subsegment C2c also extends east of the Wolf River and is characterized by massive fill, up to 10 m thick where the old road begins to ascend

into the uplands. Both subsegments have low potential to harbor archaeological deposits. Moreover, pipeline construction will not penetrate the thick fill deposits. Consequently, any sub-fill materials present will not be disturbed.

Segment D: USH 8 (1000 ft)

Subsegment D1 is located along USH 8 in the village of Monico. The WWDC extends along the south side of the highway, 7.6 m (25 ft) from the edge of the pavement. This portion of the WWDC area is urbanized or ditch cut (Table 18). No further investigations are necessary.

Table 18
Length and Condition of Segment D Subsegments along USH 8 Designated for Field Inspection

Subsegment	Length	Condition
D1	305 m (1000 ft)	urbanized and ditch cut

Segment E: USH 8 (4900 ft)

Segment E is located along USH 8. The WWDC is situated along the south side of the road, 7.6 m (25 ft) from the edge of the pavement. The segment crosses the North Branch of the Pelican River.

Subsegment E1 extends along the south shore of Venus Lake on the west edge of Monico (Table 19). The route is confined to a grassed ditch that is mowed regularly. Profiles exposed in soil pits indicate that no A or B soil horizons are present. The

Table 19
Length and Condition of Segment E Subsegments along USH 8 Designated for Field Inspection

Subsegment	Length	Condition
E1a*	0-274 m (0-900 ft)	graded with topsoil added
E1b*	274-475 m (900-1500 ft)	gravel, no soil
E1c*	475-640 m (1500-2100 ft)	ditch cut
E2a*	0-76 m (0-250 ft)	hydric
E2b*	76-335 m (250-1100 ft)	hydric floodplain
E2c*	335-411 m (1100-1350 ft)	ditch cut
E3a*	0-91 m (0-300 ft)	ditch cut
E3b*	91-442 m (300-1450 ft)	hydric

*measured from west end of subsegment

WWDC in this area has been graded and engineered removing or reworking the original soil and any archaeological deposits that it may have contained.

Subsegment E2a extends parallel to the North Branch of the Pelican River. The WWDC in this area consists of thin road fill over hydric soils in the lowland near the channel while a ditch cut is present at the east end of the subsegment. All of subsegment E2 has low potential to harbor archaeological deposits.

Segment G: STH 17 (7370 ft)

Segment G extends along STH 17. The WWDC is situated along the west side of the highway, 7.6 m (25 ft) from the edge of the pavement. Segment G traverses rugged ice-contact topography that consists of hills of varying size and relief with intervening lowland often containing wetlands. All of the subsegments (with the exception of G4d) are either comprised of fill over hydric soil, ditch cut or urbanized and thus have low potential for containing archaeological deposits (Table 20). In contrast, subsegment G4d is marked by the presence of a thin fill and was targeted for later boring.

Table 20
Length and Condition of Segment G Subsegments along STH 17 Designated for Field Inspection

Subsegment	Length	Condition
G1a*	0-411 m (0-1350 ft)	ditch cut with short stretches of fill
G1b*	411-564 m (1350-1850 ft)	hydric
G1c*	564-1052 m (1850-3450 ft)	ditch cut, stretches of hydic and urban
G2a*	0-46 m (0-150 ft)	ditch cut
G2b*	46-229 m (150-750 ft)	hydric
G2c*	229-366 m (750-1200 ft)	ditch cut
G3	152 m (500 ft)	ditch cut
G4a*	0-107 m (0-350 ft)	ditch cut
G4b*	107-183 m (350-600 ft)	fill over somewhat poorly drained soil
G4c*	183-335 m (600-1100 ft)	ditch cut
G4d*	335-396 m (1100-1300 ft)	fill, *soil borings necessary*
G4e*	396-488 m (1300-1600 ft)	hydric
G4f*	448-549 m (1600-1800 ft)	ditch cut
G5	128 m (420 ft)	ditch cut

*measured from south end of subsegment

Segment H: Hat Rapids Road (2100 ft)

Segment H extends along Hat Rapids Road. The WWDC is located along the south side of the road at the pavement edge. Subsegment H1a extends from the Hat Rapids Road bridge over the Wisconsin River 2100 ft to the east. Portions of the west end of the subsegment were previously surveyed (Stoltman 1981) prior to construction of the present bridge. Two subsegments were targeted for boring because the elevation difference between the WWDC and the soil surface outside the WWDC was very small and cutting or filling could not be confirmed by leveling (Table 21). Subsegments targeted for boring include H1a at the west end of the segment adjacent to the Wisconsin River and H1e on a high flat surface 320 m east of the Wisconsin River. The remaining portions of the Segment H are either ditch cut, consist of fill over hydric soils or were graded coincident with the operation of a nearby gravel pit.

Table 21
Length and condition of Segment H subsegments along Hat Rapids Road designated for field inspection

Subsegment	Length	Condition
H1a*	0-76 m (0-250 ft)	*soil borings necessary*
H1b*	76-107 m (250-350 ft)	ditch cut
H1c*	107-256 m (350-840 ft)	hydric
H1d*	256-320 m (840-1050 ft)	ditch cut
H1e*	320-381 m (1050-1250 ft)	*soil boring necessary*
H1f*	381-640 m (1250-2100 ft)	ditch cut, graded and gravel pit

*measured from east edge of bridge over the Wisconsin River

Soil Borings

Soil Borings (SB) were deemed necessary in five areas of the WWDC. The areas bored are: (1) subsegment C1 in the uplands along the old road north of USH 8; (2) subsegment C2a along the old road bed north of USH 8 just west of the crossing of the Wolf River; (3) subsegment G4d along the west side of STH 17; and (4) subsegment H1a and H1e at the Wisconsin River along the south side of Hat Rapids Road (Table 22).

TABLE 22
SOIL BORINGS, SUBSEGMENT LOCATION AND LOCATION OF DESCRIPTIONS IN REPORT

Soil Boring #	Subsegment	Description
1	H1a	see Appendix V
2	H1a	see Appendix V
3	H1a	see Appendix V
4	H1e	see Appendix V
5	H1e	see Appendix V
6	H1e	see Appendix V
7	G4d	see Appendix V
8	G4d	see Appendix V
9	G4d	see Appendix V
10	C2a	see Appendix V and Figure 22
11	C2a	see Appendix V
12	C2a	see Appendix V
13	C2a	see Appendix V
14	C2a	see Appendix V
15	C2a	see Appendix V
16	C2a	see Appendix V
17	C2a	see Appendix V
18	C2a	see Appendix V
19	C2a	see Appendix V
20	C2a	see Appendix V
21	C2a	see Appendix V
22	C2a	see Appendix V
23	—	boring aborted, no log
24	C2a	see Appendix V
25	C2a	see Appendix V
26	C1	see Appendix V
27	C1	see Appendix V

SUBSEGMENT C1

Subsegment C1 is located 792 m (2600 ft) east of the intersection of USH 8 and CTH S coincident with the old road bed. The upland area is a drumlin field (Simpkins et al 1987) consisting of alternate cut and fill segments. During the visual inspection it could not be determined if this portion of the route had been cut or filled. In addi-

tion, it was unclear what type of road construction technique had been used. Soil borings were thus required.

Soil Borings 26 and 27 were taken in subsegment C1 (figure 20). SB 26 consisted of 1.85 m of old road bed and fill (Appendix V). SB 27 consisted of 1.05 m of old road bed and fill. To confirm that the material in the soil boring was fill a soil pit was excavated outside the ROW in the forested land north of the old road bed. Soil in the soil pit was very different from the material recovered in the soil borings. It consisted of a very dark brown silt loam A horizon, 15 cm thick, over a brown to dark brown silt loam E horizon over a gravelly sandy loam Bt horizon beginning at 40 cm below the surface. The soil surface outside the ROW is scattered with numerous boulders and cobbles which are not present in or on the old road bed. Apparently, the old road was constructed by removing most of the soil, perhaps in the process of clearing the ROW of boulders, and then filling to produce a gradable boulder free road bed.

The soil has been removed in all of subsegment C1 and therefore no potential for *in situ* archaeological deposits exists. In addition, if the same construction technique was used in the rest of the drumlinized upland, it suggests a low potential for *in situ* archaeological deposits to be preserved in the rest of the drumlinized areas of the WWDC.

Subsegment C2

Subsegment C2 is located along the old USH 8 road bed/snowmobile trail on both sides of the Wolf River (figure 21). The portion of the segment east of the Wolf River was eliminated during the visual inspection due to the presence of thick fill and hydric soils. However, the west side of the Wolf River is characterized by a well drained meltwater stream terrace designated for soil borings.

Fifteen (15) soil borings (Appendix V) were taken at approximately 20 m intervals along the center of the old USH 8 road bed/snowmobile trail beginning 83 m west of the snowmobile bridge over the Wolf River and extending to the west for 300 m. Soil borings ranged in depth from 1.05 m to 1.95 m below the old road bed surface.

Stratigraphy in the soil borings and soil horizon sequences generally consisted of a 30-40 cm thick road bed over a truncated Bs horizon (figure 22). The degree of truncation varied from one soil boring to the next. However, in all cases where only road bed and no fill was present the upper soil horizons where archaeological materi-

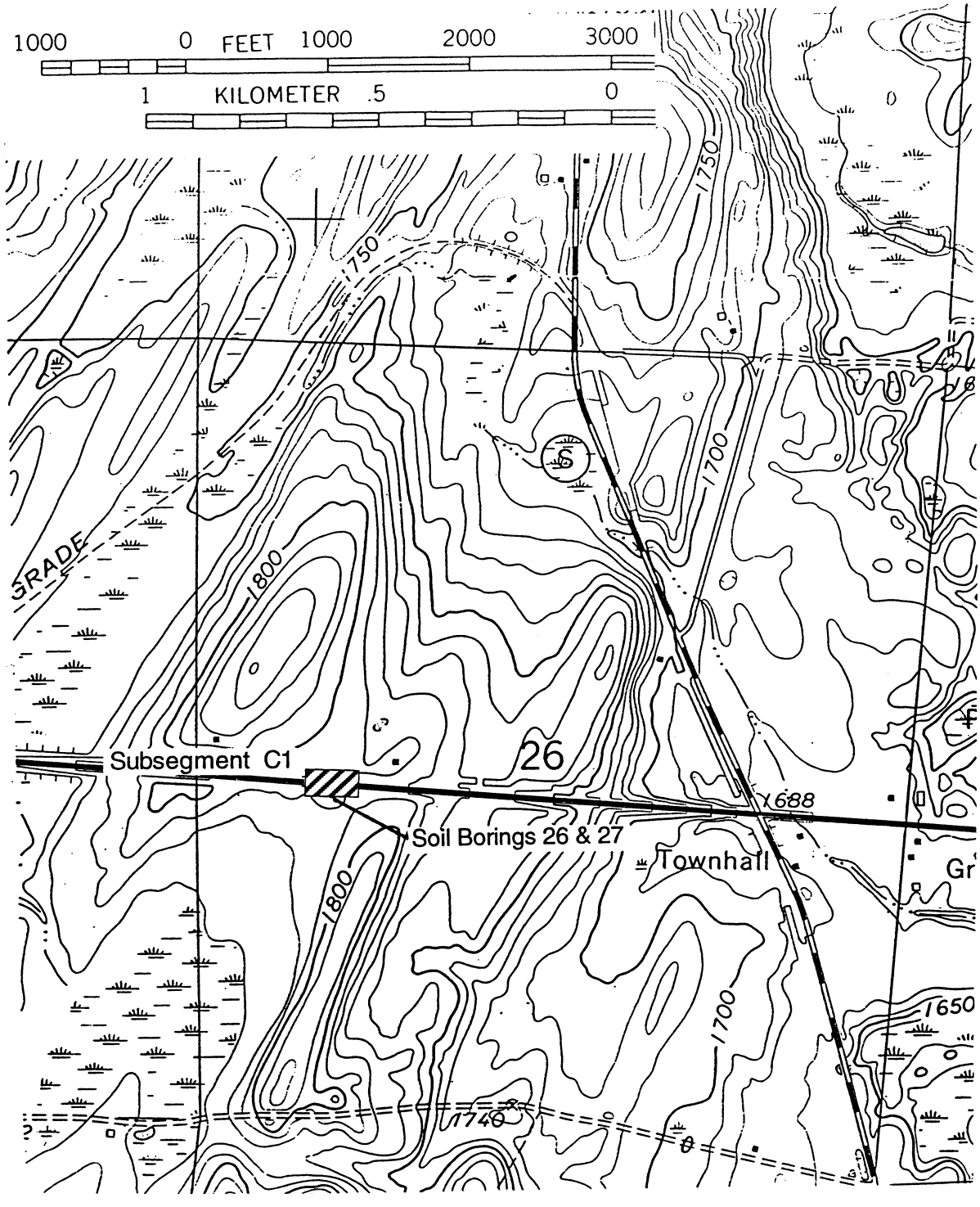


Figure 20: USGS topographic map of subsegment C1 soil borings

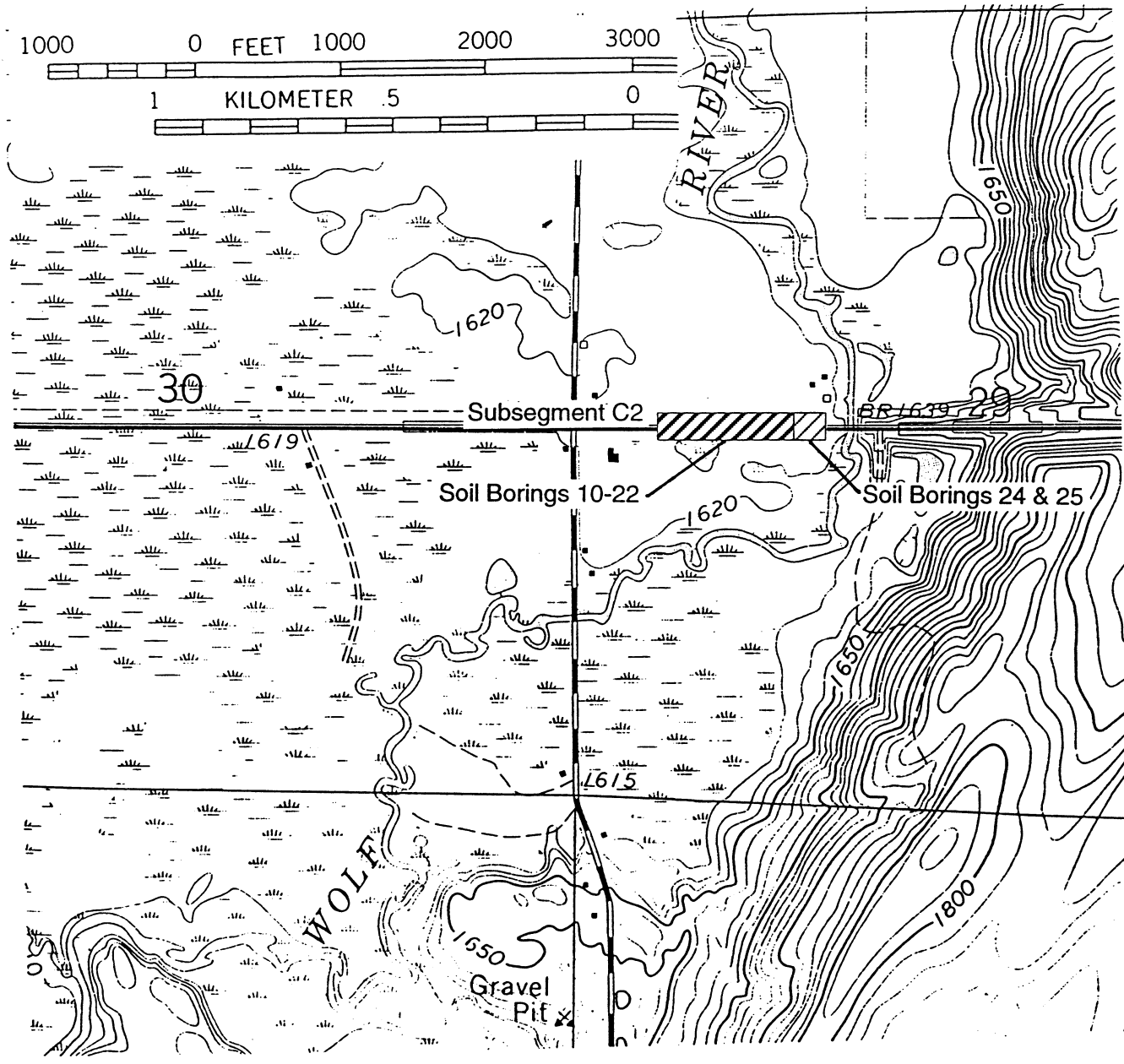


Figure 21: USGS topographic map of subsegment C2 soil borings

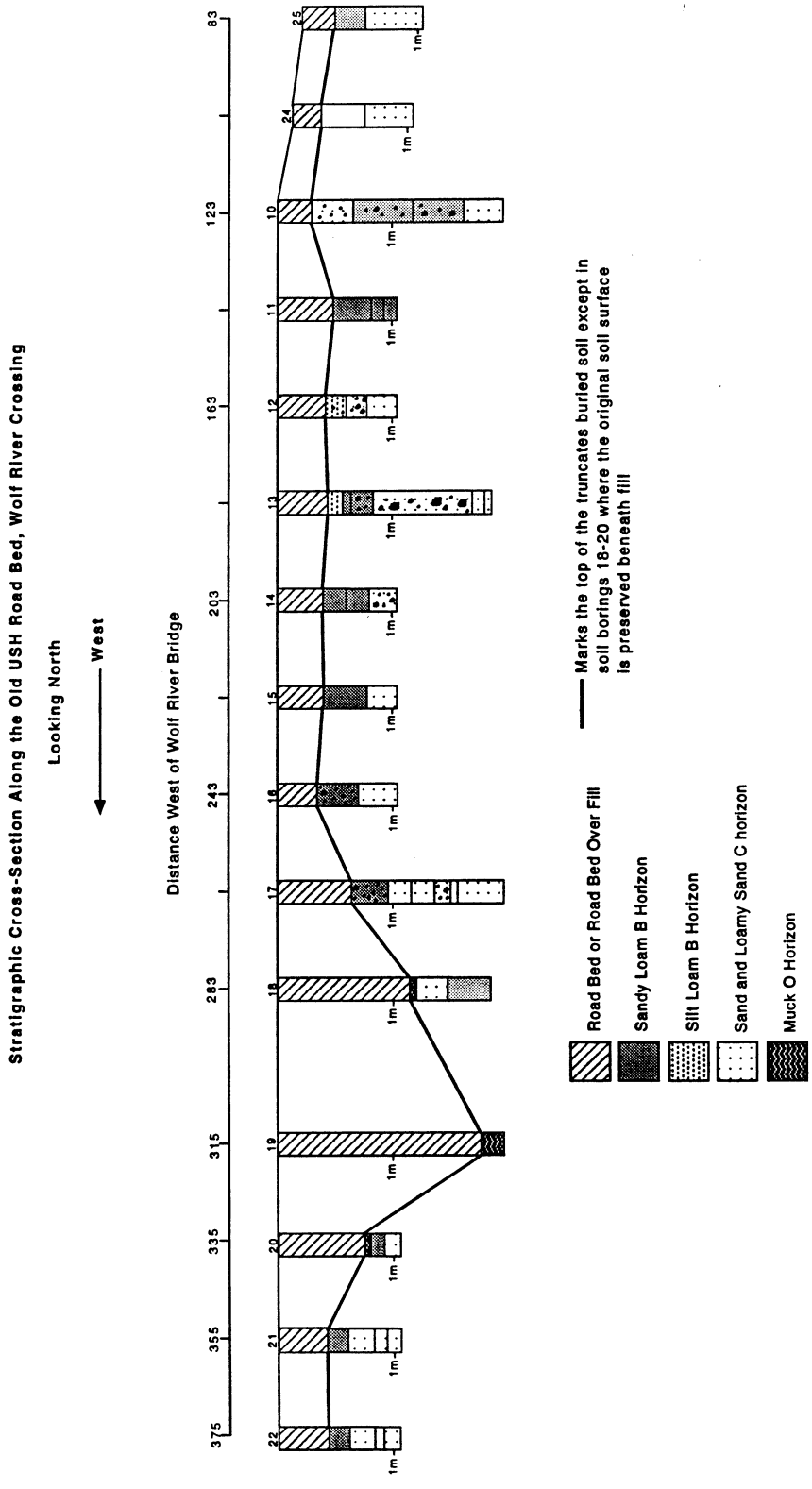


Figure 22: Stratigraphic cross section Wolf River, subsegment C2

als would be found are missing, or in a few cases mixed into the road bed materials. SB 17 - 20 have road bed over fill over a buried soil. The buried soil is truncated in SB 17 but is not truncated in SB 18 - 20 where the upper horizon is organic (Ob horizon). Here the old road crosses over a small depression on the meltwater stream terrace that contained a small wetland. The buried intact soils are hydric and therefore have low potential to harbor archaeological deposits.

Soils on the meltwater terrace are mapped as Padus-Pence complex (unpublished Forest Co. soil sheets). These soil series have Bs horizons beginning at 20 cm below the surface for the Pence series and 13 cm below the surface for the Padus surface. The Bs horizon is 28 cm thick in the Padus series and 18 cm thick in the Pence series. C horizon is within 1 m of the surface in both series. The potential for *in situ* archaeological deposits is low because: (1) the A and E horizons are not present in any of the soil borings; (2) the soil is generally truncated into the lower solum (soil above the C horizon) removing at least some of the Bs horizon; and (3) even with the roadbed included the C horizon is within a meter of the surface. Artifacts in northwoods environments are generally contained in the A, E or upper Bs horizons. Because these horizons have been removed or are a part of the road bed, artifacts, if present, would no longer be *in situ*. The solum in the type Pence and Padus series is 53 cm and 89 cm thick respectively. Along subsegment C2 the top of the C horizon is also within 1 m of the surface even with the 30-40 cm thick road bed. This is further evidence that the soil has been truncated by at least 30-40 cm.

Charles "Bud" May owns the land immediately north of the ROW in subsegment C2 and along the Wolf River upstream (north) of the snow mobile bridge. Mr. May has farmed and raised horses on the property since 1949 and has never found an artifact on his property. Mr. May's horse paddocks, enclose an extensive area of bare soil and are adjacent to the channel of the Wolf River. This is a likely area for archaeological deposits to be present but no artifacts have been recovered from these paddocks.

Subsegment G4

Subsegment G4 is located along STH 17 (figure 23). Soil borings 7, 8 and 9 (Appendix V) were taken along the west side of the highway 7.6 - 8.5 m (25 - 28 ft) from the edge of the pavement. In all the soil borings the soil beneath the fill was

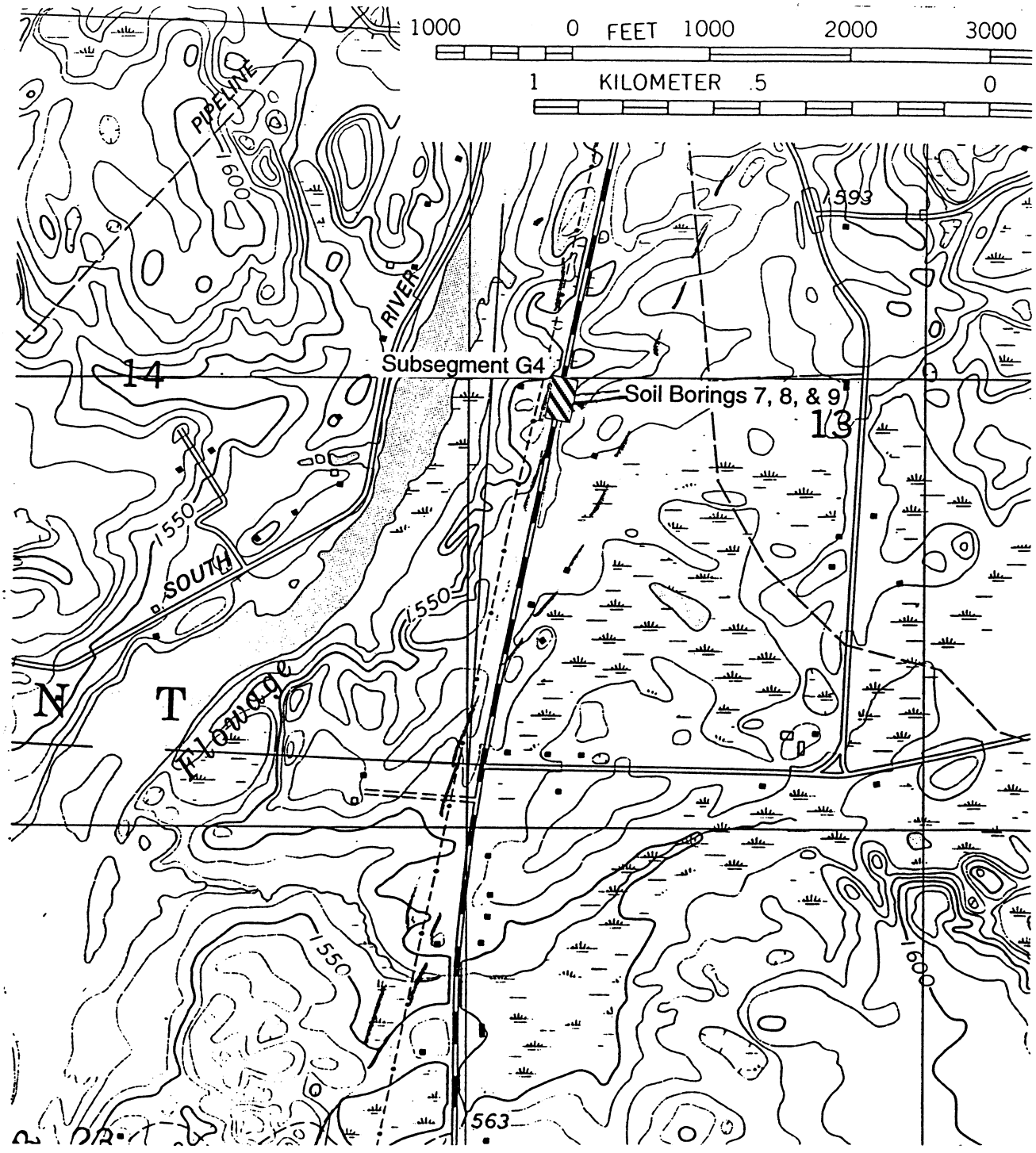


Figure 23: USGS topographic map of subsegment G4 soil borings

either hydric or the soil profile was truncated. In either case there is no potential for in situ archaeological deposits.

SB 7 consisted of 1.9 m of fill over a hydric soil marked by an O horizon of muck. The soil is well preserved beneath the fill but is very poorly drained and therefore has low potential for archaeological deposits.

SB 8 consists of three units of fill 1.9 m thick in total. Fill units F2 and F3 may be fill which was directly emplaced by machinery or may be the result of erosion and deposition during construction of the highway. Below the fill is a truncated soil from which the entire solum (A, E and B horizons) has been removed.

Soil boring 9 consists of 30 cm of fill over a thin horizon (7 cm thick) that is a mix of A and E horizon soil. The soil is truncated down to the Bs horizon and the A and E horizon material have been mechanically mixed, probably when the slope was graded, during fill emplacement and landscaping. The potential for *in situ* archaeological deposits is low.

Subsegments H1a and H1e

Subsegment H1 is at the west end of the WWDC along Hat Rapids Road. Six soil borings were taken in subsegment H1 (figure 24). Three at the east end of the subsegment H1e and three at the west end of the subsegment H1a. All borings were within 1 m of the pavement edge on the south side of the road.

SB 1 was extracted 109 m from the Hat Rapids Road bridge over the Wisconsin River and consisted of 1.2 m of fill over bedded sands to a depth of 1.95 m (Appendix V). The soil is truncated down into the C horizon. There is no potential for in situ archaeological deposits.

SB 2 was taken 61 m from the Hat Rapids Road bridge over the Wisconsin River and consists of 40 cm of road bed/fill over a disturbed Bs horizon (Appendix V). The Bs horizon material may be part of the fill but this could not be determined because the Bs horizon material could not be penetrated due to the underlying coarse gravel. Even if the Bs horizon material is not a part of the fill and is in place the soil is truncated.

SB 3 was taken 34 m east of the east edge of the Hat Rapids Road bridge over the Wisconsin River and consists of 50 cm of fill. Further penetration of the fill was not possible due to coarse gravel. SB 3 is on the fill that is graded to the level of the

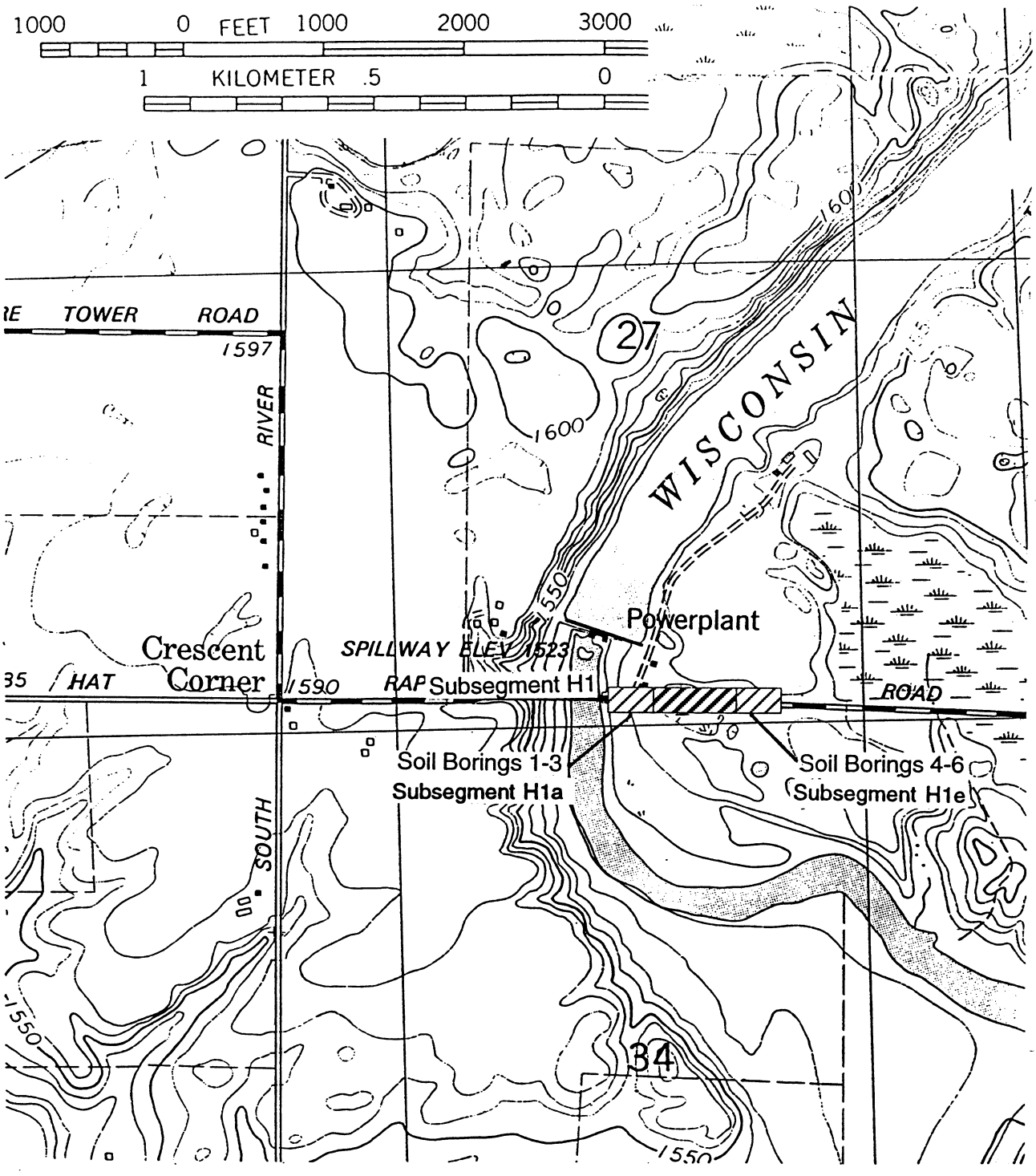


Figure 24: USGS topographic map of subsegment H1 soil borings

modern bridge over the Wisconsin River. It is unlikely an intact soil exists below the fill because the area was probably cut and then fill emplaced and engineered to specifications to ensure slope stability on the bridge approach.

SB 4, SB5, and SB 6 were extracted in subsegment H1 (figure 24). All of these borings have road bed and fill over a truncated soil.

SB 4 is located 360 m (1282 ft) east of the east edge of the Hat Rapids Road bridge over the Wisconsin River. Stratigraphy consists of 68 cm of road bed and fill over a truncated Bs horizon. No A or E horizons are present and the Bs horizon is very thin. The pavement surface is only 20 cm above the terrace surface immediately outside the corridor, a situation requiring some cutting in order to engineer a proper roadbed. Because the artifact bearing soil horizons are missing the potential for *in situ* archaeological deposits is low.

SB 5 is located 340 m (1216 ft) east of the east edge of the Hat Rapids Road bridge over the Wisconsin River. Stratigraphy consists of 50 cm of fill over a truncated E horizon. No A horizon is present and the amount of E horizon removed is unknown. The soil is truncated reducing the potential for *in situ* archaeological deposits.

SB 6 is located 320 m (1050 ft) east of the east edge of the Hat Rapids Road bridge over the Wisconsin River. Stratigraphy consists of 48 cm of road bed and fill over a truncated Bs horizon. The A or E horizons are not present. Because the artifact bearing soil horizons are missing the potential for *in situ* archaeological deposits is low.

Additional Investigation

Hat Rapids Dam Shovel Probing

The last 90 m (300 ft) of the WWDC trends north from Hat Rapids Road to the Hat Rapids Dam on WPSC owned land. This part of the WWDC is not in a highway right-of-way and archaeological deposits, if they occur, are at the surface. Consequently, an area measuring 45 m east/west by 100 m north/south was shovel probed at a 15 m interval.

Artifacts recovered consist of glass, nails, Euro-American ceramics, wire, and a small copper and enamel military-style shirt pin (Appendix VI). Visual inspection of a wooded area along the river bank encountered evidence of a small trash dump, cobblestone wall fragments, and a poured concrete foundation. A rectangular shaped soil

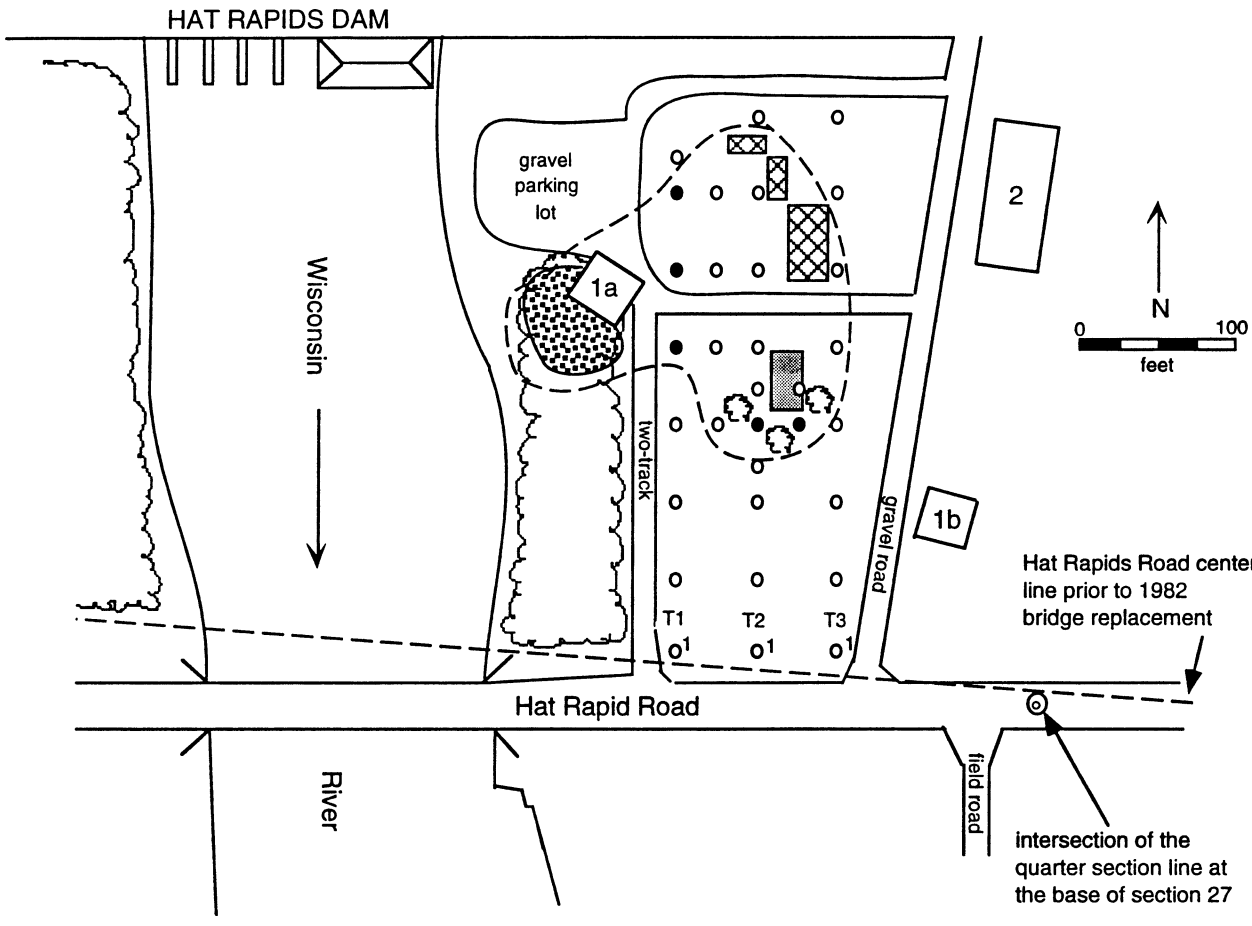
"trace" and three poured concrete pads are present in a cleared area outside the wood lot.

The artifacts recovered are not particularly diagnostic. All the nails are round wire nails that have been in common use since the turn of the century. To supplement the recovered artifact assemblage a historic context for the site was developed using landowner interviews, plats maps, aerial photographs and literature pertinent to the history of the Hat Rapids Dam and the region in general.

The Hat Rapids dam was constructed by the Rhinelander Power Company in 1905 (Hillert and Davis 1983; Smith 1908). A picture of the dam taken sometime between 1905 and 1908 shows two structures in the survey area (Smith 1908). Both are on the west river bank in the area that is presently wooded. The structure furthest to the north is a small shed of plain construction. The southernmost structure is slightly larger and may have a gabled roof. In both cases details are difficult to discern due to the size of the print and the structures position in the foreground and on the edge of the photograph. Property ownership during this time has not been established. No remains of these structures were identified during the present survey.

No structures are shown on the 1910 plat of the dam vicinity. However, a 1938 air photo shows three structures: one along the river bank at the north end of the wood lot (structure 1a on figure 25); one in the center of the survey area (rectangular soil "trace on figure 25); and another inside the Loop Road at the north end of the survey area (possibly the large concrete pad on figure 25). The 1938 layout of the roads, tree lines, parking lot and other structures coincides with the existing layouts with the exception of Hat Rapids Road which was moved approximately 12 m (40 ft) south in 1982.

Jerome Hagen's family has owned the land south of Hat Rapids Road directly opposite the survey area since before the turn of the century. According to Mr. Hagen the structures immediately east of the survey area (structures 1b and 2 on figure 25) were once utilized as quarters for resident dam keepers. Structure 2 is in its original location but structure 1b was moved from an original river bank site to its present location sometime in the early 1950s. Mr. Hagen was uncertain when the two structures were first constructed. However, structures are not indicated on a 1925 plat map. At this time the land was owned by Forbes and Wilson. Mr. Hagen remembers both structures as being present in the 1920s. Consequently it is likely that structures were built between 1925 and 1938. If the structures were built during the 1920s,



1a: former location of dam keeper's house.

1b: existing location of dam keeper's house after relocation.

2: existing structure

Poured concrete pads with no standing super-structure.

Rectangular soil "trace" possibly of structure visible on 1938 air photo.

Archaeological deposits consisting of cobblestone wall fragments, a poured concrete foundation, and a small garbage dump.

Limits of the archaeological deposits

o Negative shovel probe

● Positive shovel probe

Figure 25: Shovel probe survey on WPSC property, Hat Rapids Dam

construction would pre-date acquisition of the dam and facilities by the Wisconsin Public Service Corporation (WPSC) in 1933.

In any case no standing structures are present on the land currently owned by WPSC. However, archaeological deposits are present and consist of three types of remains: (1) foundations; (2) trash dump; and (3) a diffuse scatter of artifacts associated with utilization and abandonment of the area. Abandonment would have consisted of demolition or removal of the structures and likely would have severely disturbed associated archaeological deposits. In fact, archaeological deposits in the area of the diffuse scatter are shallow and given the relatively intense use of the area during occupation and abandonment, are likely mixed. These deposits are not likely to yield significant information.

Similarly, it is likely that archaeological deposits located in proximity to foundation remnants are also disturbed. Archaeological remains in the trash dump appear to be relatively intact but have probably been subjected to looting by bottle and can collectors. It is unlikely that the archaeological remains associated with the Hat Rapids Dam site posses significant integrity to be eligible for listing on the National Register of Historic Places. If possible, we recommend that the planned pipeline alignment be designed to avoid archaeological deposits associated with the site.

Part V: Conclusions

SUMMARY AND CONCLUSIONS

Archival research indicates 15 previously reported archaeological sites and six burial sites are located within one mile of either side of the proposed WWDC. However, no reported site locations are coincident with or directly adjacent to the proposed right-of-way. Alteration of highway right-of-way is typically severe throughout the project area. A visual reconnaissance of the route suggests that the existing slope intercept is generally coincident with the limits of the existing highway right-of-way. An exception is the Venus Lake area at Monico within survey Segment 11, where right-of-way alteration is minimal west of USH 45, and a portion of the Mud Creek lowlands addressed within survey Segment 8.

Soils present beneath the fill along the majority of the WWDC route have low potential to harbor buried archaeological deposits because these soils are variously truncated, excessively wet, or located in areas well away from prominent water bodies. Moreover, previously conducted archaeological surveys of WWDC Segments A and F indicate that no archaeological deposits are present in these portions of the proposed route.

A total of 83% (31.93 mi) of the WWDC was eliminated from further consideration as a result of the Stage 1 geoarchaeological assessment. Areas that are cut as indicated by incongruities on the topographic maps and/or by cuts on the WisDOT highway construction plans constitute 19% (7.53 miles) of the length of the WWDC. Hydric soils, which are considered to be too wet for prehistoric human occupation constitute 16% (5.97 miles) of the length of the WWDC. Areas that were previously surveyed for archaeological sites constitute 30% (11.57 miles) of the WWDC. Areas designated as having low potential for archaeological deposits because they are not in close proximity to water bodies constitute 18% (6.86 miles) of the length of the WWDC. The remaining 17% (6.37 mi) of the WWDC route could not be eliminated on the basis of the archival data available and was subject to further investigation. Results of the Stage 1 geoarchaeological assessment are summarized in Table 23.

Stage 2 field investigations consisting of pedestrian reconnaissance and subsurface sampling suggest that the entire route of the WWDC is marked by a low potential to harbor archaeological deposits. No buried archaeological deposits were encountered during these field investigations and no buried soils likely to harbor buried archaeological deposits were noted.

TABLE 23
SUMMARY OF GEOARCHAEOLOGICAL ASSESSMENT CATEGORIES BY SEGMENT

	Segments								Totals
	A	B	C	D	E	F	G	H	
Length (miles)	3.36	4.56	4.84	5.24	6.22	8.21	4.23	1.64	**38.30**
Cut									
miles	0	0.85	2.34	1.11	1.64	0	1.59	0	**7.53**
% of corridor	0%	2%	6%	3%	4%	0%	4%	0%	**19%**
Hydric Soil									
miles	0	0.24	1.64	1.29	1.77	0	0.39	0.64	**5.97**
% of corridor	0%	1%	4%	3%	5%	0%	1%	2%	**16%**
Low Potential									
miles	0	0	0.55	2.84	2.2	0	0.67	0.6	**6.86**
% of corridor	0%	0%	1%	7%	6%	0%	2%	2%	**18%**
Previously Surveyed									
miles	3.36	0	0	0	0	8.21	0	0	**11.57**
% of corridor	9%	0%	0%	0%	0%	21%	0%	0%	**30%**
Fieldwork Required									
miles	0	3.47	0.31	0	0.61	0	1.58	0.4	**6.37**
% of corridor	0	9%	1%	0	2%	0%	4%	1%	**17%**

Archaeological deposits were recovered as a result of shovel probe sampling conducted below Hat Rapids Dam. The materials appear to be associated with the location of a former early 20th century dam keeper's residence. The residence has been moved from its original location to a nearby site. Shovel test data suggest that the original archaeological context has likely been disturbed by construction activities associated with moving the former residence and with construction of the existing Hat Rapids Road Bridge over the Wisconsin River.

RECOMMENDATIONS

Archaeological and geoarchaeological reconnaissance of the route of the proposed WWDC suggests that current planned project development will not adversely affect the cultural resource base of the project area. Consequently we recommend that construction be allowed to proceed as planned.

Nonetheless, we note that current conventional archaeological survey techniques are inadequate to determine the presence of all archaeological or paleontological deposits. In the event that archaeological or paleontological materials are encountered during the course of the project, all construction in the area of the discovery should be halted.

If archaeological or paleontological materials are encountered immediate consultation to insure compliance with (1) 36 CFR 800.11, The Regulations of the Advisory Council on Historic Preservation Governing the 106 Process; or (2) S. 44.40, *Wis. Stats,* may be obtained by contacting:

The Compliance Section
Historic Preservation Division
State Historical Society of Wisconsin
Phone #: 608-262-2970

If human remains are encountered immediate consultation to insure compliance with S. 157.70, *Wis. Stats* may be obtained by contacting:

The Burial Sites Preservation Office
Historic Preservation Division
State Historical Society of Wisconsin
Phone #: 800-342-7834

References Cited

Bleed, Peter

1968 USH 45, Monico to Three Lakes. Letter report on file at the State Historical Society of Wisconsin.

Boelter, Joseph M.

1993 *Soil Survey of Oneida County, Wisconsin*. USDA Soil Conservation Service.

Boszhardt, Robert F.

1991 Paleoindian Study Unit: Region 6, Western Wisconsin. *The Wisconsin Archeologist* 72(3-4):155-200.

Bruhy, M. E., Darron, S., Larimer, G., Teater, A. R. and Turck, T.

1987 *Cultural Resource Survey and Site Evaluations, Nicolet National Forest, 1986*. Cultural Resource Report Number 4, USDA Forest Service, Nicolet National Forest. Rhinelander, Wisconsin.

Buck, Dewey

1962 USH 8, Monico to Forest County Line. Letter report on file at the State Historical Society of Wisconsin.

Chamberlin, Thomas C.

1877 *Geology of Wisconsin—Survey of 1873-1877*. volumes I-V. Published under the direction of the Chief Geologist by the Commissioners of Public Printing, Madison.

Clayton , Lee, Attig, J. W., Mickelson, D. M., and Johnson, M. D.

1992 Glaciation of Wisconsin, Wisconsin Geological and Natural History Survey Educational Series 36, 4 p.

Collinson, J.D. and D.B. Thompson

1982 *Sedimentary Structures*. George Allen & Unwin, London.

Curtis, John T.

1959 The Vegetation of Wisconsin—An Ordination of Plant Communities. The University of Wisconsin Press. Madison.

Dudzik, Mark J.

1991 First People: The Paleoindian Tradition in Northwestern Wisconsin. *The Wisconsin Archeologist* 72(3-4):137-154.

Finley, Robert W.

1976 *Original Vegetation Cover of Wisconsin from U.S. General Land Office Notes (1:500,000 map).* North Central Forest Experiment Station. Forest Service U.S.D.A., St. Paul, MN.

Fitting, James E.

1970 *The Archaeology of Michigan.* Natural History Press,Garden City, New Jersey.

Folk, R.L.

1974 *Petrology of Sedimentary Rocks.* Hemphill Publishing Company, Austin, Texas.

Foth and Van Dyke

1995a *Environmental Impact Report-Crandon Project.* [80-02]93C049.

1995b EIR Supplement: Wisconsin River Wastewater Discharge Pipeline. In *Environmental Impact Report-Crandon Project, Vol. IIIa, Appendix 3-2..*

Fritzemeier, H. Charles

1974 USH 8, Lake George to Monico. Letter report on file at the State Historical Society of Wisconsin.

Green, William, James B. Stoltman and Alice B. Kehoe (editor)

1986 *Introduction to Wisconsin Archaeology.* The Wisconsin Archeological Society, 67(3-4).

Griffin, K. L. and Lehman, D. L.

1986 Final Report on a 1985 Cultural Resources Survey Nicolet National Forest, Wisconsin. *University of Wisconsin-Milwaukee Archaeological Research Laboratory Report of Investigations, No.* 82.

Hickerson, Harold

1970 *The Chippewa and their Neighbors: A Study in Ethnohistory.* Waveland Press Inc,Prospect Heights, IL.

Hillert, Mark and Paul David

1983 *100 Years, 1883 - 1983: A Century of Service / Wisconsin Public Service Corporation*. Wisconsin Public Service Corporation, Green Bay, Wisconsin.

Hole, Francis D.

1976 *Soils of Wisconsin.* Wisconsin Geological and Natural History Survey Bulletin 87. The University of Wisconsin Press, Madison.

Hole, F. D. and Germain C. E.

1994 Natural Divisions of Wisconsin, Wisconsin Department of Natural Resources, map scale 1:1,000,000, 2 sheets, map and legend.

Lovis, W. A.

1976 Quarter Sections and Forests: An Example of Probability Sampling in the Northeastern Woodlands. *American Antiquity* 41: 364-372.

Lusignan, Paul

1986 Logging and Lumber Milling. In *Cultural Resources Management in Wisconsn, Vol. 2,* edited by Barbara Wyatt, Historic Preservation Division, State Historical Society of Wisconsin, Madison.

Martin, Lawrence

1965 The Physical Geography of Wisconsin. Third Edition. University of Wisconsin Press, Madison.

Mason, Ronald J.

1963 Two Late Paleo-Indian Complexes in Wisconsin. *The Wisconsin Archeologist* 44(4):199-211.

1981 *Great Lakes Archaeology*. Academic Press,New York.

1986 The PaleoIndian Tradition. In: Introduction to Wisconsin Archaeology, edited by W. Green, J. Stoltman, and A. Kehoe. *The Wisconsin Archeologist* 67(3-4):181-206.

Mickelson, D. M., Nelson, A. R., and Stewart, M.

1974 Glacial Events in North-Central Wisconsin, in Mickelson, D. M. and Hole, F. D., Glacial Geology and Pedology in Central and Northeastern Wisconsin, AMQUA Field Trip #1, pp. 163-180.

Mickelson, D. M., Clayton, L., Baker, R. W., Mode, W. N., and Schneider, A. F.
1984 Pleistocene Stratigraphic Units of Wisconsin, Wisconsin Geological and Natural History Survey, Miscellaneous Paper 84-1.

Morey, G. B., Sims, P.K., Cannon, W. F., Mudrey, M. G., and Southwick, D. L.
1982 Geologic Map of the Lake Superior Region Minnesota, Wisconsin and Northern Michigan, Minnesota Geological Survey, Scale 1:1,000,000

Nepton, Carol N.
1992 Archaeological Investigation during Construction of Highway 55 through the Sokaogon Chippewa Indian Reservation, Mole Lake, Forest County, Wisconsin. Sokaogon Chippewa Community, Mole Lake, Wisconsin.

Overstreet, David F.
1982 *Archaeological Inventory and Evaluation at Exxon Minerals Company, Crandon Project Site in Forest County and Langlade County, Wisconsin* Addendum to Great Lakes Archaeological Research Center Inc. Reports of Investigations No. 107.

1983a *Archaeological Survey of the Proposed Crandon, Wisconsin Area Pipeline Corridor*. Great Lakes Archaeological Research Center, Reports of Investigations No. 134.

1983b *Archaeological Survey of the Proposed Crandon, Wisconsin Area Water Discharge Pipeline. June 1983 Addendum* to Great Lakes Archaeological Research Center Reports of Investigations No. 107 (CMC-NOI-9)

1991a Updated Paleoindian Study Unit for Region 7. *The Wisconsin Archeologist* 72(3-4):201-244.

1991b Paleoindian Study Unit: Region 9, Southeastern Wisconsin. *The Wisconsin Archeologist* 72(3-4): 265-366.

1993 McCauley, Astor, and Hanson – Candidates for the Provisional Dandy Phase. *The Wisconsin Archeologist* 74(1–4): 120-196.

Overstreet, David F. (Editor) (editor)
1992 *Archaeological Studies on the Southeastern Wisconsin Uplands*. Great Lakes Archaeological Press,Milwaukee, WI. Case Studies in Great Lakes Archaeology, No. 1

Overstreet, David F., and Linda A. Brazeau

1982 *Archaeological Inventory and Evaluation at Exxon Minerals Company, Crandon Project Site in Forest County and Langlade County, Wisconsin* Great Lakes Archaeological Research Center Inc. Reports of Investigations No. 107.

Overstreet, David F., Annette Nekola, and Andrew Ippolito

1983 *Identification and Evaluation of Logging Industry-Related Cultural Resources, Nicolet National Forest, Wisconsin-1983 Addendum.* Great Lakes Archaeological Research Center, Inc. Reports of Investigations No. 114. Milwaukee, Wisconsin.

Paull, Rachell Krebs, and Richard A. Paull

1977 Geology of Wisconsin and Upper Michigan—Including Parts of Adjacent States. Kendal/Hunt Publishing Company, Dubuque, IA.

Penman, John

1977a USH 8, 3 Borrow Pits. Letter report on file at the State Historical Society of Wisconsin.

1977b USH 8, Rhinelander Belt Line. Letter report on file at the State Historical Society of Wisconsin.

Porter, James

1959 USH 8, Monico to Forest County Line. Letter report on file at the State Historical Society of Wisconsin.

Richards, John D.

1994 *Overview: Cultural Resource Investigations for the Crandon Mining Company Crandon Project, Crandon, Wisconsin*. Great Lakes Archaeological Research Center, Inc., Reports of Investigations No. 360.

Richards, John D.

1995 *Crandon Project: Preliminary Reconnaissance and Literature Review of the Wisconsin River Wastewater Discharge Alternative, Forest and Oneida Counties, Wisconsin.* Great Lakes Archaeological Research Center, Inc. Technical Memo 95.009.

Richards, John D., and David F. Overstreet

1990 *Archaeological Reconnaissance of the Proposed Concord Generating Station and Related Natural Gas Main Facilities, Jefferson and Waukesha Counties, Wisconsin* Great Lakes Archaeological Research Center, Inc., Reports of Investigations No. 245.

Riggs, Rodney E.

1990a *Overview of Archaeological Cultures in State Historic Preservation Office's Region 2-Wisconsin.* Wisconsin Regional Archaeology Program, Region 2. Office of the State Archeologist, Division of Historic Preservation, State Historical Society of Wisconsin, Madison.

1990b *Overview of Archaeological Cultures in State Historic Preservation Office's Region 4-Wisconsin.* Wisconsin Regional Archaeology Program, Region 4. Office of the State Archeologist, Division of Historic Preservation, State Historical Society of Wisconsin, Madison.

Ryden, N. L., Goldstein, L. G., and Benchley, E. D.

1983 Final report on the Initial Phases of Predictive Model Development for Aboriginal Cultural Resources in the Chequamegon National Forest, Wisconsin. *University of Wisconsin-Milwaukee Archaeological Research Laboratory Report of Investigations, No.* 73.

Salzer, Robert J.

1969 *An Introduction to the Archaeology of Northern Wisconsin.* Unpublished Ph.D. dissertation, Southern Illinois University, Carbondale.

1974 The Wisconsin North Lakes Project: A Preliminary Report. In *Aspects of Upper Great Lakes Anthropology-Essays in Honor of Lloyd A. Wilford,* edited by Eldon Johnson,pp. 40-54. Publications of the Minnesota Historical Society, St. Paul.

Salzer, Robert J. and Robert Birmingham

1977 *An Archaeological Survey of Two Highway Projects in Oneida County, Wisconsin.* Beloit College.

Salzer, Robert J. and Robert Birmingham

1978 *Archaeological Research in the Potential Exxon Minerals Company USA Mining Area of Forest and Langlade Counties.* Anthropology, Beloit College, Beloit, WI.

Simpkins, W. W., McCartney, M. C., and Mickelson, D. M.

1987 Pleistocene Geology of Forest County, Wisconsin, Wisconsin Geological and Natural History Survey Information Circular 61, 21 p.

Smith, Leonard S.

1908 *The Water Powers of Wisconsin.* Wisconsin Geological and Natural History Survey, Bulletin No. XX, Economics Series No. 13, Madison, WI.

Stiles, Cynthia M.

1994 *Cultural Study Unit: The Historic Industry in State Region 2 and Nicolet National Forest* Nicolet National Forest State Region 2 Archaeology Center, USDA Forest Service, Rhinelander, WI. Reports of Investigations No. 3.

Stoltman, James B.

1981 *Report of Archaeological Survey along Hat Rapids Road South of Rhinelander in Oneida County, WI.* UW-Madison. Reports of Investigations No.

1991 A Reconsideration of Fluted Point Diversity in Wisconsin. *The Wisconsin Archeologist* 72(3-4):245-264.

Wedel, Mildred Mott

1981 The Ioway, Oto, and Omaha Indians in 1700. *Journal of the Iowa Archaeological Society* 28:1-13.

Wetlands Training Institute, Inc.

1995 *Field Guide for Wetland Delineation.* 1987 Corps of Engineers Manual. WTI 95-3.

Wittry, Warren L.

1963 The Bell Site, Wn 9: An Early Historic Fox Village. *The Wisconsin Archeologist* 44(1):1-58.

Wyatt, Barbara.

1986 *Cultural Resource Management in Wisconsin: Volume 2, A Manual for Historic Properties.* Historic Preservation Division, State Historical Society of Wisconsin,

Appendices

APPENDIX I

PROJECT CORRESPONDENCE

State Historical Society of Wisconsin

Division of Historic Preservation

816 State Street • Madison, Wisconsin 53706-1488
☎ (608) 264-6500 • FAX (608) 264-6404

July 18, 1995

Mr. Don Moe
Crandon Mining Company
7 North Brown Street, 3rd Floor
Rhinelander, Wisconsin 54501-3161

SHSW#: 82-0335
RE: Crandon Mining Company Mine Site

Dear Mr. Moe,

We have reviewed "Crandon Mining Company Environmental Impact Report" prepared by Foth & Van Dyke and "Crandon Project: Traditional Cultural Properties Investigations", prepared by Commonwealth Cultural Resources Group, Inc. We believe that there are a number of outstanding issues presented in the reports that relate to compliance with Section 106 of the National Historic Preservation Act and 36 CFR Part 800: Protection of Historic Properties, the regulations of the Advisory Council on Historic Preservation governing the Section 106 review process. The three most important issues we will discuss in this letter are: (1) defining an Area of Potential Effect; (2)developing an appropriate methodology for identifying Traditional Cultural Properties; and, (3)submitting the archeological reports for review and comment.

The Area of Potential Effect

We have been concerned about establishing an Area of Potential Effect (APE) for this project. We have had numerous telephone conversations with Sissel Johannesen at the Corps of Engineers regarding this issue. On July 6, 1995, Ms. Johannesen indicated that the area of potential effect would consist of a four mile radius around the water

draw down area and/or the ore body. She also stated that the Corps of Engineers would send a letter and a map that will clearly delimit the APE. In addition, we recommend that the waste water pipeline right of way be included in the APE.

It is difficult to identify historic properties and determine the effects that this undertaking may have on historic properties if the Area of Potential Effect is not clearly defined.

Traditional Cultural Properties

We have a number of suggestions to make regarding the "Crandon Project: Traditional Cultural Properties Investigations", prepared by Commonwealth Cultural Resources Group, that were not addressed as recommended in our letter dated February 21, 1995.

We believe that the research did not present an adequate summary of the available ethnographic data for the Potawatomi, Menominee, and Chippewa to identify Traditional Cultural Properties. A more detailed discussion and summary of each tribe is needed as it relates to settlement history, subsistence, religion, etc., before the actual fieldwork begins. A substantial body of background data is needed to determine what types of properties could potentially be identified, as well as the kinds of questions that could be asked during the interview process.

The research also lacked important information sources that would have been useful in identifying Euro-American Traditional Cultural Properties. For example, there was no mention of the "Cultural Resource Management in Wisconsin" by Barbara Wyatt or "Wisconsin: A Geography" by Ingolf Vogeler. The report makes very little mention of celebrations in the German American community. For example, there is a recent scholarly article which states that celebrations were one of the most important aspects of the creation and maintenance of a German-American identity.

The report did not document how many people were interviewed, who was interviewed or what questions were asked. The report needs to provide more complete information concerning the interview methodology.

As a result, we believe that there was not enough supporting information to determine that there are no Euro-American Traditional Cultural Properties within the area of potential effect for this undertaking. We recommend scheduling a meeting to discuss the methodology to be used to identify any Traditional Cultural Properties.

The report also states that the Mole Lake Sokaogon Chippewa Community and the Forest County Potawatami have not expressed an interest in participating in the Traditional Cultural Property Study. However, based on a telephone conversation with Sissel Johannesen (July 6, 1995), it is our understanding that the Mole Lake Sokaogon Chippewa Community are completing an independent Traditional Cultural Property inventory and will submit the results of this study for review.

Archeological Surveys and Project Documentation

We believe that it would be premature to comment on a Cultural Resource Management Plan (found in Appendix 3.2-1) submitted by Great Lakes Archaeological Research Center because there are too many unresolved issues relating to the identification and evaluation of any historic properties that may be located within the area of potential effect of this undertaking. For example, the survey to identify Traditional Cultural Properties and the archeological survey of the thirty seven mile pipeline right of way has not been completed to date. A Cultural Resource Management Plan should be included as part of the Memorandum of Agreement that will be developed between the U.S. Army Corps of Engineers, the Advisory Council on Historic Preservation, various other interested parties, and the State Historic Preservation Officer.

We believe that the project documentation in Volume III of the report, Appendix 3.2-1 is incomplete and misleading. The "Crandon Project: Traditional Cultural Properties Investigations" prepared by Commonwealth Cultural Resources Group, Inc. is not in the appendix and neither is our letter dated February 21, 1995, which contained comments regarding how the study should be modified and/or improved.

Appendix 3.2-1 is misleading. In the appendix, a copy of our August 18, 1994, letter is matched after each of the following reports: (1) "Overview: Cultural Resource Investigations for the Crandon Mining Company Crandon Project, Crandon, Wisconsin"; (2) "Crandon Project: Additional Archaeological Survey within the Plant Site and Tailings Management Area"; (3) "Summary Report of Phase II archaeological studies at the Keith's Siding site (47-Fr-147): a logging era railroad settlement in northern Wisconsin"; (4)"Cultural Resource Management Plan for the Crandon Mining Company Crandon Project, Crandon, Wisconsin"; (5) "Crandon Project: Archaeological Investigations at Nine Soil Test Pit Sites in Area E, A Proposed Infiltration Basin Facility".

The implications of this letter/report sequence is that we have reviewed and commented on each report. In fact, this is not the case. We have only reviewed and commented on "Overview: Cultural Resource Investigations for the Crandon Mining Company Crandon Project, Crandon, Wisconsin".

The above mentioned archeological survey reports(excluding "Overview: Cultural Resource Investigations for the Crandon Mining Company Crandon Project, Crandon, Wisconsin" and "Cultural Resource Management Plan for the Crandon Mining Company Crandon Project, Crandon, Wisconsin") do not conform to the "Wisconsin Archeological Survey Guidelines". All of these reports could be combined and written according WAS guidelines under a single cover and submitted to our office for review and comment.

Prior to receiving this document, we were unaware that the proposed undertaking included a thirty seven mile wastewater pipeline. Contrary to what was stated in Volume I of the report or Appendix 3.2-1, we did not approve any plan to complete an archeological survey for the pipeline. We recommend that you submit a survey proposal for the wastewater pipeline right of way to our office for review and comment. The results of the wastewater pipeline survey could also be included in the combined archeological survey report discussed in the previous paragraph.

Appendix 3.2-1 contains a Technical Memorandum regarding the Phase II evaluation of the Keith's Siding site (47-Fr-147). In a telephone conversation (July 19, 1995), John Richards

indicated that Great Lakes Archaeological Research Center has completed a comprehensive Phase II evaluation of 47-Fr-147. We recommend that you submit two copies of that report and a formal Determination of Eligibility (NPS 10-900 form) for 47-Fr-147 to our office for review and comment.

You may call me directly at (608) 264-6507 to schedule a meeting to discuss the research methodology to identify Traditional Cultural Properties and any other concerns that you may have.

Sincerely,

Sherman Banker
Compliance Archeologist

cc: David Ballman, COE
William Tans, DNR
John Richards, GLARC
Al Milham, Forest County Potawatomi
John Teller, Menominee Tribe
Arlyn Ackley, Sokaogon Chippewa Community
Robert Jaeger, BIA

State Historical Society of Wisconsin
Division of Historic Preservation
816 State Street • Madison, Wisconsin 53706-1488
☎ (608) 264-6500 • FAX (608) 264-6404

September 14, 1995

Mr. Don Moe
Crandon Mining Company
7 North Brown Street, 3rd Floor
Rhinelander, Wisconsin 54501-3161

SHSW#: 82-0335
RE: Crandon Mining Company Mine Site

Dear Mr. Moe,

We have reviewed "Great Lakes Archaeological Research Center Technical Memorandum, RE: Crandon Project: Reconnaissance and Literature Review of the Wisconsin River Wastewater Discharge Pipeline Corridor Alternative, Forest and Oneida Counties, Wisconsin", prepared by John Richards.

The report indicates that the proposed wastewater pipeline routes is approximately 38 miles in length. The literature search indicates that there are no known archeological sites or burials within the proposed route, although there are 15 archeological sites and six burial sites within one mile of the proposed project corridor.

The author indicates that the entire project route was subjected to a drive-by reconnaissance noting the topography, ground cover, and the degree of alteration of the existing highway right of way to assess the needs for an archeological survey of the proposed pipeline route. The author states that an archeological survey would be needed if: "(1) construction easements extending beyond the existing slope intercept, (2) staging areas for underground borings at road intersections and waterways located beyond the existing slope intercept, and (3) pipeline excavation which penetrates below the existing slope intercept deposits."

It is difficult to determine the depth of the slope intercept deposits prior to construction without subsurface

testing. As a result, these areas need to be tested prior to construction to determine if there are any buried soils below the slope intercept deposits. In addition, construction easement areas extending beyond the existing slope intercept need to be tested prior to construction to determine if the project area is disturbed. Given the difficulties just discussed, we believe that these areas should be subjected to subsurface testing and an archeological survey to determine if there are any historic properties that may be effected by this undertaking if there are intact soil horizons under the slope intercept or outside the slope intercept. Areas that have already been subjected to an archeological survey, obviously do not need to be surveyed again.

In addition please submit a U.S.G.S. 7.5' topographic map that clearly indicates the following information: (1) the project route, (2) areas subjected to previous archeological surveys, and (3) the location of all known archeological sites and burial sites within one mile of the proposed pipeline route.

We look forward to reviewing the archeological report when it becomes available. If you have any questions concerning these matters, please call me directly at (608) 264-6507.

Sincerely,

Sherman Banker
Compliance Archeologist

cc: David Ballman, COE
Sissel Johanneson
William Tans, DNR
John Richards, GLARC
Al Milham, Forest County Potawatomi
John Teller, Menominee Tribe
Arlyn Ackley, Sokaogon Chippewa Community
Robert Jaeger, BIA

Crandon Mining Company

7 N. BROWN ST., 3RD FLOOR
RHINELANDER, WI 54501-3161

January 25, 1996

Mr. Sherman Banker
Compliance Archaeologist
State Historical Society of Wisconsin
Division of Historic Preservation
816 State Street
Madison, WI 53706-1488

Dear Mr. Banker:

Re: Crandon Project - SHSW #82-0335

With this letter Crandon Mining Company (CMC) would like to comment on your July 18, 1995 letter offering comments on the Crandon Project *Environmental Impact Report* (EIR) prepared by Foth & Van Dyke and the "Crandon Project: Traditional Cultural Properties Investigation" (TCPI) prepared by Commonwealth Cultural Resources Group, Inc (CCRG). We have previously discussed the nature of your comments by phone and during our December 15, 1995 meeting. Our written comments, provided below, are organized in the order in which the topics appear in your letter.

The Area of Potential Effect

This topic was discussed at length with you and representatives of the U.S. Army Corps of Engineers (COE) on December 15, 1995. The conclusion of the discussion was that it would be appropriate to first complete the project's cultural resource inventory work, after which the final establishment of an Area of Potential Effect for the project would be discussed further.

Traditional Cultural Properties

As you know from recent correspondence and our meeting in Madison on December 15, 1995, Clyde Woods, Ph.D. of Woods Cultural Research, Inc. (WCRI) has been retained by CMC to complete the Crandon Project Native American traditional cultural properties studies. Based upon comments raised by you and representatives of the COE at the meeting, CMC has agreed to provide additional historical and cultural context for each of the study area tribes. This will be accomplished by completing a more extensive literature review to develop an ethnographic inventory of recorded Native American occupation and utilization of the study area from the beginning of the historic period in 1634 to the present. The additional historical and cultural context and the ethnographic inventory will provide a more comprehensive background to aid in the

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RHINELANDER BUSINESS OFFICE
7 N. BROWN ST., 3RD FLOOR
RHINELANDER, WI 54501-3161
TEL.: (715) 365-1450 FAX: (715) 365-1457

CRANDON FIELD OFFICE
P.O. BOX 336 104 W. MADISON
CRANDON, WI 54520-0336
TEL.: (715) 478-3393 FAX: (715) 478-3641

identification and documentation of potential TCPs. The expanded and revised Native American sections will be provided in an update to Section 3.2.2.1 of the project's EIR.

Also regarding Native American TCP work, we have also been informed by the COE that the Mole Lake Sokaogon Chippewa and the Forest County Potawatomi are or may be conducting their own TCP studies independent of the efforts taken by CMC. The methods and results of these studies will be reviewed and incorporated into the Crandon Project EIR, as appropriate, when and if they are received. Dr. Woods has offered his assistance to both tribes in conducting and reporting on these studies.

A summary of the Euro-American component of the Crandon Project TCP study was provided in Section 3.2.2 the EIR. The narrative also mentioned that a more detailed final report of the project's TCP inventory would be provided once the Native American component of the work was completed. It was CMC's intent to provide greater detail for both the Native American and Euro-American components at that time. Given the delay in completing the Native American work, CMC has requested that CCRG prepare the full technical report on the Euro-American component of the project's TCPI at this time, taking into account your comments regarding methods and sources for identifying Euro-American TCPs. In the theoretical and methodological chapter, CCRG will summarize the potential sources of ethnic expression that might be indicative of Euro-American TCPs including key institutions, architectural and land use patterns, documentary sources, and interviews with knowledgeable informants. Separate chapters on the environmental and the historical background of Forest County and the Crandon area will also be provided as a backdrop for the investigations. The discussion that follows gives a brief review of the methodology used in the Euro-American assessment. This information will be expanded upon in the update to Section 3.2.2 which will be ready for distribution in February.

Following Levine and Merlan's (1993) seminal work on non-Native American TCPs, the research effort for the Crandon Project Euro-American TCP component has focused on determining if traditional communities exist in the Crandon area. Determining the presence of definable ethnic communities was achieved by using a combination of the avenues of information outlined above. Census data for Forest County from 1890 to 1940 was analyzed with respect to immigration patterns and ethnic affiliation. Cartographic data was also sought that might shed light on ethnicity. To this end, land ownership was traced with a special emphasis on the project lands surrounding the proposed mine complex in Sections 19 and 20, and 28 through 33 of T35N, R13E, Sections 23 through 25 and 36 of T35N, R12E, and Sections 5 and 6 of T34N, R13E. Tax records were also examined for selected parcels. Secondary sources pertaining to Forest County history were consulted, including Davis' (1990) seminal work on Forest County in the 1920s. General works on historic ethnic settlement in Wisconsin such as Wyatt (1986) were also consulted.

A windshield survey to identify material expressions of ethnicity across the built environment was also undertaken. All areas accessible by road within a 4-mile diameter of the center of the ore body were surveyed. Because the built environment within the project area revealed little that could be construed as elements of ethnic expression, a pedestrian survey of the City of Crandon where a larger ethnic population resides was conducted to establish the nature of ethnic expression on a community-wide basis. In addition, four cemeteries including Lakeside (Crandon), Pine Hill (Armstrong Creek), Town of Crandon, and Town of Nashville were examined by means of pedestrian survey to ascertain the presence and nature of material ethnic expression in both the Crandon area and in an area where ethnic expression most strongly manifests itself in the vicinity of the project area (Armstrong Creek).

Finally, interviews were also conducted with knowledgeable community informants to ascertain the presence and coherence of ethnic communities and traditions in the area. The religious leadership of the churches in the community were interviewed. Based on their recommendations, local residents were identified who might provide additional information on ethnicity and TCPs.

Though defining the presence of living ethnic/traditional communities is but a first step in any TCPI, the evidence overwhelmingly demonstrates that, not only is a definable Euro-American ethnic community lacking in the project area, but no Euro-American ethnic community ever had an interest in the project related lands in the past. Census data revealed that the immigrant population in Nashville and Lincoln townships was always quite small and cartographic data indicate that settlement in the area was largely within the last 50 or so years. Consistent with the latter is the fact that the field views taken of the project area demonstrate a low level of settlement of any kind in the area. These data are corroborated by local residents, local historians and officials, and by previous academic research.

A further more detailed presentation of the collected Euro-American data and an interpretation of the results will be provided in the project's Euro-American TCP report which will be published in the near future. The report will document how many people were interviewed and the information obtained regarding ethnicity and ethnic groups in Forest County and the project area. Complete information concerning interview methodology will also be provided.

Archaeological Surveys and Project Documentation

The Crandon Project Cultural Resources Management Plan (CRMP) was developed as a result of a recommendation included in GLARC's overview of cultural resource studies in the Crandon Project area. Your office reviewed the GLARC report (S. Banker to D. Moe, August 18, 1994) and concurred with this recommendation.

The CRMP was prepared according the National Park Service guidelines that stress preservation planning as a major goal of any CRMP. Consequently, the Crandon Project CRMP provides guidelines for managing: 1) identified resources on Crandon Project lands; and 2) unidentified resources that may be encountered during project development or operation. In addition, the CRMP specifies a procedure requiring archaeological survey and SHPO review of any uninventoried Crandon Project land prior to development.

However, in your EIR review letter of July 18, 1995, you decline to formally review the CRMP on the grounds that "there are too many unresolved issues relating to the identification and evaluation of any historic properties" within the Crandon Project area. Your letter cites the ongoing TCP inventory and the wastewater discharge line corridor (WWDC) study as examples of unresolved issues. While results of these studies have yet to be finalized, strategies for dealing with the resource types associated with both are addressed in the CRMP.

Your comments imply that your office views the CRMP as a compendium of final results accompanied by resource specific recommendations. If so, this is at variance with the stated intent of the document. Rather, the Crandon CRMP is designed to function as a planning tool that will facilitate adequate, consistent management of any cultural resources (currently known or that may be identified in the future) that may be affected by project development.

Crandon Mining Company is committed to insuring that this important document is: 1) consistent with requirements of your office; and 2) adequately meets the tenets of modern preservation planning. Accordingly, it would be most helpful if your office provided additional clarification regarding the Crandon Project CRMP highlighting any remaining specific issues (other than the TCP inventory and the WWDC investigation) which you feel are not adequately noted in the current draft of the CRMP.

The purpose of the reference to Appendix 3.2-1 as contained in Section 3.2.2 of the EIR (Volume I) was to point out that the letter from your office requesting that CMC conduct a TCPI for the project was contained in that appendix. The reference to Appendix 3.2-1 was not intended to imply that other correspondence from your office or the "Crandon Project: Traditional Cultural Properties Investigation" report prepared by Commonwealth Cultural Resources Group, Inc. was contained in that location. We apologize if the reference was unclear.

As noted in your letter, several recent cultural resource studies conducted for the Crandon Project were submitted to your office in formats appropriate for the project's EIR. These studies were reported in a format that was designed to facilitate consistent presentation of results in Crandon Mining Company's 15,000 plus page EIR. However, we realize that different agencies have specific reporting requirements. Consequently, GLARC is

currently reformatting these studies to follow WAS reporting guidelines. I anticipate submittal of the revised documents by mid-February 1996.

It was not Crandon Mining Company's intent to imply that SHPO had reviewed GLARC's preliminary study of the proposed WWDC. The technical memorandum detailing GLARC's study was included in the EIR to provide background information to the various agencies responsible for reviewing the EIR. Subsequent to submittal of the EIR, CMC provided your office with a copy of GLARC's technical memorandum along with additional engineering information. As I noted at that time, the memorandum was intended to provide your office with information to facilitate recommendations regarding the necessary levels of investigation. Following receipt of your letter of September 14, 1995 and a recent conversation between you and John Richards, GLARC is preparing a formal proposal to address the questions related to cultural resources within the WWDC. A copy of this plan will be forwarded for your review and comment under separate cover.

The draft report of the Phase II investigations at the Keith's Siding site (Fr 147) is undergoing final revision and will be submitted for your review and comment in early February. The report format is consistent with current WAS reporting standards.

Thank you for your comments. If you have any questions regarding our reply, please contact me at (715) 365-1450.

Sincerely,

D. E. Moe

Don Moe
Technical/Permitting Manager
Crandon Mining Company

DEM:mld2

cc: Mr. Bill Tans, Wisconsin Department of Natural Resources
Mr. Archie Wilson, Wisconsin Department of Natural Resources
Mr. Larry Lynch, Wisconsin Department of Natural Resources
Mr. Richard Dexter, The State Historical Society of Wisconsin
Mr. David Ballman, U.S. Army Corps of Engineers
Mr. John Anfinson, U.S. Army Corps of Engineers
Mr. Dan Cozza, U.S. Environmental Protection Agency
Mr. Robert Jaeger, Bureau of Indian Affairs
Ms. Denise Homer, Bureau of Indian Affairs

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Mr. Philip Shopodock, Forest County Potawatomi
Mr. John Teller, Menominee Indian Tribe of Wisconsin
Mr. Arlyn Ackley, Sokaogon Chippewa Community
Mr. Andrew Morgan, Sokaogon Chippewa Community
Ms. M. Catherine Condon, Greene, Meyer & McElroy
Dr. John Richards, Great Lakes Archaeological Research Center
Mr. James Schlender, Great Lakes Indian Fish & Wildlife Commission
Dr. James Robertson, Commonwealth Cultural Resources Group, Inc.
Dr. Clyde Woods, Woods Cultural Research, Inc.
Mr. Jerry Sevick, Foth & Van Dyke

Crandon Mining Company

7 N. BROWN ST., 3RD FLOOR
RHINELANDER, WI 54501-3161

March 6, 1996

Mr. David L. Ballman
Ecologist
U.S. Army Corps of Engineers
St. Paul District
190 5th Street East
St. Paul, MN 55101

Dear Mr. Ballman:

Re: Crandon Project - SHSW 82-0335

On September 14, 1995, Crandon Mining Company (CMC) received a letter from the Wisconsin State Historic Preservation Office (SHPO) with review comments pertaining to the Crandon Project report titled *Reconnaissance and Literature Review of the Wisconsin River Wastewater Discharge Pipeline Corridor Alternative, Forest and Oneida Counties, Wisconsin*, prepared by Great Lakes Archaeological Research Center, Inc. (GLARC). As identified in the letter, the Wisconsin SHPO raised the following two concerns with regard to the route of the proposed wastewater discharge corridor (WWDC): 1) that intact archaeological materials may be present within the proposed construction easement beneath disturbed deposits such as slope intercepts, pavement remnants, and former and existing highway right of way; and 2) installation of the proposed pipeline may impact such archaeological deposits if present. Consequently, the September 14, 1995 letter recommended that the proposed route be subjected to further archaeological investigation. Based on our conversations with Ms. Sissel Johannessen of your office, we understand that the U.S. Army Corps of Engineers (USCOE) agrees with these concerns.

CMC shares the same concerns with regard to potential impacts that pipeline installation could have on the project area cultural resources, if present. However, I must stress that the alignment of the proposed WWDC has been deliberately restricted to previously disturbed areas in order to minimize further environmental disturbance associated with its installation. GLARC's report, based on a reconnaissance of the study corridor, characterizes much of the proposed route as "severely altered" by former ground disturbing activities. Nonetheless, the GLARC report notes that "portions of the project route are characterized by a generally elevated potential to harbor unreported archaeological sites."

However, CMC believes that it is neither feasible nor necessary to conduct a conventional archaeological survey along the entire route since major portions of the proposed WWDC can be demonstrated to have little potential to harbor archaeological sites. In lieu of a conventional archaeological survey we propose a program of investigation that includes:

RHINELANDER BUSINESS OFFICE
7 N. BROWN ST., 3RD FLOOR
RHINELANDER, WI 54501-3161
TEL.: (715) 365-1450 FAX: (715) 365-1457

CRANDON FIELD OFFICE
P.O. BOX 336 104 W. MADISON
CRANDON, WI 54520-0336
TEL.: (715) 478-3393 FAX: (715) 478-3641

1) initial geoarchaeological assessment of the WWDC route; 2) limited subsurface sampling where necessary; and 3) archaeological monitoring during pipeline installation. Each program component is discussed below.

Geoarchaeological Assessment

This study will be designed to identify those portions of the route that can be confidently determined to be areas of low potential to harbor archaeological deposits, and therefore require no additional evaluation. The study will rely on existing information such as USGS topographic maps, USDA soil charts, WDNR wetland delineations, and WisDOT and county highway design sheets and roadbed cross-sections. Results of this study will also serve to identify specific locales, if any, that may require additional field investigation.

Subsurface Sampling (Coring) of Areas With Elevated Potential

Areas which cannot be confidently asserted to exhibit little potential to harbor archaeological sites and those areas identified as locales potentially capable of containing archaeological deposits will be subjected to subsurface sampling. Sampling methods will include manual extraction of soil cores, hand excavation of soil test pits, and machine-aided extraction of solid soil cores. Field investigation will be designed to test for the presence of buried soils that may harbor archaeological deposits. If buried soils are encountered, the buried deposit will be assessed as to the soil's potential to support human occupation.

Monitoring During Construction

If warranted, ground disturbing activities associated with installation of the pipeline will be monitored during construction by a qualified archaeologist.

Concluding Comments

Based on conversations with Ms. Sissel Johannessen, we understand that the USCOE concurs with the program outlined above. In light of this, CMC has authorized GLARC to complete the geoarchaeological assessment.

The investigations described above will follow methodologies successfully employed in other compliance driven cultural resource investigations in Wisconsin (cf. SHSW 94-0142 and 95-0444). Results of the WWDC investigations will be compiled according to Wisconsin Archaeological Survey guidelines as a volume in Great Lakes Archaeological Research Center's series of technical reports. We are confident that implementation of these investigations will lead to identification and adequate safeguarding of project area cultural resources.

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If you have questions or require additional information please do not hesitate to contact me.

Sincerely,

D. E. Moe

Don Moe
Technical/Permitting Manager
Crandon Mining Company

DEM:mld2

cc: Mr. Bill Tans, Wisconsin Department of Natural Resources
Mr. Archie Wilson, Wisconsin Department of Natural Resources
Mr. Larry Lynch, Wisconsin Department of Natural Resources
Mr. Sherman Banker, The State Historical Society of Wisconsin
Mr. John Anfinson, U.S. Army Corps of Engineers
Ms. Sissel Johannessen, U.S. Army Corps of Engineers
Mr. Dan Cozza, U.S. Environmental Protection Agency
Mr. Robert Jaeger, Bureau of Indian Affairs
Ms. Denise Homer, Bureau of Indian Affairs
Mr. Philip Shopodock, Forest County Potawatomi
Mr. John Teller, Menominee Indian Tribe of Wisconsin
Mr. Arlyn Ackley, Sokaogon Chippewa Community
Mr. Andrew Morgan, Sokaogon Chippewa Community
Ms. M. Catherine Condon, Greene, Meyer & McElroy
Dr. John Richards, Great Lakes Archaeological Research Center
Mr. James Schlender, Great Lakes Indian Fish & Wildlife Commission
Dr. Clyde Woods, Woods Cultural Research, Inc.
Mr. Jerry Sevick, Foth & Van Dyke

APPENDIX II

PERMIT TO CONDUCT ARCHAEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO CONDUCT FIELD ARCHAEOLOGY UNDER S.44.47, WIS. STATS.

NAME Qualified Staff from Great lakes Archaeological Research Center,Inc [GLARC]

ADDRESS 1659 N. Jackson Street

Milwaukee (City) Wisconsin (State) 53202 (Zip Code)

Institutional Affiliation State Historical Society of WI Occupation Archaeologist

Type of Field Work Archaeological survey, testing, and data recovery associated with WisDOT Projects

Location of Intended Work WisDOT land throughout Wisconsin

(Name of Park, etc./County)

Landowner or Custodian Wisconsin Department of Transportation
(DOT/DNR, etc)

Fill in for Testing and/or Excavation Only

Name of Site_____

Section and 1/4 Section Occupied by Site_____

Town_____ Range_____

Who is to curate artifacts recovered, notes, records? GLARC
(Name of Institution)

Period of Field Work: From March 1, 1996 To December 31, 1996
(exact dates must be given for testing and/or excavation)

Use the back of this form for a brief statement of the purpose of field work. Letters of explanation may accompany this application when it seems advisable.

Approved_____
Robert Allen Birmingham
State Archaeologist
State Historical Society of Wisconsin

DO NOT WRITE BELOW THIS LINE

Permission of Landowner Carol D Cuthbert Date 3-4-96

_____
H. Nicholas Muller III, Director
State Historical Society of Wisconsin

CONDITIONS:

This permit does not cover removal of human remains under s.157.70 Wis. Stats.
HP-02-46 (5458a) 2990

APPENDIX III

ARCHIVAL SOURCES CONSULTED

Bernsteen, Robert T.

1969 *Atlas of the Eight Counties of Forest, Florence, Iron, Langlade, Lincoln, Oneida, Price, Vilas*. State Historical Society of Wisconsin, Archives Division Call Number: D/GX902/B53/1969.

Brown, Charles E.

1906 A Record of Wisconsin Antiquities. *The Wisconsin Archeologist* os 5(3-4): 289-429.

1908 Additions to the Record of Wisconsin Antiquities II. *The Wisconsin Archeologist* os 7(1): 1-33.

1909 Additions to the Record of Wisconsin Antiquities III. *The Wisconsin Archeologist* os 8(4): 113-138.

1912 Fourth Addition to the Record of Wisconsin Antiquities. *The Wisconsin Archeologist* os 10(4): 176

1925 Additions to the Record of Wisconsin Antiquities. *The Wisconsin Archeologist* ns 4(1): 9-143.

Papers - Archaeology - Forest and Oneida Counties. State Historical Society of Wisconsin, Archives Division, Call Number: WIS/Mss/HB

n.d. Atlas

Forest County Map Company

1900 *Map of Forest County, Wisconsin.* Published by the Forest County Map Company, Crandon, WI. State Historical Society of Wisconsin, Microforms Collections No. 92-1173.

Government Land Office

Federal Land Survey Plat Book, Township 35N surveyed 1857 by Alfred MillaRoad State Historical Society of Wisconsin, Archives Division Call Number: Series 698

Federal Land Survey Plat Book, Township 36N Surveyed in 1839 and 1859 by H. C. Fellows and Wm E. Daugherty. State Historical Society of Wisconsin, Archives Division Call Number: Series 698

Hixson Map Company

1924 *Plat Book of Forest County*. W.W. Hixson and Company, Rockford, IL.

1925? *Plat Book of Oneida County*. W.W. Hixson and Company, Rockford, IL.

McGinley, B.

1919 *Map of Forest County, Wisconsin, Map No. 2 Keith and Hiles Lumber Company*. B. McGinley, Crandon, WI. State Historical Society of Wisconsin, Archives Division Call Number: GX9028/F71/1919/M

Moody, F. B.

1910 *Field Plat Book of the Northern Highlands of Wisconsin*. Forest Management, Wisconsin Conservation Comm. State Historical Society of Wisconsin,, Archives Division Call Number: S/GZ902/1910.

Rand McNally

1896 *Map of Lincoln, Oneida, Villas and Parts of Iron, Price and Langlade Counties, Wisconsin*. Rand McNally & Co., Chicago. State Historical Society of Wisconsin, Archives Division Call Number: GX9028/L73/1896/R

Ritter, I. R.

1920 *Map of Forest County, Wisconsin*. I.R. Ritter, County Surveyor, Crandon, Wisconsin. State Historical Society of Wisconsin, Archives Division Call Number: GX9028/F71/1920/R

Rockford Map Publishers

1958 *Forest County Wisconsin Plat Book*. Rockford Map Publishers, Rockford, IL.

Shepard, E.S.

1908 *Map of Forest County, WI*. E.S. Shepard State Historical Society of Wisconsin, Archives Division Call Number: H/GX9028/F71/1908/S

Star Map Service

1947 *Plat Book of Oneida County, Wisconsin*. Star Map Service, Milwaukee. State Historical Society of Wisconsin, Archives Division Call No. B/G1418/O5/P58/1947.

Trygg, W. J.

nd *Composite Map of U.S. Land Surveyors Original Plat & Field Notes. Wisconsin Sheets*. State Historical Society of Wisconsin, Archives Division Call Number: H/GX89/T87/Folder 1.

Unknown

1890 *Plats of Ten Townships of Vilas, Forest and Oneida Counties, WI.* State Historical Society of Wiscosnin, Archives Division Call Number: H/GX9028/O5/1890.

1908 *Map of Oneida County, Wisconsin.* State Historical Society of Wisconsin, Archives Division Call Number: GX9028/O5/1908/O

Wisconsin State Planning Board

nd *Wisconsin Land Economic Inventory, Forest and Oneida Counties, Wisconsin. Box 2.* State Historical Society of Wisconsin, Archives Division Call Number: Series 1958, 1959.

APPENDIX IV

SOIL HORIZON NOMENCLATURE

Table 1-1
Soil Horizon Nomenclature

MASTER HORIZONS

O horizon Surface accumulation of mainly organic matter overlying mineral soil; may or may not be, or has been, saturated with water. Subdivided on the degree of decomposition of organic material as measured by the fiber content after the material is rubbed between the fingers:
Oi horizon Least decomposed organic materials; rubbed fiber content is greater than 40 percent by volume.
Oe horizon Intermediate degree of decomposition; rubbed fiber content is between 17 and 40 percent by volume.
Oa horizon Most decomposed; rubbed fiber content is less than 17 percent by volume.

A horizon Accumulation of humified organic matter mixed with mineral fraction; and the latter is dominant. Occurs at the surface or below an O horizon; Ap is used for those horizons disturbed by cultivation.

E horizon Usually underlies an O or A horizon, characterized by less organic matter and/or fewer sesquioxides (compounds of iron and aluminum) and/or less clay than the underlying horizon. Horizon is light colored due mainly to the color of the primary mineral grains because secondary coatings on the grains are absent; relative to the underlying horizon, color value will be higher or chroma lower.

B horizon Underlies an O, A, or E horizon, shows little or no evidence of the original sediment or rock structure. Several kinds of B horizons are recognized, some based on the kinds of materials illuviated into them, others on residual concentrations of materials. Subdivisions are:
Bh horizon Illuvial accumulation of amorphous organic matter-sesquioxide* complexes that either coat grains, form pellets, or form sufficient coatings and pore fillings to cement the horizon.
Bhs horizon Illuvial accumulation of both organic matter and sesquioxides as organic matter-sesquioxide complexes; both value and chroma are approximately three or less.
Bk horizon Illuvial accumulation of alkaline earth carbonates, mainly calcium carbonate; the properties do not meet those for the K horizon.
Bo horizon Residual concentration of sesquioxides, the more soluble materials having been removed.
Bq horizon Accumulation of secondary silica.
Bs horizon Illuvial accumulation of amorphous organic matter-sesquioxide complexes; both color value and chroma are greater than three.
Bt horizon Accumulation of silicate clay that has either formed *in situ* or is illuvial; hence it will have more clay than the assumed parent material and/or the overlying horizon. Illuvial clay can be recognized as grain coatings; bridges between grains; coatings on ped surfaces or in pores; or thin, single or multiple near-horizontal discrete accumulation layers of pedogenic origin (clay bands or lamellae). In places, subsequent pedogenesis can destroy evidence of illuviation.
Bw horizon Development of color (redder hue or higher chroma relative to C) or structure with little or no apparent illuvial accumulation of material.
By horizon Accumulation of gypsum.
Bz horizon Accumulation of salts more soluble than gypsum.

K horizon A subsurface horizon so impregnated with carbonate that its morphology is determined by the carbonate.[24] Authigenic carbonate coats or engulfs all primary grains in a continuous medium to make up 50 percent or more by volume of the horizon. The uppermost part of a strongly developed horizon commonly is laminated. The cemented horizon corresponds to some caliches and calcretes.

C horizon A subsurface horizon, excluding R, like or unlike material from which the soil formed or is presumed to have formed. Lacks properties of A and B horizons, but includes materials in various stages of weathering.
Cox and Cu horizons In many unconsolidated Quaternary deposits, the C horizon consists of oxidized C overlying seemingly unweathered C. The oxidized C does not meet the requirements of the Bw horizon. In stratigraphic work, it is important to differentiate between these two kinds of C horizons. It is suggested the Cox be used for oxidized C horizons and Cu for unweathered C horizons. Cn has been used for unweathered horizons, but n now has another meaning. Cu is taken from the nomenclature of England and Wales.[25]
Cr horizon In soils formed on bedrock, there commonly will be a zone of weathered rock between the soil and the underlying rock. If it can be shown that the weathered rock has formed in place, and has not been transported, it is designated Cr. Such material is the saprolite of geologists; *in situ* formation is demonstrated by preservation of the original rock features, such as grain-to-grain textures, layering, or dikes. If such material has been moved, however, the original structural features of the rock are lost, and the transported material may be the C horizon for the overlying soil.

R horizon Consolidated bedrock underlying soil. It is not unusual for this and the Cr horizon to have illuvial clay in cracks; the latter would be designated Crt.

SELECTED SUBORDINATE DEPARTURES

Lower-case letters follow the master horizon designation. Those that are mainly specific to a particular master horizon are given above. Some can be found in a variety of horizons; they are listed below:

- b Buried soil horizon. May be deeply buried and not affected by subsequent pedogenesis; if shallow, they can be part of a younger soil profile.
- c Concretions or nodules cemented by iron, aluminum, manganese, or titanium.
- f Horizon cemented by permanent ice. Seasonally frozen horizons are not included, nor is dry permafrost material, that is, material that lacks ice but is colder than 0°C.
- g Horizon in which gleying is a dominant process, that is, either iron has been removed during soil formation or saturation with stagnant water has preserved a reduced state. Common to these soils are neutral colors, with or without mottling. Strong gleying is indicated by chromas of one or less, and hues bluer than 10Y. Bg is used for horizon with pedogenic features in addition to gleying; however, if gleying is the only pedogenic feature, it is designated Cg.
- j Used in combination with other horizon designation (Btj, Ej) to denote incipient development of that particular feature or property.[41]
- k Accumulation of alkaline earth carbonates, commonly $CaCO_3$.
- m Horizon that is more than 90 percent cemented. Denote the cementing material (km, carbonate; qm, silica; kqm, carbonate and silica; etc.).
- n Accumulation of exchangeable sodium.
- v Horizon characterized by iron-rich, humus-poor, reddish material that hardens irreversibly when dried. Called plinthite in *Soil Taxonomy*.[38]
- x Subsurface horizon characterized by a bulk density greater than that of the overlying soil, hard to very hard consistence, brittleness, and seemingly cemented when dry (fragipan character).
- y Accumulation of gypsum.
- z Accumulation of salts more soluble than gypsum (for example, NaCl).

*Compounds of iron and aluminum.
(Modified from Guthrie and Witty[24] and 1981 unpublished manuscript of revised U.S. Dept. Agri. Soil Survey Manual.)

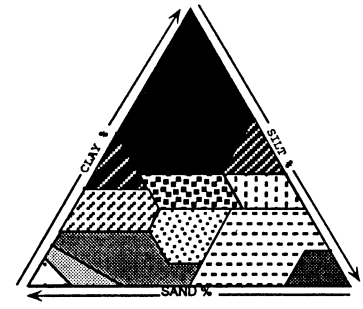
3.2-15-160

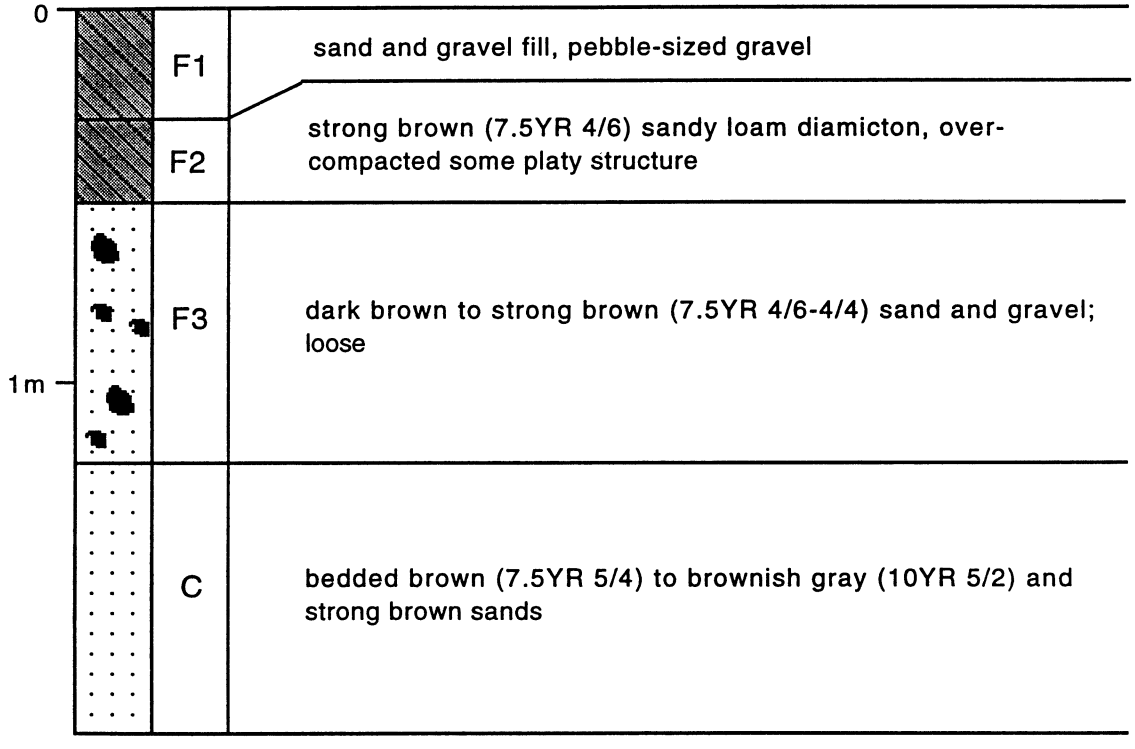
APPENDIX V

SOIL BORINGS

Soil Boring 1
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment H1a

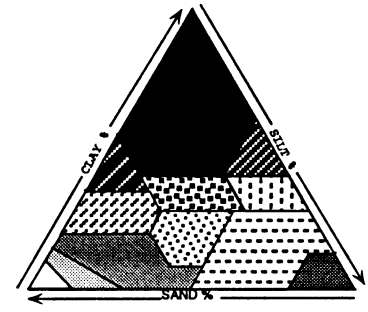
County: Onieda **Township:** Cresent
Section: 34 **T and R:** T36N, R8E
1/4 1/4: NW, NE **Quad:** Lake Julia
Location: 109 m east of east edge of bridge over the Wisconsin River along the south edge of the pavement, Hat Rapids Road





Soil Boring 2
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment H1a

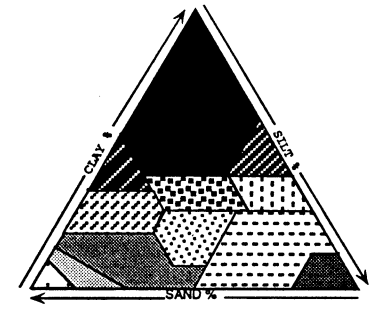
County: Onieda **Township:** Cresent
Section: 34 **T and R:** T36N, R8E
1/4 1/4: NW, NE **Quad:** Lake Julia
Location: Hat Rapids Road along the south edge of the pavement 61 m east of east edge of bridge over the Wisconsin River

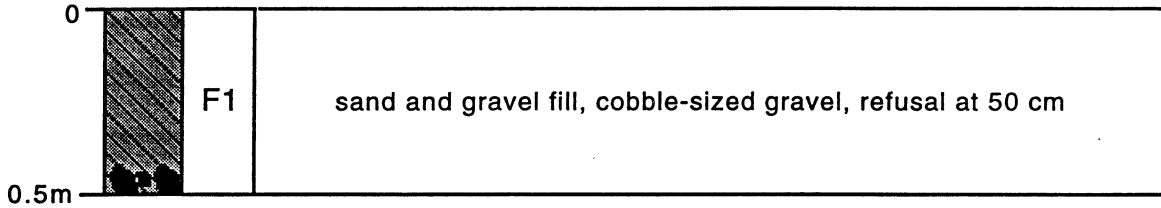


	F1	sand and gravel fill, pebble-sized gravel
	F2	strong brown (7.5YR 4/6) sand
	F3	brown (7.5YR 4/4) dirty gravel, some blocky structure

Soil Boring 3
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment H1a

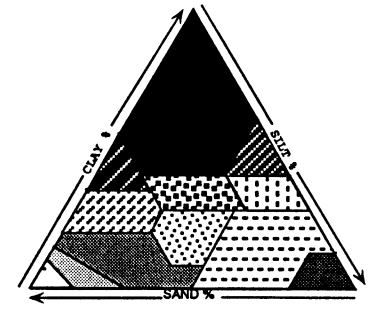
County: Onieda **Township:** Cresent
Section: 34 **T and R:** T36N, R8E
1/4 1/4: NW, NE **Quad:** Lake Julia
Location: 34 m east of east edge of bridge over the Wisconsin River along the south edge of the pavement, Hat Rapids Road





Soil Boring 4
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment H1e

County: Onieda **Township:** Cresent
Section: 34 **T and R:** T36N, R8E
1/4 1/4: NW, NE **Quad:** Lake Julia
Location: Hat Rapids Road along the south edge of the pavement



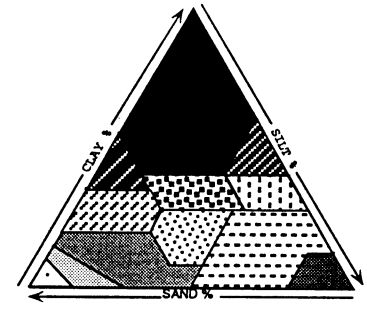
0

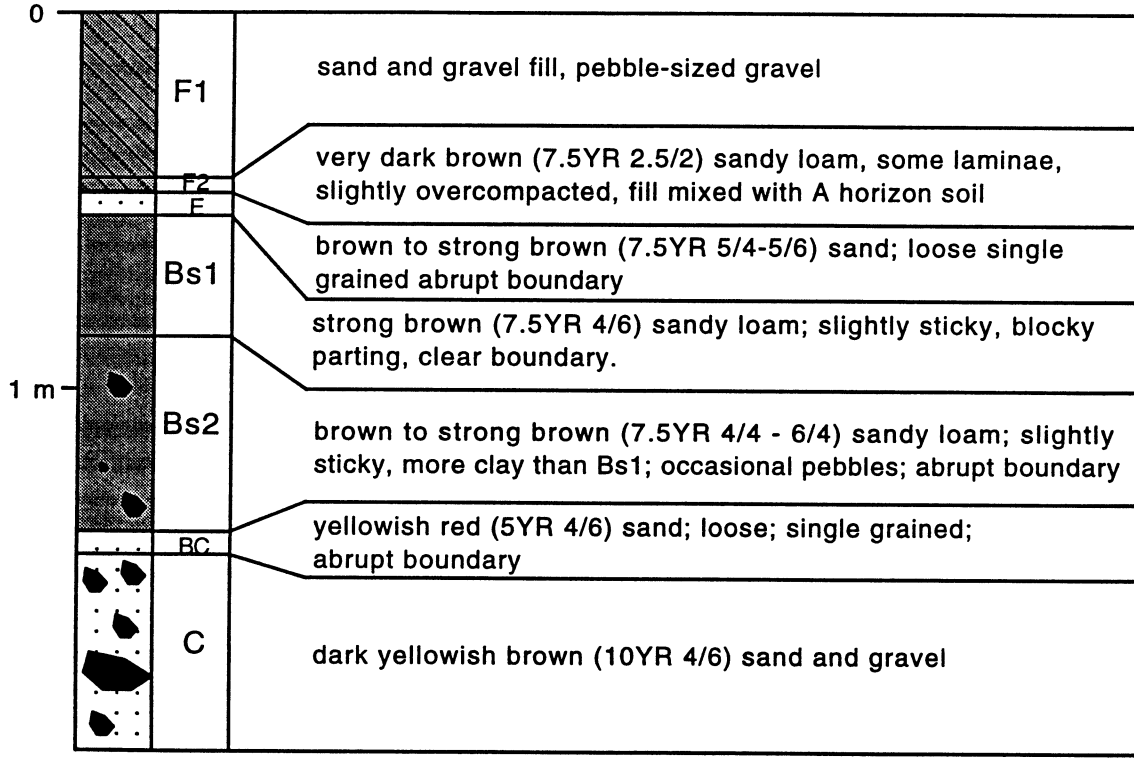
F1	sand and gravel fill, pebble-sized gravel
F2	brown (7.5YR 4/4) and strong brown (7.5YR 4/6) sand, varigated
Bs	strong brown (7.5YR 4/6) sand occasional pebbles

1 m

Soil Boring 5
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment H1e

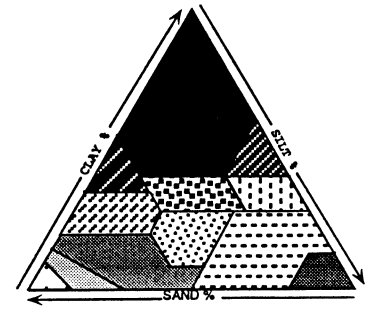
County: Onieda **Township:** Cresent
Section: 34 **T and R:** T36N, R8E
1/4 1/4: SW,NW **Quad:** Lake Julia
Location: Hat Rapids Road along the south edge of the pavement

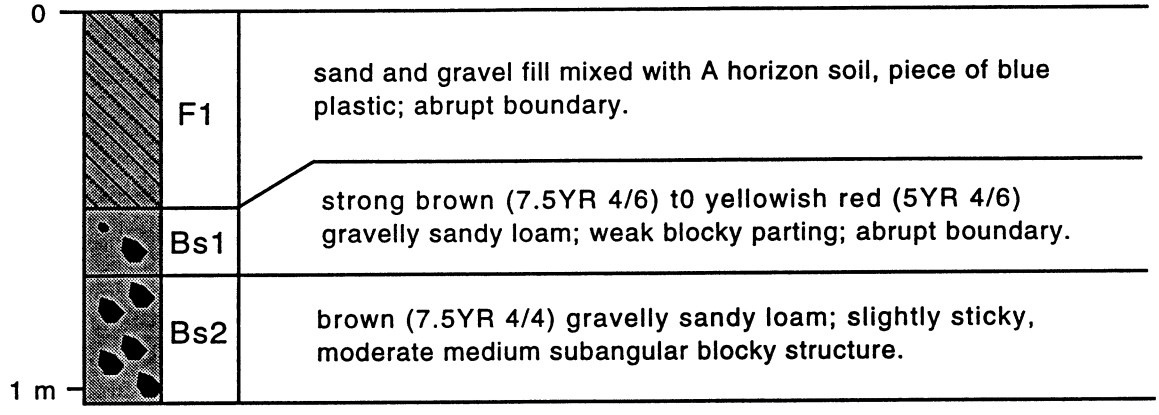




Soil Boring 6
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment H1e

County: Onieda **Township:** Cresent
Section: 34 **T and R:** T36N, R8E
1/4 1/4: NW, NE **Quad:** Lake Julia
Location: Hat Rapids Road along the south edge of the pavement





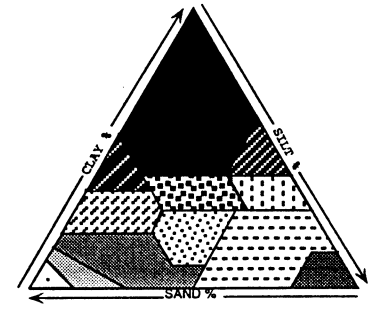
F1: sand and gravel fill mixed with A horizon soil, piece of blue plastic; abrupt boundary.

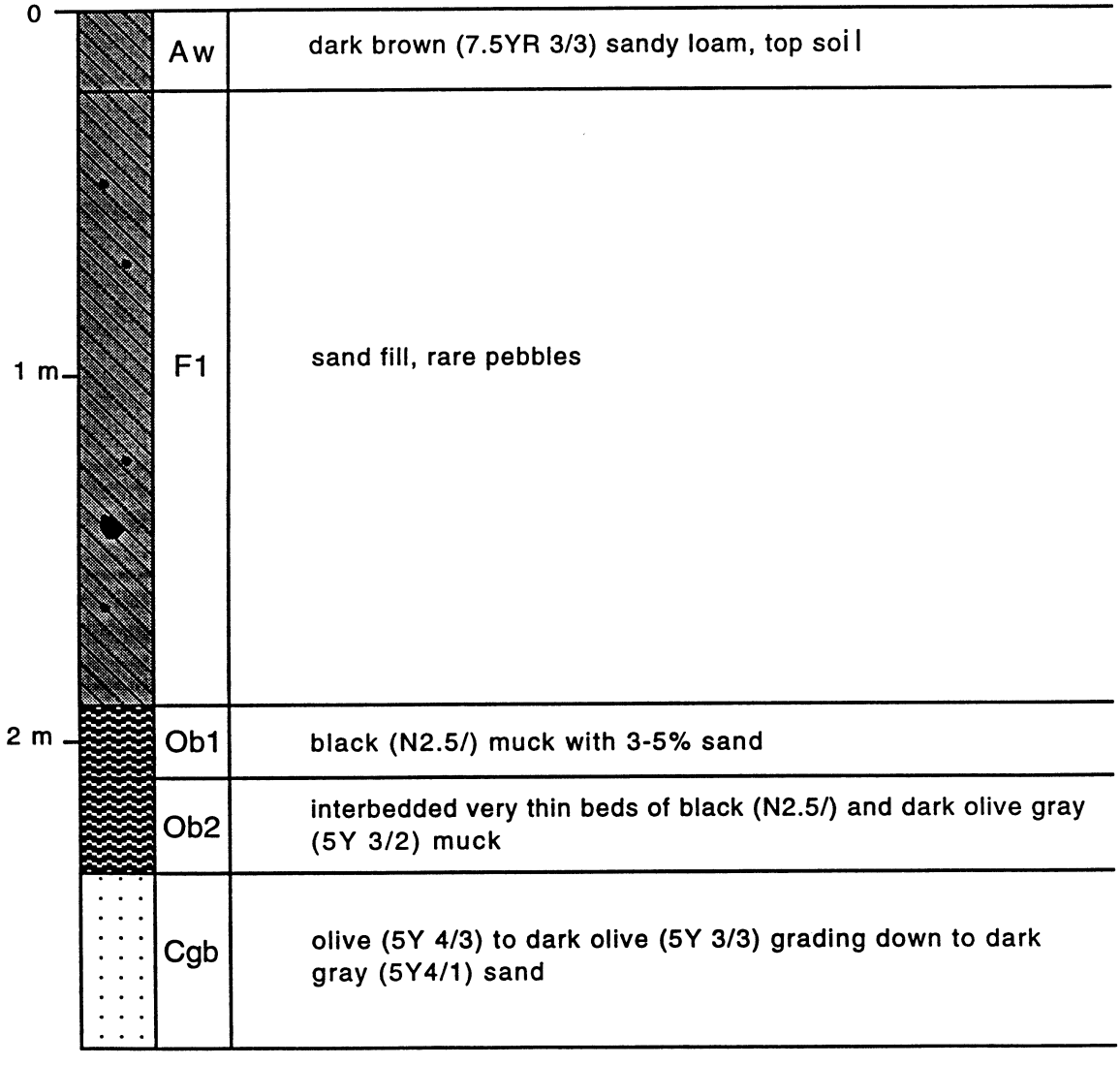
Bs1: strong brown (7.5YR 4/6) t0 yellowish red (5YR 4/6) gravelly sandy loam; weak blocky parting; abrupt boundary.

Bs2: brown (7.5YR 4/4) gravelly sandy loam; slightly sticky, moderate medium subangular blocky structure.

Soil Boring 7
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment G4d

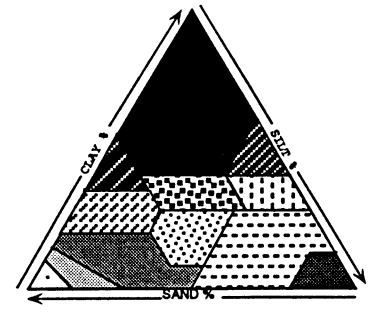
County: Onieda **Township:** Cresent
Section: 13 **T and R:** T36N, R8E
1/4 1/4: SW,NW **Quad:** Lake Julia
Location: west side of STH 17, 7.9 m (26 ft) from the edge of the pavement

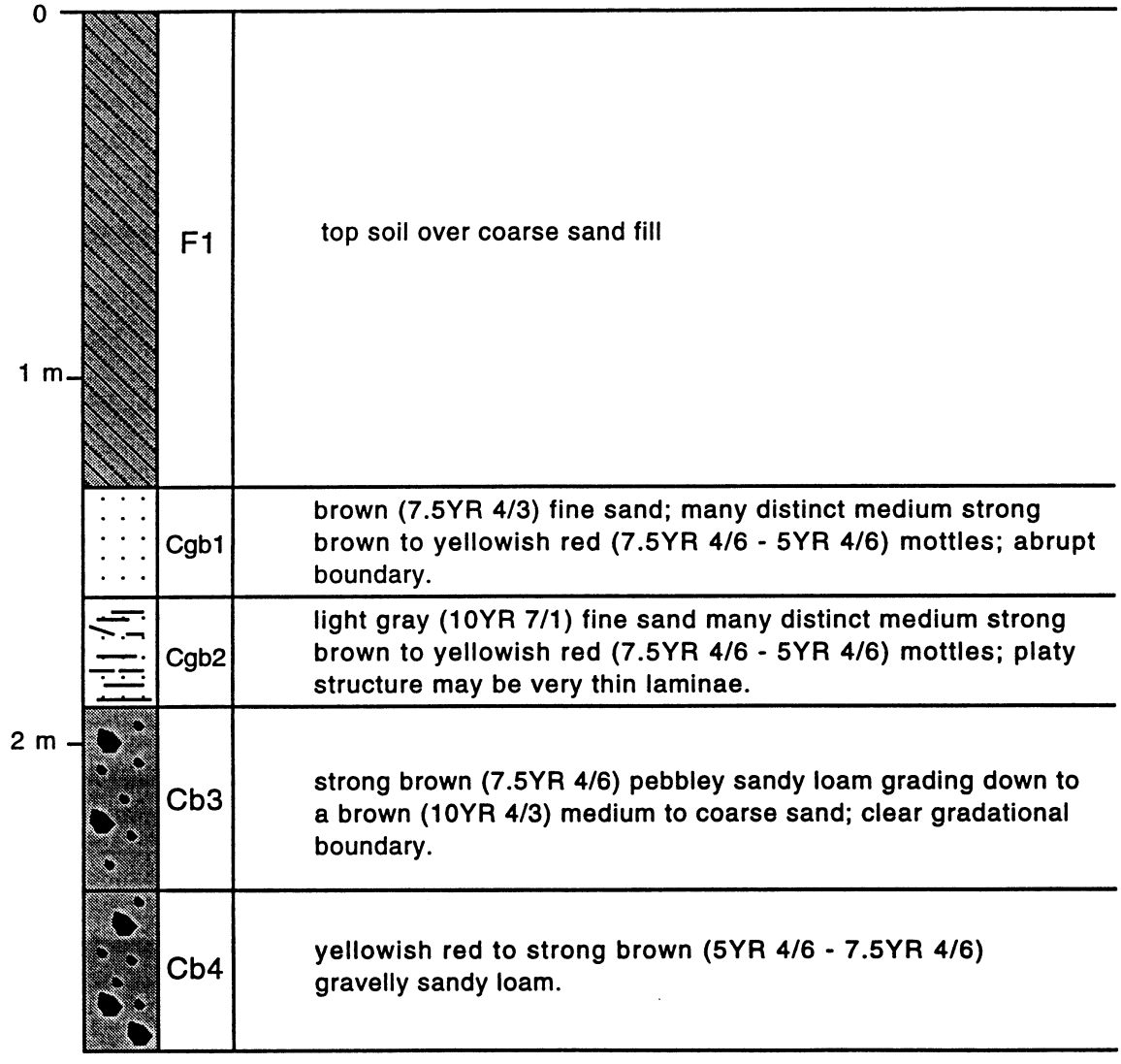




Soil Boring 8
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment G4d

County: Onieda **Township:** Cresent
Section: 13 **T and R:** T36N, R8E
1/4 1/4: SW,NW **Quad:** Lake Julia
Location: west side of STH 17, 7.9 m (26 ft) from the edge of the pavement

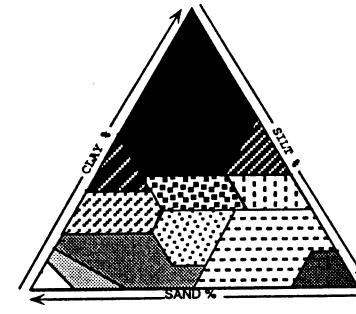




F1	top soil over coarse sand fill
Cgb1	brown (7.5YR 4/3) fine sand; many distinct medium strong brown to yellowish red (7.5YR 4/6 - 5YR 4/6) mottles; abrupt boundary.
Cgb2	light gray (10YR 7/1) fine sand many distinct medium strong brown to yellowish red (7.5YR 4/6 - 5YR 4/6) mottles; platy structure may be very thin laminae.
Cb3	strong brown (7.5YR 4/6) pebbley sandy loam grading down to a brown (10YR 4/3) medium to coarse sand; clear gradational boundary.
Cb4	yellowish red to strong brown (5YR 4/6 - 7.5YR 4/6) gravelly sandy loam.

Soil Boring 9
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment G4d

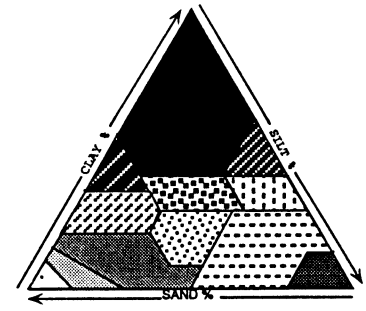
County: Onieda **Township:** Cresent
Section: 13 **T and R:** T36N, R8E
1/4 1/4: SW,NW **Quad:** Lake Julia
Location: west side of STH 17, 7.9 m (26 ft) from the edge of the pavement

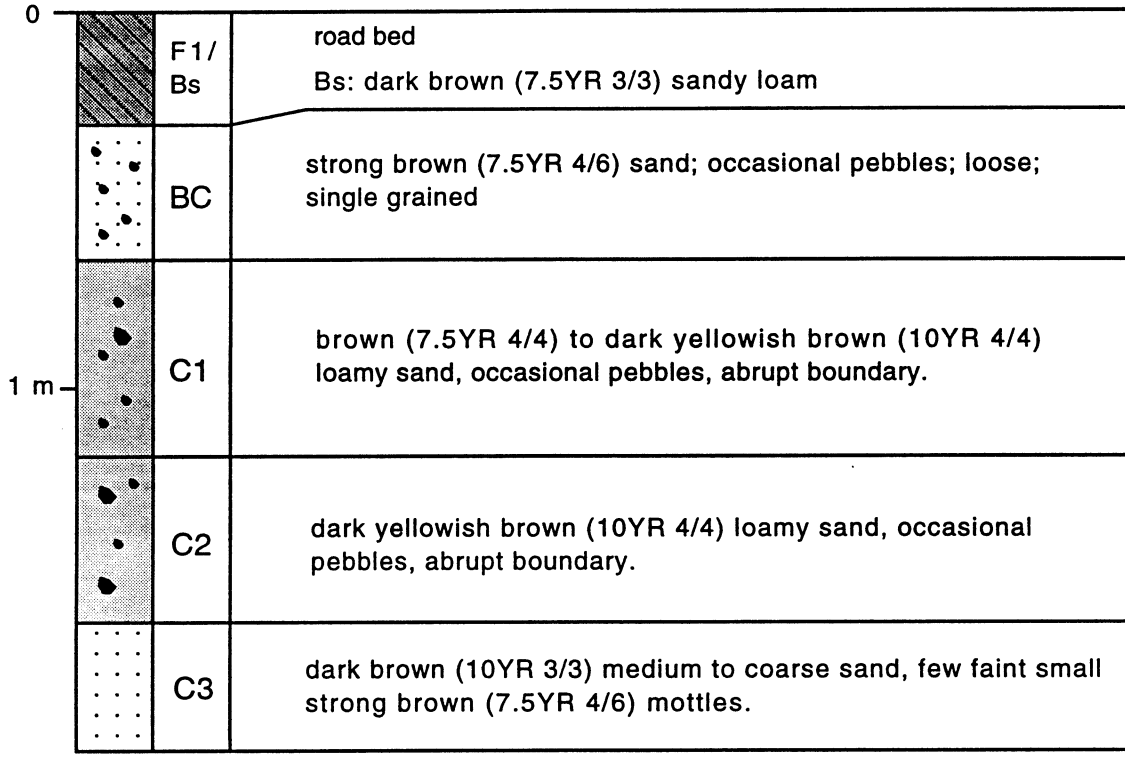


F1	top soil over coarse sand fill
A/E	black (10YR 2/1) and light gray (10YR 6/1) sand; abrupt boundary
Bs	strong brown (7.5YR 4/6) sand; weak blocky parting; clear boundary.
C1	dark brown (7.5YR 4/4) fine sand; many common, distinct strong brown (7.5YR 4/6) mottles; abrupt boundary.
C2	brown (7.5YR 5/2) fine sandy silt; many large prominant strong brown (7.5YR 4/6) mottles

Soil Boring 10
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

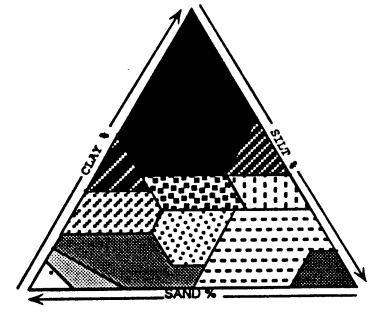
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW & SE,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 123 m west of the snowmobile bridge over Wolf River.

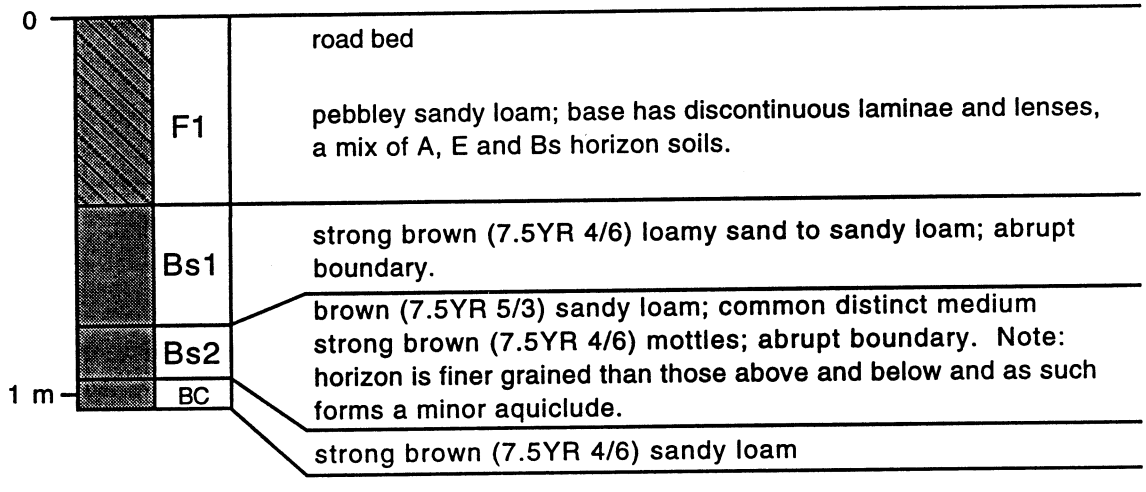




Soil Boring 11
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

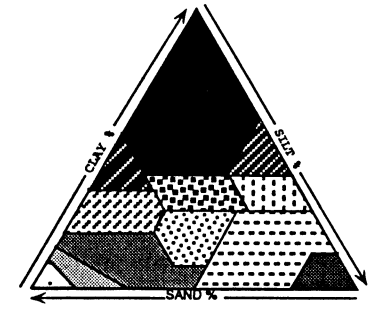
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SE,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 143 m west of the snowmobile bridge over Wolf River.

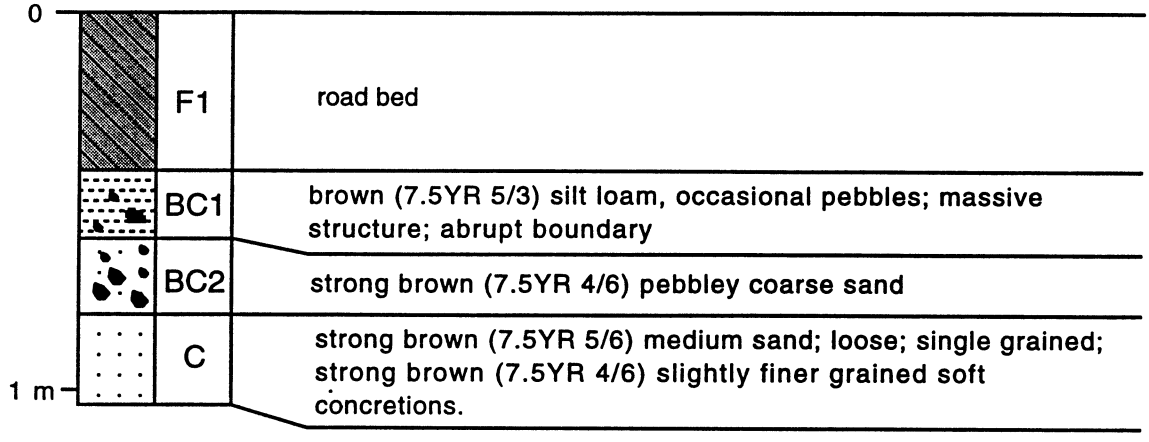




Soil Boring 12
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

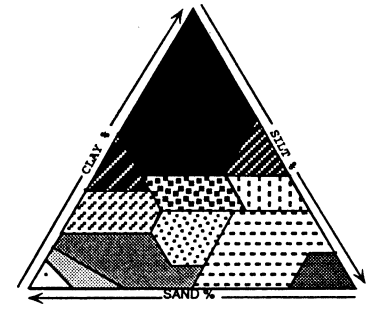
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SE,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 163 m west of the snowmobile bridge over Wolf River.

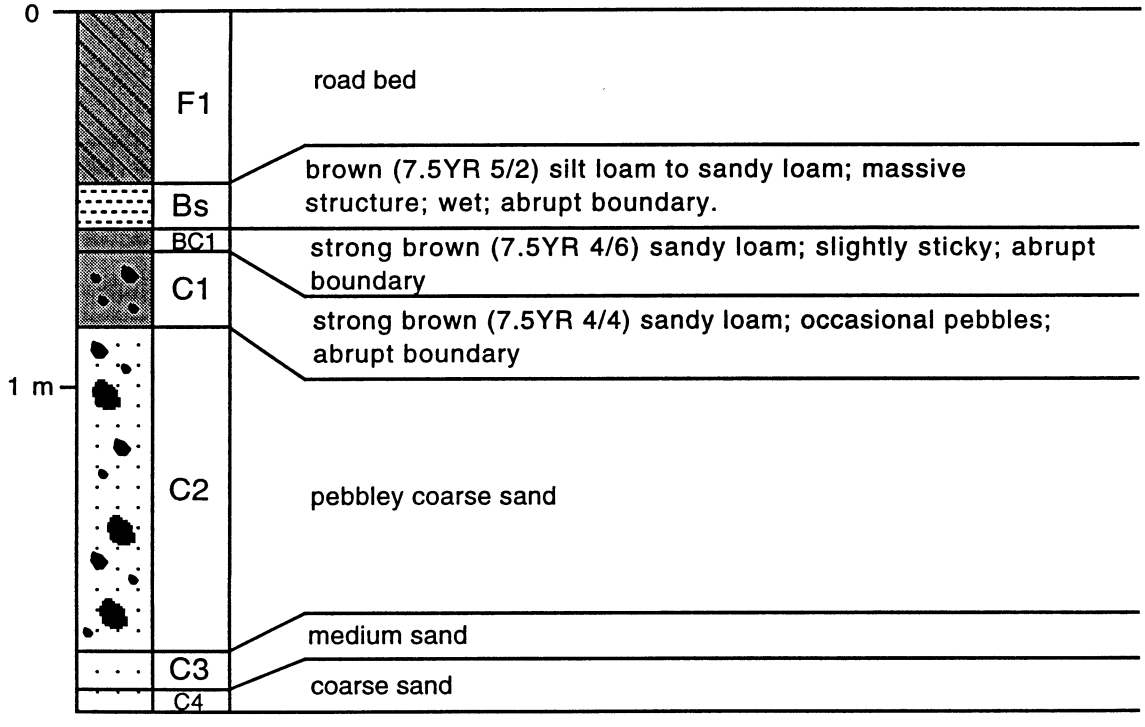




Soil Boring 13
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

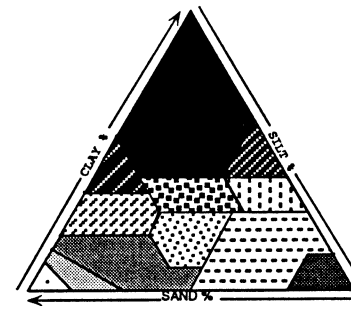
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 183 m west of the snowmobile bridge over Wolf River.





Soil Boring 14
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

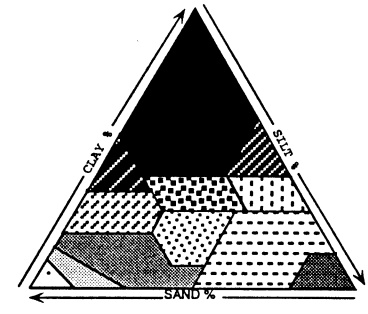
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 203 m west of the snowmobile bridge over Wolf River.

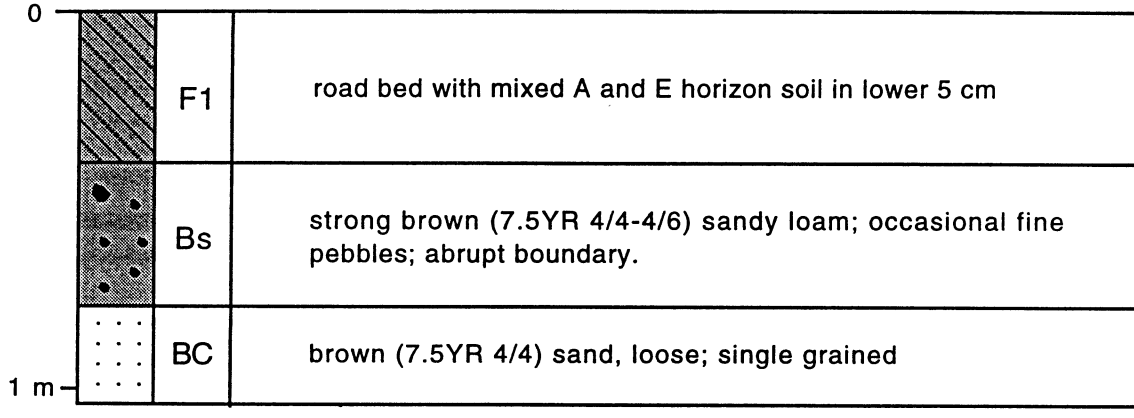


0	F1	road bed
	Bs	dark brown (7.5YR 4/3) sandy loam; weak medium subangular blocky structure; abrupt boundary
	BC	dark brown to strong brown (7.5YR 4/4-4/6) sandy loam; loose; single grained; abrupt boundary.
1 m	C	dark yellowish brown (10YR 4/4) coarse sand, occasional pebbles

Soil Boring 15
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

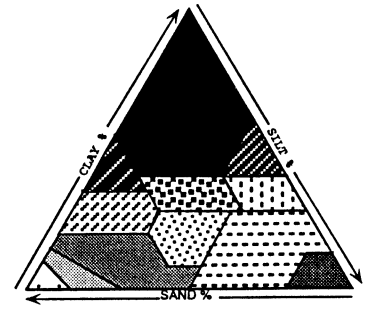
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 223 m west of the snowmobile bridge over Wolf River.





Soil Boring 16
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

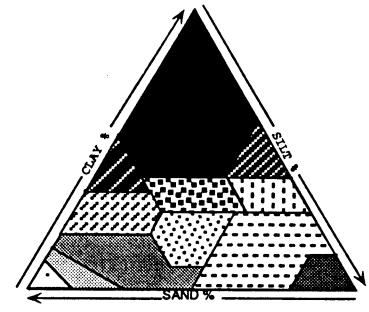
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 243 m west of the snowmobile bridge over Wolf River.

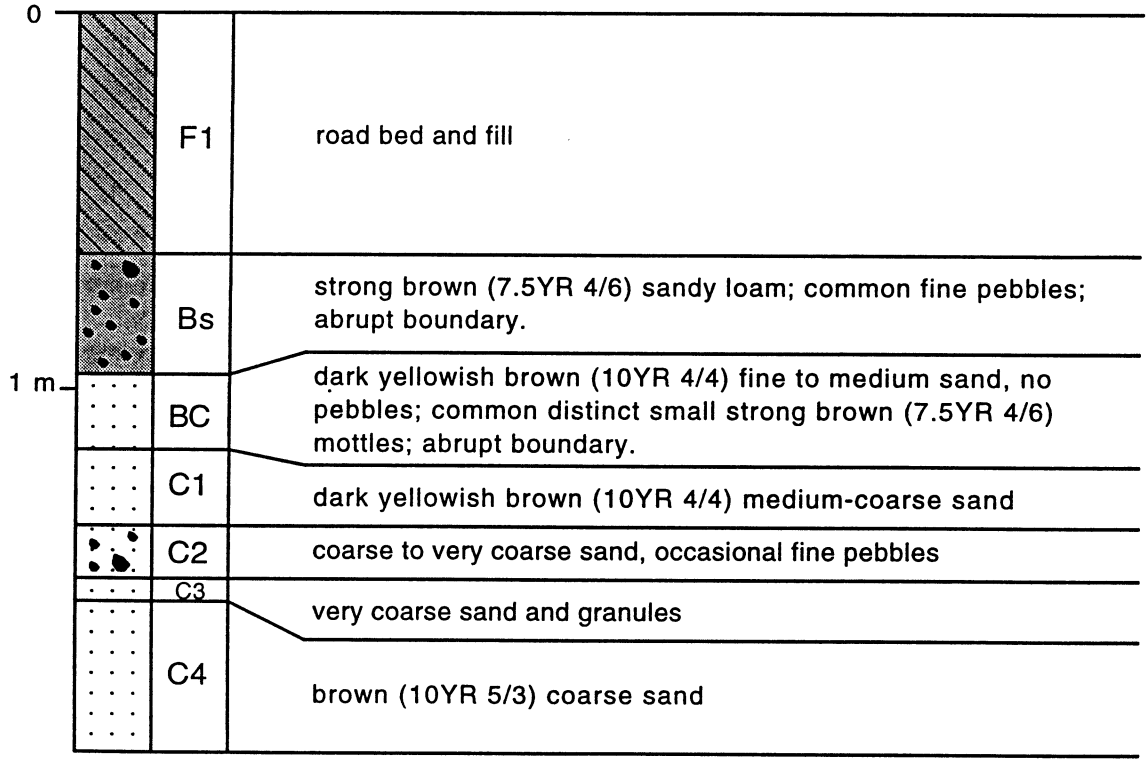


F1	road bed with mixed A horizon soil at base
Bs	dark brown (7.5YR 4/4) sandy loam; common fine pebbles; abrupt boundary.
BC	dark brown (7.5YR 4/3) coarse sand, loose; single grained

Soil Boring 17
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

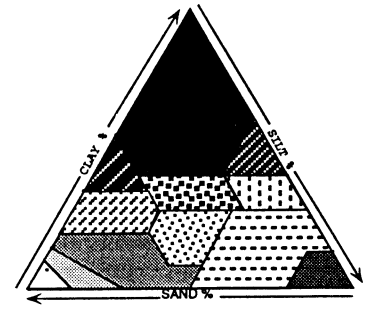
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 263 m west of the snowmobile bridge over Wolf River.

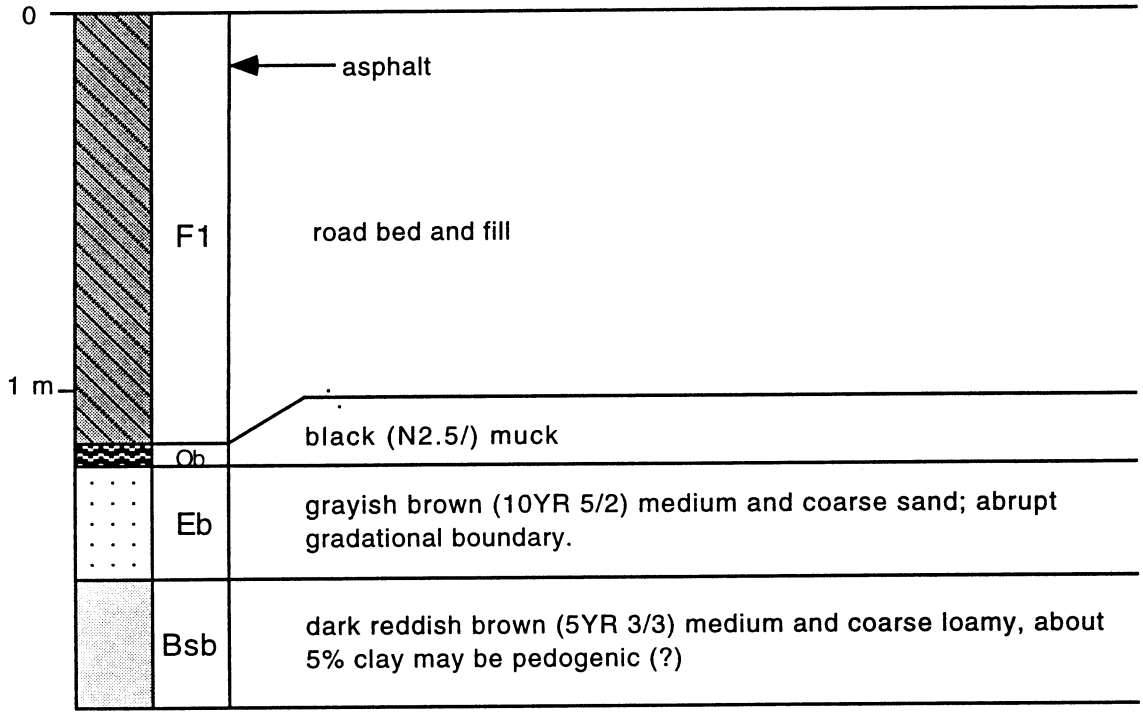




Soil Boring 18
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

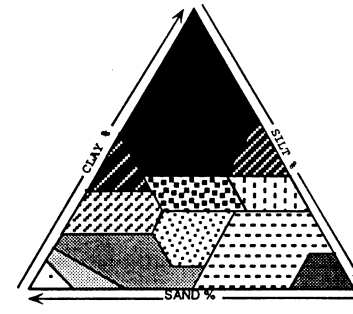
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 283 m west of the snowmobile bridge over Wolf River.

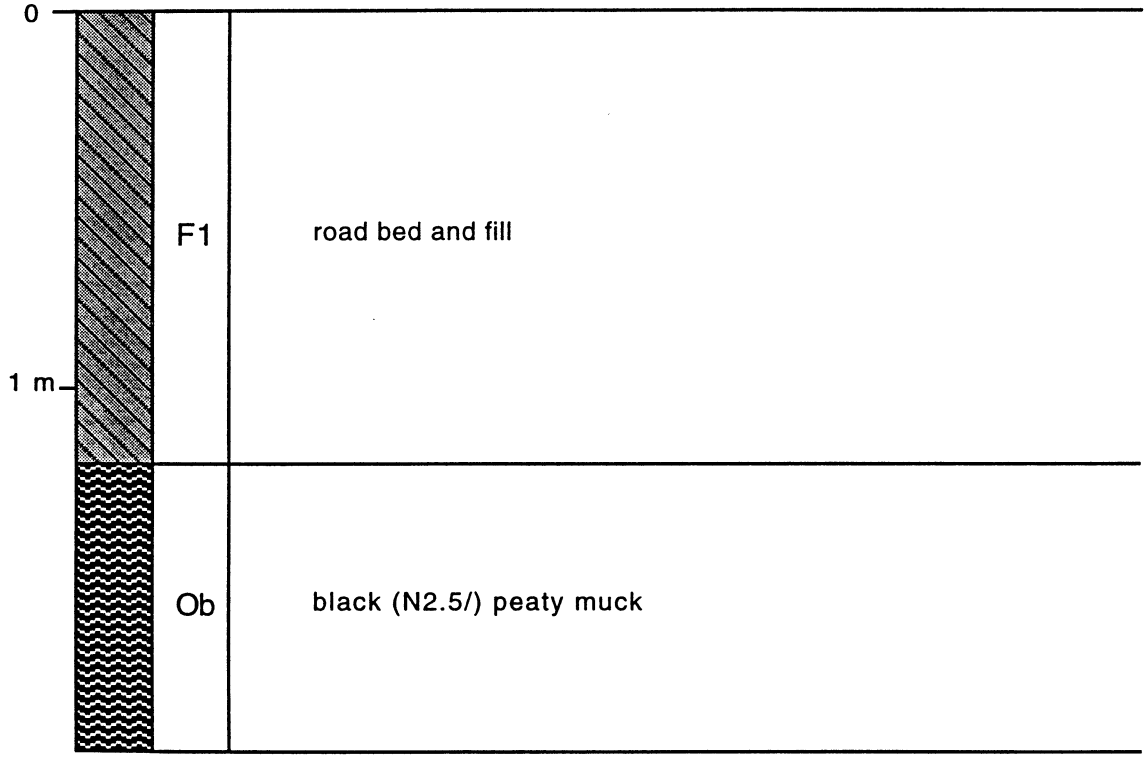




Soil Boring 19
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

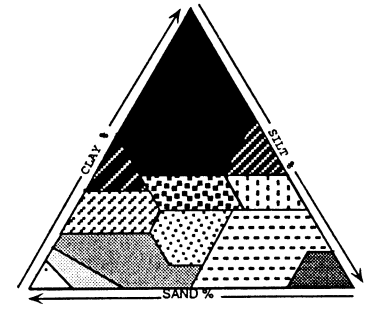
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 315 m west of the snowmobile bridge over Wolf River.

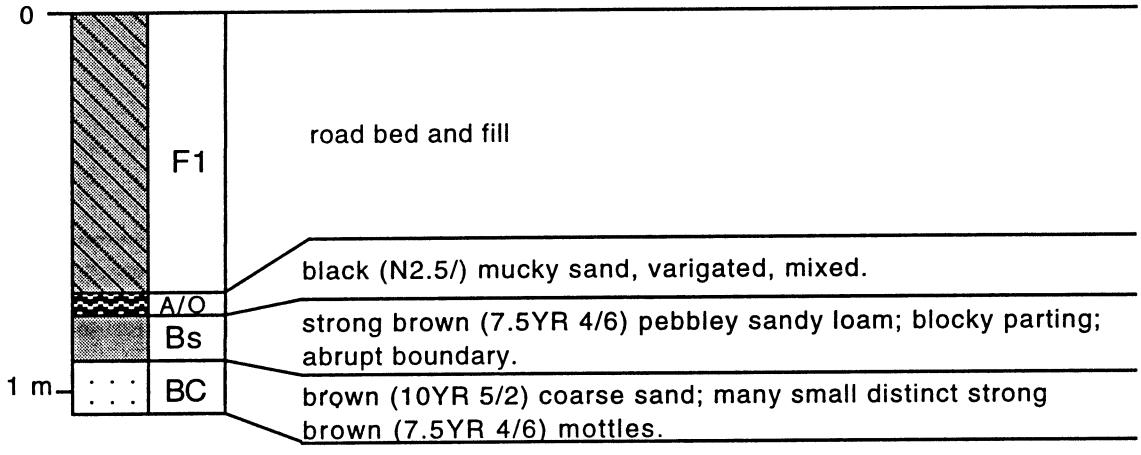




Soil Boring 20
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

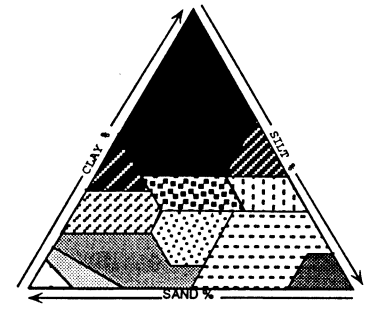
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 335 m west of the snowmobile bridge over Wolf River.

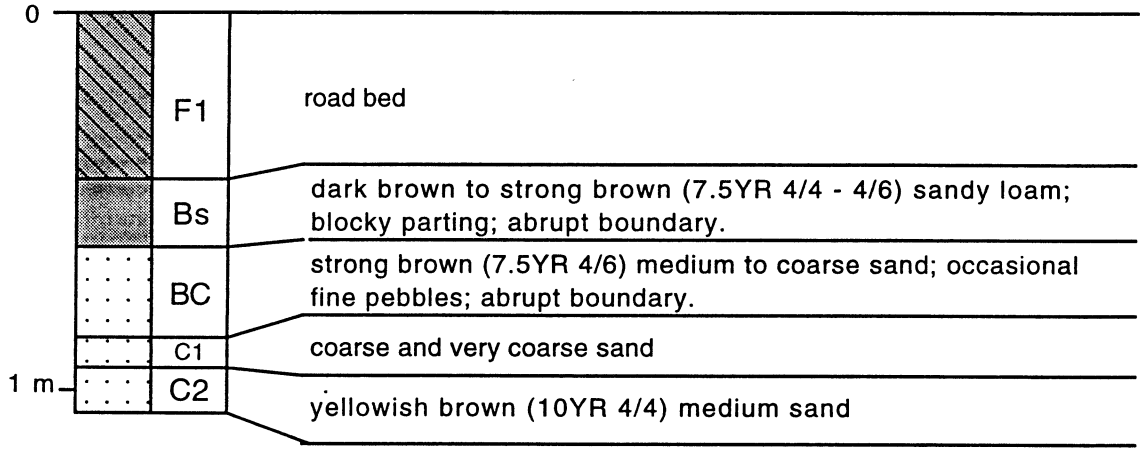




Soil Boring 21
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

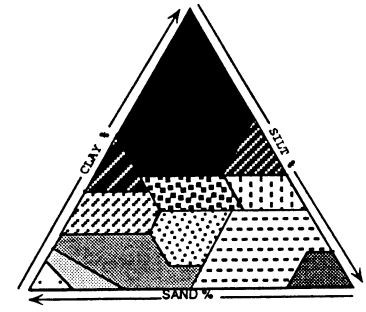
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 355 m west of the snowmobile bridge over Wolf River.

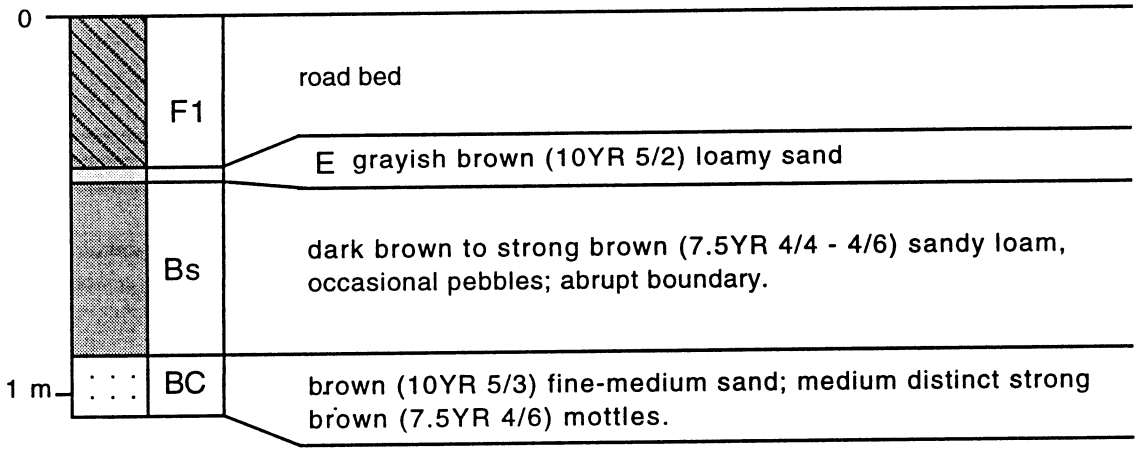




Soil Boring 22
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

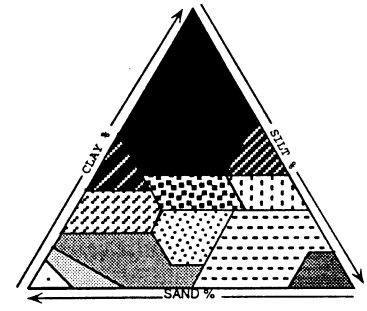
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 375 m west of the snowmobile bridge over Wolf River.

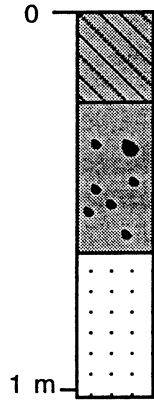




Soil Boring 24
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SE,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 98 m west of the snowmobile bridge over Wolf River.

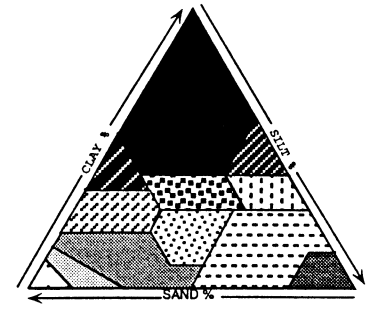


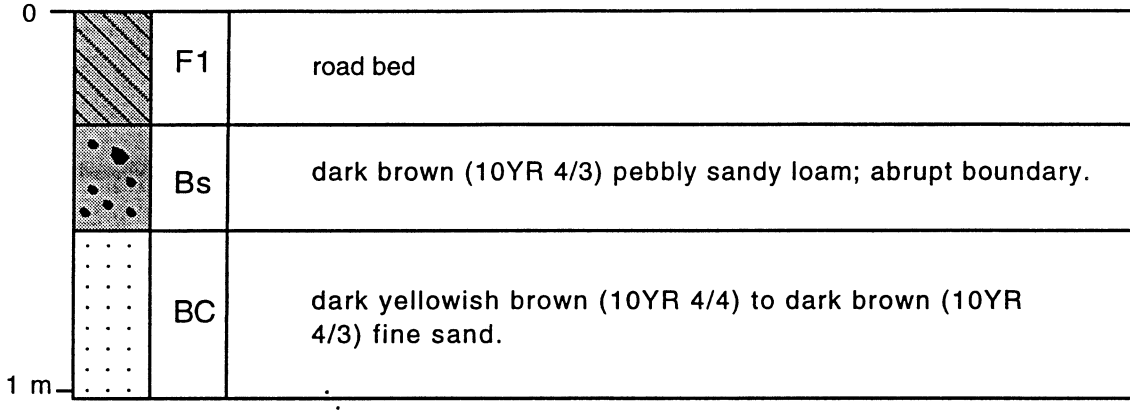


F1	road bed
Bs	strong brown (7.5YR 4/6) grading down to brown (7.5YR 4/6) sandy loam, occasional pebbles; abrupt boundary.
BC	brown (10YR 5/3) coarse sand; loose, single grained

Soil Boring 25
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C2a

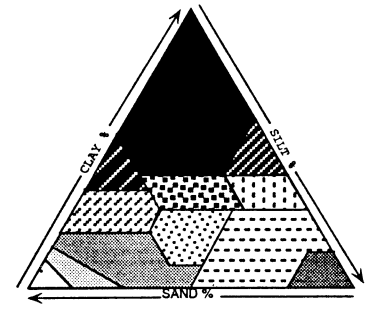
County: Forest **Township:** Crandon
Section: 29 **T and R:** T36N, R12E
1/4 1/4: SE,NW **Quad:** Nashville
Location: north side of USH 8 on the old road bed (snowmobile trail) 83 m west of the snowmobile bridge over Wolf River.

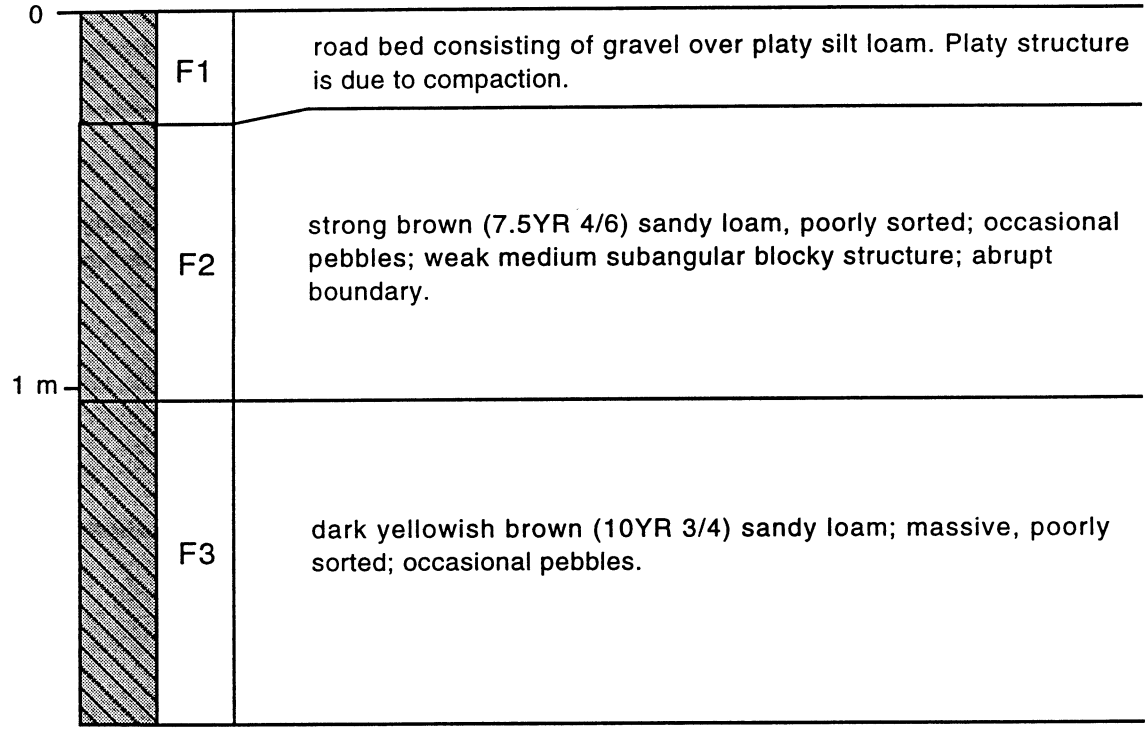




Soil Boring 26
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C1

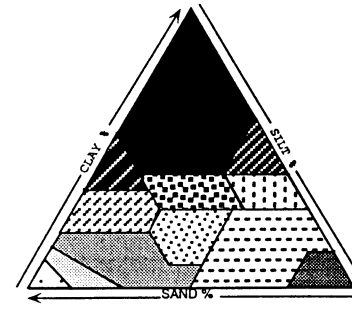
County: Forest **Township:** Crandon
Section: 26 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Crandon
Location: north side of USH 8 on the old road bed (snowmobile trail) 800 m west of the intersection of CTH S.

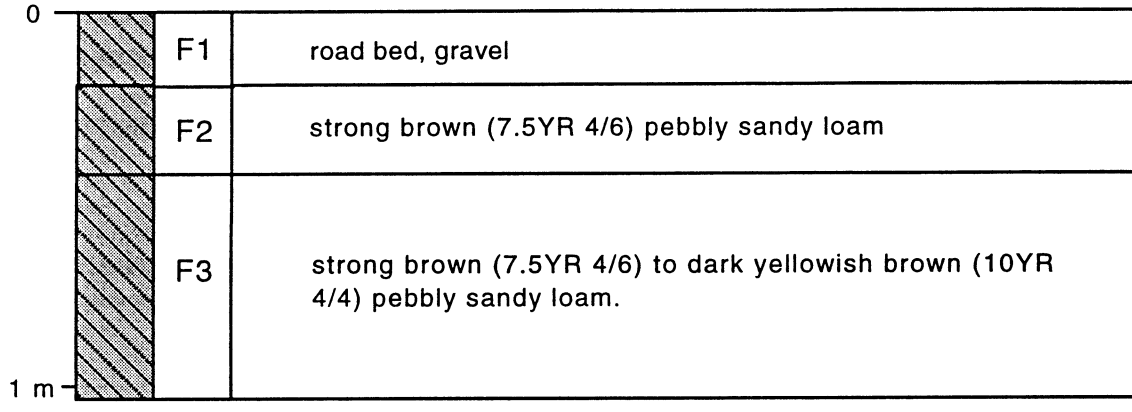




Soil Boring 27
Crandon WWDC Geoarchaeological Assessment Stage 2
Segment C1

County: Forest **Township:** Crandon
Section: 26 **T and R:** T36N, R12E
1/4 1/4: SW,NW **Quad:** Crandon
Location: north side of USH 8 on the old road bed (snowmobile trail) 820 m west of the intersection of CTH S.





APPENDIX VI

LOT CHECK INVENTORY

Stage 2 Geoarchaeological Assessment Shovel Probe Survey in Subsegment H1 Hat Rapids Dam

Lot No.	Unit/Feature Coordinates	Contents
96-043.0001	Transect 1, Hole 6	Pin - 15 mm x 9 mm, blue stars, white rectangle, red boarder, set in brass or copper; twisted wire, similar to barbed wire
96-043.0002	Transect 1, Hole 7	1 shard flat glass, triangular shape, 25 mm x 7 mm, broken, clear
96-043.0003	Transect 1, Hole 7 east bracket	1 piece bottle glass, 6 mm thick, clear
96-043.0004	Transect 1, Hole 5	1 piece bottle glass, 30 mm x 15 mm, clear with greenish tint; three round nails
96-043.0005	Transect 2, Hole 4	3 round nails, 9.5 cm long; 7 round nails, 5 - 6.5 cm long, 2 round nails, 3.5 cm long
96-043.0006	Transect 2, Hole 4 east bracket	1 round nail, 3 cm long
96-043.0007	General surface collection within shovel tested area	3 historic ceramics, white glazed, 1 with blue decoration along the rim, probably a bowl; 1 mortar fragment; 1 metal can lid, may be from a tobbacco tin

APPENDIX VII

BIBLIOGRAPHY OF ARCHEOLOGICAL REPORTS INFORMATION FOR DATA ENTRY

BIBLIOGRAPHY OF ARCHEOLOGICAL REPORTS
INFORMATION FOR DATA ENTRY

SHSW #: 82-0335 **COUNTY:** Fr, On Acreage: 41.5

Author/s: John D. Richards and Michael F. Kolb

Title of Report: Archaeological and Geoarchaeological

Investigationsof the Proposed Route of a Waste Water Discharge

Corridor, Forest and Oneida Counties, Wisconsin

Date of Report (month and year): August 1996

Series/Number: GLARC ROI 401

Place of Publication: Milwaukee, WI

Quad Map/s (7.5' Series) :Crandon, George Lake, Lake Julia, Mole Lake, Monico, Nashville

Rhinelander

Legal description of survey area: Follows proposed plant site access road to STH 55; then follows STH 55 north to CTH S, continuing north to USR 8. USR 8 to Rhinelander then south along STH 17 to Hat Rapids Rd. Follow Hat Rapids Rd to Wisconsin River, turn north to Hat Rapids Dam. Total length of pipeline is approximately 38.3 miles.

Site Information (if applicable): N/A

State Codification Number/s:

For Office Use Only:

Project Name:

Lead Agency:

THE STATE HISTORICAL SOCIETY OF WISCONSIN
816 State Street • Madison, Wisconsin 53706-1488

HP-05-07 (6-10-92)

Appendix 3.2-16

Traditional Cultural Properties Euro-American Component

TRADITIONAL CULTURAL PROPERTIES INVESTIGATIONS

EURO-AMERICAN COMPONENT

CRANDON PROJECT

CRANDON, WISCONSIN

COMMONWEALTH CULTURAL
RESOURCES GROUP, INC.

R-0227

TRADITIONAL CULTURAL PROPERTIES INVESTIGATIONS
EURO-AMERICAN COMPONENT
CRANDON PROJECT
CRANDON, WISCONSIN

Prepared for

FOTH & VAN DYKE AND ASSOCIATES, INC.
2737 SOUTH RIDGE ROAD
GREEN BAY, WISCONSIN 54307-9012

By

COMMONWEALTH CULTURAL RESOURCES GROUP, INC.
2530 SPRING ARBOR ROAD
JACKSON, MICHIGAN 49203-3602

Gary G. Robinson, Project Historian
James A. Robertson, Ph.D., Principal Investigator

June 1996

R-0227

ABSTRACT

Commonwealth Cultural Resources Group, Inc. conducted a traditional cultural properties investigation to identify Euro-American traditional cultural properties for the proposed Crandon Project. Research indicated that extant traditional communities are not present in the vicinity of the proposed project. Cartographic documentation and tax records demonstrated that land within the area of potential effect was primarily owned by lumber and land concerns and governmental agencies and that there is no pattern of ownership that can be construed as representing an ethnic enclave or traditional community. Even on properties owned by private individuals, few show evidence of actual occupation until after World War II. Consequently, Euro-American traditional cultural properties are absent from the project area.

TABLE OF CONTENTS

Abstract ii

Illustrations iv

List of Tables v

1. Introduction 1

2. Theoretical Context, Area of Potential Effect, and Methods 6
   - Theoretical Context 6
   - Area of Potential Effect 10
   - Methods 12

3. Environmental Context 14

4. Historical Context 17

5. Results 29
   - Ethnicity and Traditional Communities in Forest County and the Crandon Area 29
   - Ethnicity and Traditional Communities in the Area of Potential Effect 50

6. Conclusions and Recommendations 60

References Cited 62

Appendix A. Record of Interaction

Appendix B. Interview Questionnaire

ILLUSTRATIONS

1. Project Area 2
2. Proposed Wastewater Discharge Pipeline Route 3
3. Proposed Wetland Compensation Site 4
4. Interior of St. Paul's Evangelical Lutheran Church in 1906 36
5. St. Paul's Evangelical Lutheran Church 38
6. German Gravemarker, Lakeside Cemetery 40
7. Land Ownership in T35N/R13E in 1924 53
8. Land Ownership in T35N/R12E in 1924 54
9. Land Ownership in T34N/R13E in 1924 55

TABLES

1. Forest County Population Statistics, 1890 to 1940 19

2. Primary Origin of Forest County Population, 1890 to 1940 30

CHAPTER 1
INTRODUCTION

Crandon Mining Company (CMC) was requested by the Wisconsin State Historic Preservation Office (SHPO) in 1994 to conduct a traditional cultural properties inventory (TCPI) to establish the presence or absence of traditional cultural properties (TCPs) within the area of potential effect (APE) of the proposed Crandon Project. Commonwealth Cultural Resources Group, Inc. (CCRG) was contracted by Foth & Van Dyke (F&VD) to accomplish this study for the CMC, which included the investigation of both Native American Indian and Euro-American TCPs. This report details the results of the Euro-American component of the investigations.

Proposed actions include construction of the proposed plant site, the tailings management area, an access road, a railroad spur, electrical and gas transmission facilities, the treated wastewater discharge pipeline, and a wetland compensation site. The primary project area (Figure 1) is located in all or parts of Sections 19, 20, and 28 through 33 of T35N/R13E; Sections 23 through 25 and 36 of T35N/R12E; and Section 5 of T34N/R13E, Forest County, Wisconsin. The proposed treated wastewater discharge pipeline (Figure 2) originates at the proposed project site, follows the proposed access road right-of-way to State Highway (STH) 55 and continues north on County Highway (CTH) S to U.S. Highway (USH) 8 where it turns west. The proposed pipeline proceeds west along USH 8, enters Oneida County and continues to STH 17 south of the city of Rhinelander where the route extends south along existing highway rights-of-way and terminates at the discharge point located below the Hat Rapids Dam on the Wisconsin River. The proposed wetland compensation site (Figure 3) is located in Section 5 of T27N/R17E, Shawano County, and Section 32 of T28N/R17E, Oconto County.

Dr. James A. Robertson served as project manager and principal investigator. Fieldwork and initial historic research by project historian Gary G. Robinson took place between November 15 and December 14, 1994. This report was chiefly authored by Gary G. Robinson

2,270,000 E
2,275,000 E
2,280,000 E
2,285,000 E
125,000 N
120,000 N
115,000 N
110,000 N

PROJECT AREA BOUNDARY
PROPOSED ACCESS ROAD
PROPOSED RAILROAD SPUR
TMA BORROW SITE
PLANT SITE
TMA
RECLAIM POND
SKUNK LAKE
TMA ACCESS ROAD AND TAILINGS PIPELINE ROUTE
OAK LAKE
LITTLE SAND LAKE
DUCK LAKE
DEEP HOLE LAKE
OUTLET CREEK
SWAMP
HEMLOCK CREEK
WISCONSIN CENTRAL LIMITED RAILROAD
STEPHAN LN
RD

LEGEND

- LAKES
- STREAMS
- EXISTING ROAD
- 1675 — EXISTING CONTOUR
- 1692.0 EXISTING SPOT ELEVATION
- SECTION LINE
- ORE BODY
- PROPOSED ACCESS ROAD
- PROPOSED TMA ACCESS ROAD AND TAILINGS PIPELINE ROUTE
- PROPOSED RAILROAD SPUR
- PROPOSED FACILITIES

N

NOTES:

1. TOPOGRAPHIC BASE MAP DIGITIZED FROM 1" = 1000' SCALE, 5' CONTOUR INTERVAL MAP PREPARED BY AERO-METRIC ENGINEERING, INC., SHEBOYGAN, WISCONSIN. DATE OF PHOTOGRAPHY APRIL 28, 1976.
2. HORIZONTAL DATUM BASED ON WISCONSIN STATE PLANE COORDINATE SYSTEM - NORTH ZONE.
3. VERTICAL DATUM BASED ON MEAN SEA LEVEL DATUM. CONTOUR INTERVAL IS 25 FEET.
4. COUNTY AND TOWNSHIP LINES DIGITIZED FROM 7.5' SERIES USGS MAPS.
5. ORE BODY OUTLINE IS REPRESENTATIVE OF THE SUBCROP AT THE BASE OF THE OVERBURDEN.

Foth & Van Dyke

REVISED	DATE	BY	DESCRIPTION

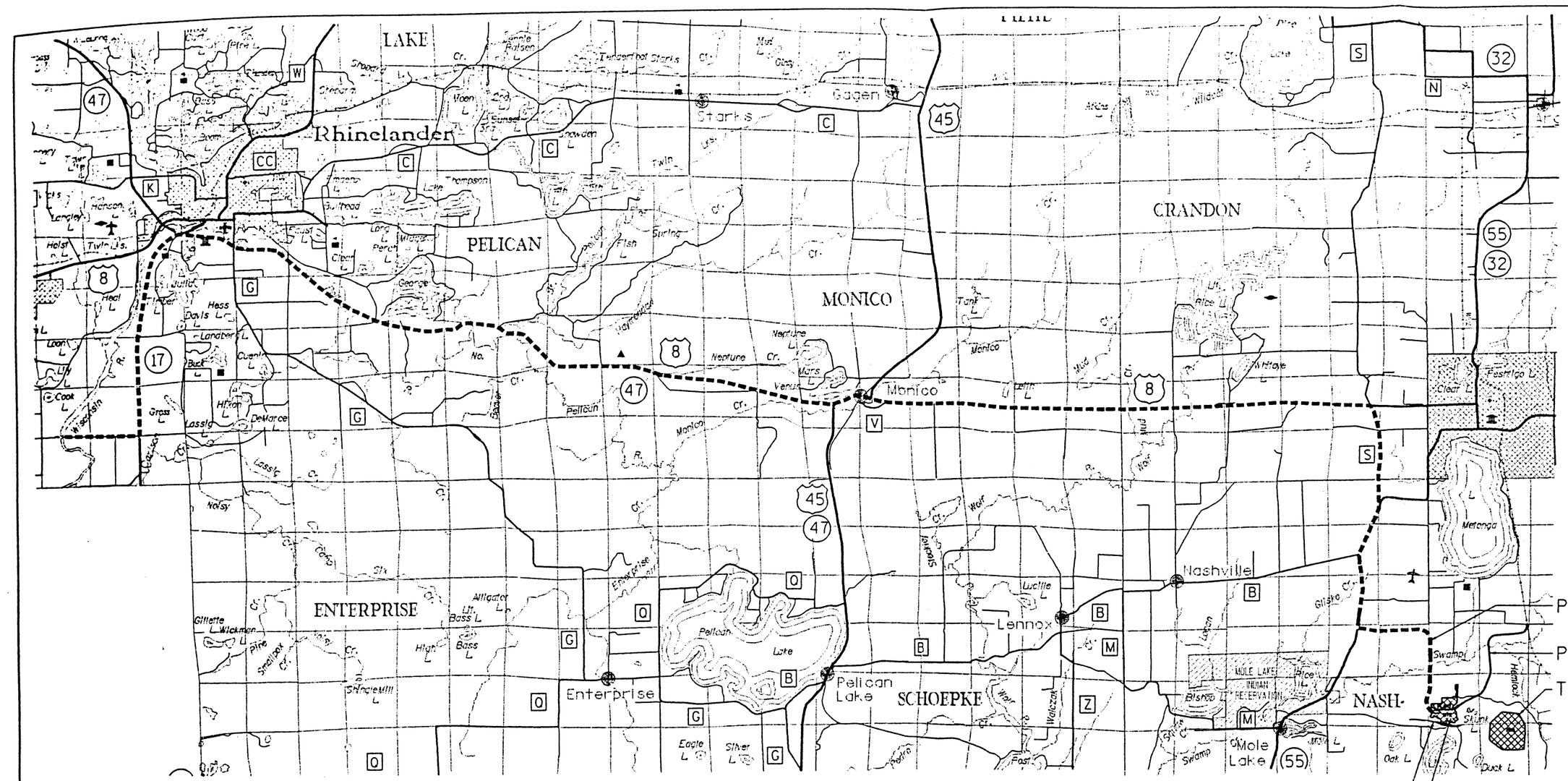
CHECKED BY:	JKSI	DATE: MAY '95
APPROVED BY:	PAE	DATE: MAY '95
APPROVED BY:	GWS	DATE: MAY '95

Crandon Mining Company

Figure 1. Project Area

Scale: 0 1000' 2000' | Date: MAY, 1995

Prepared By: Foth & Van Dyke | By: JRB



LEGEND

- U.S. OR STATE HWY
- COUNTY TRUNK ROAD
- TOWN ROAD
- SECTION LINE
- (8) U.S. HWY NO.
- (47) STATE HWY NO.
- [W] COUNTY HIGHWAY LETTER
- PROPOSED WASTEWATER PIPELINE

NOTES:

1. BASE MAP DERIVED FROM COUNTY MAPS PREPARED BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION.
2. ORE BODY OUTLINE IS REPRESENTATIVE OF THE SUBCROP AT THE BASE OF THE OVERBURDEN.

TYPICAL REPRESENTATION; REFINEMENTS MAY BE MADE PRIOR TO CONSTRUCTION.

Foth & Van Dyke

REVISED	DATE	BY	DESCRIPTION

CHECKED BY:	JKSI	DATE: MAY.'95
APPROVED BY:	PAE	DATE: MAY.'95
APPROVED BY:	GWS	DATE: MAY.'95

Crandon Mining Company

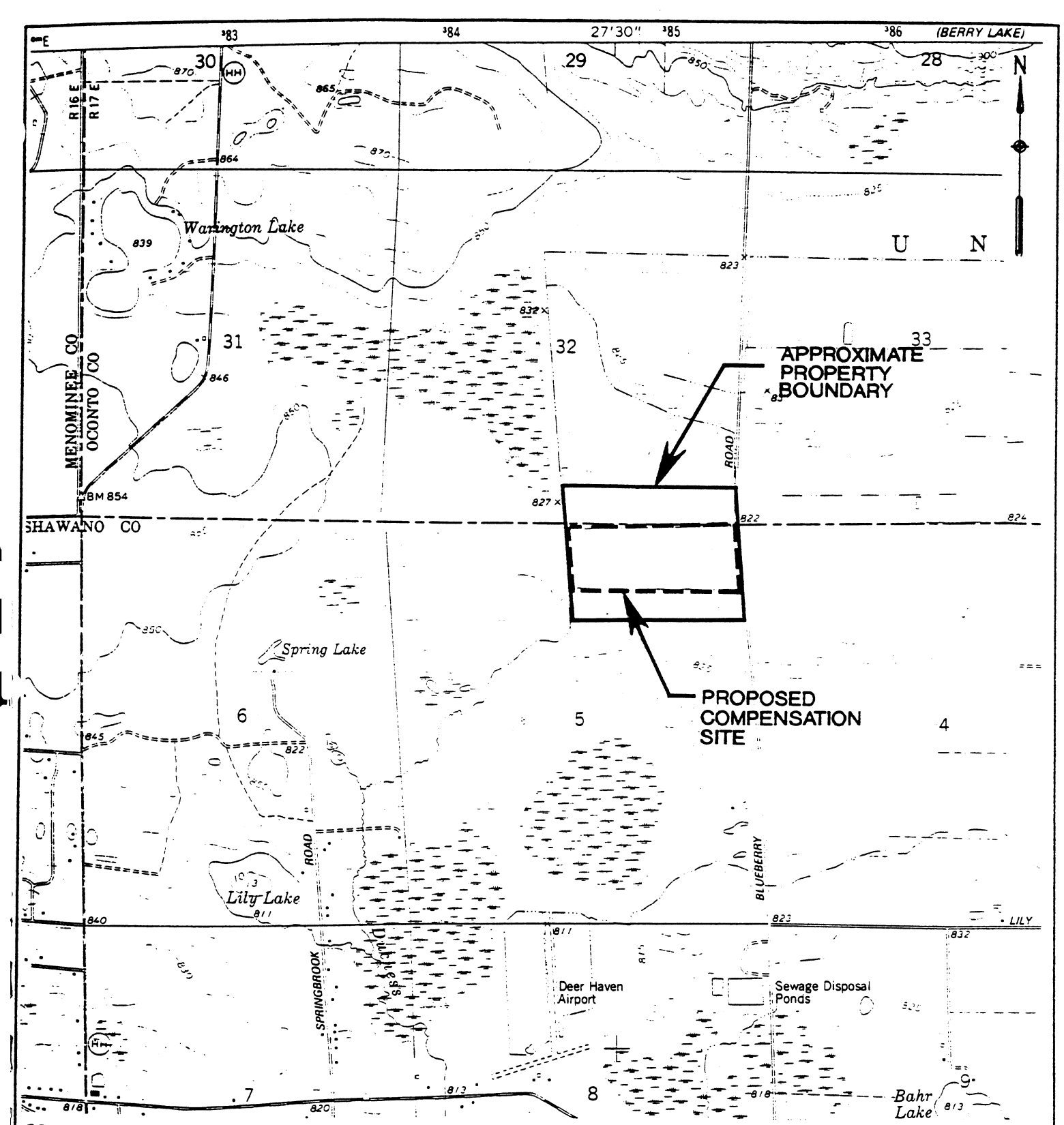
Figure 2. Proposed Wastewater Discharge Pipeline Route

Scale: 0 6000' 12,000' Date: MAY, 1995

Prepared By: Foth & Van Dyke By: GAM

3.2-16-9

93C049



SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLE - CECIL, 1974 OCONTO & SHAWANO COUNTY, WISCONSIN

Foth & Van Dyke

REVISED	DATE	BY	DESCRIPTION

CHECKED BY:	JKSI	DATE:	JULY'95
APPROVED BY:	RFS	DATE:	JULY'95
APPROVED BY:	GWS	DATE:	JULY'95

Crandon Mining Company

Figure 3. Proposed Wetland Compensation Site

Scale: 0 1000' 2000' Date: JULY, 1995

Prepared By: Foth & Van Dyke By: JOW

with contributions by James A. Robertson. Technical editing and coordination of production was the responsibility of Nancy Ford Demeter, aided by Cynthia Hicks (word processing) and Erik Wyatt (graphics).

This report includes six chapters of text followed by references and a record of research and interaction, which is attached as Appendix A. Following this introduction, the theoretical context and research methods, environmental context, historical context, and results are discussed. The text is concluded with a summary and recommendations and references cited.

CHAPTER 2

THEORETICAL CONTEXT, AREA OF POTENTIAL EFFECT, AND METHODS

THEORETICAL CONTEXT

Traditional cultural properties (TCPs) are places that are associated with cultural practices and/or beliefs of a community that are basic to its history and are important in maintaining the heritage and traditional beliefs of that community (Parker and King 1990:1). TCPs are properties of traditional cultural value to all kinds of people. The fact that TCP investigations have focused largely on Native American concerns does not eliminate the possibility that Americans of any ethnic origin have properties to which they ascribe traditional cultural value. TCPs of European-descended populations can be obvious or indistinct within the cultural landscape. The German Village Historic District in Columbus, Ohio, or Honolulu's Chinatown are easily identifiable as locations in which traditional practices occur and maintain the lifeblood of the community (Parker and King 1990:2, 5). Less explicit is the empty, open space that was the traditional location for a New Mexico Hispanic community's costume dance known as *Los Matachines* (Sebastian 1993:23).

Traditional Cultural Properties research focuses on identifying historic properties that are associated with "cultural practices or beliefs of a living community that are a) rooted in that community's history, and b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1990:1). The non-white population of Forest County is almost exclusively Native American and subject of a separate TCP investigation, while the white population is descended from European ethnic groups. As such, the investigation of Euro-American TCPs within the Crandon Project Area of Potential Effect (APE) focused on Euro-American expressions of ethnicity and traditional practices and locations where distinct Euro-American groups settled (Robertson and Robinson 1996).

The key to identifying Euro-American TCPs is determining whether cohesive ethnic and/or traditional communities persist as a definable element of the present population (Levine and Merlan 1993). Four primary sources of information and community expression are considered. The first is the documentation of population movements, land ownership, patterns of land use through historical research to determine if ethnic/traditional population enclaves ever existed in the past. By conducting such research, the time depth of traditional communities can also be precisely defined as TCPs must have significant historical time depth (typically more than 50 years) and, at the same time, refer to the ongoing beliefs, customs, and practices of a living community that have been passed down orally or through practice to the present day.

The investigation of historically important institutions that persist to the present day are a second source for identifying cohesive communities and their expression through local traditions and traditional activities. The single most dominant institution where knowledge of ethnically distinct practices may be maintained among Euro-Americans is the church. Studies indicate that ethnic communities can maintain distinct identities for long periods of time (Locher 1986). This is particularly true of religious communities. Linebaugh (1993) discovered that German Lutheran settlers in the Valley of Virginia maintained an intact identity that expressed itself in the material culture nearly a century after their entrance into the valley. Bavarian Lutheran immigrants in the Saginaw Valley of Michigan also established a cohesive community that maintained both sacred and secular lifeways for over 100 years after the founding of the settlement (Robinson 1994).

The reason for this is that certain Christian denominations had strong associations to their European progenitors. Although ethnically distinct, the various denominations organized by European immigrants in the United States shared a common ideology. All were Christian churches that laid claim to being part of an universalizing religious system. Such a universalizing system is "considered by its adherents to be proper to all mankind" and has "mechanisms to facilitate [its] transmittal" (Sopher 1967:86-87).

For many of these immigrant denominations, the competitive system of denominationalism in the United States was an unfamiliar situation. State churches with only a few dissenting church bodies prevailed in most European countries. This new environment led to high social self-consciousness among the immigrant church bodies and to emphasis on characteristics peculiar to each church. In most cases, leaders of immigrant churches believed that the only way to be sure of survival was to insist on the rigid preservation of the whole. Initially, most foreign-language immigrant churches used cultural rather than doctrinal grounds to maintain their individuality (Handlin 1951:129; Meyer 1975:180-181).

Smith (1986:109-110) notes that this is particularly true of diasporic communities. Once a community is separated from its homeland, the sacred and religious factors within the community's culture may increase in importance. This process may proceed to a point where these factors act as guardians and transmitters of the "myth-symbol complex" of the community and of its historic culture. In extreme instances, this myth-symbol complex can replace the distant homeland as the major mechanism for the maintenance of the ethnic identity. Andrus (n.d.) goes so far to state "the church is the heart of community consciousness and discipline. When it ceases to function as such, fragmentation of the community is merely a matter of time." For this reason, the local religious community is the primary institution emphasized in the TCP research.

A third focus of TCP research are fairs, ethnic festivals, foodways, and other traditional activities that may be associated with particular locations. Except when these activities are taking place, however, they are not observable on the landscape. The existence of such "non-material" cultural traditions, beyond those associated with the religious community, is best investigated by means of interviews with individuals knowledgeable about local history and individuals that maintain knowledge of their ethnic heritage.

A fourth avenue of research that can potentially reveal TCPs are the material expressions of ethnicity. Studies of the material aspects of Euro-American ethnicity have focused on the presence of distinct architectural styles, land use patterns, and, more recently, cemeteries.

Cultural geographers have studied the ways in which cemeteries were planned, located, named, subdivided, and used. The study of cemeteries, known as necrogeography, falls into two broad categories: 1) architectural style and content analysis of gravemarkers, and 2) the cemetery as an element of local land use patterns (Francaviglia 1971:501; Norris 1988:123).

Cemeteries serve a dual purpose for an ethnic group. They, of course, provide for the internment of the dead, but their importance to TCP research rests with the fact that they act as an interface between current and past generations (Francaviglia 1971:501). As such, cemeteries and the material culture within them represent valuable indicators of both past cultures and traditional values within a cultural landscape. They also reflect ethnic values and identity (Anderson 1993:1-2; Kniffen 1967; Stone 1991:1-30).

Ethnic expression also manifests itself in architecture and land use. Oszuscik (1987:25) states that "anywhere there was a high concentration of Germans in the United States, Germanic influences appeared in local structures." With their many regional differences in history, dialect, religion, and architecture in their homeland, Germans brought a diversity of building traditions to the Midwest. In larger, more homogeneous enclaves, building traditions reflected customary Old World building patterns. Elsewhere, German builders were influenced by local environmental conditions and elements derived from the dominant culture or other ethnic groups in the area (Linebaugh 1993; Marshall 1986:92-3; Milspaw 1983:82; Oszuscik 1987:25; Tischler 1986:142; Wilhelm 1980:24).

In certain cases, especially among rural farmers, traditional building forms were transported wholesale by some ethnic groups. For example, the sparsely settled coniferous and mixed forest lands of the upper Midwest allowed Finnish immigrants to use their vernacular log building traditions to construct buildings that were essentially continuations of the five basic types common in nineteenth-century Finland (Kaups 1986:124-125). On the other hand, certain ethnic building traditions appear to have no recognizable foreign antecedents. The brick-veneered log houses built

almost exclusively by Belgian immigrants in Wisconsin were unknown in Belgium (Calkins and Laatsch 1986:100; Upton 1986:9).

Ethnicity may also be expressed in the spatial organization of a farmstead. Outbuildings (typically log-constructed) on Finnish farmsteads typically followed an L-shaped or nearly square pattern with the hallmark feature being the *savusauna* or smoke sauna. The sauna was typically located away from the primary grouping of farmstead structures as it was considered a fire hazard (Kaups 1986:127). The traditional Belgian-American farm, in contrast, is typically expressed in a U-shaped configuration of the barnyard, numerous log buildings, and outlying fields (McClelland et al. 1990:30). In Michigan, the layout of a farmstead settled by a Russlanddeutsch (Russian-German) Mennonite family reflects that of a Volga German farmstead with its identifiable *fehderhof* and *hinnerhof* spatial subdivisions (Demeter and Robinson 1995).

The Euro-American TCP research design for the Crandon Project, therefore, employs a multi-faceted approach. It combines historical data on settlement with the investigation of extant institutions, local traditions and practices, and material culture. By doing so, both the time depth of a potential TCP and its location can be established.

AREA OF POTENTIAL EFFECT

The APE for the Euro-American TCPI differs from that defined for the Native American TCPI. The latter takes into account Native American explanations of cultural resources in terms of their own culture and knowledge. The Euro-American TCPI is, instead, based on late nineteenth and twentieth century Euro-American concepts of ownership and tangible resources with well defined boundaries such as property, structures, and community facilities used by civic, religious, fraternal, and/or ethnic organizations (e.g., parks, fairgrounds, church facilities and cemeteries, lodges, etc.).

As a working model, direct parallels can be drawn with APEs developed for above-ground resources surveys which consider historic structures and districts, including rural landscapes which are anticipated to occur within the project area. As with above-ground resources surveys, all areas where construction will disturb the ground surface are included in the APE. The vast majority of all direct environmental impacts are restricted to such areas. These include the proposed plant site; the tailings management area (TMA); the access road, TMA access road, and railroad spur line; electrical and gas transmission facilities; the treated wastewater discharge pipeline corridor; and a wetland compensation parcel. Second, all lands owned by CMC in the project area are included in the APE since access to a TCP would, potentially, be impeded.

Above and beyond direct impacts, cultural landscapes are taken into account by considering the construction and/or restriction of access as an impact on not just the specific parcel of land and/or structure(s), but also any logically associated parcel and/or structures using criteria such as ownership, ethnic affiliation, and/or functional association. An example from a hypothetical above-ground resources survey can serve to illustrate this point. For example, assume that a project impacts one historic above-ground structure. This structure, however, is associated with several others of the same architectural style and of similar age reflecting the early settlement of an area. In this case, a potential historic district is indicated and the survey would necessarily include all the structures that make up the potential district even though only one would be impacted by the hypothetical project.

As described below, efforts to identify ethnic communities and traditions went beyond the limits of the APE. It should be noted, however, that the treated wastewater discharge pipeline corridor occurs within existing rights-of-way and the wetland mitigation parcel is an isolated, rural cultivated field with no standing structures. As such, neither was considered to have any potential for impacting a Euro-American TCP and therefore are not discussed further as part of this report.

METHODS

Following Levine and Merlan (1993), the first step in documenting TCPs in non-Native American communities is defining the communities and their traditions. The research effort focused on determining if traditional communities exist in the Crandon area and what traditions these communities may be practicing. Also, the investigations sought to identify community members who could provide information about these traditional practices and their meaning (Levine and Merlan 1993:56-57).

Determining the presence of definable ethnic communities was achieved by using a combination of the avenues of information outlined above. Census data for Forest County from 1890[1] to 1940 was analyzed with respect to immigration patterns and ethnic affiliation. Cartographic data was also sought that might shed light on ethnicity. To this end, land ownership was traced for the APE with a special emphasis on the project lands surrounding the proposed mine complex in Sections 19, 20, and 28 through 33 of T35N/R13E, Sections 23 through 25 and 36 of T35N/R12E, and Sections 5 and 6 of T34N/R13E. Tax records were also examined for selected parcels. Secondary sources pertaining to Forest County history were consulted, including Davis' (1990) seminal work on Forest County in the 1920s. General works on historic ethnic settlement in Wisconsin (e.g., Wyatt 1986) were also consulted.

A reconnaissance survey to identify material expressions of ethnicity across the built environment was also undertaken. Because the built environment within the APE revealed little that could be construed as elements of ethnic expression, all areas accessible by road within the 3-mile radius of the center of the ore body were inspected to establish the nature of ethnic expression on a community-wide basis. Also included was a pedestrian survey of the city of Crandon to establish the nature of ethnic expression on a community-wide basis. In addition, four cemeteries (Lakeside [Crandon], Pine Hill [Armstrong Creek], Town of Crandon, and Town of

[1]Census data is not available for Forest County prior to 1890 as it was not organized until 1885. The population of Forest County prior to 1890, however, was small.

Nashville) were examined by means of pedestrian survey to ascertain the presence and nature of material ethnic expression.

Finally, interviews were conducted with knowledgeable community informants to ascertain the presence and coherence of ethnic communities and traditions in the area. The religious leaders of the churches in the community were interviewed, and, based on their recommendations, local residents were identified who might provide additional information on ethnicity and TCPs. Informants who are knowledgeable about the history and ethnicity of the area were also interviewed.

CHAPTER 3
ENVIRONMENTAL CONTEXT

The project area is located within the Northern Highland physiographic complex of Wisconsin (Martin 1965). Underlain by igneous and metamorphic Precambrian bedrock (Paull and Paull 1977:72), the topography of the region is a reflection of glacial action. This produced a mosaic landscape of drumlins, kame-kettle slopes and ridges, elongated morainic hills and ridges, and outwash plains marked by wet depressions formed from kettles. Slopes are variable within the project area and range from level to rolling.

The hydrology is characteristic of a glaciated headwaters region. Drainages include intermittent and low-order streams that feed or are fed by springs, kettle lakes, marshes, and swamps. The highest order stream within the project area is Swamp Creek, a tributary of the Wolf River. Much of the northern portion of the project area drains north into Swamp Creek including Hemlock Creek on the east. South of the mine facilities are a number of small kettle lakes including Oak Lake, Duck Lake, Little Sand Lake, and Deep Hole Lake. The latter three drain south into Rolling Stone Lake and ultimately into the Wolf River.

Soils within the project area are classified as soils of the Loamy Uplands and Plains. Soil associations include Pence and associated shallow sandy loams over acid outwash sands and gravels, Kennan and associated loams over brown sandy glacial till, and Iron River and associated loams over acid reddish sandy glacial till. In the low, marshy areas that support sedges, moss, and other wet-loving plant species, soils are associated with Au Gres sand and Cable loam (Hole 1976:12, 102-104).

In its original state at the time of Euro-American settlement, most of Forest County was either a hardwood-dominated upland or peat-filled bogs (Davis 1990:12). These hardwood-dominated forests were also interrupted by pockets of prairie and the marsh and swamp

environments that dot the landscape. Dominant tree species recorded by early surveyors included pine, hemlock, sugar maple, yellow birch, and beech. White pine predominated on drier soils while tamarack, cedar, and black spruce predominated in wet environments (Finley 1970:64-67).

Early arrivals to the region recorded a variety of animal species. Black bear, elk, moose, and white-tailed deer were among the larger game animals. Predatory species included red fox, coyote, bobcat, cougar, and brush and timber wolf. Smaller species of mammals, some of economic import, included wolverine, martin, skunk, mink, otter, beaver, muskrat, weasel, and red and gray squirrel. Birds included numerous songbirds, predatory birds, grouse, and waterfowl. The latter were plentiful given the numerous lakes and wetland habitats in the county. A wide variety of reptiles and amphibians were found in the forest, riverine, and wetland habitats.

With this general backdrop in mind, it is the historic change in the natural environment that is of direct relevance to Euro-American settlement. Loggers first began to harvest timber in Forest County in the 1870s, but intensive logging did not begin until the hardwood markets developed in the 1890s (Davis 1990:12). Yet, as late as 1898, all but the northwest corner of Forest County still contained excellent stands of hardwood and hemlock that had escaped both the saw and fire (Roth 1898).

Specific descriptions of the forest encountered within the Crandon Project area, however, do not indicate that the local environment was particularly rich. During an evaluation of the area prior to logging (ca. 1916), timber cruiser William Stenerson described the timber in Sections 30, 32, and 34 of T35N/R13E as follows:

> Land in sec[tion] 30 I would call a pulp proposition hem[lock] small, but good. Maple scrubby and poor birch not large and it don't look to be of the best quality. Tam[arack] all dead.

> Timber in sec[tions] 32 & 34 much larger. Maple short and scrubby. I would not compare this timber with timber around Laona. Has not the quality [Connor Lumber and Land Company Records (CLLCR), timber cruise books, Wisconsin State Historical Society Archives (WSHSA), Madison].

Over the next 25 years, lumbering and fire combined to result in a haphazard pattern of virgin land, raw cutover land with stumps and snags, slash-and-burned land covered with brush and/or saplings, cleared farmer's fields, swamps and bogs, creeks and lakes, and small towns and villages. The decimation of the presettlement environment was particularly intense during the 1920s. In 1923, one estimate indicated that 41 percent of the county was in merchantable timber. By 1928, this figure fell to a mere three percent with more than 52 percent of all land slashed and burned (Davis 1990:14).

The combination of logging and the subsequent clearing of land for agriculture represents a fundamental change in the vegetation regime. Suitable habitats for many animals were destroyed in the process and many large game animals essentially disappeared from the region. Lands cleared for agricultural uses were, at best, only marginally successful. Today, second- and third-growth forests have reclaimed much of the landscape.

CHAPTER 4
HISTORICAL CONTEXT

The history of Forest County and especially the project area is, at best, fragmentary. Few synthetic historical chronicles concerning Forest County or Nashville and Lincoln townships could be located. Available sources beyond primary archival data are limited to public relations publications and a company history. The public relations publications (e.g., Brady 1990; Chicago and North Western Railway Company 1901, 1914; Forest County Board of Supervisors [FCBS] 1990, 1924; Per Ola Land Company 1917) depict Crandon and Forest County, their history, and contemporary conditions in the best possible light. The history of the Connor Lumber and Land Company (CLLC) (Conner 1972), an important economic factor in the history of Forest County (Connor 1972), was written by a former corporate secretary who was also the wife of a former president of the company and the mother of two of the company's chief officers. This volume presents a very uncritical view of the activities of the CLLC and the Connor family. The only scholarly work of history found during this research was Mark Davis' (1990) M.A. thesis and subsequent publications (Davis 1995; 1995-1996), which focus generally on the sociopolitical maneuvering and economics in Forest County during the 1920s and particularly on the political maneuverings of the CLLC and the Connor family.

The cartographic record is informative. Archives in Madison, Stevens Point, Milwaukee and Green Bay (Wisconsin), and Lansing (Michigan), hold numerous maps depicting the project area and vicinity. Some, such as the Hixson (1924) *Plat Book of Forest County* provide useful land ownership data and depict local settlements.

Forest County first enters the documentary record in 1838 as part of, then, Crawford County. At that time, the area was supposedly occupied by "New York Indians" (Smith 1838). It is next depicted in 1846 (Anonymous 1846) and 1849 (Office of the Surveyor General, 1849, Public Surveys in the State of Wisconsin and the Territory of Minnesota; American

Geographical Society Map Collection [AGSMC], University of Wisconsin at Milwaukee [UW-M], Milwaukee, Wisconsin), again as part of Crawford County. Crawford County was partitioned soon after and Brown County was created. Forest County was part of Brown County until 1851 when Brown was itself partitioned and Oconto County was formed (Hunt 1853:164-165).

Cartographic information indicates that the project area was not surveyed until ca. 1860 (Chapman 1857; Colton 1854, 1855, 1857; Johnson and Wyckoff 1858; Lewis, Warner [Surveyor General], 1860, Sketch of the Public Surveys in the State of Wisconsin and Territory of Minnesota; AGSMC, UW-M, Milwaukee, Wisconsin; Thomas, Cowperwaite and Co. 1850). Forest County remained as part of Oconto County until ca. 1876 when it became part of Langlade County (Allen 1868; Breese 1871; Chapman 1868, 1870, 1876; Lapham 1865, 1869; Seifert and Lawton 1871; Tuttle 1875). Even as late as 1881 the project area is depicted as unsettled (Page 1881:159).

Forest County was organized in 1885 out of parts of Langlade, Oconto, and Shawano counties. The county's boundaries were revised in 1893 and 1895 before being stabilized in 1897 (Youth Community Conservation Improvement Program [YCCIP] 1980:23). The county seat at Crandon was founded in 1885.

Logging and lumber-related industries provided the economic base for Forest County during the late nineteenth century and early twentieth century. Like many other areas of the country, it was the promise of economic prosperity that promoted the settlement of Forest County and the project area. The population of Forest County came from three sources. First were those people who moved north with the inception of the lumber industry. The second source was a migration from Kentucky and the Appalachian Mountain region that began in the early twentieth century. These individuals were attracted by the north woods environment and the logging-farming economy that resembled that of their homeland. The third group, including many foreign immigrants, was attracted to the cutover land for its agricultural potential and its cheap cost (Davis 1990:15-16).

Population statistics for Forest County (Table 1) indicate that immigration into and settlement of Forest County was at its peak between 1900 and 1910 when the population increased 386 percent (from 1,396 to 6,782 people). In terms of absolute numbers, the county also witnessed a significant gain (3068 people) in population between 1910 and 1920, though it represents only a modest increase of 45 percent. After 1920, population growth decreased from 13 percent (1920 to 1930) to 6 percent (1930 to 1940). The number of foreign-born people parallels that of the population as a whole until 1930 when their numbers decrease. Furthermore, the proportion of foreign-born individuals in relation to the total population for the years 1900, 1910, and 1920 was maintained at a steady rate of 16.2 percent, 16.8 percent, and 15.5 percent, respectively. This suggests that foreign immigration occurred at a steady but not overwhelming rate during these years, which kept pace with the general population growth of the county.

TABLE 1
FOREST COUNTY POPULATION STATISTICS, 1890 TO 1940

Year	Total Population	White Population	Non-White[1] Population	U.S. Born White	Foreign Born White	U.S. Born White Both Parents Foreign Born
1890[2]	1,012	893	119	726	286	N/A
1900[3]	1,396	1,234	162	1,170	226	N/A
1910[4]	6,782	6,632	150	5,496	1,136	1,335
1920[5]	9,850	9,474	376	7,950	1,524	1,821
1930[6]	11,118	10,770	348	9,489	1,281	1,753
1940[7]	11,805	11,402	403	10,490	912	N/A

[1] All but two non-White individuals in 1910 and three non-White individuals in 1920 are Native Americans
[2] Department of the Interior 1895:360, 435, 450
[3] Hunt 1901:416, 527, 563
[4] Hunt 1913:1086
[5] Hunt 1922:1126
[6] Truesdell 1932:1324
[7] Truesdell 1943:575

The oldest settlement in Forest County was at Hiles, which began as a trading post in the 1860s. A sawmill opened in Hiles in 1903 and, in 1919, the C. W. Fish Lumber Company

bought the mill and the town (Davis 1990:17). The three major communities of greatest social, economic and political import in Forest County, however, are Crandon, Laona, and Wabeno.

Crandon was founded in 1885 by lumbermen and speculators led by Samuel Shaw. Growth of the city was inhibited until the completion of the Chicago & North Western railway spur to the city in 1901 and the opening of the Page and Landeck sawmill that same year. Lumbering was the major industry in Crandon area and was dominated by Page and Landeck and its successor company (Davis 1995:9), the Keith and Hiles Lumber Company. The latter was established by Page's son-in-law (M. Monte, personal communication 1994) . Page and Landeck was founded in 1890 to process and manufacture Wisconsin hardwoods, hemlock, and pine and to deal in southern hardwoods and general merchandise. Southern hardwoods were processed at their mills in Indiana and Kentucky. The Crandon mill processed the hardwoods harvested from the extensive tracts of land they had purchased in Forest County and beyond.

By 1906, Page and Landeck had become the largest business in Crandon, employing 400 men with a total payroll of $110,000. Their mill ran 24 hours a day and could produce 20,000 board feet of lumber every 20 hours. Operation of the mill required 15 million feet of logs per annum, which were transported to the mill by the company's own 7 mile railroad track (Brady 1906 [1990]:np). The original Page and Landeck lumber mill continued in operation until it burned in 1921 (M. Monte, personal communication 1994).

Page and Landeck also operated a large department store in Crandon called the Page Mercantile Company, which openly competed with catalog retailers. By 1914 this store was advertised as being the largest store in Forest County with 19,329 square feet of space (FCBS 1914 [1990]:np).

Among the other lumber companies operating in the Crandon area was the W. H. Rogers Lumber Company, which built a sawmill in 1903. They also built 30 houses and a general store for workers in their village (Nashville). The company marketed cut-over land for farming

(Brady 1906 [1990]:np), as did the Keith and Hiles Lumber Company through the Per Ola Land Company (Davis 1995:25).

Lumber-related industries included a broom handle factory, sash and planing mills, the Vulcan Last Company a manufacturer of maple shoe forms, and the Crandon Manufacturing Company, which manufactured wagon hubs and slack barrel headings (Brady 1906 [1990]:np). The vice president of the latter company was M. D. Keith, the president of Page and Landeck. The raw material for these items was purchased from settlers, jobbers, and the Page and Landeck Lumber Company.

The production of fruit crates and other wood products also took place in Crandon (Sanborn Map Company 1904, 1909, 1924). The Wisconsin Fruit Package Company (WFPC) was founded in Crandon to circumvent the effects of a price control agreement among the manufacturers of fruit boxes. In August 1903, E. A. Schmidt of Rockford, Illinois, purchased the Hagen sawmill, buildings, and power supply. By November of that year he had remodelled the buildings and opened the factory, and in December, the company shipped its first product to market. The company produced a birch fruit box that proved to be popular; during its first year of operation it produced 2.5 million boxes. The next year production rose to 6 million (Brady 1906 [1990]:np).

The WFPC met opposition from the trust of box manufacturers who were trying to control market prices. This trust cut prices on their product in the large market areas in an attempt to put an end to WFPC's inroads into the fruit box market, but, Schmidt's birch box received recognition at the 1904 St. Louis Exposition and market acceptance grew. By 1906, the company employed 50 workers and manufactured yellow birch fruit boxes and bushel baskets. Fruit crates were being made out of basswood, pine, elm, and maple (Brady 1906 [1990]:np).

The Gambill Distillery operated in Crandon during the early twentieth century (M. Monte, personal communication 1994), as did two creameries, a telephone company, a bank,

and a variety of stores and markets (Davis 1990:18, 52; FCBS 1914:np; Per Ola Land Company 1917:40). In 1915, a second railroad, the Wisconsin & Northern, arrived (Davis 1995:9). M. D. Keith, of the Keith and Hiles Lumber Company, and Samuel Shaw, the founder of Crandon, played a major role in seeing that the construction of this line would result in additional rail service for Crandon (Brady 1906 [1990]:np).

The town of Wabeno soon eclipsed Crandon as the wealthiest and most populous town. Wabeno also grew in response to the arrival of the railroad and expansion of the lumbering industry. By the 1920s, the town supported five sawmills including ones operated by companies out of Appleton and Neenah. The town also included a variety of wood products factories, a creamery, a cheese plant, and the usual complement of stores, saloons, a bank and hospital, public buildings, and schools (Davis 1995:10).

Though Crandon was dominated by the Page and Landeck/Keith and Hiles Lumber Company, Laona was the quintessential company town as it was, for all intents and purposes, owned and operated by the CLLC. The origins of the CLLC rest with Robert Connor, who, with his brothers, John and James Connor, arrived in Wood County, Wisconsin, in the 1870s. They cleared land for farming, laid a plan for a town, and purchased forest land in the area. At first Robert and John operated a general store, but after four years Robert bought out his brother and founded the R. Connor Company. By 1878, the R. Connor Company had purchased a second-hand sawmill, a planing mill, and a blacksmith shop (Lubkema, Lynn and Ann Hokanson, 1988-1990, History of Connor Lumber and Land Company, CLLCR, WSHSA, Madison).

John and James Connor moved to Iowa during the economic panic of 1882-83. Robert continued to run his company with the help of his son William Duncan Connor. Robert was eventually elected to the Wisconsin state legislature in 1888 and William assumed the management of the company. When the company incorporated in 1892, William became its president (Lubkema, Lynn and Ann Hokanson, 1988-1990, History of Connor Lumber and Land Company, CLLCR, WSHSA, Madison).

William aggressively expanded the R. Connor Company holdings throughout the 1890s. He founded the village of Stratford in Marathon County in 1891. By 1894, the company was one of the largest hardwood concerns in the state producing 40 to 50 million board feet of lumber in seven mills in central Wisconsin. Also by that time, company housing, a boarding house, and a post office had been built at Stratford. He was also responsible for the construction of the Marathon County Railway which connected with the Chicago & North Western Railway and allowed the shipping of hardwoods out of northern Wisconsin. William also purchased large quantities of timberland in Ashland, Iron, and Forest counties as well as in Florida, California, and British Columbia. These properties were purchased at reduced prices due to the economic depression of 1892-93 (Lubkema, Lynn and Ann Hokanson, 1988-1990, History of Connor Lumber and Land Company, CLLCR, WSHSA, Madison).

In 1898, William founded Laona in eastern Forest County where the largest block of virgin timber existed in Forest County. It was at Laona that he formed the CLLC in 1898 (Davis 1995:10, 12). The sawmill was in operation by 1901, and a flooring factory and a shingle mill soon followed. The Chicago & North Western Railroad extended its mainline into the town and built a depot, warehouse, and turntable. The CLLC, in association with the R. Connor Company and the Marathon County Railway Company (a wholly-owned subsidiary of the R. Connor Company) formed the Laona & Northern Railway Company and built a connecting rail between the mill at Laona and the Soo Line 10 miles north. Eventually CLLC holdings included land, milling operations (planing, lathing, and flooring), retail lumber, a farm, a hotel, banks, railroads, motor companies, a public utility, an insurance company, and company housing for its workers (Lubkema, Lynn and Ann Hokanson, 1988-1990, History of Connor Lumber and Land Company, CLLCR, WSHSA, Madison).

The sons of William D. Connor (William D. Jr. and Richard M.) joined CLLC in the 1920s. William, Sr. became the president of Canadian Puget Sound Lumber and Timber Company. Under the management of William, Jr. and Richard, the company continued to diversify into sawdust, juvenile furniture, shingle tow, shavings and maple heel stock (Lubkema,

Lynn and Ann Hokanson, 1988-1990, History of Connor Lumber and Land Company, CLLCR, WSHSA, Madison). The CLLC purchased almost 100,000 acres of northern land and, by the 1920s, it was the largest single part of the R. Conner Company (Davis 1995:12). Spurned by political forces in Crandon, CLLC abandoned plans for a second mill north of Crandon and remodeled its facilities and built a new sawmill at Laona. Completed in 1926, the mill had three saws, each capable of cutting 30,000 feet a day which led William Conner, Jr. to claim that it was the largest hardwood sawmill in the country (Davis 1990:22). Management of its timberlands became increasingly progressive as the company began to practice perpetual harvest selective cutting on its lands. It was also one of the first companies to place land under the Wisconsin Forest Crop Act and the Michigan Pearson Act (Lubkema, Lynn and Ann Hokanson, 1988-1990, History of Connor Lumber and Land Company, CLLCR, WSHSA, Madison).

By the 1950s, CLLC had survived labor controversies during the 1930s and the loss of nearly 5,000 acres of timberland to Michigan's Porcupine Mountain State Park in 1944. It also had to sell its Canadian interests in 1945. During the 1950s, the company made the transition from plywood and veneer to kitchen cabinet production at its Wausau plant. The Laona plant continued to manufacture nursery furniture, flooring, and plastics. In 1968, the company changed its name to Connor Forest Industries (Lubkema, Lynn and Ann Hokanson, 1988-1990, History of Connor Lumber and Land Company, CLLCR, WSHSA, Madison).

Despite the success of the CLLC and the fact that lumbering related enterprises in Forest County brought jobs and people to Forest County, Davis (1990) demonstrates that the population did not share in the prosperity it brought to other areas of the state. Instead it brought "environmental degradation, poverty, social malaise, and instability" (Davis 1990:15). Though the economy was comprised of a mix of logging and lumber related industries, farms, commercial enterprises, and railroad related work, few jobs lasted all year and much of the population was forced into seasonal logging work, work in the mills, work on highway or railroad work gangs, and ice harvesting. For many, poaching and making and selling moonshine were primary sources of income (Davis 1990:16). Unfortunately, growth and development was forestalled by the fact

that their economic mainstay, lumbering, had already peaked as an industry in Wisconsin. Hardwoods from Forest County could not compete with the lumber from other areas of the country and no river was large enough to support a paper mill. Other economic venues were thus needed to replace the lumber industry if the county was to flourish as the remaining lumber was cut (Davis 1990:14).

Like many other places where the timber industry cleared large expanses of land, Forest County entrepreneurs sought to make use of the deforested land by attracting agricultural settlers to the area. This had happened successfully in other parts of the Midwest, particularly in Michigan where, as land was cleared by the logging of the forests, a marked increase in agricultural settlement occurred. It was not only due to the fact that lumbering activities cleared land for use but also because the roads and railroads used by the lumbering industry frequently provided necessary transportation to local and statewide markets for the farmers in the region (McGaugh 1952:205, 220).

Early attempts to lure farmers north to Forest County were largely ineffective. Better lands in other parts of the country were still available to homesteaders. These lands were more desirable, in part, because they did not require the clearing of tree stumps. But as the nineteenth century drew to a close and the frontier began to close, the attention of the homesteading population turned to northern Wisconsin (Davis 1990:39).

To attract permanent settlers, a flood of books and brochures extolling the virtues of Forest County and its environs as a haven for the agriculturalist were published (Brady 1990; Chicago and North Western Railway Company 1901; FCBS 1924, 1990; Per Ola Land Company 1917). Such publications as *Northern Wisconsin, A Handbook for the Homeseeker*, published by the state, targeted foreign immigrants and outlined the environmental conditions and agricultural prospects in northern Wisconsin (Henry 1896). Lumbering companies such as the CLLC used local development associations and booster groups and even hired advertising agencies to market their cut-over land (Davis 1990:42).

Eventually the reality of agricultural life in northern Wisconsin became apparent. In spite of glowing promises that the area was one "where one potato crop buys the land" and that "yields of 200 to 300 bushels [of potatoes] per acre are common" (FCBS 1914 [1990]:np), farming turned out to be, as Davis (1990:42) phrases it, "a difficult proposition at best." One of the main difficulties was clearing the land of stumps. Not only was the removal of the stumps from cut-over land a time consuming and labor intensive activity, but the timber, a marketable commodity that would have provided material for building, had already been removed. Cut-over land, therefore, had to be under cultivation quickly to produce an income, but productivity was lowered since stump removal depleted the already poor quality of the soils (Davis 1990:43-44).

Dairying and potato growing were the primary agricultural pursuits in Forest County. Argonne (North Crandon) was the center of potato farming (Davis 1990:17). The claim that Forest County was free from "the bad diseases of potatoes" (FCBS 1914 [1990]:np) proved, however, to be untrue. Farmers in the county faced potato rot and blight, as well as unpredictable weather and insect infestation. Also, market prices were uncertain, and even years with good yields could be unprofitable. Although dairying was somewhat more successful, milk yields and prices were far lower than elsewhere in the state (Davis 1990:47). By the mid-1920s, Forest County farmland had the lowest income per acre in Wisconsin, and the gross income per farm was a meager $987, less than half of the state average income of $2,231. The fact that farming was a less than viable occupation in Forest County is reflected by the fact that only three percent of the land was cultivated for crops or pasture (Ebling 1929:84; University of Wisconsin 1931:11).

Tourism was also touted as a major asset of Forest County. The tourist industry in Wisconsin had it origins in the post-Civil War era. Railroads built country hotels and resorts around the lakes west of Milwaukee, and the popularity of these resorts prompted the expansion of the industry to other parts of the state. Northern Wisconsin offered fishing as a recreational pursuit, and nearby Vilas and Oneida counties offered the most extensive concentration of lakes in Wisconsin. The first resort opened in the Vilas/Oneida area in the 1870s and others soon followed. At first, the railroads brought the tourists to the area, but after 1910, Wisconsin began

to construct highways to the region and the automobile gained in popularity as a vacation vehicle (Davis 1990:54-55).

Forest County promoted tourism by advertising itself as a "recreational paradise" and as a health resort (Brady 1906 [1990]:np; Davis 1990:63; FCBS 1924; Mordt n.d.). The Chicago & North Western Railway Company also aided in attracting tourists to the region (Chicago and North Western Railway Company 1914). The interest in northern Wisconsin as a tourist destination provided some income for farmers in the area who owned lakefront property; many built a few cabins and opened a resort. Frequently these small resorts were operated by the wives or widows of farmers (Davis 1990:56). In addition to resorts, summer camps were popular in northern Wisconsin. These camps were intended for special populations such as "Jewish boys," senior citizens, or Chicago public school students (Davis 1990:56).

Unfortunately for Forest County residents, only a fraction of tourist facilities anticipated ever opened in the county. In 1928, there were only 19 resorts in Forest County as compared to 180 in nearby Vilas County. Summer camps were no more plentiful in the county. The only camp in the county appears to have been a short-lived Boy Scout camp near Wabeno. The Chicago & North Western Railway Company discussed building a camp near Laona, but it was never built (Davis 1990:56-57).

With the marginal success of farming and the failure to develop a burgeoning tourist trade, the collapse of the lumbering industry was a severe blow to the economy of Forest County, and its effects were felt for decades afterwards. County population dropped from its peak of 11,805 in 1940 to 7,691 by 1970. By 1970, 46 percent of the work force of Forest County was classed as laborers. The state average for this class was 34 percent. The average per capita income in 1970 was only $6,432, the fourth lowest in Wisconsin. The futility of farming in Forest County led to the reduction of the number of farmsteads from a peak of 770 in 1920 to the 210 farmsteads in existence in 1969 (Northeastern Wisconsin Regional Planning Commission 1971; Wisconsin Department of Health and Social Sciences 1976:1-14).

Largely due to the efforts of the National Forest Service, the forests of the county were restored and, by the 1970s, nearly 40 percent of the county's area was forested. Pulpwood lumbering continues as a major economic activity in Forest County (Northeastern Wisconsin Regional Planning Commission 1971). The Conner Forest Industries' mill at Laona burned in the 1960s but was replaced with a more modern facility. The company stayed in Forest County until the mid-1980s when it closed the mill in Laona. The renewed forest, however, enabled the tourist industry to develop in the county. The modern focus of the industry is on the wilderness areas, campgrounds, and canoe and snowmobile routes created and maintained by the National Forest Service, though its economic impact is dramatically less than that of Vilas County (Davis 1990:144).

CHAPTER 5
RESULTS

ETHNICITY AND TRADITIONAL COMMUNITIES IN FOREST COUNTY AND THE CRANDON AREA

Patterns of Immigration

As discussed in the previous chapter, population growth was most marked between 1900 and 1920. This was true for the population as a whole and for European immigrants. The period between 1900 and 1920, however, occurs at the tail end of foreign immigration into the United States in general and Wisconsin in particular (e.g., Wyatt 1986).

Table 2 lists the primary origin the major immigrant groups of Forest County between 1890 and 1940. During the early period of settlement, including census years 1890 and 1900, German immigrants predominate. A small Scandinavian contingent is also noted. Germans continue to dominate the pattern of immigration based on the 1910 census with an additional influx of Austrian, Russian, and French Canadian immigrants. The Scandinavian contingent, especially Norwegian immigrants, steadily increases. The dominance of the German population, however, is underscored when the origin of the parents of native-born individuals is considered since there are 707 individuals with German-born parents. When foreign-born individuals and native-born individuals with foreign-born parents are taken together (n=2,471), Germans and those with German parents (n=1,074) comprise 43.5 percent of this population (see Table 2).

As can be seen in Table 2, the 1920 census indicates fundamental changes in the immigration pattern for Forest County. Though changing political boundaries in eastern Europe and the political ramifications of World War I may account for some of the differences, a noticeable influx of Polish and Czech immigrants occurred between 1910 and 1920. Furthermore,

TABLE 2
PRIMARY ORIGIN OF FOREST COUNTY POPULATION, 1890 TO 1940

Year	Germany	Poland	Czecho-slovakia	Norway	Sweden	Austria	Russia	French Canadian	Other	Total
1890[1]	98	14	N/A	22	10	N/A	8	N/A	134	286
1900[2]	82	10	N/A	7	21	0	0	16	90	226
1910[3]	367(707)[7,8]	N/A	N/A	47(69)	51(26)	145(30)	199(26)	76(118)	251(359)	1,136(1,335)
1920[4]	251	383	69	68	86	144	170	56	297	1,524
1930[5]	208(1,004)[9]	361(474)	59(80)	54(120)	89(157)	45(97)	86(56)	40(208)	339(789)	1,281(2,985)
1940[6]	164	310	37	30	59	45	49	23	195	912

[1] Department of the Interior 1895:667-668
[2] Hunt 1901:794-795
[3] Hunt 1913:1086
[4] Hunt 1922:1135
[5] Truesdell 1932:1339
[6] Truesdell 1943:602
[7] 367 (707) = Birthplace of foreign born (birthplace of parent[s] but native born)
[8] Figures in parentheses are for individuals whose parents are both foreign born
[9] Figures in parentheses are for individuals with foreign-born or mixed parents

the number of German-born immigrants decreases for the first time, a trend consistent with state and national patterns (Legreid 1986a).

The figures for the 1930 census (Table 2) provide the most accurate portrayal of the potential ethnic composition of Forest County if the origin of individuals whose parents are foreign born or of mixed ethnic heritage (n=2,985) and the origin of foreign-born individuals (n=1,281) are combined (n=4,266). If this combined population is an accurate estimate of the ethnic population of Forest County, then 38 percent of the total population of Forest County (n=11,118) belongs to a recognizable ethnic group. Germans (n=1,212) comprise approximately 28 percent of this total ethnic population, Poles (n=835) 20 percent, French Canadians (n=248) 6 percent, Swedes (n=246) 6 percent, Norwegians (n=174) 4 percent, Austrians (n=142) 3 percent, Russians (n=142) 3 percent, and Czechs (n=139) 3 percent. Excluding English Canadian and English groups, the only other European population element comprising at least 3 percent of the combined population of individuals whose parents are foreign born or of mixed ethnic heritage and foreign-born individuals in Forest County is Yugoslavian (n=137) (Truesdell 1932:1337, 1339). Unfortunately, the census does not divide down the Yugoslavian immigrant population into its component ethnic groups (e.g., Croat, Serb, Muslim).

Potential Ethnic and Traditional Communities in Forest County and the Crandon Area

The ethnic composition of Forest County based on the census records indicates that the greatest potential for traditional cultural properties rests with the persistence of traditional German or Polish communities or enclaves. The vast majority of these people would have settled in Forest County between the 1900s and the 1920s. In addition, and as intimated in Chapter 4, the "Kentucks," people who trace their origins to the migration of families from Kentucky in the early twentieth century, may also reside in traditional communities or enclaves with a potential for having TCPs. The following three sub-sections of this chapter discuss the German, Polish, and Kentuck populations and their traditional areas of settlement in anticipation of what could be expected within the APE. This is not to say that traditional communities associated with less

numerous ethnic groups do not exist. On the contrary, work by the Nicolet National Forest (Project Plan: Historical Investigations of Velebit, ms. on file, Nicolet National Forest office, Rhinelander, Wisconsin) and the Three Lakes Historical Society has succeeded in identifying a small, abandoned Croatian farming community near Eagle River in Vilas County known as Velebit.

German Communities

The emigration of settlers from Germany to Wisconsin occurred in three waves during the nineteenth century. Each wave emigrated from distinct geographical regions of Germany and each was prompted by both economic and religious reasons. The first wave of German emigration occurred between 1845 and 1855 and included the southwest German provinces of Nassau, Hesse, the Rhineland, Pfalz, Baden, Wurtenberg, and Bavaria. The primary motivation for these people to immigrate to America was the frequent occurrence of crop failures and increasing poverty among the agricultural communities (Zeitlin 1977:4).

The second wave of emigration occurred between 1865 to 1873 and was comprised of settlers from northwest Germany in the provinces of Schleswig-Holstein, Ost Frisland, Hanover, Oldenburg, and Westphalia. This emigration was also motivated by economic hardship in these regions. In this case, cheap grain from America depressed agricultural prices creating poverty in the agricultural areas of the provinces. Coinciding with this occurrence was increasing unemployment in the industrialized districts (Zeitlin 1977:4).

The third, and final, wave of emigration began ca. 1880 and continued into the twentieth century. Participants in this wave originated in northeast Germany in the provinces of Prussia, Pomerania, Upper Silesia, and Mecklenberg. The Prussian "consolidation" of lands created a large landless class in this part of Germany. Many of these landless people turned to immigration to the United States to improve their standard of living (Zeitlin 1977:5). By the turn

of the century, German-born residents constituted 10 percent of Wisconsin's population and 47 percent of its foreign-born population (Legreid 1986a).

The first German immigrants to Wisconsin were concentrated in communities along the eastern shore of Lake Michigan south of Green Bay, though scattered settlements occurred elsewhere including those in Rock, Green, Lafayette, and Walworth counties. After 1848, Manitowoc, Sheboygan and Calumet counties, as well as the Lake Winnebago region, saw an influx of German people. During the next two decades, German settlement spread throughout the Fox River Valley, Green Lake County, and Outagamie County. The heavily forested central region of the state was settled after 1860 in Marathon and surrounding counties (Legreid 1986a).

The Germans who were making their way to Forest County arrived at the peak of immigration that occurred in 1900 (Legreid 1986a). Most were Lutherans, possibly coming from the province of Pomerania (J. Holzhueter, personal communication 1994). Some may also have been German-descended residents emigrating from Kentucky after many years in this country (M. Monte, personal communication 1994). Their motivation for coming to Forest County was probably the promise of work in the forests and mills of the county and/or the availability of inexpensive farmland (A. Freimuth, personal communication 1994; M. Monte, personal communication 1994).

Though definable German settlements may exist throughout Forest County, research has not focused on documenting such communities in the area. In part, this is because first and second generation Germans settled in a rather scattered pattern throughout the county (Davis 1995:7). Visual and pedestrian survey of Crandon and the APE revealed that vernacular architectural styles commonly found throughout the Midwest predominate. The few agricultural buildings observed in the APE also lack any indication of ethnicity. Indeed, the greatest potential for the preservation of traditional German culture, knowledge, and activities in the Crandon area rests with the predominant religion of the settlers, as embodied in the local Lutheran churches.

Two German-derived Lutheran denominations are present in Crandon, the Lutheran Church-Missouri Synod and the Wisconsin Evangelical Lutheran Synod. The Lutheran Church-Missouri Synod (LC-MS) was founded in 1847 by German Lutheran immigrants who settled in the Midwest. This branch of the Lutheran Church has been characterized as "the core of ultraconservative Lutheranism" (Meyer 1975:181, 189). German language and traditions remained very important for the denomination as witnessed by the fact that its original, official title, *Duetche Evangelish-Lutherische Synode von Missouri, Ohio und andern Staaten*, remained unchanged until 1917. Early church leaders in the United States opposed the use of English in worship services, citing that such a practice would lead to the introduction of a new "American" religion (Meyer 1975:181). Both the religious doctrine and the language were components of a process that ensured the preservation of the church by preserving cultural elements (Meyer 1975:180-181).

In Crandon, the LC-MS church is Good Shepherd Lutheran Church. Good Shepherd Lutheran Church of the Lutheran Church-Missouri Synod, however, was only founded in 1971. Although a member of a traditionally German denomination, this church does not represent an historically significant ethnic community functioning in the Crandon area (M. Koepsell, personal communication 1994).

The Wisconsin Evangelical Lutheran Synod (WELS) was organized in Milwaukee in 1850. It was originally titled the German Evangelical Lutheran Synod of Wisconsin. Like it sister synod, the LC-MS, it clung to orthodoxy and opposed all fellowship with other churches and intermarriage with anyone outside the denomination (J. Holzhueter, personal communication 1994; Mead 1990:147-8). In Crandon, the WELS church is St. Paul's Evangelical Lutheran Church.

The history of St. Paul's begins in the 1890s when the area was served by J. Dejung, Sr., a Lutheran minister who serviced the Lake Shore-Rhinelander Mission Field for the then German Evangelical Lutheran Synod of Wisconsin. Reverend Dejung visited Crandon

approximately every four weeks. The date for the first services held at Crandon is January 15, 1896, when a communion service and two baptisms were celebrated (History of St. Paul Evangelical Lutheran Church, by M. Koepsell, ms. on file, St. Pauls's Evangelical Lutheran Church).

St. Paul's continued to be part of a mission field until 1902 when Reverend G. Luedtke was installed as the congregation's first resident pastor. The present church building was constructed at that time at its current location on East Glen Street. A parsonage was constructed to the east and adjacent to the church in 1905. This parsonage is still in use (History of St. Paul Evangelical Lutheran church, by M. Koepsell, ms. on file, St. Paul's Evangelical Lutheran Church).

In 1905 the church at Crandon became the center for a new mission field that included Crandon, North Crandon (Argonne), Laona, and Wabeno. In 1911 St. Paul's was officially admitted to the Wisconsin Evangelical Lutheran Synod, and in 1915 a parochial school was opened by the church. There is little documentation of the church's history after this time as records have been lost. Improvements to the church structure were made in the late 1940s (new heating system) and in 1952 (improved lighting in the basement). In 1959 the interior of the church was redecorated. Regular maintenance of the structure has continued since that time (History of St. Paul Evangelical Lutheran church, by M. Koepsell, ms. on file, St. Paul's Evangelical Lutheran Church).

Of particular interest is the photograph of the interior of the church provided by Rev. Stellick (Figure 4). This photograph taken by A. Freimuth, depicts the church ca. 1906. Apparently it was taken during Christmas celebrations, as evergreen garlands and candles are shown draping the entrance to the sanctuary and the lectern. Notable among the accoutrements is the altar cloth that contains the statement:

Figure 4. Interior of St. Paul's Evangelical Lutheran Church in 1906

(The Lord is Risen [from the dead]!). This clearly presents the prevalence of German language in the worship of the church in Crandon. By comparison, a photograph in the possession of Reverend Stellick of the interior of St. Paul's taken on December 14, 1994, shows the effects of the redecoration of the interior of the church but also exhibits the total lack of German linguistic expressions within the church.

St. Paul's is located on East Glen Street and is an one and one-half-story, rectangular, gable front, frame structure that sits on a mortared, dressed fieldstone foundation and is clad with weatherboard (Figure 5). A two-story, square, hip-roofed bell tower is centrally located in the presentation facade and contains both a rectangular sash window and a diamond-shaped window above a double-hung window and the door that serves as the main entrance to the church. A hip-roofed belfry with round, louvered vents (reminiscent of wheel windows) sits atop the bell tower and supports a cross. Narrow sash windows pierce the sides of the structure. The roof is covered with asphalt shingles. A one-story gable-roofed addition extends from the rear of the structure.

St. Paul's church is a vernacular Gothic-Romanesque hybrid structure with a centrally placed square bell tower (Rifkin 1980:142). The origins of the architectural style exhibited by St. Paul's are fairly clear. There are definite antecedents to this structure in New York and Pennsylvania, and it was already prevalent in New York during the late eighteenth century (see Rose 1963:321-322). This common style of church is well-known in the Midwest and was transplanted from previously settled areas to the east of the Great Lakes (Robinson 1994). As such, this structure does not exhibit any identifiable German ethnic traits.

Figure 5. St. Paul's Evangelical Lutheran Church

Material expression of German ethnicity in cemeteries within the City of Crandon and the three surrounding Townships (Crandon, Lincoln, Nashville) is, surprisingly, not strong given the strong German flavor in the early years of the church. Cemeteries examined include the Town of Crandon Cemetery, the Town of Nashville Cemetery, and Lakeside Cemetery in Crandon. The Town of Lincoln has no cemetery of its own. The Town of Crandon and the Town of Nashville cemeteries exhibit no distinct ethnic mortuary behaviors. Only one gravemarker in the former cemetery exhibits a Germanic surname, that of Clifford C. Krauel who died in 1977 (Thompson 1994:20-21). In the latter cemetery, only two gravemarkers exhibited non-Anglican surnames, that of a member of the Stahl family and that of Bertha Branhan.

The only indication of German ethnicity occurs within Lakeside Cemetery, which is located within the city limits of Crandon. This is a large cemetery that exhibited Polish/Eastern European, German, and Anglican surnames. A large number of the gravemarkers were obelisk and cross-vault obelisk types, with common tablet, pulpit, scroll, and block types also well represented. The best expression of German ethnicity is the gravemarker illustrated in Figure 6. This marker is a painted cast iron crucifix ornately decorated with angels, scrollwork, and molding. The inscription on this marker was in German but was broken so the family name could not be determined. The inscription reads as follows:

PET [missing]
GEB. 8 JUNE [missing]
GES. 14 MARZ 1920.
RUHE IN FRIEDEN

The earliest German surnames noted were Blankenheim (1911), Burkholtz (1916), Fasbender (1917), Vroman (1916), Kleinschmidt (1916), and Scharf (1917). It was noted that these surnames do not recur on later gravemarkers at the cemetery nor do they occur in the current telephone directory for Crandon-Argonne. This could indicate that these families are no longer resident in the Crandon area, either due to relocation or to the family name dying out.

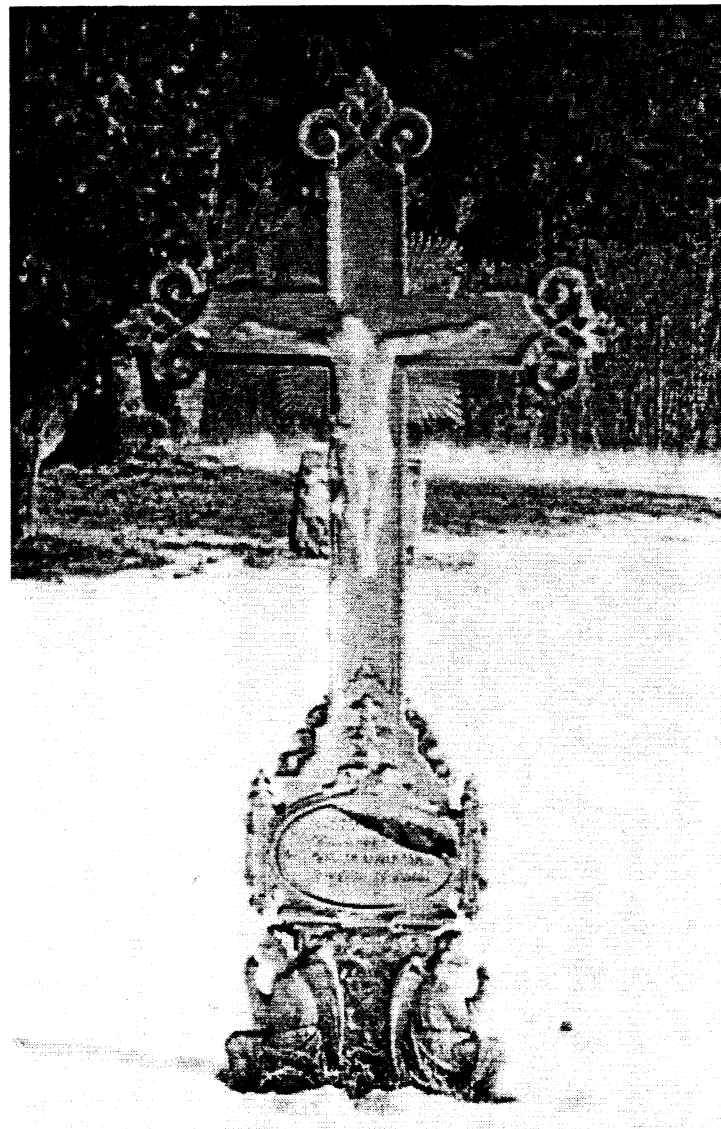


Figure 6. German Gravemarker, Lakeside Cemetery

Nevertheless, later gravemarkers with Germanic surnames do occur, though obvious ethnic expression is lacking.

In sum, there does not appear to be a strong expression of German ethnicity in the Crandon area, though it may persist elsewhere in Forest County. The potential for German ethnic expression within the APE is, therefore, low.

Polish Communities

The main influx of Polish immigrants to Wisconsin occurred before 1890. In most areas of Wisconsin, they constituted a relatively settled, organized, and self-conscious group by the turn of the century. The vast majority of Wisconsin's Polish immigrants came from German Poland, a trend that makes Wisconsin's Polish population unique. Imbued with a strong national consciousness, the desire to transmit one's Polish cultural identity, especially via the Polish Catholic Church, was particularly strong in Wisconsin's Polish communities (Legreid 1986b).

Driven by a desire to become landowners, entire families of Poles emigrated from German Poland between the 1850s and 1870s, though most German or Prussian Poles emigrated in the 1880s. By 1900, Wisconsin's Polish population ranked fourth nationally behind Illinois, New York, and Pennsylvania. Though urban concentrations outnumbered Polish agrarian communities, more Poles worked in agriculture (23 percent in 1900) than in any other state. The three most sizeable rural Polish communities were in the Portage/Marathon County area, the western border counties (especially Trempealeau County), and the farming areas northwest of Green Bay (Brown, Shawano, Oconto counties). Efforts to settle in northern Wisconsin did not occur until the late nineteenth century with the advent of rail transportation in this area of the state (Legreid 1986b).

According to Davis (1990:17, 42), Polish immigrants came to Forest County hoping to establish farmsteads despite having little education and knowledge of American farming.

Nevertheless, this group appears to have succeeded where many others failed, as evidenced by the Polish-dominated community of Armstrong Creek.

Available plat maps for Armstrong Creek demonstrate that land ownership is dominated by people of Polish descent (Rockford Map Publishers, Inc. [Rockford] 1971). Large areas of contiguous tracts owned by families with Polish surnames suggest an enclave with a long-standing history of settlement and interaction. Among the most common family names are Kozlowski, Wilczynski, Wikowski, Gudowicz, Frydrych, Tomazewski, Wysocki, Kulczyski, Wywialowski, Sadowski, Wozniak, and Piantek to name a few. Polish surnames are also common for the roads of the area (Rockford 1971).

The field view of Armstrong Creek revealed that the only church is St. Stanislaus Kostka Catholic Church, which reaffirms the Polish dominance in the community. The mortuary behavior exhibited at the Pine Hill Cemetery located in Section 25 of the Town of Armstrong Creek (T37N/R16E) is also consistent with the Polish ethnicity of the community. Specifically, Pine Hill Cemetery is a small cemetery that exhibits the distinct mortuary behaviors of an active, long-term Polish/Eastern European community. The majority of gravemarkers in Pine Hill Cemetery were tablet, pulpit, or near-ground block type markers. These gravemarkers exhibited Polish/Eastern European surnames such as Kulczycki, Danka, Piartek, Makowski, Marinich, Gorka, Tomaszewski, and Frydrych, while those of other nationalities are few in number.

Expressions of the Roman Catholic faith in the cemetery were ubiquitous. Most of the graves at Pine Hill, including the oldest, had grave offerings. These offerings, including artificial flowers, flowered wreaths, religious statuary, and toys, attest to the vitality of the long-term, resident Polish families of the community. The oldest gravemarker noted was Vastel Sadoski's, a private with the First Division, 28th Wisconsin Infantry who died on July 22, 1918. This date is consistent with the relatively late arrival of Polish immigrants in northern Wisconsin (Legreid 1986b) and as inferred from the census figures above.

Though Armstrong Creek is by no means as large or as famous as the rural Polish settlements of Polonia in Portage County or Crivitz in Marinette County (Legreid 1986b), its concentrated pattern of land ownership, active Catholic church and cemetery, and Polish Heritage Days festival is a clear indication that TCPs may exist for the Armstrong Creek Polish community. This community is, however, located well to the northeast of the Crandon Project location. Other such clearly defined Polish communities are not documented for Forest County and were not observed in the Crandon area. The potential for Polish ethnic expression and, by extension, a Polish-related TCP in the project area is, therefore, low.

Kentuck Communities

Prominent among the groups moving into Forest County in the early twentieth century were the Kentucks, a group of diverse ethnic stock emigrating from the coal fields and Appalachian Mountain region of Kentucky. As a group, the Kentucks had a significant impact on the economic and political life of Forest County. They were probably attracted to Forest County for many of the same reasons that caused others to move to the region: employment opportunities in the logging industry and inexpensive land (Davis 1990, personal communication 1995).

The Kentucks had a reputation of being disputatious. In the town of Alvin, where they were most numerous and concentrated, they acquired a good deal of political influence. In other parts of the county, however, they were frequently cast as pawns in the political battles between the local populace and the timber barons (Davis 1990, personal communication 1995).

Wherever they settled, the Kentucks brought a new and significant element to the economy of that area, moonshining. The distilling and sale of illicit liquor probably did not begin with the arrival of the Kentucks in Forest County, but it is certain that after their coming bootlegging became one of the economic mainstays of the county. Local lore closely associates moonshining with Kentuck enclaves. Crandon and Armstrong Creek are also frequently

mentioned in accounts of bootlegging raids and trials (Davis 1990, personal communication 1995; *Forest Republican [FR]* 1985; *Rhinelander Daily News [RDN]* 1986).

Like the Germans, the Kentuck contingent settled in scattered groups throughout northern Wisconsin and appear to have been fiercely independent (Davis 1990:16). Kentuck settlement appears to have been a slow "filtering-in" over the years that, in most cases, would not have resulted in the formation of a distinct enclave. Settlement primarily focused on the communities of Alvin and Nelma, Nashville, Pine Lake, and Pickerel Lake, as well as parts of Oneida and Vilas counties (Davis, personal communication 1995). The greatest concentration in Forest County, however, was in the town of Alvin. A contingent of Kentuck migrants founded the agricultural and logging hamlet of Nelma in the town of Alvin near the Michigan-Wisconsin border (Davis 1990:17) and the village of Alvin further to the south early in the twentieth century. One lake, aptly named Kentuck Lake, in the extreme northwest corner of the town of Alvin, reflects the heritage of the area.

The early twentieth-century contingent from Kentucky that settled in the town of Alvin initially included the Buttler, Hall, Huff, Jacobson, May, Perry, Powell, Puckett, Spencer, and Thrashler families. The Halls and Huffs arrived in 1902, while most of the other families arrived soon after hearing reports of the abundance of forest land and its promise. Many stayed with the Halls and Huffs while locating and building their own homes. The Huff family owned the store that housed the first post office in the settlement. Huff personally chose the name Alvin after Alvin Spencer a Baptist Minister whose family moved to the area in 1908 and purchased the Huff homestead. Nelma was apparently named after Nelma Spencer of the same family (Shapodock, by D. Miller, ms. on file at Nicolet National Forest office, Rhinelander, Wisconsin).

As recently as 1976, an elderly resident of the area (Howard K. [Buddy] Larimer) recalled that

> the people from the Alvin area were mostly from Kentucky and often moved back and forth. Often they went back for wives. The land around Alvin was similar, except for the cold, had large areas of wood, lots of game, lots of fish and very few outlanders. The old ballads, turns of speech, names and dances I remember...the way of living there was just like home - violating and moonshine" [Shopodock, by D. Miller, ms. on file at Nicolet National Forest office, Rhinelander, Wisconsin].

It is apparent from Mr. Larimer's perspective that the traditional ways that defined the Kentucks are, in his words, "vignettes of a by-gone era - lumber camps, depression, prohibition, and the stills turning out the local panther-water, forest fires and fire fighting, the wild life then" (Shapodock, by D. Miller, ms. on file at Nicolet National Forest office, Rhinelander, Wisconsin). The persistence a Kentuck traditional community in Alvin is further weakened by the fact that many of the descendants of the founding families no longer reside in the area (Shapodock, by D. Miller, ms. on file at Nicolet National Forest office, Rhinelander, Wisconsin).

The heritage of the Kentucks has been recognized in Forest County by instituting Kentuck Day, an event that celebrates the Kentucky origins of many people, their independent lifestyle, and the traditional lore describing activities such as moonshining. Yet, the existence of such an event is not indicative of a Kentuck TCP in and of itself given the widespread nature of Kentuck settlement in northern Wisconsin. Even if it were a festival with long-standing historical stature, such a festival would have to be tied to a specific location or enclave, such as the town of Alvin, for it to be considered as (or an integral part of) potential TCP. The potential for a Kentuck TCP to be present in the project area is considered low.

Interviews were sought with individuals who might have knowledge of traditional communities, especially the German, Polish, and Kentuck communities in the Crandon area. Interviews were conducted with Mrs. A. W. Freimuth, a life-long resident with German and Czech ethnic ties; Reverend Markus O. Koepsell, retired minister of St. Paul's Evangelical Lutheran Church; and Michael Monte, life-long resident of Argonne and Crandon and local historian. Mr. Mark Davis of the University of Wisconsin-Baraboo, who has conducted extensive historical research on Forest County, and Mr. Jack Holzhueter, folklorist at the State Historical Society of Wisconsin, were also consulted (see Appendix A). Though the latter two individuals provided information pertaining to Kentuck and European ethnic groups in Forest County, this information has been integrated into the above discussion. Because Mrs. Freimuth, Reverend Koepsell, and Mr. Monte are long-term local residents, the results of the interviews (see Appendix B for a listing of questions asked in the interviews) with these individuals are discussed in detail, below.

Freimuth Interview

On December 13, 1994, an interview was conducted with Mrs. A. W. Freimuth in her home in Crandon. Mrs. Freimuth is 86 years old and is a life-long resident of Forest County. Mrs. Freimuth's maiden name was Cedzo. Both of Mrs. Freimuth's parents were immigrants. Her father immigrated to the United States prior to 1900 from an area of Bohemia that today would be part of the Czech Republic. In 1904 her mother emigrated from an area that today would be part of Slovakia. Initially they resided in West Allis, Wisconsin, but moved to the town of Nashville in 1913. The primary motivation for her parents' move to northern Wisconsin was the availability of land. Her father traded their farmstead in West Allis for an 80-acre parcel in the town of Nashville.

There were few Czech or Slovak residents in Forest County when her parents arrived. They settled in the western portion of the town of Nashville just east of Jennings, a settlement located in southeast Oneida County. The Jennings area had a large population of Poles. The Polish community was culturally and linguistically similar to Czech and Slovak culture and the Cedzos had a close relationship to this community.

Within the home, the Cedzos spoke primarily Czech, although her mother spoke Slovak. The languages are closely allied and speakers of each can readily understand the other. Outside of the home, both of her parents spoke English. The education of the children was provided by the public school system, although children were released from school for religious instruction.

As soon as they were eligible, both of her parents became naturalized citizens. Mrs. Freimuth states that naturalization was the common practice among the immigrants she knew, and the acquisition of American citizenship was a major motivation for immigrating to the United States. Mrs. Freimuth did not recall significant numbers of immigrants moving into or out of the Crandon area. To her recollection, the population of the area was quite stable.

Mrs. Freimuth stated that there were no distinctly ethnic festivals or group activities practiced among the Czech/Slovak/Polish population of the town of Nashville/Jennings area. The Cedzos were Roman Catholic, and there were no ethnic religious celebrations at the Roman Catholic church they attended. Mrs. Freimuth recalls no traditional crafts practiced by her parents or neighbors. Her mother sewed and crocheted but she believes these were practical applications and not folk crafts. Her only knowledge of an eastern European ethnic community in the area is Armstrong Creek.

Mrs. Freimuth's husband of 42 years, the late Art W. Freimuth, was of German descent. Mr. Freimuth worked as an automobile repairman, usually doing body work, and as a projectionist at the local theater. Mr. Freimuth was a member of the second generation of a

German immigrant family. The Freimuth family first resided in New London, Wisconsin, and moved to Crandon in 1901. The primary motivation for the move was a job offer from local businessman Harry P. Keith (of Page and Landeck and Keith and Hiles Lumber Companies) to work as a mechanic in Keith's woodworking shop.

The Germans in the Crandon area did not form a cohesive community according to Mrs. Freimuth. She did not know if the Germans who came to the Crandon area were from any particular region in Germany. Her husband spoke English both within and outside the home and was a member of St. Paul's Evangelical Lutheran Church. Like the Roman Catholic community, the Lutheran church in Crandon did not celebrate any ethnic religious holidays. There were no secular ethnic festivals celebrated either historically or today. Mrs. Freimuth had no recollection of her mother-in-law or other members of her husband's family practicing traditional crafts. Mrs. Freimuth recalled that some of the German families in the Crandon area farmed but had no recollection of where the farmsteads were or if any were extant. She was aware of the plans to construct the Crandon mine and knew where it was to be located but stated that she did not know any of the people who lived there and, therefore, had never visited the area.

Koepsell Interview

On December 12 and 28, 1994, interviews were conducted with Reverend Markus O. Koepsell, the retired pastor of St. Paul's Evangelical Lutheran Church in Crandon and the brother of Walter J. Koepsell, pastor of St. Paul's from 1938 to 1941. Reverend Koepsell served as St. Paul's pastor from 1971 until 1987.

Reverend Koepsell confirmed that the congregation had been founded in 1902 and that it had, at first, been served by a circuit rider who also pastored at Argonne and Hiles. He also stated that most of the church's records prior to 1946 have been lost, most likely due to the carelessness of previous ministers who served the congregation.

During the early days of the congregation the services were conducted in German but by the time his brother Walter became pastor at St. Paul's in 1938, the services were, and had been for some time, held in English. Also gone by this time were any distinctly German feasts, festivals, or religious services. Reverend Koepsell did not know the origins of the Germans in the congregation but believed that some of the Kentuckians who relocated to Crandon during the first decade of the twentieth century were of German ancestry.

Reverend Koepsell had no knowledge of other traditional German denominations, such as the Evangelical Brethren, operating in Forest County either presently or in historical times. He was aware of the plans to construct the Crandon mine and knew where it was to be located. He did not know of any Kentuck or Euro-American ethnic settlement or traditional activities that may have occurred there.

Monte Interview

On December 7, 1994, an interview was conducted with Michael Monte, the publisher of the *Pioneer Express* and the owner of Pioneer Printing in Crandon. Mr. Monte is known as the area's most knowledgeable local historian. He is a life-long resident of Forest County having resided in both Argonne and Crandon. Pioneer Printing was responsible for the reprinting of two early twentieth-century publications promoting the city (Brady 1990; FCBS 1990).

Mr. Monte related that he believed the German population in the Crandon area came from two sources: Germany and Kentucky. Rather than a coherent immigration to Forest County, the German population, like the most other settlers in the region, filtered into the area and did not settle in distinctive ethnic enclaves. He stated that the primary exception to the near lack of ethnic enclaves in Forest County was the Polish community of Armstrong Creek. The primary motivation for resettlement to the Crandon area was the availability of jobs in the lumber mills, particularly the Page and Landeck mill in Crandon. Mr. Monte was well aware of the

Crandon Project and its location and did not know of any Kentuck or Euro-American ethnic settlement or traditional activities that may have occurred there.

ETHNICITY AND TRADITIONAL COMMUNITIES IN THE AREA OF POTENTIAL EFFECT

Based on the above review of traditional and ethnic communities in the region and interviews with local informants, there is little evidence to suggest that there are any communities that actively maintain their heritage through cultural practices and beliefs specific to locations associated with the Crandon Project. Ethnic groups in the Crandon area have been absorbed and integrated into the mainstream of American life. The pattern of immigrant settlement is one of dispersal, which sharply contrasts with the pattern observed for the community of Armstrong Creek and which has persisted to this day. Although the heritage and history of certain groups (e.g., the Kentucks) are widely recognized by people of Forest County and the Crandon area, such recognition does not constitute maintenance of system of shared beliefs and practices that has maintained the lifeways of a specific group of people. The final section of this chapter, therefore, seeks to conclusively demonstrate why Euro-American TCPs do not exist within the Crandon Project APE.

Further investigation of the distribution of immigrant populations and historic patterns of land use strongly support the contention that there are not now and never have been traditional communities with an interest in lands within the APE. Based on the 1930 census, which lists 4,266 foreign-born individuals or native-born individuals with foreign or mixed parentage for Forest County, the municipalities that saw the largest ethnic populations include the towns of Wabeno (n=761), Laona (n=709), Armstrong Creek (n=644), and Argonne (n=390) and the city of Crandon (n=490). In contrast, the towns of Lincoln and Nashville, within which the proposed project will be located, had among the smallest ethnic populations in Forest County. In the town of Lincoln, there were only 15 foreign-born individuals and 43 individuals with foreign or mixed parentage. In the town of Nashville, there were only 41 foreign-born individuals

and 92 individuals with foreign or mixed parentage. Knowing that several ethnic groups are probably represented, it is highly unlikely that a coherent ethnic community ever existed in either township.

This conclusion is underscored by the history of land use within and in the vicinity of the project area. Cartographic documents do not depict settlement within the APE prior to 1920 suggesting that active settlement of this rural area was late (Anonymous 1890; Chapman 1868, 1870; Chicago and North Western Railway Company 1888, 1890; Forest County Map Company 1900; Shepard 1908).

Forest County tax rolls provide a fairly complete history of land ownership, and the project area first enters the documentary record in 1897 when sections of the then town of Crandon are patented by railroad companies and private citizens. Large sections of the project area are owned by the Chicago & North Western Railway Company, the CLLC, and various companies and individuals involved with land management and lumbering. The picture of land usage in the project area is typical for northern counties where the land is poor and timber is the major exploitable resource. Wide-spread land speculation and lumbering occurred within in the project area and environs from an early date. Land changes hands frequently and taxes on the lands held by individuals frequently are paid by lumbering companies such as the Danaher and Melendy Company from Ludington, Michigan (Forest County Tax Rolls [FCTR], Area Research Center [ARC], University of Wisconsin-Stevens Point [UW-SP], Stevens Point, Wisconsin).

Substantial portions of the project area have been owned by the CLLC of Marshfield, Wisconsin, and its predecessors and subsidiaries. According to the documentary record, CLLC's activity in the project area begins in 1909 when it owns all of Sections 30, 32, 34, and part of Section 35 of T35N/R13E in the project area. This property was purchased from W. D. Connor for $25 per acre (Connor Lumber and Land Company Records [CLLCR], Wisconsin State Historical Society Archives [WSHSA], Madison). At about this same time, the R. Connor Company holds the NE, SE, and SW quarters of Section 30 and all of Section 31 of

the same township. By 1920, Section 31 has become the property of the town of Nashville but CLLC holds all of Sections 30 and 32 in T35N/R13E. Also during this year the Underwood Veneer Company of Wausau, Wisconsin, paid the taxes on properties held by the Chicago & North Western Railway Company in Section 29 of T35N/R12E (FCTR, ARC, UW-SP, Stevens Point, Wisconsin). In addition, the 1920 *Map of Forest County, Wisconsin* (Ritter 1920) depicts, for the first time, evidence of settlement. Keith, a logging settlement established by the Keith and Hiles Lumber Company, is located along the Wisconsin & Northern Railroad (Ritter 1920) and has been documented archaeologically by Mier et al. (1995). No other evidence of settlement in the APE is depicted on this map (Ritter 1920).

The 1924 *Plat Book of Forest County, Wisconsin* (Hixson 1924) depicts this pattern of land ownership by lumber and land companies for the project lands and beyond in Sections 19, 20 and 28 through 33 of T35N/R13E, Sections 23 through 25 and 36 of T35N/R12E, and Sections 5 and 6 of T34N/R13E (Figures 7, 8, 9). Within these sections, the only privately owned parcels are that of E. Laird in Section 19 and J. P. Frank in Section 28 of T35N/R13E, and L. Montzfeldt and P. Brown in Section 25, H. Whitley in Section 24, and J. O. Sherman, J. Barnes, and F. Reindel in Section 23 of T35N/R12E. The rest are owned by lumbering concerns (C. W. Fish, Keith and Hiles, Menasha Woodenware, Underwood Veneer, Connor Lumber and Land, Kimberly Clark), land companies (Shawano Land, Wisconsin Town and Lot, Iola Land, Keith and Hiles Land, Nor Land), the Chicago & North Western Railroad, and the State of Wisconsin.

The year 1930 saw the greatest extent of CLLC holdings. At this time the company held the SE1/4 NE1/4, the SE1/4 NW1/4 and all of the SE1/4 of Section 25 of T35N/R12E as well as the S1/2 of the NW1/4 and the entire S1/2 of Section 30 and all of Section 32 in T35N/R13E. Also, the Underwood Veneer Company holds all of Section 29 (FCTR, ARC, UW-SP, Stevens Point, Wisconsin).

Though land continues to change hands through the years, the vast majority remains in the hands of lumbering concerns. Nevertheless, the critical issue is whether anyone actually

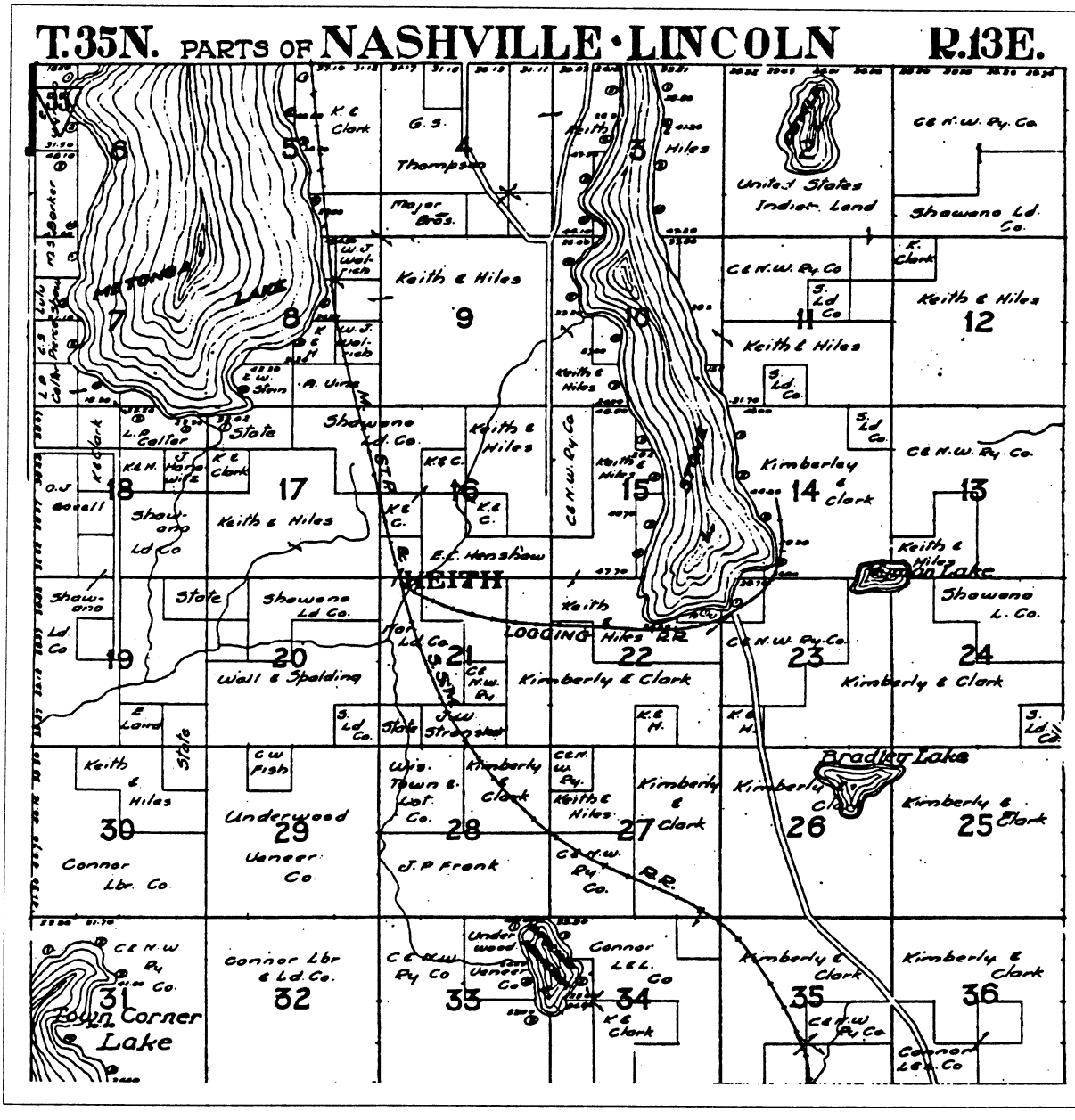


Figure 7. Land Ownership in T35N/R13E in 1924

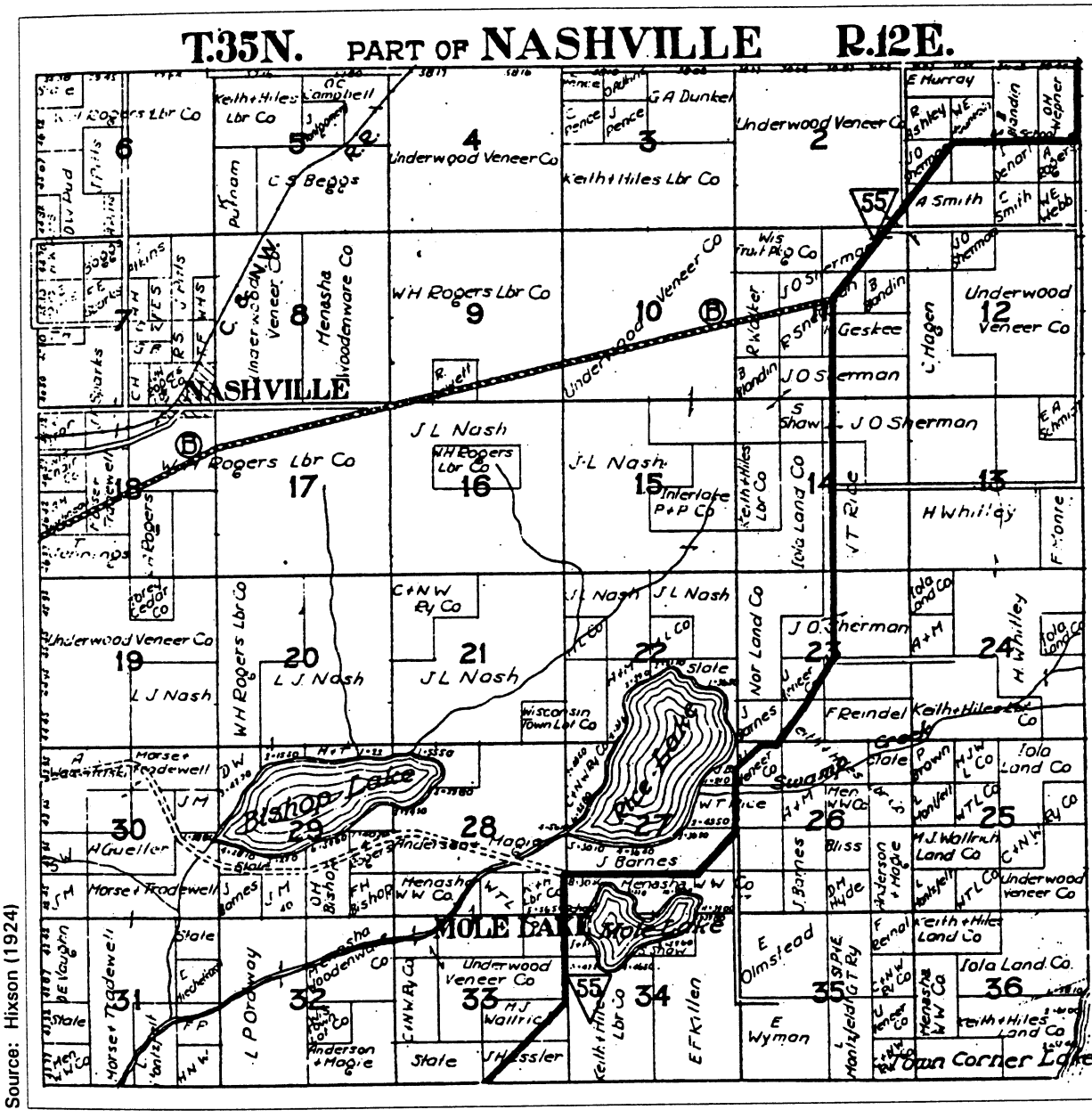
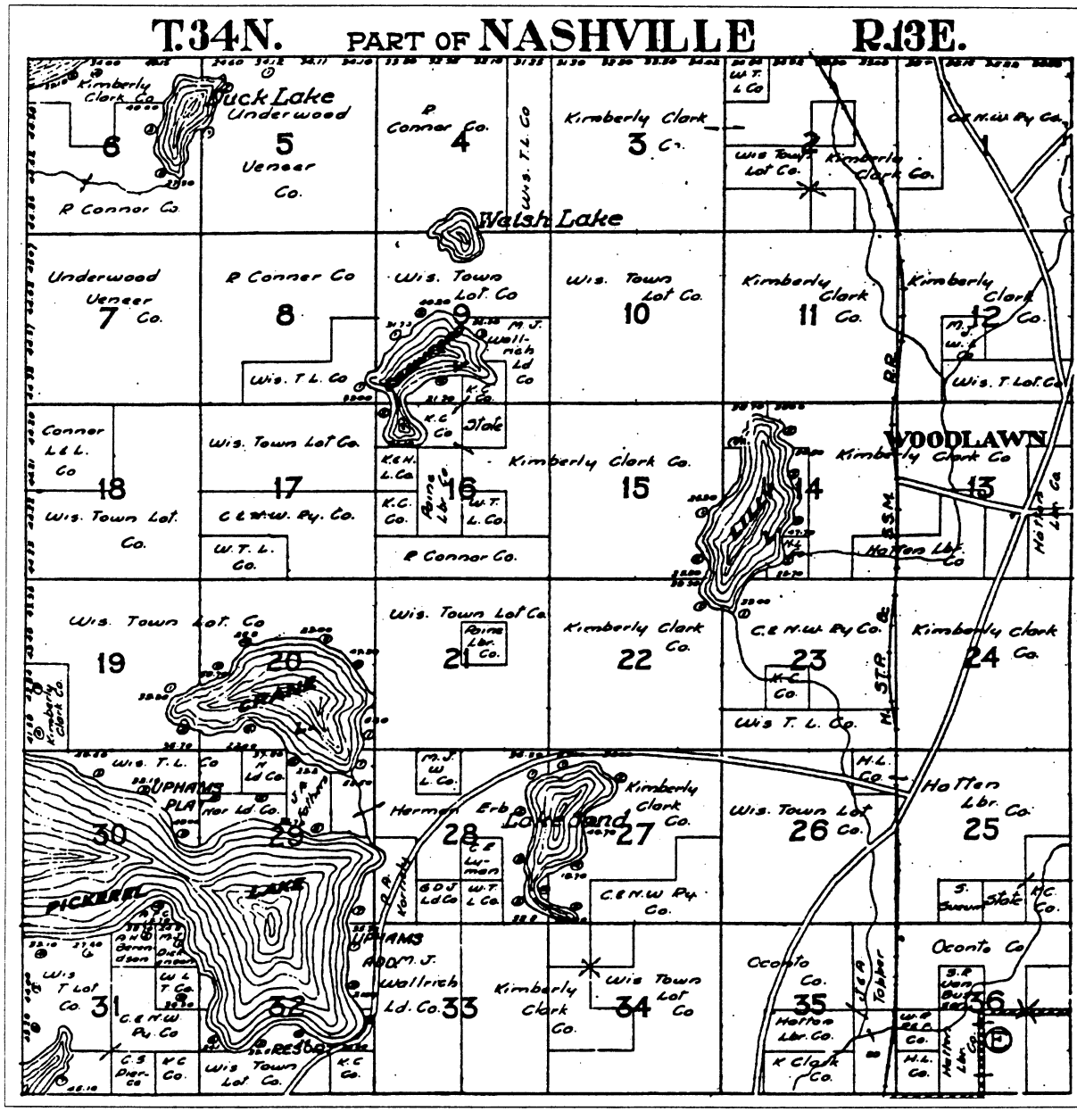


Figure 8. Land Ownership in T35N/R12E in 1924


T.34N. PART OF NASHVILLE R.13E.
Buck Lake
Underwood Veneer Co.
P Conner Co.
Kimberly Clark
Wis. T. L. Co
Welsh Lake
Wis. Town Lot Co.
Kimberly Clark Co.
C. & N.W. Ry Co.
WOODLAWN
Hatton Lbr. Co.
Wis. T. L. Co.
Wis. Town Lot Co.
C. & N.W. Ry. Co.
W. T. L. Co.
K.C. Co.
K. & H. L. Co.
Connor L. & L. Co.
Reins Lbr. Co.
M. J. Wallrich Ld Co
Slate
Hatton Lbr Co
UPHAMS PLAT
Upham Ld. Co.
PICKEREL LAKE
Hermon Erb
Lowland
C. & N.W. Ry Co.
Upham's Add
M. J. Wallrich Ld. Co.
Oconto Co.
Kimberly Clark Co.
Wis Town Lot Co
Hatton Lbr. Co.
K Clark Co.
H.L. Co.
Wis T Lot Co.
C. & N.W. Ry. Co.
C.S. Pier Co.
Wis Town Lot Co.
Wis. Town Lot Co
Wis T. L. Co
Wis T Lot Co.
Wis T. L. Co
Wis T. Lot Co.
Wis. Town Lot Co.
Kimberly Clark Co.
Wis. Town Lot Co.
Wis. Town Lot Co
Wis. Town Lot Co.
Kimberly Clark Co.
Wis. Town Lot Co.
Kimberly Clark Co.
Kimberly Clark Co.
Kimberly Clark

lived on these lands. Unfortunately, the 1924 plat does not depict structural information. The Wisconsin Land Economic Inventory Maps (WLEI) for the area (WLEI, Series 1956, 1928-1938, Wisconsin State Historical Society Archives [WSHSA], Madison), however, do depict structures, transportation features and other aspects of the built environment. Sections 19, 20 and 28 through 33 of T35N/R13E, Sections 24, 25 and 36 of T35N/R12E, and Sections 5 and 6 of T34N/R13E were all mapped in July, August, and September 1936 by G. Sheldon, T. Sheldon, W. Ford, and E. Brownell. At this late date, virtually the entire area is still unsettled, few parcels are depicted as cleared, only two stump pastures are depicted, and no land whatsoever is indicated as cultivated. Forest cover includes a mix of popple with white birch (some with pin cherry or black spruce), mixed upland hardwoods, swamp hardwoods, sedge marsh, white cedar and balsam, hemlock with hardwoods, and tag alder and willow along Swamp Creek.

Only portions of three sections have any evidence of human occupation (structures, pastures, agricultural fields) based on the WLEI maps (WLEI, Series 1956, 1928-1938, WSHSA, Madison). In Section 31 of T35N/R13E, four summer cottages are depicted along the east and north shores of Little Sand Lake. In Section 20 of T35N/R13E are a sawmill in a stump pasture (NW1/4 NW1/4 NE1/4) and a school and a house in a clearing (NE1/4 NE1/4). The latter three structures are a portion of the abandoned settlement of Keith's Siding documented archaeologically by Mier et al. (1995). Finally, in Section 19 of T35N/R13E, occupied dwellings are located at the end of a road in the NE1/4 NE1/4 SW1/4, east of the road in the SW1/4 NW1/4 NE1/4, and west of the road in the NE1/4 NE1/4 NW1/4. Small clearings surround these structures and a stump pasture is noted south of and adjacent to the clearing associated with the structure west of the road in the NE1/4 NE1/4 NW1/4. Two other clearings (one isolated and one opposite the structure at the end of the road) are also depicted on the map.

Curiously, the land associated with these structures and clearings is depicted on the 1924 plat map (Hixson 1924) as owned by the Shawano Land Company. Thus, it is likely that the land was purchased and the structures erected between 1924 and 1936. Regardless of who

owned the land and the structures, the important information provided by these maps is that the project area was virtually unoccupied from the inception of settlement through and including 1936.

The next available map of the area that depicts both landowners and structures is the 1958 atlas and plat book (Rockford 1958). Again, there is a paucity of occupation within and near the Crandon Project area. No structures are depicted in Sections 5 and 6 of T34N/R13E as the land is owned by timber and manufacturing concerns (Kimberly Clark Company, CLLC, and Somo Timber, Inc. [Illinois-Owens Glass Company]).

In T35N/R12E, structures are depicted in the SW1/4 SE1/4 SW1/4 of Section 25 (276 acres) on land owned by R. Hoffman, in the SW1/4 SW1/4 NW1/4 of Section 24 (160 acres) on land owned by C. McNeely, and adjacent to State Trunk Highway 55 in Section 23 on parcels owned by A. Riley (35 acres), J. Hillman (165 acres), and T. Jorgerson (156 acres). The structures on these properties were erected sometime between 1936 and 1958. Other landowners in Sections 23, 24, 25, and 36 who own property but for whom no structures are depicted include the federal government (120 acres), CLLC (80 acres), E. Howerton (40 acres), S. N. Moe (40 acres), E. Hoffman (40 acres), L. Hoffman (40 acres), J. Walentowski (80 acres), S. R. Davis (320 acres including Oak Lake), S. Davis (80 acres), H. Vollmar (77.6 acres), A. M. Kelchner (20 acres), N. Pryor (18 acres), C. F. Webb (20 acres), V. Galo (57.4 acres), J. Topp (122 acres), W. Sherman (80 acres), and J. Schallock (80 acres).

In T35N/R13E, all of Section 33 is owned by V. Richter. Two structures are also depicted on the north shore of Ground Hemlock Lake, presumably summer cabins. All of Section 32 is owned by CLLC and no structures are depicted in this section. The landowner of Section 31 is not depicted on the plat map nor could the owner be located in either the 1940 or 1955 tax records. The most recent tax listing inventoried by CCRG for this section indicated ownership by the town of Nashville in 1920 (FCTR, ARC, UW-SP, Stevens Point, Wisconsin). Two structures are, however, depicted on the north shore of Little Sand Lake in Section 31 that

are presumably summer cabins. One is, in fact, located in the same position as one depicted in 1936 on the WLEI maps (WLEI, Series 1956, 1928-1938, WSHSA, Madison).

All of Section 29 and the SW1/4 of Section 28 is owned by Forest County while V. Richter, the federal government, and Kimberly Clark Company each owns 160 acre parcels in this section. CLLC owns the majority of Section 30, while the State of Wisconsin and Forest County own the remainder. Again, no structures are depicted in these sections of T35N/R13E.

In Section 20 of T35N/R13E, two structures are depicted that were erected sometime between 1936 and 1958. One is located in the NE1/4 SE1/4 NE1/4 on land owned by G. Palmer (360 total acres in this section) and the other is located in the SE1/4 NE1/4 NE1/4 on land (40 acres) owned by L. Zelechowski who apparently purchased the land between 1939 and 1940 (in Mier et al. 1995). Other landowners in Section 20 for whom no structures are depicted include L. Palmer (40 acres), R. Hale (40 acres), E. Rudloff (80 acres), State of Wisconsin (40 acres), and the Kimberly Clark Company (40 acres).

Finally, in Section 19 of T35N/R13E, three structures are depicted, two of which occur in the same locations as those recorded on the 1936 WLEI maps (WLEI, Series 1956, 1928-1938, WSHSA, Madison). The structure first depicted in the SW1/4 NW1/4 NE1/4 on the 1936 map is located on a 40-acre lot owned by R. Gee and the structure first depicted in the NE1/4 NE1/4 NW1/4 on the 1936 map is located on an 80-acre parcel owned by E. Holzer. The third structure depicted on the 1936 WLEI map (WLEI, Series 1956, 1928-1938, WSHSA, Madison) is no longer present. Instead, a structure that was erected sometime between 1936 and 1958 is depicted in the NW1/4 SW1/4 NE1/4 on a 40-acre tract owned by A. Hearn. Other landowners in this section for whom no structures are depicted include the State of Wisconsin (80 acres), F. Lyons (65 acres), F. Tracy (15 acres), W. Reisner (79.3 acres), I. Tanner (159 acres), L. Paul (39 acres), and S. N. Moe (39 acres).

Overall, the pattern of land ownership and development is remarkably consistent through time. First, the vast majority of land is owned by commercial enterprises and government agencies prior to 1960. Second, of the land owned by private individuals, only three structures (possibly farmsteads) and a few summer cottages were present on the landscape in 1936. By 1958, this figure had not appreciably changed, with seven structures and a few summer cottages. It is worth noting that within the project lands per se (Figure 1), no standing structures are extant and the windshield survey of the APE revealed a mere three farmsteads, none of which were ethnically distinct in terms of building type, attribute(s), and layout. The remaining structures within the APE date after World War II. The three building groups that were evaluated and found not to be architecturally significant in 1982 (MacDonald and Mack Partnership 1982), currently lie outside the project boundaries and APE.

Third, the pattern of land ownership does not provide any evidence of a past or historically viable ethnic community or enclave. Surnames associated with the land are not indicative of any one ethnic group. The ethnic (predominantly German and Eastern European) surnames that do occur are few in number and are not spatially clustered. This situation is in stark contrast to the spatial aggregation of Polish and Croatian surnames in Armstrong Creek and Velebit, respectively.

CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

The effort to identify Euro-American TCPs that potentially would be impacted by the proposed Crandon Project first focused on identifying extant traditional communities in Forest County and the Crandon area. Research and interviews with local residents and people knowledgeable about the history of settlement in Forest County and/or the Crandon area support the contention that few traditional communities exist. The only strong evidence for the existence of a viable traditional community is the Polish settlement in the town of Armstrong Creek, which was established by Polish immigrants in the 1920s. Though complete documentation of this community and their traditional practices was beyond the scope of this study as Armstrong Creek is located well outside of the project area, the material expressions of ethnicity observed, the active Polish Catholic Church and Cemetery, and the pattern of land ownership suggest that additional research would be a profitable endeavor with respect to documenting its historical significance.

Other potential traditional communities considered for this project include German and Kentuck populations. Research demonstrated that the German population was dispersed and quickly absorbed into the mainstream of Forest County socioeconomic life. Material expressions of German ethnicity are rare and no on-going ethnic traditions could be demonstrated, even within the context of the Evangelical Lutheran Church which has served the community since the early twentieth century.

The Kentuck population of Forest County may, at one time, have comprised one or more traditional communities. Though their pattern of settlement was largely dispersed and occurred over a long period of time throughout Forest, Vilas, and Oneida counties, the Kentuck settlement in the town of Alvin appears to have been concentrated and established quickly in the early twentieth century. The Kentuck community in Alvin even gained a good deal of political

and economic influence which, though somewhat conjectural, may be indicative of what was, at one time, a close-knit, traditional community. Their cohesion as a community, however, appears to have disappeared with the decline of moonshining and their eventual absorption into the mainstream of society.

Research pertaining to the existence of potential TCPs within the APE demonstrated that the ethnic population was small in the towns of Nashville and Lincoln and may not have been large enough to have sustained a traditional community. The fragility of small ethnic communities is demonstrated by Velebit which was abandoned within 15 years of its settlement (Project Plan: Historical Investigations of Velebit, ms. on file Nicolet National Forest office, Rhinelander, Wisconsin).

Analysis of the pattern of land ownership and development demonstrated that the vast majority of land within the APE was owned by commercial enterprises and government agencies prior to 1960 and, therefore, was unlikely to have been a location for a TCP. Of the land owned by private individuals, only three structures (possibly farmsteads) and a few summer cottages were present on the landscape in 1936. By 1958, this figure had not appreciable changed. The pattern of land ownership does not provide any evidence of a past or historically viable ethnic community or enclave. Surnames associated with the land are not indicative of any one ethnic group. The ethnic (almost exclusively German and Polish) surnames that do occur are few in number and are not spatially clustered. This situation is in stark contrast to the spatial aggregation of Polish and Croatian surnames in Armstrong Creek and Velebit, respectively. Finally, the field view of the APE did not identify any material elements of ethnicity.

Based on the foregoing, it is concluded that no definable traditional communities can be associated with the project area. Consequently no Euro-American TCPs are present within the project area and no additional research is recommended or warranted.

REFERENCES CITED

Allen, T. S.
1868 *The Legislative Manual of the State of Wisconsin.* Atwood and Rublee, Madison.

Anderson, T. G.
1993 Czech-Catholic Cemeteries in East-Central Texas: Material Culture and Ethnicity in Seven Rural Communities. *Material Culture* 25(3):1-18.

Andrus, E.
n.d. Agrarian Ethnic Frontiers: A Review and Case Study. Ms. on file, Department of Anthropology, State University of New York, Binghamton.

Anonymous
1846 *Wisconsin.* J. H. Colton[?], New York[?]

1890 *Plats of Vilas, Forest, and Oneida Counties.* Publisher and location unknown.

Brady, F. H.
1990 *Crandon, Its Industries and Resources.* Reprinted. Pioneer Printing, Crandon. Originally published 1906, Brady and Sons, Crandon, Wisconsin.

Breese, L.
1871 *The Legislative Manual of the State of Wisconsin.* Atwood and Culver, Madison.

Calkins, C. F. and W. G. Laatsch
1986 Belgians. In *America's Architectural Roots: Ethnic Groups that Built America,* edited by Dell Upton, pp. 100-105. The Preservation Press, Washington, D.C.

Chapman, S.
1857 *Chapman's New Sectional Map of Wisconsin with Most Recent Surveys.* Dyer and Pasmor, Milwaukee.

1868 *Chapman's New Sectional Map of Wisconsin.* S. Chapman, Milwaukee.

1870 *Chapman's New Sectional Map of Wisconsin.* S. Chapman, Milwaukee.

1876 *Sectional Map of Wisconsin.* S. Chapman, Milwaukee.

Chicago and North Western Railway Company

1888 *Map of the United States Land Grant to the Chicago and North Western Railway Company in the State of Wisconsin.* Land Department, Chicago and North Western Railway Company, Chicago.

1890 *Map of the United States Land Grant to the Chicago and North Western Railway Company in the State of Wisconsin.* Land Department, Chicago and North Western Railway Company, Chicago.

1901 *Facts Bearing on the Timber Lands of Northern Wisconsin and Michigan.* Chicago and North Western Railway Company, Chicago.

1914 *Hunting and Fishing Resorts of Northern Wisconsin and Michigan Reached by the Chicago and North Western Railway.* Chicago and North Western Railway Company, Chicago.

Colton, J. H.

1854 *Wisconsin.* J. H. Colton, New York.

1855 *Wisconsin.* J. H. Colton, New York.

1857 *Colton's Township Map of the State of Wisconsin Showing the Milwaukee, Watertown, and Madison Railroad and Its Connections.* J. H. Colton, New York.

Conner, M. R.

1972 *A Century with Conner Timber.* Wozalla Publishing Company, Stevens Point, Wisconsin.

Davis, M.

1990 *Boosters, Bootleggers, and Bamboozlers, Forest County, Wisconsin, in the 1920s.* Unpublished master's thesis, Department of History, University of Wisconsin, Madison.

1995 Northern Choices: Rural Forest County in the 1920s, Part I. *Wisconsin Magazine of History* 79(1):3-31.

1995-1996 Northern Choices: Rural Forest County in the 1920s, Part II. *Wisconsin Magazine of History* 79(2):109-138.

Demeter, C. S. and G. G. Robinson
1995 *Phase II Archaeological Evaluation of the Seibert Farmstead (20EM83), US-31 Petoskey Area Improvement Project, Emmet County, Michigan.* Commonwealth Cultural Resources Group, Inc., Jackson, Michigan.

Ebling, W. D.
1929 *Distribution of Gross Farm Income in Wisconsin.* Unpublished Ph.D. dissertation, University of Wisconsin, Madison.

Finley, Robert W.
1970 *Geography of Wisconsin, A Content Outline.* College Printing & Publishing, Madison.

Forest County Board of Supervisors (FCBS)
1924 *Forest County, Wisconsin, From an Agricultural, Industrial, and Recreational Standpoint.* Forest County Board of Supervisors, Crandon, Wisconsin.

1990 *About Forest County, Wisconsin: The Heart of the Great Hardwood Country.* Reprinted. Pioneer Printing, Crandon. Originally published 1914, Forest County Board of Supervisors, Crandon.

Forest County Map Company
1900 *Map of Forest County, Wisconsin.* Forest County Map Company, Crandon.

Forest Republican (FR) [Crandon, Wisconsin]
1985 Forest County's Early History. 15 August. Crandon, Wisconsin.

Francaviglia, R. V.
1971 The Cemetery as an Evolving Cultural Landscape. *Annals of the Association of American Geographers* 61:501-509.

Handlin, O.
1951 *Uprooted: The Epic Story of the Great Migrations that Made the American People.* Little, Brown and Company, Boston.

Henry, W. A.
1896 *Northern Wisconsin, A Handbook for the Homeseeker.* Democrat Printing Company, Madison.

Hixson, W. W.
1924 *Plat Book of Forest County, Wisconsin.* W. W. Hixson, Rockford, Illinois.

Hole, F. D.
1976 *Soils of Wisconsin.* Wisconsin Geological and Natural History Survey Bulletin 87. The University of Wisconsin Press, Madison.

Hunt, J. W.
1853 *Wisconsin Gazetteer.* Beriah Brown, Madison.

Hunt, W. C.
1901 *Twelfth Census of the United States Taken in the Year 1900.* Population: Nebraska-Wyoming. Department of Commerce, Bureau of the Census, Washington, D.C.

1913 *Thirteenth Census of the United States Taken in the Year 1910.* Population: Nebraska-Wyoming. Department of Commerce, Bureau of the Census, Washington, D.C.

1922 *Fourteenth Census of the United States Taken in the Year 1920.* Population, vol. 3. Department of Commerce, Bureau of the Census, Washington, D.C.

Interior, Department of the
1895 *Report on the Population of the United States Eleventh Census: 1890.* Part I, Department of the Interior, Census Office, Washington, D.C.

Johnson, A. J. and P. Wyckoff
1858 *Johnson's New Railroad and Township Copper Plate Map of Wisconsin, Iowa, Minnesota, and Nebraska From Latest and Best Authorities.* Johnson and Wyckoff, New York.

Kaups, M.
1986 Finns. In *America's Architectural Roots: Ethnic Groups that Built America*, edited by Dell Upton, pp. 124-129. The Preservation Press, Washington, D.C.

Kniffen, F.
1967 Necrogeography in the United States. *The Geographical Review* 57:426-427.

Lapham, I. A.
1865 *A Map of Wisconsin.* Publisher unknown, Milwaukee.

1869 *A New Geologic Map of Wisconsin, Prepared Mostly from Original Observations.* Publisher unknown, Milwaukee.

Legreid, A.
1986a Settlement: German. In *Cultural Resource Management in Wisconsin: Volume 1*, compiled by Barbara Wyatt, pp. 2.1-2.18. Historic Preservation Division, State Historical Society of Wisconsin, Madison.

1986b Settlement: Polish. In *Cultural Resource Management in Wisconsin: Volume 1*, compiled by Barbara Wyatt, pp. 7.1-7.10. Historic Preservation Division, State Historical Society of Wisconsin, Madison.

Levine, F. and T. W. Merlan
1993 Documenting Traditional Cultural Properties in Non-Indian Communities. *CRM* 16 (Special Issue):55-59.

Linebaugh, D. W.
1993 Folk Art, Architecture, and Artifact: Toward a Material Understanding of the German Culture in the Valley of Virginia. Paper presented at the Southern Backcountry: Beginning an Inter-Disciplinary Dialogue conference. University of South Carolina, Columbia.

Locher, J.
1986 The Persistence of Material and Non-Material Culture: German Influence in Appalachia. *Pioneer American Society Transactions* 9:57-62.

MacDonald and Mack Partnership
1982 *Evaluation of the Buildings in the Crandon Project Area, Crandon, Wisconsin.* MacDonald and Mack Partnership, Minneapolis.

Marshall, H. W.
1986 The Pelster Housebarn: Endurance of Germanic Architecture on the Midwestern Frontier. *Material Culture* 18(2):65-104.

Martin, L.
1965 *The Physical Geography of Wisconsin.* Revised. The University of Wisconsin Press, Madison. Originally published 1932.

McClelland, L. F., J. T. Keller, G. P. Keller, and R. Z. Melnick.
1990 *Guidelines for Evaluating and Documenting Rural Historic Landscapes.* National Park Service Bulletin No. 30. National Register of Historic Places, National Park Service, Washington, D.C.

McGaugh, M. E.
1952 *The Settlement of the Saginaw Basin.* Ph.D. dissertation, Department of Geography, University of Chicago.

Mead, F. S.
1990 *Handbook of Denominations in the United States.* Abingdon Press, Nashville.

Meyer, J. W.
1975 Ethnicity, Theology, and Immigrant Church Expansion. *The Geographical Review* 65:180-197.

Mier, L. J., D. Overstreet, R. Watson, and A. Kowenstrot
1995 *Phase II Archaeological Investigation of Keith's Siding (47 Fr 147), A Logging Era Settlement in Forest County, Wisconsin.* Great Lakes Archaeological Research Center, Inc., Milwaukee, Wisconsin. Reports of Investigations No. 377 (Draft).

Milspaw, Y. J.
1983 Reshaping Tradition: Changes to Pennsylvania German Folk Houses. *Material Culture* 15(2):67-84.

Mordt, A. L.
n.d. *The Lodge of Nature's Temple, From Chicago to Crandon, Forest County, Wisconsin.* City of Crandon.

Norris, D. A.
1988 Ontario Gravestones. *Markers* 5:123-149.

Northeastern Wisconsin Regional Planning Commission
1971 *Economic Base Study for Forest County.* Northeastern Wisconsin Regional Planning Commission, Madison.

Oszuscik, P.
1987 Germanic Influence Upon the Vernacular Architecture of Davenport, Iowa. *Pioneer America Society Transactions* 10:17-27.

Page, H. R. and Company (publishers)
1881 *Illustrated Historical Atlas of Wisconsin.* H. R. Page and Company, Chicago.

Parker, P. L. and T. F. King
1990 *Guidelines for Evaluating and Documenting Traditional Cultural Properties.* National Park Service Bulletin No. 38. National Register of Historic Places, National Park Service, Washington, D.C.

Paull, R. K. and R. A. Paull
1977 *Geology of Wisconsin and Upper Michigan - Including Parts of Adjacent States.* Kendall/Hunt, Dubuque.

Per Ola Land Company
1917 *The Story of the Per Ola Settlements in Forest County, Wisconsin.* Crandon.

Rhinelander Daily News (RDN)
1986 Crandon Moon Was Best. 11 November.

Rifkin, C.
1980 *Field Guide to American Architecture.* Bonanza Books, New York.

Ritter, I. R.
1920 *Map of Forest County, Wisconsin.* I. R. Ritter, Crandon.

Robinson, G. G.
1994 Material Culture and Settlement Pattern Among the Germans in the New World: The View from Frankenmuth, Michigan. In *Spatial Patterning in Historical Archaeology: Selected Studies of Settlement* edited by D. W. Linebaugh and G. G. Robinson, pp. 91-116. King and Queen Press, Williamsburg, Virginia.

Rockford Map Publishers, Inc. (Rockford)
1958 *Tri-Annual Atlas and Plat Book, Forest County, Wisconsin.* Rockford Map Publishers, Inc., Rockford, Illinois.

1971 *Triennial Atlas and Plat Book, Forest County, Wisconsin.* Rockford Map Publishers, Inc., Rockford, Illinois.

Rose, H. W.
1963 *Colonial Houses of Worship in America.* Hastings House Publishers, New York.

Roth, F.
1898 *On the Forestry Conditions of Northern Wisconsin.* Bulletin No. 1, Economic Series No. 1. Wisconsin Geological and Natural History Survey, Madison.

Sanborn Map Company
1904 *Crandon, Forest County, Wisconsin.* Sanborn Map Company, New York.

1909 *Crandon, Forest County, Wisconsin.* Sanborn Map Company, New York.

1924 *Crandon, Forest County, Wisconsin.* Sanborn Map Company, New York.

Sebastian, L.
1993 Protecting Traditional Cultural Properties Through the Section 106 Process. *CRM* 16 (Special Issue):22-26.

Seifert and Lawton (lithographers)
1871 *Map of Wisconsin Prepared From Official Records, 1871.* Seifert and Lawton, Milwaukee.

Shepard, E. S.
1908 *Map of Forest County, Wisconsin.* Publisher and place of publication unknown.

Smith, A. D.
1986 *The Ethnic Origins of Nations.* Blackwell, Cambridge, Massachusetts.

Smith, W. R.
1838 *Observation on the Wisconsin Territory.* E. L. Carey and A. Hart, Philadelphia.

Sopher, D. E.
1967 *Geography of Religions.* Prentice-Hall, Englewood Cliffs.

Stone, G.
1991 Material Evidence of Ideological and Ethnic Choice in Long Island Gravestones, 1670-1820. *Material Culture* 23(3):1-30.

Thomas, Cowperwaite and Company
1850 *A New Map of the State of Wisconsin.* Thomas, Cowperwaite and Company, Philadelphia.

Thompson, T. L
1994 *Town of Crandon Cemetery.* Pioneer Express, Crandon.

Tischler, W. H.
1986 Midwestern Germans. In *America's Architectural Roots: Ethnic Groups that Built America*, edited by Dell Upton, pp. 142-147. The Preservation Press, Washington, D.C.

Truesdell, L. E.
1932 *Fifteenth Census of the United States: 1930.* Population, vol. 3. Department of Commerce, Bureau of the Census, Washington, D.C.

1943 *Sixteenth Census of the United States: 1940.* Population, vol. 2. Department of Commerce, Bureau of the Census, Washington, D.C.

Tuttle, C. R.
1875 *An Illustrated History of the State of Wisconsin.* B. B. Russell, Boston.

University of Wisconsin
1931 *Making the Most of Forest County Land.* College of Agriculture, Extension Service, Madison.

Upton, D.
1986 *America's Architectural Roots: Ethnic Groups that Built America.* The Preservation Press, Washington, D.C.

Wilhelm, H. G. H.
1980 German Settlement and Folk Building Practices in the Hill Country of Texas. *Pioneer America* 3(2):15-24.

Wisconsin Department of Health and Social Sciences
1976 *Basic Planning Profile: Forest County.* Division of Mental Hygiene, Bureau of Planning, Evaluation, and Research, Madison.

Wyatt, B.
1986 *Cultural Resource Management in Wisconsin: Volume 1.* Historic Preservation Division, State Historical Society of Wisconsin, Madison.

Youth Community Conservation Improvement Program (YCCIP)
1980 *Memories of Forest County: Historical Research Project.* Youth Community Conservation Improvement Program, Crandon.

Zeitlin, R. H.
1977 *Germans in Wisconsin.* State Historical Society of Wisconsin, Madison.

APPENDIX A

RECORD OF INTERACTION

Crandon Project
Traditional Cultural Properties Investigation
Record of Interaction for Euro-American Component

10/28/94 Crandon Mining Company (CMC) Letter of Intent to Wisconsin State Historic Preservation Officer (SHPO)

10/31/94 Commonwealth Cultural Resources Group, Inc. (CCRG) Letter of Intent to Interested Parties (City of Crandon, Forest County Board of Supervisors, Forest County Potawatomi [FCP], Menominee Indian Tribe of Wisconsin [MITW], town of Lincoln, town of Nashville, Sokaogon Chippewa Community [SCC])

12/04/94 Michael Hobbs, Town of Lincoln Supervisor
Telephone conversation with Mr. Hobbs to inform him of CCRG's fieldwork activities; inquiries made concerning possible local historical informants

12/07/94 Terry L. Thompson, Forest County Historical Society, Crandon
Interview at the office of the *Pioneer Express* in Crandon; discussed the historical collections at the local museum and the lack of research potential with regard to the Historical Society's collections for the Crandon Project; also discussed the location and nature of the Town of Crandon cemetery and purchased a copy of the *Pioneer Express* publication about the cemetery

12/07/94 Michael Monte, publisher of *Pioneer Express* and local historian, Crandon
Interviewed regarding the history of the Crandon area and the different groups of people represented in the community

12/08/94 Richard Pitts, Town of Nashville Supervisor
Telephone conversation with Mr. Pitts to inform him of CCRG's fieldwork activities; inquiries made concerning possible local historical informants

12/08/94 Office of Mayor Vernon Kincaid, Crandon
Telephone conversation with the Mayor's secretary informing him, through her, of CCRG's fieldwork activities in the area and left information where CCRG personnel could be reached if Mr. Kincaid had any questions or concerns

12/12/94 Rev. Oscar Stellick, minister at St. Paul's Evangelical Lutheran Church, Crandon
Interviewed by telephone regarding the history of the church and congregation; he suggested CCRG speak with Rev. Markus Koepsell

12/12/94 Rev. Markus O. Koepsell, retired minister of St. Paul's Evangelical Lutheran Church, Crandon
Interviewed by telephone regarding the history of the church and the congregation and about possible ethnic church practices and festivals

12/13/94 Mrs. A. W. Freimuth, life-long resident of Crandon, Crandon
Interviewed regarding the history of Crandon and the history of the German, Polish Czech, and Slovak settlers in the Crandon area

12/14/94 Rev. Oscar Stellick, minister at St. Paul's Evangelical Lutheran Church, Crandon
Meeting with Rev. Stellick at St. Paul's; provided CCRG with copies of the church's history and a negative made from a ca. 1906 photograph of the interior of the church

12/28/94 Jack Holzhueter, folklorist, Editorial Department of State Historical Society of Wisconsin, Madison
Interviewed regarding ethnicity in the Crandon Area; provided CCRG with background information concerning the probable origins and practices of German settlers in the Crandon area and of the spiritual and social practices of the Wisconsin Evangelical Lutheran Synod

12/28/94 Rev. Markus O. Koepsell, retired minister of St. Paul's Evangelical Lutheran Church, Crandon
Follow-up interview with Mr. Koepsell regarding the practices of St. Paul's church and congregation

3/22/95 Mark Davis, Assistant Professor of History, University of Wisconsin-Baraboo
Interviewed by telephone regarding the socioeconomic and political background and history of the Kentucks who emigrated from Kentucky to the Crandon area during the first two decades of the twentieth century

Institutional Contacts

American Geographical Society Map Collections, Golda Meir Library, University of Wisconsin at Milwaukee - Sharon Hill, Geographer

Archives of Michigan, Lansing - Lee Barnett, Archivist

Archives of the State Historical Society of Wisconsin, Madison

Area Research Center, Cofrin Library, University of Wisconsin at Green Bay - Michael Klawitter, Archivist

Area Research Center, Golda Meir Library, University of Wisconsin Milwaukee - Randy Bell, Librarian

Area Research Center, Forrest L. Polk Library, University of Wisconsin at Oshkosh - Fritz Knoebel, Librarian

Area Research Center, Learning Resources Center, University of Wisconsin at Stevens Point - Bill Paul, Archivist

Crandon Public Library, Crandon

Library, Michigan State University, East Lansing

Library of Michigan, Lansing

Library of the State Historical Society of Wisconsin, Madison

Memorial Library, University of Wisconsin, Madison

Nicolet National Forest Service Office, Rhinelander - Mark E. Bruhy, Heritage Resources Management Archaeologist; Kim L. Potaracke, Archaeological Technician; and Cynthia M. Stiles, State Region 2 Archaeologist

Rhinelander Public Library, Rhinelander

Richard J. Brown Library, Lake Julia Campus, Nicolet Area Technical College, Rhinelander - Susan L. Brant, Reference Librarian

Steenbock Memorial Library, University of Wisconsin, Madison

APPENDIX B

INTERVIEW QUESTIONNAIRE

Crandon Project
Traditional Cultural Properties Investigation
Interview Questionnaire for Euro-American Component*

1) What is the country/state of origin of your family?

2) Which of your (and spouse's) ancestors immigrated to this country and when did they arrive?

3) Did they become US citizens?

4) Where did they initially reside?

5) When did they arrive in northeastern Wisconsin?

6) How many families comprised the German (Polish, Kentuck, Czech) community in the Crandon area and does it still exist?

7) What part of Germany (Poland, Czechoslovakia, Kentucky) did these people come from?

8) What attracted the German (Polish, Czech, Kentuck) people to the area?

9) Was the German (Polish, Czech, Kentuck) population of the area stable? Was there a lot of in- and out-migration or did families settle in and stay for long periods of time? Where did new families come from?

10) What kind of work did they do? Did any farm? Are any farms of German (Polish, Czech, Kentuck) immigrants still standing?

11) What language did you speak in the house (church)?

12) What language did you speak outside of the home?

13) What was the predominant religion among the Germans (Poles, Czechs, Kentucks) and what church(es) did they attend?

14) Were there any distinctly German (Polish, Czech, Kentuck) holidays celebrated in the area?

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*The list of questions provided above is a comprehensive list of all questions asked. The wording of each question was modified for each interview, as appropriate. In addition, Rev. Koepsell and Mr. Monte were asked questions regarding the Lutheran Church and history of Crandon, respectively.

15) Where did the children go to school and was there special religious instruction available?

16) Where were German (Polish, Czech, Kentuck) residents buried?

17) Were there any traditional crafts practiced in the home, at church, by fraternal organizations?

18) Do you know where the Crandon Mine will be located?

19) Do you know of any traditional activities (farming, berrying, sugaring, social, religious) that took place there or in the vicinity?

20) Were any ethnic festivals ever celebrated?

21) Do you know of anyone else who might be able to provide additional information on this subject?

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