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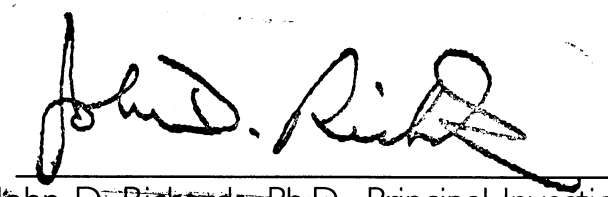
Phase I Archaeological Investigations of Potential Soil Absorption Sites, Forest County, Wisconsin

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PHASE I ARCHAEOLOGICAL INVESTIGATIONS OF POTENTIAL SOIL ABSORPTION SYSTEM SITES, FOREST COUNTY, WISCONSIN

by

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Historic Resource Management Services

University of Wisconsin-Milwaukee

Archaeological Research Laboratory Report of Investigations No. 136

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MANAGEMENT SUMMARY

During the period May through August 1998, archaeological field crews from University of Wisconsin-Milwaukee Historic Resource Management Services (HRMS) conducted archaeological investigations in Forest County, Wisconsin. Archaeological fieldwork was conducted in association with the field investigations to generate data on potential Crandon Project soil absorption sites. Fieldwork was conducted on eight tracts identified as possible soil absorption system sites as described in Section 1.3.

Archaeological investigations were designed in accordance with Wisconsin Archaeological Survey (WAS) guidelines endorsed by the State Historical Society of Wisconsin. Specific workplans were developed in consultation with Foth & Van Dyke, Nicolet Minerals Company, HRMS, and the U.S. Army Corps of Engineers, St. Paul District.

Archaeological investigations included literature and archival research to identify any known historic resources in the affected areas and field investigations at each selected site. Archaeological field investigations included pedestrian survey and archaeological monitoring of backhoe excavated soil test pits. Backhoe excavations were documented by line drawings of exposed soil profiles, color and black-and-white photographs, and videorecordings. Pedestrian survey techniques consisted primarily of shovel probing due to the presence of extensive ground cover in the affected areas. However, surface survey and visual inspection was occasionally possible in those areas where erosional surfaces were exposed.

The entire acreage comprising Areas E, G, J, K, XB, and XC was subjected to archaeological survey. Within Area H, all but portions of the West subarea (Field 6) was completely surveyed. Survey in the West portion of Area H and XF was restricted to those locales directly affected by the engineering studies. In these cases, archaeological survey was conducted along access routes, at test pit sites and at any associated staging areas.

A total of eight potential sites were subjected to archaeological investigations. Sites investigated include Area E, Area G, Area H, Area J, Area K, Area XB, Area XC, and Area XF. Results of the archival investigations indicate that no previously reported historic properties are present within or adjacent to any of the affected areas. Field investigations failed to document the presence of previously unreported historic resources in Areas E, H, J, K, XB, and XC. A single late 19th Century-early 20th Century site, the Hess site (Field ID# 98.36.1), was identified in Area G.

The newly identified archaeological site in Area G comprises 1.36 acres and was defined by the presence of historic artifacts recovered from shovel probes and by the presence of surficial remains. Artifacts recovered include: kaolin pipe fragments, glass fragments, faunal remains, three-pronged fork, spoon, ceramic button, hand-forged bolt, suspender buckle, nails, can fragments and stove pipe flashing. Surficial remains

include 9 depressions on the west side of an unimproved road and four large excavated areas on the east side of the unimproved road.

The artifact assemblage is suggestive of a domestic habitation although no domestic structures were identified. Material culture recovered from the eastern portion of the site suggests a range of occupation from as early as 1850 to as late as 1910. One of the small pits in the western portion of the site provides evidence for fire in the form of melted glass and a layer of ash and carbonized wood at 25 to 30 cm below surface. There are no artifacts associated with the features on the east side of the road and their size is more suggestive of logging activities rather than domestic occupation. These features may be related to those in the eastern portion of the site or they may be more recent.

In the event that Area G is selected as a preferred site for the soil absorption system, additional investigations at Site 98.36.1 should be conducted to determine if the site is potentially eligible for listing on the National Register of Historic Places. If either the West (Field 6) portion of Area H or unsurveyed portions of Area XF is selected as a preferred site, additional archaeological survey should be conducted in any potential impact area not previously surveyed. If construction is restricted to previously surveyed portions of these tracts, no additional investigation is necessary. No additional investigations are recommended in Areas E, J, K, XB, or XC. Construction of the potential soil absorption system in any of these latter locales or in surveyed portions of Area H and Area XF should have no effect on the local cultural resource base.

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INTRODUCTION

PROJECT DESCRIPTION

This report presents the results of a cultural resource management study conducted for Nicolet Minerals Company as part of the Crandon Project. Phase I archaeological investigations were conducted at a variety of potential soil absorption system locations.

Personnel of the University of Wisconsin-Milwaukee's Historic Resources Management Services conducted archaeological survey for this project from May through August of 1998. Archaeological materials, field notes, and supporting documentation are currently curated at the University of Wisconsin-Milwaukee's Archaeological Research Laboratory, Milwaukee, Wisconsin.

The organization of this report follows the general guidelines outlined in the Wisconsin Archaeological Survey *Guidelines for Conservation Archaeology in Wisconsin* as follows: Project Background; Environmental Setting; Cultural Setting; Methodology; Results; and Conclusions and Recommendations.

PROJECT BACKGROUND

The zinc and copper mine currently proposed by Nicolet Minerals Company is located near the town of Crandon in Forest County, Wisconsin. Project location within Forest County is shown in figure 1.

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

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 subsequently re-opened the permitting process with the intent to develop an underground mine projected to extract 5,500 tons of ore per day.

In 1998, Rio Algom Limited acquired sole interest in the Crandon Project and subsequently renamed the company Nicolet Minerals Company. Nicolet Minerals Company's plans for the project include crushing the

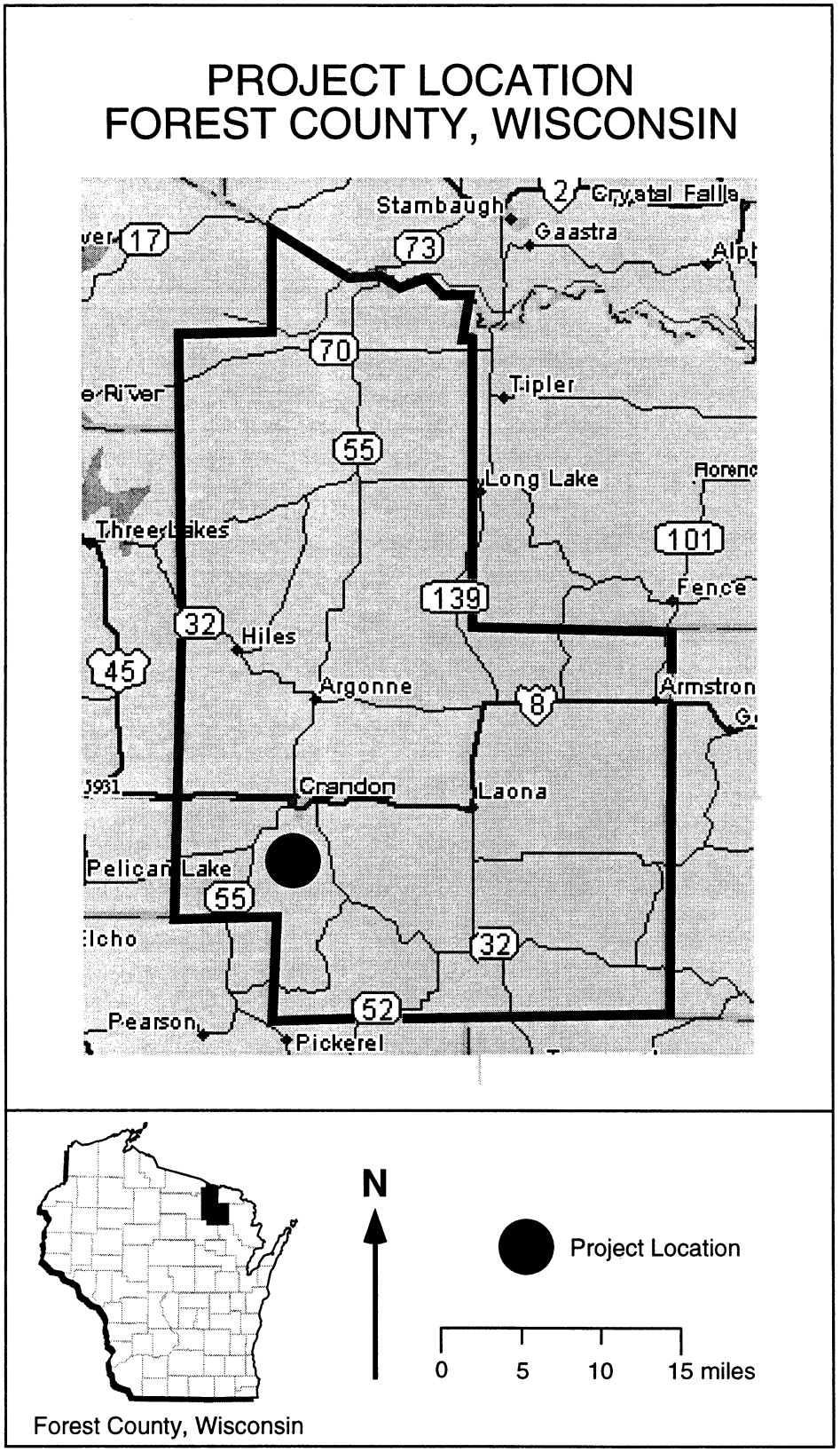


Figure 1: Project locale within Forest County, Wisconsin

extracted ore in an underground facility prior to concentrating the crushed ore in a surface concentrator. Concentrates targeted for recovery include zinc, copper, and lead. Tailings generated by the concentrator facility will be disposed in mined-out areas underground or in lined cells in the tailings management area. 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. Support facilities related to the mine include offices, warehousing, storage facilities, and utility corridors. An overland access road and railroad connection to the nearby Wisconsin Central Railroad is also planned.

ENVIRONMENTAL SETTING

THE MODERN ENVIRONMENT

Commercial logging and lumbering that occurred from the late 1860s through the 1920s resulted in the removal of the old growth conifer-hardwood forests that covered most of Forest County. Today second-growth forests have reclaimed some of the landscape. Current upland forests of Forest County are comprised primarily of younger stands of mesic and xeric forests while the wetlands consist mainly of spruce, conifer, and hardwood forests. Mesic forests are dominated by sugar maple, yellow birch, beech, and hemlock. Alternatively, xeric forests today include white pine, red pine, jack pine, and the three most common associated hardwoods: red maple, trembling aspen, and white birch (Curtis 1959: 101-220). The swamp-marsh depressions of Forest County include tamarack-black spruce forests, cedar-balsam fir conifer forests, and ash-yellow birch-hemlock forests.

Current faunal species found in the project area are typical of those occupying the northern hardwood forest of Wisconsin (McCabe 1972, Dickinson 1972, Young 1972, Schorger 1973). Information on project area endangered and threatened mammals, birds, amphibians, reptiles, fish, mussels, and their habitats is documented in the *Environmental Impact Report for the Crandon Project* (Foth & Van Dyke 1995/1998).

Forest County and the project area can be characterized as a forested region with occasional pockets of agriculture. Human settlement, environmental, and economic factors have all contributed to produce the modern environment of Forest County.

LAND USE HISTORY

Aboriginal use of Forest County, while spanning thousands of years, is less dramatically evident than that of Euroamerican land use. The vast forests encountered by early Euroamerican settlers of Forest County are gone. Systematic logging of the region from the late 1860s through the 1920s left a

landscape largely devoid of forests. Settlement on the stump-doted lands of northern Wisconsin was promoted at the turn of the century and cutover agricultural of the 1920s left additional marks on the depleted lands. Cutover lands of the area were found largely unsuitable for long term agriculture because of unproductive soils and harsh climate. The collapse of early farming climaxed during the depression of the 1930s. This depression was the impetus for the formation of the state forest system and efforts to replant the eroded landscape (Vogeler 1986: 84-121). Clearly Euroamerican logging and agriculture activities have dramatically modified the landscape and floristic and faunal communities of Forest County and the project area.

PRESETTLEMENT ENVIRONMENT

PHYSIOGRAPHY

The following discussion is intended to provide a general overview of the project environs. Detailed reconstructions of the physiographic or topographic characteristics of the project locality may be found in Chamberlin (1877), Martin (1965), Curtis (1959), Hole (1976), Paull and Paull (1977), and Finley (1970). Furthermore, research conducted in association with exploratory mining investigations for the Crandon Project has provided detailed information of the project area bedrock geology (Foth & Van Dyke 1995/1998).

Martin (1965) places the project area within the physiographic province known as the Northern Highland of Wisconsin. The Northern Highland of Wisconsin is part of the Laurentian Upland dome and is underlain by Precambrian bedrock of igneous and metamorphic origins (Martin 1965: 34; Paull and Paull 1977:72). The topography of the Northern Highland region is primarily the result of physically altering processes that include glaciation, sedimentation, weathering and erosion. Characteristic of the project area is glacially produced irregular topography. The area is thickly blanketed by glacial drift deposits producing a landscape characterized by drumlinized uplands associated with elongated hills as well as scattered outwash flats pitted with kettle formations (Paull and Paull 1977). The drainage pattern of the Northern Highlands is typical of a glaciated region. Streams, kettle lakes, marshes and swamps are abundant in the project region.

The modern climate of the project area is characterized as temperate continental, cool and moist, with an average annual precipitation of 30 inches. Well-developed summer and winter seasons exist. Winters are relatively long and cold with a January mean temperature of 14 degrees Fahrenheit and an annual seasonal snowfall of 50 to 60 inches. The normal growing season (between first and last killing frosts) averages 100 days near Crandon, Wisconsin. Summers in northern Wisconsin are generally cooler

with a mean July temperature of 68 degrees Fahrenheit (Finley 1970: 51-63).

VEGETATION

Reconstruction of the pre-settlement distribution of floral communities can be obtained from early land survey records and personal accounts of settlers, lumberjacks, and trappers. Early description of the forest of northern Wisconsin date to the French explorers of the seventeenth century (Curtis 1959:172). Most of the land in Forest County was originally covered by conifer-hardwood forest, and the remainder was comprised of prairie grasses and plants favoring marsh and swamp environments (Curtis 1959; Finley 1970:64-67). Based on original survey field notes of 1832-1866 the original vegetation cover of the Northern Highland consists of pine, hemlock, sugar maple, yellow birch and beech (Finley 1970:67). White pine was dominant on the drier soils and uplands. Early settlers to Forest County noted the presence of black bear, elk, moose, wolverine, martin, white tailed deer, gray and red squirrel, red fox, coyote, bobcat, cougar, timber and brush wolf, skunk, mink, otter, beaver, muskrat, weasel, and chipmunk. However, the clearing of upland forest areas drastically changed natural habitats causing the disappearance of many of the larger animals such as moose, cougar, wolverine and elk (McCabe 1972; Schorger 1973).

SOILS

In Forest County, the types of parent material, climate, vegetation, and glacial topography have helped determine the soil-forming processes. Soils of this region are primarily formed from glacial till and outwash, and include soils defined by Hole (1976:98-99) as soils of the Loamy Uplands and Plains. During initial lumbering, glacial landforms were exposed and the organic zones of the uplands and hills were eroded by water and wind.

No detailed soil survey of Forest County has been published; however, preliminary research by the Soil Conservation Service has classified the project area soils in the Pence soil series (Natural Resources Conservation Service 1992). Physical characteristics of the soils found within the project boundary are the result of the position and relief of the local landscape on which they developed. Project soils are classified as Pence Sandy Loam on 0 to 6 percent slopes. These are somewhat well-drained soils formed in silty and loamy deposits that are highly erodible. Soils of this series are found on glacial outwash deposits and near lake margins.

ARCHAEOLOGICAL CONTEXT

CULTURAL SETTING

The following discussion is not intended to provide a detailed overview specific to the project locality. For a discussion of broadly applicable patterns of prehistoric and historic peoples' utilization of Northern Wisconsin see Green et al. (1986), Salzer (1969,1974), Mason (1981), Overstreet (1983), Stiles (1994), and Rohe (1985). For a specific discussion of the project area refer to the Cultural Resource Management Program for the Crandon Mining Company Crandon Mining Project, Crandon, Wisconsin (Overstreet and Richards 1995).

PREHISTORY

Information on the culture history of the Crandon region is based primarily on information derived from the Lakes district of Vilas and Oneida Counties. Archaeological survey and excavation conducted by the Beloit College Northern Lakes Project in the 1960s provides the basis for a local chronology (Salzer 1969, 1974, 1986a, 1986b). Table 1 provides a generalized Archaeological Sequence for Northern Wisconsin. The following summary of Salzer's work provides a framework for understanding the prehistoric resources in the Crandon region.

PALEOINDIAN

Paleoindian traditions are subdivided into two temporal categories as follows: Early Paleoindian, (10,000-9,000 B.C.) identified by chipped stone technologies associated with fluted projectile points; and Late Paleoindian, (9,000 - 5,000 years B.C.) commonly associated with unfluted laceolate-shaped stone projectile points.

No known Early Paleoindian sites or fluted points are known from northern Wisconsin. It is unclear whether this is a result of a landscape unsuitable for human occupation during Early Paleoindian times, or a result of the ephemeral nature of sites dating to this time period.

Two late Paleo-Indian phases have been identified in the area. The earliest is the Flambeau Phase (7,000 BC) which has Agate Basin projectile points and a lithic assemblage which is predominantly Hixton silicified sandstone. Flambeau Phase sites are small (1 acre) and are located on high ground at lake outlets and along lakeshores. Although some materials from this phase have been found on the surface, excavated components are deeply buried under windblown sands and silts.

TABLE I:
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	**Oneota** *Green Bay*	*Sandy Lake* / *Black Duck* / *Lakes*
1000	950	**Late Woodland**	*ClamRiver*
		Heins Creek	
		Middle Woodland	*Red Cedar* / *Nokomis*
A.D. / 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

The subsequent Minoqua Phase (5,000-1,000 BC) has Scottsbluff-like projectile points and a variety of lithic tools including large bifaces and scrapers. Although Hixton is present in the assemblage, other lithic raw materials including basalt, chert, and rhyolite were in use. Minoqua Phase sites are also found along lake shores and lake outlets and are known from both surface and buried contexts.

Archaic

The Archaic Tradition (5,000-1,000 years B.C.) is most often conceptualized as the change from Late Paleoindian big game hunting to less focal, more settled lifestyles. This is tied to changing climatic conditions at the end of the Pleistocene glaciation. In general, Archaic traditions are more regionally specific, exhibit more settled "base camps" and communal mortuary areas often placed on prominent landscape features. The Archaic Tradition is divided into Early, Middle, and Late temporal units.

Early Archaic sites (5,000-4000 B.C.) have not been identified from the region around the Crandon Project. The reasons for this absence are not entirely clear (Overstreet 1996).

Salzer (1969, 1974) has identified an ephemeral Middle Archaic occupation in northern Wisconsin The Squirrel River Phase (4,000 BC) is known from only one site situated at a lake outlet. Corner and side-notched points as well as a variety of other lithic tool types characterize the component. Lithic raw materials include non-local debris such as Hixton, chert, and a little Knife River chalcedony. A few artifacts are made of copper.

Late Archaic assemblages (2000-1000 B.C.) are also rare in northern Wisconsin. The Burnt Rollways Phase is known from one excavated site along a high stream bank and two other surface sites. Salzer (1974) estimates this phase dates to 2,000-1,000 BC. The projectile points are corner notched and a variety of stone tools occur. Points tend to be manufactured from chert, and other lithic materials include quartz, Hixton, and chalcedony. Copper is also found on the sites.

Woodland Tradition

Two broadly defined cultural traits are used to differentiate Woodland Traditions from the earlier Archaic Traditions: the appearance of ceramic technologies, and a shift from burial on prominent landscape features to burial in constructed earthern mounds. The Woodland tradition is commonly divided into Early, Middle and Late. In northern Wisconsin Early and Middle are lumped together into "Initial Woodland" after Salzer (1969, 1974).

Unlike earlier cultural manifestations in northern Wisconsin, many more Initial Woodland sites, defined by Salzer as the Nokomis Phase (AD 200),

are present. Components are known from both surface and excavated contexts and are found along rivers, at lake outlets, along northern lakeshores, at lake inlets, and on islands. Sites also appear to be larger than previous periods and may be up to ten acres in size. Pottery appears for the first time during this phase. Decorative styles resemble both North Bay and Havana materials. Lithic raw materials are characterized by non-local materials such as Dongola chert, Hixton, red chert from Barron County, and Knife River chalcedony. The stone tools include stemmed knives and projectile points as well as other types. There is substantial evidence for manufacturing of copper tools at Nokomis Phase sites. The first evidence for actual houses in the lakes district is associated with the Nokomis Phase.

Probably the majority of known sites in northern Wisconsin date to the Late Woodland Lakes Phase (AD 600-1400). Lakes Phase sites are found along lake shores, at lake outlets, on peninsulas, on islands, along rivers at rapids, and at the confluence of streams and rivers. The sites range in size from 1 to 40 acres. Burial mounds appear for the first time during this phase and may be conical, linear, or tapered in shape. Early in the phase the pottery resembles Madison Cord-Impressed, and later in the phase the materials are like Point Sauble and Aztalan collared. Oneota ceramics are also present. The lithic assemblage includes small triangular projectile points, other tools, and waste flakes composed primarily of quartz. Bipolar quartz cores and flakes have been found on Lakes Phase sites. Small copper tools such as fishhooks are also found.

Historic Native American

The Historic Period begins in Wisconsin with the 17th century arrival of French explorers. The journals and records of these early explorations indicate that the first documented occupants of northeastern Wisconsin were the Menominee and the Winnebago. Later occupants were the Sauk and Fox, Potawatomi, and the Chippewa.

From the late 17th century through the early 19th century, relationships between the Europeans and the Indians were dominated by the fur trade; a system created by European demands for the pelts of beaver, muskrat, and other small furred animals. In this system the Indians trapped and hunted the animals and traded them for goods such as blankets, cooking pots, guns, decorative articles, etc. at posts located throughout the north. Initially, the trade was carried out by the French. It later passed to British and finally to American interests. Throughout this process, Native American socioeconomic patterns were changed and much of the aboriginal material culture was lost. By the 19th century the Indians had become fairly reliant on the fur trade, although some traditional subsistence pursuits such as hunting, fishing, and wild rice gathering continued to be employed.

The 1830s saw the virtual collapse of the fur trade due to a world-wide economic depression and the depletion of fur bearing animals. The firmly

established Euro-Americans then turned their economic interests in the north to such resources as timber and minerals, and negotiated a number of treaties in which the Indians ceded their lands to the United States Government. Ultimately reservations were created throughout the north for the exclusive use of the Indians.

One group living in the vicinity of Forest County, the Sokaogon band of Chippewa, was somehow ignored in the allotment of reserves, and did not receive their own land until 1937. The small Sokaogon reservation is located on Mole Lake in Forest County. Other Native American groups presently living in the vicinity of Forest County are the Lac Vieux Desert Chippewa and the Potawatomi of Forest County who first received tribal land in 1913. The Potawatomi are remnants of a southern Wisconsin group that fled into northern Wisconsin to escape removal to Kansas in the 19th century.

The Logging Era

Logging era sites have been summarized from both archaeological and historical perspectives. For more detailed descriptions see Overstreet et al. (1983), Rohe (1985), Lusignan (1986), and Stiles (1994). Pre 1870s logging was generally conducted by small companies. From 1870-1910 larger companies exploited the pineries utilizing major waterways to move logs. By shortly after the turn of the century, the pine was essentially cut out. The hardwood era dates from 1910 to 1945 and relates to the arrival of the railroads in northern Wisconsin. Rail systems facilitated removal of hardwoods that could not be floated to processing sites along the rivers. Sometime after World War II more modern and less labor intensive lumbering became characteristic of the region. Today, the lumbering industry is predominantly mixed pulp and lumber production. Sites of the pineries era, hardwoods/rail camp era and post World War II era are all known from the project locality. Keith's Siding (47 Fr 147) is a hardwoods era rail siding site known from the project area that has been determined eligible for listing on the National Register of Historic Places.

PREVIOUS INVESTIGATIONS

A detailed compilation of previous investigations can be found in Great Lakes Archaeological Research Center's Reports of Investigation No. 360 (1994). This report reviews the results of previous cultural resource surveys conducted for the Crandon Project. The following discussion is abstracted from that report.

Cultural resources investigations related to the proposed Crandon Mining Project began in 1977 with the Beloit College archaeological survey of approximately 3,820 acres (Salzer and Birmingham 1978; Richards 1994). Great Lakes Archaeological Research Center, Inc. conducted additional archaeological investigations including survey and test excavation in 1981.

At that time an additional 990 acres were investigated (Overstreet and Brazeau 1982). Survey related to an access road, a natural gas pipeline, and a proposed water discharge pipeline was also conducted (Overstreet and Brazeau 1982; Overstreet 1983a, 1983b; Richards 1994).

Historic site and properties surveys were conducted by the MacDonald and Mack Partnership (1982). As a result of this study, three separate building clusters consisting of five individual structures were evaluated. None of these buildings were found to be of these cultural resources investigations were reviewed and commented upon by the Historic Preservation Division, State Historic Society of Wisconsin during the years 1977-1986. With the reactivation of the Crandon Project in 1993, SHPO requested a comprehensive summary of Crandon Project cultural resources management studies conducted relative to that project. Foth & Van Dyke asked Great Lakes Archaeological Research Center, Inc. to compile: *ROI # 360,Overview: Cultural Resource Investigations for the Crandon Mining Company Crandon Project, Crandon, Wisconsin* (Richards 1994).

Finally, archaeological investigations specific to the Area E project site were conducted in during February 1995 (Richards 1996) and failed to identify any historic resources within the sampled locales. However, winter conditions including snow cover and freezing temperatures restricted the 1995 investigations to selected backhoe excavation locations. Consequently, conventional archaeological survey of the entire Area E parcel was recommended in the event that further engineering investigations were planned.

METHODOLOGY

ARCHIVAL RESEARCH

In September of 1998 a literature and archives search was performed by Historic Resource Management Services to update our list of previously recorded historic and prehistoric sites in the vicinity of the project area. Published literature sources consulted include: The Wisconsin Archeologist, a quarterly journal published since 1901; The Wisconsin Magazine of History, the journal of the State Historical 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 from the archives of the State Historical Society of Wisconsin in Madison that were consulted include: 1) 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 Inventory Files, housed at the Historic Preservation Division, State Historical Society of Wisconsin. The second file consulted is

the Historic Preservation Division inventory file also housed at the Historic Preservation Division, State Historical Society of Wisconsin. Map files reviewed 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. Manuscript files investigated include the Charles E. Brown manuscript files and the State Archaeologist's county files. Finally, archaeological survey reports housed at the Historic Preservation Division, State Historical Society of Wisconsin were consulted.

FIELD METHODS

Methods and techniques of archaeological inventory are determined primarily by ground cover conditions and surficial geology of a particular project area. A variety of archaeological investigative techniques were employed during the course of this project. These include traditional survey methodology as follows: (1) simple visual inspection; (2) systematic surface collection, and (3) shovel probing. A modified survey methodology was also employed in particular locales. Finally, archaeological monitoring of exploratory soil absorption system test excavations was conducted. A brief explanation of these techniques is provided below.

Simple Visual Inspection

A simple visual inspection is commonly used to provide a preliminary assessment of the study area. It is at this point that those portions within the project area that can not be surveyed using conventional techniques can be identified. Areas fitting this criteria include: areas that have been heavily disturbed by the development of commercial and residential properties or construction sites; areas such as roads or parking lots that have been paved, heavily graveled, or filled; inundated areas; and ditched roadsides. The entire project area was subjected to simple visual inspection.

Surface Survey

Pedestrian surveys consist of walking areas where at least 20% of the ground surface is visible. Surveyors are spaced at 5 meter intervals along a pre-determined baseline. The entire survey crew walks forward along an agreed upon transect and scans the ground for indications of archaeological sites. Each surveyor is responsible for 5 meters either side of their position. To insure sufficient coverage surveyors often walk a weaving or zigzag pattern within their respective transect. Artifact locations are flagged and a map of artifact distribution is compiled.

SHOVEL PROBING

Shovel Probing is a systematic survey method designed to cope with the problems presented by surveying for prehistoric sites in settings where the ground surface is obscured by vegetation. Prehistoric archeological deposits in these types of settings are rarely exposed at the surface, as they would be in a plowed field. Shovel probing involves the excavation of a small hole, the width of two shovel blades (35x35cm), to a depth necessary to observe culturally sterile soil. The soil is then screened through 1/4" (66mm) hardware cloth and examined for the presence of cultural material. Pits are immediately backfilled upon the completion of the inspection.

To insure complete coverage, crewmembers are spaced along transects at 15 meter intervals. Shovel probes are typically then excavated at 15 meter intervals along each transect. If historic/prehistoric cultural material is recovered, the interval between shovel probes is reduced, and additional probes are excavated at 5 meter intervals along transects oriented to each cardinal direction. Excavation continues until two sterile probe locations are encountered in each direction. This procedure is repeated around each positive probe until the limits of the site or artifact scatter are defined. Artifacts are then collected, and the site limits are marked in a manner allowing precise relocation.

MODIFIED SHOVEL PROBE SURVEY METHODOLOGY

A modified survey methodology was implemented to investigate selected locales of the project area. Rather than subjecting an entire area or unit to a surface collection or shovel test survey, selected locales, designated as backhoe test pit excavation units, were identified in the field. A 200 x 200 foot area was surveyed prior to backhoe test pit excavations. In addition, a 200 foot wide path was surveyed beginning at the point of entry into each parcel and continuing to the location of each backhoe excavation area. This methodology provides survey coverage of entry and exit routes impacted by backhoe machinery en route to test pit excavation units within each study area. Backhoe test pit excavation units and associated access routes were surveyed using standard shovel test or surface collection survey methodology.

BACKHOE TEST PIT MONITORING

Backhoe excavated soil pits were undertaken for Nicolet Minerals Company in order to generate geologic and engineering data. Backhoe test pit excavations measure three to four meters in width and five to eight meters in length. In general, each backhoe test pit is excavated to a depth of roughly one to six meters. Test pits are dug with a large backhoe equipped with a bucket roughly one meter wide to remove soil and expose subsoil stratigraphy. In areas where backhoe excavations took place, an

archaeologist from the UW-Milwaukee, Historic Resource Management Services was present to continuously monitor excavations to identify any potentially intact archaeological deposits. Profiles were drawn for each of the trench excavations. In addition, photographs and video of the excavations were taken.

During the course of the archaeological monitoring of the engineering test pits, descriptions of exposed soil horizons were recorded by the engineering field team as well as the monitoring archaeologists. Consequently, occasional differences may exist between characterizations recorded for purposes of assessing engineering characteristics and those obtained by project archaeologists. Archaeological soil descriptions are provided throughout this report, and are also included on the Test Pit profile drawings attached as Appendix III. These characterizations are intended to delineate discrete stratigraphic contexts in order to segregate any archaeological deposits that might be present. Archaeological soil characterizations are not intended to be used as engineering data.

RESULTS OF INVESTIGATIONS

INTRODUCTION

During the months of May through August of 1998, archaeological field crews from the University of Wisconsin-Milwaukee, Department of Anthropology; Historic Resource Management Services conducted a series of archaeological investigations on selected tracts identified as potential soil absorption areas. Altogether, eight unit areas were subjected to archaeological investigations. For a chronology of archaeological investigations see Table 2. Figure 2 provides the location of all but Area XF, which is well beyond the project site. The location of Area XF is provided in the discussion of that area.

Two locales identified as Area A were also subjected to a series of backhoe test pit excavations. Both of these locations were located in areas previously subjected to archaeological investigation (Salzer and Birminghan 1978). Consequently, these locations were not subjected to any additional field investigations during the HRMS 1998 field season.

Archaeological investigations consisted of a two-part process. The first stage of investigation consisted of either surface collection survey in areas where ground surface visibility was greater than 25% and standard shovel probing survey in areas where vegetation obscured the soil. In addition to standard shovel test surveys, a modified shovel test survey was developed and implemented in several areas. In areas where archaeological deposits were encountered, site limits were determined and no additional investigations were pursued (i.e. backhoe test pits). Table 3 provides

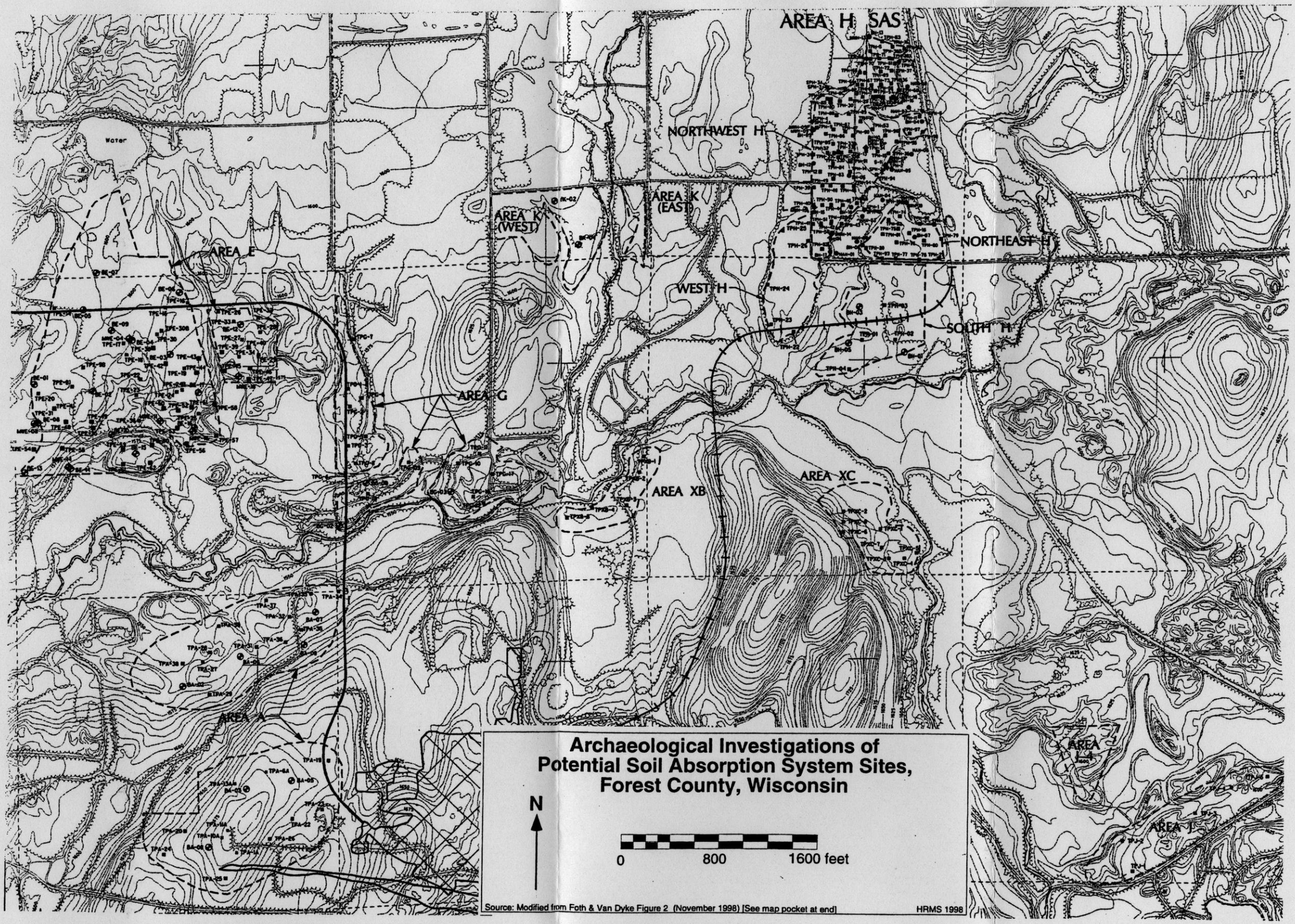
survey and approximate acreage information for each archaeologically surveyed area.

The second stage in the investigative process is comprised of the excavation of a series of backhoe test pits in each of the potential impacted areas. Following archaeological survey of each of the areas to be impacted, the exploratory backhoe test pit excavations were employed. Personnel from Foth and Van Dyke utilized the data gathered from the backhoe excavations for engineering and soil exploratory purposes.

TABLE 2:

Chronology of Archaeological Investigations (1998 HRMS Field Season)

Area	Date Surveyed	Complete Coverage	Impact Areas Only	Date Test Pit Monitored
E				
Central Unit	5/11-5/14	X		5/11-5/14 6/1-4 7/6-8
East Unit	5/13 6/3 7/8	X		5/13 6/3 7/8
South Unit	7/6 - 7	X		7/8
G				
North Unit	6/1	X		7/20-21
South Unit	7/20-24	X		7/20-24
Southeast Unit	7/20-24 & 7/27-29	X		7/20-24
H				
South Unit	7/20-21	X		7/21, 7/31
Northeast Unit	7/31-8/20	X	X	7/31 –8/5 8/25-31 9/1
Northwest Unit	7/31-8/20	X	X	7/31 –8/5 8/25-31 9/1
West Unit				
J				
J-1 Unit	6/2 - 3	X		6/8
J-4 Unit	6/3	X		6/8
K				
East Unit	7/21	X		No excavations
West Unit	7/22	X		No excavations
XF	7/30		X	7/30
XB (S. of Swamp Creek)	7/21-24	X	X	7/21-25
XC (S. of Swamp Creek)	7/21-24	X	X	7/21-24



3.2-20-23

Figure 2: Map of Survey Units

TABLE 3:

Survey Coverage For Eight Potential Absorption System Areas

Area	Acres Surveyed			
	Surface Survey	Shovel Probe Complete Coverage	Shovel Probe Impact Areas	Total
E				
Central Unit			186	186
East Unit		3	24	27
South Unit			30	30
			Subtotal	243
G				
North Unit		37		37
South Unit		16		16
Southeast Unit		27		27
			Subtotal	80
H				
South Unit	3	26		29
Northeast Unit		23		23
Northwest Unit		130		130
West Unit			13	13
			Subtotal	195
J				
J-1 Unit		62		62
J-4 Unit		9		9
			Subtotal	71
K				
East Unit		6		6
West Unit		41		41
			Subtotal	47
XF			12	12
XB (S. of Swamp Creek)		7		7
XC (S. of Swamp Creek)		33		33
			TOTAL	688

ARCHIVAL INVESTIGATIONS

In September of 1998 a literature and archives search was performed by Historic Resource Management Services to update our list of previously recorded historic and prehistoric sites in the vicinity of the project area.

PREVIOUSLY REPORTED SITES WITHIN THE PROJECT AREA

No cultural resources were identified within the project boundaries nor were any cultural resources noted within a distance of one mile of the project area. For a more comprehensive review of cultural resources within Forest County please refer to the Cultural Resource Management Program for the Crandon Mining Company Crandon Mining Project, Crandon, Wisconsin (Overstreet and Richards 1995).

FIELD INVESTIGATIONS

AREA E

Description

Area E is comprised of three discontiguous units totaling approximately 243 acres. The three units located in Area E have been assigned individual locale designation and are as follow: Central E unit, East E unit, and South E unit (see figure 3). For representative vegetation and topography refer to figures 4 and 5. Brief descriptions for each of the three units that make up Area E are provided below. Representative shovel probe profiles are depicted in figure 6.

Central E Unit

Central E unit is a 186 acre tract of land comprised primarily of wooded areas, that included recently logged or slash areas, pine plantations, and areas containing a mixture of softwoods and hardwoods. Consequently, the central E unit was subjected to a shovel test survey. Archaeological crewmembers traversed the study area along transects spaced 15 meters apart. Transects typically began at logging roads that could be identified on the project area map. Transects were oriented along an east/west compass bearing. Along each transect a series of shovel probes were excavated at roughly 15 meter intervals. The archaeological investigations within the central E unit failed to identify any evidence indicating intact archaeological deposits. Soil profiles vary across the project area. In general however, the soil profiles exhibit a shallow A horizon or organic layer overlying a weakly developed B horizon (figure 7).

East E Unit

East E unit is located roughly 150 feet (45 meters) immediately to the east of the Central unit E parcel of land. East E unit is roughly 24.08 acres of pine plantation. A standard shovel test survey was conducted on the entire portion of land forming the east E unit. A series of transects running from east to west and west to east is used during the survey of the east E unit.

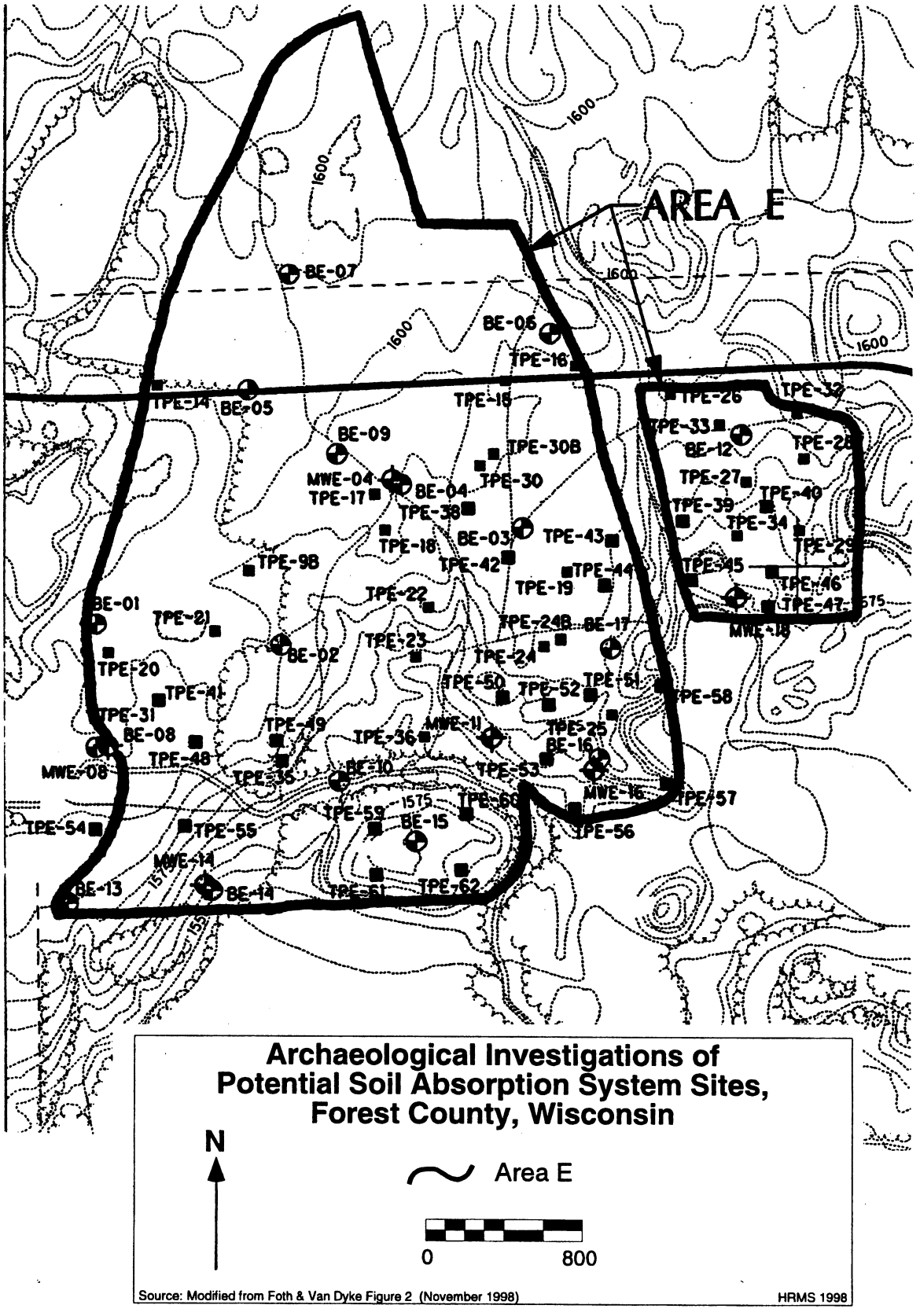


Figure 3: Area E Unit Survey Areas

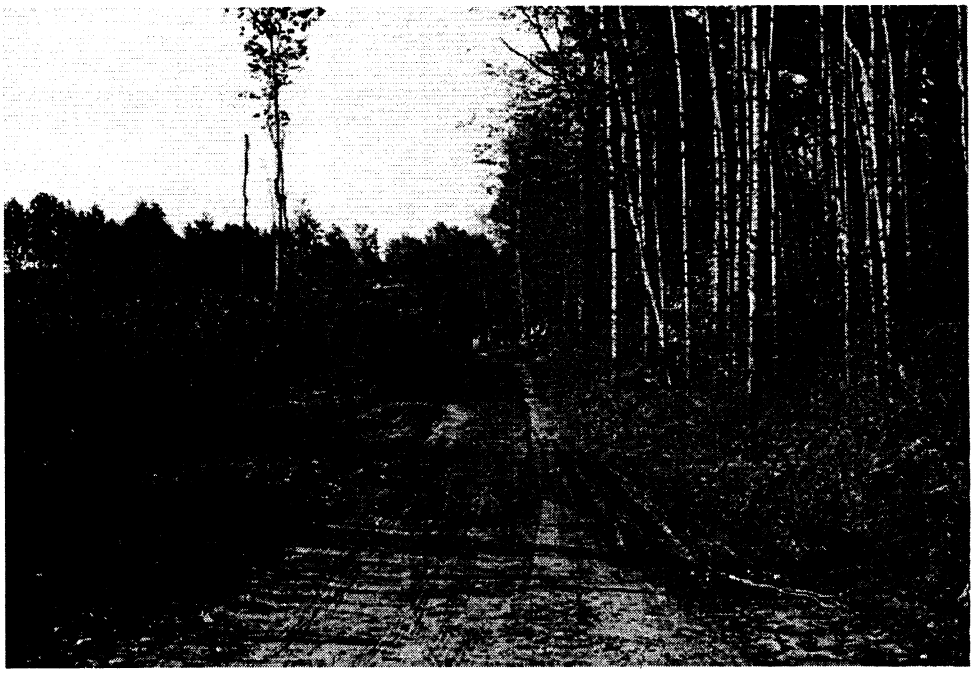


Figure 4: South E unit logging road view north

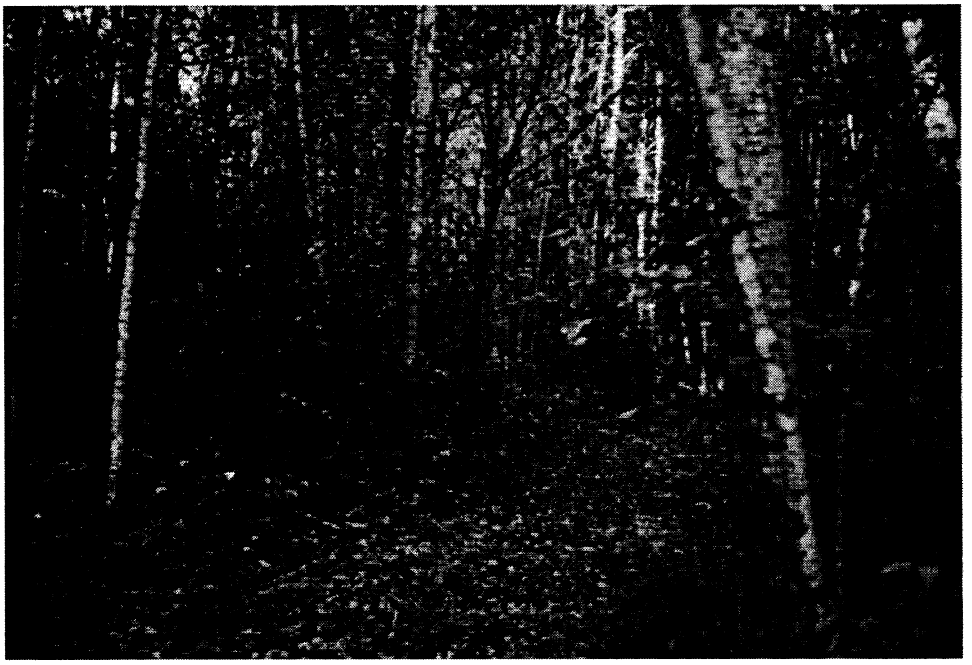


Figure 5: Central E unit view north/north east

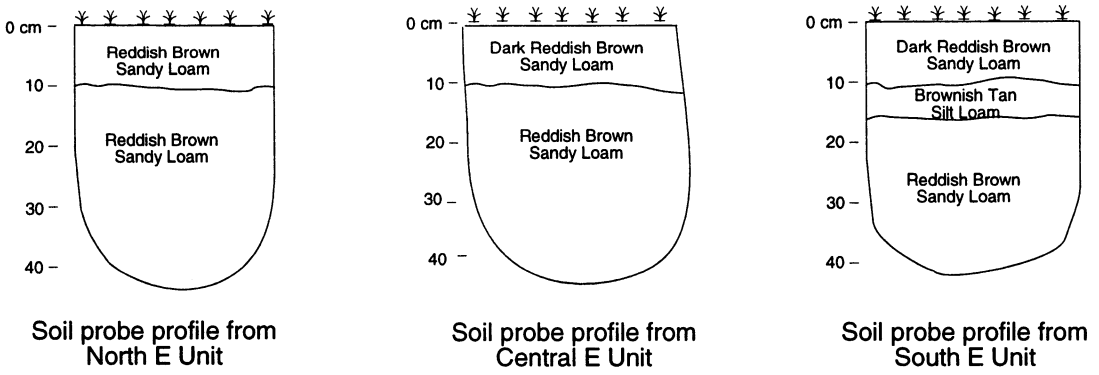


Figure 6: Soil Probe profiles from Area E Unit Survey

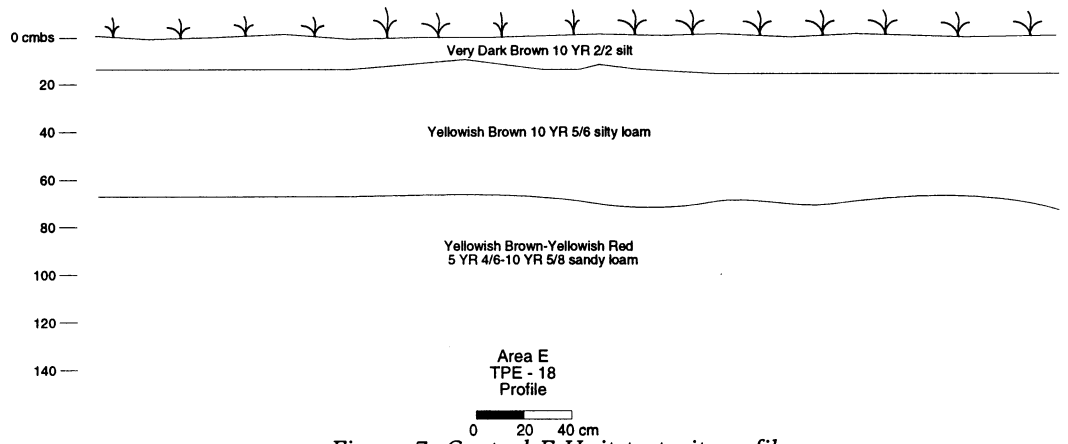


Figure 7: Central E Unit test pit profile

No evidence of archaeological deposits was recovered from the east E unit. A profile representative of the east E unit can be observed in figure 8.

South E Unit

The south E unit is a 33 acre tract of land located immediately adjacent to the southern border of the central E unit. The majority of the south E unit is comprised of a mixture of hardwoods and softwoods. The remaining portions of south E unit are made up of a pine plantation, an active agricultural field, and a fallow field. Altogether, 30 acres was surveyed using standard shovel probe testing methodology. Shovel probes were excavated in transects, spaced 15 meters apart, and oriented along the north and south directions. Agricultural crops covered an additional 3 acres with a surface visibility of 35-45%. Consequently, the 3 acre tract of land was subjected to standard pedestrian survey. Figure 9 provides a typical backhoe excavation profile from the south E unit.

Archaeological Sites within Area E

No cultural resources were identified as a result of archaeological investigations conducted in the Area E Unit.

Summary

No significant archaeological resources will be affected if a soil absorption system is constructed in Area E.

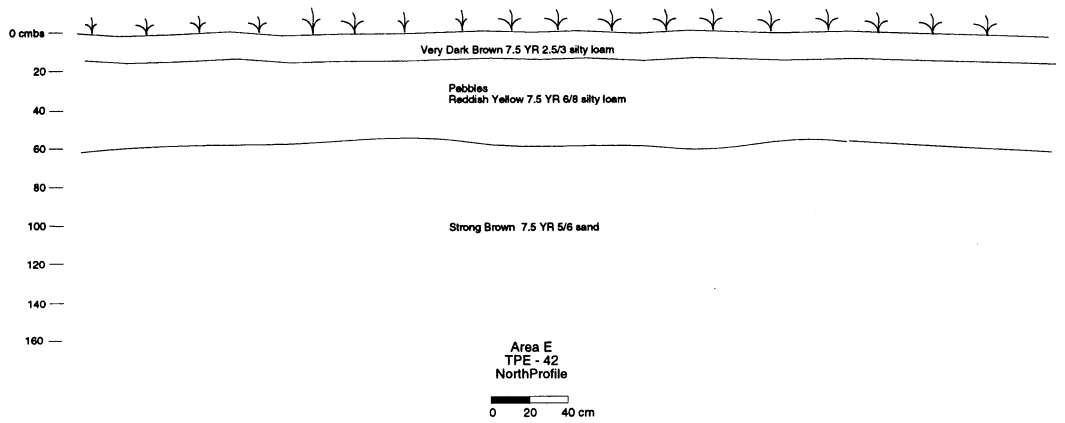


Figure 8: East E Unit test pit profile

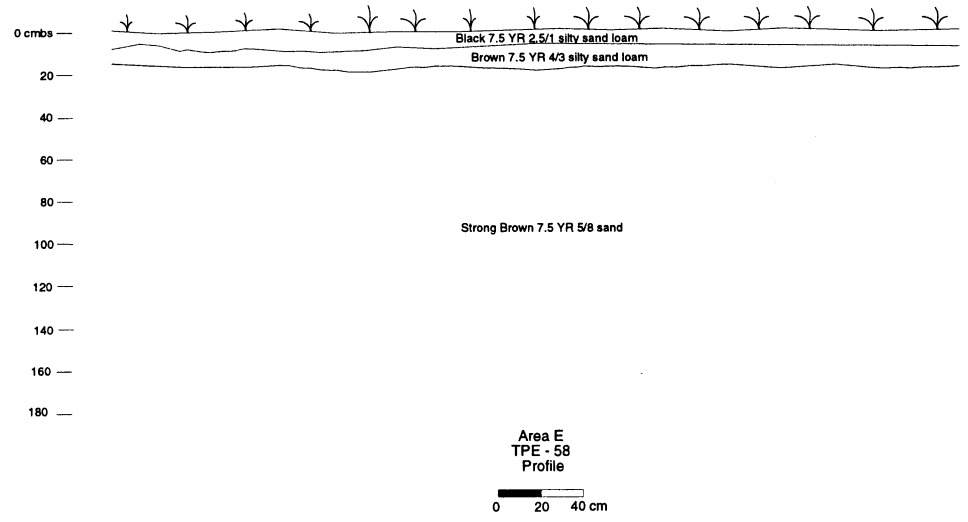


Figure 9: South E Unit test pit profile

AREA G

Description

There are three discontiguous units that comprise area G. The three units, the North G unit, the South G unit, and the Southeast G unit, comprise a total of 80 acres (see figure 10). Each of the three G units was surveyed by means of traditional archaeological survey methods and techniques. For representative vegetation and topography refer to figure 11. Brief descriptions for each of the three units that make up Area G are provided below. Representative shovel probe profiles are depicted in figure 12.

North G Unit

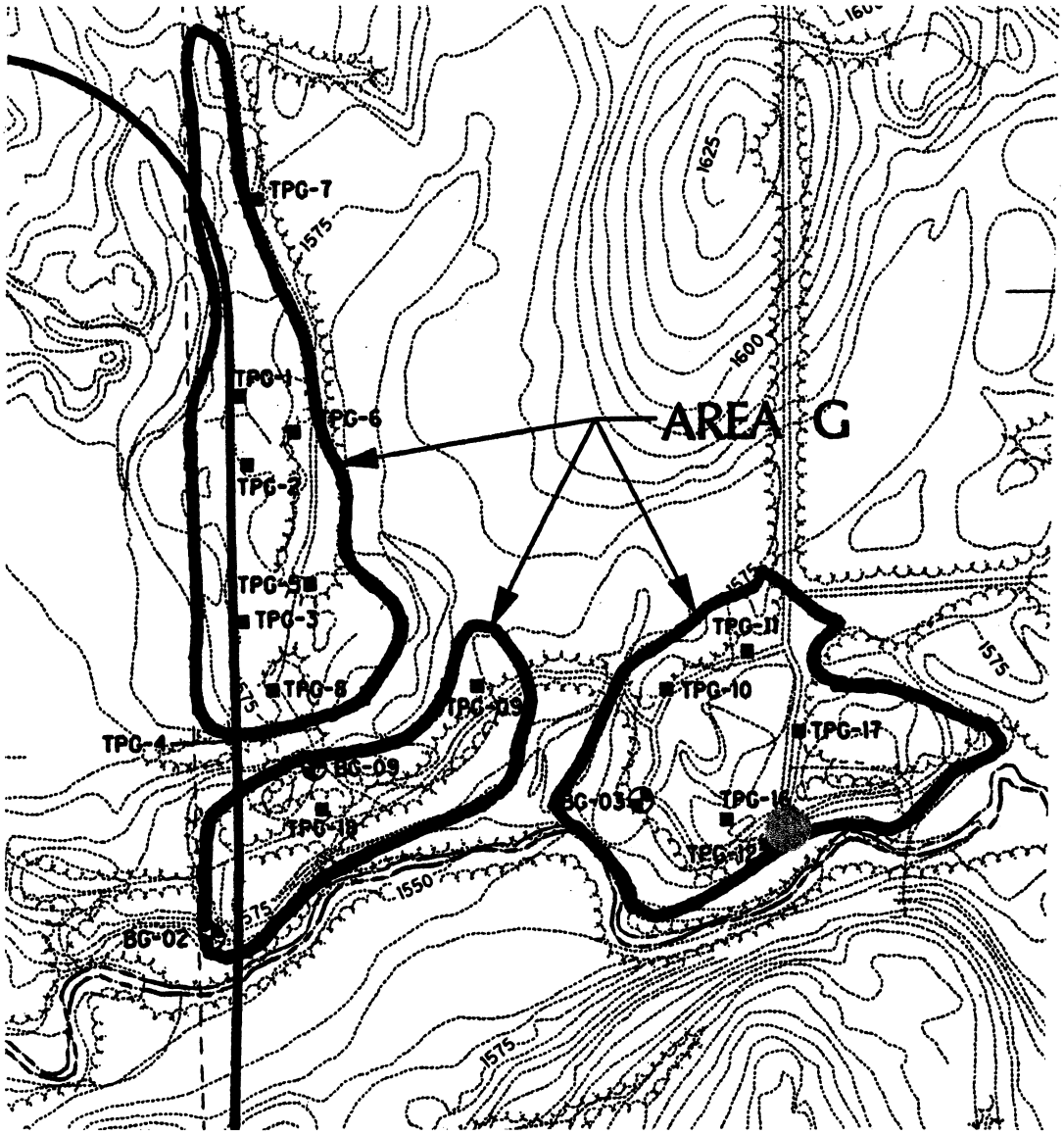
The north G unit is a triangular shaped tract of land encompassing 37 acres. Low and wet areas or ponds border the north G on both the west and east sides. The parcel of land consisted of a mixture of softwoods and hardwoods averaging 20-30 feet in height. In addition, a variety of undergrowth plants and shrubbery typically found below canopies of soft and hardwood forests was also present. As a result, the entire north G unit was subjected to a 15 meter shovel test survey. Transects were spaced 15 meters apart and ran along east/west orientations. A profile representative of the north G unit can be observed in figure 13.

South G Unit

The south G unit is 16 acre tract of land roughly 150 feet south of the north G unit. The tract of land runs from the southwest to the northeast. Vegetation types located throughout the south G unit are a combination of hardwoods and softwoods. The entire study unit was surveyed by archaeologists using shovel testing methods spaced along transects 15 meters apart. A series of shovel probes were excavated in each transect at 15 meter intervals. A profile representative of the south G unit can be observed in figure 14.

Southeast G Unit

The southeast G unit is a 27 irregular shaped area. The landscape of the southeast G unit is covered with a mixture of hardwoods and softwoods. A low and wet area encompassing roughly 4 acres is located in the central portion of the study unit. Subsequently, the low and wet area was subjected to a visual inspection. The remaining portion of the southeast G unit was subjected to a shovel test survey. A series of shovel probes were excavated every 15 meters along transects also spaced 15 meters apart. A profile representative of the southeast G unit can be observed in figure 15.



Archaeological Investigations of Potential Soil Absorption System Sites, Forest County, Wisconsin

N

Area G

Archaeological Site

0 800

Source: Modified from Foth & Van Dyke Figure 2 (November 1998) HRMS 1998

Figure 10: Area G Unit survey areas



Figure 11: Southeast G Unit view south

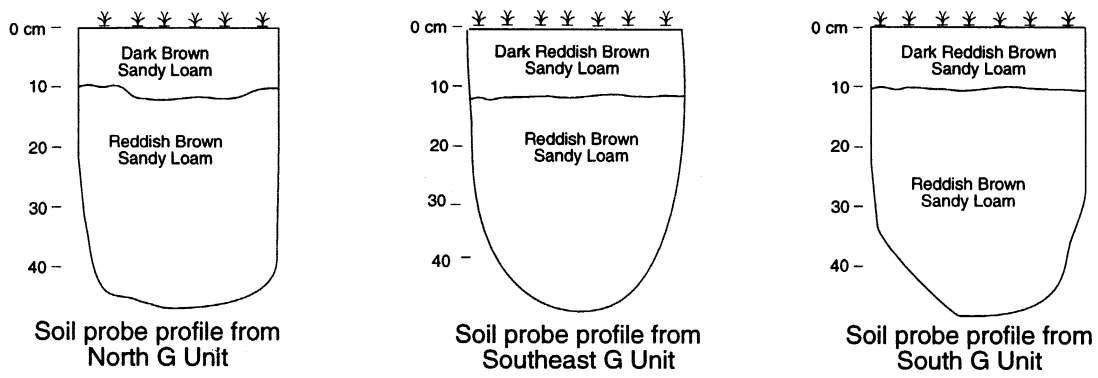


Figure 12: Soil Probe profiles from Area G Unit Survey

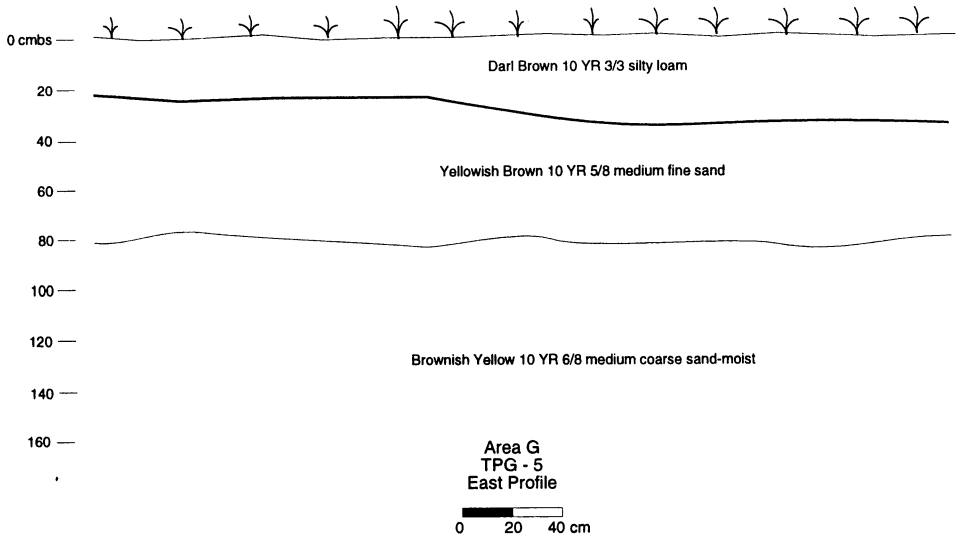


Figure 13: North G Unit test pit profile

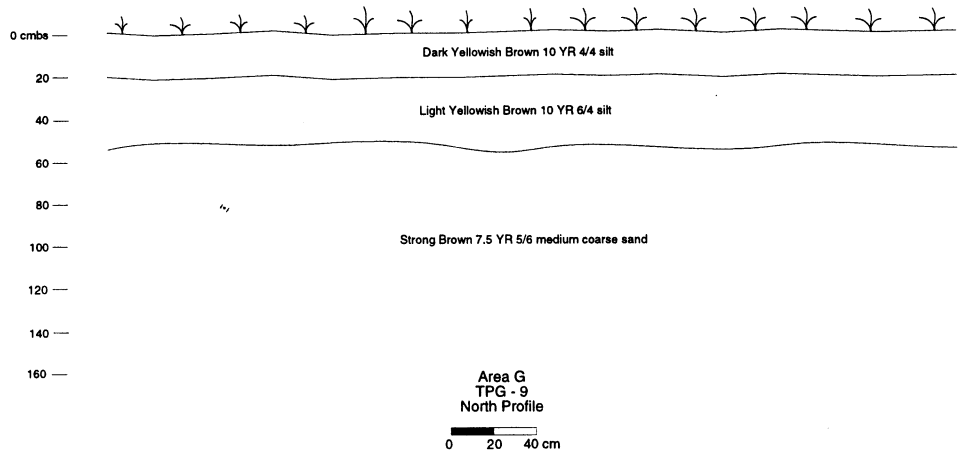


Figure 14: South G Unit test pit profile

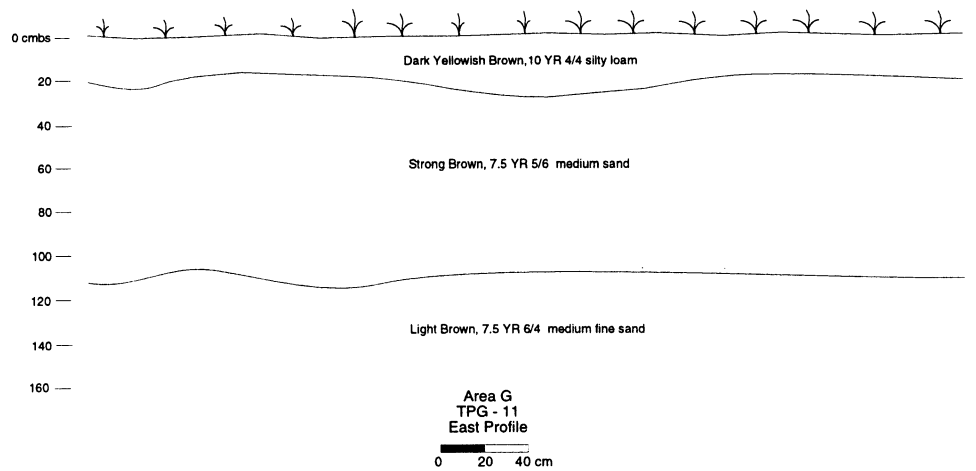


Figure 15: Southeast G Unit test pit profile

Archaeological Sites within Area G

Hess Site

An archaeological site was identified within the boundaries of the southeast unit of Area G. (refer to figure 10). The Hess site (HRMS field ID # 98.36.1) comprises 1.36 acres and is defined on the basis of both historic artifacts recovered from shovel probes and surficial remains (figure 16). Artifacts recovered include: kaolin pipe fragments, glass fragments, faunal remains, three-pronged fork, spoon, ceramic button, hand-forged bolt, suspender buckle, nails, can fragments and stove pipe flashing. Surficial remains include 9 small depressions on the west side (figure 17) of an unimproved road and four large excavated areas on the east side of the unimproved road (figure 18).

The artifact assemblage is suggestive of a domestic habitation although no domestic structures were identified. Material culture recovered from the eastern portion of the site suggests a range of occupation from as early as 1850 to as late as 1910. One of the small pits in the western portion of the site provides evidence for fire in the form of melted glass and a layer of ash and carbonized wood at 25 to 30 cm below surface. There are no artifacts associated with the features on the east side of the road and their size is more suggestive of logging rather than domestic occupation. These features may be related to those in the eastern portion of the site or they may be more recent.

Summary

One archaeological site has been identified as a result of survey of the southeast unit of Area G. This site is potentially significant and as a result additional archival investigation and phase II testing is recommended if the area is to be impacted further. No cultural resources were identified in either the North Area G or the South Area G sections; consequently, project development in these areas will not negatively impact any archaeological sites.

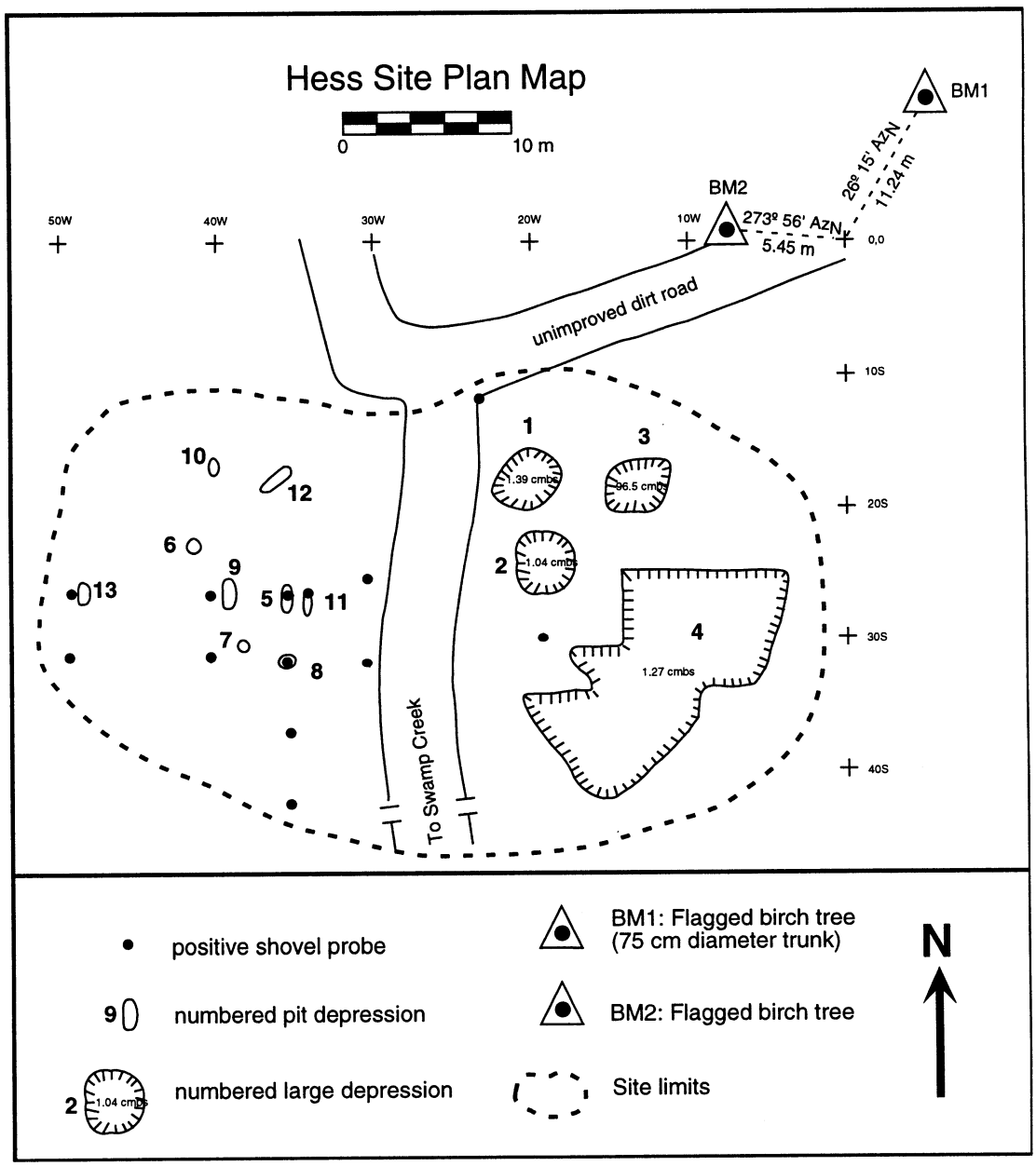


Figure 16: Hess Site (HRMS field site # 98.36.1) sketch map



Figure 17: Depression 8, Hess site, view north



Figure 18: Depression 2, Hess site, view southwest

AREA H

Description

Area H encompasses 193 acres distributed among four individual study units. These units include the south H unit, the northeast H unit, the northwest H unit, and the west H unit (figure 19). These areas are identified in the associated engineering studies as Field 1, 2, 3, 4, 5, and 6. The Northwest archaeological survey area includes Field 1, 2, 3, and 4. Field 5 is coincident with the Northeast area and Field 6 is located within the West area. Field identifications were not assigned to acreage comprising the South area.

Approximately 180 acres including all of the South, Northwest (Field 1,2, 3, 4) and Northeast (Field 5) parcels was subjected to 15 m interval shovel probe survey. Within the West (Field 6) parcel, archaeological survey was conducted according to a modified protocol that targets only those locations directly affected by the engineering investigations. Consequently, archaeological survey within Field 6 was restricted to 13 acres coincident with specific impact areas and access routes. Survey within the remainder of Field 6 was deferred pending evaluation of the engineering data from this portion of Area H. Backhoe excavations in all portions of Area H were archaeologically monitored and documented by a combination of field drawings, color slides, and black-and-white photographs.

Brief descriptions for each of the three units that comprise Area H are provided below. For representative vegetation and topography refer to figure 20. Representative shovel probe profiles are depicted in figure 21.

South H Unit

The south H unit is a 26 acre irregularly shaped tract of land located south of Keith Siding Road. The area surveyed is comprised of a mixture of recent deciduous tree growth, 10-15 feet in height, open grassy areas, formerly used as agriculturally worked fields, and locales of larger deciduous and coniferous stands of trees ranging in height from 30 to 50 feet. Given the lack of surface visibility required to conduct a pedestrian surface collection survey in all the areas of south H unit, including the grassy areas, a 15 meter shovel test survey was employed. Transects followed the cardinal directions beginning at edges of forested and grassy areas or along existing dirt access roads. Figure 22 provides a typical backhoe excavation profile from the south H unit.

Northeast H Unit

Northeast H unit is an agricultural field currently used to grow a hay crop. The total area of the northeast H unit encompasses 23 acres. Surface visibility was restricted to less than 20%. Initially, selected areas were

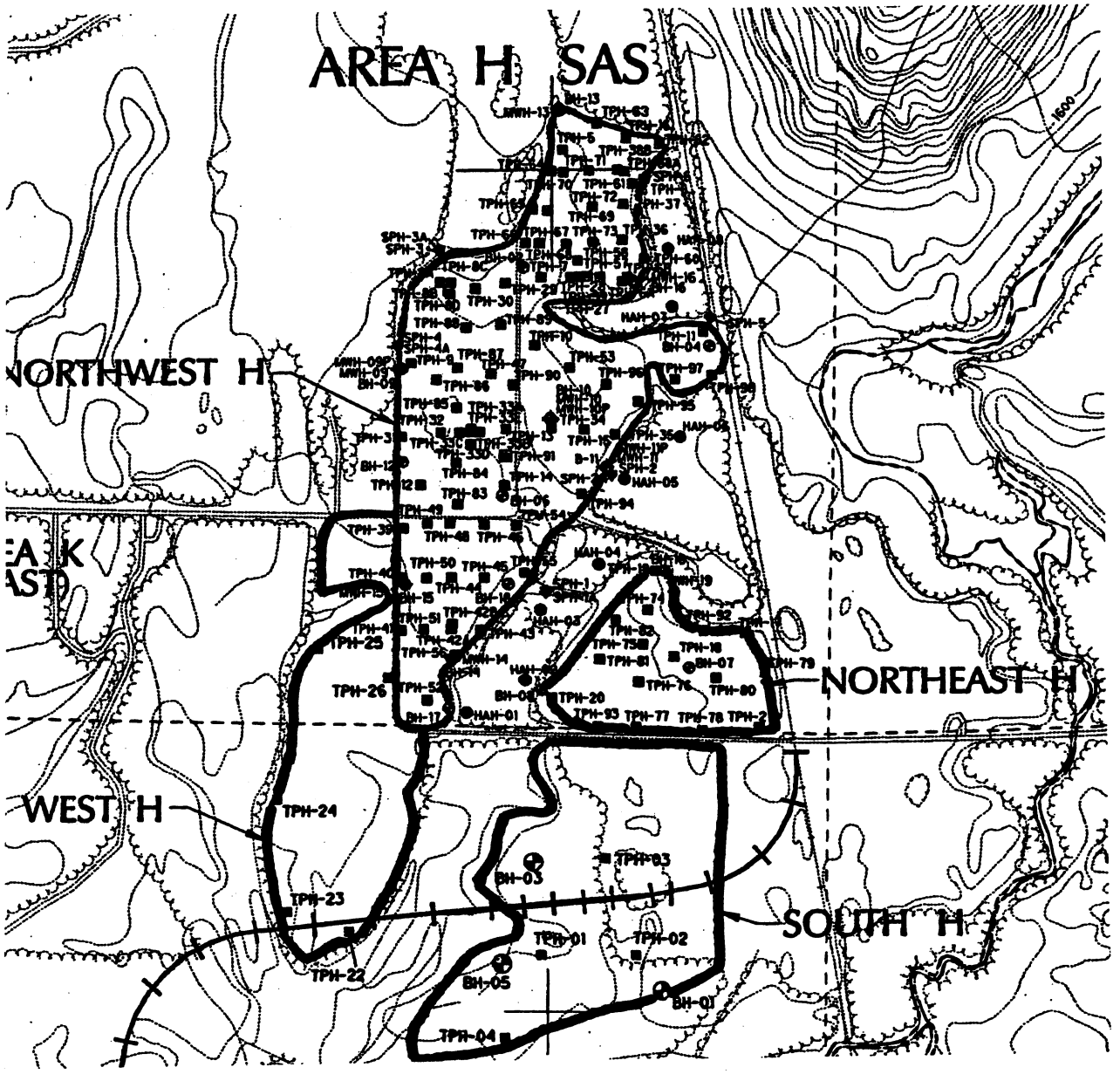


Figure 19: Area H Unit survey areas



Figure 20: South H Unit view south

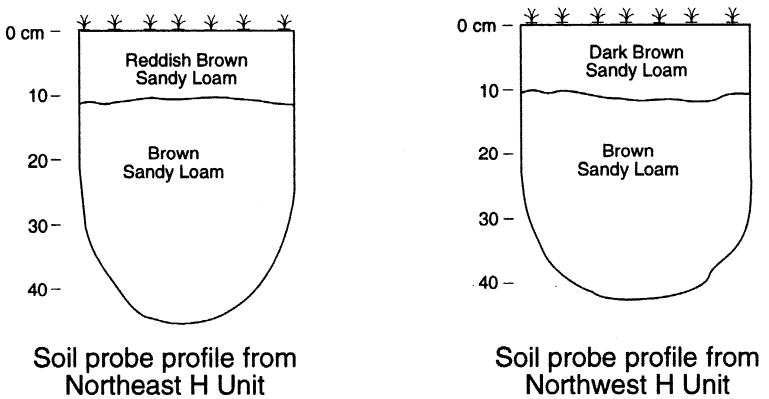


Figure 21: Soil Probe profiles from Area H Unit Survey

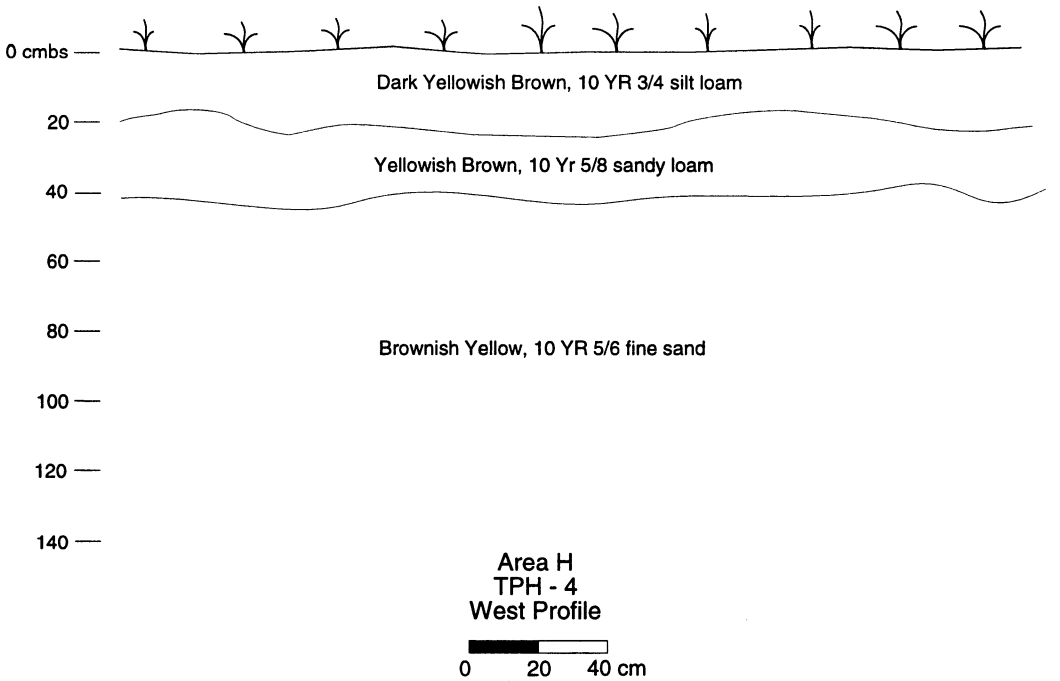


Figure 22: South H Unit test pit profile

identified for backhoe test pits. Prior to excavating the backhoe pits, selected areas were subjected to an archaeological shovel test survey. Selected areas include the actual backhoe test excavation areas as well as the overland backhoe access routes employed to gain entry to specified St pit areas. After determining that northeast H unit provided data conducive to soil absorption system engineering specifications, the entire northeast H unit was surveyed at 15 meter intervals. Figure 23 provides a typical backhoe test pit profile from the northeast H unit.

Northwest H Unit

The northwest H unit lies north of the Keith Siding Road. Northwest H unit totals 130 acres of agricultural cropland. At the time of the archaeological survey by HRMS in 1998 the field planted in hay with less than 20% surface visibility. Several backhoe test pit excavation locales within the Northwest H unit were identified for engineering exploratory purposes. Each locale, including backhoe access routes was surveyed using a shovel test survey at 15 meter intervals. A 200 foot wide path was surveyed beginning at the point of entry into the survey unit, and continuing between each test pit excavation locale. Following the exploratory backhoe test pit excavations, the remaining portions of the northwest H unit was subject to a 15 meter shovel test survey. Figure 24 provides a typical backhoe excavation profile from the northwest H unit.

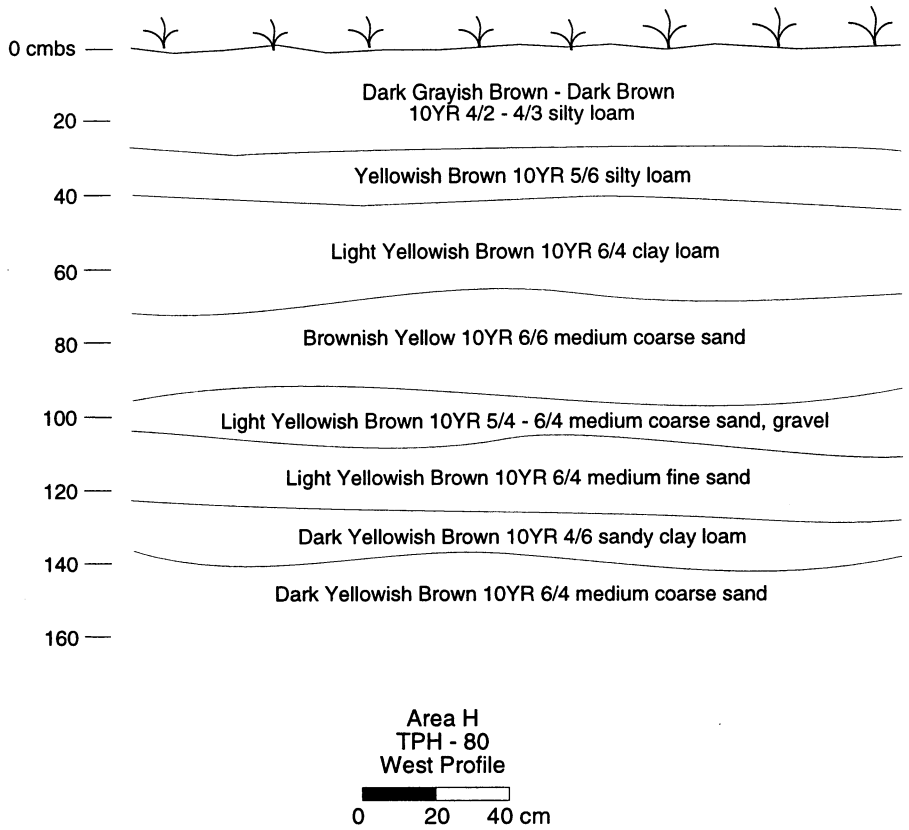


Figure 23: Northeast H Unit test pit profile

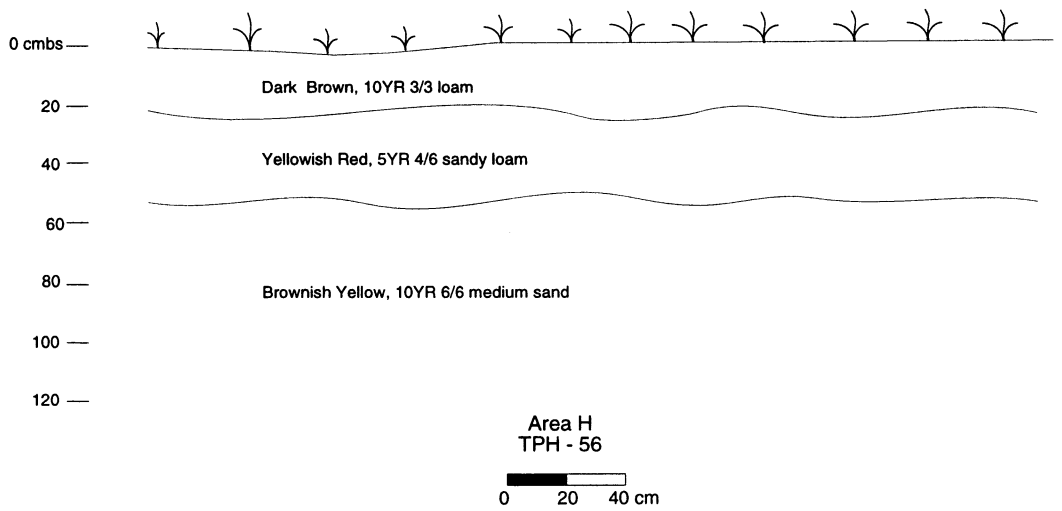


Figure 24: Northwest Unit H test pit profile

West H Unit

West H unit is a 33 acre tract of land currently planted in potatoes. Several backhoe test pit excavation locales within the northwest H unit were identified for engineering exploratory purposes. Each locale, including backhoe access routes was surveyed using a shovel test survey at 15 meter intervals. A 200 foot wide path was surveyed beginning at the point of entry into the survey unit, and continuing between each test pit excavation locale. A total of 13 acres of the original 33 acres, designated as the west H unit, was archaeological investigated. Information obtained during the preliminary backhoe trench excavations indicated the west H unit would not be a suitable area for a soil absorption system. Consequently, no additional archaeological investigations or backhoe excavations were pursued in the west H unit. Figure 25 provides a typical backhoe excavation profile from the west H unit. Figure 26 illustrates an Area H soil column.

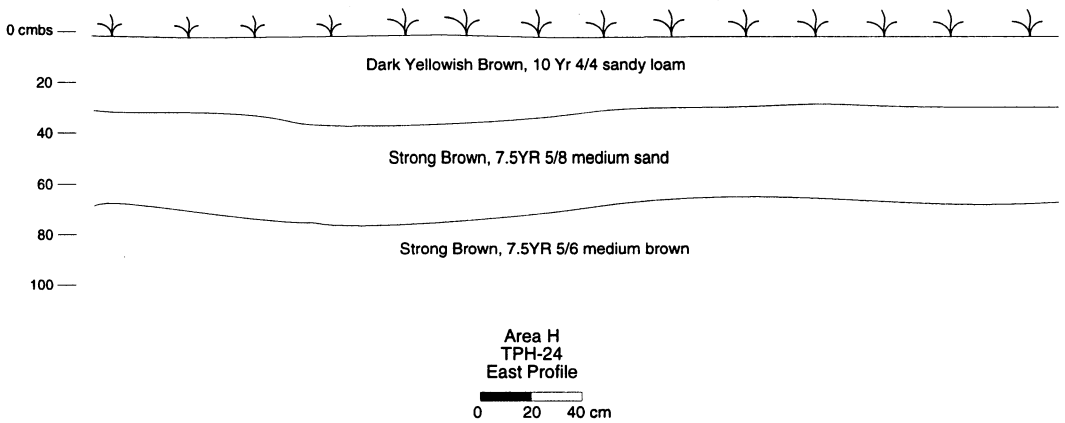


Figure 25: West Unit H test pit profile

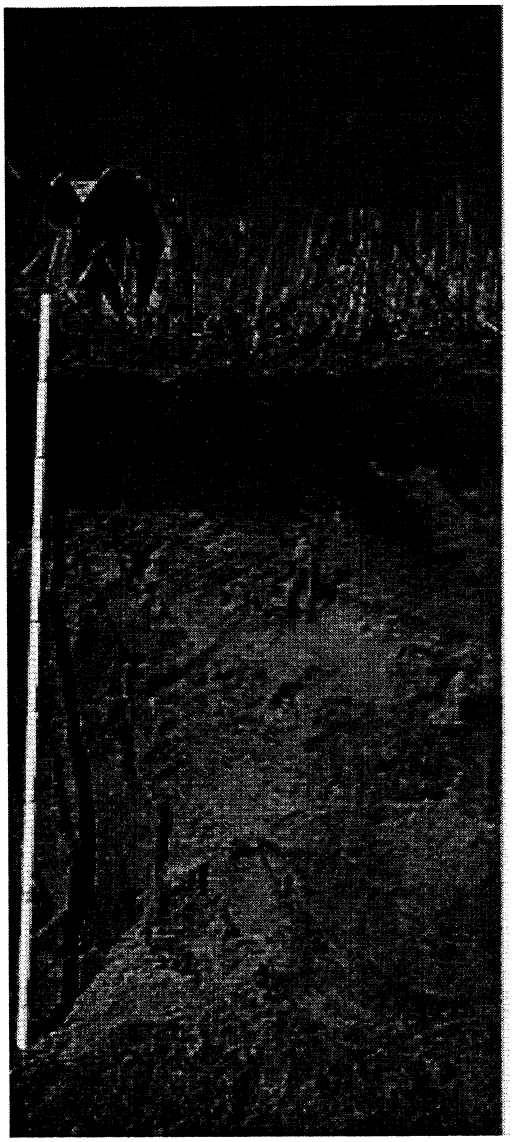


Figure 26: Soil column - H unit

Archaeological Sites within Area H

Cultural material was recovered from shovel probes in Northwest Area H (northeast of the southern bend in Keith Siding road). No structures or depressions are associated with the cultural material. One depression is noted 100 feet to the northwest of the positive shovel probes. Materials are recent and include: fragments of canning jars, window glass, and modern nails. The current landowner remembers stump clearing by means of blasting. Initially designated an archaeological site, the area is now considered to be a disturbed scatter of relatively recent materials. It is not considered an archaeological site locus.

Cultural material was recovered from shovel probes in Northeast Area H (north of Keith Siding road). These materials were originally collected due to the proximity of the location to the Keith Siding site. However, examination of the recovered material suggests only modern scatter. Materials recovered include a piece of aluminum tubing, a four-pronged fork, broken white ware and clinkers. This area represents a scatter of recent materials and is not associated with a structure or any surficial remains. It is not considered an archaeological site locus.

Summary

No significant archaeological resources will be affected if a soil absorption system is constructed within Area H.

AREA J

Description

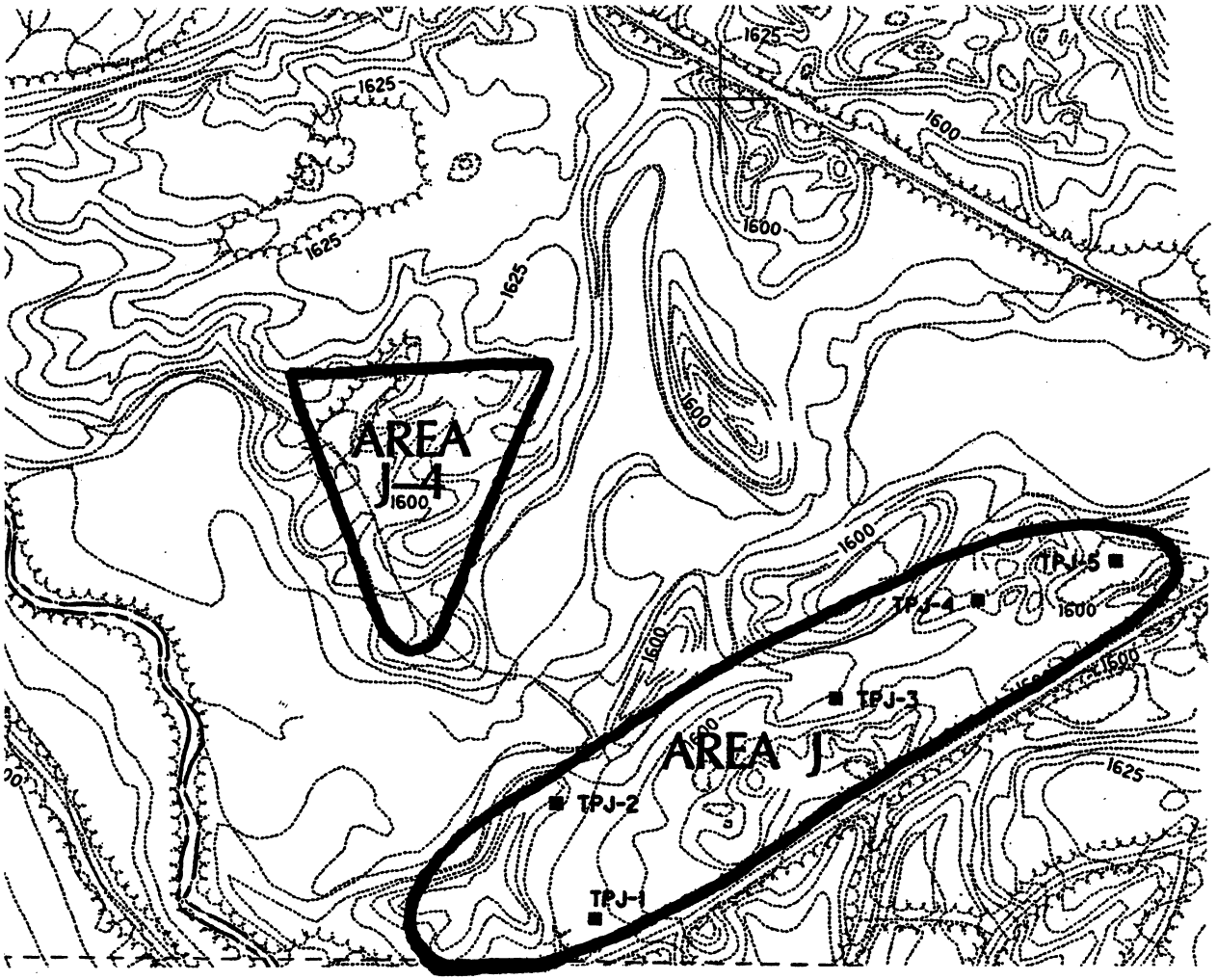
Two non-adjacent tracts of land make up the area surveyed in Area J (figure 27). Altogether, Area J comprises 71 acres of archaeologically investigated land. Both survey units are characterized by predominantly hardwood/deciduous forest, although conifers are scattered throughout. Brief descriptions for the two units that comprise Area J are provided below. For representative vegetation and topography refer to figure 28. Representative shovel probe profiles are depicted in figure 29.

J-1 Unit

The parcel of land designated J-1 unit measures 62 acres. A mixture of hard and softwoods cover the entire surveyed area of the J-1 unit. J-I survey unit runs parallel to Ground Hemlock Lake Road in a northeast to southwest manner. The entire unit was subjected to a 15 meter shovel test survey. Transects were spaced at 15 meter intervals and were oriented north to south. A profile representative of the J-1 unit is shown in figure 30. Figure 31 illustrates backhoe excavations in Area J.

J-4 Unit

The J-4 unit is triangular in shape, encompassing roughly 9 acres. The J-4 unit is located northwest of the J-1 unit. A beaver dam created an inundated area that divided the two units in area J. The beaver dam did provide an point of access to J-4 from the southeast to an otherwise land locked parcel of land. The majority of the study unit was comprised of a mixture of hardwoods and softwoods averaging 25-40 ft in height. Transects were spaced at 15 meters intervals along a north to south access



Archaeological Investigations of Potential Soil Absorption System Sites, Forest County, Wisconsin

N

Area J

0 800

Source: Modified from Foth & Van Dyke Figure 2 (November 1998) HRMS 1998

Figure 27: Area J Unit survey areas

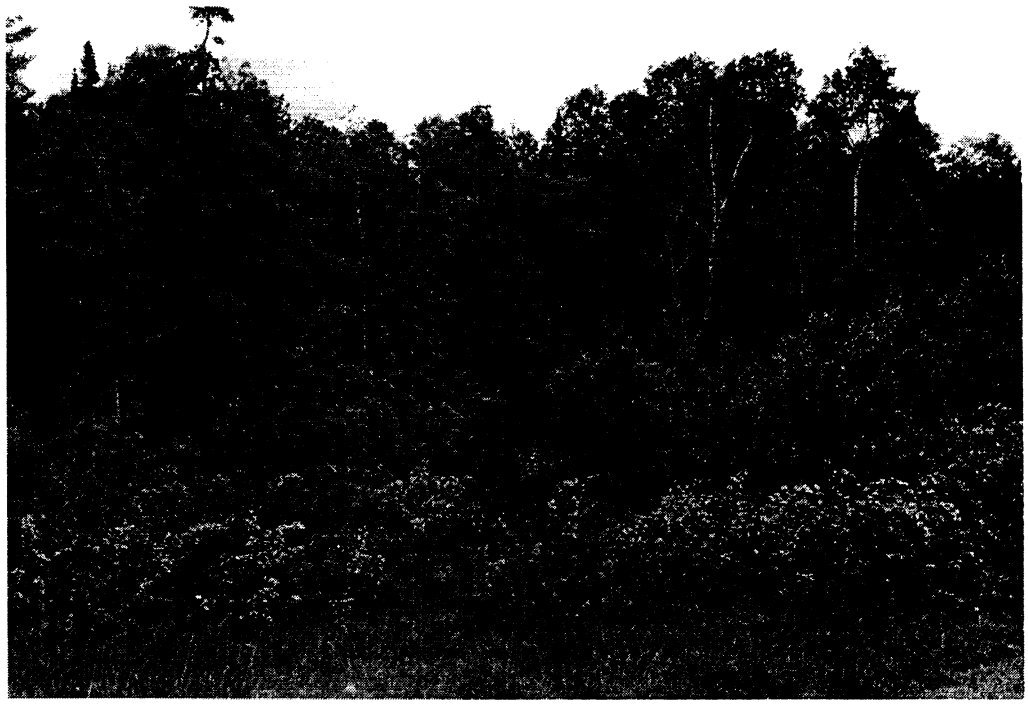


Figure 28: J-1 Unit view west

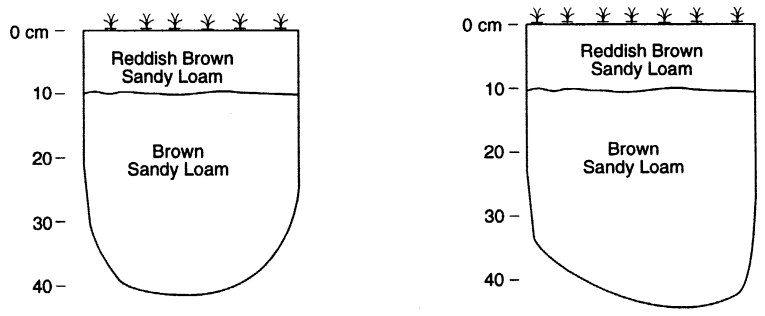


Figure 29: Soil Probe profiles from Area J Unit Survey

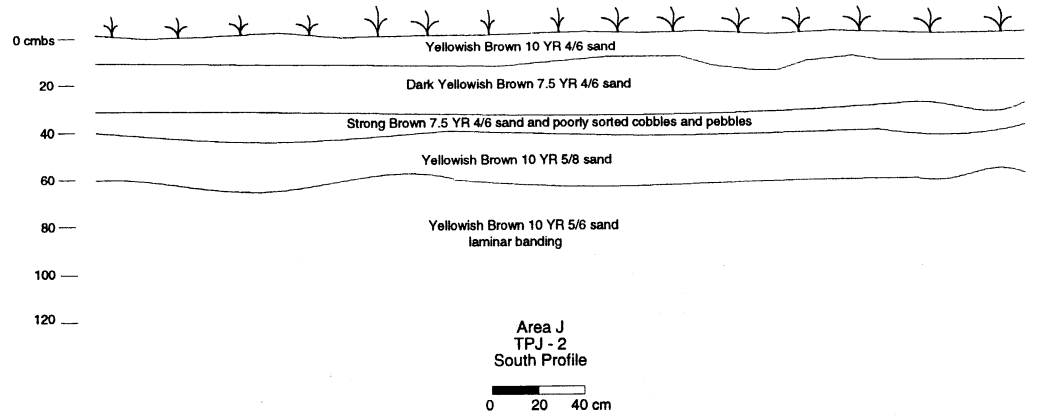


Figure 30 J-1 Unit test pit profile



Figure 31: Area J backhoe excavations

road. A series of shovel probes were placed every 15 meters along each transect on an east/west orientation. No backhoe excavations were conducted in the J-4 unit.

Archaeological Sites within Area J

No cultural resources were identified as a result of archaeological investigations conducted in the Area J Unit.

Summary

No significant archaeological resources will be affected if a soil absorption system is constructed within Area J.

AREA K

Description

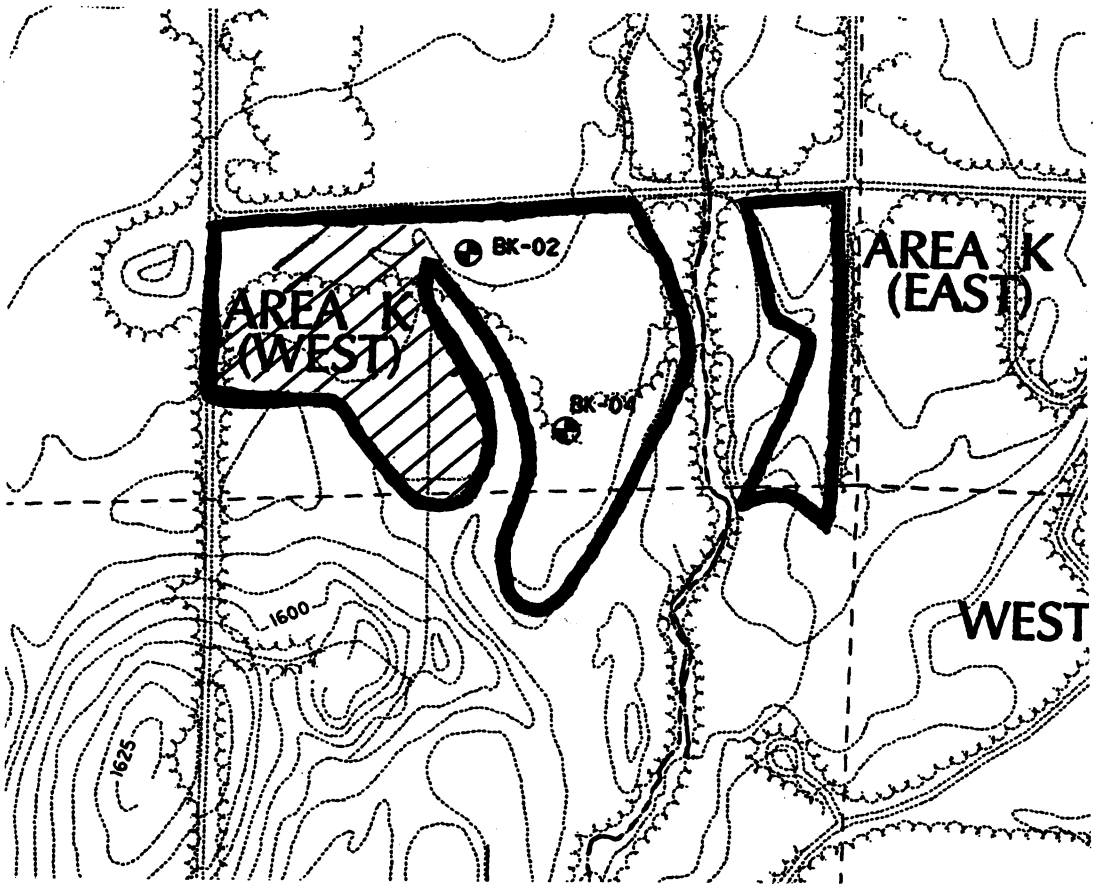
Two discontiguous, irregularly shaped units totaling 47 acres comprise area K. The two survey units, designated east K unit and west K unit, extend south of Keith Siding Road roughly one half mile south of Lake Metonga. The units are divided by Outlet Creek and the low and wet areas associated with the creek. Approximately 15 acres were omitted from survey in the west K unit due to access restrictions. The areas omitted from survey as well as the general survey units in area K are depicted in figure 32. Brief descriptions for the two units that comprise Area K are provided below. For representative vegetation and topography refer to figure 33. Representative shovel probe profiles are depicted in figure 34.

East K Unit

The east K unit lies along the eastside of the Outlet Creek drainage. East K unit encompasses 6 acres and is comprised of a mixture of softwoods and hardwoods roughly 35-45 feet in height. As a result, the entire survey unit was subjected to a series of shovel probes at 15 meter intervals along transects spaced 15 meters apart. Transects were oriented east and west and began at the southern end of the study unit moving northward. No backhoe trenches were excavated in the east K unit.

West K Unit

The west K unit is a double lobed tract of land totaling 40. The west K unit is located roughly 200 feet from the east K lobe. The study unit consists of both pasture and wooded areas. The wooded areas are comprised of a blend of hardwoods and softwoods. Permission to survey 15 acres was not obtained. Approximately 26 acres were surveyed using standard archaeological shovel test survey transects spaced 15 meters and oriented east and west. A series of shovel probes were excavated at 15 meter intervals along each transect. No backhoe test pits were excavated in the west K unit. No engineering investigations were performed in the area not surveyed archaeologically.



Archaeological Investigations of Potential Soil Absorption System Sites, Forest County, Wisconsin

N

Area K

Areas not surveyed archaeologically

0 800

Source: Modified from Foth & Van Dyke Figure 2 (November 1998)

HRMS 1998

Figure 32: Area K Unit survey areas



Figure 33 K Unit view south

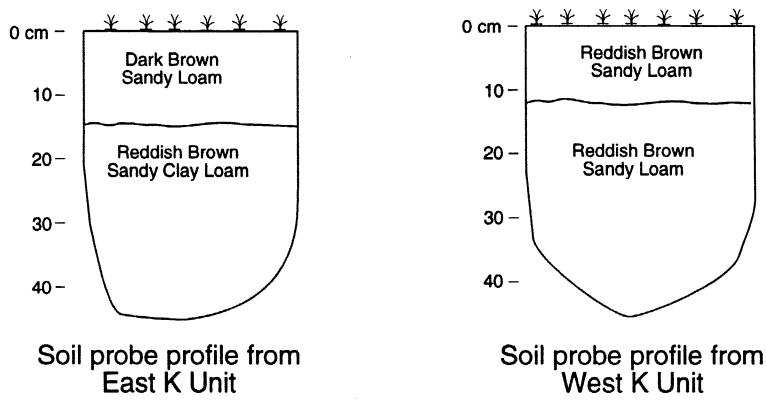


Figure 34: Soil Probe profiles from Area K Unit Survey

Archaeological Sites within Area K

No cultural resources were identified as a result of archaeological investigations conducted in the Area K Unit.

Summary

No significant archaeological resources will be if a soil absorption system is constructed within Area K.

AREA XF

Description

Area XF testing of approximately 12 acres was conducted in an active sand and gravel quarry (figure 35). A 200 foot wide access route was surveyed into the designated areas for each trench excavation and access by the backhoe equipment. The survey included a set of transects spaced 15 meters apart. Along each transect, shovel probes were excavated at a 15 meter interval. Following the preliminary trench excavations and archaeological survey, no additional trench or archaeological investigative work was pursued. A brief description of the XF Unit is provided below. A representative shovel probe profile is depicted in figure 36.

Archaeological Sites Within Area XF

No cultural resources were identified as a result of archaeological investigations conducted in the Area XF Unit.

Summary

No significant archaeological resources will be if a soil absorption system is constructed within Area XF.

AREA XC

Description

Area XC is located south of Swamp Creek (figure 37). The area encompasses 33 acres of forest comprised of both hardwood and softwood trees. Surface visibility was restricted to less than 5%. Consequently, the entire tract of area XC was subjected a shovel test survey. The shovel test survey consisted of a number of transects spaced at 15 meter intervals. A series of shovel probes were excavated along each transect roughly 15 meters apart. A brief description of the XC Unit is provided below. A representative shovel probe profile is depicted in figure 38.

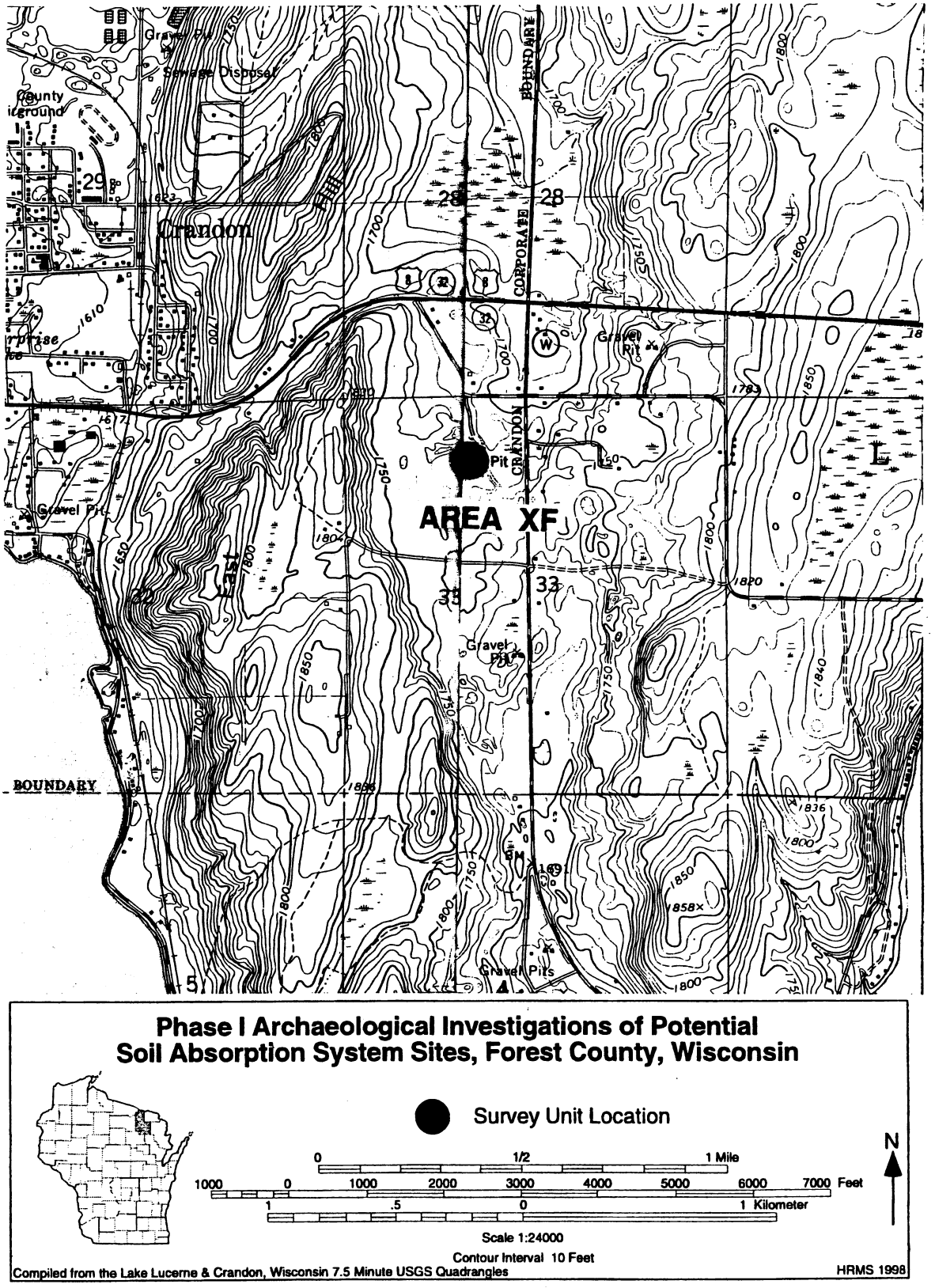


Figure 35: Area XF Unit survey area

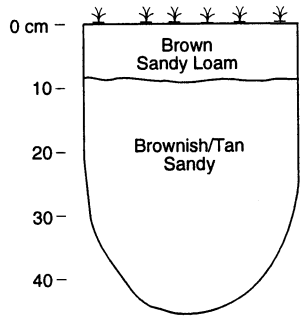


Figure 36: Soil Probe profile from Area XF Unit Survey

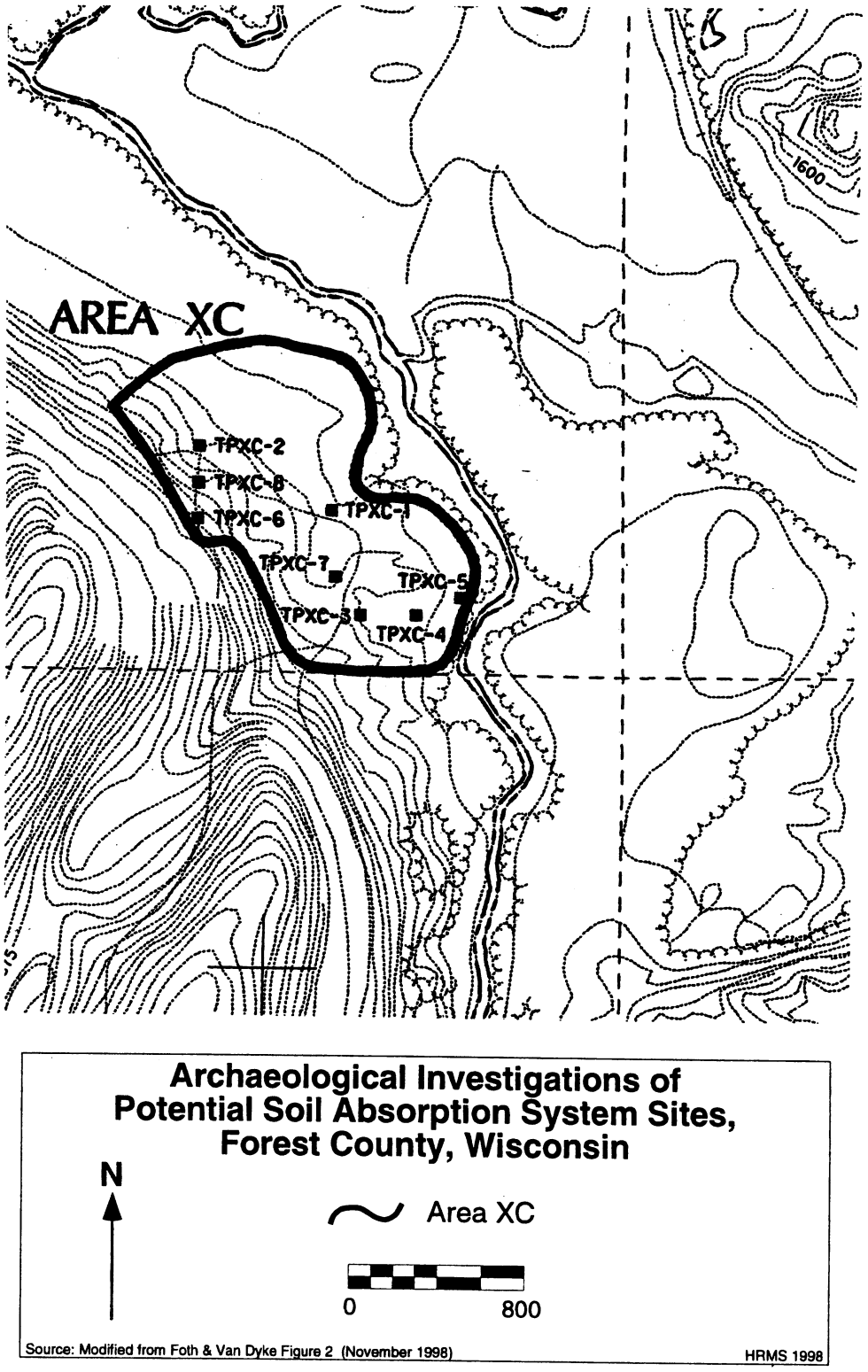


Figure 37: Area XC Unit survey area

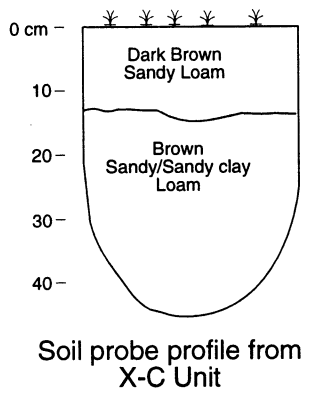


Figure 38: Soil Probe profile from Area XC Unit Survey

Archaeological Sites Within Area XC

No cultural resources were identified as a result of archaeological investigations conducted in the Area XC Unit.

Summary

No significant archaeological resources will be affected by project operations within Area XC.

Area XB

Description

Located south of Swamp Creek, area XB is a 7 acre parcel covered with a mixture of hardwoods and softwoods (figure 39). The majority of area XB soil visibility was obscured by vegetation. As a result, the entire 7 acres of area XB was tested using traditional archaeological shovel test survey following transects spaced 15 meters apart. Along each transect, shovel probes are excavated at 15 meter intervals. A brief description of the XB Unit is provided below. Representative shovel probe profiles are depicted in figure 40.

Archaeological Sites Within Area XB

No cultural resources were identified as a result of archaeological investigations conducted in the Area XB Unit.

Summary

No significant archaeological resources will be affected if a soil absorption system is constructed within Area XB.

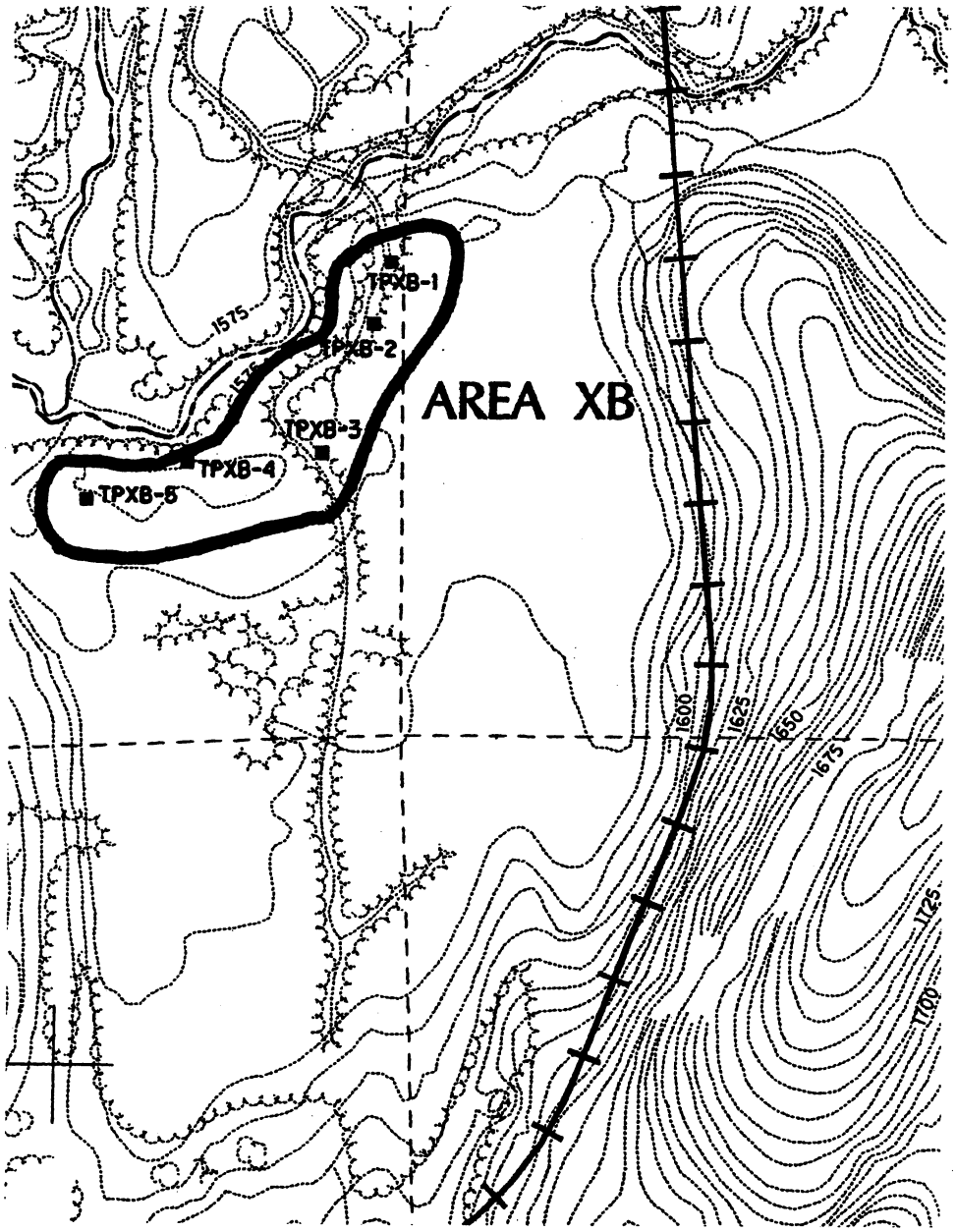


Figure 39: Area XB Unit survey area

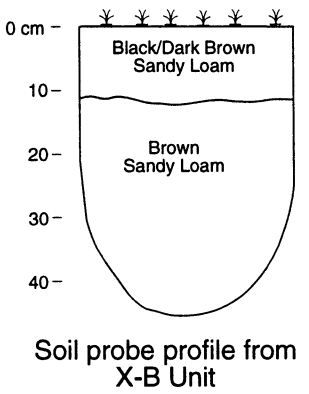


Figure 40: Soil Probe profile from Area XB Unit Survey

SUMMARY AND CONCLUSIONS

Archaeological investigations including surface survey, shovel probe survey, and archaeological monitoring of machine-aided excavations were conducted within eight locales identified as potential soil absorption system sites. In all, approximately 685 acres were subjected to archaeological investigation. Results of the archaeological investigations suggest that:

- A single archaeological property, the Hess site (HRMS# 98.36.1), was identified in the Area G survey locale.
- No archaeological resources were identified within any of the remaining seven locales subjected to archaeological investigations.

In accord with results of the investigations we recommend that:

- In the event that the portion of Area G coincident with the Hess site location is selected as a preferred site for the soil absorption system, additional investigations at Site 98.36.1 should be conducted to determine if the site is potentially eligible for listing on the National Register of Historic Places. No cultural resources were identified in either the North Area G or the South Area G sections; consequently, project development in these areas will not negatively impact any archaeological sites.
- If either the West (Field 6) portion of Area H or unsurveyed portions of Area XF is selected as a preferred site, additional archaeological survey should be conducted in any potential impact area not previously surveyed.
- No additional investigations are recommended in Areas E, J, K, XB, or XC.

If construction is designed to avoid the Hess site locus in Area G or is restricted to previously surveyed portions of Areas E, J, K, XB, or XC, no additional investigation is warranted. Construction of the potential soil absorption facility in any of these locales or in surveyed portions of Area H and Area XF should have no effect on the local cultural resource base.

Nonetheless, current conventional archeological survey techniques are inadequate to determine the presence of all archaeological or paleontological deposits. In the event that archeological or paleontological materials are encountered, project operations should be halted pending review by a qualified archaeologist.

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

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APPENDIX I

FIELD ARCHAEOLOGY PERMIT

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

NAME John D. Richards and qualified staff of Historic Resource Management Services

ADDRESS Dept. of Anthropology, UW-Milwaukee, P.O. Box 413

Milwaukee (City) WI (State) 53213 (Zip Code)

Institutional Affiliation UW-Milwaukee **Occupation** Archaeologist

Type of Field Work Pedestrian survey (surface collection & shovel probe)

Location of Intended Work East 1/2 of SW 1/4 of Section 28, T35N, R13E

Forest County (see attached map)
(Name of Park, etc./County)

Landowner of Custodian Forest County
(WDOT/WDNR, 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? UW-Milwaukee
(Name of Institution)

Period of Fieldwork: From 6/3/98 **To** 8/1/98
(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 Edward Vogt **Date** 6-5-98

per [illegible] for
George L. Vogt, Director
State Historical Society of Wisconsin

CONDITIONS: _____

PURPOSE OF FIELDWORK

The parcel to be surveyed has been identified by Foth & Van Dyke, Inc. (consultants to Nicolet Minerals Company) as a potential location for a groundwater infiltration basin associated with theCrandon Project being developed by Nicolet Minerals Company. The survey is designed to partially fulfill requirements of Section 106 of the National Historic Preservation Act of 1966 as amended.



Section 28, T35N, R13E, FOREST CTY

APPENDIX II

LOT CHECK INVENTORY

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0007	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	4	1.40	63	32.70
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	0	0
Flat	0	0
Other	0	0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	1	1
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	2	11
Tin Cans	1	18
Fasteners	0	0
Bottle Caps	0	0
Other	0	0

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	0	0
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0011	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	0	0.00	0	0.00
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	0	0
Flat	0	0
Other	0	0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	0	0
Tin Cans	0	0
Fasteners	0	0
Bottle Caps	0	0
Other	1	39

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	0	0
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0012	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical modified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	0	0.00	0	0.00
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	2.40	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	0	0
Flat	0	0
Other	0	0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	1	1
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	0	0
Tin Cans	0	0
Fasteners	0	0
Bottle Caps	0	0
Other	0	0

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	0	0
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0013	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	18	11.50	7	3.60
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	6	11
Flat	0	0
Other	20	10

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	3	73
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	6	4
Tin Cans	70	134
Fasteners	0	0
Bottle Caps	0	0
Other	16	100

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	1	1
Miscellaneous (leather, plastic, rubber, other)	3	2

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0014	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	1	18.40	0	0.00
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers		0
Flat		0
Other		0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	0	0
Tin Cans	0	0
Fasteners	0	0
Bottle Caps	0	0
Other	0	0

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	0	0
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0015	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	0	0.00	0	0.00
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	0	0
Flat	0	0
Other	0	0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	0	0
Tin Cans	0	0
Fasteners	0	0
Bottle Caps	0	0
Other	0	0

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	1	1

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	0	0
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0016	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned Ct.	Unburned Wt. (g)	Burned Ct.	Burned Wt. (g)
Mammal	0	0.00	0	0.00
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized Ct.	Carbonized Wt. (g)	Uncarbonized Ct.	Uncarbonized Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	0	0
Flat	0	0
Other	1	1

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	0	0
Tin Cans	0	0
Fasteners	0	0
Bottle Caps	0	0
Other	0	0

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	0	0
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0017	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	0	0.00	0	0.00
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	1	14
Flat	0	0
Other	0	0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	0	0
Tin Cans	0	0
Fasteners	0	0
Bottle Caps	0	0
Other	0	0

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	0	0
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0045	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By		

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	33	19.60	39	16.80
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	5	3
Flat	0	0
Other	0	0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	8	18
Tin Cans	0	0
Fasteners	0	0
Bottle Caps	0	0
Other	2	6

Other Metals	Ct.	Wt. (g)
Tin	1	1
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	0	0
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0046	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	12	85.30	1	0.90
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	1	1
Flat	0	0
Other	0	0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	1	6
Tin Cans	8	21
Fasteners	0	0
Bottle Caps	0	0
Other	2	0

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	2	89
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0047	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	0	0.00	0	0.00
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	0.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	0	0
Flat	0	0
Other	0	0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	0	0
Tin Cans	0	0
Fasteners	1	260
Bottle Caps	0	0
Other	0	0

Other Metals	Ct.	Wt. (g)
Tin	0	0
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	0	0
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0048	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T. Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	28	147.50	7	12.00
Fish	0	0.00	1	0.20
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	1	0.40	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	16.50	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	0	0
Flat	0	0
Other	2	0

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	0	0
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	3	14
Tin Cans	0	0
Fasteners	0	0
Bottle Caps	0	0
Other	1	11

Other Metals	Ct.	Wt. (g)
Tin	2	3
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	2	3
Miscellaneous (leather, plastic, rubber, other)	0	0

HRMS LOT# INVENTORY SUMMARY

Archaeological Investigations at Eight Proposed Soil Absorption Pond Sites, Forest County, Wisconsin

HRMS Project#	980036	Lot Inventory#	980036.0049	Feature#
Site No.	980036.01	Site Name	Hess	
Provenience	shovel probe			
Date Inventoried	Nov 2, 1998	Inventoried By	T.Revane	

LITHICS

Projectile points	0
Bifaces	0
Scrapers	
End	0
Side	0
Side & End	0
Blades	0
Flakes	
Cortical unmod.	0
Cortical mofified	0
Not cortical unmod	0
Not cortical modified	0
Cores	0
Shatter/ Chunks	0
Other	0
FCR	0
Ground stone	0
Rough rock	0

CERAMICS

	Rimsherds	Bodysherds	Fragments
Grit tempering	0	0	0
Shell tempering	0	0	0
Other tempering	0	0	0

ANIMAL BONE

	Unburned		Burned	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Mammal	0	0.00	0	0.00
Fish	0	0.00	0	0.00
Bird	0	0.00	0	0.00
Reptile	0	0.00	0	0.00
Tooth	0	0.00	0	0.00
Unidentified	0	0.00	0	0.00
Mussel shell	0	0.00	0	0.00

FLORAL REMAINS

	Carbonized		Uncarbonized	
	Ct.	Wt. (g)	Ct.	Wt. (g)
Wood	0	2.00	0	0.00
Nuts & Seeds	0	0.00	0	0.00
Other	0	0.00	0	0.00

HISTORIC MATERIALS

Glass	CT.	Wt. (g)
Containers	9	23
Flat	16	22
Other	24	111

Ceramics	Ct.	Wt. (g)
Earthenware	0	0
Stoneware	0	0
Porcelain	0	0
Kaolin	1	22
Bricks	0	0
Other	0	0

Iron	Ct.	Wt. (g)
Nails-wire	0	0
Nails-cut	6	26
Tin Cans	0	0
Fasteners	0	0
Bottle Caps	0	0
Other	0	0

Other Metals	Ct.	Wt. (g)
Tin	8	37
Brass	0	0
Kettle Brass	0	0
Copper	0	0
Other Metal	0	0

Miscellaneous	Ct.	Wt. (g)
Ordnance	0	0
Rock	1	6
Miscellaneous (leather, plastic, rubber, other)	0	0

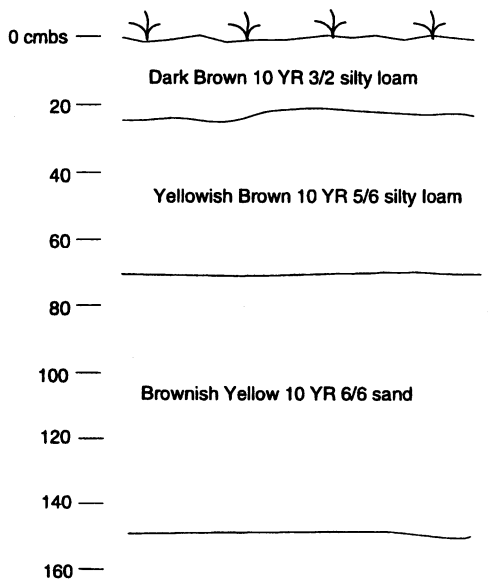
APPENDIX III

PROJECT AREA UNIT

PROFILE DRAWINGS

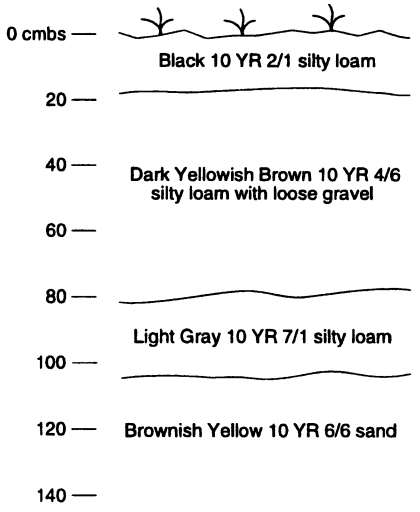
During the course of the archaeological monitoring of the engineering test pits, descriptions of exposed soil horizons were recorded by the engineering field team as well as the monitoring archaeologists. Consequently, occasional differences may exist between characterizations recorded for purposes of assessing engineering characteristics and those obtained by project archaeologists. The soil descriptions included on the following Test Pit drawings are intended to delineate discrete stratigraphic contexts in order to segregate any archaeological deposits that might be present. Archaeological soil characteristics are not intended to be used as engineering data.

The term, cmbs, is an abbreviation for centimeters below surface. The term provides vertical measurement below the existing ground surface and is represented in each test pit excavation profile.



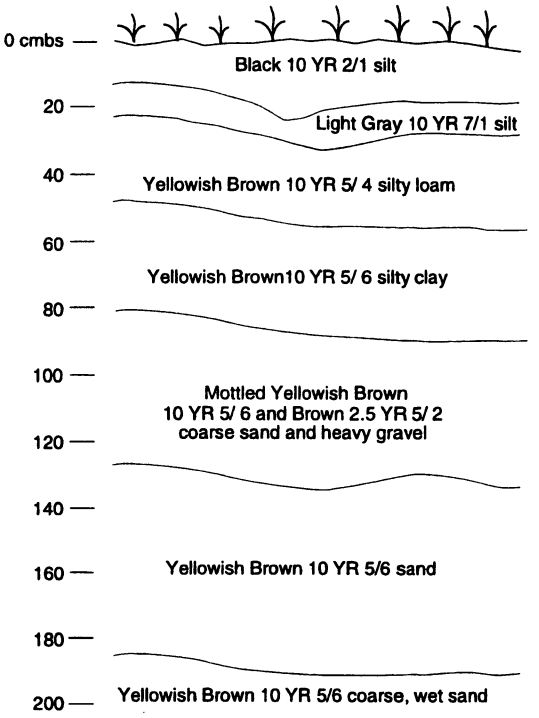
Area E
TPE - 9b
North Profile

0 20 40 cm



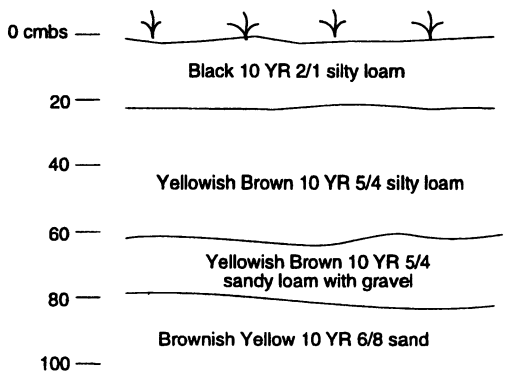
Area E
TPE - 15
East Profile

0 20 40 cm



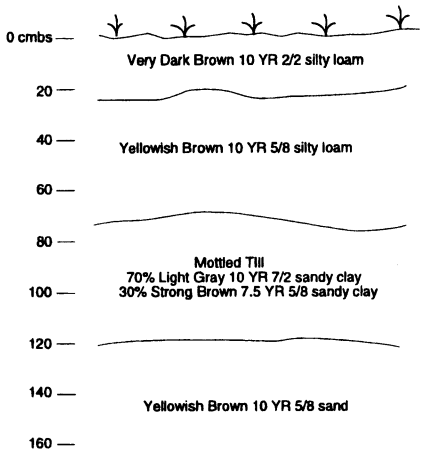
Area E
TPE - 14
North Profile

0 20 40 cm



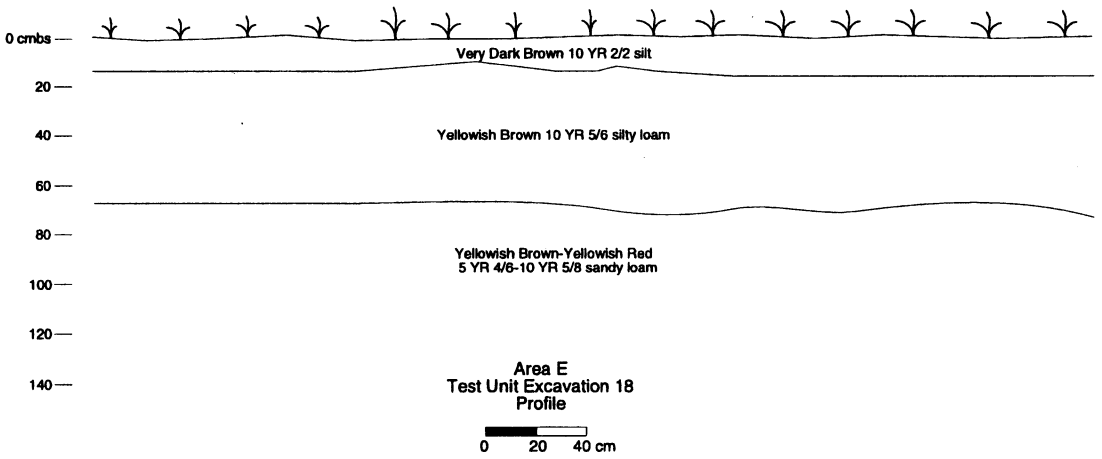
Area E
TPE - 16
East Profile

0 20 40 cm



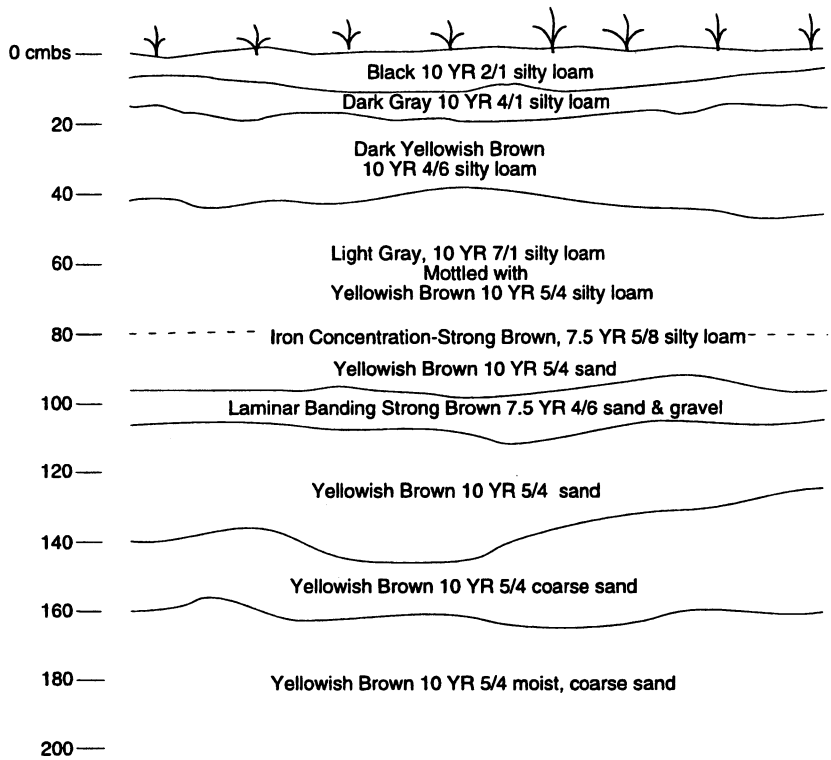
Area E
TPE - 17
South Profile

0 20 40 cm



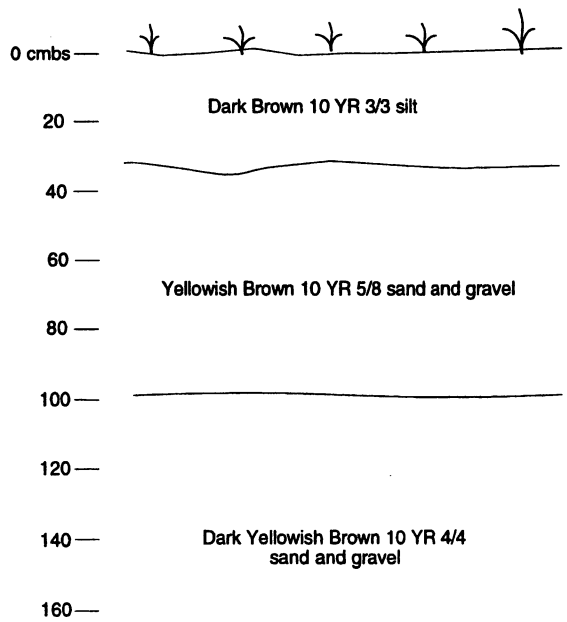
Area E
Test Unit Excavation 18
Profile

0 20 40 cm



Area E
TPE - 19
North Profile

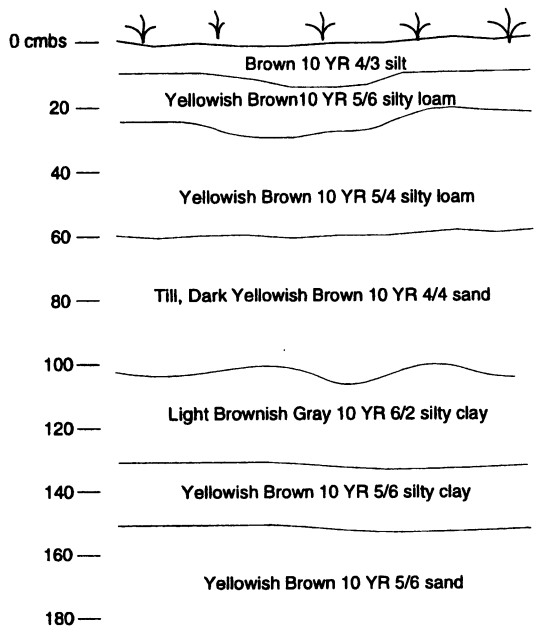
0 20 40 cm



Area E
TPE - 20
North Profile

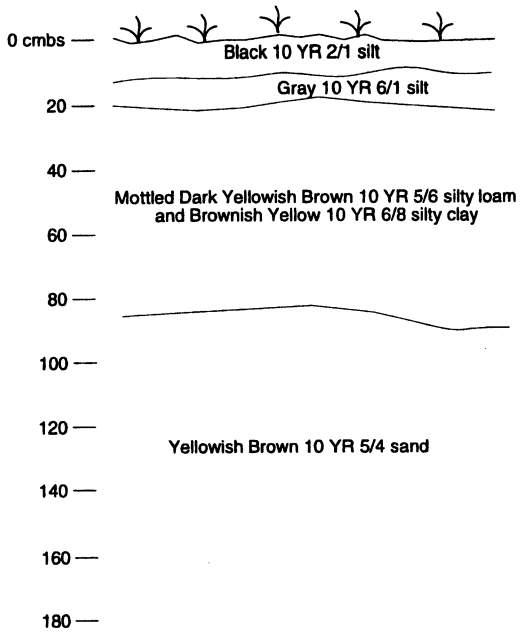
0 20 40 cm

3.2-20-85



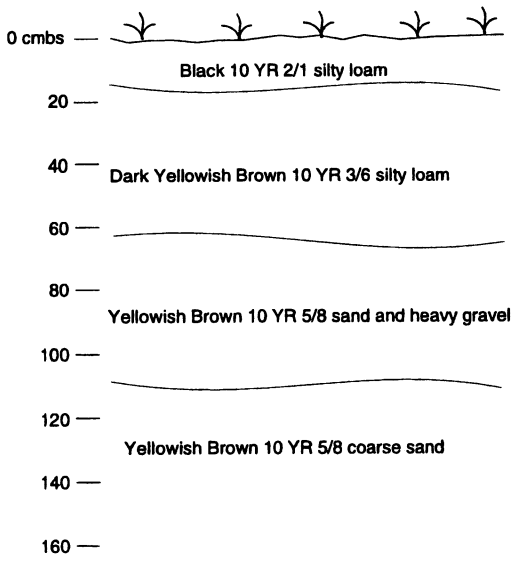
Area E
TPE - 21
Profile

0 20 40 cm



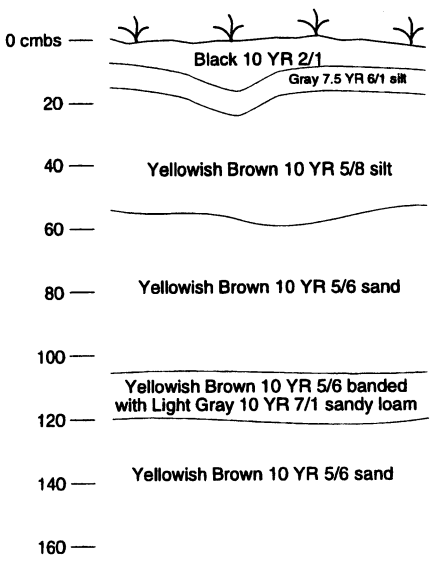
Area E
TPE - 22
North Profile

0 20 40 cm



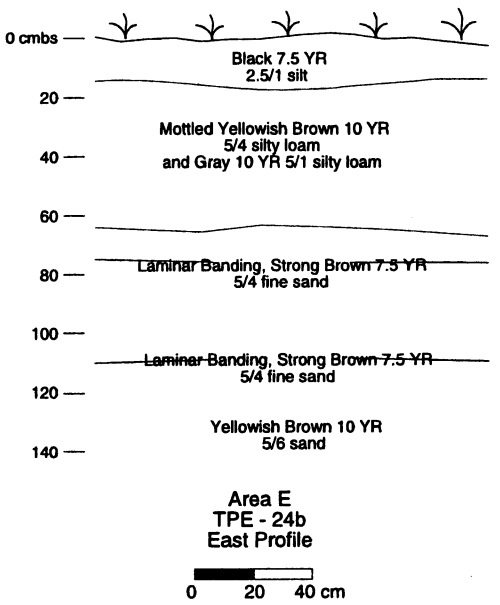
Area E
TPE - 23
South Profile

0 20 40 cm



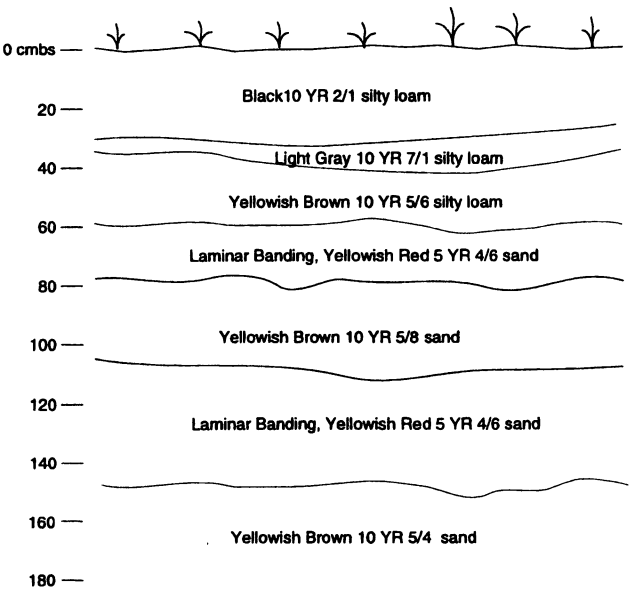
Area E
TPE - 24
East Profile

0 20 40 cm



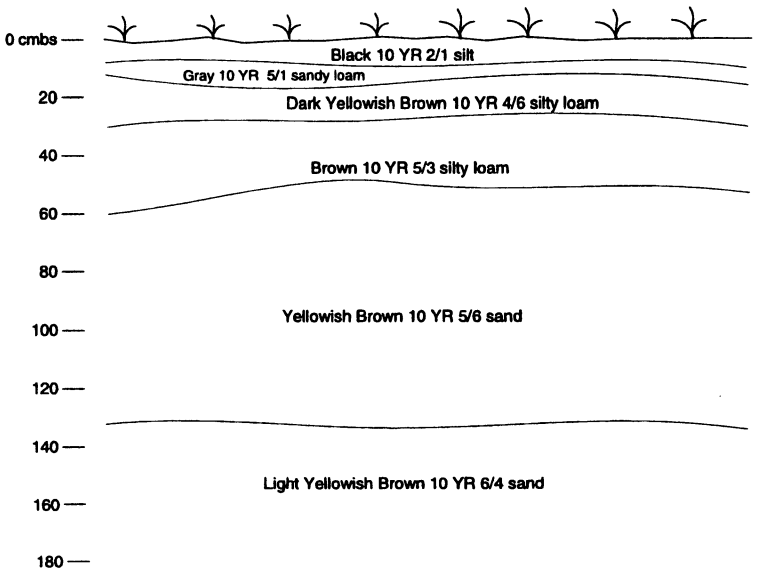
Area E
TPE - 24b
East Profile

0 20 40 cm



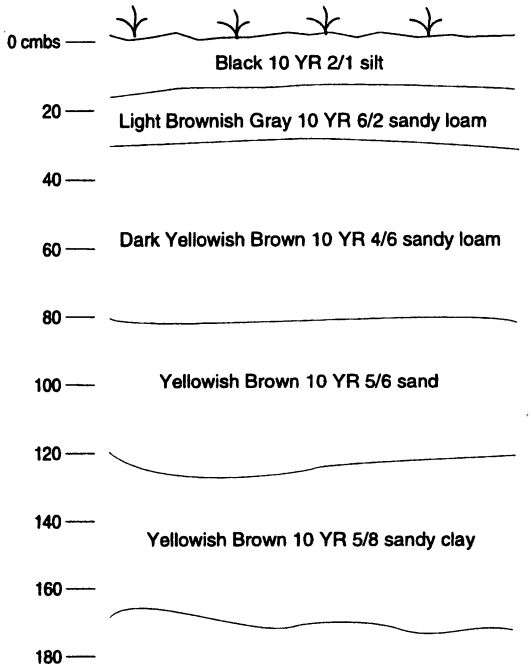
Area E
TPE - 25
North Profile

0 20 40 cm



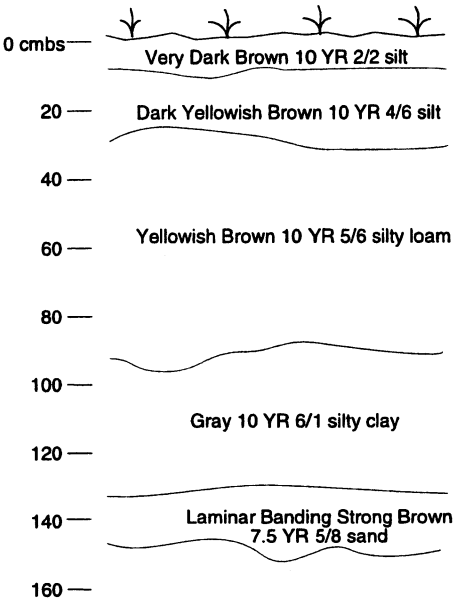
Area E
TPE - 26
East Profile

0 20 40 cm



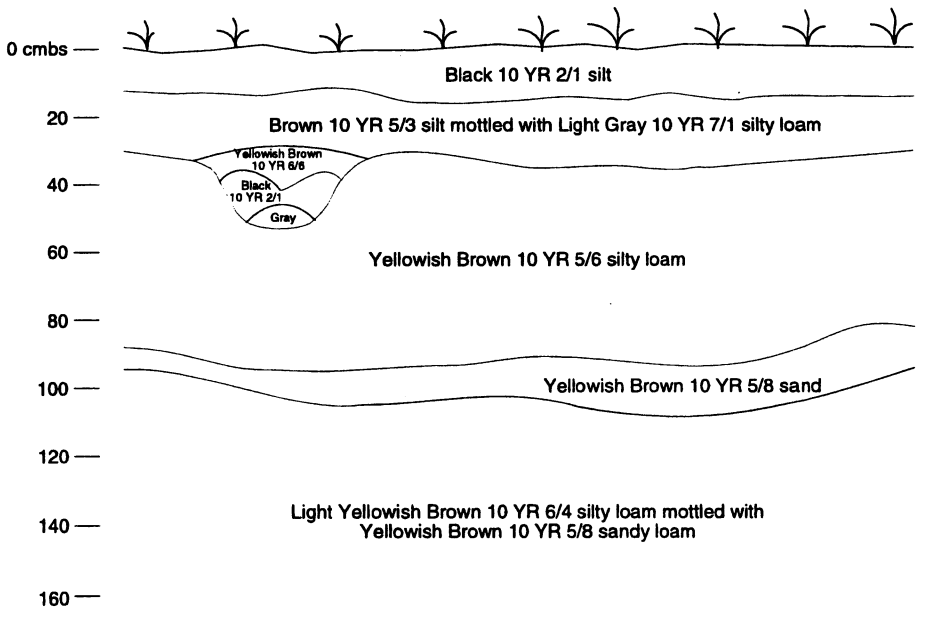
Area E
TPE - 27
North Profile

0 20 40 cm



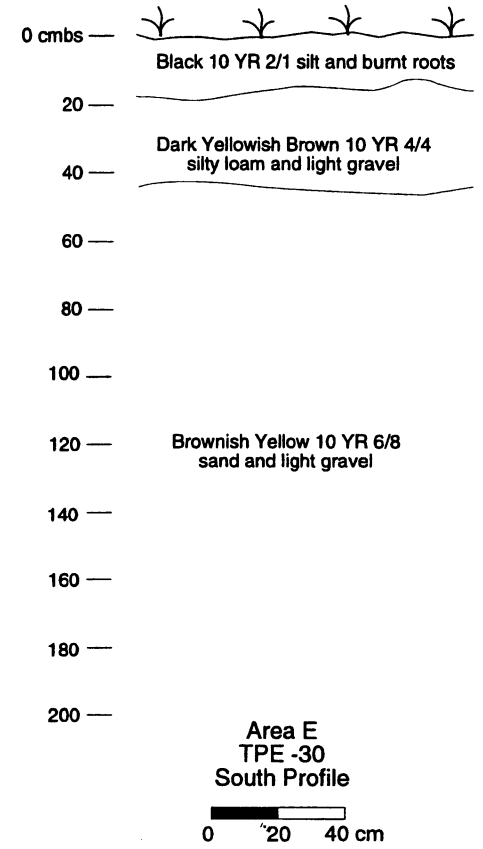
Area E
TPE - 29
South Profile

0 20 40 cm



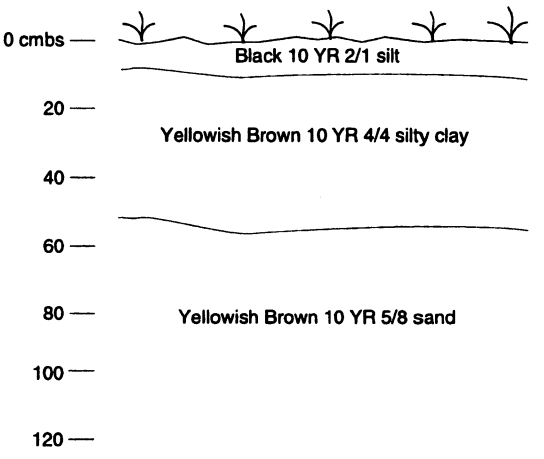
Area E
TPE - 28
West Profile

0 20 40 cm



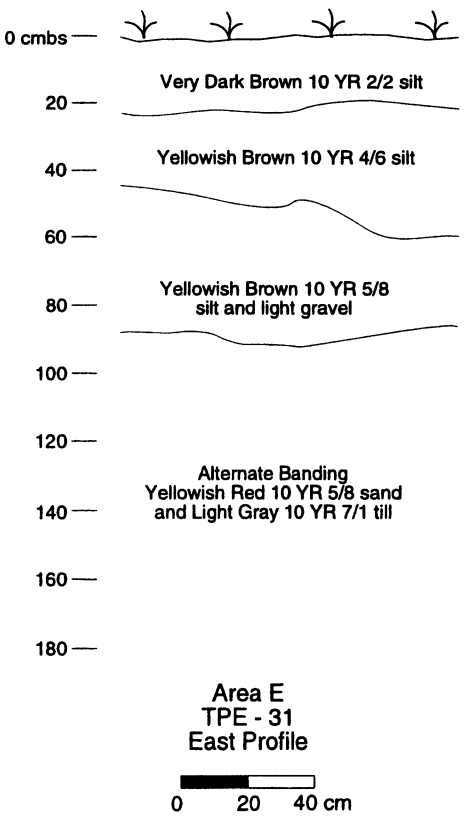
Area E
TPE -30
South Profile

0 20 40 cm



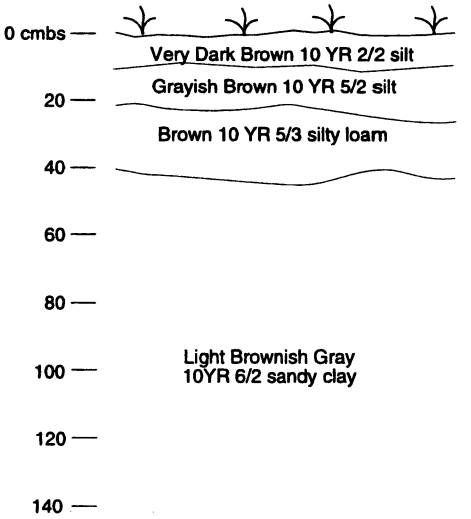
Area E
TPE - 30b
West Profile

0 20 40 cm



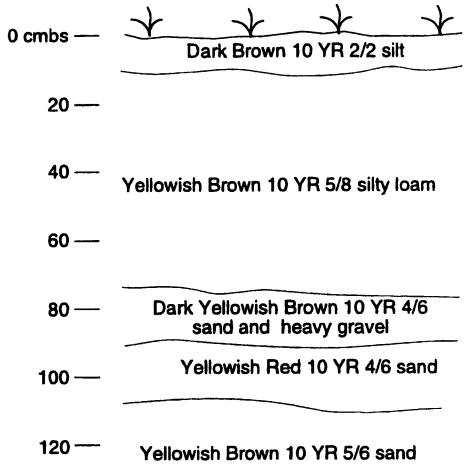
Area E
TPE - 31
East Profile

0 20 40 cm



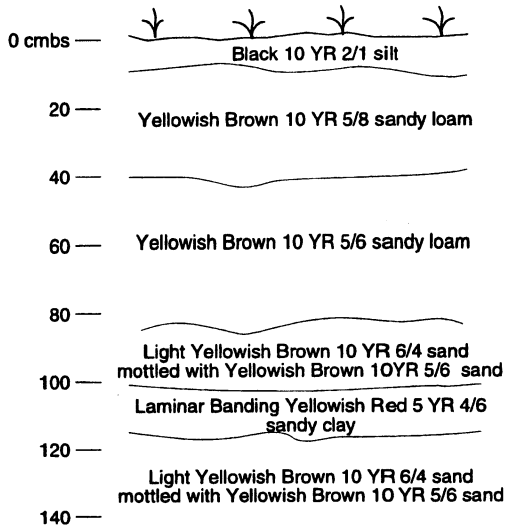
Area E
TPE - 32
North Profile

0 20 40 cm



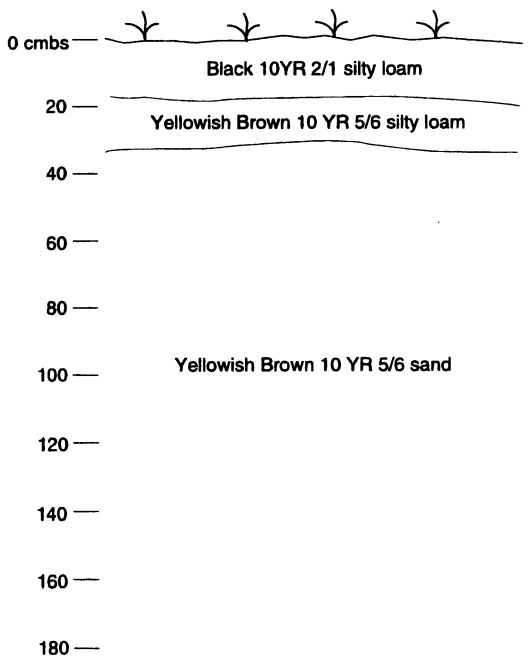
Area E
TPE - 33
Profile

0 20 40 cm



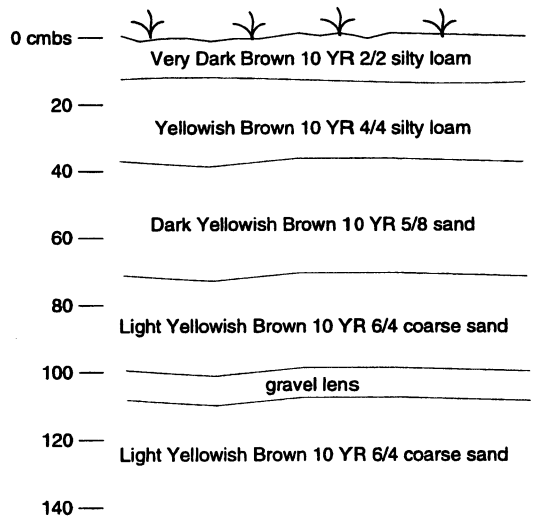
Area E
TPE - 34
Profile

0 20 40 cm



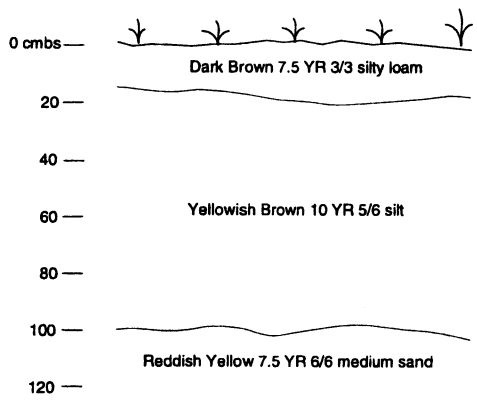
Area E
TPE - 35
West Profile

0 20 40 cm



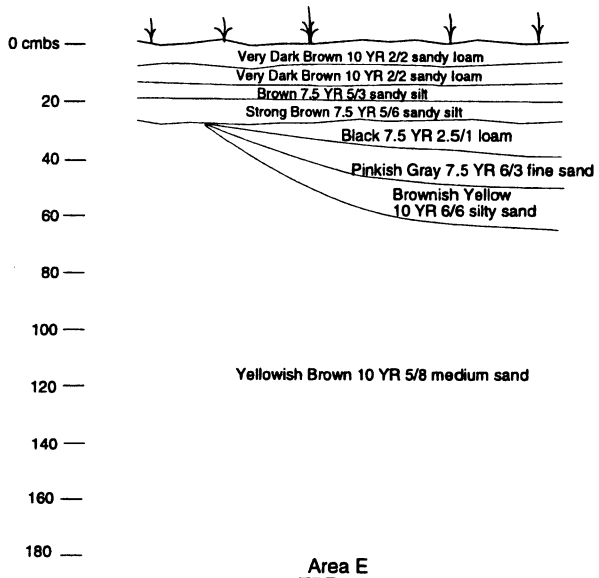
Area E
TPE - 36
Profile

0 20 40 cm



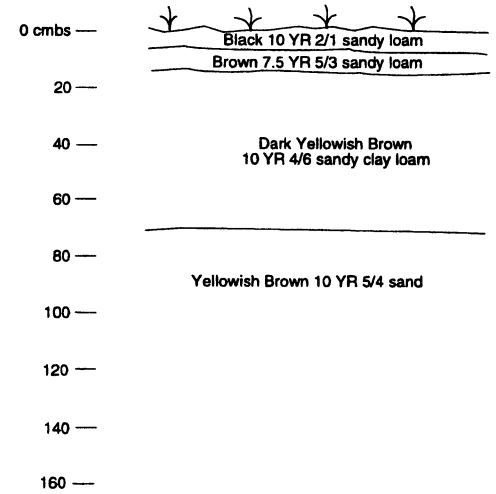
Area E
TPE - 38
South Profile

0 20 40 cm



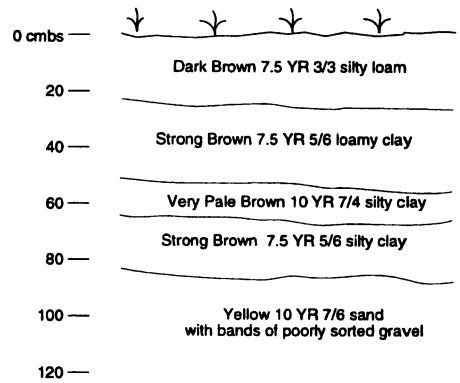
Area E
TPE - 39
North Profile

0 20 40 cm



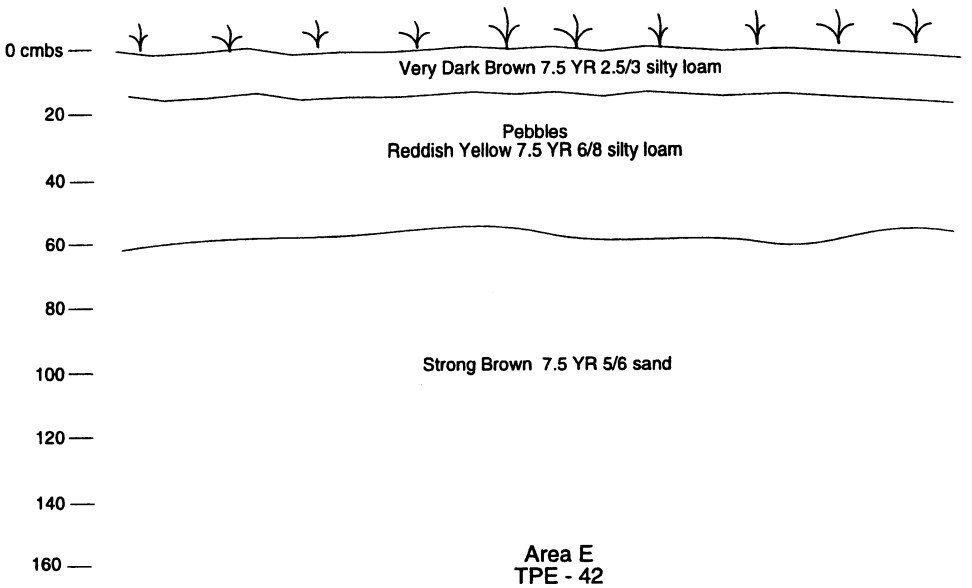
Area E
TPE - 40
East Profile

0 20 40 cm



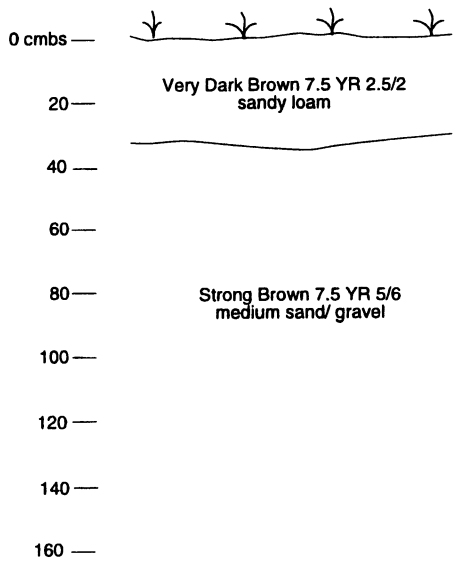
Area E
TPE - 41
West Profile

0 20 40 cm



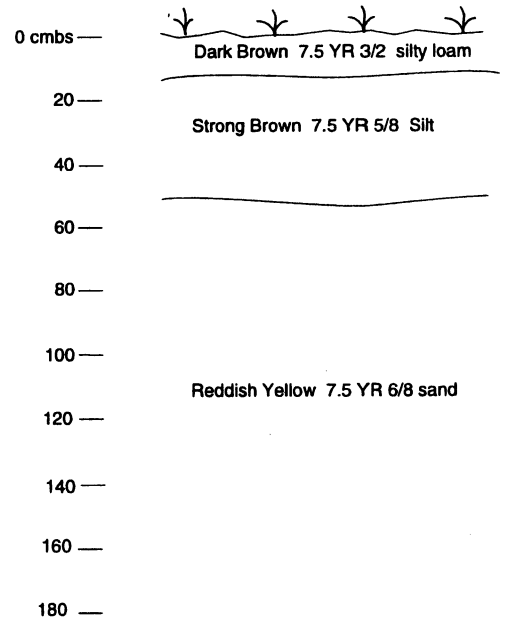
Area E
TPE - 42
NorthProfile

0 20 40 cm



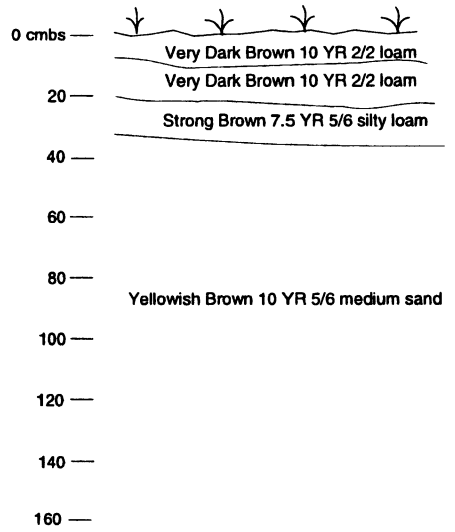
Area E
TPE - 43
North Profile

0 20 40 cm



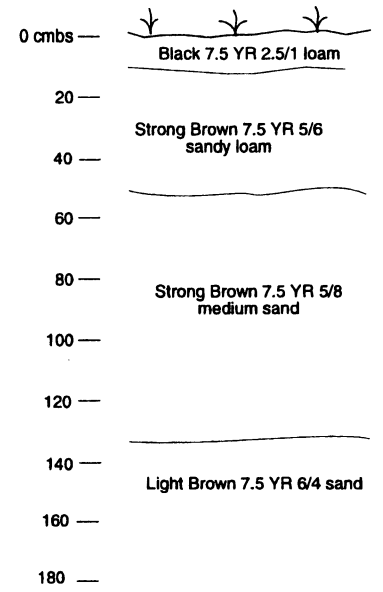
Area E
TPE - 44
South Profile

0 20 40 cm



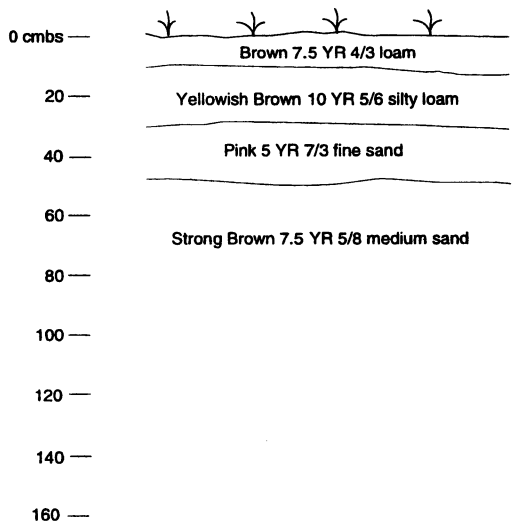
Area E
TPE - 45
South Profile

0 20 40 cm



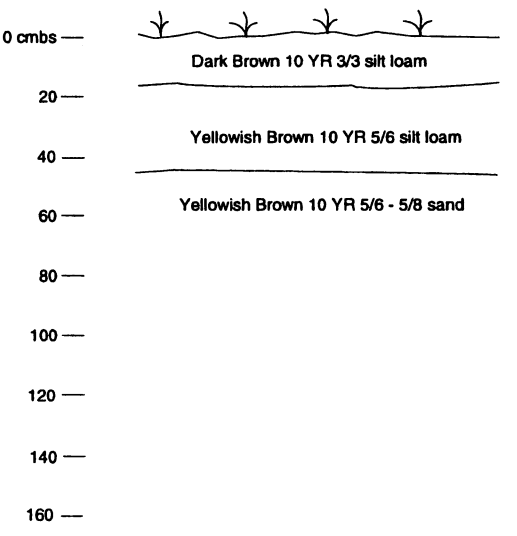
Area E
TPE - 46
West Profile

0 20 40 cm



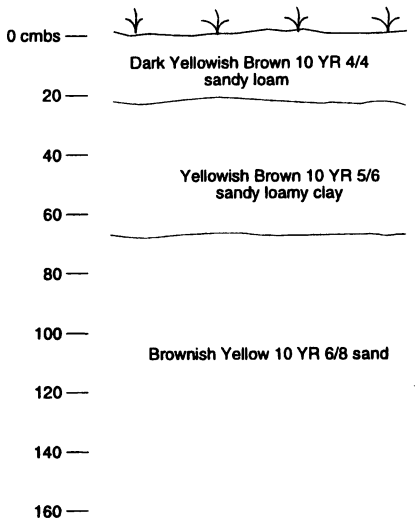
Area E
TPE - 47
East Profile

0 20 40 cm



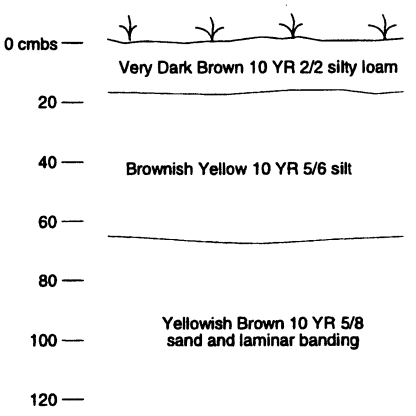
Area E
TPE - 48
East Profile

0 20 40 cm



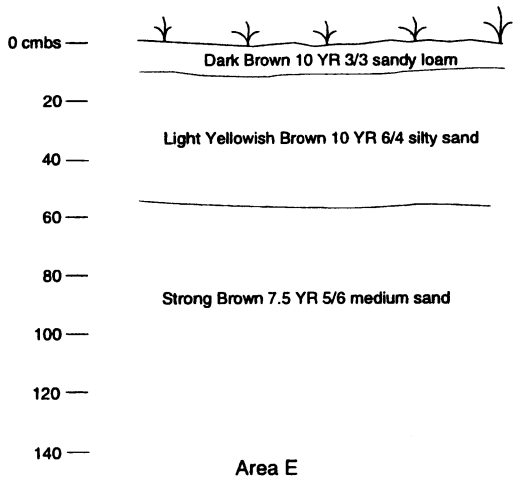
Area E
TPE - 49
North Profile

0 20 40 cm



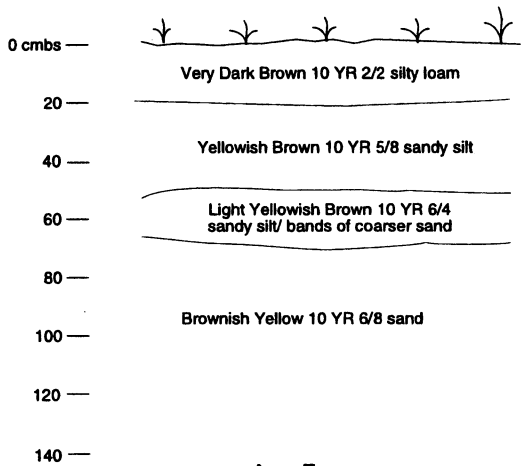
Area E
TPE - 50
East Profile

0 20 40 cm



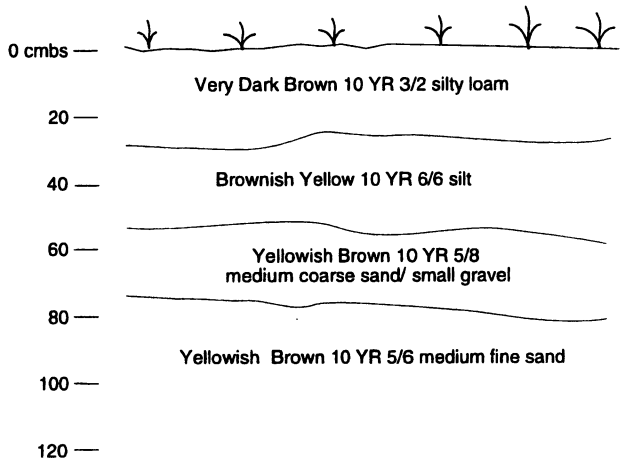
Area E
TPE - 51
North Profile

0 20 40 cm



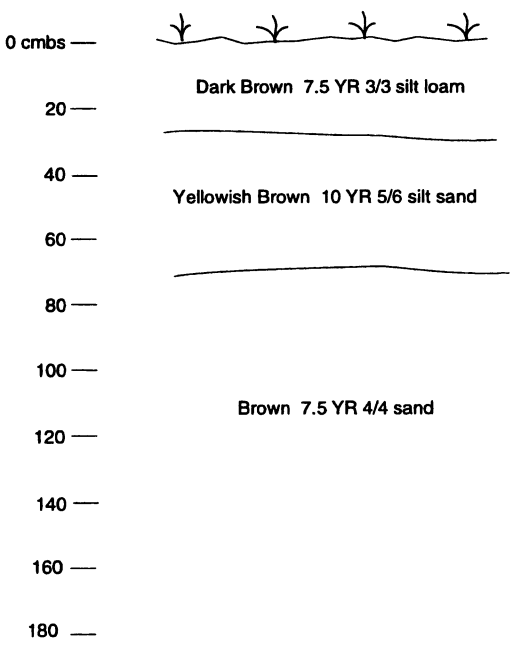
Area E
TPE - 52
North Profile

0 20 40 cm



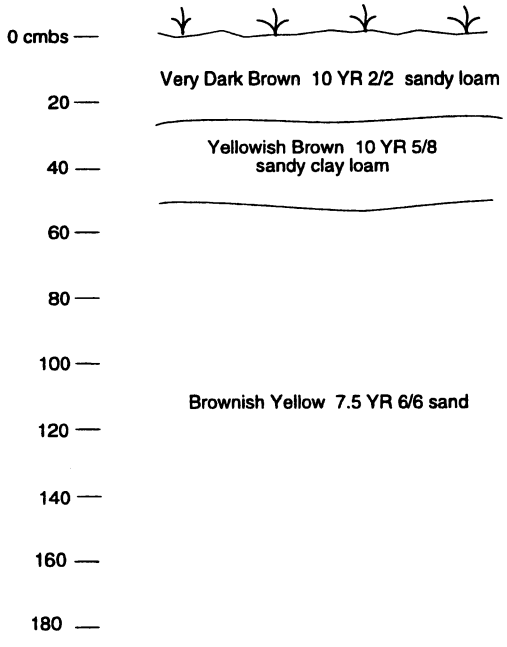
Area E
TPE - 53
East Profile

0 20 40 cm



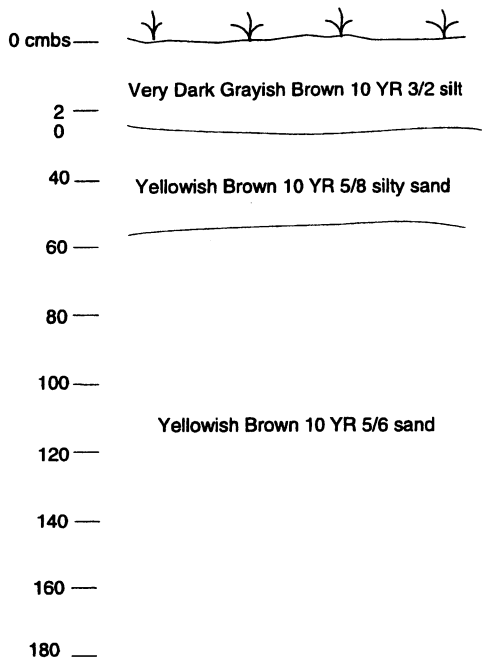
Area E
TPE - 54
South Profile

0 20 40 cm



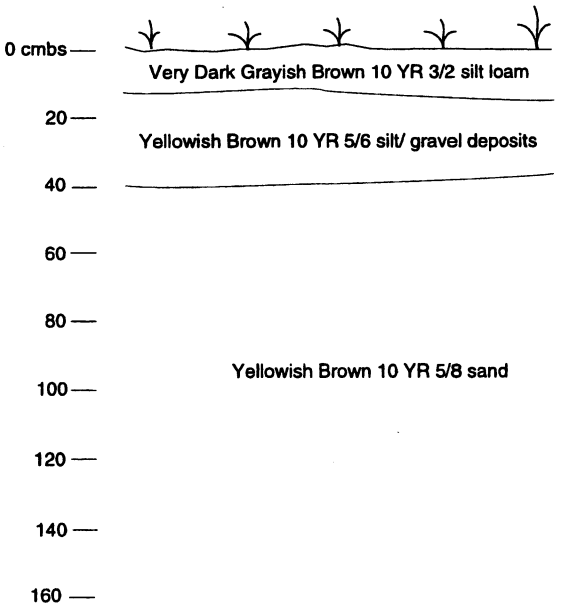
Area E
TPE - 55
South Profile

0 20 40 cm



Area E
TPE - 56
South Profile

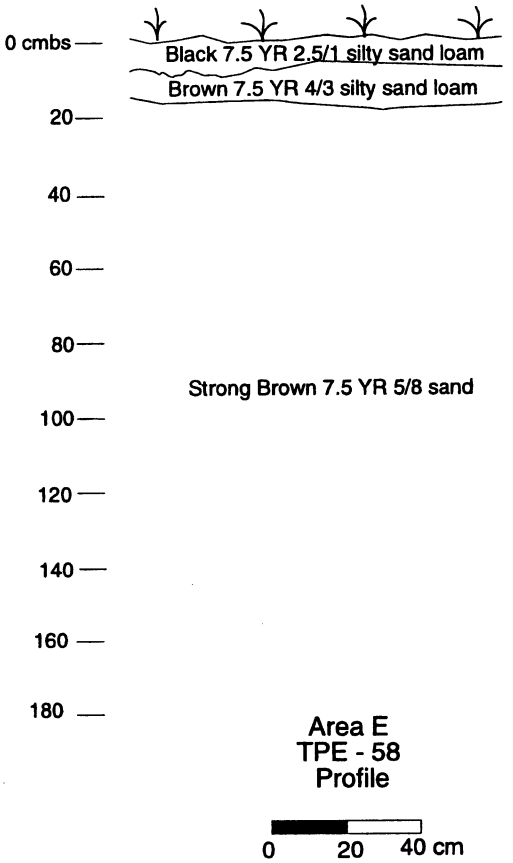
0 20 40 cm

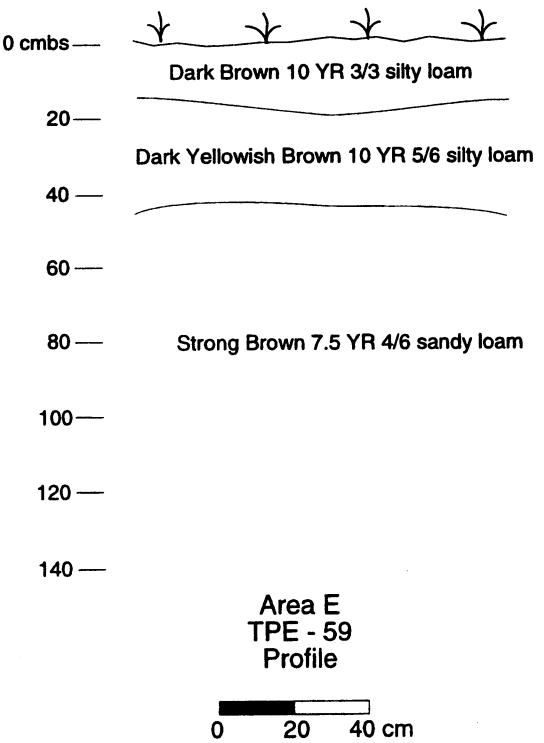


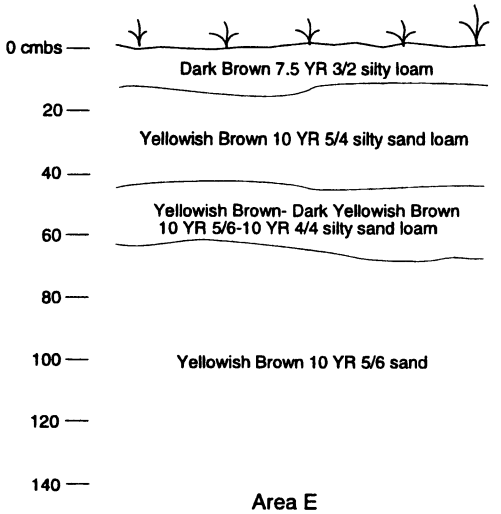
Area E
TPE - 57
North Profile

0 20 40 cm

3.2-20-96

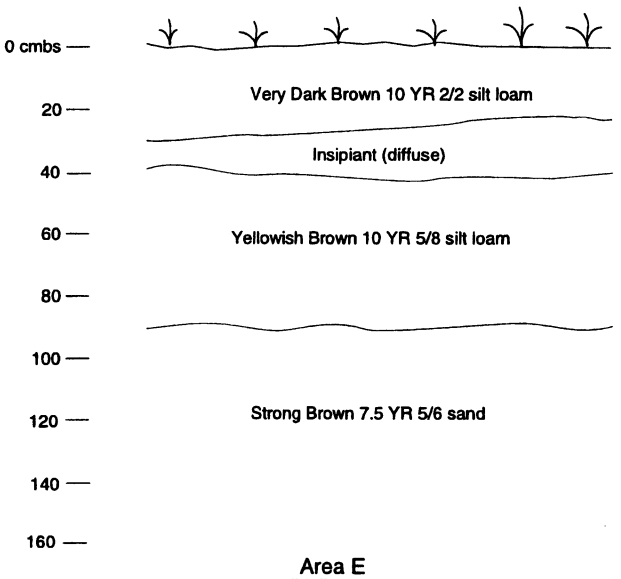

0 cmbs
20
40
60
80
100
120
140
160
180
Black 7.5 YR 2.5/1 silty sand loam
Brown 7.5 YR 4/3 silty sand loam
Strong Brown 7.5 YR 5/8 sand
Area E
TPE - 58
Profile
0
20
40 cm


0 cmbs
20
40
60
80
100
120
140
Dark Brown 10 YR 3/3 silty loam
Dark Yellowish Brown 10 YR 5/6 silty loam
Strong Brown 7.5 YR 4/6 sandy loam
Area E
TPE - 59
Profile
0
20
40 cm



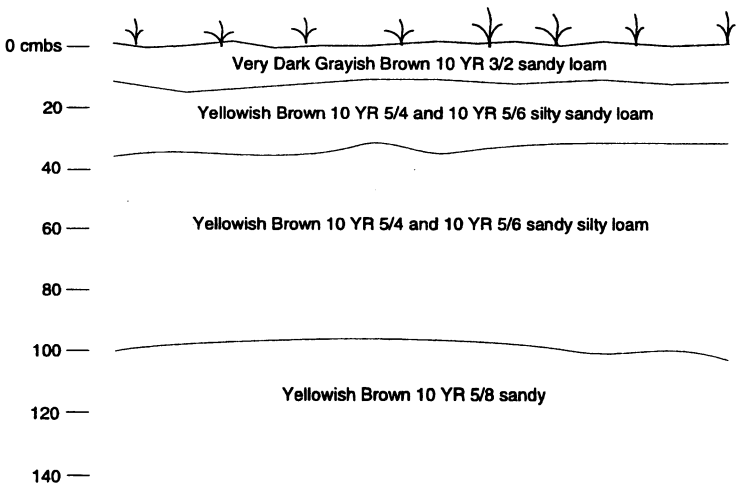
Area E
TPE - 60
East Profile

0 20 40 cm



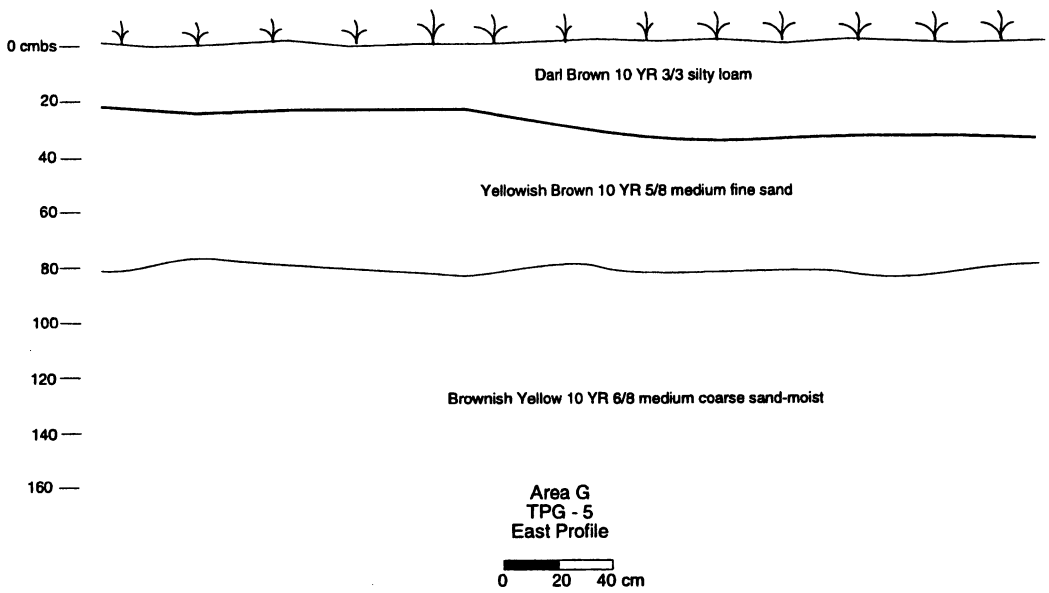
Area E
TPE - 61
NorthProfile

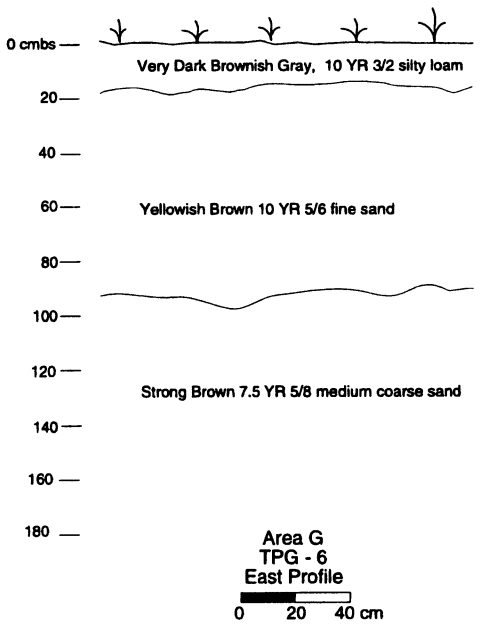
0 20 40 cm

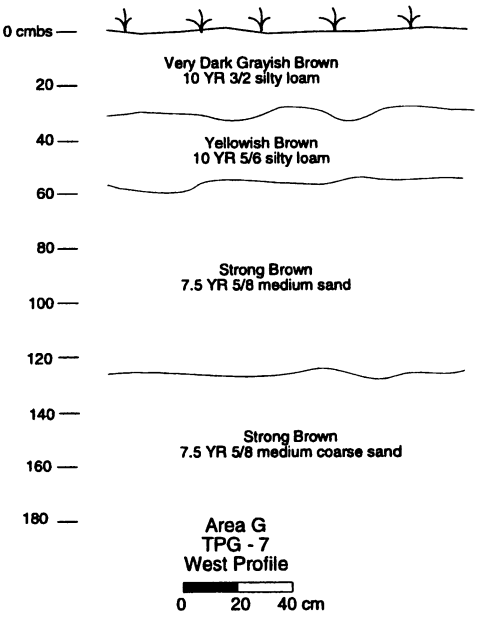


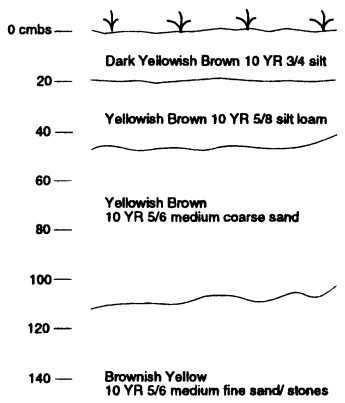
Area E
TPE - 62
East Profile

0 20 40 cm


0 cmbs
20
40
60
80
100
120
140
160
Darl Brown 10 YR 3/3 silty loam
Yellowish Brown 10 YR 5/8 medium fine sand
Brownish Yellow 10 YR 6/8 medium coarse sand-moist
Area G
TPG - 5
East Profile
0 20 40 cm

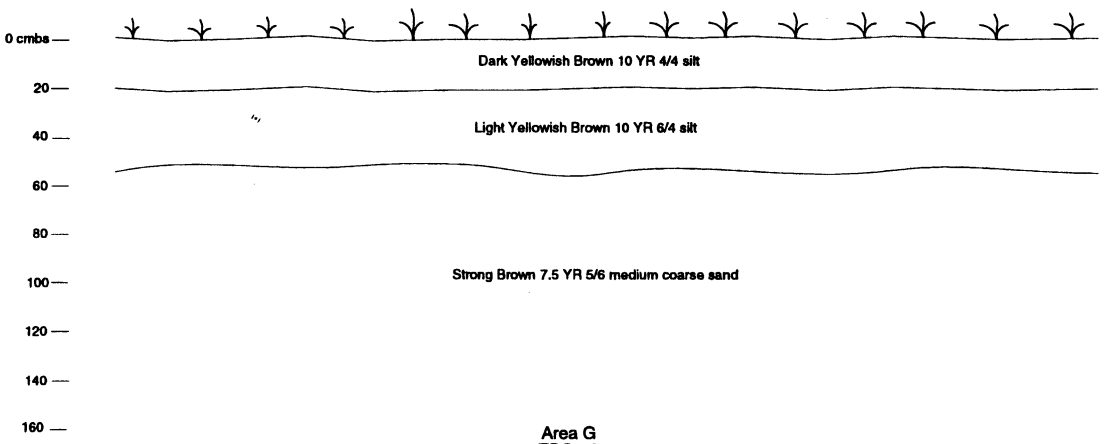

0 cmbs
20
40
60
80
100
120
140
160
180
Very Dark Brownish Gray, 10 YR 3/2 silty loam
Yellowish Brown 10 YR 5/6 fine sand
Strong Brown 7.5 YR 5/8 medium coarse sand
Area G
TPG - 6
East Profile
0 20 40 cm


0 cmbs
20
40
60
80
100
120
140
160
180
Very Dark Grayish Brown
10 YR 3/2 silty loam
Yellowish Brown
10 YR 5/6 silty loam
Strong Brown
7.5 YR 5/8 medium sand
Strong Brown
7.5 YR 5/8 medium coarse sand
Area G
TPG - 7
West Profile
0 20 40 cm



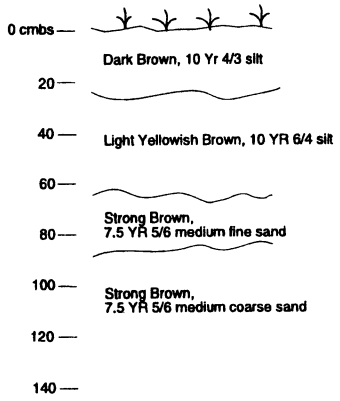
Area G
TPG - 8
North Profile

0 20 40 cm



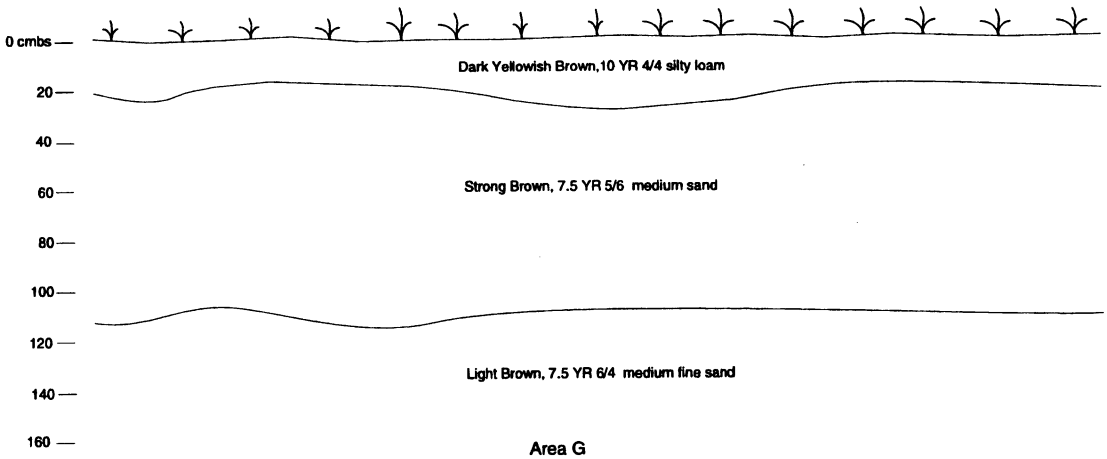
Area G
TPG - 9
North Profile

0 20 40 cm



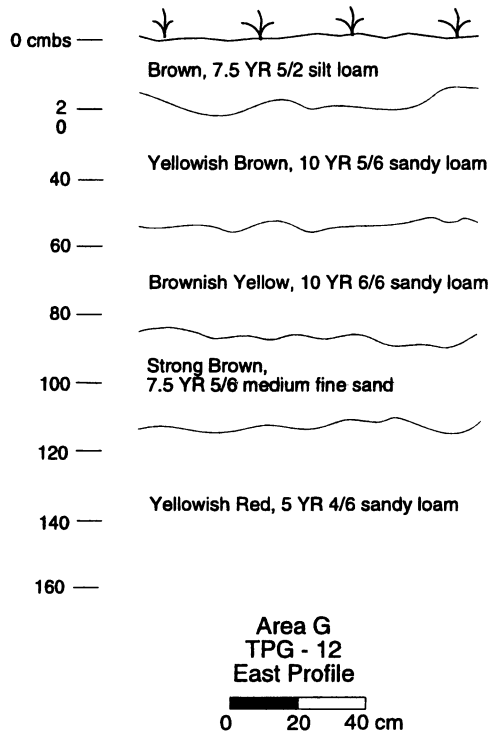
Area G
TPG - 10
North Profile

0 20 40 cm



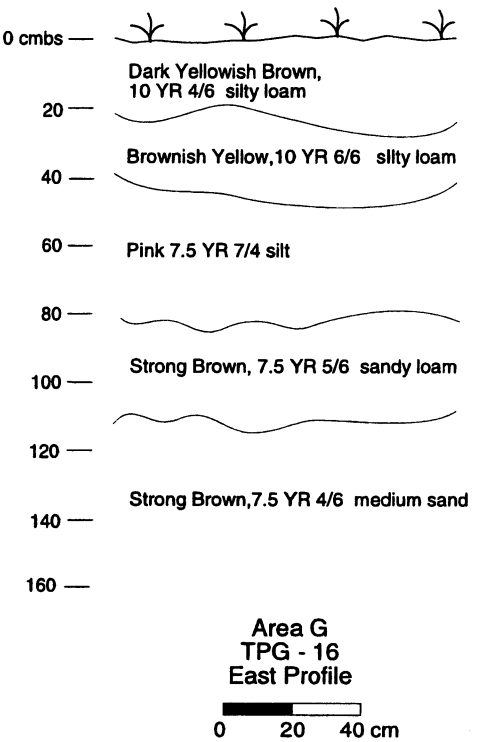
Area G
TPG - 11
East Profile

0 20 40 cm



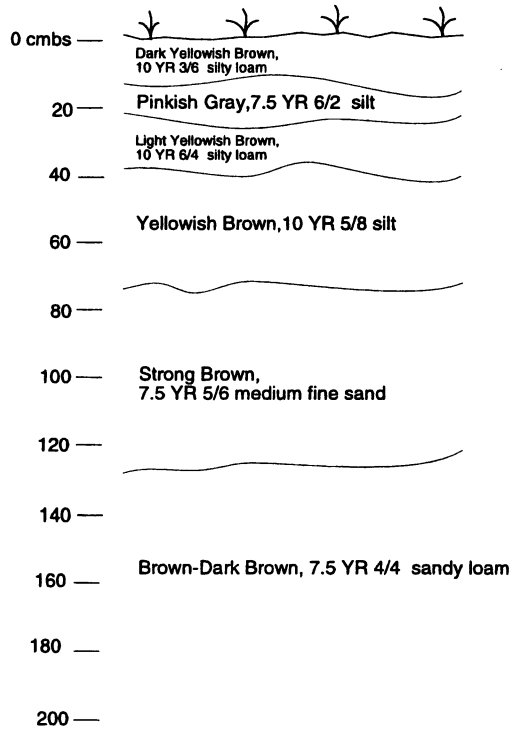
Area G
TPG - 12
East Profile

0 20 40 cm



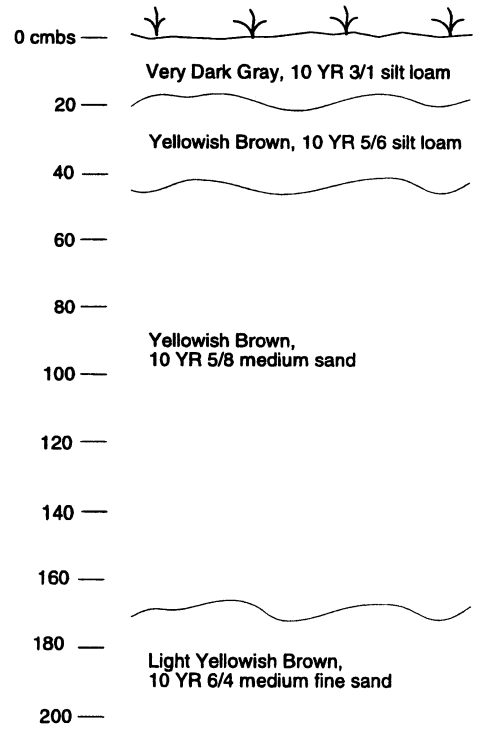
Area G
TPG - 16
East Profile

0 20 40 cm



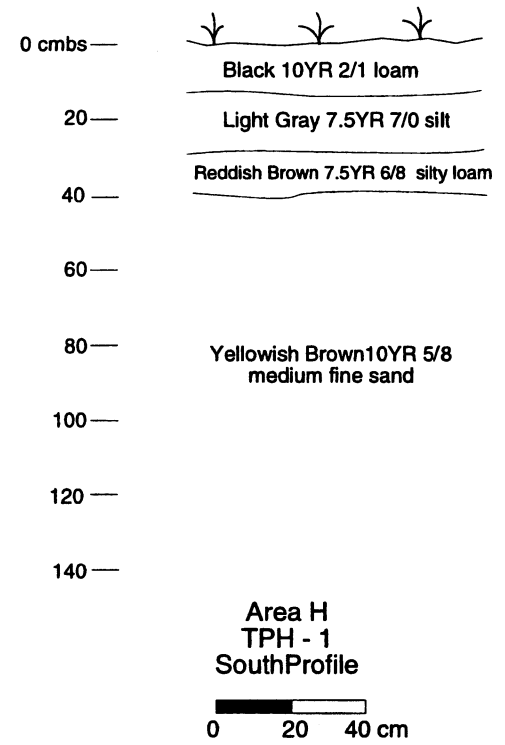
Area G
TPG - 17
SouthProfile

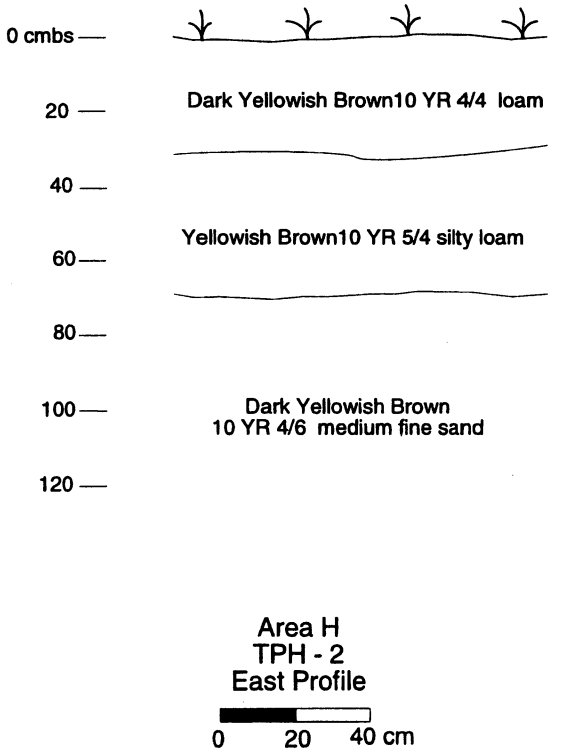
0 20 40 cm

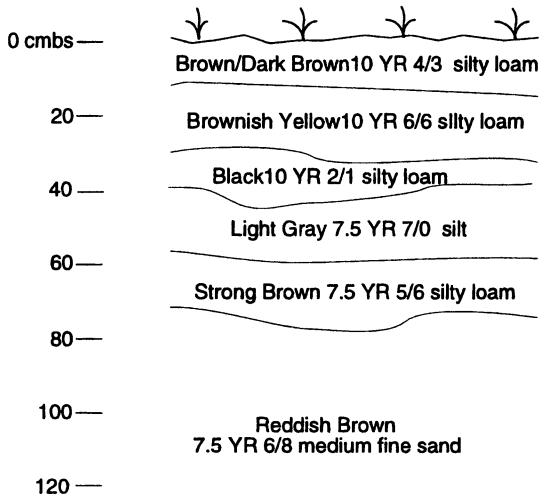


Area G
TPG - 18
North Profile

0 20 40 cm

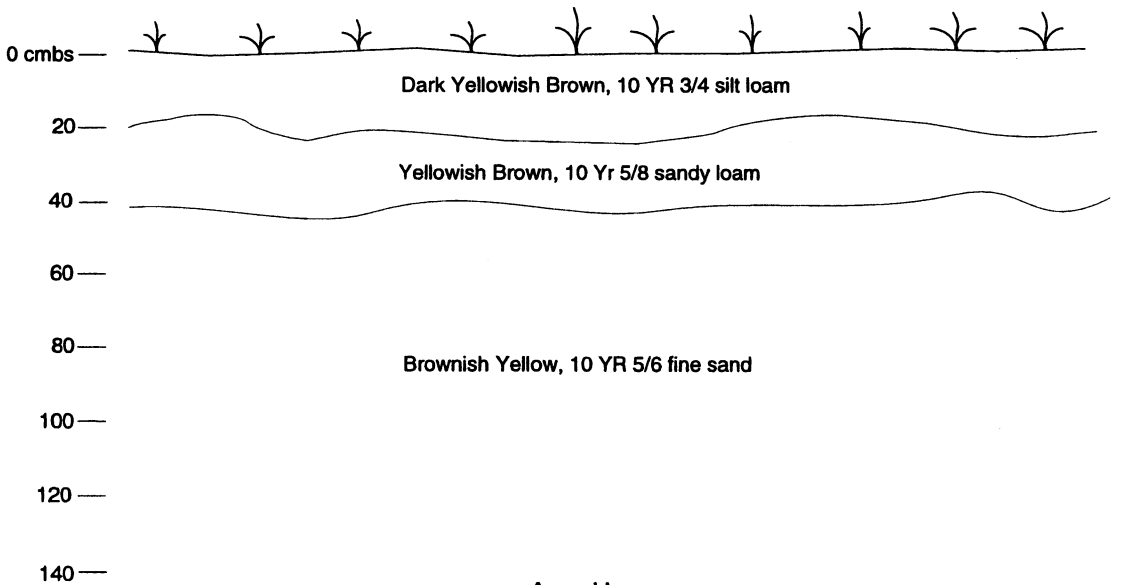

0 cmbs
20
40
60
80
100
120
140
Black 10YR 2/1 loam
Light Gray 7.5YR 7/0 silt
Reddish Brown 7.5YR 6/8 silty loam
Yellowish Brown10YR 5/8
medium fine sand
Area H
TPH - 1
SouthProfile
0
20
40 cm


0 cmbs
20
40
60
80
100
120
Dark Yellowish Brown10 YR 4/4 loam
Yellowish Brown10 YR 5/4 silty loam
Dark Yellowish Brown
10 YR 4/6 medium fine sand
Area H
TPH - 2
East Profile
0
20
40 cm



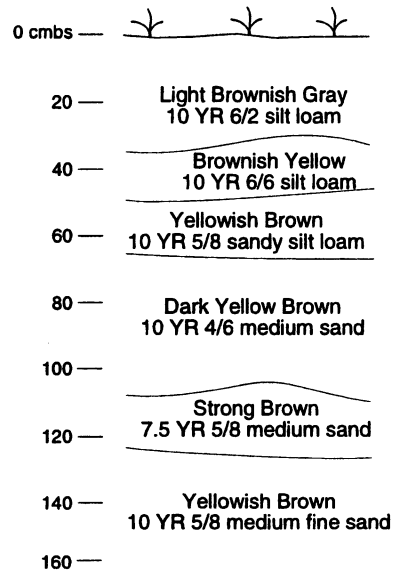
Area H
TPH - 3
West Profile

0 20 40 cm



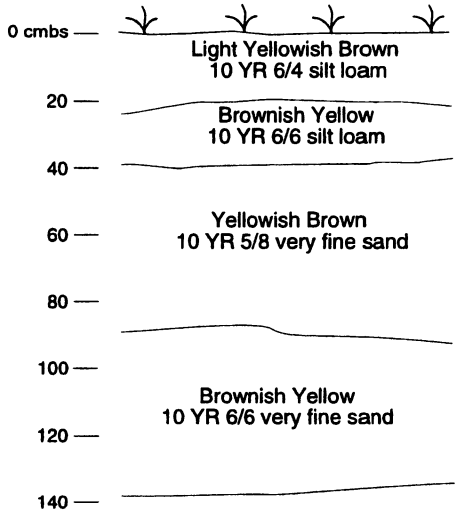
Area H
TPH - 4
West Profile

0 20 40 cm



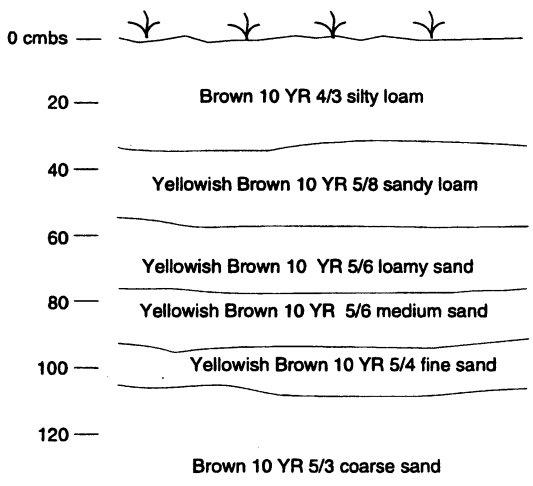
Area H
TPH - 5
East Profile

0 20 40 cm



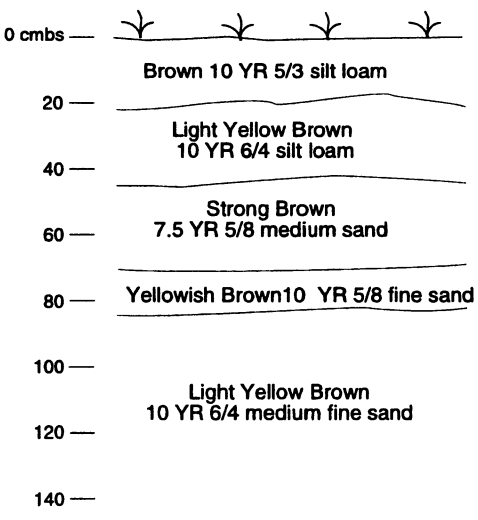
Area H
TPH-6
South Profile

0 20 40 cm



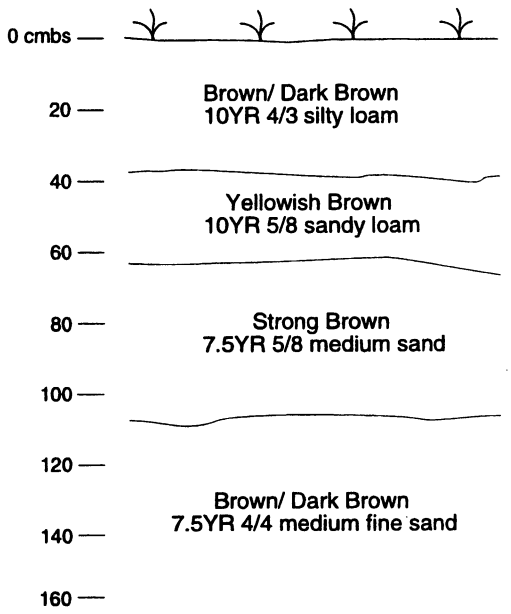
Area H
TPH - 6b
West Profile

0 20 40 cm



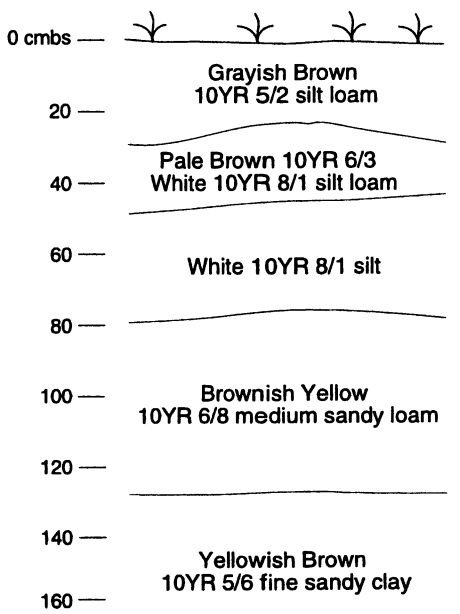
Area H
TPH - 7
South Profile

0 20 40 cm



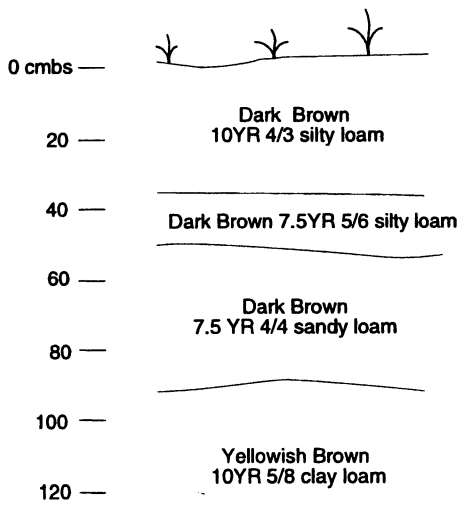
Area H
TPH - 8
North Profile

0 20 40 cm



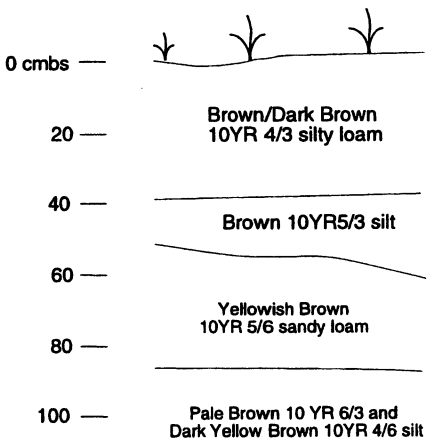
Area H
TPH - 8b
East Profile

0 20 40 cm



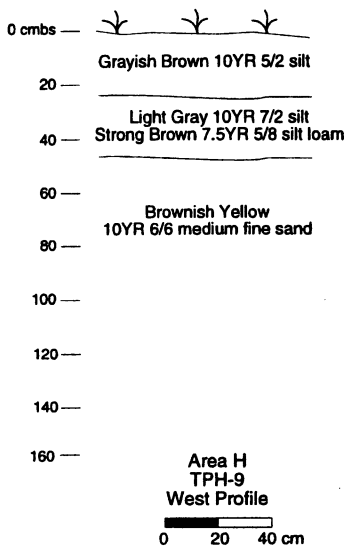
Area H
TPH - 8C
East Profile

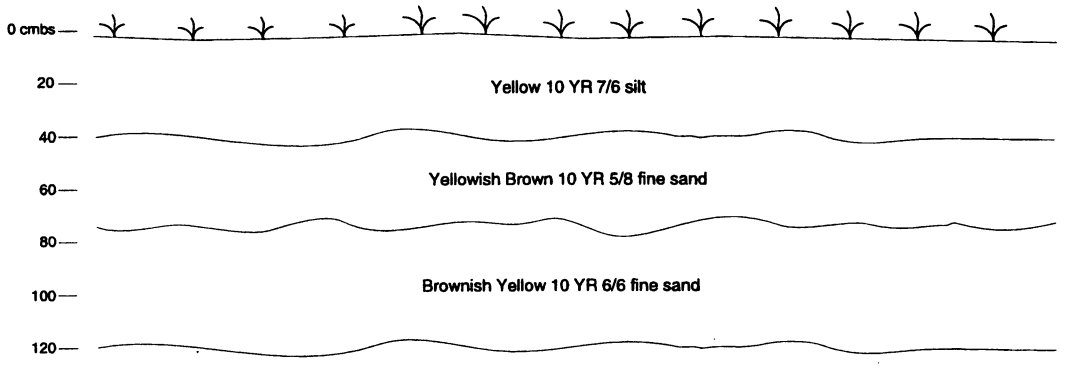
0 20 40 cm



Area H
TPH - 8D
East Profile

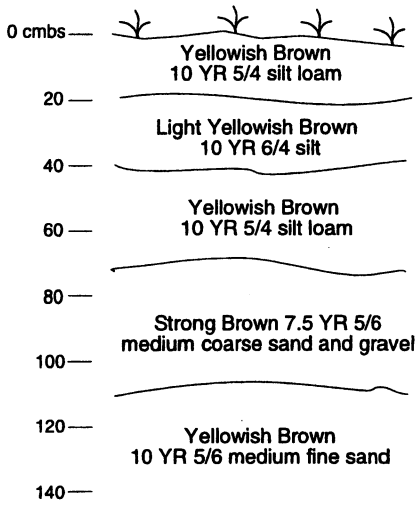
0 20 40 cm





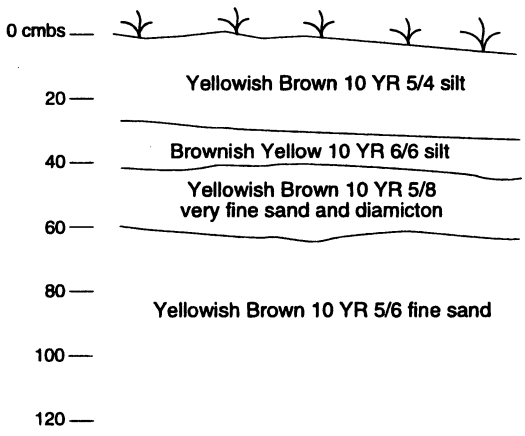
Area H
TPH - 10
North Profile

0 20 40 cm



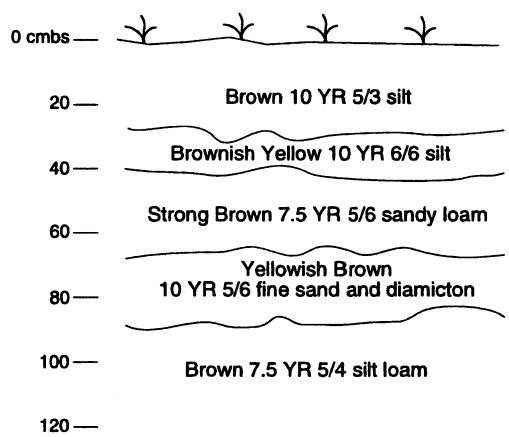
Area H
TPH - 11
North Profile

0 20 40 cm



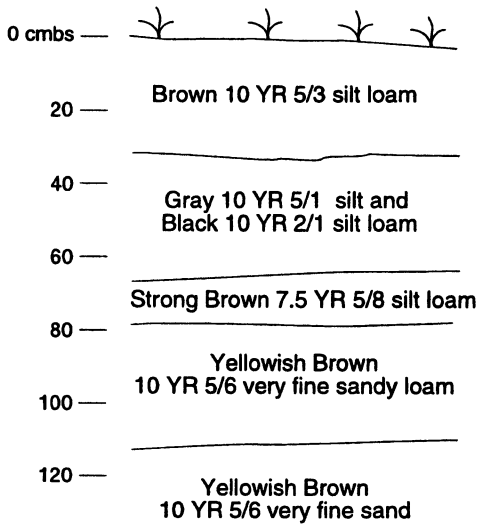
Area H
TPH - 12
South Profile

0 20 40 cm



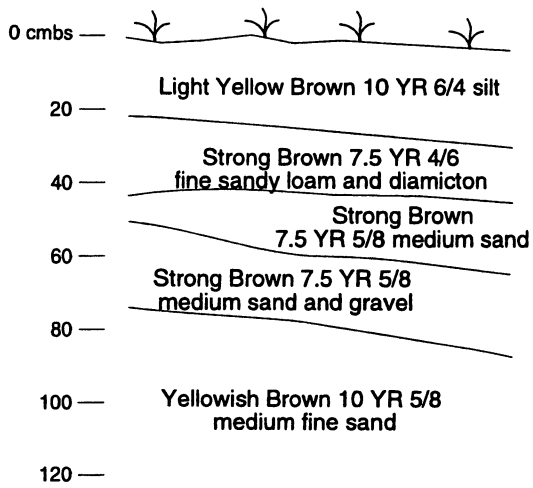
Area H
TPH - 13
North Profile

0 20 40 cm



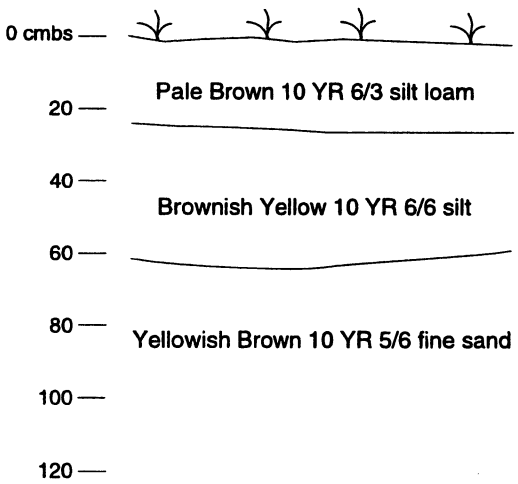
Area H
TPH - 14
North Profile

0 20 40 cm



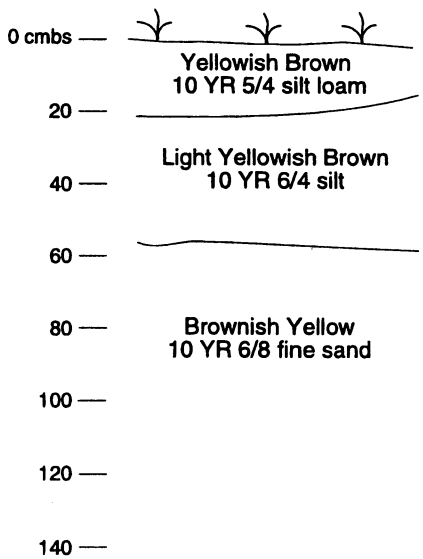
Area H
TPH - 15
North Profile

0 20 40 cm



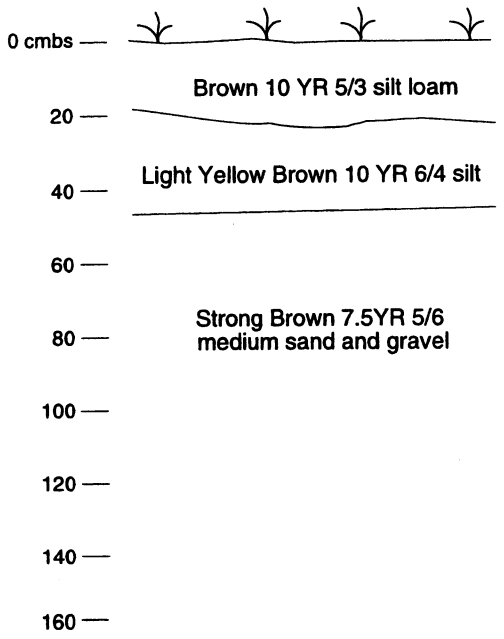
Area H
TPH - 16
North Profile

0 20 40 cm



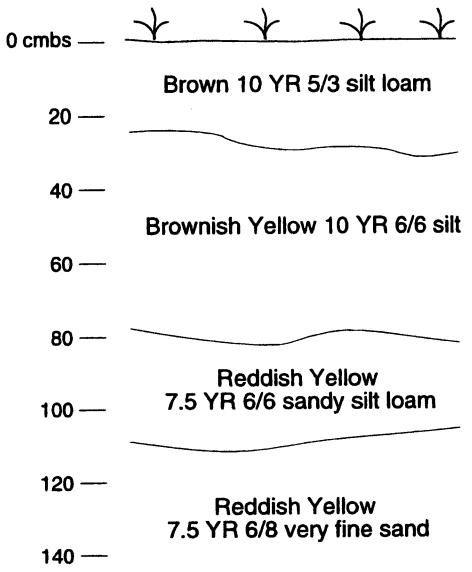
Area H
TPH - 17
East Profile

0 20 40 cm



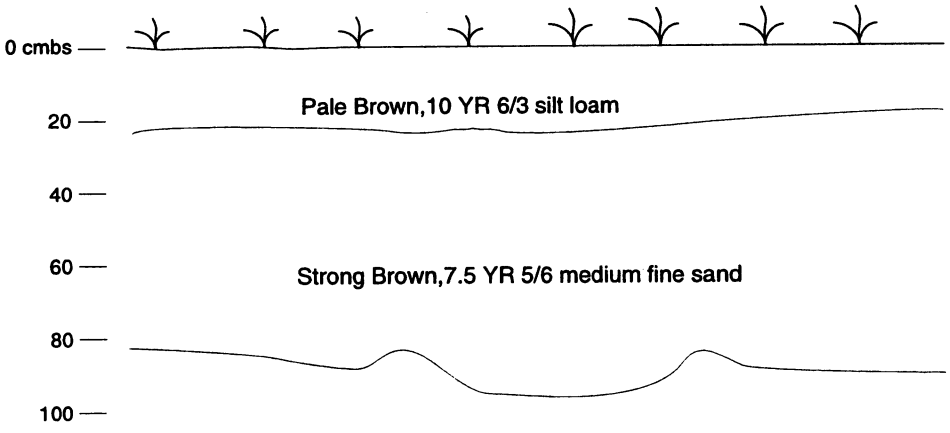
Area H
TPH - 18
East Profile

0 20 40 cm



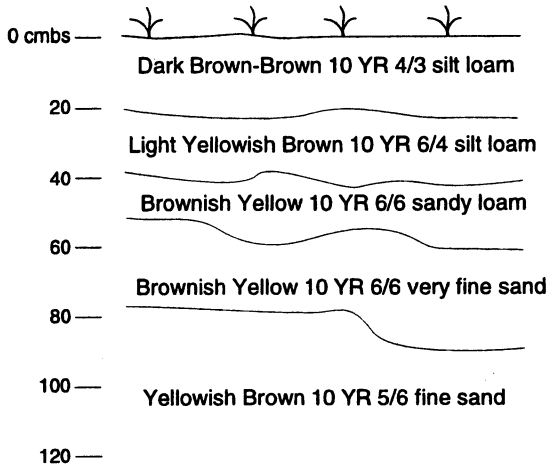
Area H
TPH - 19
West Profile

0 20 40 cm



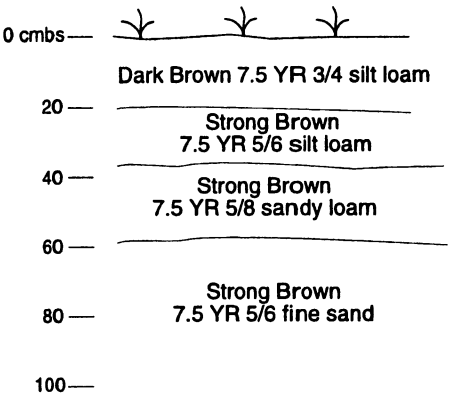
Area H
TPH - 20
West Profile

0 20 40 cm



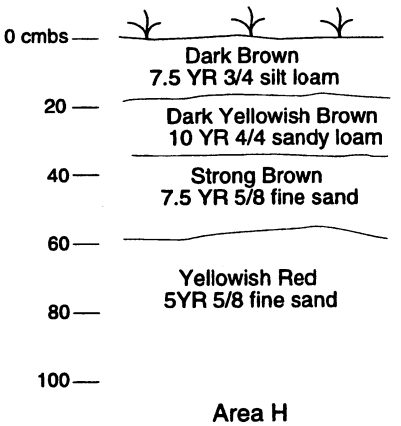
Area H
TPH - 21
North Profile

0 20 40 cm



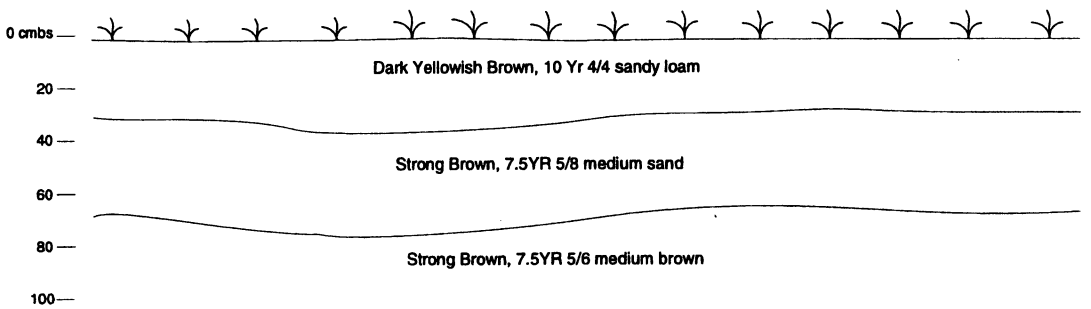
Area H
TPH - 22
East Profile

0 20 40 cm



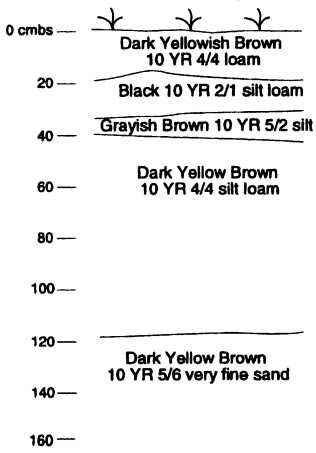
Area H
TPH - 23
West Profile

0 20 40 cm



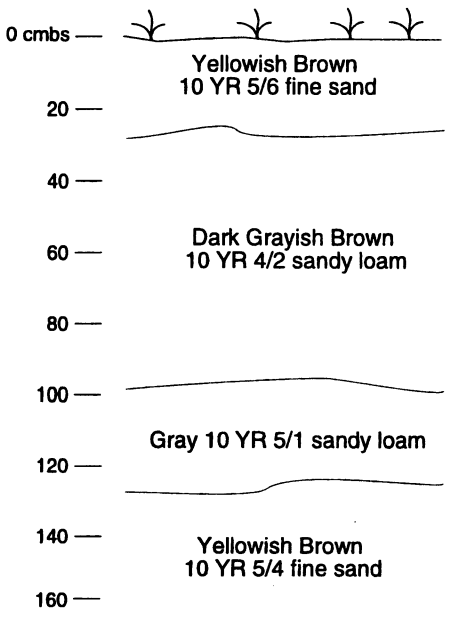
Area H
TPH-24
East Profile

0 20 40 cm



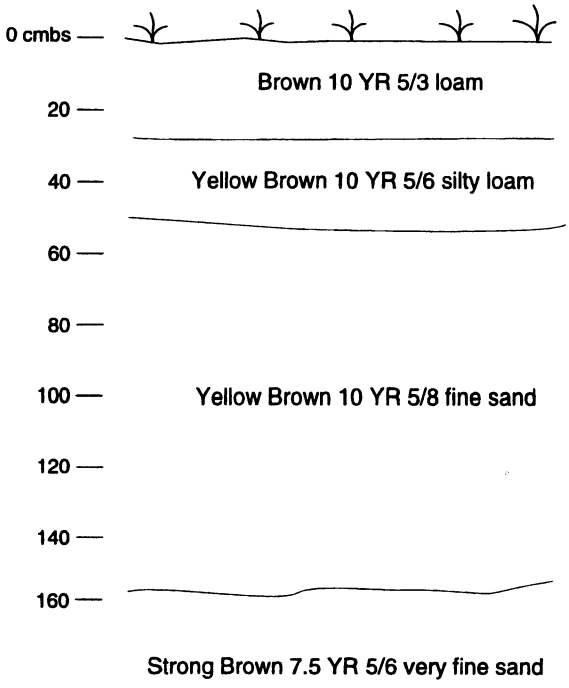
Area H
TPH - 25
East Profile

0 20 40 cm



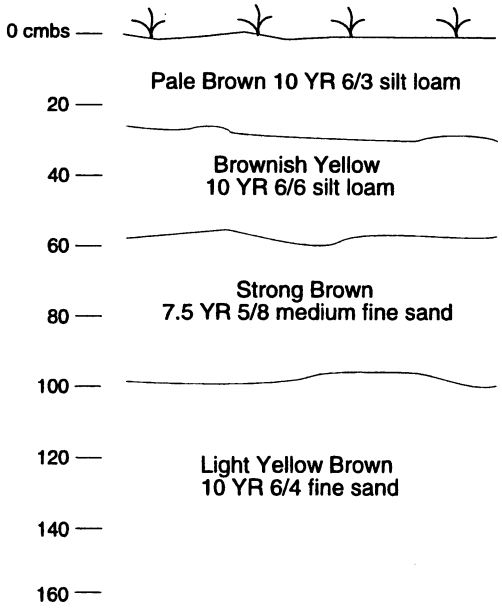
Area H
TPH - 26
North Profile

0 20 40 cm



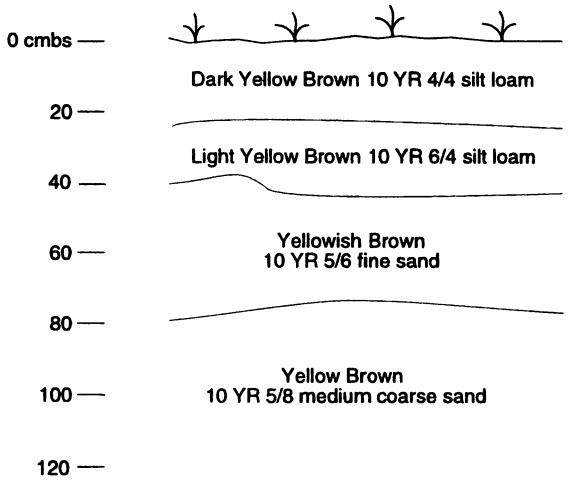
Area H
TPH - 27
South Profile

0 20 40 cm



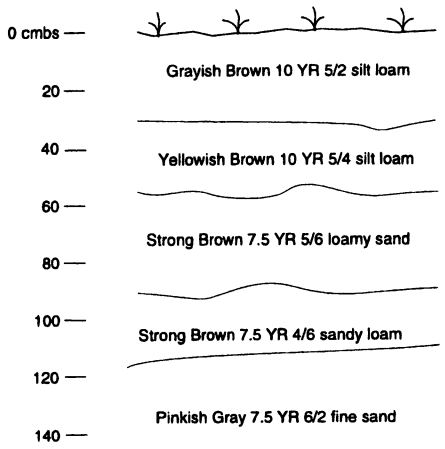
Area H
TPH - 28
South Profile

0 20 40 cm

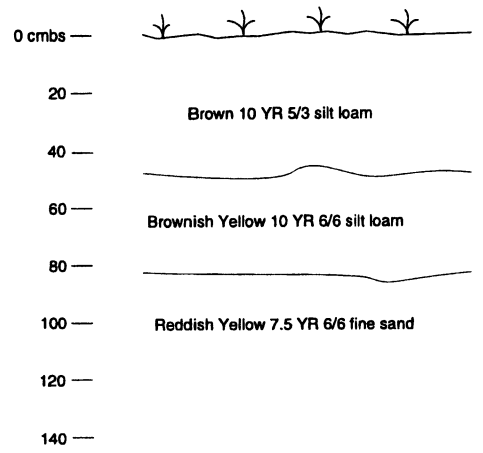


Area H
TPH - 29
North Profile

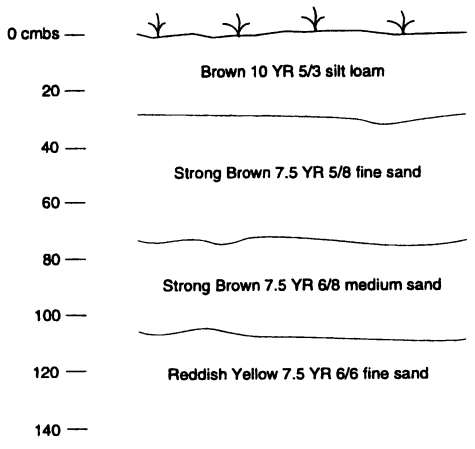
0 20 40 cm



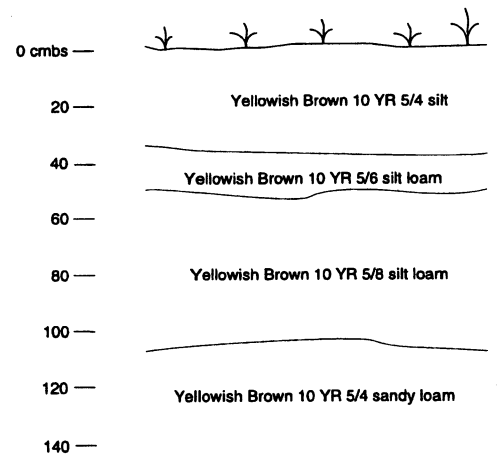
Area H
TPH - 30
North Profile
0 20 40 cm



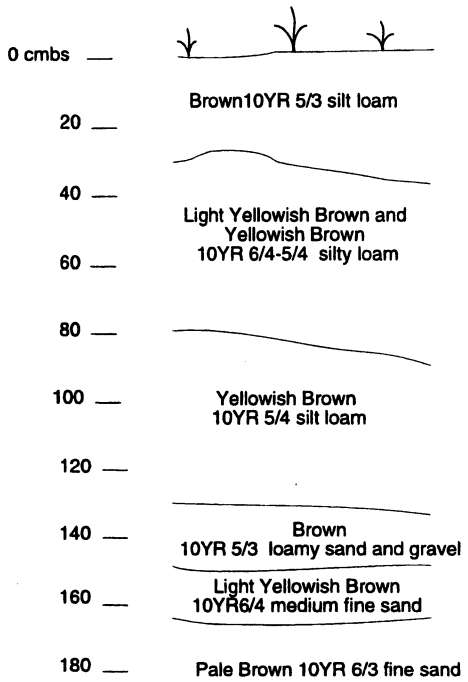
Area H
TPH - 31
North Profile
0 20 40 cm



Area H
TPH - 32
South Profile
0 20 40 cm

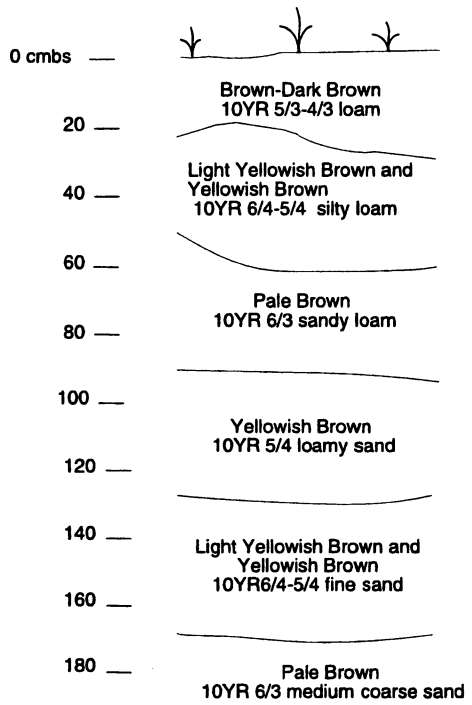


Area H
TPH - 33
North Profile
0 20 40 cm



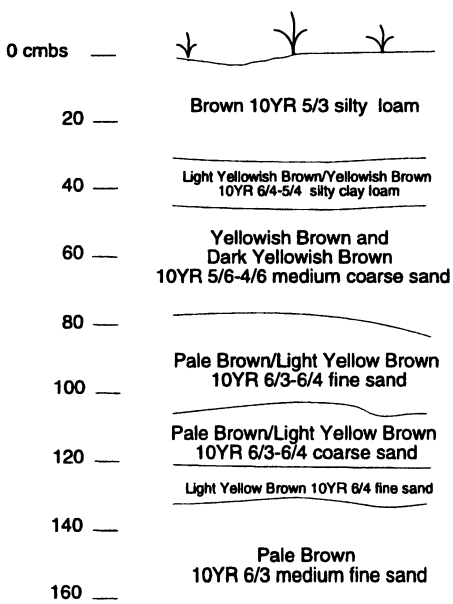
Area H
TPH - 33B
West Profile

0 20 40 cm



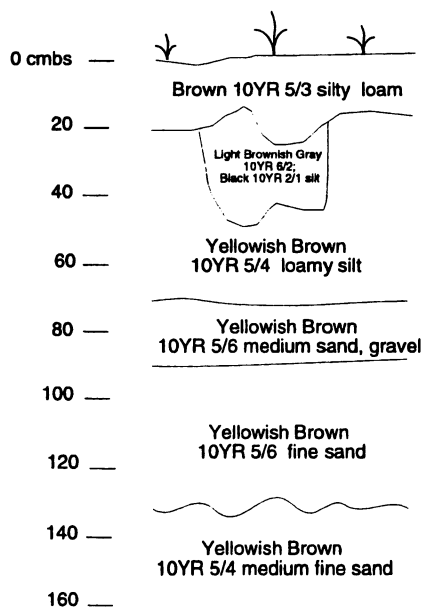
Area H
TPH - 33C
West Profile

0 20 40 cm



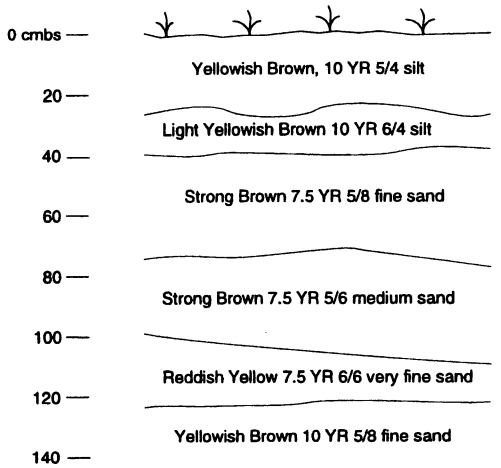
Area H
TPH - 33D
West Profile

0 20 40 cm



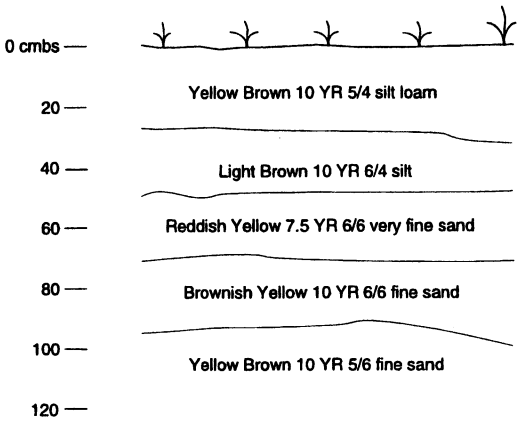
Area H
TPH - 33E
South Profile

0 20 40 cm



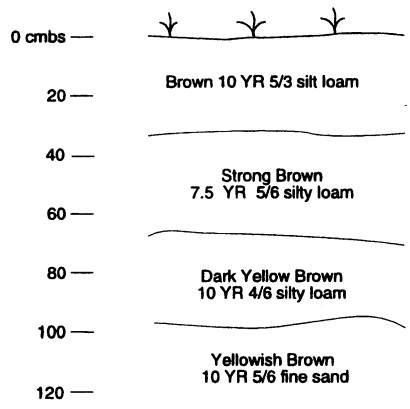
Area H
TPH-34
North Profile

0 20 40 cm



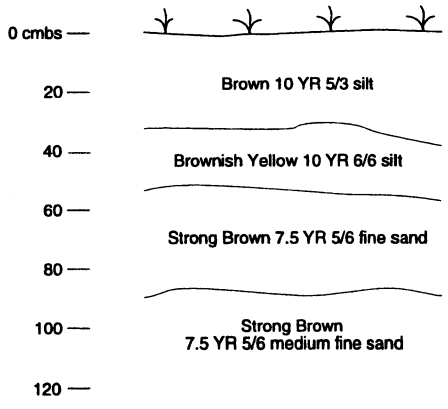
Area H
TPH - 35
North Profile

0 20 40 cm



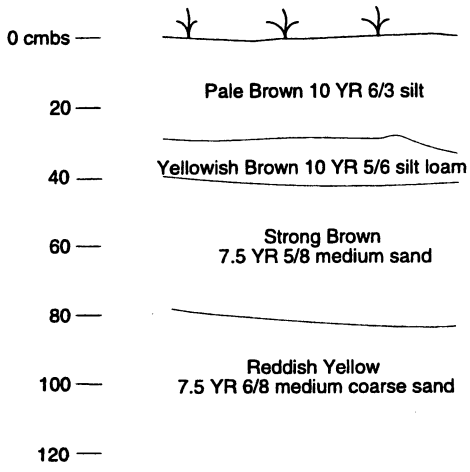
Area H
TPH - 36
East Profile

0 20 40 cm



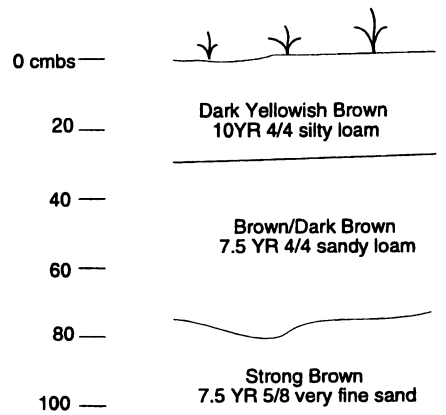
Area H
TPH - 37
West Profile

0 20 40 cm



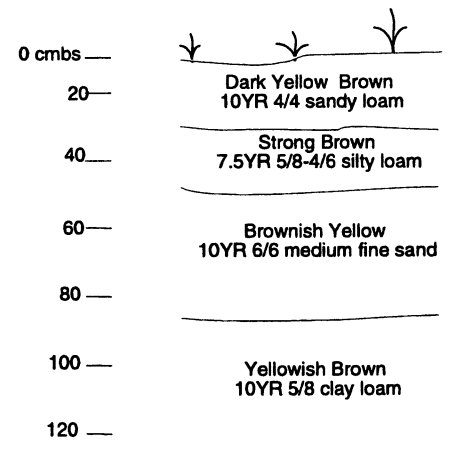
Area H
TPH - 38
West Profile

0 20 40 cm



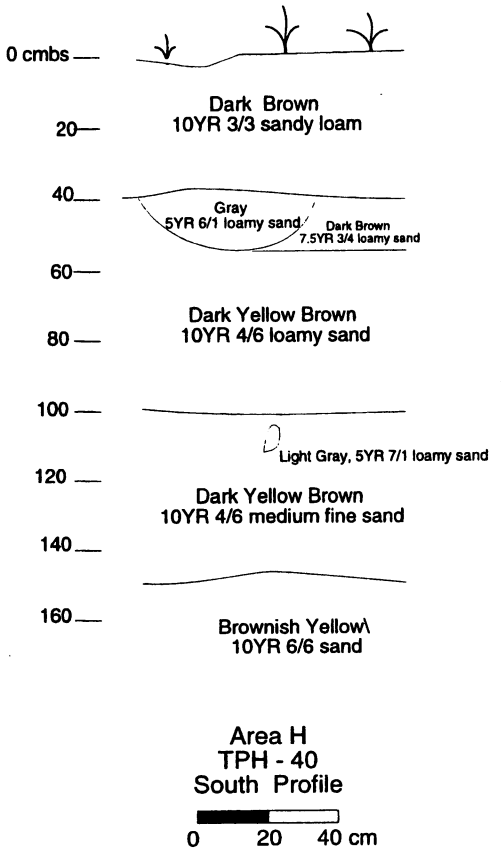
Area H
TPH - 38 B
North Profile

0 20 40 cm



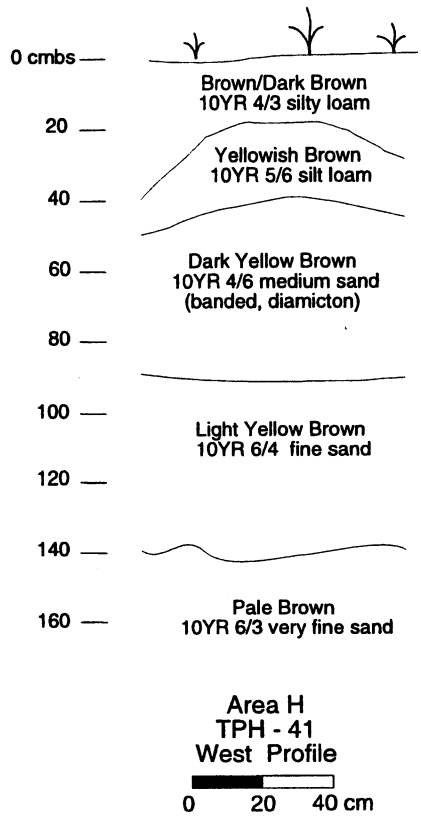
Area H
TPH - 39
West Profile

0 20 40 cm



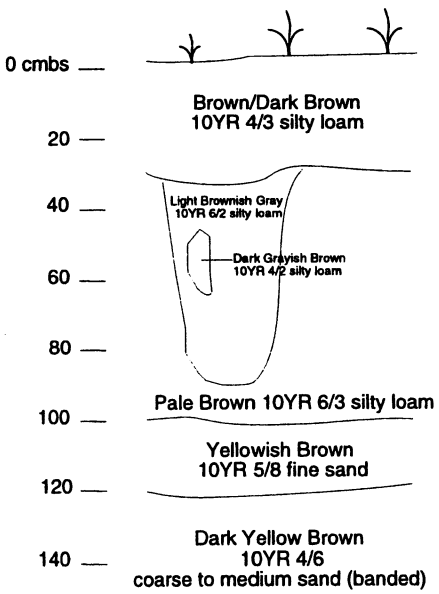
Area H
TPH - 40
South Profile

0 20 40 cm



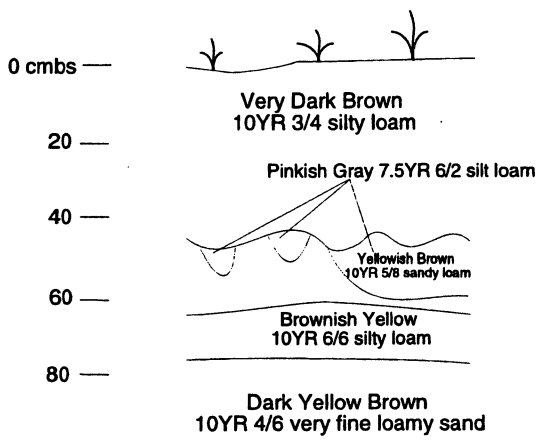
Area H
TPH - 41
West Profile

0 20 40 cm



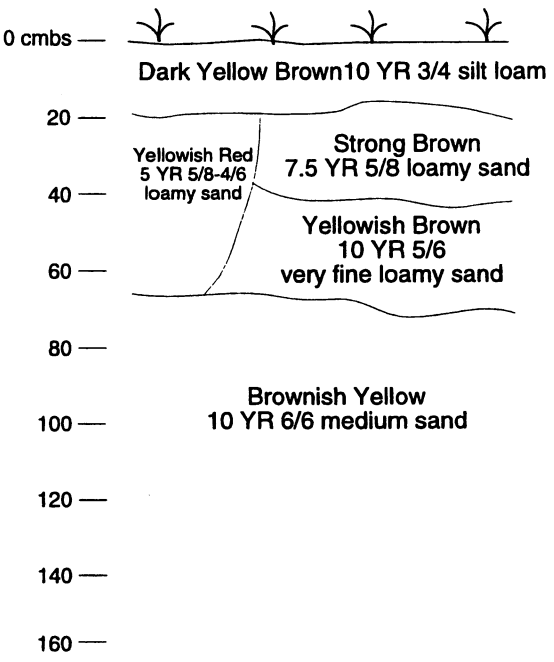
Area H
TPH - 42
South Profile

0 20 40 cm



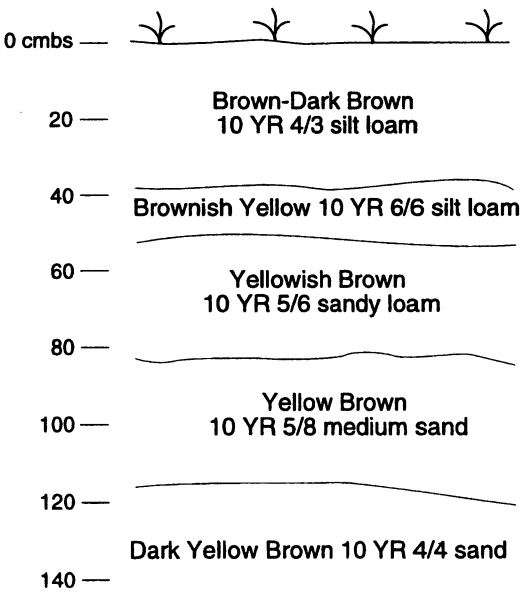
Area H
TPH - 42B
North Profile

0 20 40 cm



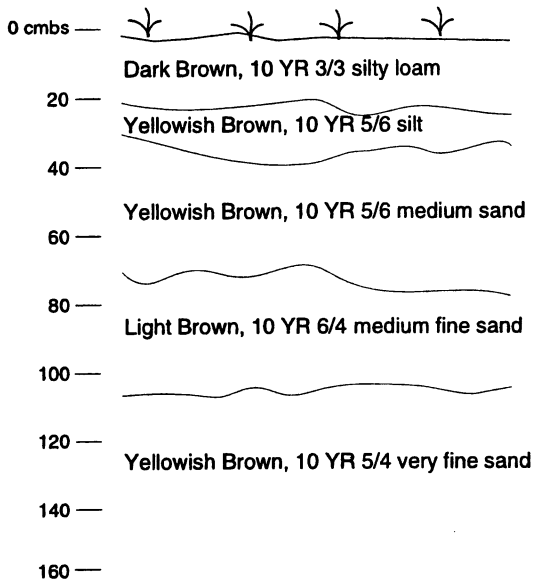
Area H
TPH-43
East Profile

0 20 40 cm



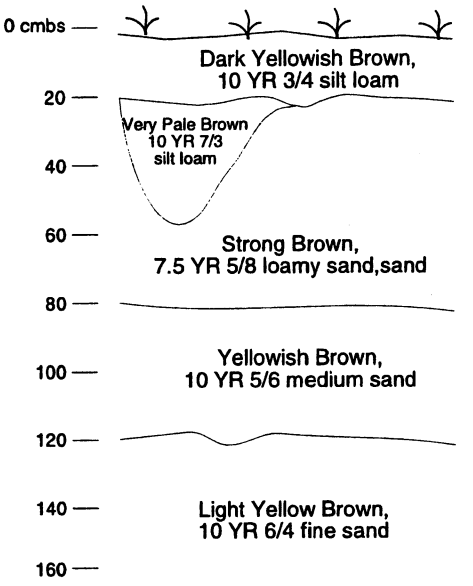
Area H
TPH - 44
West Profile

0 20 40 cm



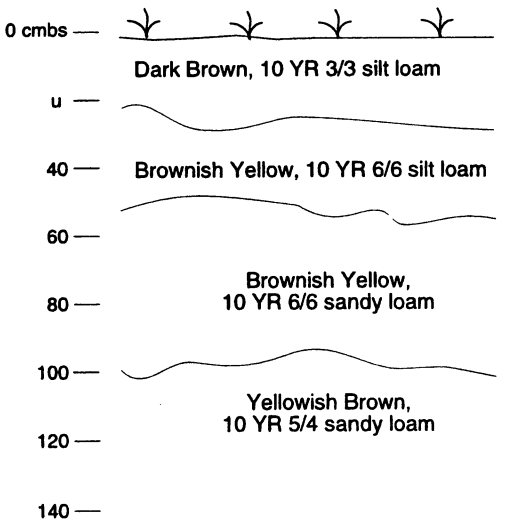
Area H
TPH - 45
South Profile

0 20 40 cm



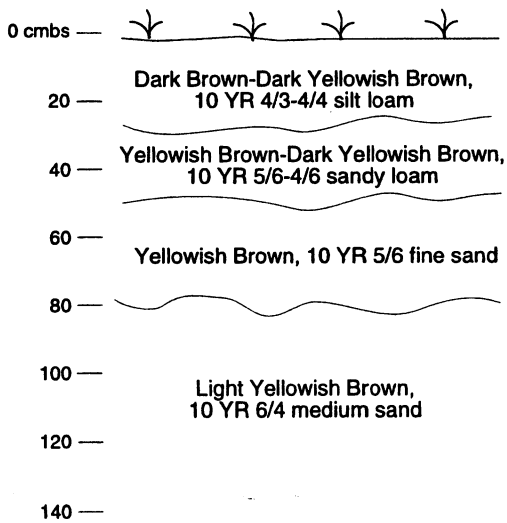
Area H
TPH - 46
East Profile

0 20 40 cm



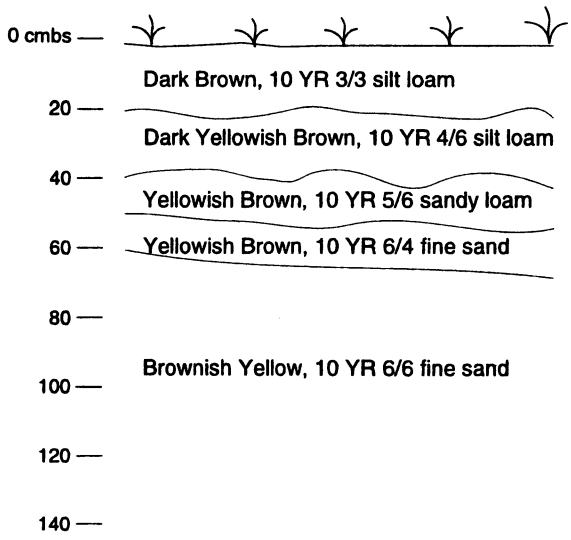
Area H
TPH - 47
South Profile

0 20 40 cm



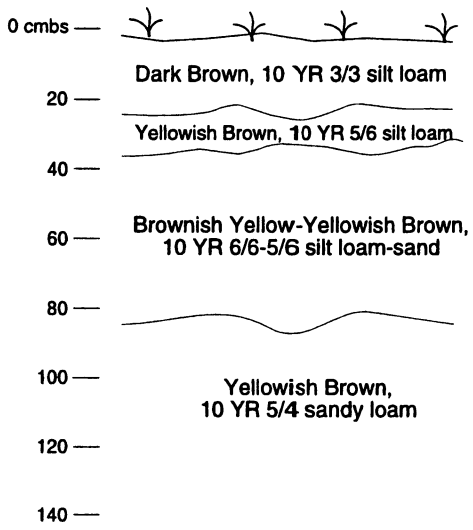
Area H
TPH - 48
South Profile

0 20 40 cm



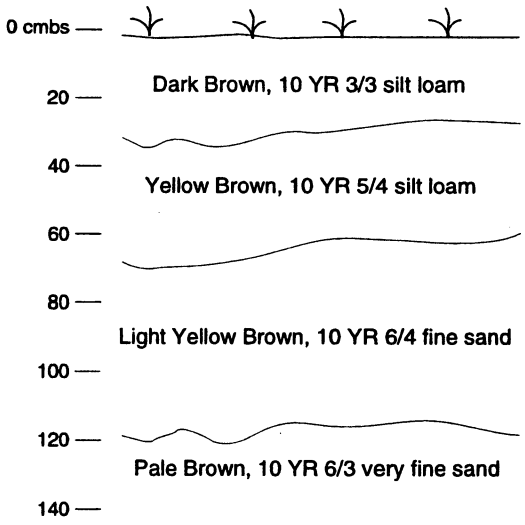
Area H
TPH - 49
South Profile

0 20 40 cm



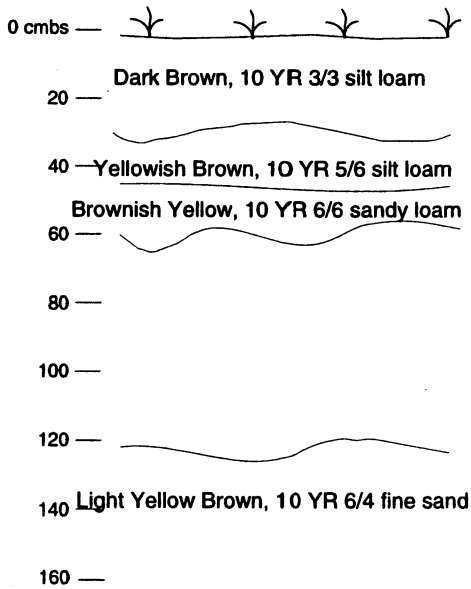
Area H
TPH - 50
East Profile

0 20 40 cm



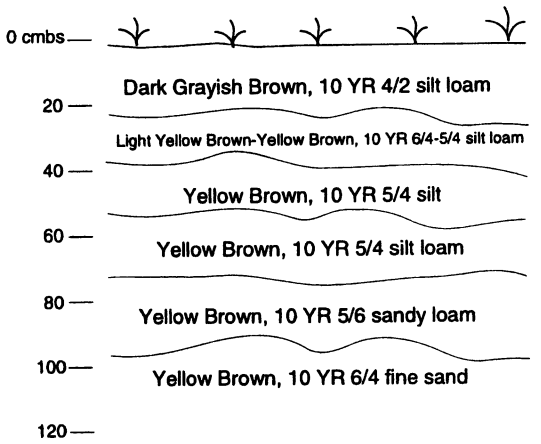
Area H
TPH - 51
East Profile

0 20 40 cm



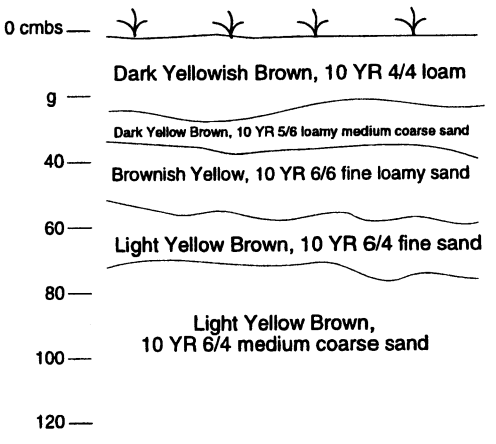
Area H
TPH - 52
East Profile

0 20 40 cm



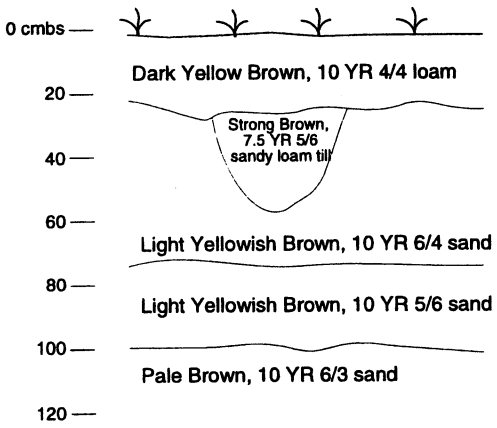
Area H
TPH - 53
North Profile

0 20 40 cm



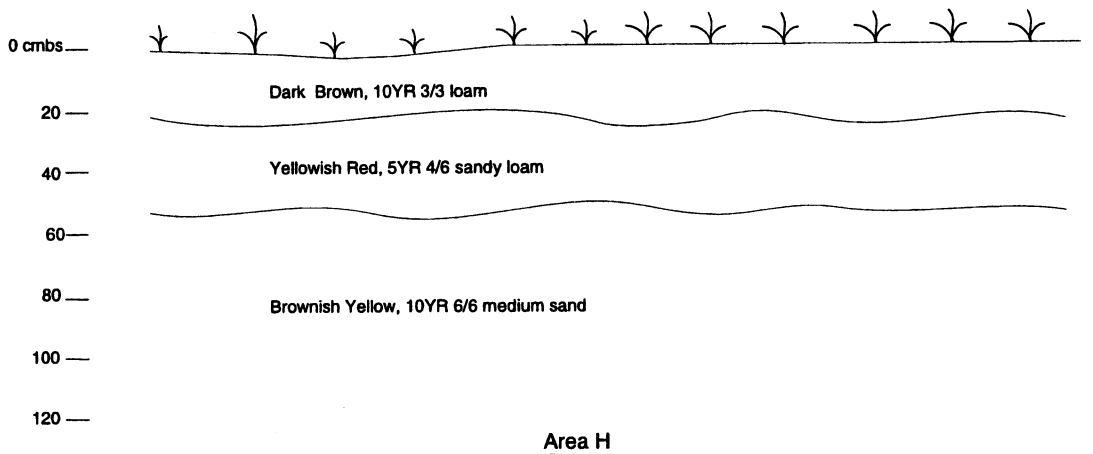
Area H
TPH - 54
South Profile

0 20 40 cm



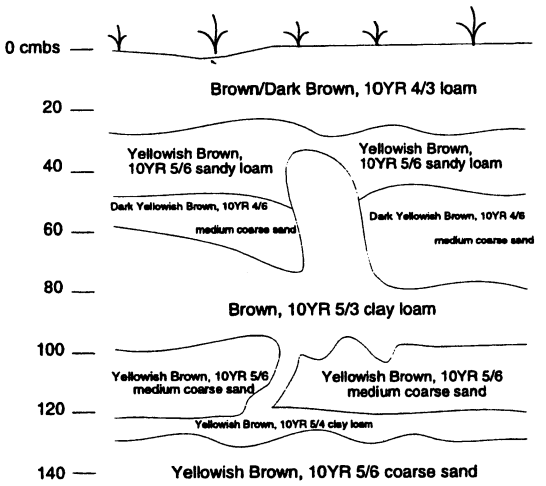
Area H
TPH - 55
South Profile

0 20 40 cm



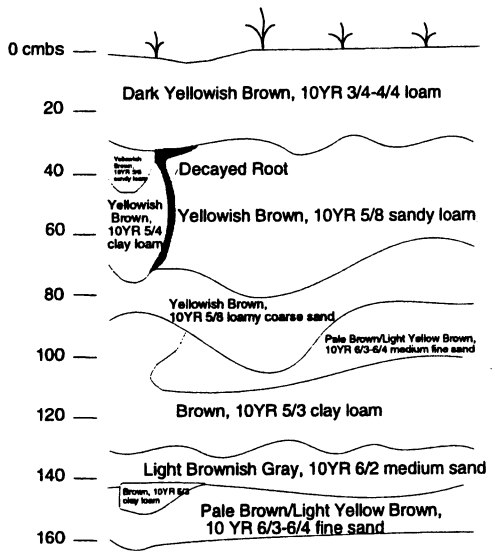
Area H
TPH - 56

0 20 40 cm



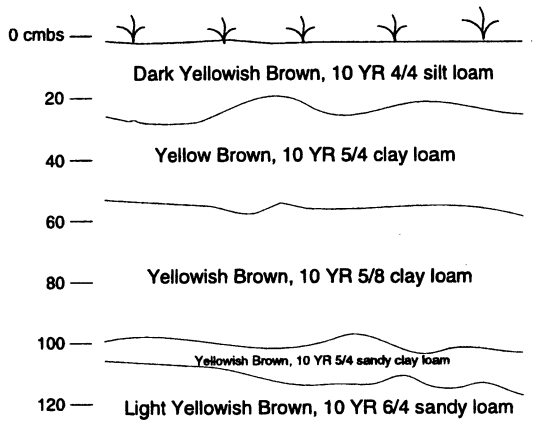
Area H
TPH - 57
South Profile

0 20 40 cm



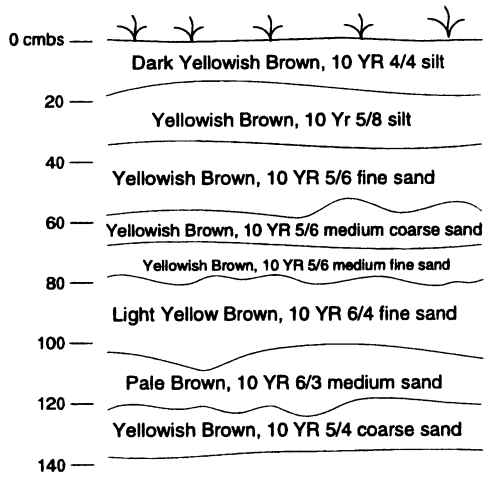
Area H
TPH - 58
West Profile

0 20 40 cm



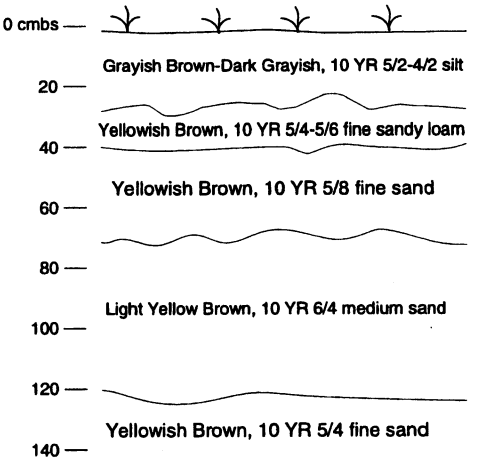
Area H
TPH - 59
East Profile

0 20 40 cm



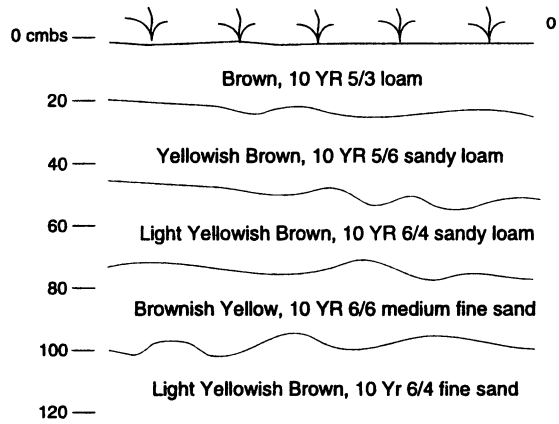
Area H
TPH - 60
North Profile

0 20 40 cm



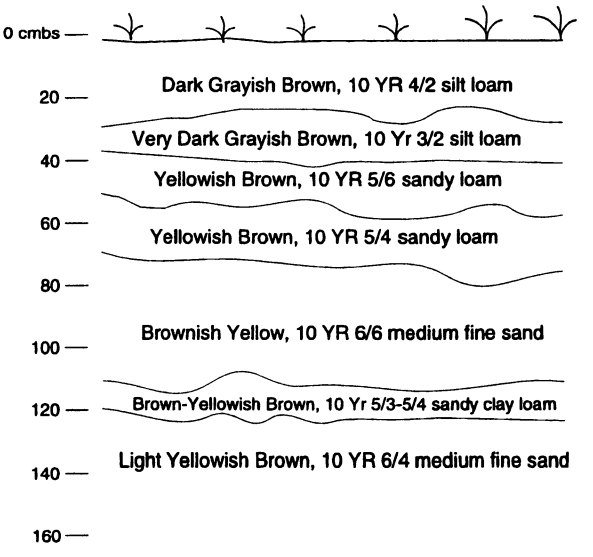
Area H
TPH - 61

0 20 40 cm



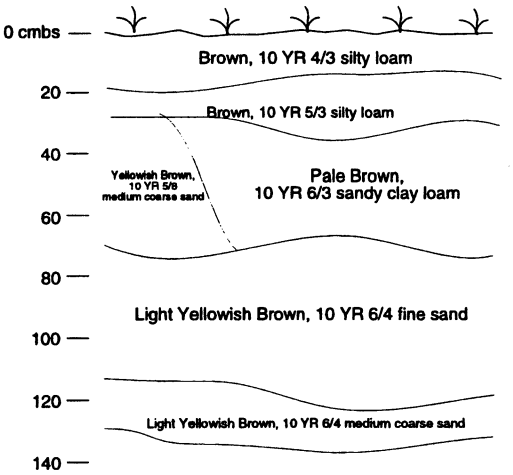
Area H
TPH-62
South Profile

0 20 40 cm



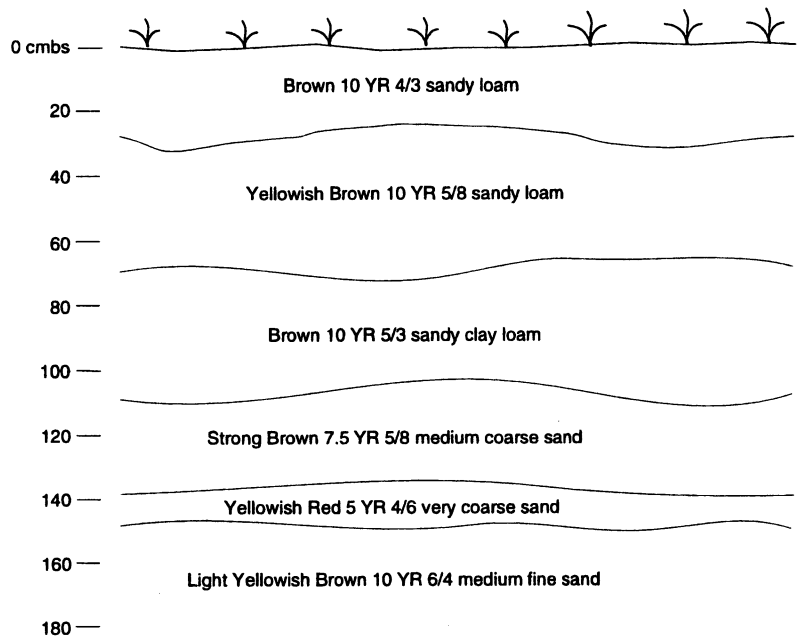
Area H
TPH-63
South Profile

0 20 40 cm

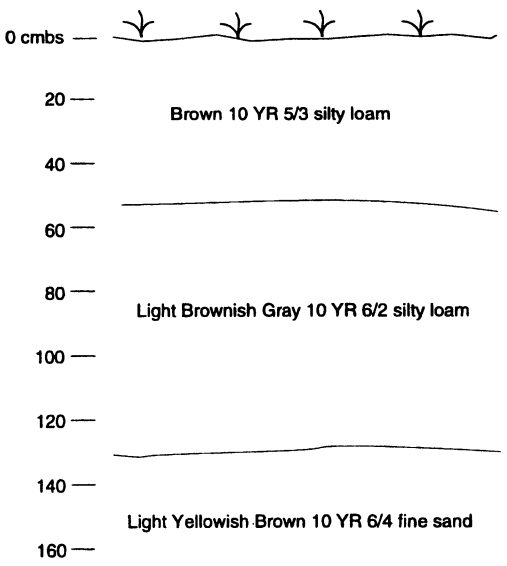


Area H
TPH - 64
North Profile

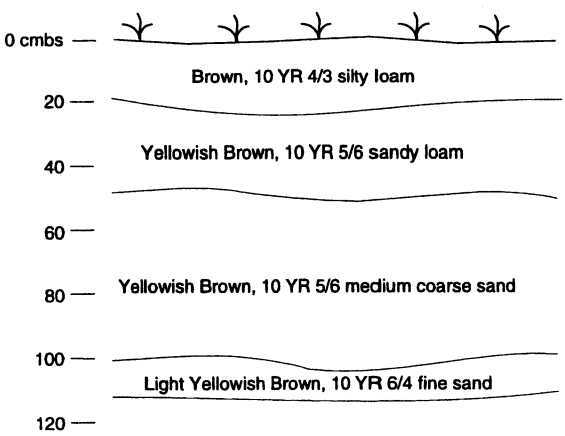
0 20 40 cm



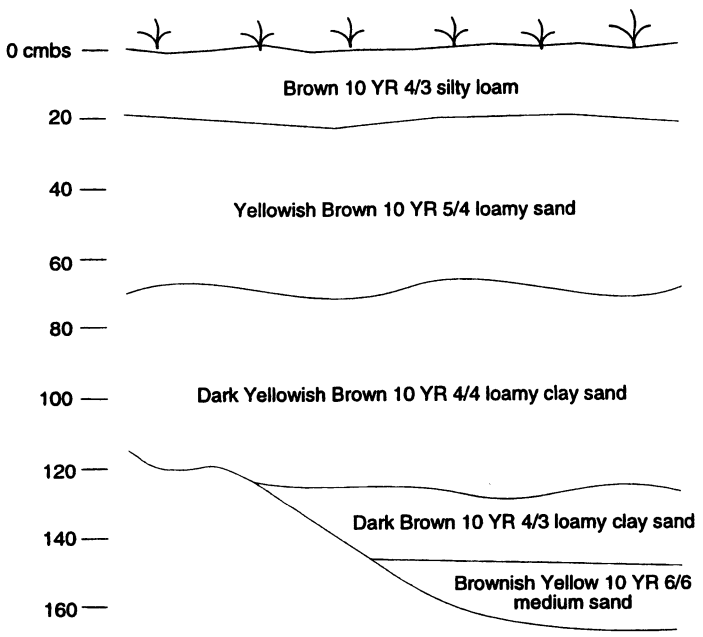
Area H
TPH - 65
West Profile
0 20 40 cm



Area H
TPH - 66
West Profile
0 20 40 cm

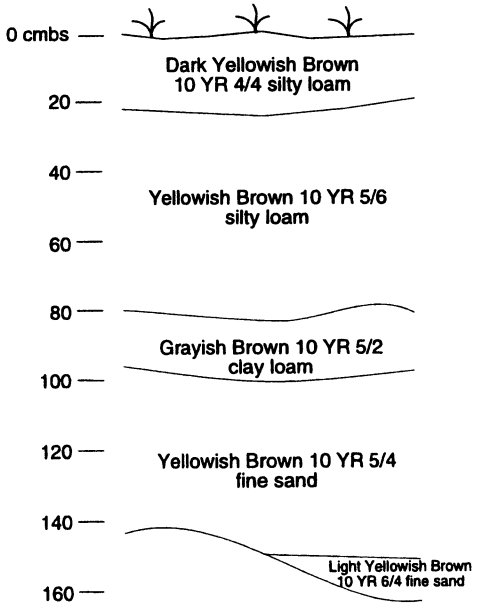


Area H
TPH-67
0 20 40 cm



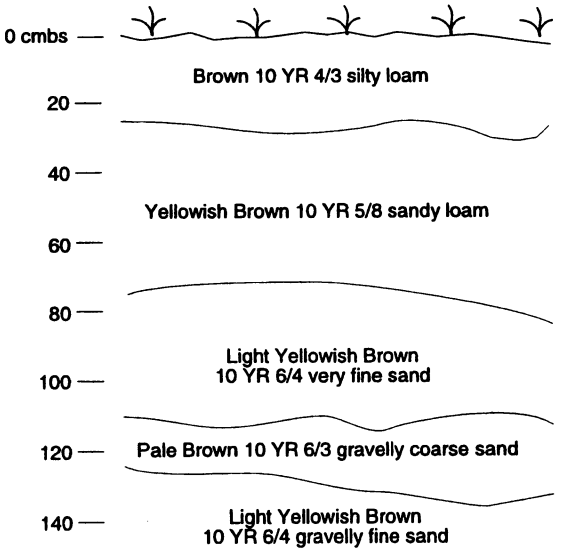
Area H
TPH-68

0 20 40 cm



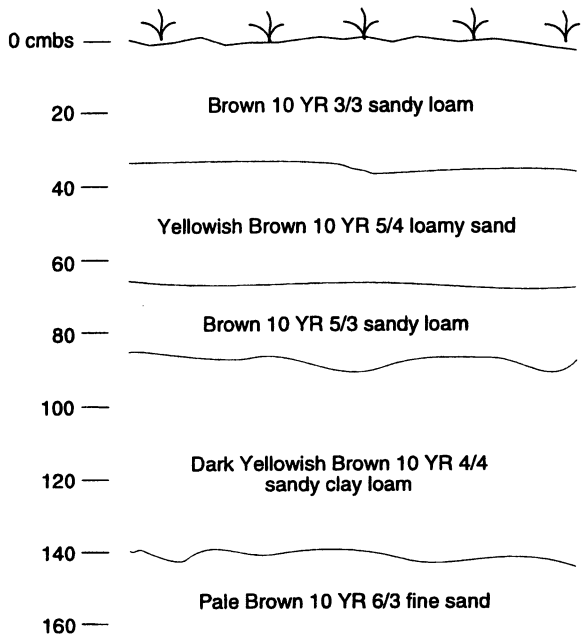
Area H
TPH - 69
West Profile

0 20 40 cm



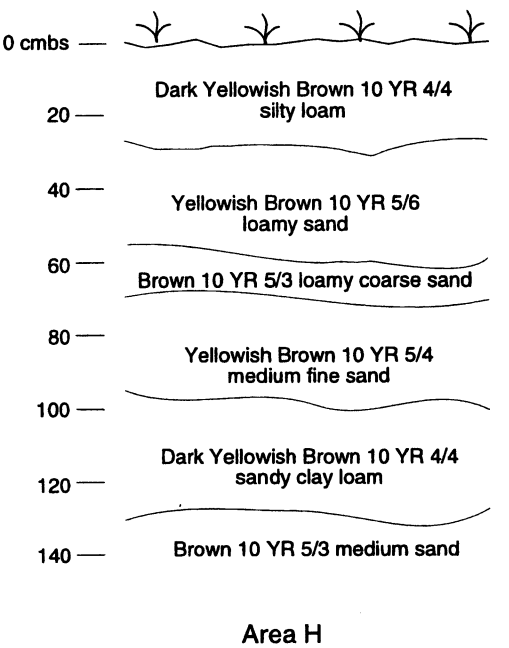
Area H
TPH - 70
South Profile

0 20 40 cm



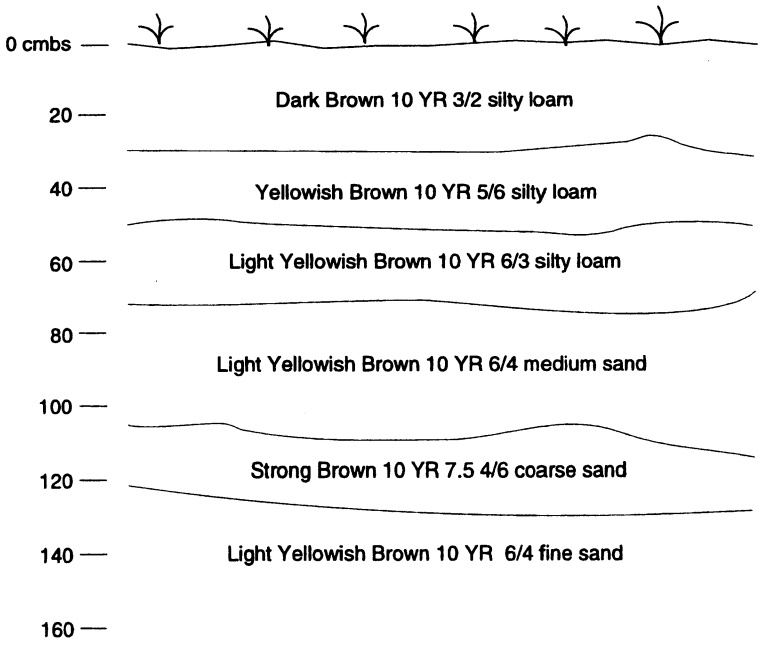
Area H
TPH - 71
South Profile

0 20 40 cm



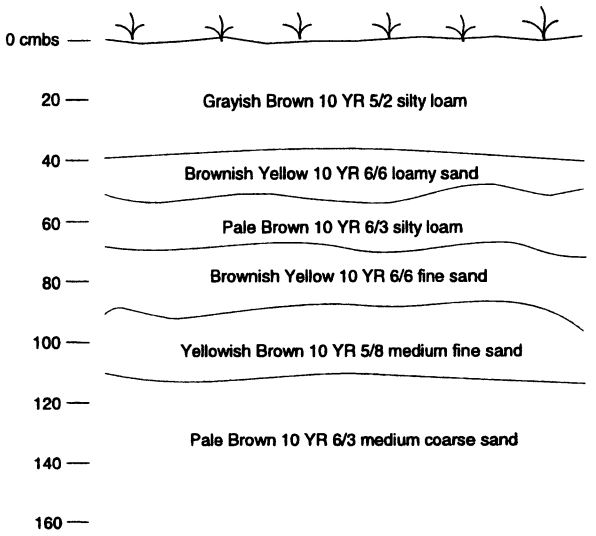
Area H
TPH - 72
East Profile

0 20 40 cm



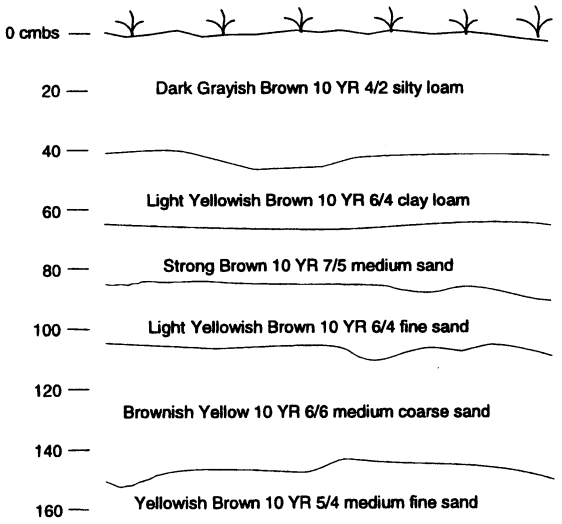
Area H
TPH - 73
East Profile

0 20 40 cm



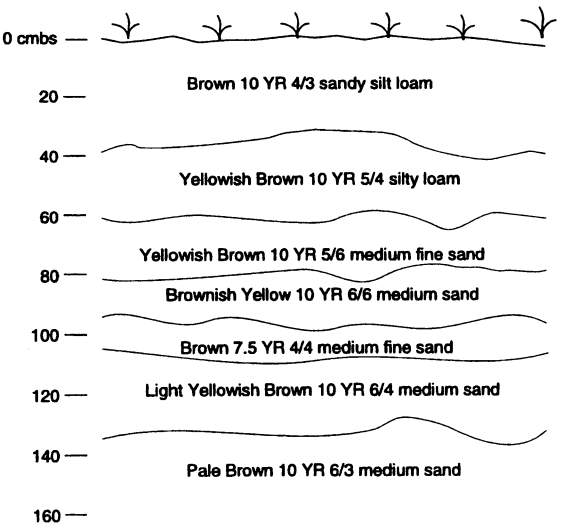
Area H
TPH - 74
East Profile

0 20 40 cm



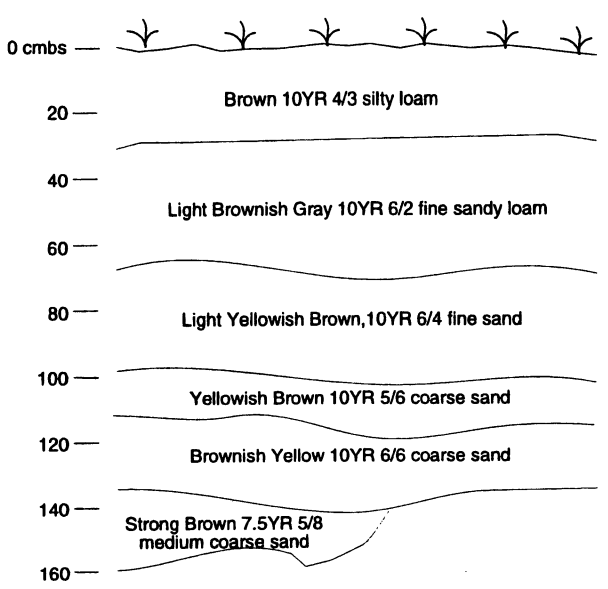
Area H
TPH - 75
North Profile

0 20 40 cm



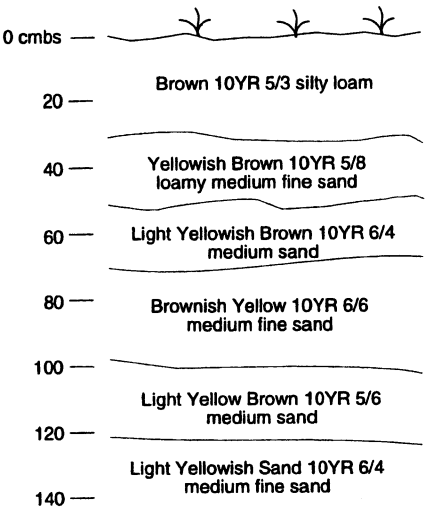
Area H
TPH - 76

0 20 40 cm



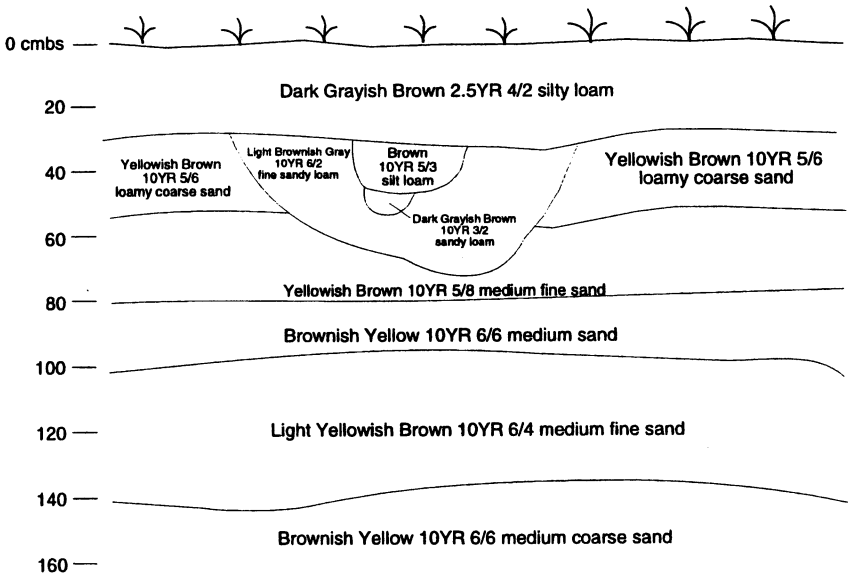
Area H
TPH - 77
North Profile

0 20 40 cm



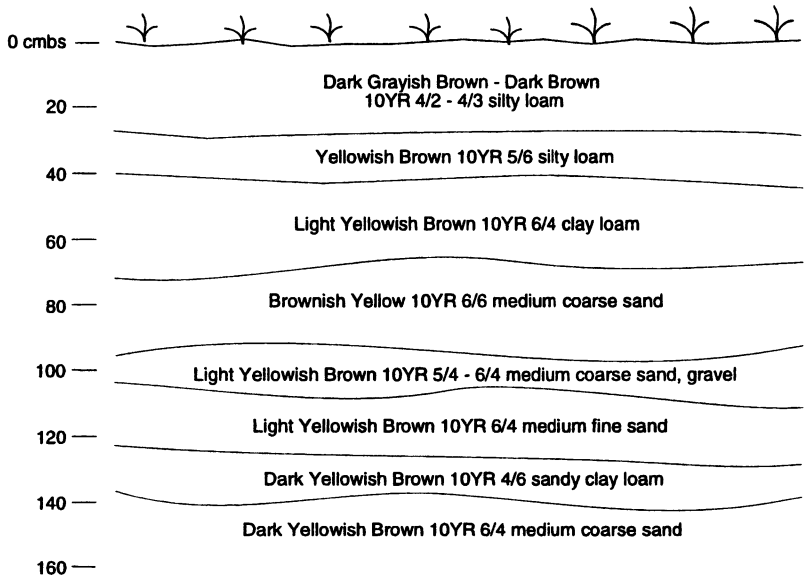
Area H
TPH - 79
East Profile

0 20 40 cm



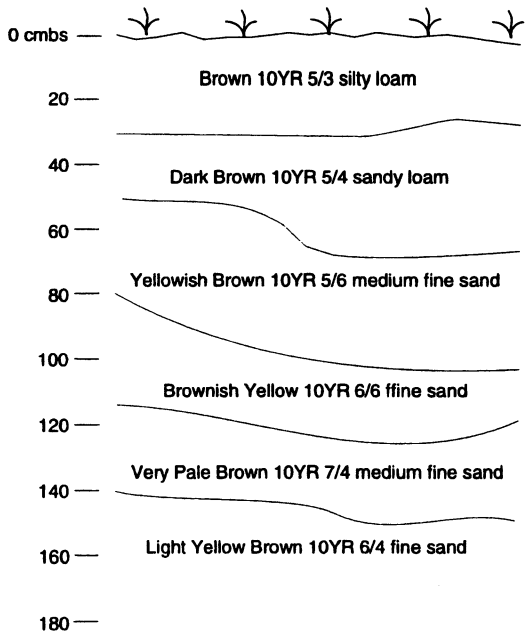
Area H
TPH - 78

0 20 40 cm



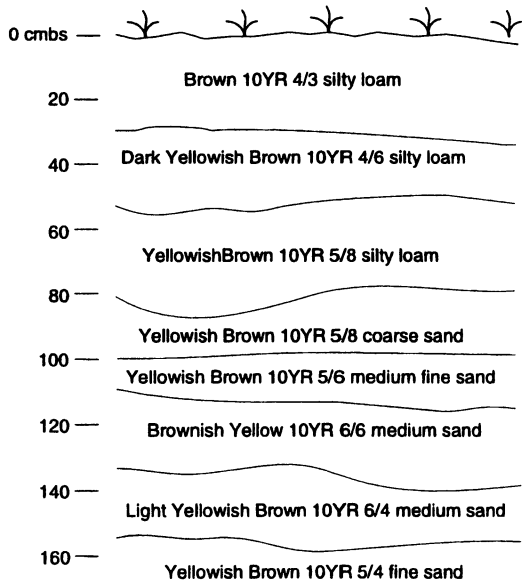
Area H
TPH - 80
West Profile

0 20 40 cm



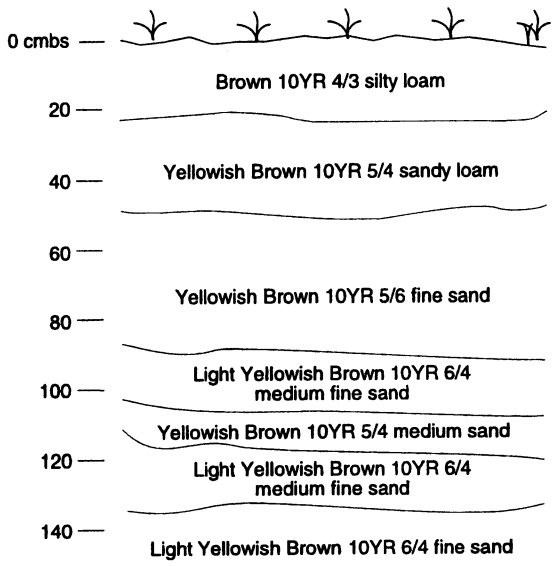
Area H
TPH - 81
North Profile

0 20 40 cm



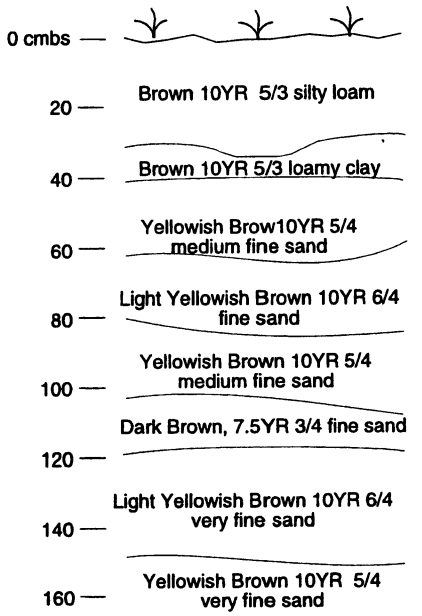
Area H
TPH - 82
West Profile

0 20 40 cm



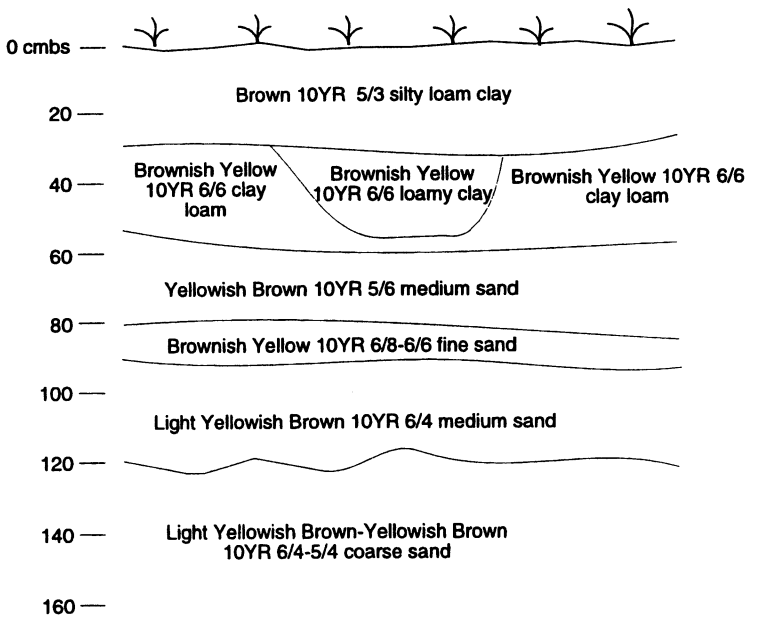
Area H
TPH - 83
North Profile

0 20 40 cm



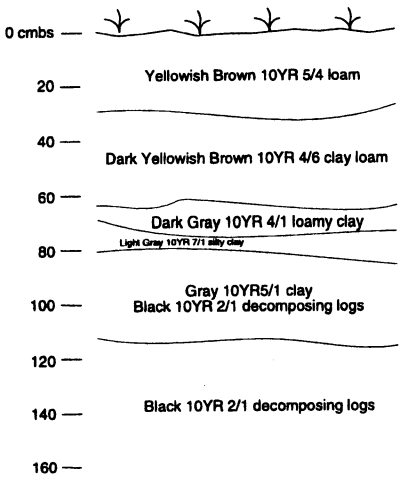
Area H
TPH - 84

0 20 40 cm



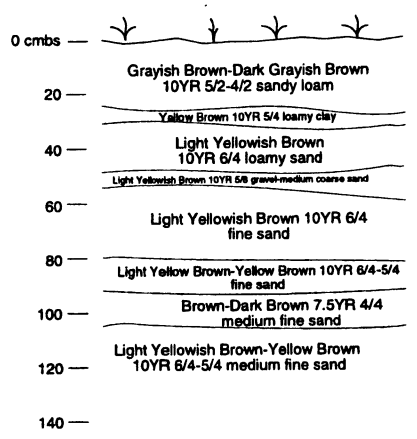
Area H
TPH - 85

0 20 40 cm



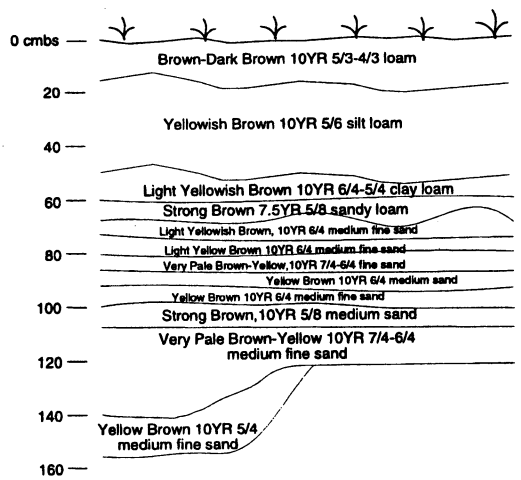
Area H
TPH - 86
East Profile

0 20 40 cm



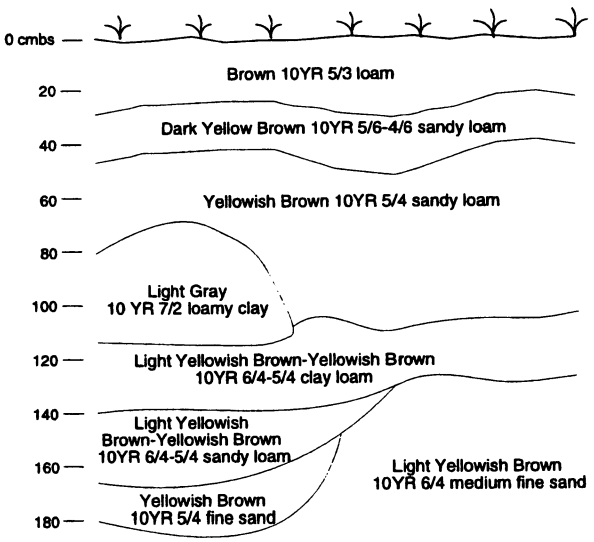
Area H
TPH - 87
East Profile

0 20 40 cm



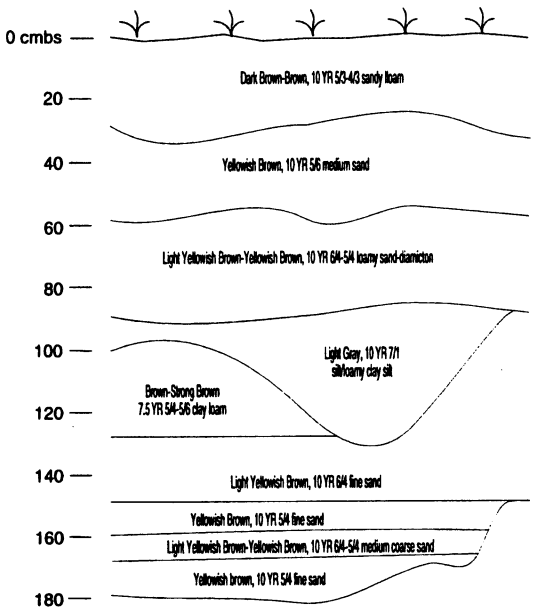
Area H
TPH - 88

0 20 40 cm



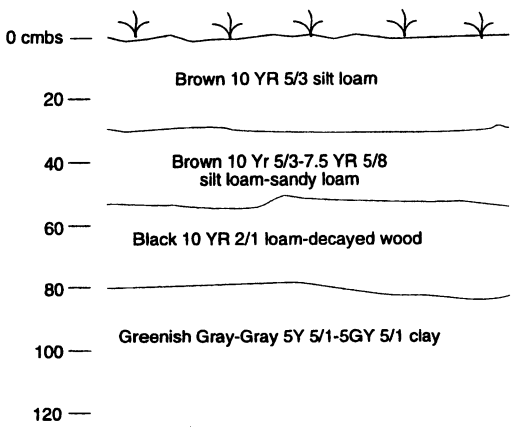
Area H
TPH - 89
South Profile

0 20 40 cm



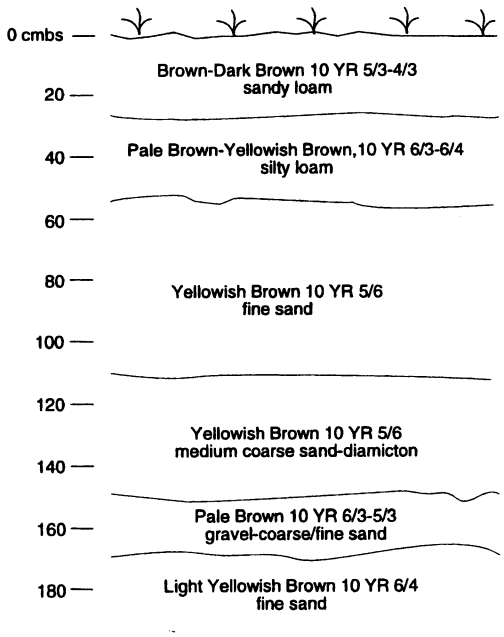
Area H
TPH - 90
West Profile

0 20 40 cm



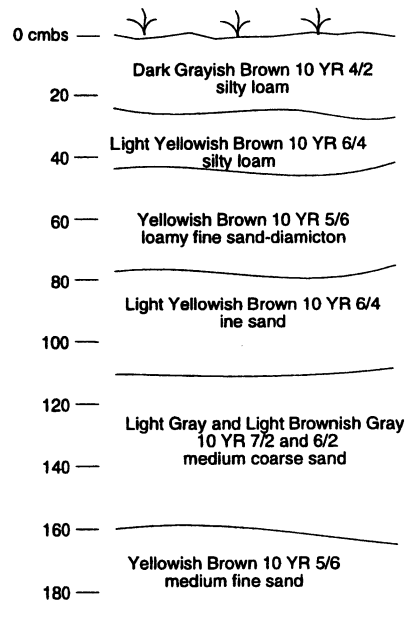
Area H
TPH - 91
West Profile

0 20 40 cm



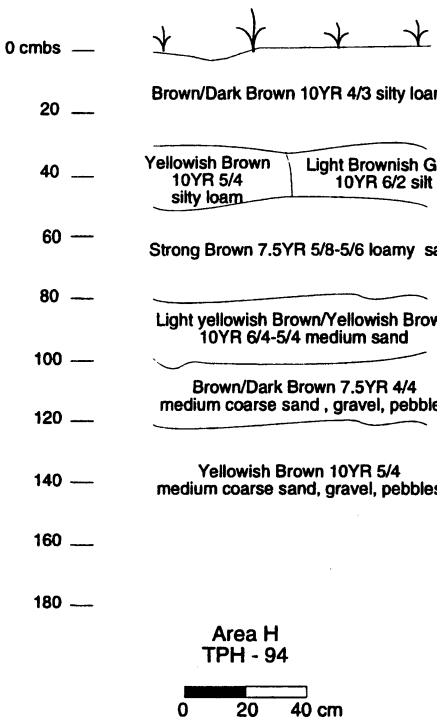
Area H
TPH - 92
North Profile

0 20 40 cm



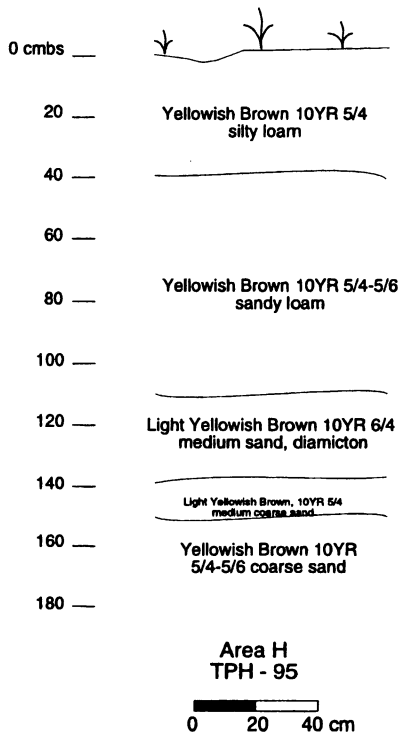
Area H
TPH - 93
West Profile

0 20 40 cm



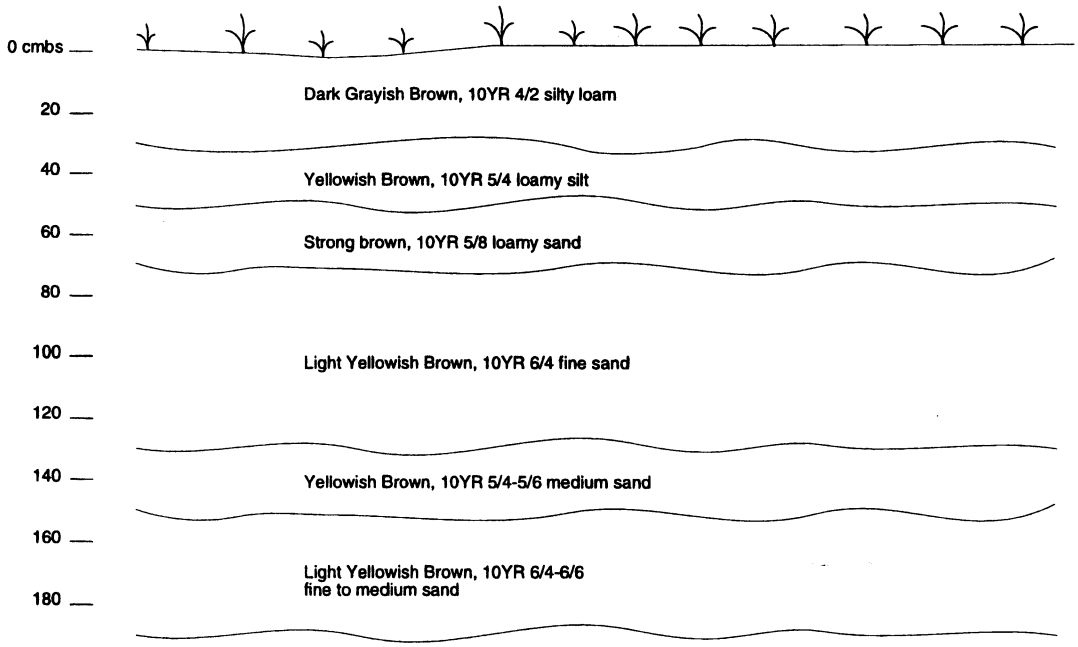
Area H
TPH - 94

0 20 40 cm



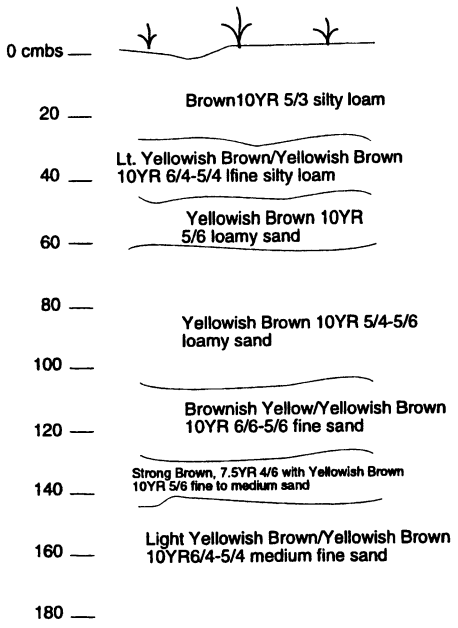
Area H
TPH - 95

0 20 40 cm



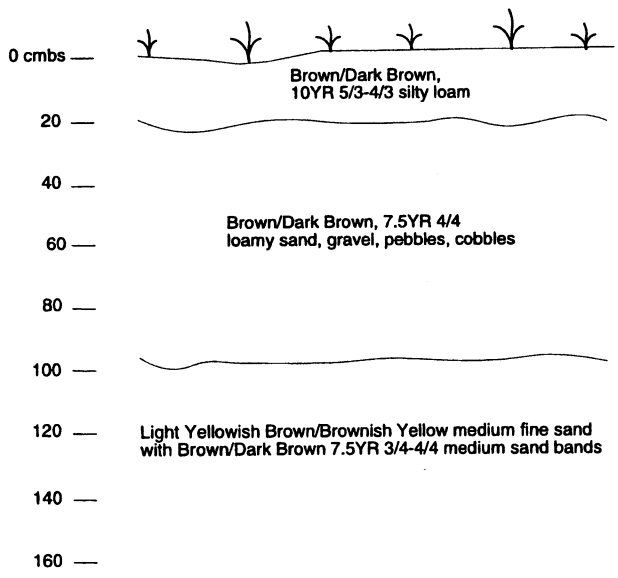
Area H
TPH - 96
East Profile

0 20 40 cm



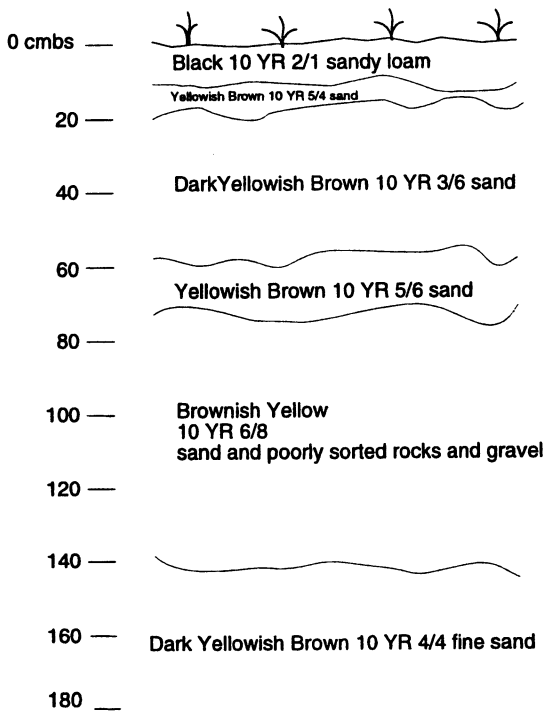
Area H
TPH - 97
South Profile

0 20 40 cm



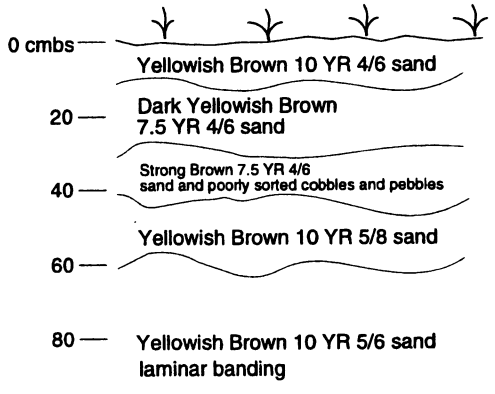
Area H
TPH - 98

0 20 40 cm



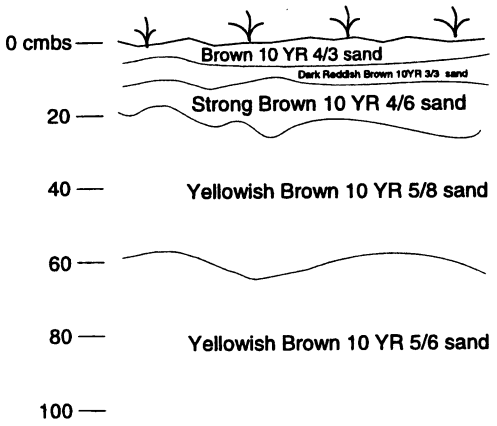
Area J
TPJ - 1
East Profile

0 20 40 cm



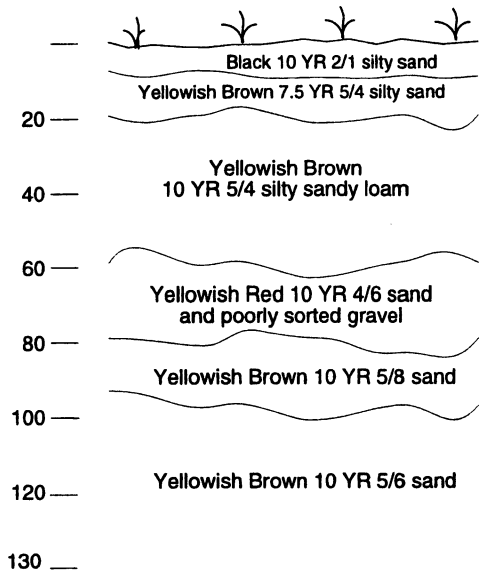
Area J
TPJ - 2
South Profile

0 20 40 cm



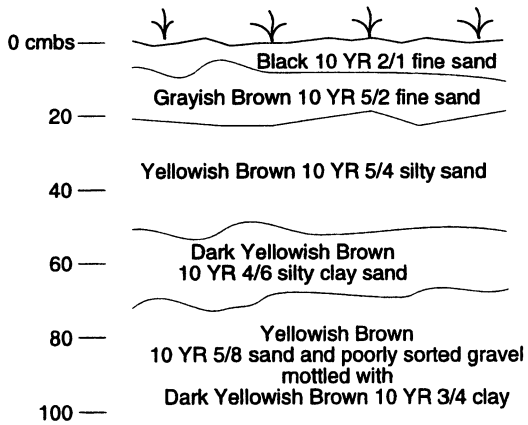
Area J
TPJ - 3
South Profile

0 20 40 cm



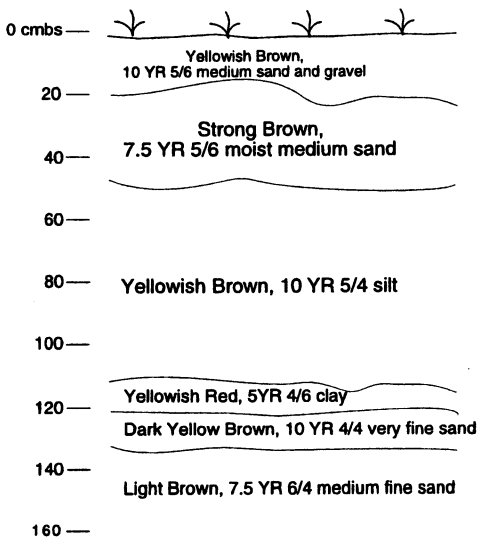
Area J
TPJ - 4
East Profile

0 20 40 cm



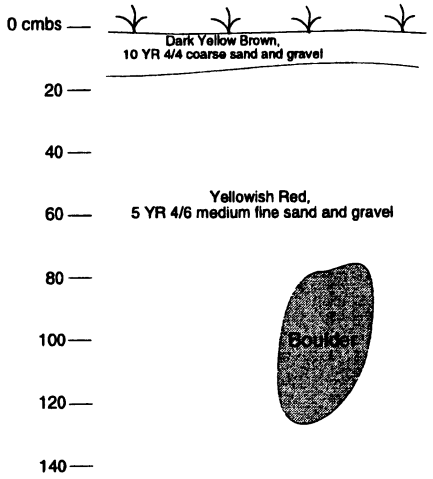
Area J
TPJ - 5
East Profile

0 20 40 cm



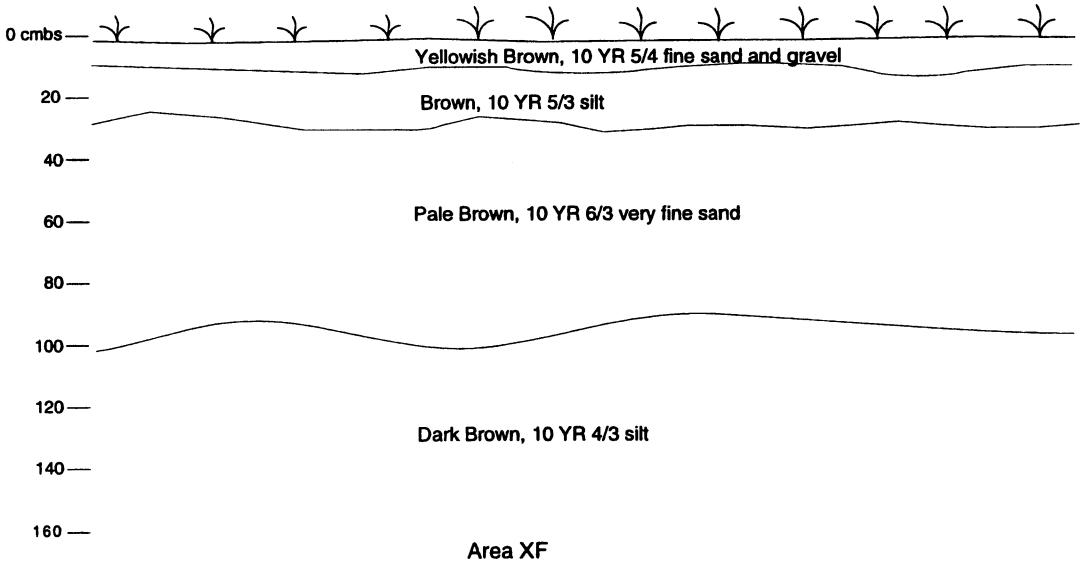
Area XF
TPXF - 1
South Profile

0 20 40 cm



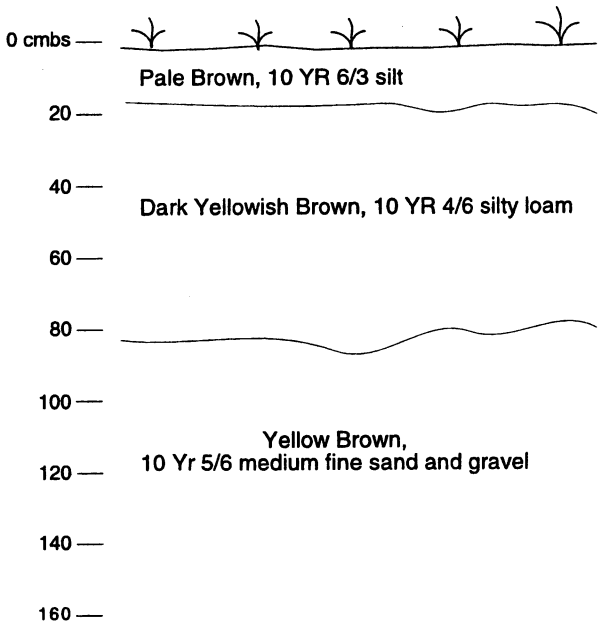
Area XF
TPXF - 3
South Profile

0 20 40 cm



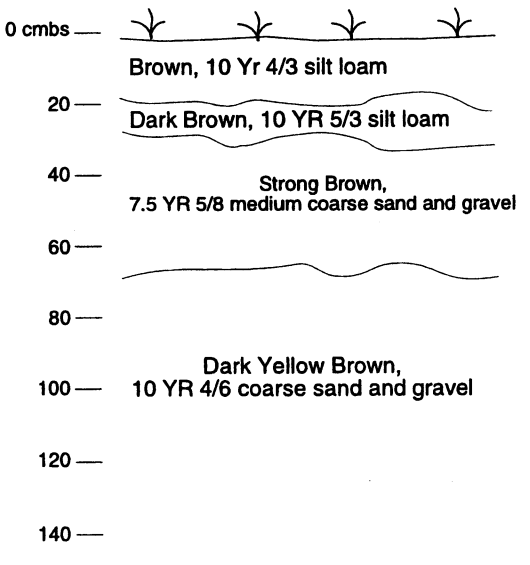
Area XF
TPXF - 2
North Profile

0 20 40 cm



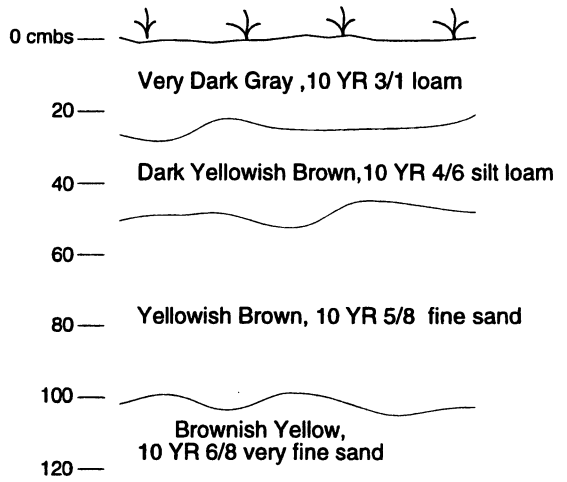
Area XF
TPXF - 4
North Profile

0 20 40 cm

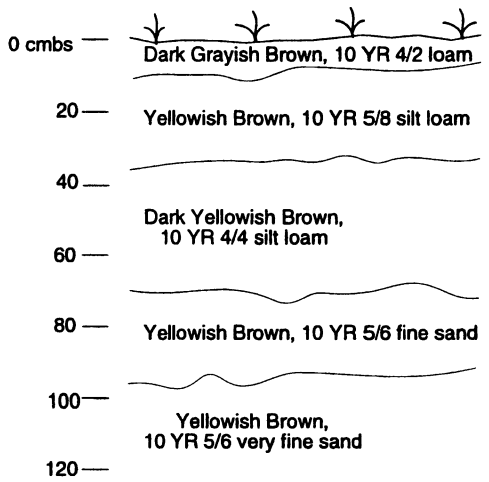


Area XF
TPXF - 5
North Profile

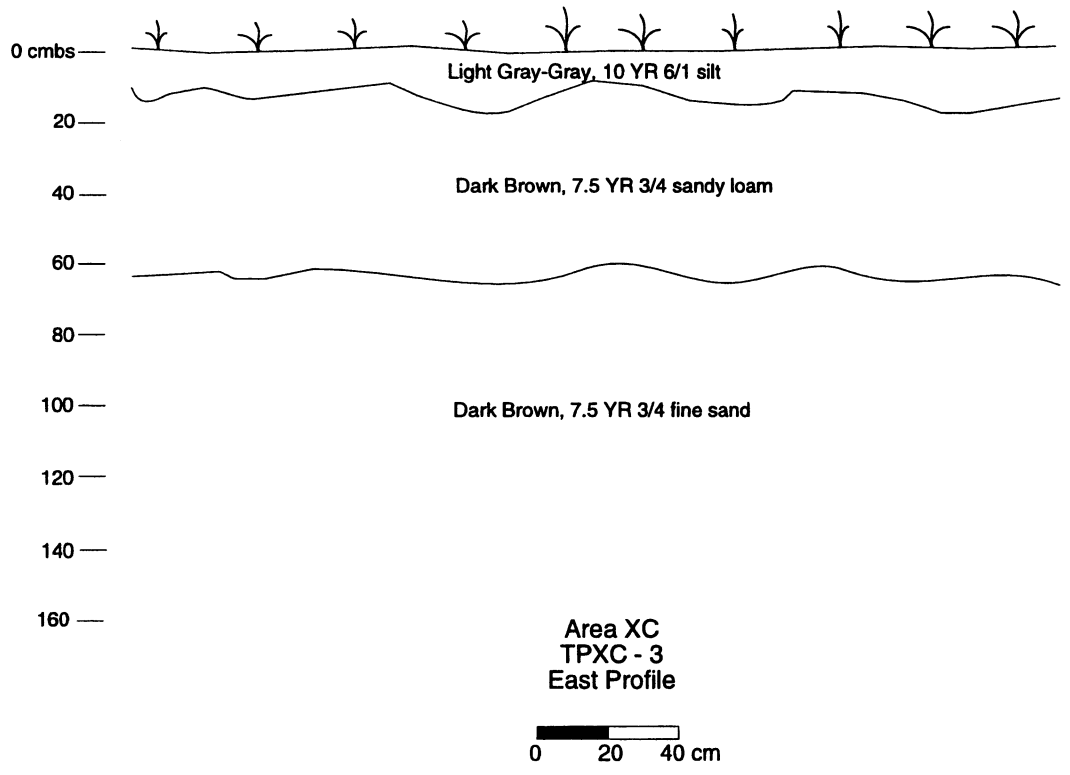
0 20 40 cm



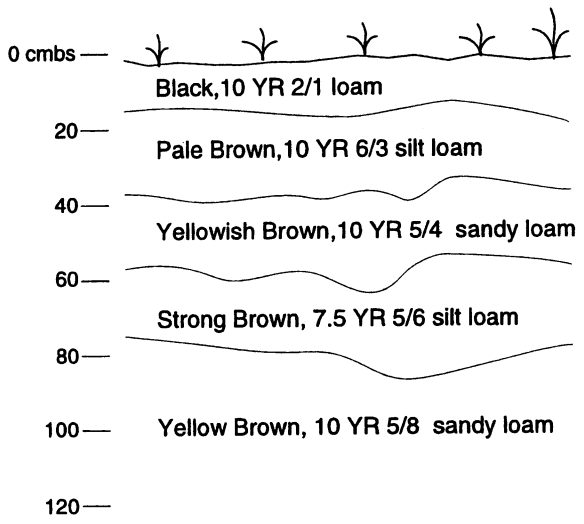
Area XC
TPXC - 1
East Profile



Area XC
TPXC - 2
South Profile

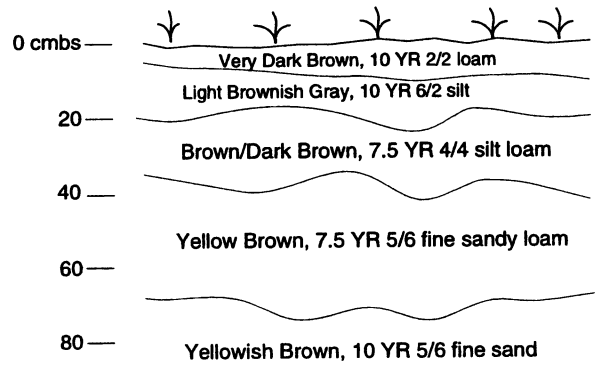


Area XC
TPXC - 3
East Profile



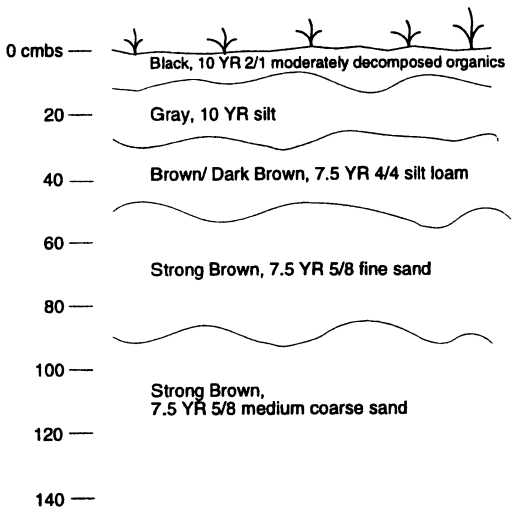
Area XC
TPXC - 4
West Profile

0 20 40 cm



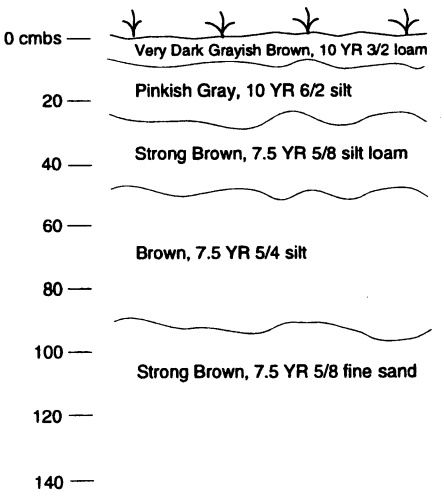
Area XC
TPXC - 5
North Profile

0 20 40 cm



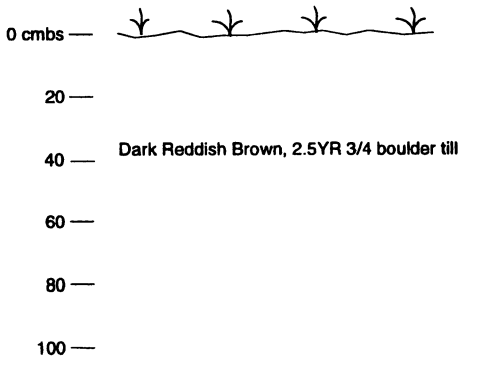
Area XC
TPXC - 6
West Profile

0 20 40 cm



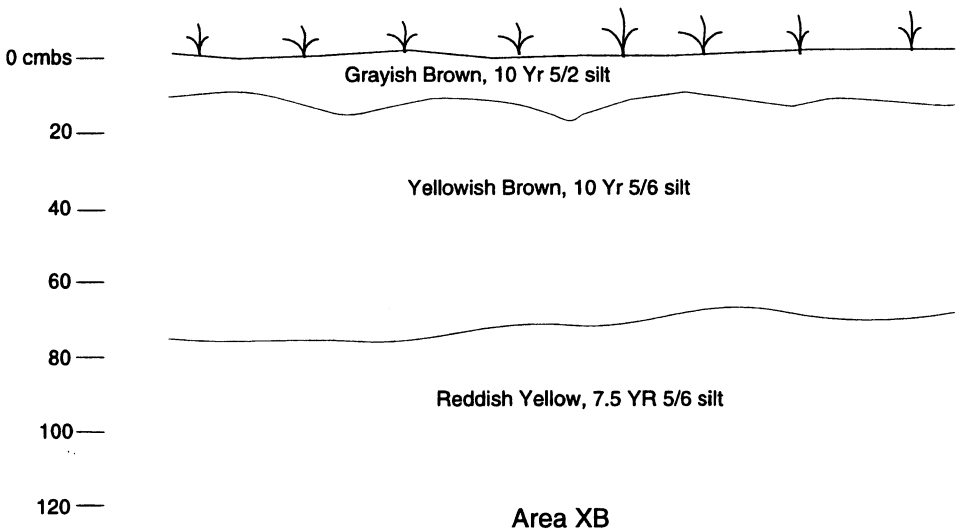
Area XC
TPXC - 7
NorthProfile

0 20 40 cm



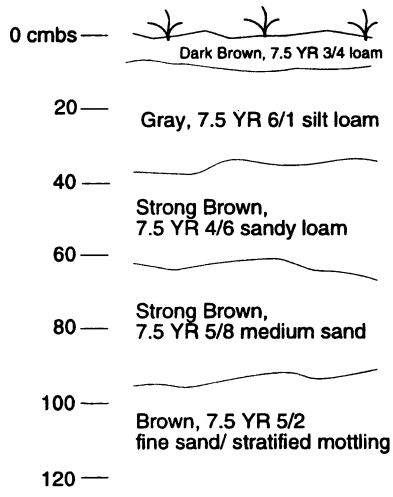
Area XC
TPXC - 8

0 20 40 cm



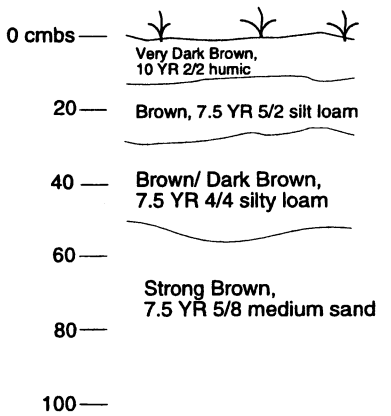
Area XB
TPXB - 1
South Profile

0 20 40 cm



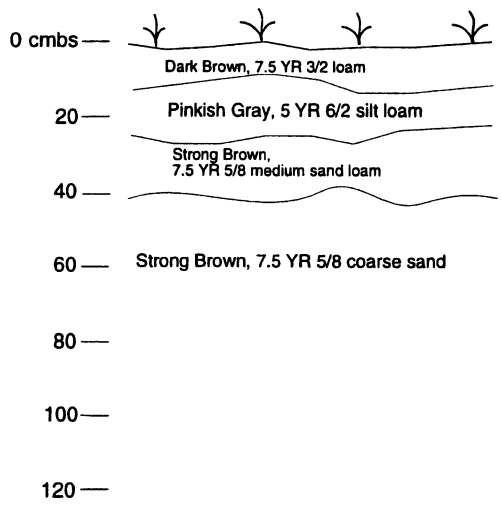
Area XB
TPXB - 2
North Profile

0 20 40 cm



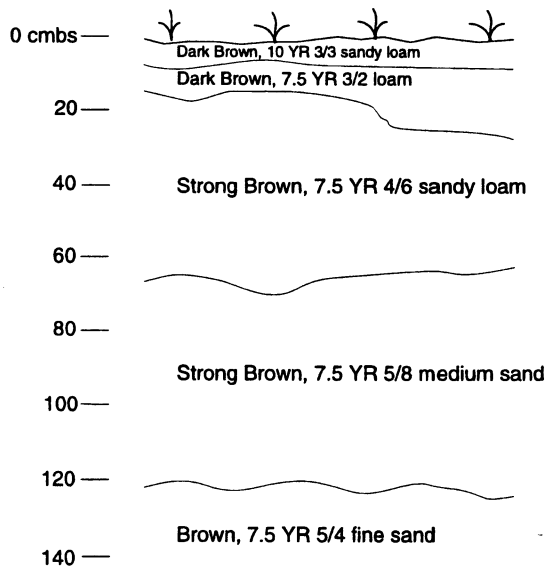
Area XB
TPXB - 3
East Profile

0 20 40 cm



Area XB
TPXB - 4
Profile

0 20 40 cm



Area XB
TPXB - 5
South Profile

0 20 40 cm

APPENDIX IV

ARCHAEOLOGICAL SITE INVENTORY FORM (ASI)

Wisconsin Archeological Site Inventory Form (revised 12/07/1993)

(10) CODE # 47- (30) COUNTY Forest

(20) SITE NAME (limit 25 characters) Hess Site

(25) FIELD NUMBER (S) :

Locational Information:

(Be sure to attach copy of USGS topographic quad with site location.)

(40,45) CIVIL TOWN(S) Town of Lincoln

(50) TOWN # 35 NORTH RANGE # 13 E or W SECTION # 19

(60) QUARTER-SECTIONS (at least 3) W1/2, SW1/4, NW1/4, SE1/4 AND NW1/4, NW1/4, SW1/4,SE1/4.

(70) QUARTER-SECTION GRID ALIGNMENT (edge and corner) SE corner

(75) OTHER LEGAL DESCRIPTION: French or Government Lot #

Additional TRS Data:

(80) TOWN # NORTH RANGE # E or W SECTION #

(90) QUARTER-SECTIONS (at least 3)

(100) QUARTER-SECTION GRID ALIGNMENT(edge and corner)

UTM COORDINATES: (110)Zone 16 (112) Easting 350,570 (114) Northing 5,039,820

(120) USGS 7.5' QUADRANGLE MAP NAME Mole Lake Quad

(130) GEOGRAPHIC LOCATION & RELATION TO LANDSCAPE FEATURES The site is located in Section 19 along a north/south road that leads to Swamp Creek. The site is approximately 100 m North of the creek. The topography slopes at @30 degrees down to creek.

Ownership Information:

(135) OWNERSHIP TYPE: (Check all that apply)

___ Public-Federal ___ Public-State ___ Public-Local X Private ___ Indian ___ Unknown

(140) OWNER'S NAME(S) J. Hess

OWNER'S ADDRESS(ES)

(150) YEAR OWNERSHIP DETERMINED

Environmental Information:

(180) ELEVATION: (Feet above sea level) 1580

(200) DRAINAGE SYSTEM: (Check one)

___ Black R.	___ Rock R.	___ Illinois R.	___ Fox R. (South)
___ Chippewa R.	___ St. Croix R.	___ L. Michigan	___ Fox R. (North)
___ Green Bay	X Wisconsin R.	___ L. Superior	___ Mississippi R.

(210) DRAINAGE-TRIBUTARY OR SMALL LAKE: Lake Lucerne

HHHH

ASI NUMBER _____

 Wisconsin Archeological Site Inventory Form (revised 12/07/1993)

(220) NEAREST WATER SOURCE NAME: Swamp Creek

(230) NEAREST WATER TYPE (S): (Check one)
- X Perennial stream/river
- ___ Intermittent stream
- ___ Spring
- ___ Other: [_____]
- ___ Lake/pond
- ___ Floodplain lake/oxbow
- ___ Marsh

(260) SOIL (S): Sandy loam over till and outwash.

(300) ADDITIONAL ENVIRONMENTAL DATA: Cedar and young Birch predominate; Jack Elder, Aspen and Black Spruce are present. Beaver activity present (beaver "runs" and felled trees).

Site Characteristics and Condition:

(310) SITE TYPE (S) (Check all that apply)

___1. Cabin/homestead
___22. CCC/WPA site
X 23. Dam/historic earthwork
___24. Farmstead
X 25. Foundation/depression
X 26. HCM concentration
___28. Kiln
___9. Logging camp
___29. Military site
___30. Mill
___32. Shipwreck
___33. Tower
___17. Trading/fur post
___34. Transportation site

___2. Cache/pit/hearth
___3. Campsite/village
___4. Cave/rockshelter
___5. Cemetery/burials
___6. Corn hills/garden beds
___21. Enclosure/earthworks
___18. Fish weir/trap
___8. Isolated find
___27. Kill site/bone bed
___7. Lithic scatter
___10. Mound(s)-conical
___11. Mound(s)-effigy
___12. Mound(s)-linear
___13. Mound(s)-other
___14. Quarry/mine
___15. Rock art
___31. Rock feature
___16. Sugar bush
___19. Workshop site
___99. Unknown
___20. Other [_____]

(320) CULTURE(S): (Check all that apply using certainty [1, 2, or 3] for each) (certainty of affiliation: 1= definite, 2= probable, 3= possible)

___ Unknown
___ Unknown Prehistoric
___ Unknown Historic

___ Paleo-Indian
___ Archaic
___ Woodland
___ Late Prehistoric

___ Early Paleo-Indian
___ Late Paleo-Indian
___ Early Archaic
___ Middle Archaic
___ Late Archaic
___ Early Woodland
___ Middle Woodland
___ Late Woodland

___ Initial Woodland
___ Terminal Woodland
___ Middle Mississippian
___ Upper Miss./Oneota

___ Historic Indian
1 Historic Euro-American

(330) PHASES/TRIBE/ETHNIC GROUP(S): Euro-American

(340) DATE(S): Late nineteenth to early twentieth centuries.

(350) DATING METHOD(S):
- X 1. Artifact style/cross-dating
- ___ 2. Radiocarbon
- ___ 3. Thermoluminescence
- ___ 4. Historic records
- ___ 5. Site type
- ___ 6. Other: [_____]
- ___ 7. Informant

(360/370) SITE DIMENSIONS: 164 E/W x 364 N/S feet (circle one)

or

(365/375) SITE AREA 1.36 acres (circle one)

(380) MODERN LAND USE (AT LAST UPDATE): (Check one or two)
- X Forest
- ___ Cultivation
- ___ Pasture
- X Road
- ___ Industrial
- ___ Recreational
- ___ Residential
- ___ Other: [_____]
- ___ Marked cemetery
- ___ Unknown

(400) DEGREE OF DISTURBANCE (AT LAST UPDATE): (Check one)
X 1. Minimal ___ 2. Moderate ___ 3. Heavy ___ 4. Completely destroyed ___ 5. Unknown

(410) THREATS TO SITE: Currently there no threat to the site.

(420) SITE/FEATURE DESCRIPTION: This site consists of nine shallow depressions on the won the west side of an unimproved road that heads generally south to Swamp Creek. Four of these pits had cultural material within or in close proximity (within one meter) of them. One of the depressions contained melted glass, a kaoline pipe, stove pipe flashing, a layer of ash and carbonized wood at 25-30 centimeters below surface (cmbs) and 50 cmbs.

There are four large excavated areas on the east side of the road. Three features are roughly 4x4.5 meters and circular in shape A fourth is a larger excavated feature @11x17 meters. Numerous boulders and cobbles are observed on the ground and extruding from the walls of these features. Depths average one meter below surface. No cultural material was found with the features on the east side of the road.

(430) MATERIAL CLASS(ES): (Check all that apply)

___ 1. Aboriginal ceramics	___ 5. Human bone	X 9. Euro-American ceramics
___ 2. Projectile points	X 6. Faunal remains	X 10. Glass
___ 3. Other chipped stone	___ 7. Floral remains	X 11. Fire-altered rock
4. Ground/pecked stone	X 8. Metal	X 99. Other [Kaoline pipe fragment, ceramic button.]

(440) MATERIAL TYPES(S): Historic glass fragments (portion of sample is melted), sawed faunal remains, three-pronged fork, spoon, suspender buckle, nails, stove pipe flashing, can fragments and a hand forged bolt.

Investigator/Reporter Information:

(450) INVESTIGATION TYPE(S):

___ Unknown	___ Test excavation	___ Other [ ]
X Surface survey	___ Major excavation	___ Historical research
X Shovel probing	___ Vandalism	___ Interview/informant
		___ Osteological analysis

(460) NAME OF INVESTIGATOR(S)	(465) AFFILIATION	(470) DATE(S) OF INVESTIGATIONS
L.M. Heckenkamp	HRMS-UWM Archaeology Lab	July/August 1998

(480) ARTIFACT REPOSITORY: UWM Archaeology Lab

(500) NAME OF SITE REPORTER	(505) AFFILIATION	(510) DATE SITE REPORTED
L.M. Heckenkamp	HRMS	October 1998

(540) BIBLIOGRAPHIC REFERENCES:

(565) SITE RECORDED FOR: (check one)

X Compliance- - - - - - - list SHSW Case # _____

_____ SHPO S&P Grant - - - - list S&P Grant # _____

_____ State Region Program- - - list Region-Year R - _____

_____ Personal/private survey

_____ Chance Encounter

_____ Other [_____]

HHHH

APPENDIX V

BIBLIOGRAPHY OF ARCHAEOLOGICAL REPORTS DATA SHEET

Bibliography of Archeological Reports
Information for Data Entry

SHSW #: _____ County: Forest Acreage: 688

Author/s: Richards, Patricia B.
Nicholls, Brian D.

Title of Report: Phase I Archaeological Investigations of Potential Absorption System Sites, Forest County, Wisconsin

Date of Report (month and year): November 1998

Series/Number: UWM-Archaeology Research Lab
Report of Investigations 136

Place of Publication: Milwaukee

Quad Map/s (7.5' Series): Crandon, Lake Lucerne, Mole Lake, Roberts Lake

Legal description of survey area: T36N, R13E, Sec. 33
T35N, R12E, Sections 17,18,19,20,24 T35N, R13E Sec(s) 27,28

Site Information (if applicable): _____

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)

2,275,000 E | 2,280,000 E | 2,285,000 E | 2,290,000 E

N

130,000 N

125,000 N

120,000 N

115,000 N

110,000 N

LAKE METONGA

AREA H SAS

NORTHWEST H

NORTHEAST H

WEST H

SOUTH H

AREA K (EAST)

AREA K (WEST)

AREA E

AREA G

AREA XB

AREA XC

AREA A

AREA J-4

AREA J

SKUNK LAKE

OAK LAKE

LITTLE SAND LAKE

DUCK LAKE

DEEP HOLE LAKE

GROUND HEMLOCK LAKE

Water

LEGEND

- TREES/BRUSH
- UNPAVED ROAD/TRAIL
- PAVED ROAD
- EXISTING SPOT ELEVATION (x 1542.0)
- EXISTING CONTOUR (1600)
- CREEKS/RIVERS/LAKES
- PROPOSED ACCESS ROAD
- SECTION LINE
- ORE BODY
- PROPOSED RAILROAD SPUR
- PROPOSED FACILITIES
- BE-08 — SOIL BORING NUMBER AND LOCATION
- MWE-08 — MONITORING WELL NUMBER AND LOCATION
- TPE-9 — TEST PIT NUMBER AND LOCATION
- TPH-53 — TEST PIT NUMBER AND LOCATION AREA H NORTHEAST AND NORTHWEST
- SPH-2 — SAND POINT NUMBER AND LOCATION
- HAH-05 — HAND AUGER BORING NUMBER AND LOCATION

0 800' 1600'
BAR SCALE

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 5 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.
6. FLANNERY PROPERTY AREA TEST PITS TPXF-1 THROUGH TPXF-5 (NOT SHOWN) ARE LOCATED IN NW1/4, T36N, R13E, SECTION 33.

Foth & Van Dyke

REVISED	DATE	BY	DESCRIPTION

CHECKED BY:	REM	DATE: NOV. '98
APPROVED BY:	SAD2	DATE: NOV. '98
APPROVED BY:		DATE:

Nicolet Minerals COMPANY

FIGURE 2

TEST PIT, SOIL BORING AND WELL LOCATIONS FOR 1998 SOIL ABSORPTION SITE INVESTIGATION

Scale:	SEE BAR SCALE	Date:	NOVEMBER, 1998
Prepared By:	Foth & Van Dyke	By:	DAT

b:\93c049\e-l-r\eir-f5.dgn
20 NOV 98 jrb2

3.2-20-153

Appendix 3.5-14a

Grout Testing Program Boring Logs and Abandonment Forms

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 101

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Treptow	4/7/98	4/10/98	mud rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NMC-101	70.25	1657-03	6-inch

Boring Location
State Plane 116184 N, 2277673 E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30 , T35 N, R13 E Long

Local Grid Location (if applicable)
Feet ___ N Feet ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA	NA	NA	140	0-140 - Glacial deposits: sand, silt, gravel, boulders. Brown to reddish brown.	NA		NA	NA	NA	NA	NA	NA	NA	

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 102

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Treptow	3/31/98	4/30/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30 , T35 N, R 13 E Long

Local Grid Location (if applicable)
NA Feet ___ N ___ S NA Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA	50	0-140 - Glacial Material: gravel, sand, silt, boulders. Brown to reddish brown.	NA		NA	NA	NA	NA	NA	NA	NA	
			100											
			150	140-176 - Saprolite										
			200	176-250 - Crandon fm.										
			250											

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 103

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Treptow	4/10/98	4/23/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30 , T35 N, R 13 E Long

Local Grid Location (if applicable)
NA Feet ____ N ____ S NA Feet ____ E ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA	50	0-156 - Glacial deposits: gravel, silt, sand, boulders. Brown to reddish brown	NA		NA	NA	NA	NA	NA	NA	NA	
			100											
			150											
				156-200'- Saprolite										
			200	200-230 - Gray lapilli tuff										
			250	230-250 Crandon fm.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

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State of Wisconsin
Department of Natural Resources

Route to:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 104

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Triptow	4/16/98	4/25/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30, T35 N, R 13 E Long

Local Grid Location (if applicable)
NA N Feet S
NA E Feet W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (In)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA	50	0-146 - Glacial deposits: gravel, sand, silt, boulders.	NA		NA	NA	NA	NA	NA	NA	NA	
			100											
			150	146-202 - Saprolite										
			200	202-250 - Crandon Fm.										
			250											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 105

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Triptow	4/18/98	4/22/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30, T35 N, R 13 E Long

Local Grid Location (if applicable)
NA N Feet S
NA E Feet W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA	0	0-146 - Glacial deposits: sand, silt, gravel and clay with cobbles and boulders.	NA		NA	NA	NA	NA	NA	NA	NA	
			50											
			100											
			150	146-211 - Saprolite - red, high clay content										
			200	211-250 - Crandon Fm. - massive sulfide										
			250											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Steven Wood

Firm: Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 106

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Triptow	4/25/98	5/7/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30, T35 N, R 13 E Long

Local Grid Location (if applicable)
NA N Feet S
NA E Feet W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA		0-200 - Glacial deposits: sand, pebbles, silt, cobbles	NA		NA	NA	NA	NA	NA	NA	NA	
			50											
			100											
				142-202 - Saprolite										
			150											
			200	202-218 - Crandon Fm. 218-222 - Lapilli Tuff 222-242 - Crandon Fm. 242-247 - Schistose Tuff 247-250 - Pyritic Shale									
			250	250-262 - Black Schist										
			270											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 107

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Triptow	4/27/98	5/4/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30, T35 N, R 13 E Long

Local Grid Location (if applicable)
NA Feet N S
NA Feet E W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA	0	0-145 - Glacial deposits: sand, pebbles, gravel, cobbles, and boulders.	NA		NA	NA	NA	NA	NA	NA	NA	
			50											
			100											
				145-175 - Saprolite: red/orange, clayey										
			150											
				175-212 - Lapilli Tuff										
			200	212-224 - Crandon Fm.										
				224-232 - Lapilli Tuff										
				232-265 - Crandon Fm.										
			250											
			270											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 108

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Triptow	5/1/98	5/6/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30, T35 N, R 13 E Long

Local Grid Location (if applicable)
NA N Feet ___ S
NA E Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA		0-131 - Glacial deposits: gravel, sand, boulders.	NA		NA	NA	NA	NA	NA	NA	NA	
			50											
			100											
				131-176 - Saprolite - brick red, clayey										
			150											
				176-265 - Crandon Fm.: pyritic massive sulfide										
			200											
			250											
			270											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Stephen McDonnell Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 109

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Triptow	5/13/98	5/16/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30, T35 N, R 13 E Long

Local Grid Location (if applicable)
NA N Feet ____ S
NA E Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA	50	0-156 - Glacial deposits: gravel, sand, cobbles.	NA		NA	NA	NA	NA	NA	NA	NA	
			100											
			150	156-175 - Saprolite										
				175-200 - Lapilli Tuff										
			200	202-250 - Crandon Fm.: Pred. pyritic massive sulfide.										
			250											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 110

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Triptow	5/18/98	5/25/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30, T35 N, R 13 E Long

Local Grid Location (if applicable)
NA N Feet S
NA E Feet W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA		0-145 - Glacial deposits: gravel, sand, cobbles.	NA		NA	NA	NA	NA	NA	NA	NA	
			50											
			100											
				145-200 - Saprolite										
			150											
			200	200-265 - Crandon Fm.: pyritic massive sulfide.										
			250											
			270											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 111

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Triptow	5/14/98	5/18/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30, T 35 N, R 13 E Long

Local Grid Location (if applicable)
NA Feet N S
NA Feet E W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA	50	0-150 - Glacial deposits	NA		NA	NA	NA	NA	NA	NA	NA	
			100											
			150	150-200 - Saprolite										
			200	200-250 - Crandon Fm.: pyritic massive sulfide interbedded with shale.										
			250											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm
Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project	NA	NMC 112

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Layne Northwest, Rick Triptow	5/20/98	5/27/98	Diamond Drill Core/ Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
NA	NA	NA	NA	NA	NQ

Boring Location
State Plane NA N, NA E S/C/N Lat
SE 1/4 of SW 1/4 of Section 30, T35 N, R 13 E Long

Local Grid Location (if applicable)
NA N Feet S NA E Feet W

County	DNR County Code	Civil Town/City/or Village
Forest	71	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
NA		NA	50	0-145 - Glacial deposits: gravel, sand, cobbles. and boulders	NA		NA	NA	NA	NA	NA	NA	NA	
			100											
			150	145-175 - Saprolite: red.										
				175-234 - Lapilli Tuff: grey.										
			200	234-256 - Crandon Fm.: pyritic massive sulfide.										
			250											
			260											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 [X] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC-102

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) _____ (From groundsurface)

Casing Diameter (ins.) 4"

Casing Depth (ft.) 170

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 170 Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes onl
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	250	181	15#

(8) Comments: 3.5-14a-13

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: Richard Taylor
Date Signed: 6-29-98
Street or Route
Telephone Number ( )

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected
District/County
Reviewer/Inspector
Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-8

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 ☒ E ☐ W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC103

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☒ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☐ Unconsolidated Formation ☒ Bedrock

Total Well Depth (ft.) 250 Casing Diameter (ins.) 4"
(From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? ☒ Yes ☐ No ☐ Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain

Was Casing Cut Off Below Surface?	☒ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☒ Yes	☐ No
If Yes, Was Hole Retopped?	☒ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes or
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	250	188	15#

(8) Comments: 3.5-14a-14

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: Michael Nepstad Date Signed: 6-29-98

Street or Route Telephone Number ( )

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 [X] E [ ] W

(If applicable) Gov't Lot ____ Grid Number ____

Grid Location ____ ft. [ ] N. [ ] S., ____ ft. [ ] E. [ ] W.

Civil Town Name: Nahsville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC104

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 250 Casing Diameter (ins.) 4
(From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes onl
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	250	56	15#

(8) Comments:

3.5-14a-15

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: Richard Meylow
Date Signed: 6-29-98

Street or Route

Telephone Number ( )

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected

District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-85

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 [X] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC105

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 250 Casing Diameter (ins.) 4"
(From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes o
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grou

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	250	365	15#

(8) Comments:

3.5-14a-16

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: Richard Taylor
Date Signed: 6-29-98
Street or Route
Telephone Number

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County
Reviewer/Inspector

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-8

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 [X] E [ ] W

(If applicable) Gov't Lot ____ Grid Number ____

Grid Location ____ ft. [ ] N. [ ] S. ____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC106

WI Unique Well No.: - - - - - -

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 265 Casing Diameter (ins.) 4"
(From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes o
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grou

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	265	202	15#

(8) Comments:

3.5-14a-17

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: Richard Taylor Date Signed: 6-29-98

Street or Route Telephone Number

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected District/County

Reviewer/Inspector

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N R. 13 [X] E [ ] W

(If applicable) Gov't Lot ____ Grid Number ____

Grid Location ____ ft. [ ] N. [ ] S. ____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC107

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 265 Casing Diameter (ins.) 4"
(From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes only
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	265	130	15#

(8) Comments:

3-5-14a-18

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work | Date Signed

Street or Route | Telephone Number ( )

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 [X] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC108

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 265 Casing Diameter (ins.) 4"
(From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes or
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	265	21	15#

(8) Comments:

3.5-14a-19

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: [signature] Date Signed: 6-29-98

Street or Route

Telephone Number

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-85

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 [X] E [ ] W

(If applicable) _____ Gov't Lot _____ Grid Number

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC109

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 250 Casing Diameter (ins.) 4" (From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[X] Conductor Pipe-Gravity [ ] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes or
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	250	117	15#

(8) Comments: 3.5-14a-20

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work

Date Signed: 6-29-98

Street or Route

Telephone Number

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected

District/County

Reviewer/Inspector

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-9

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 ☒ E ☐ W

(If applicable) Gov't Lot ____ Grid Number ____

Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC110

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☐ Yes ☒ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify)

Formation Type:
☐ Unconsolidated Formation ☒ Bedrock

Total Well Depth (ft.) 265 Casing Diameter (ins.) 4"
(From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? ☒ Yes ☐ No ☐ Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain

Was Casing Cut Off Below Surface?	☒ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☒ Yes	☐ No
If Yes, Was Hole Retopped?	☒ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes o
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grou

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	265		15#

(8) Comments:

3.5-14a-21

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work

Date Signed: 6-29-98

Street or Route

Telephone Number

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected

District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-9

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N R. 13 [X] E [ ] W

(If applicable) Gov't Lot ____ Grid Number ____

Grid Location ____ ft. [ ] N. [ ] S., ____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC111

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 250 Casing Diameter (ins.) 4"
(From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes o
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Gro

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	250	621	15#

(8) Comments: 3.5-14a-22

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work

Date Signed: 6-29-98

Street or Route

Telephone Number

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected

District/County

Reviewer/Inspector

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B

Rev. 8-8

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N R. 13 [X] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): NMC112

WI Unique Well No: _ _ _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date): 9-28-94

[ ] Monitoring Well
[ ] Water Well
[ ] Drillhole
[X] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 250 Casing Diameter (ins.) 4"
(From groundsurface)

Casing Depth (ft.) 200

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 200 Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Gro

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weigh
Cement	Surface	250		15#

(8) Comments:

3.5-14a-23

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: [signature] Date Signed: 6-29-98

Street or Route: Telephone Number:

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected: District/County:

Reviewer/Inspector:

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 [X] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): PWA

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-7-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[X] Water Well
[ ] Drillhole
[ ] Borehole

Construction Report Available? [X] Yes [ ] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 228 Casing Diameter (ins.) 6"
(From groundsurface)

Casing Depth (ft.) 180

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 180 Feet

(4) Depth to Water (Feet) NA

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes only
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	228	70	15#

(8) Comments: 3.5-14a-24

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: Richard Taylor Date Signed: 6-29-98

Street or Route

Telephone Number ( )

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected

District/County

Reviewer/Inspector

Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N; R. 13 [X] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N. Brown St.

City, State, Zip Code: Rhinelander WI 54501

Facility Well No. and/or Name (If Applicable): PWAR

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-8-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[X] Water Well
[ ] Drillhole
[ ] Borehole

Construction Report Available? [X] Yes [ ] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 270 Casing Diameter (ins.) 6"
(From groundsurface)

Casing Depth (ft.) 219

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 219 Feet

(4) Depth to Water (Feet) 65

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[X] No	[ ] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[X] Yes	[ ] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes onl
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	270	82	15#

(8) Comments: 3.5-14a-25

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: Richard Taylor
Date Signed: 6-29-98
Street or Route
Telephone Number ( )
City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected
District/County
Reviewer/Inspector
Follow-up Necessary

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Form 3300-5B

Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location

County: Forest

SE 1/4 of SW 1/4 of Sec. 30 ; T. 35 N R. 13 [X] E [ ] W

(If applicable) Gov't Lot _____ Grid Number _____

Grid Location _____ ft. [ ] N. [ ] S., _____ ft. [ ] E. [ ] W.

Civil Town Name: Nashville

Street Address of Well

City, Village

(2) FACILITY NAME

Original Well Owner (If Known): Crandon Mining

Present Well Owner: Nicolet Minerals

Street or Route: 7 N Brown St.

City, State, Zip Code: Rhinelander, WI 54501

Facility Well No. and/or Name (If Applicable): PWB

WI Unique Well No.: _ _ _ _ _ _

Reason For Abandonment

Date of Abandonment: 5-27-98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On

(Date) 9-28-94

[ ] Monitoring Well
[X] Water Well
[ ] Drillhole
[ ] Borehole

Construction Report Available? [X] Yes [ ] No

Construction Type:
[X] Drilled [ ] Driven (Sandpoint) [ ] Dug
[ ] Other (Specify)

Formation Type:
[ ] Unconsolidated Formation [X] Bedrock

Total Well Depth (ft.) 400 Casing Diameter (ins.) 6"
(From groundsurface)

Casing Depth (ft.) 180

Was Well Annular Space Grouted? [X] Yes [ ] No [ ] Unknown
If Yes, To What Depth? 180 Feet

(4) Depth to Water (Feet) 25

Pump & Piping Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Liner(s) Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Screen Removed?	[ ] Yes	[ ] No	[X] Not Applicable
Casing Left in Place?	[X] Yes	[ ] No	

If No, Explain

Was Casing Cut Off Below Surface?	[ ] Yes	[X] No
Did Sealing Material Rise to Surface?	[X] Yes	[ ] No
Did Material Settle After 24 Hours?	[X] Yes	[ ] No
If Yes, Was Hole Retopped?	[X] Yes	[ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[ ] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes onl
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Cement	Surface	400	54 bags	15#

(8) Comments: 3.5-14a-26

(9) Name of Person or Firm Doing Sealing Work
Layne-Northwest a div. of Layne Christensen Co.

Signature of Person Doing Work: Richard Murphow
Date Signed: 6-29-98

Street or Route

Telephone Number ( )

City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected

District/County

Reviewer/Inspector

Follow-up Necessary

Appendix 3.5-14b

Soil Test Pit Logs for the 1998 Soil Absorption System Investigation

- Area A
- Area E
- Area G
- Area H
- Area J
- Area XB
- Area XC
- Area XF

Area A

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-1A, pit dug approximately 20' SW of TAP-1.

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050598	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 204"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.0	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²

3.5-14b-2

Additional Remarks:

a. Pit TPA-1 extended to approximately 17'. Soil similar to that described for TPA-1 with the exception that gravel content and firmness increase with depth.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-6A, pit dug approximately 80' W of TPA-6

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050598	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 204"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 below 120"	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-7	10YR2/2-3/2	-	l	1f-mgr	mvfr	2f,2m	as		
2	7-23	10YR4/4	-	sil	2msbk	mfr	0-1f	cs		
3	23-64+	7.5YR3/4	-	sl	0-1csbk	mfr	0	-	8-10% gravel	0.0
3A	64-96	7.5YR3/4	-	sl	0-1csbk	mfr	0	as	8-10% gravel	0.0
4	96-120	see remarks	-				0	as		0.3
5	120-204+	10YR5/6-6/6	-	m-cos	sg	ml	0	-		0.8

3.5-14b-3

Additional Remarks:

a. Pit extended to approximately 17'. Observations concerning horizons 3A, 4 and 5 were made from outside the test pit, and depths of horizon changes are approximate.

b. Horizon 4 consists of 10YR5/6-6/6 f-ms (sg, ml) which contains a few thin (generally <1" thick) strata of 7.5YR4/4 fsl (0, mfr).

c. Structure in horizon 4 overprinted on 2c geologic layering.

d. Structure in horizon 5 overprinted on 1c geologic layering.

Low loading 60-120"
Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-10A, pit dug approximately 35' NE of TPA-10.

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050598	forested	loess over glacial till

Customer Address	Estimated Shallowest Groundwater Depth	Flood Plain Elevation
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161	> 120"	

County	Tax Parcel No.	System Loading Rate (GPD/ft²)
Forest	Crandon Mine Site	0.3 below 21"

Lot Legal Description	System Geometry and Depth	Test Pit Topography
SE¼, T35N R12E, Section 25		

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-9	10YR3/3	-	sil	2fsbk	mfr	2f,2m	as		
2	9-21	10YR4/4	-	sl-ls	1msbk	mvfr	1f	cs	8-10% gravel	
3	21-64+	7.5YR4/4	-	gravelly ls	0-1csbk	w-mvfr	0	-	30-40% gravel	0.3

3.5-14b-4

Additional Remarks:

a. Pit extended to approximately 10'. Soil similar to that encountered in horizon 3.

b. Structures in horizons 1 and 2 are overprinted on 2mpl geologic layering (probably resulting from ice compaction).

c. Water seeping into pit at 62".

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

05-07-98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-11A, pit dug approximately 20' W of TPA-11.

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050598	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.3 below 26"	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-9	10YR4/2-3	-	sil	1f-msbk	mvfr	1f,2m	as		
2	9-26	10YR4/4-6	-	fsl	1csbk	mvfr	0-1f	cs		
3	26-64+	5YR4/4-7.5YR4/4	-	ls-sl	0-1csbk	mfi-vfi	0	-	10-15% gravel	0.3

3.5-14b-5

Additional Remarks:

a. Pit extended to approximately 10'. Soil similar to that encountered in horizon 3 with the exception that soil texture grades to fsl and the gravel content increases to 15-20% with depth.

b. Horizon 1 contains mmp 2.5YR4/8-5YR5/8 textural mottling.

c. Horizon 2 contains mm-cd 10YR4/6-7.5YR4/6 textural mottling.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-13A, pit dug approximately 40' W of TPA-13.

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050598	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 204"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 below 84"	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-4	10YR2/2-3/2	-	sil	1f-mgr	mvfr	2f,2m	as		
2	4-12	7.5YR4/4	-	sil-l	1m-csbk	mvfr	2f	aw		
3	12-38	10YR4/3-5/3	-	fsl	3msbk	mfr	0-1f	gs		
4	38-80+	2.5YR3/4-5YR3/4	-	cos → cosl	0-1csbk	mfi-vfi	0	-	10-12% gravel	0.3
4A	80-84	2.5YR3/4-5YR3/4	-	cosl	0-1csbk	mfi-vfi	0	aw	10-12% gravel	0.3
5	84-204+	7.5YR5/6-8	-	m-cos	sg	ml	0	-	5-8% gravel	0.8

3.5-14b-6

Additional Remarks:

a. Pit extended to approximately 17'. Observations concerning horizons 4A and 5 were made from outside the pit, and depth of horizon changes are approximate.

b. Structure in horizon 3 overprinted on 2c geologic layering.

c. Structure in horizon 5 overprinted on 1c geologic layering.

low loading 60-84"
Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-19

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050498	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 186"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.0	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-5	10YR2/2	-	sil	1f-mgr	mvfr	1f,1m	cs		
2	5-20	10YR3/4-4/4	-	ls	1-2msbk	w-mfr	1f,1m	cs		
3	20-41	7.5YR3/4-10YR3/4	-	ls	1csbk	w-mvfr	0-1f	as		
4	41-64+	7.5YR4/4	-	gravelly ls-cos	2f-csbk	w-mvfi	0	-	20-30% gravel	0.0

3.5-14b-7

Additional Remarks:

a. Pit extended to approximately 15½'. Soil similar to that encountered in horizon 4 with the exception that the soil becomes drier with depth.

b. Horizons 2 and 3 contain cmd 7.5YR5/6 textural mottling.

c. Water seeping into pit at 41".

d. Structure in horizon 4 overprinted on 2c geologic layering.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-20

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050598	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.0	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-7	10YR2/1	-	sil	1-2fgr	mvfr-l	2f,2m	as		
2	7-14	10YR4/4	-	sicl	1-2mgr	mvfr	1f,1m	as		
3	14-27	10YR5/3-4	-	fsl	2m-csbk	mfr	0-1f	cs		
4	27-65+	7.5YR3/4-4/4	-	lcos	0-1csbk	w-mfr	0-1f	-	8-10% gravel	0.0

3.5-14b-8

Additional Remarks:

a. Pit extended to approximately 8'. Soil similar to that encountered in horizon 4 with the exception that the soil becomes drier with depth.

b. Water seeping into pit below 44".

c. Horizon 3 contains mcd 7.5YR5/6-8 textural mottling.

d. Horizon 4 contains a few strata characterized by ccp 2.5YR3/6-5YR5/8 horizontal mottling (¼' thick) surrounding 7.5YR6/4 (¼-1" thick) depletion zones between 55-65".

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1314

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-22

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050498	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 204"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.0	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-6	10YR2/2	-	sil	1fgr	mvfr-l	2f,2m	as		
2	6-26	10YR4/4	-	sil-sicl	1fgr	mvfr-l	1f	cs		
3	26-46	7.5YR4/4-6	-	ls	1csbk	mfr	0-1f	as		
4	46-72+	5YR4/4-7.5YR4/4	-	sl-ls	1csbk	mfi → fr	0	-	8-10% gravel	0.0

3.5-14b-9

Additional Remarks:

a. Pit extended to approximately 17'. Soil similar to that encountered in horizon 4.

b. Water seeping into pit at several depths between 45-65".

c. Horizon 3 contains fcd 5YR4/4 textural mottling.

d. Horizon 4 contains fcp 2.5YR4/8-7.5YR5/8 textural mottling.

e. Structure in horizon 3 overprinted on 0-1c geologic layering.

f. Structure in horizon 4 overprinted on 2m geologic layering.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-23

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050498	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 216"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.0	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-10	10YR2/2	-	sl	2cpl	mvfr	1f	as	8-10% gravel	
2	10-22	10YR4/4	-	fsl	1cpl → 1csbk	mfr	1f	cs		
3	22-38	7.5YR3/4	-	ls	0-1csbk	mfr	0-1f	cs		
4	38-53	5YR3/4	-	gravel	0	mvfi	0	cs		
5	53-66+	5YR4/6	-	lcos → cosl	0-1csbk	mfi	0	-	10-12% gravel	0.0

3.5-14b-10

Additional Remarks:

a. Pit extended to approximately 18'. Soil similar to that encountered in horizon 5.

b. Water seeping into pit at about 10".

c. The upper 5" of horizon 2 contains fmd 5YR5/6 textural mottling.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-24

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050598	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.3 below 35"	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SW¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-6	10YR2/1	-	sil	1f-mgr	mvfr-l	2f,1m	aw		
2	6-16	10YR3/3-4	-	sl-scl	2f-mgr	mvfr-l	1f,1m	cs		
3	16-35	10YR4/4	-	sl	1fsbk	mvfr	0	cs		
4	35-59+	7.5YR3/4	-	cosl	0-1csbk → sg	w-mvfr	0	-	5-8% gravel	0.3

3.5-14b-11

Additional Remarks:

a. Pit extended to approximately 12'. Soil similar to that encountered in horizon 4 with the exception that the soil becomes drier with depth.

b. Water seeping into pit between 40-50".

c. Horizon 3 contains fm-cd 7.5YR5/6-8 textural mottling.

d. Horizon 4 contains cm-cd 7.5YR5/6-8 textural mottling.

e. Structure in horizon 3 overprinted on 1f geologic layering.

f. Structure in horizon 4 overprinted on 0-1c geologic layering.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1944

05 07 98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-25

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050498	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 132"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.3 below 58"	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-6	10YR2/1	-	sil	2f-mgr	ml	2f,1m	as		
2	6-17	10YR4/4	-	sil	2fsbk-gr	ml	1f	as		
3	17-33	7.5YR4/4	-	sl	2m-csbk	mfr	0-1f	cs		
4	33-58	7.5YR4/6	-	gravelly ls	1csbk	mfi-vfi	0	cs	30-40% gravel	
5	58-76+	5YR4/4-7.5YR4/4	-	sl	0-1msbk	mvfr-l	0	-		0.3

3.5-14b-12

Additional Remarks:

a. Pit extended to approximately 11'. Soil similar to that encountered in horizon 5.

b. Horizon 3 contains fm-cd 7.5YR5/8 textural mottling.

c. Structure in horizon 4 overprinted on 2vc geologic layering.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-26

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	050498	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 180"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.0	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
SE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Remarks	Loading GPD/ft²
1	0-12	10YR2/1-3/1	-	sil	2mabk	mvfi	1-2f	as		
2	12-27	10YR5/3	-	sicl	3cpl	mfr	0-1f	cs		
3	27-40	10YR4/4	-	scl	1csbk	w-mfr	0	cs		
4	40-78+	5YR4/4-7.5YR4/4	-	ls-sl	1csbk	w-mfi	0	-	10-12% gravel	0.0

3.5-14b-13

Additional Remarks:

a. Pit extended to approximately 15'. Soil similar to that encountered in horizon 4.

b. Structure in horizon 1 overprinted on 3c geologic layering.

c. Structure in horizon 4 overprinted on 2m geologic layering.

d. Horizon 2 contains c-mfp 2.5YR3/6 textural mottling along the surfaces of the structural plates.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

050798
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-27

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		~ 108"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (E)	2-4	10YR3/2	-	sl	1mgr-sbk	d-mvfr	1f-c	cw	loess	none
3 (B2s)	4-12	7.5YR5/4	-	sil	1f-msbk	d-mfr	0-1f-c	cw	loess	none
4 (B3)	12-21	7.5YR6/4	-	sl-sil	2msbk	d-mfr	0-1f-c	cw	loess	partially Ce/Cp
5 (2C1)	21-44	7.5YR5/4	-	grsl-scl	1m-csbk	mfr	0	cw	sandy till	partially Ce/Cp
6 (2C2)	44-58	7.5YR4/4	-	scl	1csbk	mvfi	0	cw	till	mod-strong Cp
7 (3C3)	58-67+	10YR5/4 (v)	-	grm-cos	1csbk	mvfr	0	-	outwash	moderate Cp
7 (3C3)	67-84	10YR5/4 (v)	-	grm-cos	1csbk	mvfr	0	cs	outwash	moderate Cp
8 (3C4)	84-132+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	moderate Cp

3.5-14b-14

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 9'. c. Grab sample collected at 60".

d. Structure in horizon 4 developed in 2c geologic layering. e. Horizon 6 contains mmd 7.5YR5/6-8 (accumulation) and mmp 7.5YR6/2 (depletion) textural mottles.

e. Horizon 7 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

compacted sediments/ > 44
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-28

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091698	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (E)	2-4	7.5YR6/1 (v)	-	sil-sl	1f-mgr	mvfr	2f-c	cw	loess	none
3 (B2s)	4-15	7.5YR4/4	-	sl-sil	1fgr-csbk	mvfr-mfi	0-1f	cw	loess	partially Ce/Cp
4 (2C1)	15-31	7.5YR5/6	-	grm-cos	sg	ml	0	cw	outwash	partially Ce/Cp
5 (2C2)	31-77+	10YR6/4	-	m-cos	1csbk	w-mvfr	0	-	outwash	moderate Cp
5 (2C2)	77-108	10YR6/4	-	m-cos → cos	1csbk → sg	w-mvfr → ml	0	cs	outwash	moderate Cp
6 (2C3)	108-144+	10YR5/4	-	cos	sg	w-ml	0	-	outwash	weak Cp

3.5-14b-15

Remarks:

a. Pit extended to approximately 12', soil as described above. b. Soil saturated below 72". c. Collected grab sample at 45".

d. Horizon 4 contains few thin (<¼" thick) discontinuous 7.5YR4/4 fsl strata, and few thin (<2" thick) grcos seams.

e. Horizon 5 contains very few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

compacted sediments/ > 31
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-29

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 43"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (A1)	0-4	10YR2/2	-	sl	1f-mgr	mvfr	1f-m	cw	loess	none
2 (A2)	4-7	10YR3/2	-	sl	2csbk	mfr	0-1f	cw	loess	none
3 (E)	7-14	10YR6/2	-	sil-sl	2-3f-msbk	mfr	0-1f	cw	loess	partially Ce/Cp
4 (B2s)	14-37	7.5YR5/3	-	sl-l	2-3csbk	mfr	0-1f	gw	loess	partially Ce/Cp
5 (2B3)	37-63+	7.5YR4/4	-	grscl	1csbk	mfi-mvfi	0	-	till	mod-strong Cp
5 (2B3)	63-84	7.5YR4/4	-	grscl	1csbk	mfi-mvfi	0	gs	till	mod-strong Cp
6 (3C)	84-156+	7.5YR4/4 (v)	-	grsl-scl	1csbk	mfr	0	-	sandy till	moderate Cp

3.5-14b-16

Remarks:

a. Pit extended to approximately 13', soil as described above. b. Water seeping into pit below 43".

c. Horizon 4 contains mm-cd 7.5YR5/6-8 (accumulation) and cmp 7.5YR6/2 (depletion) textural mottles.

d. Top 6" of horizon 5 contains fmd 7.5YR5/6-8 (accumulation) and fmp 7.5YR6/3 (depletion) textural mottles.

compacted sediments/ > 37
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223196

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-30

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		~ 108"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Oe)	0-3	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (E)	3-6	7.5YR4/2	-	sil	1fgr	d-mvfr	1f-c	as	loess	none
3 (B21)	6-9	7.5YR4/4	-	sil-sl	1f-mgr	mvfr	0-1f	aw	loess	none
4 (B22)	9-18	10YR6/4	-	sil	1f-mgr	mvfr-mfr	0-1f	cw	loess	partially Ce/Cp
5 (2B3)	18-27	7.5YR5/4	-	cosl	sg-2csbk	ml-mfr	0-1f	cw	sandy till	partially Ce/Cp
6 (3C1)	27-32	7.5YR5/4	-	lfs	2msbk	mvfr	0-1f	cw	outwash	moderate Cp
7 (3C2)	32-75+	10YR6/4	-	m-cos	1csbk → sg	mfr → ml	0	-	outwash	weak Cp

3.5-14b-17

Remarks:

a. Pit extended to approximately 10", soil similar to that encountered in horizon 7. b. Soil saturated below 9'. c. Grab sample collected at 48".

d. Horizon 6 contains thin (<½" thick) 7.5YR4/4 fsl strata at the top and base of the horizon.

e. Horizon 7 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

compacted sediments/ > 27
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223196

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-31

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 132"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (A)	0-2	10YR3/2	-	sl	0-1fgr	mvfr	2f,1mc	cw	loess	none
2 (E)	2-6	10YR6/1	-	sl	0-2csbk	mvfr-mfr	0-1f	cw	loess	none
3 (B2)	6-23	10YR6/4	-	sil	2m-csbk	mvfr	0-1f	cw	loess	partially Ce/Cp
4 (2B3)	23-42	7.5YR5/4	-	m-cos	sg-1csbk	ml-mfr	0-1f	cs	sandy till	partially Ce/Cp
5 (3C1)	42-55	10YR5/4	-	grcos	sg-1csbk	ml-mfr	0-1f	cs	outwash	partially Ce/Cp
6 (3C2)	55-80	10YR6/4	-	m-cos	1csbk	mvfr	0	cs	outwash	moderate Cp
7 (3C3)	80-85+	10YR5/4	-	vcos	sg	ml	0	-	outwash	weak Cp

3.5-14b-18

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 7. b. Grab sample collected at 75".

c. Horizon 5 contains few thin (<½" thick) irregular and discontinuous 7.5YR4/4-5/6 fsl strata.

d. Horizon 6 contains very few thin (<½" thick) discontinuous 7.5YR4/4-5/6 fsl strata.

compacted sediments/ > 55
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 226796

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-32

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		~ 144"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (A)	0-4	10YR4/3	-	sl-sil	0-1f-mgr	d-mvfr	3f,1m	as	loess	none
2 (E)	4-7	10YR6/2-3	-	sl	1f-mgr	d-mvfr	0-1f	aw	loess	none
3 (B21)	7-11	7.5YR5/4	-	sil-sl	2m-csbk	d-mvfr-mfr	0-1f	cw	loess	partially Ce/Cp
4 (B22)	11-13	7.5YR6/6	-	sil	2msbk	d-mfi-mvfi	0-1f	cw	loess	partially Ce/Cp
5 (2B3)	13-19	10YR6/4	-	sil	2mgr	d-mvfr	0-1f	cw	sandy till	none
6 (3C1)	19-60	7.5YR5/6 (v)	-	grcos-scl	sg-2csbk	mfr-mvfi	0-1f	cs	outwash	partially Ce/Cp
7 (3C2)	60-66+	10YR6/4	-	ms	1csbk	mvfr	0	-	outwash	moderate Cp
7 (3C2)	66-144	10YR6/4	-	ms	1csbk	mvfr	0	cs	outwash	moderate Cp
8 (3C3)	144-168+	10YR5/4	-	grcos	sg	w-ml	0	-	outwash	weak Cp

3.5-14b-19

Remarks:

a. Pit extended to approximately 14', soil as described above. b. Soil saturated below 12'. c. Grab samples collected at 63" and at 12'.

d. Horizon 6 contains rafted till fragments ranging in size from 2" x 2" to 4" x 24" with a wide variety of orientations, and a few thick (<15" thick) grvcos seams.

compacted sediments/ > 60
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-33

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		~ 168"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (A)	2-7	7.5YR3/3	-	sl	1f-mgr	d-mvfr	1f-c	cw	loess	none
3 (B2)	7-15	7.5YR5/4	-	sl-sil	1f-mgr	d-mvfr	1f	cw	loess	none
4 (2B3)	15-33	7.5YR5/6 (v)	-	grcos	sg-1csbk	ml-mfi	0-1f-c	cw	sandy till	partially Ce/Cp
5 (3C1)	33-47	7.5YR6/6 (v)	-	grm-cos	sg-1csbk	ml-mfr	0-1f	cw	outwash	partially Ce/Cp
6 (3C2)	47-63+	10YR6/4	-	ms	1csbk	mvfr	0	-	outwash	moderate Cp
6 (3C2)	63-96	10YR6/4	-	ms	1csbk	mvfr	0	cs	outwash	moderate Cp
7 (3C3)	96-192+	10YR5/4	-	grvcos	sg	w-ml	0	-	outwash	weak Cp

3.5-14b-20

Remarks:

a. Pit extended to approximately 16', soil as described above. b. Soil saturated below 14'.

c. Horizon 5 contains common thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata, and few thin (<4" thick) grvcos seams.

d. Horizon 6 contains few fine (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

compacted sediments/ > 47
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 23796

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Date Signed

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-34

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 180"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (A)	0-2	7.5YR2.5/2	-	sl	1f-mgr	mvfr	2f-c	cw	loess	none
2 (E)	2-5	7/5YR6/1-3	-	sl-sil	1fgr	d-mvfr	1f	cw	loess	none
3 (B21s)	5-11	7.5YR4/4	-	sl-sil	1f-mgr	d-mvfr	1f-c	cw	loess	none
4 (B22)	11-20	10YR6/4	-	sl-sil	2mgr-sbk	mvfr	1f-m	cw	loess	partially Ce/Cp
5 (2B3)	20-28	5YR5/6 (v)	-	cosl-scl	sg-2csbk	ml-mfi	0-1f	cw	sandy till	partially Ce/Cp
6 (3C1)	28-38	7.5YR5/6 (v)	-	grm-cos	sg-1csbk	ml-mvfr	0-1f	cw	outwash	partially Ce/Cp
7 (3C2)	38-67+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	weak Cp
7 (3C2)	67-90	10YR6/4	-	m-cos	1csbk	mvfr	0	cs	outwash	weak Cp
8 (3C3)	90-180+	10YR5/4	-	cos	1csbk	mvfr	0	-	outwash	weak Cp

3.5-14b-21

Remarks:

a. Pit extended to approximately 15', soil as described above. b. Collected grab sample at 50".

c. Horizon 6 contains few thin (<¼" thick) discontinuous 7.5YR4/4 fsl strata, and few thin (<3" thick) grvcos seams.

d. Horizon 7 contains few thin (<¼' thick) very discontinuous 7.5YR4/4 fsl strata.

compacted sediments/ > 38
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-35

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091798	forested	loess over interlayered till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 49"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (E)	2-6	10YR5/2	-	sl-sil	1fgr	mvfr	1f-c	cs	loess	none
3 (B2s)	6-14	7.5YR4/4	-	sil-sl	1msbk	mvfr	0-1f-c	cw	loess	partially Ce/Cp
4 (2B31)	14-32	7.5YR4/6	-	grcosl	sg-1csbk	ml-mfr	0-1f-c	cw	sandy till	partially Ce/Cp
5 (2B32)	32-90	7.5YR4/4	see remarks	grscl	0-1csbk	w-mfr-mfi	0	cw	till	mod-strong Cp
6 (3C1)	90-96+	10YR6/4	-	m-cos	1csbk	w-mfr	0	-	outwash	moderate Cp
6 (3C1)	96-120	10YR6/4	-	m-cos	1csbk	w-mfr	0	cs	outwash	moderate Cp
7 (4C2)	120-180	7.5YR4/4	-	cosl-scl	1csbk	w-mfr	0	cs	sandy till	moderate Cp
8 (5C3)	180-204+	10YR5/3	-	cosl	sg-1csbk	w-ml-mfr	0	-	outwash	moderate Cp

Remarks:

a. Pit extended to approximately 17', soil as described above. b. Soil wet-saturated below 49". c. Collected grab sample at 92".

d. Horizon 5 contains f-ccp 2.5YR4/6-8 (accumulation) and fcp 5Y6/2-10YR6/2 (depletion) mottles.

compacted sediments/ > 32
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

3.5-14b-22

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-36

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091798	forested	loess over interlayered till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		~ 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (B2)	2-30	10YR6/3 (v)	-	sil	2m-csbk	d-mvfr	1f-c	cw	loess	partial Ce/Cp
3 (2B3)	30-35	7.5YR4/6	-	grcosl	sg	ml	0-1f	cs	sandy till	none
4 (3C1)	35-74	10YR5/4	-	m-cos	2csbk	mfr	0	cs	outwash	moderate Cp
5 (3C2)	74-77+	10YR5/3	-	fs	2msbk	mfr	0	-	outwash	moderate Cp
5 (3C2)	77-96	10YR5/3	-	fs	2msbk	mfr	0	cs	outwash	moderate Cp
6 (4C3)	96-120	7.5YR4/4	-	scl-sl	1csbk	w-mfr-mfi	0	cs	sandy till	mod-strong Cp
7 (5C4)	120-180+	10YR5/3	-	grm-cos	1csbk	w-mvfr	0	-	outwash	weak Cp

3.5-14b-23

Remarks:

a. Pit extended to approximately 15', soil as described above. b. Soil saturated below 8'. c. Collected grab sample at 48".

d. Horizon 4 contains few thin (<3" thick) grvcos seams.

compacted sediments/ > 35
Limiting Factors/Depth

J. E. Thresher Jr.
John E. Thresher, Jr., CST No. 223796

092398
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-37

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		~ 132"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (A)	0-1	10YR3/1	-	sl-sil	1f-mgr	mvfr	1f-c	as	loess	none
2 (E)	1-2	10YR6/1-2	-	sl-sil	1f-mgr	d-mvfr	0-1f	cw	loess	none
3 (B2)	2-16	10YR6/4	-	sil-sl	1f-mgr-sbk	mvfr	0-1f-c	cs	loess	none
4 (2B3)	16-26	7.5YR5/4	-	sl-scl	1csbk	mfr-mvfi	0-1f	cs	sandy till	partially Ce/Cp
5 (3C1)	26-39	see remarks	-	-	-	-	0	cs	outwash	none
6 (3C2)	39-69+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	none
6 (3C2)	69-72	10YR6/4	-	m-cos	sg	ml	0	cs	outwash	none
7 (3C3)	72-108	10YR5/3	-	grvcos	sg	ml	0	cs	outwash	none
8 (3C4)	108-144+	10YR5/4	-	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-24

Remarks:

a. Pit extended to approximately 12', soil as described above. b. Soil saturated below 11'. c. Horizon 5 consists of 7" of 7.5YR5/6, grvcos, sg, ml; over 4" of 7.5YR6/6, ms, 1msbk, mvfr; over 4" of 7.5YR5/6, grvcos, sg, ml. d. Horizon 5 contains few thin (<¼" thick) discontinuous 7.5YR4/4 fsl strata. e. Horizon 6 contains very few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata, and few thin (<4" thick) grvcos seams.

none
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

092398
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPA-38

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	091798	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		~ 108"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R12E, Section 25			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (A)	0-2	10YR2/1	-	sl	0-1f-msbk	mvfr	2f-c	as	loess	none
2 (E)	2-5	7.5YR5/1-2	-	sl	0-1f-mgr	mfr	0-1f-c	cw	loess	none
3 (B2s)	5-9	7.5YR4/4	-	sl	0-1mgr	mvfr	1f-c	cw	loess	none
4 (2C1)	9-18	10YR6/6	-	cosl-ls	0-1mgr	mvfr	2f-c	cs	outwash	none
5 (2C2)	18-63+	10YR6/4	-	m-cos	1csbk	mvfr-mfr	1f-c	-	outwash	weak Cp
5 (2C2)	63-90	10YR6/4	-	m-cos	1csbk	mvfr-mfr	1f-c	cs	outwash	weak Cp
6 (2C3)	90-120	10YR5/4	-	grvcos	sg	w-ml	0	cs	outwash	weak Cp
7 (2C4)	120-132+	10YR5/3 (v)	-	sgr	sg	w-ml	0	-	outwash	none

3.5-14b-25

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 9'. c. Collected grab sample at 48".

d. Horizon 5 contains fcp 10YR3/2 root mottles/channels which are partially cemented.

compacted sediments/ > 18
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

092398
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

Area E

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-9B

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060198	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 36"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (> 24")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-8	10YR2/2	-	sl	1f-msbk	mfr	2f	as	loess	
2 (A/B)	8-11	10YR3/2	-	sl	1fgr	mvfr	1f,m	cs	loess	
3 (B)	11-24	10YR4/4	-	l	1mgr-sbk	mfr	1f	cs	loess	
4 (2C)	24-36+	10YR5/6 (v)	-	m-cos	sg	ml	0-1f	-	outwash	0.4

3.5-14b-27

Remarks:

a. Structure in horizon 3 overprinted on 3c geologic layering.

b. Horizon 4 contains several thin (<1" thick) discontinuous 7.5YR3/4-4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

06 10 98
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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-14

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060498	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 60")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-5	10YR2/1	-	sil	1fgr	mvfr	2f-c	as	loess	
2 (B2s)	5-9	7.5YR4/6	-	sil	1fsbk	mvfr	1f-c	cs	loess	
3 (B21)	9-15	10YR4/6	-	sil	1fsbk	mvfr	0-1f-c	cs	loess	
4 (B31)	15-21	10YR5/4	-	sil	1fsbk	mvfr	0-1f	cw	loess	
5 (2B32)	21-33	7.5YR4/4	-	scl	1csbk	mfi	0	cw	till	0.0
6 (3C1)	33-60	10YR5/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C2)	60-75+	10YR5/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-28

Remarks:

a. Pit extended to approximately 12' (sampled at 12'), soil similar to that encountered in horizon 7.

b. Collected grab samples and core at 68".

c. Horizon 4 contains ffd 7.5YR5/6 textural mottles.

d. Horizon 5 contains ccp 10YR5/2 (depletion) and 5YR4/4 (enrichment) textural mottles.

e. Horizon 6 contains several thin (<2" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1916

061098
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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-15

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060198	forested	loess over glacial outwash and till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 192"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.2 (> 64")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-9	10YR2/1	-	sl-l	1fgr	mvfr	2f,1m	as	loess	
2 (A/C)	9-13	10YR4/2	-	l-sil	1msbk	w-mvfr	1f,m	as	loess	
3 (2C1)	13-43	7.5YR4/6	-	m-cos	0-1csbk	mvfr	0-1f-c	cs	outwash	
4 (2C2)	43-64	7.5YR4/6	-	m-cos	sg	ml	0-1f-c	aw	outwash	
5 (3C3)	64-68+	7.5YR4/4	-	ls-sl	0-1csbk	mvfi → ml	0	-	sandy till	0.2

3.5-14b-29

Remarks:

a. Pit extended to approximately 16', soil similar to that encountered in horizon 5.

b. Collected grab sample at 12' (sample excludes the coarsest 15-20% of the material).

c. Horizon 3 contains several thin (<1" thick) discontinuous 7.5YR3/4-4/4 mfr sl strata.

d. Horizon 3 also contains fcp 10YR2/1 root mottles and channel fillings.

e. A small amount of water seeping into the pit at 64" at the upper surface of horizon 4. Soil moisture in horizon 4 becomes decreases with depth.

f. The upper 12" of horizon 4 consists of partially indurated (mvfi) till which contains mcp N6-5PB7/1 (depletion) and 10R3/4-4/8 (accumulation) textural mottles.

mvfi-ml sandy till / 64"
Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-16

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060198	forested	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 180"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (> 36")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sl	1fgr	mvfr	2f	as	outwash (?)	
2 (E)	3-5	10YR6/2	-	ls	1fgr	mvfr	0-1f	as	outwash (?)	
3 (B2hs)	5-11	10YR3/6	-	sl	1fgr-sbk	mvfr	1f-m	cs	outwash (?)	
4 (B2s)	11-21	10YR4/6	-	sl	1csbk	mvfr	0-1f-m	cs	outwash (?)	
5 (2B3)	21-36	10YR5/4	-	sil	2mabk	mfr	-	aw	loess	
6 (3C1)	36-76	10YR5/6 (v)	-	m-cos	0-1csbk	ml	-	as	outwash	0.4
7 (4C2)	76-84+	7.5YR4/4	-	cosl	1csbk-sg	mfi-ml	-	-	sandy till	0.4

3.5-14b-30

Remarks:

a. Pit extended to approximately 15', soil similar to that encountered in horizon 7. b. Collected grab sample at 12' (coarsest 8-10% of material excluded from sample).

c. Horizon 5 contains ffd 7.5YR5/6 textural mottling.

d. Small amount of water seeping into pit along top of horizon 7 (sandy till), however the material within the horizon is not wet. Upper 2' of horizon 7 contains ccp 5B6/1 (depletion) and 5YR4/4 (enrichment) textural mottling.

mfl-ml sandy till / 76"
Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-17

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060298	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 59")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (Oe)	0-1	10YR2/1	-	-	-	mvfr	2f	aw	-	
2 (E)	1-6	7.5YR5/2-6/2	-	sil	1fgr	mvfr	1f,m	aw	loess	
3 (B2hs)	6-15	7.5YR4/4	-	sil-sl	1mgr	mvfr	1m	cs	loess	
4 (B2s)	15-24	7.5YR4/6	-	sl	1csbk	mfr-mfi	0-1f	cs	outwash (?)	
5 (2B3)	24-37	7.5YR4/4	-	cl	2f-msbk	mfi	0-1f	cs	till	0.2
6 (3C1)	24-59	10YR5/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C2)	59-72+	10YR5/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-31

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 7.

b. Collected grab sample and core at 5½', and grab sample at 12'.

c. Horizon 4 appears to be a developing fragipan.

d. Horizon 5 contains ccp 10YR5/2 (depletion) and 5YR4/6 (enrichment) textural mottling.

e. Horizon 6 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-18

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060298	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 58")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	l	1f-mgr	mvfr	2m,c	as	loess	
2 (E)	3-7	10YR6/2	-	sil	2msbk	mvfr	0-1f	as	loess	
3 (B2s)	7-11	7.5YR5/4-6	-	sil	1fsbk	mvfr	1f	cs	loess	
4 (B21)	11-18	10YR4/4	-	sil	1msbk	mvfr	0-1f	as	loess	
5 (2B3)	18-25	7.5YR4/4 (v)	-	fsl-scl	2csbk	mfr-mfi	0	aw	sandy till	0.4
6 (3C1)	25-58	7.5YR5/6 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C2)	58-72+	7.5YR5/6	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-32

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 7.

b. Collected grab sample at 10'.

c. Structure in horizon 3 overprinted on 3c geologic layering.

d. Horizon 6 contains several thin (<2" thick) discontinuous 5YR4/6-7.5YR4/6 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-19

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060498	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 168"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 50")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	2f-c	as	-	
2 (E)	2-2½	10YR5/3	-	sil	1fgr	mvfr	0-1f	as	loess	
3 (B2hs)	2½-4	10YR3/4	-	sil	1fgr	mvfr	0-1f	as	loess	
4 (Eb)	4-7	10YR5/2	-	sil-sl	1fgr	mvfr	0-1f	as	loess	
5 (2Bb)	7-24	7.5YR4/4	-	scl-sl	1csbk	mfr-mfi	0	cw	till	0.3
6 (3C1b)	24-50	10YR6/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C2b)	50-59+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-33

Remarks:

a. Pit extended to approximately 14', soil similar to that encountered in horizon 7.

b. Collected grab sample at 14'.

c. Horizons 1-4 represent a bisequum series of horizon development.

d. Horizon 5 contains fcp 10YR6/1-2 (depletion) and 7.5YR3/4 (enrichment) textural mottles.

e. Horizon 6 contains several thin (<2" thick) discontinuous 7.5YR4/4 mfr fsl-sl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-20

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060198	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 108"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 54")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-12	10YR2/2	-	sl-sil	1f-mgr	mvfr	<4": 3f >4": 1f	gs	loess	
2 (B)	12-20	10YR5/4	-	sl-sil	2msbk	mfr	0-1f	as	loess	
3 (2C1)	20-34	7.5YR4/4	-	ls	0-1msbk	mfr	0	cw	sandy till	0.4
4 (3C2)	34-54	10YR5/4	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
5 (3C3)	54-66+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-34

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 5.

b. Collected core and grab sample at 60", and grab sample at 9'.

c. Horizon 3 contains fcp 7.5YR6/1-2 (depletion) and 7.5YR4/4 (enrichment) textural mottles.

d. Horizon 4 contains several thin (<¼" thick) discontinuous 7.5YR3/4 mfr lfs strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-21

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060298	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 168"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (31-120"); 0.8 (> 120")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-9	10YR3/2	-	sl	1mgr	mvfr	2f,1m	cs	loess (?)	
2 (B2)	9-22±10	7.5YR4/4	-	sl-l	2m-csbk	mfr	0-1f	cs	loess	
3 (B31)	22-31±10	10YR4/3 (v)	-	sil	2msbk	mfr	0-1f	cs	loess	
4 (2B32)	31-64+	7.5YR3/4 (v)	-	sl-scl	1csbk	mfr	0	-	sandy till	0.4
4 (2B32)	64-90	7.5YR3/4 (v)	-	sl-scl	1csbk	mfr	0	cs	sandy till	0.4
5 (3C1)	90-120	7.5YR6/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
6 (3C2)	120-168+	7.5YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-35

Remarks:

a. Pit extended to approximately 14'. Soil changes as noted above. b. Collected grab sample at 12'.

c. Structures in horizons 3 and 4 overprinted on 2m and 1c geologic layering, respectively.

d. Horizon 3 contains small (<2" diameter) fragments of 7.5YR4/4 fsl.

e. Horizon 4 contains ccp 10YR5/1-6/2 (depletion) and 5YR3/4-4/4 (enrichment) textural mottles.

f. Horizon 5 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

061098
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-22

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060298	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 50")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sl-sil	1fgr	mvfr	1f,m	as	loess	
2 (B2)	3-6	7.5YR4/6	-	sil	1fsbk	mvfr	1f	as	loess	
3 (B3)	6-21	7.5YR4/6 → 10YR4/6	-	sil-sl	1m-csbk → 2csbk	mvfr → mfi	0-1f	cs	loess	
4 (2C1)	21-50	7.5YR5/4 (v)	-	m-cos	1csbk	mvfr	0	-	outwash	0.4
5 (2C2	50-64+	7.5YR5/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-36

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 5.

b. Collected grab sample at 12'.

c. The lower part of horizon 3 appears to be a developing fragipan.

d. Horizon 4 contains several thin (<2" thick) discontinuous 7.5YR3/4-5/4 mfr-mfi fsl-scl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1904

061098
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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-23

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060498	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		about 8'	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 63")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-5	10YR2/1	-	sil	1fgr	mvfr	2f,1m	as	loess	
2 (B2)	5-15	10YR5/4	-	sil	1msbk	mvfr	1f-c	cs	loess	
3 (2B31)	15-38	10YR5/3 (v)	-	sl-scl-cl	1csbk	mfr	0-1f-c	cs	sandy till	
4 (2B32)	38-58	7.5YR3/4-4/4	-	scl-cl	1csbk	mfr	0	cw	till	0.3
5 (3C1)	58-63	10YR6/4 (v)	-	ms	0-1csbk	mvfr	0	-	outwash	0.4
6 (3C2)	63-65+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-37

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 6. **Soil is wet to saturated below 8'.**

b. A few scattered, thin (<½" thick) discontinuous strata (developing E horizon) of 10YR6/1 sil were observed in the pit between horizons 1 and 2.

c. Horizon 5 contains several thin discontinuous strata and patches of 5YR4/4-7.5YR4/4 mfr sl-scl material.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-24

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060298	forested	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 108"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 47")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sl	1fgr	mvfr	2f,1m	as	outwash	
2 (E)	3-3½	10YR6/2	-	sl	1f-mgr	mvfr	1f	as	outwash	
3 (B2s)	3½-11	7.5YR4/6	-	ls	1f-msbk	mfr	2f,1m	cs	outwash	
4 (B21)	11-26	10YR4/6	-	sl	1m-csbk	mfr-mfi	0-1f,m	cs	outwash	
5 (2B3)	26-34 (v)	7.5YR4/4-6	-	sl	1csbk	mfr	0	cs	sandy till	0.4
6 (3C1)	34-47	10YR5/4 (v)	-	m-cos	0-1csbk	mfr	0	cs	outwash	0.4
7 (3C2)	47-57+	10YR5/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-38

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 7.

b. Collected core and grab sample at 50".

c. Horizon 4 appears to be a developing fragipan.

d. The depth to the top of horizon 5 varies from 20-34"; the depth to the base of the horizon varies from 30-70", and the thickness of the horizon varies from 0-36".

e. Horizon 6 contains several thin (<1½" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

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Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-24B

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060298	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 54"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 29")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-4	10YR2/2	-	sil	1fgr	mvfr	2f,1c	as	loess	
2 (E)	4-6	10YR5/2	-	sil	2f-msbk	mvfr	2f	as	loess	
3 (B2s)	6-10	7.5YR4/4	-	l-sil	2msbk	mfr	0-1f-c	cs	loess	
4 (2B21)	10-17	7.5YR4/6-10YR4/6	-	sl-l	1msbk	mfr-mfi	0-1f-m	cs	sandy till	0.3
5 (3B3)	17-29	7.5YR4/6 (v)	-	m-cos	1csbk	mfr-mfi	0-1f	cw	outwash	0.3
6 (3C)	29-54+	7.5YR5/6 (v)	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-39

Remarks:

a. Horizon 2 contains ffp 5YR4/4 textural mottles.

b. Structure in horizon 4 overprinted on 1c geologic layering.

c. Horizon 5 contains several thin (<2" thick) discontinuous 7.5YR4/4-5/4 mfr fsl-l strata.

Limiting Factors/Depth

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-25

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060498	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 168"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 55")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-5	10YR3/2	-	sil	1fgr	mvfr	1f,m	as	loess	
2 (B1)	5-11	7.5YR5/6	-	sil	1msbk	mvfr	1m	cs	loess	
3 (B2)	11-18	10YR5/4	-	sil	1msbk	mvfr	1m	cs	loess	
4 (2B3)	18-27	10YR4/4 (v)	-	scl-sl	2msbk	mfr	0-1f	cw	till	0.5
5 (3C1)	27-55	10YR5/4	-	m-cos	0-1csbk	mvfr-ml	0	cs	outwash	0.4
6 (3C2)	55-72+	10YR5/4 → 10YR6/4	-	m-cos → ms	sg	ml	0	-	outwash	0.8

3.5-14b-40

Remarks:

a. Pit extended to approximately 14', soil similar to that encountered in horizon 6.

b. Horizon 5 contains a few thin (<1" thick) discontinuous 7.5YR4/4 mfr sl strata.

c. Collected core and grab sample at 60".

Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-26

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060398	forested	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		about 12'	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (62-71"); 0.8 (> 71")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sil	1fgr	mvfr	3f	as	loess	
2 (E)	3-8	10YR4/1-7/1	-	sil	1fgr	mvfr	1f	aw	loess	
3 (B2s)	8-14	7.5YR4/4	-	sl	1mgr	mvfr	1f	cs	outwash	
4 (B21)	14-24	7.5YR4/6	-	sl	1m-csbk	mvfr	0-1f	cs	outwash	
5 (2B3)	24-62	7.5YR3/4-4/4	-	scl-ls	1csbk	mfr-mfi	0	cw	sandy till	0.3
6 (2C1)	62-71	10YR5/4 (v)	-	ms	0-1csbk	mvfr	0	cs	outwash	0.4
7 (2C2)	71-74+	10YR5/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-41

Additional Remarks:

a. Pit extended to approximately 14', soil similar to that encountered in horizon 7. **Soil saturated below 12'.**

b. Collected grab sample at 10'.

c. Horizon 6 contains several thin (<2" thick) discontinuous 7.5YR4/4-6 mfr fsl-sl strata.

Limiting Factors/Depth

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-27

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060398	forested	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (32-70"); 0.8 (> 70")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sil	1fgr	mvfr	2f,1m	as	outwash	
2 (E)	3-4½	10YR4/2-5/2	-	sl-sil	1fgr	mvfr	1f	aw	outwash	
3 (B2hs)	4½-13	5YR3/4	-	sl	1mgr	mvfr	1f	cs	outwash	
4 (B2s)	13-32	7.5YR4/6	-	ls-sl	1csbk	mvfr	0-1f	cs	outwash	
5 (2C1)	32-64	7.5YR4/4 (v)	-	scl-ls	0-1csbk	mfr	0	cw	sandy till	0.4
6 (3C2)	64-70	10YR5/4 (v)	-	ms	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C3)	70-72+	10YR5/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-42

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 7. b. Collected grab sample at 12'.

c. Structure in horizons 5 and 6 overprinted on 1c and 2c geologic layering, respectively.

d. Horizon 5 contains fcp 10YR6/1-2 (depletion) and 7.5YR4/4 (enrichment) textural mottles.

e. Horizon 6 contains several thin (<1" thick) discontinuous 7.5YR5/6 mfr sl and fsl strata.

f. The base of horizons 3, 4 and 5 were 11", 15" and 24", respectively, on the opposite side of the pit.

g. Portions of horizon 4 appear to be developing fragipans at several locations within the pit (mvfr-mfr-mfi).

Limiting Factors/Depth

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-28

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060398	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 168"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (84-96"); 0.8 (> 96")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (Oe)	0-4	10YR2/1	-	-	-	mvfr	2f	aw	-	
2 (E)	4-8	10YR5/2-6/1	-	fsl-l	1fgr	mvfr	0-1f	aw	loess	
3 (B2hs)	8-13	7.5YR3/4	-	fsl-l	1msbk	mvfr	1f,m	cw	loess	
4 (B2s)	13-28	7.5YR4/6	-	ls	1csbk	mvfr	0-1f	cs	loess	
5 (2B3)	28-70+	7.5YR4/4	-	scl-l	1csbk	mfr-mfi	0	-	sandy till	0.3
5 (2B3)	70-84	7.5YR4/4	-	scl-l	1csbk	mfr-mfi	0	cs	sandy till	0.3
6 (3C1)	84-96	10YR6/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C2)	96-210+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-43

Remarks:

a. Pit extended to approximately 14', soil changes as noted above. b. Collected grab sample at 12'.

c. Maximum depth to the base of horizon 2 was 17" in one corner of the pit.

d. Horizon 5 contains cvcp 5PB6/1-7/1 (depletion) and 5YR3/4 (enrichment) textural mottles.

e. Horizon 6 contains several thin (<2" thick) discontinuous 7.5YR3/4-4/6 mfr fsl-sl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-29

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060398	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 132"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (25-63"); 0.8 (> 63")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-2	10YR2/1	-	sil	1fgr	mvfr	2f,1m	as	loess	
2 (E)	2-3½	10YR4/1-2	-	sil	1fgr	mvfr	2f	as	loess	
3 (B2s)	3½-14	7.5YR4/4	-	sil	1fgr	mvfr	2c,1m	cs	loess	
4 (B21)	14-25	10YR4/4	-	sil	1fsbk	mvfr	1f	cs	loess	
5 (2B3)	25-54	7.5YR3/4	-	scl-sl	2m-csbk	mfr	0-1f	cs	sandy till	0.5
6 (3C1)	54-63	10YR5/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C2)	63-66+	10YR5/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-44

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 7.

b. The base of horizon 2 extends to 34" in one corner of the pit. The area above the horizon contained charcoal and disturbed A and E horizon material. A large rotting root extends through the base of the extended E horizon into horizon 5.

c. Horizon 5 contains fcp 7.5YR6/1-7/6 (depletion) and 7.5YR3/3-4/4 (enrichment) textural mottles.

d. Horizon 6 contains several thin (<¾" thick) discontinuous 7.5YR4/4 mfr fsl-l strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-30

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060198	forested	loess over glacial outwash and till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 168"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 57")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (Oe)	0-3	10YR2/1	-	-	-	mvfr	1-2f	as	-	
2 (A)	3-5	10YR2/1	-	sil	1msbk	mvfr	0-1f	as	loess	
3 (E)	5-9	7.5YR4/2	-	sil	1msbk	mvfr	1f	as	loess	
4 (B2hs)	9-15	10YR4/3	-	sicl-cl	1msbk	mvfr	1m,c	cs	loess	
5 (B2s)	15-23	10YR4/4	-	sicl	1fsbk	mfr	1m,c	cs	loess	
6 (2B3)	23-37	10YR5/4 (v)	-	m-cos	1csbk	mvfr	0-1f,m	cs	outwash	0.4
7 (2C1)	37-57	7.5YR4/4 (v)	-	gr cos	sg	ml	0	cs	outwash	0.4
8 (2C2)	57-72+	7.5YR5/4-6	-	m-cos	sg	ml	0	-	outwash	0.8
8 (2C2)	72-96	7.5YR5/4-6	-	m-cos	sg	ml	0	cs	outwash	0.8
9 (3C3)	96-170+	7.5YR4/4	-	cos	sg	ml	0	-	sandy till	0.8

3.5-14b-45

Remarks:

a. Pit extended to approximately 14', soil changes as described above. b. Collected grab sample at 10'.

c. Horizon 7 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
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608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-30B

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060298	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 54")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (Oe)	0-1±½	10YR2/1	-	-	-	mvfr	2f,1m	aw	-	
2 (A)	1-2±½	10YR2/1	-	sl	1fgr	mvfr	2f,1m	aw	loess	
3 (E)	2-3±½	10YR4/1	-	sil	2fsbk	mvfr	2f-m	aw	loess	
4 (B1s)	3-7	7.5YR4/4	-	sil	1msbk	mvfr	1f	cs	loess	
5(B2)	7-14	10YR3/6	-	sicl	2f-msbk	mvfr	0-1f	cs	loess	
6 (B3)	14-29	10YR4/6	-	sicl	2msbk-abk	mvfr	0	cs	loess	
7 (2C1)	29-54	10YR6/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
8 (2C2)	54-60+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

Remarks:

a. Horizon 6 contains fm-c charcoal fragments.

b. Structure in horizons 6 and 7 overprinted on 1m and 3c geologic layering, respectively.

c. Horizon 7 contains several thin (<2" thick) discontinuous 5YR4/4-7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-31

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060198	forested	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (50-62"); 0.8 (> 62")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-7	10YR2/1	-	l	1fgr	mvfr	2f	as	loess	
2 (B21)	7-14	7.5YR4/6	-	sil	2msbk	mvfr	1f	as	loess	
3 (2B22)	14-20	7.5YR4/6	-	ls	1m-csbk	mfr	0-1f	cs	outwash	
4 (2B31)	20-33	10YR4/4	-	ls	1csbk	mfr	0-1f	cs	outwash	
5 (3B32)	33-50±10	7.5YR4/3-4	-	scl	2m-csbk	mfr	0	cw	till	0.5
6 (4C1)	50-62	10YR5/4 (v)	-	ms	0-1csbk	mvfr	0	cs	outwash	0.4
7 (4C2)	62-72+	10YR5/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-47

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 7.

b. Collected grab sample at 12'.

c. Structure in horizon 2 overprinted on 2c geologic layering.

d. Horizon 5 contains ccp 7.5YR6/1-2 (depletion) and 5YR5/8-7.5YR5/8 (enrichment) textural mottles.

e. Horizon 6 contains several thin (<¼" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

060198
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-32

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060398	forested	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		?	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.0 (26-72"); 0.4 (72-90"); 0.8 (> 90")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sl	1f-mgr	mvfr	2f,1m	as	outwash	
2 (E)	3-7	10YR4/1-2	-	ls	1msbk	mvfr	1f	as	outwash	
3 (2Ab)	7-10	10YR2/2	-	sil	0-1fgr	mfr	1f,m	as	loess	
4 (2Eb)	10-17	10YR5/2	-	sil	2fsbk	mfr	0-1f	cs	loess	
5 (3Bb)	17-26	10YR5/4-6	-	scl-sl	1msbk	mvfr	0-1f	cs	till	0.4
6 (3C1b)	26-60+	7.5YR4/4	-	scl	0-1csbk	mfi-mvfi	0	-	till	0.0
6 (3C1b)	60-72	7.5YR4/4	-	scl	0-1csbk	mfi-mvfi	0	cs	till	0.0
7 (4C2)	72-90	7.5YR5/6	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
8 (4C3)	90-120	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

Remarks:

a. Pit extended to approximately 10'. Soil changes as noted above. b. Water seeping into the base of the pit below about 8'.

c. Structure in horizon 4 overprinted on 3f geologic layering. d. Horizon 5 contains cmd 7.5YR4/6 textural mottles.

e. Horizon 6 contains ccp → fcp 10YR6/2 (depletion) and 5YR4/6 (enrichment) textural mottles.

f. The depth to base of horizons 5 and 6 were 28" and 43", respectively, on the opposite side of the pit. On that side of the pit the till was underlain by 10YR5/4-6/4 m-cos.

Limiting Factors/Depth

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2828 Regent St.
Madison, WI 53705
608-233-0297

3.5-14b-48

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-33

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060398	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 168"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 45")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3±1	10YR2/1	-	sil	1fgr	mvfr	2f,1m	aw	loess	
2 (E)	3-6±1	10YR6/1-2	-	sil	1fgr	mvfr	0-1f	aw	loess	
3 (B2s)	6-11	7.5YR4/6	-	sil	1fgr	mvfr	1f,m	cs	loess	
4 (B21)	11-19	10YR5/4	-	sil	1fsbk	mvfr	0-1f	cw	loess	
5 (2B3)	19-34	10YR4/4	-	scl-cl	2csbk	mfr-mfi	0	cw	till	0.3
6 (3C1)	34-45	10YR5/4	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C2)	45-48+	10YR5/6	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-49

Remarks:

a. Pit extended to approximately 14', soil similar to that encountered in horizon 7.

b. Horizon 6 contains several thin (<2" thick) discontinuous 7.5YR4/4-6 mfr fsl-sl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-34

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060398	forested	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 52")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sil	1fgr	mvfr	2f	as	outwash	
2 (E)	3-5	10YR5/1-2	-	sl-sil	1fgr	mvfr	1f	cw	outwash	
3 (B2s)	5-11	7.5YR4/6	-	sl-sil	1fgr	mvfr	1f	cs	outwash	
4 (B21)	11-19	10YR4/6	-	ls	1f-msbk	mfr-mfi	0-1f	cs	outwash	
5 (2B3)	19-29	7.5YR3/4	-	scl-sl	2csbk	mfr-mfi	0	cs	sandy till	0.4
6 (3C1)	29-52	10YR6/4 (v)	-	ms	0-1csbk	mvfr	0	-	outwash	0.4
7 (3C2)	52-56+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-50

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 7.

b. Horizon 5 contains fcp 10YR6/1-2 (depletion) and 7.5YR4/3 (enrichment) textural mottles.

c. Horizon 6 contains several thin (<1" thick) discontinuous 7.5YR4/3-4/6 mfr fsl-sl strata.

Limiting Factors/Depth

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-35

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060498	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 59")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR3/2	-	sil	1fsbk	mvfr	1f-c	as	loess	
2 (B1)	3-11	10YR5/4	-	sil	1fsbk	mvfr	1f	cs	loess	
3 (B2)	11-16	10YR5/4-6/4	-	sil	0-1msbk	mfr	0-1f	cs	loess	
4 (2B3)	16-20	7.5YR4/4	-	sicl	2msbk	mfr-mfi	0-1f	cs	till	0.4
5 (3C)	20-59	10YR6/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
6 (3C2)	59-64+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 6.

b. Collected grab sample at 12'.

c. Structure in horizon 4 overprinted on 2m geologic layering.

d. Horizon 5 contains few thin (<1" thick) discontinuous 7.5YR4/6 mfr ls strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

060698
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2828 Regent St.
Madison, WI 53705
608-233-0297

3.5-14b-51

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-36

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	060498	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 53")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR3/2	-	sil	1fgr	mvfr	2f,1m	aw	loess	
2 (E)	3-10	10YR4/2 + 10YR2/1	-	sil	1fgr	mvfr	1f,m	cw	loess	
3 (B2hs)	10-15	7.5YR3/4	-	sil	1mgr	mvfr	0-1f	cs	loess	
4 (2B3)	15-30	10YR3/3	-	scl-sl	1m-csbk	mfr-mfi	0-1f,m	cw	sandy till	0.4
5 (3C1)	30-53	10YR4/6	-	ms	0-1csbk	mvfr	0	cs	outwash	0.4
6 (3C2)	53-60+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-52

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 6.

b. Collected core and grab sample at 53".

c. Soil essentially saturated below 8'.

d. Horizon 5 contains several thin (<½" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

060698
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608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-38

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 53")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-2	10YR2/1	-	sil	1fgr	mvfr	2f,1mc	aw	loess	
2 (E)	2-4	7.5YR5/2	-	sil	1fgr	mvfr	1f,m	aw	loess	
3 (B2hs)	4-8	7.5YR4/3	-	sil-sl	1fgr	mvfr	1f,2mc	as	loess	
4 (B2s)	8-14	7.5YR4/4	-	sil	1f-msbk	mvfr	1f-c	as	loess	
5 (B3)	14-21	10YR5/3-4	-	sil	2f-msbk	mfr	0-1f-m	aw	loess	
6 (2C1)	21-36	7.5YR4/4(v)	-	scl-sl	0-1m-csbk	mfr-mfi	0-1f	cw	till	0.2
7 (3C2)	36-53	7.5YR5/4	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
8 (3C3)	53-60+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-53

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 8.

b. Soil moisture in horizon 7 increases with depth.

c. Collected grab sample at 60".

d. Horizon 7 contains several thin (<1½" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-39

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070898	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		about 11'	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 40")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	-	as	-	
2 (A)	2-3	10YR2/1	-	sil	1mgr	mvfr	3f,1mc	aw	loess	
3 (E)	3-6	7.5YR5/2	-	sil-sl	1fgr	mvfr	0-1f	aw	loess	
4 (B2s)	6-9	7.5YR5/6	-	sl	1msbk	mvfr	0-1f	aw	loess	
5 (B31)	9-12	10YR4/4	-	sil-sl	2msbk	mfr	1f	cs	loess	
6 (B32)	12-17	7.5YR4/4	-	sil	2msbk	mfr	0-1f-m	cw	loess	
7 (2C1)	17-26	7.5YR4/4 (v)	-	sl-scl	0-1csbk	mfi	0	cw	sandy till	0.0
8 (3C2)	26-40	7.5YR5/4	-	sl-ms	0-1csbk	mfr	0	cs	outwash	0.4
9 (3C3)	40-60+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-54

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 9. **Soil saturated below 11'.** b. Collected grab sample at 11'.

c. Structure in horizons 4-6 overprinted on 3f geologic layering.

d. Horizon 8 contains several thin (<1½" thick) 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-40

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070898	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		about 12'	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 56")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sil	1fgr	mvfr	3f	as	loess	
2 (E)	3-6	10YR4/2	-	sil	1msbk	mfr	1f	aw	loess	
3 (B2s)	6-11	7.5YR4/4	-	sil	2f-msbk	mfr	1f	cs	loess	
4 (B31)	11-15	10YR5/3	-	sil	2f-msbk	mfr	0-1f	cs	loess	
5 (2B32)	15-22	7.5YR4/4	-	ls	1csbk	mfr-mfi	0	aw	sandy till	0.3
6 (2C1)	22-40	7.5YR5/4 (v)	-	ls	0-1csbk	mfr-mfi	0	aw	sandy till	0.3
7 (3C2)	40-56	10YR6/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
8 (3C3)	56-60+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-55

Remarks:

a. Pit extended to approximately 13', soil similar to that encountered in horizon 8. **Soil saturated below 12'.**

b. Structure in horizon 3 and 4 overprinted on 3f geologic layering.

c. Collected grab samples and core at 60".

d. Horizon 7 contains very few thin (<1" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-41

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 156"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.6 (> 49")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-10	10YR3/2	-	sil	1f-mgr	mvfr	1f-m	as	loess	
2 (B21)	10-17	10YR6/4	-	sil	3fabk	mvfr	0-1f-m	cs	loess	
3 (B22)	17-22	10YR5/4	-	sil	2f-msbk	mfr	0-1f	cs	loess	
4 (2B3)	22-27	7.5YR4/4	-	scl	1msbk	mfi	0	cw	till	
5 (3C1)	27-49	10YR5/4 (v)	-	ls	0-1csbk	mfr	0	cs	outwash	0.4
6 (3C2)	49-72+	10YR6/4 (v)	-	ms	0-1csbk → sg	mfr → ml	0	-	outwash	0.6

3.5-14b-56

Remarks:

a. Pit extended to approximately 13', soil similar to that encountered in horizon 6.

b. Structure in horizon 2 overprinted on 3f-m geologic layering.

c. Horizon 5 contains alternating, thin (1-3" thick) strata of 7.5YR4/4 mfr-mvfr fsl-fs, cos + gr, and f-ms.

d. Horizon 6 contains several thin (<3" thick) strata of gr and vcos at depth.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-42

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 132"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 46")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sil	1fgr	mvfr	2f,1mc	as	loess	
2 (A/E)	3-5	variegated	-	sil	1fgr	mvfr	1f-c	cs	loess	
3 (E)	5-8	7.5YR5/2	-	sil	1fgr	mvfr	1f	as	loess	
4 (B2)	8-16	7.5YR5/4	-	sil	2msbk	mvfr	0-1f	cs	loess	
5 (2C1)	16-31	7.5YR4/4 (v)	-	sl-scl	0-1csbk	mfr-mfi	0-1f	cw	sandy till	
6 (3C2)	31-46	7.5YR5/4	-	m-cos	0-1csbk	mfr	0-1f-c	cs	outwash	0.4
7 (3C3)	46-64+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-57

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 7.

b. Horizon 6 contains very few thin (<½" thick) 7.5YR4/4 discontinuous mfr fsl strata.

c. Collected grab samples and core at 73".

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-43

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 55")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	cl	2f-msbk	mvfr	1f-c	as	loess	
2 (E)	3-6	7.5YR5/2-10YR5/2	-	sil	1fsbk	mvfr	1f	as	loess	
3 (E/B)	6-10	10YR5/3	-	sil	1f-mgr	mvfr	1f-m	as	loess	
4 (B2)	10-15	10YR5/4	-	sil	2msbk	mfr	0-1f-m	cs	loess	
5 (2B3)	15-21	7.5YR4/4 (v)	-	scl-sl	1csbk	mfr-mfi	0	cw	till	
6 (3C1)	21-55	7.5YR5/6	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C2)	55-60+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-58

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 7.

b. Collected grab sample at 60".

c. Horizon 6 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fsl-ls strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

071598
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-44

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 132"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 50")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sl	1f-mgr	mvfr	2f-c	aw	loess	
2 (E)	3-4	10YR5/2	-	sl	1fgr	mvfr	2f	aw	loess	
3 (B2hs)	4-8	5YR3/4	-	sl	1mgr	mvfr	1f-c	aw	loess	
4 (B2s)	8-13	7.5YR5/6	-	sil	0-1csbk	mvfr	1f	as	loess	
5 (B31)	13-24	7.5YR4/4 (v)	-	sl-sil	2msbk	mfi	1f-c	aw	sandy till	0.0
6 (2B32)	24-36	7.5YR5/6	-	m-cos	1csbk	mfi	1f	cs	outwash	0.2
7 (3C1)	36-50	10YR5/4	-	m-cos	0-1csbk	mfr	0-1f-c	cs	outwash	0.4
8 (3C2)	50-84+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-59

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 8.

b. Collected grab samples and core at 50".

c. Horizon 7 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

07-5-98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-45

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070898	forested	loess over glacial outwash

Customer Address	Estimated Shallowest Groundwater Depth	Flood Plain Elevation
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161	> 156"	

County	Tax Parcel No.	System Loading Rate (GPD/ft²)
Forest	Crandon Mine Site	0.8 (> 56")

Lot Legal Description	System Geometry and Depth	Test Pit Topography
NE¼, T35N R12E, Section 24		

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	
2 (E)	2-4	7.5YR5/1-2	-	sil-sl	1vfgr	mvfr	1f	aw	loess	
3 (B2hs)	4-9	7.5YR3/4	-	sl	1vfgr	mvfr	1f-m	aw	loess	
4 (B2s)	9-15	7.5YR4/4-6	-	sl	1fgr-sbk	mvfr	1f	cs	loess	
5 (B31)	15-22	10YR5/4	-	sil	1f-msbk	mfr	0-1f-m	cw	loess	
6 (B32)	22-32	see below	-	sil	3msbk	mfr	0	cs	loess	
7 (B33)	32-45	7.5YR6/2	-	sil	2m-csbk	mfr-mfi	0	cw	loess	
8 (2C1)	45-56	10YR6/4 (v)	-	ms	0-1csbk	mfr	0	cs	outwash	0.4
9 (2C2)	56-64+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-60

Additional Remarks:

a. Pit extended to approximately 13', soil similar to that encountered in horizon 9. Soil moisture in horizon 9 increases with depth.

b. Color of horizon 6 consists of about equal amounts of 10YR6/1 (depletion) and 7.5YR5/3 (accumulation) textural mottles.

c. Horizon 7 contains cmd 7.5YR5/3 and vfvfp 10YR2/1 textural mottles.

d. Horizon 8 contains several thin (<½" thick) 7.5YR4/4 → 10YR6/6 discontinuous mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-46

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070898	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		about 13'	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.3 (50-61"); 0.4 (61-68"); 0.8 (> 68")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-4	10YR2/1	-	sl	1fgr	mvfr	3f,1mc	as	loess	
2 (E)	4-6½	10YR6/2	-	sl	1f-mgr	mvfr	0-1f	aw	loess	
3 (B2hs)	6½-12	7.5YR3/4	-	sil	1vfgr	mfr	1f-m	cs	loess	
4 (B2s)	12-17	7.5YR4/4	-	sil	1vfgr	mvfr	1f	cs	loess	
5 (B31)	17-21	10YR4/4	-	ls	2msbk	mfr	0-1f-m	cs	loess	
6 (2B32)	21-27	7.5YR4/4 (v)	-	sl	1-2m-csbk	mfr	0-1f	cw	reworked till	0.6
7 (2C1)	27-50	7.5YR5/4 (v)	-	ls	0-1m-csbk	mvfr	0-1f	cw	outwash	0.6
8 (2C2)	50-61	7.5YR4/3-4	-	sl-scl	1m-csbk	mfr-mfi	0	cw	sandy till	0.3
9 (3C3)	61-68	10YR6/4 (v)	-	ms	0-1csbk	mvfr	0	cs	outwash	0.4
10 (3C4)	68-76+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-61

Remarks:

a. Pit extended to approximately 14', soil similar to that encountered in horizon 10. **Soil saturated below 13'.**

b. Collected grab sample at 70".

c. Horizon 9 contains several thin (<½" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-47

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070898	forested	loess over glacial till and outwash

Customer Address	Estimated Shallowest Groundwater Depth	Flood Plain Elevation
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161	about 11'	

County	Tax Parcel No.	System Loading Rate (GPD/ft²)
Forest	Crandon Mine Site	0.6 (> 50")

Lot Legal Description	System Geometry and Depth	Test Pit Topography
NE¼, T35N R12E, Section 24		

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (Oe)	0-3½	10YR2/1	-	-	-	mvfr	2f,1m	cw	-	
2 (E)	3½-7	7.5YR5/1-2	-	sil-sl	1msbk	mfr	0-1f	cw	loess	
3 (B2hs)	7-8	7.5YR3/3	-	sl-sil	1vfgr	mvfr	0-1f	aw	loess	
4 (B2s)	8-10½	7.5YR3/4	-	sil-sl	1fgr	mfr	0-1f-m	as	loess	
5 (B31)	10½-13½	7.5YR4/6	-	sil-sl	1f-msbk	mfr	0-1f	cs	loess	
6 (B32)	13½-22	10YR5/4-6	-	sil	2msbk	mfr	0-1f	cs	loess	
7 (2B3)	22-27	7.5YR4/4 (v)	-	sl-scl	2csbk	mfr-mfi	0-1f	cw	sandy till	0.4
8 (3C1)	27-50	7.5YR5/6	-	ls	0-1csbk	mvfr	0	cs	outwash	0.4
9 (3C2)	50-60+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.6

3.5-14b-62

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 9. **Soil saturated below 11'.**

b. Horizon 2 contains fmp 10YR3/1-4/1 mottles (probably Oe + E mixed, or remnants of a former A). c. Collected grab samples and core at 60".

d. Horizon 8 contains several thin (<1" thick) 7.5YR4/4 mvfi fsl strata.

e. Horizon 9 contains very few thin (<½" thick) 10YR6/6 mvfr fsl strata.

Limiting Factors/Depth	John E. Thresher, Jr., CSTMO1914	07/15/98 Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-48

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 132"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 42")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-8	10YR2/2	-	sil	1mgr	mvfr	2f-c	as	loess	
2 (B1)	8-12	10YR4/3	-	sil	1fgr	mvfr	1f	as	loess	
3 (B2)	12-19	10YR5/4	-	sil	2mabk	mfr	1f	aw	loess	
4 (2B3)	19-23	7.5YR5/4-4/4	-	scl-sl	1csbk	mfi-mvfi	0-1f	aw	till	
5 (3C1)	23-42	10YR5/4 (v)	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
6 (3C2)	42-84+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-63

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 6.

b. Structure in horizon 3 overprinted on 3m geologic layering.

c. Horizon 5 contains fcp 2.5YR3/4-6 root mottles at 80".

d. Collected grab sample at 4', and core and grab sample at 7'.

e. Horizon 5 also contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fs strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

07.598
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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-49

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070698	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (31-68"); 0.8 (> 68")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-6	10YR2/1	-	sil	1f-mgr	mvfr	1f-c	aw	loess	
2 (E)	6-9	7.5YR5/2	-	fsl	0-1fgr	mvfr	0-1f	cw	loess	
3 (B2hs)	9-16	7.5YR3/4	-	sl	1csbk	mfr	0-1f-c	cw	loess	
4 (B21)	16-24	10YR4/4	-	sil	2msbk	mfr-mfi	0-1f	cs	loess	
5 (B22)	24-31	10YR4/4	-	fsil-l	2msbk	mfr	0-1f	cs	loess	
6 (2C1)	31-55	10YR6/4	-	f-ms	0-1csbk	mfr	0	cs	outwash	0.4
7 (2C2)	31-68	10YR5/4	-	m-cos	0-1csbk	mvfr	0	cs	outwash	0.4
8 (2C3)	68-72+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-64

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 8.

b. Structure in horizon 5 overprinted on 2m geologic layering.

c. Horizon 7 contains several thin (<1½ thick) discontinuous 7.5YR4/4 mfr-mfi fs-fsl strata.

d. Collected grab sample of fs-fsl material from horizon 7. This material is somewhat coarser than these strata in other pits.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-50

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 50")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sil	1mgr	mvfr	1f-c	cs	loess	
2 (E)	3-6	7.5YR6/2	-	sil	1fgr	mvfr	1f	cs	loess	
3 (B2s)	6-10	7.5YR4/4	-	sil	1fsbk	mfr	1f-c	cs	loess	
4 (B21)	10-13	10YR5/4	-	sil	1f-mgr	mvfr	1f-c	cs	loess	
5 (B3)	13-17	7.5YR5/3	-	sil-fsl	2msbk	mfi-mvfi	0-1f	as	loess	
6 (2C1)	17-50	7.5YR5/6	-	m-cos	0-1csbk	mvfr	0-1f	cs	outwash	0.4
7 (2C2)	50-60+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-65

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 7.

b. Horizon 2 contains fmp 10YR2/1 mottles (inclusions on A within the E).

c. Structure in horizons 3 and 4 overprinted on 2f geologic layering.

d. Collected grab samples and core at 50".

e. Horizon 6 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

07/15/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-51

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 132"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 50")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-2	10YR3/1	-	sil	1fgr	mvfr	2f-c	as	loess	
2 (E)	2-3	7.5YR4/2	-	sil	1vfgr	mvfr	1f	as	loess	
3 (B21)	3-6	10YR5/4	-	sil	2fsbk	mfr	1f-m	as	loess	
4 (B22)	6-10	10YR5/3	-	sil	2msbk	mvfr	0-1f	cs	loess	
5 (B3)	10-17	10YR5/4	-	sil	1f-msbk	mfr	0-1f	cs	loess	
6 (2C1)	17-27	7.5YR5/4	-	scl	0-1csbk	mfi	0	aw	till	
7 (3C2)	27-50	7.5YR5/6	-	m-cos	0-1csbk	mvfr	0	as	outwash	0.4
8 (3C3)	50-64+	10YR6/4	-	cos	sg	ml	0	-	outwash	0.8

3.5-14b-66

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 8.

b. Structure in horizons 3-5 overprinted on 2m geologic layering.

c. Collected grab sample at 60".

d. Horizon 7 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fs-fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-52

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 40")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/1	-	sil	1fgr	mvfr	2f,1mc	aw	loess	
2 (E)	3-6	7.5YR6/2	-	sil	1fgr	mvfr	1f	aw	loess	
3 (B2s)	6-8	7.5YR4/6	-	fsl	1fsbk	mvfr	0-1f-c	cw	loess	
4 (B21)	8-12	7.5YR5/6	-	fsl	1fsbk-gr	mvfr	0-1f	cs	loess	
5 (B31)	12-18	7.5YR5/6-10YR5/6	-	fsl	0-1msbk	mfr	0-1f	cw	loess	
6 (2B32)	18-22	7.5YR5/4	-	sl-scl	2csbk	mfr-mfi	0-1f	cw	sandy till	
7 (3C1)	22-40	7.5YR5/6	-	m-cos	2csbk	mfi	0	cs	outwash	0.4
8 (3C2)	40-54+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 8.

b. Structure in horizons 4 and 5 overprinted on 2f geologic layering.

c. Horizon 7 contains several thin (<½" thick) discontinuous 7.5YR4/4 mfi fsl strata, especially above 40".

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

3.5-14b-67

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-53

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 108"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 50")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-4	10YR2/1	-	sil	1f-mgr	mvfr	2f-c	aw	loess	
2 (E/B)	4-6	7.5YR5/3	-	sil	1f-msbk	mvfr	0-1f	aw	loess	
3 (B21)	6-10	7.5YR5/4	-	sil	1fgr	mvfr	0-1f-m	cs	loess	
4 (B22)	10-15	10YR5/4	-	sil	1fsbk	mvfr	0-1f-m	cs	loess	
5 (B31)	15-21	10YR5/4 (v)	-	sil	2msbk	mfr	0-1f-m	cs	loess	
6 (2B32)	21-34	7.5YR4/4	-	sl-scl	2csbk	mfr-mfi	0	cs	sandy till	
7 (3C1)	34-50	10YR6/4 (v)	-	m-cos	sg	ml	0	cs	outwash	0.4
8 (3C2)	50-60+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-68

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 8.

b. Collected grab sample at 60".

c. Horizon 7 contains several thin (<1½" thick) discontinuous 7.5YR4/4 mfi fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

071598
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-54

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070698	forested	loess over glacial till and outwash

Customer Address	Estimated Shallowest Groundwater Depth	Flood Plain Elevation
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161	> 168"	

County	Tax Parcel No.	System Loading Rate (GPD/ft²)
Forest	Crandon Mine Site	0.4 (> 59")

Lot Legal Description	System Geometry and Depth	Test Pit Topography
NW¼, T35N R12E, Section 24		

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-9	10YR3/2	-	sil	0-1msbk-gr	mvfr	2f,1m	as	loess	
2 (B1)	9-24	7.5YR5/4	-	sil-sicl	1msbk	mfr-mfi	0-1f	ai	loess	
3 (2B2)	24-59	7.5YR4/4	-	scl	2csbk	mfi-mvfi	0-1f	ai	till	0.0
4 (3C)	59-73+	7.5YR5/4-10YR5/4	-	cos	1csbk → sg	mvfr → ml	0	-	outwash	0.4

3.5-14b-69

Remarks:

a. Pit extended to approximately 14', soil similar to that encountered in horizon 4.

b. Collected grab sample at 72", and core and grab sample at 96".

c. Structure in horizon 2 overprinted on 3f geologic layering.

d. Horizon 3 contains fmd 7.5YR5/6 textural mottles in the lower 6" of the horizon.

e. Horizon 4 contains several thin (<3" thick) discontinuous mvfr-ml fsl, vfs, and well graded cos+gr (about 6" thick) strata.

f. grained strata in outwash / 59"
Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

07/5/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-55

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 132"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (27-96"); 0.8 (> 96")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-9	10YR2/2	-	sil	1csbk	mfr	1f,m	as	loess	
2 (B21)	9-27	7.5YR4/4	-	sil-l	1msbk →1csbk	mfr → mfi	0-1f	ai	loess	
3 (2B22)	27-53	7.5YR4/3 (v)	-	sl-scl	1-2csbk	mfr-mfi	0	aw	sandy till	0.4
4 (3C1)	53-64	10YR6/4 (v)	-	m-cos	0-1csbk	mfr	0	-	outwash	0.4
4 (3C1)	64-96	10YR6/4	-	m-cos	0-1csbk	mfr	0	as	outwash	0.4
5 (3C2)	96-132+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-70

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 5.

b. Collected grab sample at 60".

c. Horizon 2 contains cmf 7.5YR4/6 textural mottles in the lower 6" of the horizon.

d. Horizon 3 contains ff-md 2.5YR4/6-5YR4/6 textural mottles.

e. Horizon 4 contains several thin (<½" thick) discontinuous 7.5YR4/6-5/6 mfr fs and fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

07/15/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-56

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		about 12'	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (40-60"); 0.8 (> 60")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-2	10YR2/1	-	sil	1fgr	mvfr	2f-c	as	loess	
2 (E)	2-5	7.5YR6/2	-	sil	1fgr	mvfr	1f	as	loess	
3 (B2hs)	5-8	7.5YR3/3	-	sil	1vfsbk	mfr	0-1f	cs	loess	
4 (B2s)	8-10	7.5YR4/4	-	sil	1fsbk	mfr-mfi	0-1f	as	loess	
5 (B3)	10-13	7.5YR4/6	-	sl	2msbk	mfr	0-1f	aw	loess	
6 (2C1)	13-22	7.5YR4/6	-	ls	0-1csbk	mfr	0	cw	sandy till	0.4
7 (3C2)	22-60	7.5YR5/6	-	m-cos	2csbk	mfi-mfr	0	cs	outwash	0.2-0.4
8 (3C3)	60-80+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-71

Remarks:

a. Pit extended to approximately 13', soil; similar to that encountered in horizon 8. **Soil saturated below 12'.**

b. Collected grab samples at 35 and 70".

c. Structure in horizons 3 and 4 overprinted on 3f geologic layering.

d. Horizon 7 contains several thin (<¼" thick) discontinuous 7.5YR4/4 fsl strata, especially above 40". Horizon 7 is mfi from 30-40", mfr from 40-60".

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-57

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070798	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 42")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-1½	10YR2/2	-	sil	1mgr	mfr	2f-c	as	loess	
2 (E)	1½-3	7.5YR6/1	-	sil	2mgr	mvfr	1f	as	loess	
3 (B21)	3-7	10YR5/4	-	sil	0-1fsbk	mvfr	1f-m	cs	loess	
4 (B22)	7-17	10YR6/3	-	sil	3f-msbk	mfr	0-1f-m	cs	loess	
5 (2B3)	17-22	7.5YR4/4 (v)	-	sl	1csbk	mfr-mfi	0-1f	cs	sandy till	
6 (3C1)	22-42	10YR6/4 (v)	-	ms	0-1csbk	mvfr	0	cs	outwash	0.4
7 (3C2)	42-72+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-72

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 7.

b. Structure in horizon 4 overprinted on 3f geologic layering.

c. Horizon 6 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-58

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070698	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 144"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 54")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NE¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-3	10YR2/2	-	sil	1mgr	mvfr	1f-c	as	loess	
2 (B1)	3-7	7.5YR4/4	-	sil	1f-mgr	mvfr	1-2f	as	loess	
3 (B2)	7-13	10YR5/3	-	sil	2f-msbk	mvfr	0-1f-c	as	loess	
4 (2B3)	13-18	7.5YR4/4	-	sl-scl	2msbk	mfr	0-1f	as	sandy till	0.4
5 (3C1)	18-54	10YR6/4 (v)	-	m-cos	0-1csbk	mvfr	0	as	outwash	0.4
6 (3C2)	54-74+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	0.8

3.5-14b-73

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 6.

b. Collected grab sample at 96", and core and grab sample at 72".

c. At some places within the pit horizon 1 consisted of 2" of 10YR2/1 sil (A horizon) plus 1" of 7.5YR7/2 sil (E horizon).

d. Horizon 5 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfr fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-59

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070898	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.8 (> 50")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-6	10YR3/1	-	sil-sl	1f-msbk-gr	mvfr	1f-c	as	loess	
2 (E)	6-9	7.5YR4/2-5/2	-	sil-sl	1fgr	mvfr	2f	cs	loess	
3 (B2hs)	9-12	7.5YR4/3	-	sil	1f-msbk	mvfr	1f-m	cs	loess	
4 (B3)	12-17	7.5YR5/6	-	sil-sl	1msbk	mfr	0-1f	aw	loess	
5 (2C1)	17-27	7.5YR5/6	-	f-ms	0-1csbk	mfr	0-1f	cs	outwash	0.4
6 (2C2)	27-50	10YR5/4	-	ms	0-1csbk	mvfr	0-1f	cs	outwash	0.4
7 (2C3)	50-53+	10YR5/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-74

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 7, with the exception that the soil → 10YR6/4; m-cos; sg; ml with depth.

b. Collected grab samples and core at 50".

c. Horizon 6 contains several thin (<1" thick) discontinuous 7.5YR4/4 mvfi fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-60

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070898	forested	loess over glacial outwash

Customer Address	Estimated Shallowest Groundwater Depth	Flood Plain Elevation
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161	> 132"	

County	Tax Parcel No.	System Loading Rate (GPD/ft²)
Forest	Crandon Mine Site	0.8 (> 50")

Lot Legal Description	System Geometry and Depth	Test Pit Topography
NW¼, T35N R12E, Section 24		

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-4	10YR2/1	-	sil	2fgr	mvfr	1f-c	as	loess	
2 (E)	4-6	7.5YR5/2	-	sil	1vfgr	mvfr	0-1f-c	as	loess	
3 (B21)	6-10	7.5YR5/4	-	sil	1fgr	mvfr	0-1f-c	cs	loess	
4 (B22)	10-17	10YR5/4	-	sil	1f-msbk	mvfr	0-1f-c	as	loess	
5(B3)	17-23	7.5YR5/4-6/4	-	sil-sl	1msbk	mfr	0-1f	aw	loess	
6 (2C1)	23-50	7.5YR5/6	-	ms	0-1csbk	mvfr	0	cs	outwash	0.4
7 (2C2)	50-58+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-75

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 7.

b. Collected grab sample at 60".

c. Structure in horizon 5 overprinted on 3f geologic layering.

d. Horizon 5 contains fmd 7.5YR5/6-8 textural mottles.

e. Horizon 6 contains several thin (<1" thick) discontinuous 7.5YR4/4 mfi fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

07-5-98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-61

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070898	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (37-60"); 0.8 (> 60")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-5	10YR2/1	-	sl-sil	1fgr	mvfr	2f,1mc	as	loess	
2 (B2)	5-10	7.5YR4/4	-	sl-sil	1f-mgr	mvfr	1f-m	cs	loess	
3 (B31)	10-15	10YR4/4	-	sil	1f-msbk	mvfr	1f-c	cs	loess	
4 (B32)	15-37	10YR4/6	-	sil	1fsbk	mfr	0-1f-m	cw	loess	
5 (2C1)	37-60	7.5YR5/6	-	ms	0-1csbk	mvfr	0	cs	outwash	0.4
6 (2C2)	60-64+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-76

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 6.

b. Collected grab sample at 60".

c. Structure in horizons 3 and 4 overprinted on 3f geologic layering.

d. Horizon 5 contains several thin (<½" thick) discontinuous 7.5YR4/4 mfr-mfi fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

8/15/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPE-62

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	070898	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 108"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.4 (15-60"); 0.8 (> 60")	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T35N R12E, Section 24			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-1½	10YR2/1	-	sl	1fgr	mvfr	1f-c	as	loess	
2 (E)	1½-3½	7.5YR6/2	-	fsl	1fgr	mvfr	0-1f	aw	loess	
3 (B2s)	3½-5	7.5YR4/4	-	fsl	1fsbk	mvfr	1f-m	aw	loess	
4 (B21)	5-7½	7.5YR4/4-6	-	sl	1f-msbk	mvfr	1f-m	aw	loess	
5 (B31)	7½-15	7.5YR4/4-6	-	sl-sil	1f-mgr	mvfr	0-1f	cs	loess	
6 (2B32)	15-29	7.5YR4/4 (v)	-	sl-scl	1f-csbk	mfr-mfi	0-1f	cs	sandy till	0.4
7 (3C1)	29-60	7.5YR5/6	-	ms	0-1csbk	mvfr	0-1f	cs	outwash	0.4
8 (3C2)	60-64+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.8

3.5-14b-77

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 8.

b. Collected grab samples and core at 54".

c. Horizon 7 contains several thin (<1" thick) discontinuous 7.5YR4/4 fsl mfi strata.

Limiting Factors/Depth

John E. Thresher, Jr., CSTMO1914

071598
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

Area G

Foth & Van Dyke
consultants · engineers · scientists

Client: Nicolet Minerals Company | Scope I.D. 93C049
Project: Area G | Page: 1 of 1
Prepared by: Erik Silvola (EAS) | Date: 6/5/98
Checked by: Ron Meister (REM) | Date: 7/14/98

FIELD LOG OF TEST PIT

Test Boring No.: TPG-01

Start Date: 6/5/98 | Location: Area G (see test pit location map)

Completion Date: 6/5/98 | Surface Elevation: | Boring Depth: 15.5 ft

Depth Fr. Lnd. Surf.	Sample No. Depth Interval	Type	N	Rec.	M Color	Description of Material	Class
						0-0.3 Dk brown (10YR21) organic topsoil mod. fine blocky structure.	OL
						Minimal O horizon .1-0, 0-0.28 A horizon	SP
						0.3-0.4 Lt grey (10YR5/1) fine sand (E horizon)	ML
						0.4-0.8 Brown (7.5YR5/4) fine sandy silt with minor clay, mod. med. blocky structure,	
2						damp, soft (silt loam)	ML
						0.8-2.1 As above, mottled grey (2.5YR4/1) minor gravel (sandy silt loam), till	SP
						2.1-3.5 Orange brown (7.5YR5/6) - med-coarse sand with silt and gravel, massive-weak	SP
						c. platy structure, damp, washed-reworked till (sand-loamy sand), oxidized, greater	
						oxidation around mafic clasts, minor sandy clayey silt laminae	
4	S1 (4-6)					2.5-7.2 Brown (7.5YR6/3) fine-med. sand with gravel, stratified, structureless, damp, loose,	
						outwash, oxidation around gravel clasts.	
6							
						7.2-15.5 Brown (10YR6/2) fine-med. sand, stratified damp, loose, outwash (sand) coarser	SP
						with depth caving by 10 ft, minor c. sandy gravel lenses.	
8							
10	S2 (10-12)						
12							
14							
						E.O.P. at 15 ft	
						Collapsing - GW Not Encountered	
16							
18							

Drilling Method: Backhoe | Rig: Koehring | Depth of Water: At Completion: N/A

Drilling Contractor: Flannery | Driller: Dick | Hour Later: N/A

Foth & Van Dyke
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Client: Nicolet Minerals Company | Scope I.D. 93C049
Project: Area G | Page: 1 of 1
Prepared by: Erik Silvola (EAS) | Date: 6/5/98
Checked by: Ron Meister (REM) | Date: 7/14/98

FIELD LOG OF TEST PIT

Test Boring No.: TPG-02

Start Date: 6/5/98 | Location: Area G (see test pit location map)

Completion Date: 6/5/98 | Surface Elevation: | Boring Depth: 14 ft

Depth Fr. Lnd. Surf.	Sample No. Depth Interval	Type	N	Rec.	M Color	Description of Material	Class
						0-0.2 Dark brown (10YR2/2) organic topsoil, weak, fine blocky structure, damp, soft, roots.	OL
						0.1-0 (O horizon) 0-0.2 (A horizon)	
						0.1-0.2 Grey (10YR5/1) fine sand, structureless (loose) E horizon	
						0.2-0.9 Strong orange brown (7.5YR5/7) fine silty sand, weak, med. blocky structure, highly	SP
2						oxidized, minor gravel, damp, soft (loamy sand).	
						0.9-2.5 Brown (7.5YR5/5-5/6) fine sand with silt and minor gravel and minor silt lenses,	
						oxidized, soft (outwash)	
						2.5-3.2 Brown (7.5YR6/2) med. sand with gravel, stratified, outwash	SP
						3.2-14 Brown (7.5YR7/2) fine-med. sand, structureless, stratified, damp, loose.	
4	S-1 (4-5)						
6							
8							
10	S-2 (10-12)						
12							
14						E.O.P. at 14 ft	
16							
18							

Drilling Method: Backhoe | Rig: Koehring | Depth of Water: At Completion: N/A

Drilling Contractor: Flannery | Driller: Dick | Hour Later: N/A

Foth & Van Dyke
consultants · engineers · scientists

Client: Nicolet Minerals Company | Scope I.D. 93C049
Project: Area G | Page: 1 of 1
Prepared by: Erik Silvola (EAS) | Date: 6/5/98
Checked by: Ron Meister (REM) | Date: 7/14/98

FIELD LOG OF TEST PIT

Test Boring No.: TPG-03

Start Date: 6/5/98 | Location: Area G (see test pit location map)

Completion Date: 6/5/98 | Surface Elevation: | Boring Depth: 13.8 ft

Depth Fr. Lnd. Surf.	Sample No. Depth Interval	Type	N	Rec.	M Color	Description of Material	Class
						0-0.5 Brown (10YR2/1) organic topsoil, weak crumb structure, damp, soft (silt loam)	OL
						0.5-1.8 Brown (7.5YR5/6) fine silty sand with minor gravel, weak med. platy structure, damp, oxidized (loam)	SP-SM
2						1.8-2.9 Brown (7.5YR4/4) fine sandy silt - silty sand with gravel, minor grey mottles, minor clay, mod., med. platy-blocky structure, damp.	SP
						2.9-3.6 Orange-brown (7.5YR5/6) fine-med sand with minor silt and gravel, weak coarse platy-blocky structure, damp, oxidized along root traces and gravel clasts (sand).	SP
4						3.6-8.2 Brown (10YR6/3) fine-med sand with gravel lenses, stratified, structureless to v.fine platy structure, v. damp, oxidized along stratification of fine sand (outwash)	SP
	5-6						
6							
8						8.2-13.8 Lt. brown (10YR6/2) fine-med sand, minor silt, stratified, structureless, v. damp.	SP
10	10-12						
12							
14						E.O.P. at 13.8 ft Collapse	
16							
18							

Drilling Method: Backhoe | Rig: Koehring | Depth of Water: At Completion: N/A

Drilling Contractor: Flannery | Driller: Dick | Hour Later: N/A

Foth & Van Dyke
consultants · engineers · scientists

Client: Nicolet Minerals Company | Scope I.D. 93C049
Project: Area G | Page: 1 of 1
Prepared by: Erik Silvola (EAS) | Date: 6/5/98
Checked by: Ron Meister (REM) | Date: 7/14/98

FIELD LOG OF TEST PIT

Test Boring No.: TPG-04

Start Date: 6/5/98 Location: Area G (see test pit location map)

Completion Date: 6/5/98 Surface Elevation: _____ Boring Depth: 12 ft

Depth Fr. Lnd. Surf.	Sample No. Depth Interval	Type	N	Rec.	M Color	Description of Material	Class
						0-0.5 Dk brown (10YR2/1) organic topsoil (loam), weak, fine crumb structure, damp, soft, roots, 0.1-0 (0 horizon)	OL
						0.5-0.8 Grey brown (10YR3/2) silty fine sand sl. damp-dry, loose (E horizon)	SP
						0.8-2.3 Orange brown (7.5YR6/7) highly oxidized, silty sand with gravel (till), reworked.	SP-SM
2							
						2.3-3.8 Brown (7.5YR5/6) silty fine sand (dense) with gravel and deformed lenses of gravelly sand silt with clay, reworked (till), highly oxidized.	
						3.8-4.9 Brown (7.5YR6/3) med-coarse sand with gravel lenses, structureless, damp, loose, oxidized along finer lenses.	SP
4							
						4.9-8.5 Brown (10YR6/3) med sand as above, less oxidation.	
6							
8							
						8.5-12 Brown (10YR5/4) silty v. fine sand, wet, water running rapidly in pit, saturated, massive, stratified.	SP-SM
10							
12						E.O.P. at 12 ft	
14							
16							
18							

Drilling Method: Backhoe Rig: Koehring Depth of Water: At Completion: N/A

Drilling Contractor: Flannery Driller: Dick _____ Hour Later: N/A

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-5

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072098	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 58"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-2	10YR3/1	-	sl	1mgr	mvfr	1f-c	aw	loess	none
2 (E)	2-4	10YR6/1-2	-	vfs	sg	d-ml	0-1f-m	aw	loess	none
3 (B2hs)	4-7	7.5YR3/3	-	sl	1fgr	mvfr	0	aw	loess	none
4 (B2s)	7-11	7.5YR4/6	-	ls	1fgr	mfr	0	aw	loess	none
5 (2B3)	11-58	10YR5/6 (v)	-	m-cos	0-1csbk	mvfr	0-1f-m	ai	outwash	none
6 (2C1)	58-64	10YR5/6-6/6	see remarks	m-cos	0-1csbk	mvfr	0-1f-m	ai	outwash	none
7 (2C2)	64-72+	10YR5/4	gleyed 10YR6/2	fs	0-2msbk	w-mfr-mfi	0	-	outwash	partial Ce/Cp
7 (2C2)	72-78	10YR5/4	gleyed 10YR6/2	fs	0-2msbk	w-mfr-mfi	0	cs	outwash	partial Ce/Cp
8 (2C3)	78-90+	10YR5/3	gleyed 10YR6/3	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-83

Remarks:

a. Pit extended to approximately 7½', soil as described above. b. Soil saturated below 64".

c. Horizon 5 contains fvc patches of fscl material which contain fcp 7.5YR4/6 textural mottles.

d. Horizon 6 contains fvc patches of fscl material which contain fcp 5Y6/2-3 (depletion) and fcp 7.5YR5/8 and 5RP5/8 (accumulation) mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-6

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072098	forested	loess over glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 108"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-3	10YR3/1	-	sil-sl	1mgr	mvfr	3f	as	loess	none
2 (B2hs)	3-7	10YR4/3	-	sil	1vfgr	mvfr	1m-c	as	loess	none
3 (B2s)	7-21	10YR5/4	-	sil	1f-csbk	mfr	0-1f	as	loess	none
4 (2B31)	21-37	10YR5/6	-	fs	0-1csbk	mfr	0-1f-c	as	outwash	none
5 (2B32)	37-54	7.5YR4/4 + 10YR6/4	-	layered vfsl + fs	1csbk	mfi	0-1f-c	aw	outwash	strong Cp
6 (3C1)	54-72	10YR5/4	-	m-cos	sg-1csbk	ml-mfi	0	as	sandy till	weak Cp
7 (4C2)	72-80+	10YR5/3	-	f-vfs	1msbk	mfr-mfi	0	-	outwash	weak Cp
7 (4C2)	80-96	10YR5/3	-	f-vfs	1msbk	mfr-mfi	0	cs	outwash	weak Cp
8 (4C3)	96-138	10YR5/3	-	fs	2msbk	w-mfr	0	cs	outwash	none
9 (4C4)	138-144+	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-84

Remarks:

a. Pit extended to approximately 12', soil as described above. b. Soil saturated below 10'.

c. Horizon 6 contains mcd 10YR5/8 textural mottles in the upper 8" of the horizon, and fmp 5YR4/6 mottles (textural?) in the lower one-half of the horizon.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-7

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072098	forested	loess over glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 64"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-8	10YR2/1	-	sl	2msbk-gr	mvfr	2f-c	cs	loess	none
2 (B1)	8-20	10YR5/3	-	sl	1f-mgr	mvfr	1f	cw	loess	none
3 (2B2)	20-33	10YR5/8	-	fs	0-1msbk	mvfr	0-1f	cw	outwash	none
4 (3B3)	33-72	10YR6/2	-	sil	2msbk	mfr	0	cw	loess	none
5 (4C1)	72-76+	7.5YR3/4	-	ms	0-1msbk	w-mfr-mfi	0	cs	outwash	weak Cp
6 (5C2)	76-96	7.5YR4/3	-	grscl-sl	1csbk	w-mfr-mfi	0	-	till	weak Cp

3.5-14b-85

Remarks:

a. Pit extended to approximately 8', soil as described above. b. Soil saturated below 76".

c. Horizon 3 contains fcd 7.5YR5/8 (streaks) and vfcp 5YR3/4 (patches) textural mottles.

d. Horizon 4 contains cmp 7.5YR4/4-5/8 textural mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-8

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072098	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-2	10YR3/1	-	sil	1fgr	mvfr	1f-c	as	loess	none
2 (E)	2-4	10YR4/1-2	-	sil-sl	1fgr	mvfr	0-1f	as	loess	none
3 (B2)	4-18	10YR5/3 → 10YR6/4	-	sl → sil	1fgr → 2mgr	mvfr-mfr	2f,1m	as	loess	none
4 (B3)	18-32	10YR6/4 → 10YR6/3	-	sil → sl	1msbk → 1csbk	mvfr-mfi	1f-m	aw	loess	partial Ce/Cp
5 (2C1)	32-37	10YR5/4 (v)	-	grfs	sg	w-ml	0-1f-m	aw	sandy till	none
6 (3C2)	37-48	10YR6/4	-	ms	sg	w-ml	0-1f-m	as	outwash	none
7 (3C3)	48-56+	10YR6/4	-	vfs	0-2msbk	ml-mfr	0-1f-m	as	outwash	none
7 (3C3)	56-72	10YR6/4	-	vfs	0-2msbk	ml-mfr	0	cs	outwash	none
8 (3C4)	72-96	10YR6/6	fmd 7.5YR4/4	ms	0-1csbk	ml-mfr	0	cs	outwash	none
9 (3C5)	96-132+	10YR6/3	cmd 7.5YR5/6-8	ms	sg	w-ml	0	-	outwash	none

3.5-14b-86

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 8'.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-9

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072098	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 20"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Oe)	0-½ ± ½	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (E)	½-3	10YR5/2-6/2	-	sil	1fgr	mvfr	1f-c	as	loess	none
3(B1)	3-7	10YR6/4	-	sil-sl	1fgr	mvfr	1f	as	loess	none
4 (B2)	7-20	10YR5/3-6/3	-	sil	1csbk	mfr	0-1f-m	as	loess	none
5 (B3)	20-34	7.5YR5/3	see remarks	sl-sil	2msbk	mfi-mvfi	0-1f-m	cw	loess	partial Ce/Cp
6 (2C1)	34-63	10YR6/4	see remarks	ls	0-1csbk	mfi-mvfi	0-1f	cw	outwash	partial Ce/Cp
7 (2C2)	63-85	10YR6/3	see remarks	m-cos	0-1csbk	mvfr	0	as	outwash	none
8 (2C3)	85-88+	7.5YR4/6 (v)	-	layered	variable	variable	0	-	outwash	none

3.5-14b-87

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 8. b. Soil saturated below 8'.

c. Structure in horizon 5 overprinted on 1m geologic layering. d. Horizon 5 contains mcp 7.5YR6/1-2 (depl.) and fmp 5YR4/6-5/8 (accum.) textural (?) mottles.

e. Horizon 6 contains ccp 5YR4/6, fcp 2.5YR3/6 and vfcp 10YR2/1 banded mottles. f. Horizon 7 contains cfp 5YR4/6-7.5YR5/8 mottles.

g. Horizon 8 consists of alternating ms (sg,w-ml), fs (sg, w-ml) and vfsl (2msbk, mfr-mfi) strata, 6-8" thick. Saturated strata tend to be grayer in color.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-10

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072098	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 53"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-4	10YR3/2	-	sil	2mgr	mvfr	1f-c	as	loess	none
2 (E)	4-7	10YR6/1-7/1	-	sil	1fgr	mvfr	1f-m	as	loess	none
3 (B1)	7-11	10YR6/4	-	sil	1fgr	mvfr	0-1f	cs	loess	none
4 (B2)	11-19	10YR6/3	-	sil-sl	1fsbk	mvfr	0-1f-m	cs	loess	none
5 (2B3)	19-33	7.5YR4/4	-	sl	2csbk	mfr-mfi	0-1f	cs	sandy till	partial Ce/Cp
6 (3C1)	33-64+	10YR6/4 → 7.5YR6/4	> 53" see remarks	m-cos	0-1csbk → sg	mvfr → ml	0	-	outwash	none
6 (3C1)	64-72	7.5YR6/4	see remarks	m-cos	sg	ml	0	cs	outwash	none
7 (3C2)	72-144+	10YR5/4	-	cos	sg	w-ml	0	-	outwash	none

3.5-14b-88

Remarks:

a. Pit extended to approximately 12', soil as described above. b. Soil saturated below 10'.

c. Horizon 6 contains few thin (< ½" thick) discontinuous 7.5YR4/4 fsl strata, and fcd 7.5YR5/8-6/8 mottles (patches and streaks) below 53".

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-11

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072198	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 75"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-6	10YR3/1	-	sil-sl	1f-mgr	mvfr	2f-c	aw	loess	none
2 (E)	6-16	7.5YR6/1-2	-	sl-sil	1vfgr	mvfr	1f	cw	loess	none
3 (B2hs)	16-24	7.5YR3/3	-	sl	3f-csbk	mfr-mfi	1f-c	cw	loess	strong Ce
4 (B3)	24-56	10YR6/2-3	-	sil-sl	3csbk	mfi-mvfi	0-1f-c	cw	loess	vy strong Ce/Cp
5 (2C)	56-90+	10YR6/4	> 75" ccp 7.5YR5/8	m-cos	0-1csbk-gr	mvfr-ml	0-1f-m	-	outwash	none

3.5-14b-89

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 5. b. Soil saturated below 88".

c. Horizon 4 contains cvcp 7.5YR3/4-4/6 textural mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/14/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-12

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072198	forested	loess over glacial outwash and till
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-3	10YR3/1-2/1	-	-	-	mvfr	2f-c	as	-	-
2 (A)	3-9	10YR3/2	-	sil	1fgr	mvfr	2f-c	as	loess	none
3 (B1)	9-13	10YR6/3	-	sil	1vfgr	mvfr	0-1f-c	cs	loess	none
4 (B2)	13-21	10YR6/3	-	sil	1f-msbk	mvfr-mfr	0-1f	cw	loess	none
5 (B3)	21-33	7.5YR4/4 (v)	-	sil	2msbk	mfr	0-1f	cw	loess	none
6 (2C1)	33-44	10YR5/6 (v)	-	ms	0-1csbk	mvfr-ml	0-1f	cw	outwash	none
7 (3C2)	44-80+	5YR4/4-4/6	-	scl	1csbk	mfr-mfi	0-1f	-	till	weak Cp
7 (3C2)	80-84	5YR4/4-4/6	-	scl	1csbk	mfr-mfi	0	gs	till	weak Cp
8 (3C3)	84-122+	5YR4/4	-	grscl	1csbk	mfr-mfi	0	-	till	weak Cp

3.5-14b-90

Remarks:

a. Pit extended to approximately 12', soil as described above. b. Soil saturated below 7'.

c. Horizon 5 contains mcd 7.5YR6/3 textural mottles and fvfp 10YR2/1 intrapedal mottles.

d. Horizon 6 contains cvcd 5YR3/4-4/6 banded textural mottles. e. Moisture content in horizon 7 increases with depth from 60-84".

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-16

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072198	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 180"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1	0-6	see remarks	-	-	-	-	2f-c	aw	loess	none
2 (B1)	6-17	10YR6/3		sil	1fgr	mvfr	1f-c	as	loess	none
3 (B3)	17-26	7.5YR4/3 (v)		sl	2msbk	mfr	0-1f	cs	loess	none
4 (2C1)	26-84+	5YR3/4 (v)		scl	0-1csbk	mfi-mvfi	0-1f	-	till	strong Cp
4 (2C1)	84-156	5YR3/4 (v)		scl	0-1csbk	mvfr-mvfi	0-1f	gs	till	partial Cp
5 (2C2)	156-180+	7.5YR3/4 (v)		grscl-sl	0-1csbk	mfr-mfi	0	-	sandy till	weak Cp

3.5-14b-91

Remarks:

a. Pit extended to approximately 15', soil as described above. b. Soil not saturated.

c. Highly disturbed upper 6". Horizon 1 consists sil material which appears to have been organized into a sequence of an Oe, A and E horizons.

d. Horizon 4 contains several thin (< 3" thick) discontinuous 10YR5/4-6 ms seams. The ms contains ccd 7.5YR3/4-4/6 textural mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-17

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072198	forested	loess over glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 138"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-1	10YR2/1	-	-	-	mvfr	2f	as	-	-
2 (A)	1-6	10YR3/2	-	sil	1fgr	mvfr	1f-c	aw	loess	none
3 (E)	6-14	10YR8/1	-	sl	1fgr	mvfr	0-1f-c	cw	loess	none
4 (B1)	14-22	10YR5/4	-	sl	1fsbk-gr	mvfr	1f-c	cw	loess	none
5 (B2)	22-47	10YR6/4 → 7.5YR5/4	-	sl	1f-csbk → 2f-csbk	mfr	0-1f-c	cs	loess	none
6 (2C)	47-75+	5YR3/4 (v)	see remarks	vscl	0-1csbk	w-mvfr-mvfi	0-1f	-	till	partial Cp

3.5-14b-92

Remarks:

a. Pit extended to approximately 13', soil similar to that encountered in horizon 6. b. Soil saturated below 12½'.

c. Horizon 6 contains few scattered pockets of 10YR6/3 ms. The ms pockets contain fmd 7.5YR5/6 mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPG-18

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072098	forested	loess over glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SW¼, T35N R12E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-2	10YR2/1	-	sil	1fgr	mvfr	1f-c	as	loess	none
2 (E)	2-6	10YR4/2-5/2	-	sil	1mgr	mvfr	2f-m	as	loess	none
3 (B1)	6-12	10YR6/4	-	sil	1mgr-sbk	mvfr	1f-c	as	loess	none
4 (B2)	12-18	7.5YR5/4	-	ls	1mgr-sbk	mfr-mfi	0-1f	cs	loess	partial Ce/Cp
5 (B3)	18-37	7.5YR4/4 (v)	-	sl	0-1csbk	mfr	0-1f	cs	loess	none
6 (C1)	37-45	7.5YR5/4	-	sl	0-1csbk	mfr	0-1f	cs	loess	none
7 (2C2)	45-62	7.5YR4/4	-	scl-sl	2f-csbk	mfi-mvfi	0-1f	cw	sandy till	strong Cp
8 (3C3)	62-76+	10YR6/4	-	cos	sg	ml	0	-	outwash	none
8 (3C3)	76-168	10YR6/4	-	cos	sg	ml	0	cs	outwash	none
9 (3C4)	168-180	10YR5/3	-	fs	2msbk	mfr	0	cs	outwash	none
10 (4C5)	180-183+	7.5YR4/4	-	grscl	0-1csbk	mfr	0	-	till	-

3.5-14b-93

Remarks:

a. Pit extended to approximately 15', soil as described above. b. Soil saturated below 14'. c. Collected grab sample at 72".

d. Particles in upper 4" of horizon 7 coated with 7.5YR5/8 ppts., lower half of horizon 7 contains ccd 5YR4/6 (accum.) and ccp 7.5YR7/2 (depl.) textural mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/14/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

Area H

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-1

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072198	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 54"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 20			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-3	10YR4/3	-	sil	1msbk	d-mvfr	1f-c	as	loess	none
2 (E/B)	3-6	10YR6/2	-	sl	1msbk	d-mvfr	1f-c	cs	loess	none
3 (B)	6-17	10YR6/4	-	sl-sil	0-1fgr	d-mvfr	1f-c	cs	loess	none
4 (2C)	17-72+	10YR6/4	> 54" ccd 10YR5/8	m-cos	0-1csbk → sg	mvfr → ml	0-1f → 0	-	outwash	none

3.5-14b-95

Remarks:

a. Pit extended to approximately 7', soil similar to that encountered in horizon 4. b. Soil saturated below 6½'.

c. Horizon 4 contains few thin (< ½" thick) discontinuous 7.5YR4/4 fsl strata between 17-34".

d. Horizon 4 becomes gleyed (color → 10YR7/1-2) below 67".

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-2

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072198	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 46"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 20			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-8	10YR3/1	-	sl	2f-mgr	d-mvfr	3f,1mc	as	loess	none
2 (B1)	8-16	10YR5/4	-	sil	1f-csbk	d-mvfr	0-1f	cs	loess	none
3 (B2)	16-28	7.5YR5/3 (v)	-	sl	0-1m-csbk	d-mvfr	0	cw	loess	none
4 (2C)	28-60+	10YR6/4	> 46" see remarks	m-cos → ms	0-1csbk → sg	mvfr → ml	0	-	outwash	none

3.5-14b-96

Remarks:

a. Pit extended to approximately 8', soil similar to that encountered in horizon 4. b. Soil saturated below 7'.

c. Horizon 4 contains few thin (< 3" thick) layers of grcos and fs.

d. Horizon 4 contains ccd → mcd 10YR5/6 mottling below 46". Color of horizon → 10YR6/3 below 46".

Limiting Factors/Depth

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-3

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072198	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 20			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-4	10YR3/1	-	sl	2mgr	d-mfr	2f,1mc	aw	loess	none
2 (E)	4-6	10YR7/1-2	-	sl-sil	2cgr	d-mfr	0-1f	aw	loess	none
3 (B2)	6-19	10YR5/6	-	sl-sil	0-1vfgr	d-mfr	1f	cs	loess	none
4 (B3)	19-24	7.5YR4/6	-	sl	1msbk	mvfr	0-1f	cs	loess	none
5 (2C1)	24-72+	10YR5/4 (v)	-	f-ms	0-1csbk → sg	mvfr-ml	0-1f-c	-	outwash	none
5 (2C1)	72-84	10YR5/4 (v)	-	f-ms	sg	ml	0	cs	outwash	none
6 (2C2)	84-96	10YR5/3	ccd 7.5YR5/6	cos	sg	w-ml	0	cs	outwash	none
7 (2C3)	96-120+	10YR5/4	-	mf	sg	w-ml	0	-	outwash	

3.5-14b-97

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 9'.

c. Horizon 5 contains few thin (< 4" thick) discontinuous grscl-sl strata (sandy till?).

Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-4

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072198	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 61"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 20			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (A)	0-5	10YR2/1	-	sl	1vfgr	mvfr	3f,1mc	aw	loess	none
2 (E)	5-8	5YR7/1	-	sil	1vfgr	d-mvfr	0-1f	ai	loess	none
3 (B2hs)	8-13	5YR4/4	-	sil	1mgr	mvfr	1f-c	cw	loess	none
4 (B2s)	13-21	10YR5/4	-	sl	2msbk	mfr	1f-c	cs	loess	none
5 (B3)	21-33	10YR6/6	-	lfs	0-1msbk	mvfr	1mc	cs	outwash	none
6 (2C)	33-70+	10YR6/4	> 61" see remarks	ms → fs	sg	ml	0	-	outwash	none

3.5-14b-98

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 6. b. Soil saturated below 8'.

c. Horizon 6 contains few thin (< ¼" thick) discontinuous 7.5YR5/4 fsl strata.

d. Horizon 6 also contains ccp 5YR3/4-4/6 banded mottles below 61". Color of horizon → 10YR5/4 below 64".

Limiting Factors/Depth

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Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-5

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073098	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description		**System Geometry and Depth**	
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/1	-	sil	1mgr	d-mvfr	2f	as	loess	none
2 (B21)	9-17	10YR4/6	-	sil	2msbk	d-mvfr	0-1f	as	loess	none
3 (B22)	17-24	7.5YR4/6	-	sl	2msbk	d-mvfr	0-1f	aw	sandy till	none
4 (2C1)	24-49	10YR4/6-5/6	-	m-cos	1csbk	mvfr	0	aw	outwash	none
5 (2C2)	49-64+	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none

3.5-14b-99

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 5. b. Soil saturated below 8'.

c. Collected grab sample at 10'.

d. Horizon 4 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata and few thin (<1" thick) 7.5YR5/6 vcos+gr seams.

prob. seasonal sat'n > 84"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-6A

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073098	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR5/3	-	sil	2mgr	d-mvfr	1f	as	loess	none
2 (B21)	10-14	10YR6/3	-	sil	2f-msbk	d-mfr	0-1f	as	loess	none
3 (2B22)	14-24	7.5YR4/4	-	scl-sl	2msbk	mfi	0-1f	aw	till	partially Ce/Cp
4 (3C1)	24-47	10YR4/4	-	m-cos	0-1csbk	mvfr	0	aw	outwash	none
5 (3C2)	47-64+	10YR6/4	-	ms	1csbk	mfr	0	-	outwash	none
5 (3C2)	64-96	10YR6/4	-	ms	0-1csbk	mvfr	0	cs	outwash	none
6 (3C3)	96-156+	10YR6/4	-	vcos	sg	w-ml	0	-	outwash	none

3.5-14b-100

Remarks:

a. Pit extended to approximately 13', soil changes as noted above. b. Soil saturated below 11'.

c. Portions of horizon 3 are partially cemented/compacted.

prob. seasonal sat'n > 120"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-6B

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082898	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2-3	-	sil-sl	2m-csbk	mfr	2f,1mc	as	loess	none
2 (B)	9-15	10YR5/3-4	-	sil-sl	2f-msbk	mfr	1f	cw	loess	none
3 (2C1)	15-48+	10YR6/6 (v)	> 84" see remarks	m-cos	1csbk	mvfr	0-1f	-	outwash	none
3 (2C1)	48-96	10YR6/6 (v)	see remarks	m-cos	1csbk → sg	mvfr → ml	0	cs	outwash	none
4 (2C2)	96-108+	10YR5/4	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-101

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 3. b. Soil saturated below 8'.

c. Horizon 3 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata and very few thin 1" thick) grvcos seams.

d. Horizon 3 also contains ccd 7.5YR5/6 banded mottling above the waster table.

e. Pit was constructed to conduct a double-ring infiltrometer test. The tested infiltration surface was at 24". Grab samples were collected at the infiltration surface beneath the rings, and at 2' and 4' north and south of the rings. Additional grab samples were collected at depths of 1½', 3' and 4½' beneath the infiltration surface.

prob. seasonal sat'n > 84"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-7

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073098	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR5/3	-	sil-sl	2mgr-sbk	d-mfr	1f	as	loess	none
2 (2B21)	10-14	5YR4/4	-	sl	2mgr	d-mvfr	0-1f	as	outwash	none
3 (2B22)	14-28	7.5YR5/6-8	-	m-cos	2msbk	mvfr	0	cs	outwash	none
4 (2C)	28-78+	10YR5/4-6/4	-	m-cos	1msbk	mvfr	0	-	outwash	none
4 (2C)	78-168+	10YR5/4-6/4	> 120" see remarks	m-cos	1msbk	w-mvfr	0	-	outwash	none

Remarks:

a. Pit extended to approximately 14', soil similar to that encountered in horizon 4. b. Soil saturated below 11'.

c. Horizon contains ccd 7.5YR5/6-8 banded mottling above the water table.

prob. seasonal sat'n > 120"
Limiting Factors/Depth

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Madison, WI 53705
608-233-0297

3.5-14b-102

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-8A

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073198	alfalfa	fill over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 40"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-6	10YR3/2	-	sil-sl	2msbk	d-mvfr	2f	as	fill	
2 (B1)	6-12	10YR5/2	-	sl	0-1fgr	d-mvfr	0-1f	as	fill	
3 (B2)	12-20	2.5Y7/6	-	sl	2msbk	mfr-mfi	0-1f	aw	fill	partially Ce/Cp
4 (B3)	20-59	2.5Y7/6	> 40" see remarks	sl	sg	ml	0	aw	fill	
5 (2Eb)	59-72	2.5Y4/1-2		m-cos	sg	w-ml	0	as	outwash	
6 (2Bhsb)	72-74	10YR2/1		m-cos	3csbk	w-mvfi	0	cs	outwash	strongly Ce
7 (2Bsb)	74-86+	7.5YR5/4		m-cos	1csbk	w-mfr	0	-	outwash	

3.5-14b-103

Remarks:

a. Description is for profile on north wall of pit. Soil on the south side of the pit is similar to that encountered in TPE-8B.

b. Horizon 3 contains ffd 7.5YR5/8 intrapedal mottles. Portions of horizon 3 are partially cemented/compacted.

c. Horizon 4 contains ccp → mcp 5YR5/8-7/5YR5/8 and vfvfp 5YR3/2 (accumulation) and ccp 10YR5/3 (depletion) mottles.

d. Pit was dug in an area where fill was used to cover a strongly developed aquod.

e. Horizons 5-7 appear to be saturated.

strongly cemented > 40"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-8B

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073198	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 54"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR3/2	-	sil	2csbk	d-mvfr	2f	as	loess	none
2 (2AC)	8-56	7.5YR4/4	> 24", see remarks	sl-scl	0-1csbk	mfr-mfi	0-1f	cw	till	none
3 (3C)	56-64+	10YR5/4	?	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-104

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 3. b. Soil saturated below 5½'-6'.

c. Horizon 2 contains fmd 10YR4/6 → mcd 7.5YR4/6 and ffp → cfp 10YR3/1-2 (accumulation), and fmd 10YR6/2 → ccd 10YR6/2 (depletion) mottles.

d. Mottling in horizon 2 becomes banded below 50".

prob. seasonal sat'n > 54"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-8C

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	alfalfa	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161			
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1	0-									
2										
3										
4										
5										
6										
7										

3.5-14b-105

Remarks:

a. Pit was dug to prepare a platform for conducting a double-ring infiltrometer test. The soils were found to consist of fill materials and the pit was therefore abandoned and the test was moved to TPH-8D.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-8D

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161			
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1	0-									
2										
3										
4										
5										
6										
7										

3.5-14b-106

Remarks:

a. An infiltration test using a double-ring infiltrometer was conducted in the upper part of the sandy soils in this test pit. At termination of the test the pit was extended and it was found that a large rafted till fragment (7.5YR4/4, scl, 1csbk, mfr), about 4-12" thick and 6' long, was located a few inches beneath the base of the infiltrometer. The upper surface of the till fragment slopes to the north. The relative moisture content of the sand surrounding, and beneath, the till fragment indicated that most of the infiltrating water migrated along the upper surface of the fragment and entered the underlying sand to the north of the fragment. It also appears that small portion of the infiltration percolated through the till fragment.

Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-9

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073198	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 48"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR3/2	-	sil	2m-csbk	d-mfr	2f,1m	as	colluvial	none
2 (Ab)	10-10½±¼	10YR2/1	-	-	-	d-mfr	-	as	-	none
3 (Eb)	10½-13	10YR7/1-2	-	sl-sil	2f-msbk	d-mvfr	0-1f	cs	loess	none
4 (2B2b)	13-24	10YR5/4	-	sl-scl	2csbk	d-mfr-mfi	0-1f	cs	till	none
5 (3C1b)	24-33	10YR5/4 (v)	-	m-cos	1csbk	mvfr	0-1f	cs	outwash	none
6 (3C2b)	33-54+	10YR5/3	> 44" see remarks	m-cos	1csbk	w-mvfr	0	-	outwash	none

3.5-14b-107

Remarks:

a. Pit extended to approximately 8', soil similar to that encountered in horizon 6.

b. Soil is wet to saturated below 5'.

c. Horizon 4 contains cmd 7.5YR4/6-5/8 textural mottling.

d. Horizon 6 contains ccd 7.5YR5/6-8 banded mottling above the water table.

prob. seasonal sat'n > 48"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-10

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 90"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-13	10YR4/2	-	sil	1m-csbk-gr	d-mfr	1-2f	as	loess	none
2 (2B)	13-21	7.5YR4/4 (v)	-	sl-ls	2msbk → 0-1msbk	d-mfi-mfr	0-1f	as	outwash	none
3 (2C)	21-60+	10YR6/4	-	m-cos	0-1csbk → sg	mfr → ml	0-1f	-	outwash	none
3 (2C)	60-120+	10YR6/4	> 84" see remarks	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-108

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 3. b. Soil saturated below 8½'.

c. Horizon 3 contains fvcd 7.5YR4/6-5/8 root mottles.

d. Horizon 3 also contains cvcd 7.5YR5/6-8 banded mottling above the water table.

prob. seasonal sat'n > 84"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-11

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 108"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR4/1	-	sil	2f-mgr	d-mvfr	2f	as	loess	none
2 (B2)	11-33	10YR6/2-3	-	sl-sil	2f-msbk	d-mfi	0-1f	cw	loess	partially Ce/Cp
3 (2C1)	33-45	7.5YR4/6 (v)	-	sl	0-1csbk	mfr	1f-m	cw	till	partially Ce/Cp
4 (3C2)	45-64+	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none

3.5-14b-109

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 4. b. Soil saturated below 10'.

c. Horizon 2 contains fmd 10YR6/6 → fvcp 7.5YR3/4 textural mottles.

d. Portions of horizon 2 and 3 are partially cemented/compacted.

prob. seasonal sat'n > 108"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-12

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080398	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (In.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9½	10YR4/2	-	sil	2msbk	d-mfr	2f,1mc	as	loess	none
2 (B2)	9½-25±8	7.5YR5/4 (v)	-	sl-sil	1msbk	d-mvfr	0-1f	cw	loess	partially Ce/Cp
3 (2C1)	25-44	7.5YR4/6	-	m-vcos	0-1csbk	mvfr	0-1f-m	cs	outwash	none
4 (2C2)	44-64+	10YR5/4	-	m-cos	1csbk → sg	mfr → ml	0-1f	-	outwash	none

3.5-14b-110

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 4. b. Soil saturated below 7'.

c. Collected grab sample at 6'.

d. Horizon 2 contains common thin (<1" thick) 10YR6/3 sil strata.

e. Portions of horizon 2 are partially cemented/compacted.

e. Horizons 3 and 4 contain vfcp 7.5YR5/8 root mottles.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-13

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080398	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 78"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sl-sil	1f-mgr	d-mvfr	2f-m	aw	loess	none
2 (B2)	10-19	7.5YR4/4 (v)	-	sil	2m-csbk	d-mfr	0-1f	cw	loess	none
3 (2C1)	19-29	7.5YR5/4	-	sl	0-1csbk	d-mvfr	0-1f	cs	sandy till	none
4 (2C2)	29-46	7.5YR4/4 (v)	-	sl-scl	2csbk	d-mfi-mvfi	0-1f	cs	till	none
5 (3C3)	46-66+	10YR6/4	-	m-cos	sg	ml	0	-	outwash	none

3.5-14b-111

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 5. b. Soil saturated below 7½'.

c. Collected grab sample at 4½'.

prob. seasonal sat'n > 78"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-14

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080398	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR3/2	-	sil	1fgr	d-mvfr	2f,1mc	as	loess	none
2 (B21)	11-23	10YR6/3	-	sil	1mgr-sbk	d-mvfr	1f-c	as	loess	partially Ce/Cp
3 (B22)	23-35	10YR6/3	-	ls	1mgr	mvfr	1f	cw	loess	none
4 (B3)	35-48	7.5YR4/4	-	sl-ls	1csbk	mfr	0-1f	cw	loess	partially Ce/Cp
5 (2C)	48-64+	10YR5/3	-	ms	0-1csbk	mvfr	0-1f	-	outwash	none
5 (2C)	64-96+	10YR5/3	> 72" see remarks	ms → m-cos	0-1csbk	w-mvfr	0	-	outwash	none

3.5-14b-112

Remarks:

a. Pit extended to approximately 8', soil similar to that encountered in horizon 5. b. Soil saturated below 7'.

c. Collected grab sample at 6'.

d. Portions of horizons 2 and 4 are partially cemented/compacted.

e. Horizon 5 contains ccd 10YR5/8-6/8 banded mottling above the water table.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-15

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080398	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 48"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2-3		sil	1msbk	d-mvfr	2f,1m	as	loess	none
2 (B1)	10-12	10YR6/4		sil	1msbk	d-mvfr	1f	as	loess	none
3 (2B2)	12-32	7.5YR4/4 (v)		sl-scl	2mgr	mfr	1f	as	till	none
4 (3C)	32-48+	10YR6/4	> 38" see remarks	m-cos	1csbk	mvfr	0	-	outwash	none

3.5-14b-113

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 4. b. Soil saturated below 5'.

c. Collected grab samples at 3½' and 5'.

d. Horizon 4 contains ccd 7.5YR5/6-8 and ffp 2.5YR3/4-5YR3/4 banded mottles above the water table.

prob. seasonal sat'n > 48"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-16

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080398	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 132"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2	-	sil	2csbk	d-mfr-mfi	2f	as	loess	none
2 (B2)	9-14	10YR5/6	-	sil	2msbk	d-mfi	0-1f	as	loess	partially Ce/Cp
3 (2C1)	14-30	7.5YR4/4 (v)	-	ms → grcos	sg	d-ml	0-1f	cs	outwash	none
4 (2C2)	30-41	7.5YR5/6	-	ms	1csbk	mfr	0	as	outwash	none
5 (2C3)	41-63+	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none

3.5-14b-114

Remarks:

a. Pit extended to approximately 13', soil similar to that encountered in horizon 5. b. Soil saturated below 12'.

c. Collected grab samples at 4½' and 8'.

d. Portions of horizon 2 are partially cemented/compacted.

e. Horizon 4 contains few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

prob. seasonal sat'n > 132"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-17

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080398	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 108"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/3	-	sil	2m-csbk	d-mfr	1-2f	as	loess	none
2 (B2)	10-21	10YR6/4	-	sl-sil	2mgr-sbk	d-mfr	0-1f	as	loess	none
3 (2C1)	21-34	7.5YR5/6	-	ms → cos	0-1msbk	d-mvfr	0-1f	as	outwash	none
4 (2C2)	34-72+	10YR6/4	-	m-cos	0-1csbk → sg	mvfr → ml	0-1f	-	outwash	none
4 (2C2)	72-96	10YR6/4	-	m-cos	sg	ml	0	cs	outwash	none
5 (2C3)	96-144+	10YR5/3	-	grcos	sg	w-ml	0	-	outwash	none

3.5-14b-115

Remarks:

a. Pit extended to approximately 12', soil as described above. b. Soil saturated below 10'.

c. Collected grab sample at 5'.

d. Horizon 3 contains few thin (<¾" thick) discontinuous 7.5YR4/4 fsl strata.

e. Horizon 4 contains few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata and few thin (<4" thick) vcos seams.

prob. seasonal sat'n > 108"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-18

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080398	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2	-	sil	2msbk	d-mfi	2f,1m	as	loess	partially Ce/Cp
2 (2B2)	9-27	10YR6/4	-	sl-ls	1mgr	d-mvfr	0-1f	cw	sandy till	partially Ce/Cp
3 (3C1)	27-46	7.5YR4/4	-	ms → fgr	sg → 1csbk	ml → mfr	0	as	outwash	none
4 (3C2)	46-74+	10YR6/4 (v)	-	m-cos	0-1csbk → sg	mvfr → ml	0	-	outwash	none
4 (3C2)	74-108	10YR6/4 (v)	> 102" see remarks	m-cos	sg	w-ml	0	cs	outwash	none
5 (3C3)	108-132+	10YR5/3	gleyed (?)	grcos	sg	w-ml	0	-	outwash	none

3.5-14b-116

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 9'.

c. Collected grab sample of ms at 4' (finest grained material in the outwash).

d. Portions of horizons 1 and 2 are partially cemented/compacted.

e. Horizon 3 contains few thin (<¼" thick) discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains cvcd 7.5YR5/6-8 banded mottles above the gleyed horizon

prob. seasonal sat'n > 96"
Limiting Factors/Depth

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-19

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR4/1-2	-	sil	2mgr-sbk	d-mfr	2f,1mc	as	loess	none
2 (2B2)	8-22	7.5YR4/4	-	sl → m-cos	2mgr → 1mgr	d-mfr → mvfr	0-1f	cw	outwash	partially Ce/Cp
3 (2C1)	22-64+	10YR6/4	-	m-cos	0-1csbk → sg	mvfr →ml	0-1f	-	outwash	none
3(2C1)	64-72	10YR6/4	-	m-cos	sg	ml	0	cs	outwash	none
4 (2C2)	72-132+	10YR5/3-4	> 78" see remarks	vcos	sg	w-ml	0	-	outwash	none

3.5-14b-117

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 7'.

c. Collected grab sample at 4'.

d. Portions of horizon 2 are partially cemented/compacted.

e. Horizon 3 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata and very few thin (<6" thick) grm-cos seams.

f. Horizon 4 contains cvcp 7.5YR5/8 banded mottles above the water table.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-20

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sil	2csbk	d-mfi	1f	as	loess	partially Ce/Cp
2 (2B2)	10-22	5YR4/6	-	grm-cos	2msbk → sg	d-mfr → ml	0-1f	cw	outwash	partially Ce/Cp
3 (2C)	22-54+	7.5YR5/4 → 10YR6/4	-	m-cos	0-1csbk → sg	mvfr → ml	0-1f-m	-	outwash	none
3 (2C)	54-108+	10YR6/4	> 66" see remarks	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-118

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 6'.

c. Collected grab sample at 4'.

d. Portions of horizons 1 and 2 are partially cemented/compacted.

e. Horizon 3 contains ff-cd 7.5YR5/8 root mottles above 48", and few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata and few thin (<4" thick) grvcos seams.

f. Horizon 3 also contains ccd 7.5YR5/6-8 banded mottling above the water table.

prob. seasonal sat'n > 60"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-21

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 90"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2	-	sil	2f-msbk	d-mfr	2f,1mc	as	loess	partially Ce/Cp
2 (B2)	9-15	10YR6/4	-	sil	2msbk	d-mfi	0-1f	cw	loess	partially Ce/Cp
3 (2B31)	15-20	7.5YR5/4	-	grvcos	1msbk	d-mfr	0-1f	cs	outwash	partially Ce/Cp
4 (2B32)	20-35	10YR5/4	-	ls-ms	2msbk → 0-1msbk	mfr → mvfr	0-1f	cw	outwash	none
5 (2C1)	35-63+	10YR6/4	-	ms	1csbk	mvfr	0	-	outwash	none
5 (2C1)	63-84	10YR6/4	-	ms	0-1csbk	mvfr	0	cs	outwash	none
6 (2C2)	84-132+	10YR6/4	> 96" see remarks	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-119

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 8½'.

c. Collected grab samples at 4' and 9'. d. Portions of horizons 1-3 are partially cemented/compacted.

e. Horizon 4 contains few thin (<½" thick) very discontinuous 7.5YR4/4 strata.

f. Horizon 6 contains fvcd 7.5YR5/6 banded mottles above the water table.

prob. seasonal sat'n > 90"
Limiting Factors/Depth

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-22

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	potatoes	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 0.0"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Bot Legal Description			
NW¼, T35N R13E, Section 20			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-5	10YR3/2	ffp 2.5YR3/6	sl-sil	1f-mgr	mvfr	1f-m	aw	loess	none
2 (A)	5-10	10YR3/1	cfp 2.5YR3/4-6	sl	2mgr	mvfr	0-1f	aw	loess	none
3 (2B2)	10-14	10YR4/4	ccp 7.5YR4/1-2 + ccp 7.5YR4/6	scl	1csbk	mfr-mfi	0-1f	aw	till	none
4 (3C1)	14-22	7.5YR5/3	fcd 7.5YR4/6	m-cos	1msbk	w-ml	0	cs	outwash	none
5 (3C2)	22-40+	10YR5/3-4	fcp 7.5YR4/6	m-cos	sg	w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 7', soil similar to that encountered in horizon 5. b. Soil saturated below 3'.

c. Collected grab sample at 3'.

prob. seasonal sat'n at 0"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

052898
Date Signed

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2828 Regent St.
Madison, WI 53705
608-233-0297

3.5-14b-120

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-23

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	potatoes	loess over glacial outwash

Customer Address	Estimated Shallowest Groundwater Depth	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161	> 15"	

County	Tax Parcel No.	
Forest	Crandon Mine Site	

Lot Legal Description		
NW¼, T35N R13E, Section 20		

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-15±5	10YR3/2-3	?	sil-sl	1f-cgr	mvfr	2f,1mc	ai	fill	none
2 (Eb)	15-19±4	7.5YR5/2-6/2	fmp 5YR4/4	ms	0-1mgr	mvfr	0-1f	ai	outwash	none
3 (B2hsb)	19-22±3	2.5YR2.5/4	?	m-cos	2msbk	mfi	0-1f	cw	outwash	partially Ce/Cp
4 (B2sb)	22-30±3	7.5YR3/4	fmp 5YR3/4	m-cos	1msbk	mfr	0-1f	cs	outwash	none
5 (B3)	30-36	7.5YR5/3	cmd 7.5YR5/8	ms	1msbk	mfr	0	cs	outwash	none
6 (C1)	36-42	10YR5/6	mvcd 7.5YR4/6	m-cos	0-1msbk	w-mvfr	0	cs	outwash	none
7 (C2)	42-74+	10YR4/2-5/2	gleyed	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-121

Remarks:

a. Pit extended to approximately 7', soil similar to that encountered in horizon 7. b. Soil saturated below 40".

c. Collected grab sample at 6'.

d. Portions of horizon 3 are partially cemented/compacted.

e. Horizons 4 and 5 contain vfvcp 2.5YR2.5/2-3 root mottles.

prob. seasonal sat'n > 15"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-24

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	potatoes	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 0" (?)	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NW¼, T35N R13E, Section 20			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR3/3	ffp 5YR4/4 (?)	sl	2csbk	mfr	0-1f	as	fill	none
2 (B2)	11-17	10YR6/4	cmd 7.5YR4/4	sil-sl	2msbk	mvfr	0	as	loess	none
3 (2C1)	17-43	7.5YR5/3	see remarks	m-cos	1m-csbk	mfr	0	cs	outwash	none
4 (2C2)	43-46+	5YR3/1-4/1 (v)	gleyed	m-cos	sg	w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 6', soil similar to that encountered in horizon 4. b. Soil saturated below 5'.

c. Horizon 1 mottling may be an inherited feature of the fill material.

d. Horizon 2 contains a few thin (<½" thick) sections of a 10YR6/1 Eb horizon.

e. Horizon 3 contains cvcd 5YR4/4 banded mottling above the gleyed horizon.

prob. seasonal sat'n > 0"
Limiting Factors/Depth

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3.5-14b-122

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-25

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	potatoes	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 13"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NW¼, T35N R13E, Section 20			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9±3	10YR3/3	-	sl	2msbk	mfr	2f,1mc	ai	fill	none
2 (B21)	9-20	10YR5/4	> 13" cmd 7.5YR5/8 + ccp 7.5YR6/1	sil-sl	2msbk	mfr	0-1f	cs	loess	none
3 (B22)	20-25	7.5YR4/4	cmd 7.5YR5/8 ccp 7.5YR6/1-2	sil-sl	1msbk	mfr	0	cs	loess	none
4 (2C1)	25-43	7.5YR5/6	see remarks	m-cos	1csbk	mfr	0	cs	outwash	none
5 (2C2)	43-48+	10YR5/2	gleyed	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-123

Remarks:

a. Pit extended to approximately 8', soil similar to that encountered in horizon 5. b. Soil saturated below 4'.

c. Horizon 4 contains cvcp 5YR4/6 banded mottling above the gleyed horizon.

prob. seasonal sat'n > 13"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-26

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	potatoes	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 35"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NW¼, T35N R13E, Section 20			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (A)	0-32±4	none	-	var.	var.	var.	yes	ai	fill	none
2 (Eb)	32-35	10YR5/1-2	-	m-cos	1msbk	w-mfr-mfi	0	cs	outwash	none
3 (2B2hb)	35-45	10YR4/2	gleyed (?)	m-cos	2csbk	w-mfr	0	cw	outwash	none
4 (2C1b)	45-59±12	2.5Y5/1-2	gleyed	m-cos	1msbk	w-mfr	0	cvw	outwash	none
5 (2C2b)	59-96+	2.5Y4/2	gleyed	m-cos	1msbk	w-mfr	0	-	outwash	none

3.5-14b-124

Remarks:

a. Pit extended to approximately 8', soil similar to that encountered in horizon 5. b. Soil saturated below 4'.

c. Pit was dug in a low area that was partially filled with trees and soil during land clearing. Soils contain a strong H_2S odor.

prob. seasonal sat'n > 35"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-27

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sl	1mgr-sbk	d-mvfr	1f-m	as	loess	none
2 (B2)	10-23	10YR6/4	-	sl	1csbk	d-mfr	0-1f	cs	loess	partially Ce/Cp
3 (2C1)	23-53	10YR5/4 (v)	-	mixed	1m-csbk	mfr	0	cs	outwash	none
4 (2C2)	53-66+	7.5YR4/4	> 63" see remarks	msl	1msbk	w-mfr	0	cs	outwash	none
5 (2C3)	66-120+	7.5YR5/3	see remarks	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-125

Remarks:

a. Pit extended to approximately 10', soils as described above. b. Soil saturated below 7'.

c. Portions of horizon 2 are partially cemented/compacted.

d. Horizon 3 consists of mixed ms, cos and grcos and contains few thin (<¾" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Horizon 4 contains ccp 7.5YR6/1 patches (depletion) and cfd 7.5YR5/8 bands (accumulation) mottles.

f. Horizon 5 contains ccd 7.5YR5/8 banded mottling above the water table.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-28

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR3/3	-	sil	2msbk	d-mfr	2f,1m	as	loess	none
2 (B2)	9-18	10YR6/4	-	sl	2msbk	d-mfr	0-1f	cs	loess	partially Ce/Cp
3 (2C1)	18-32	5YR4/4-6 (v)	-	grm-cos → ms	0-1csbk → sg	mfr → ml	0-1f	cs	outwash	partially Ce/Cp
4 (2C2)	32-40	7.5YR5/4	-	fls	2csbk	mfr	0	as	outwash	none
5 (2C3)	40-63+	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none
5 (2C3)	63-126+	10YR6/4	> 102" see remarks	m-cos	0-1csbk → sg	mvfr → w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 10½', soil as described above. b. Soil saturated below 9'.

c. Collected grab sample at 8'. d. Portions of horizons 2 and 3 are partially cemented/compacted.

e. Horizon 3 contains cmf 7.5YR4/6 textural mottles.

f. Horizon 4 contains fvcp 10YR6/4 (cores) with fmp 5YR2.5/2-3/3 (rims) root mottles.

g. Horizon 5 contains cvcd 7.5YR5/6-8 banded mottles below 8½'.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

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Madison, WI 53705
608-233-0297

3.5-14b-126

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-29

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080498	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sil-sl	1f-cgr	d-mvfr	2f,1mc	ai	loess	none
2 (B1)	10-17	7.5YR5/6	-	sl-sil	1mgr	d-mvfr	1f-m	cs	loess	partially Ce/Cp
3 (B2)	17-31	7.5YR6/4-6	-	sl	2mgr-sbk	d-mfr	0-1f	cs	loess	partially Ce/Cp
4 (2C1)	31-41	7.5YR5/6	-	grm-cos	1csbk	mfr	0	as	outwash	none
5 (2C2)	41-61+	10YR6/4	-	m-cos	1csbk	mfr	0	-	outwash	none
5 (2C2)	61-132+	10YR6/4	> 102" see remarks	m-cos	1csbk → sg	mfr → w-ml	0	-	outwash	none

3.5-14b-127

Remarks:

a. Pit extended to approximately 11' soil as described above. b. Soil saturated below 9'.

c. Collected grab samples at 4½' and 7'.

d. Portions of horizons 2 and 3 are partially cemented/compacted.

e. Horizon 4 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

f. Horizon 5 contains cvcd 7.5YR5/6 banded mottling.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-30

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080598	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 36"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sil	2f-msbk	d-mvfr	2f,1mc	as	loess	none
2 (B1)	10-12	10YR8/1	-	cl	0	d-mfi	0	as	cemented loess	strong Ce
3 (B2)	12-44	7.5YR4/4	> 28" see remarks	sl	1csbk	mvfr	0-1f	cw	loess	none
4 (2C)	44-62+	5YR6/4	?	m-cos	0-1csbk	w-mvfr	0	-	outwash	none

3.5-14b-128

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 4. b. Soil saturated below 4'. c. Collected grab sample at 4½'.

d. Horizon 2 was a sil material which is being cemented with calcium carbonate precipitates due to the upward migration of capillary water during dry weather.

e. Horizon 3 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Horizon 3 also contains cf-mp 7.5YR4/6 root mottles above 36".

g. Horizon 3 also contains cmp 5YR5/8 (accumulation) and ccp 2.5YR6/2 (depletion) mottles between 28-38", below 38" it contains cvcd 7.5YR5/6-8 banded mottling.

prob. seasonal sat'n > 36"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-31

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080598	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sil	2m-csbk	d-mvfr	2f,1mc	as	loess	none
2 (E)	10-12½±1	10YR7/1	-	fsl	1fgr	mvfr	0-1f	cs	loess	none
3 (B2hs)	12½-22	7.5YR4/4	-	sl-sil	2csbk	mfr	0-1f	cw	loess	partially Ce/Cp
4 (2B2s)	22-43	7.5YR6/6	-	m-cos	0-1csbk	mvfr	0	cs	outwash	none
5 (2C)	43-54+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	none

3.5-14b-129

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 5. b. Soil saturated below 7'.

c. Collected grab sample at 9'.

d. Horizon 2 is a native E horizon which is now accumulating calcium carbonate precipitates from upward migrating capillary water similar to horizon 2 in TPH-30.

e. Portions of horizon 3 are partially cemented/compacted.

f. Horizon 4 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-32

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080598	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 78"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/1	-	sil-sl	2msbk	d-mvfr	1f-c	as	loess	none
2 (B)	10-27	7.5YR4/4	-	sil	1m-csbk	d-mvfr	0-1f-m	cw	loess	partially Ce/Cp
3 (2C)	27-63+	7.5YR4/6	-	m-cos	0-1csbk → sg	mvfr → ml	0	-	outwash	none

3.5-14b-130

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 3. b. Soil saturated below 7½'.

c. Collected grab sample at 5'.

d. Portions of horizon 2 are partially cemented/compacted.

e. Horizon 3 contains very few thin (<½" thick), very discontinuous and irregular in shape 7.5YR4/4 fsl strata, and few thin (<4" thick fgr-grcos seams.

prob. seasonal sat'n > 78"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-33A

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080598	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 90"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR4/1	-	sil-sl	2msbk	d-mfr	2f,1mc	as	loess	none
2 (B2)	11-21	10YR7/4	-	sil	1msbk	d-mfr	0-1f	cs	loess	partially Ce/Cp
3 (2C1)	21-33	5YR4/4	-	grm-cos	1csbk	d-mfr	0-1f	cs	outwash	none
4 (2C2)	33-48±7	7.5YR5/6	-	grm-cos	1csbk	mvfr	0-1f	aw	outwash	none
5 (2C3)	48-57±7	7.5YR4/4	-	fsl	3fabk	mfr	0	aw	outwash	none
6 (2C4)	57-65+	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none

3.5-14b-131

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 6. b. Soil saturated below 8½'.

c. Portions of horizon 2 partially cemented/compacted.

d. Horizon 5 contains fmd 7.5YR5/8 (accumulation) and fmd 7.5YR5/3 (depletion) mottles.

prob. seasonal sat'n > 90"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-33B

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082898	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR4/2	-	sil	2msbk	mvfr	2f,1mc	as	loess	none
2 (B1)	11-22	10YR5/4(v)	-	sl	1fsbk	mfr	0-1f	gs	loess	partially Ce/Cp
3 (B2)	22-37	10YR6/4(v)	-	sl	1msbk	mfr	0-1f	cs	loess	partially Ce/Cp
4 (2C1)	37-59	7.5YR4/4(v)	-	scl-sl	sg-1csbk	ml-mfi	0-1f	cs	sandy till	none
5 (3C2)	59-70+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	none
5 (3C2)	70-120	10YR6/4		m-cos	1csbk → sg	mvfr → (w)ml	0	cs	outwash	none
6 (3C3)	120-120+	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-132

Remarks:

a. Pit extended to approximately 10½', soil similar to that encountered in horizon 5. b. Soil saturated below 9'.

b. Structures in horizons 2 and 3 overprinted on 3c geologic layering.

c. Portions of horizons 2 and 3 are partially cemented/compacted.

d. Horizon 3 contains ffp 7.5YR5/6 textural mottles.

e. Horizon 5 contains very few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

092898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-33C

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083198	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161			
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1	0-9			sil					loess	
2	9-22			sil					loess	
3	22-31			sl-scl					sandy till	
4	31-52			scl					till	
5	52-64+			ms					outwash	

3.5-14b-133

Remarks:

a. Horizon 4 pendants and clay balls along its lower boundary and appears to be a large rafted till fragment.

b. Collected grab sample at 60".

c. Pit was dug to determine the distribution of rafted till fragments.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-33D

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161			
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	cementation, Ce Compaction, Cp
1	0-14			sil-sl					loess	
2	14-47			m-cos					outwash	
3	47-65+			m-cos					outwash	

3.5-14b-134

Remarks:

a. Pit was dug to determine the distribution of rafted till fragments.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-33E

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161			
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1	0-11			sl-sil					loess	
2	11-40			m-cos					outwash	
3	40-56+			m-cos					outwash	

3.5-14b-135

Remarks:

a. Horizon 2 is partially cross bedded.

b. Pit was dug to determine the distribution of rafted till fragments.

Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-34

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080598	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/1-2	-	sil	2m-csbk	d-mvfr	2f	as	loess	none
2 (2B)	10-26	7.5YR5/6 (v)	-	grm-cos	0-1mgr	mvfr	0-1f	cw	outwash	partially Ce/Cp
3 (2C1)	26-33	10YR5/6	-	m-cos	0-1msbk	mvfr	0	cs	outwash	none
4 (2C2)	33-43	10YR5/6	-	fsl	2msbk	mvfr	0	cs	outwash	none
5 (2C3)	43-68+	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none
5 (2C3)	68-120+	10YR6/4	> 96" see remarks	m-cos	0-1csbk → sg	mvfr → w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 9'. c. Collected grab sample at 5'.

d. Portions of horizon 2 are partially cemented/compacted.

e. Horizon 2 contains few thin (<½" thick) irregular and very discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains few thin (<½" thick) irregular and discontinuous 7.5YR4/4 fsl strata at the top and base of the horizon.

g. Horizon 5 contains cvcd 7.5YR5/6-8 banded mottling below 8'.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

09'28'98
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608-233-0297

3.5-14b-136

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-35

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080598	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2	-	sil	2m-csbk	d-mfr	1f	as	loess	none
2 (2AC)	9-17	7.5YR5/6 (v)	-	f-ms	0-1mgr	d-mvfr	0-1f	cs	outwash	partially Ce/Cp
3 (2C1)	17-29	10YR6/6	-	ms	2csbk	mfr	0-1f	cs	outwash	none
4 (2C2)	29-61+	10YR6/4	-	m-cos	0-1csbk → sg	mvfr → ml	0	-	outwash	none
4 (2C2)	61-120+	10YR6/4	> 72" see remarks	m-cos	sg	w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 7'.

c. Collected grab sample at 3'.

d. Portions of horizon 2 are partially cemented/compacted.

e. Horizon 3 contains few thin (<¾" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains fcd 7.5YR5/6-8 banded mottling below 6'.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
608-233-0297

3.5-14b-137

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-36

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080598	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR4/2	-	sil	2f-csbk	d-mvfr	2f	as	loess	none
2 (B1)	11-19	10YR5/4-6/4	-	sl	0-1mgr	d-mvfr	0-1f	cs	loess	partially Ce/Cp
3 (B21)	19-25	10YR5/4	-	sil	2msbk	mvfr	0-1f	cw	loess	partially Ce/Cp
4 (B22)	25-36	7.5YR4/4 (v)	-	sil-sl	2msbk	mvfr	0-1f	cw	?	none
5 (2C)	36-72+	10YR6/4 (v)	-	m-cos	1csbk	mvfr	0	-	outwash	none

3.5-14b-138

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 5. b. Soil saturated below 9'.

c. Collected grab sample of the finest grained material within the horizon at 5'.

d. Portions of horizons 2 and 3 are partially cemented/compacted.

e. Horizon 2 contains fmp 5YR5/8-7.5YR5/8 root mottles.

f. Horizons 2-4 contain fmd 7.5YR5/6-10YR5/6 textural mottles.

g. Horizon 4 contains ffp 10YR2/1 and ffd 7.5YR5/6 intrapedal mottles.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-37

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080598	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR4/2	-	sil	2f-csbk	d-mfr	1f-m	as	loess	none
2 (B2)	11-14	7.5YR6/4	-	sl-sil	2f-msbk	d-mfr	0-1f	aw	loess	partially Ce/Cp
3 (2C1)	14-29	7.5YR3/4	-	m-cos	sg → 1csbk	ml → mfr	0	cs	outwash	none
4 (2C2)	29-56+	10YR5/4	-	m-cos	1csbk → sg	mvfr → ml	0	-	outwash	none
4 (2C2)	56-132+	10YR5/4	> 96" see remarks	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-139

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 9'. c. Collected grab sample at 3'.

d. Portions of horizon 2 partially cemented/compacted.

e. Horizon 3 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains very few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata, and few thin (<2" thick) fgr-fgrvcos discontinuous seams.

g. Horizon 4 contains cvcd 7.5YR5/6-8 banded mottling below 8'.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-38A

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	080598	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2	-	sil	2m-csbk	d-mfi	1f-m	as	loess	none
2 (2AC)	9-30	7.5YR5/6	-	m-cos	1msbk	mfr-mvfr	0	as	outwash	partially Ce/Cp
3 (2C1)	30-35	10YR5/4	-	fsl	2mabk	mfr	0	as	outwash	none
4 (2C2)	35-54+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	none
4 (2C2)	54-120+	10YR6/4	> 96" see remarks	m-cos	1csbk → sg	mvfr → w-ml	0	-	outwash	none

3.5-14b-140

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 9'.

c. Collected grab sample at 3½'.

d. Portions of horizon 2 are partially cemented/compacted.

e. Horizon 3 contains fmd 5YR4/6 textural mottles.

f. Horizon 4 contains cvcd 7.5YR5/6-8 banded mottling below 8'.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-38B

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2-3	-	sil	2msbk	d-mfi	1f-m	as	loess	none
2 (2B1)	9-28	7.5YR5/6	-	m-cos	1csbk	mfr-mvfr	0	as	outwash	partially Ce/Cp
3 (2B2)	28-31	10YR5/4	-	fsl	2mabk	mfr	0	as	outwash	none
4 (2C)	31-66+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	none

3.5-14b-141

Remarks:

a. Pit was constructed to conduct a double-ring infiltrometer test. The tested infiltration surface was at 45". A grab sample was collected beneath the infiltrometer rings at a depth of 60" the day following the conclusion of the infiltrometer test.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

09'28'98
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Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-39

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	7.5YR3/2	-	sl	1mgr	mvfr	1f-m	as	loess	none
2 (B2hs)	10-13	7.5YR4/6	-	sl	1msbk	mvfr	0-1f	aw	loess	none
3 (B2s)	13-18	10YR4/4	-	sl	2msbk	mvfr	0-1f	cs	loess	none
4 (2B31)	18-22	7.5YR4/6	-	sl-ms	0-1msbk	ml-mvfr	0-1f	aw	sandy till	none
5 (3B32)	22-32	10YR6/6	-	ms	2msbk	mvfr	0	as	outwash	none
6 (3B33)	32-38	10YR5/4	-	fs-fsl	2msbk	mfr	0	aw	outwash	none
7 (3C1)	38-47	variegated	-	vcos	sg	d-ml	0	cs	outwash	none
8 (3C2)	47-56+	10YR6/4	-	ms	1csbk	mvfr	0	-	outwash	none
8 (3C2)	56-72	10YR6/4	-	ms	1csbk	mvfr	0	cs	outwash	none
9 (3C3)	72-132+	10YR5/4 (v)	-	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-142

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 7'. c. A <1" thick band of textural mottling was found between horizons 4, 5 and 6.

d. Many small (<10" long) rafted till fragments (7.5YR4/4, scl-cl) were found between 30-72" in the west wall of the pit which contained 5YR5/8 and 10B6/1 textural mottling.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-40

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	oats	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 56"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (In.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-14	10YR3/2	-	sl	2msbk	mvfr	1f	as	loess	none
2 (sB)	14-35	10YR5/6	-	ms-mls	0-1msbk	mvfr-ml	0-1f	cs	outwash	none
3 (3C1)	35-51±4	7.5YR4/4	-	scl-sl	0-1csbk	mvfr-mfi	0	cw	till	none
4 (4C2)	51-61	10YR6/4	-	m-cos	1-2csbk	mfr-mvfr	0	cw	outwash	none
5 (4C3)	61-72+	10YR5/4 (v)	> 84" see remarks	cos-grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-143

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 5. b. Soil saturated below 68".

c. Horizon 2 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

d. Horizon 2 also contains few truncated cradle knoll spodosol horizons (up to 22' thick).

e. Horizon 3 contains fcp 5YR5/6 (accumulation) and 10YR6/1-2 (depletion) textural mottles.

prob. seasonal sat'n > 56"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-41

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR3/3	-	sil	2csbk	mfr	1f-m	as	loess	none
2 (2Bs)	10-14	7.5YR4/4	-	scl-sl	2csbk	mfr	0-1f	cs	till	partially Ce/Cp
3 (3C1)	14-31	7.5YR4/4 (v)	-	m-cos	1csbk	mfr-mfi	0-1f	cs	outwash	partially Ce/Cp
4 (3C2)	31-54	10YR6/4	-	m-cos	2csbk	mfr	0	cs	outwash	partially Ce/Cp
5 (3C3)	54-66+	10YR6/4	> 64" see remarks	ms	1csbk	mfr	0	-	outwash	none

3.5-14b-144

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 5. b. Soil saturated below 7'.

c. Portions of horizons 2, 3 and 4 are partially cemented/compacted.

d. Horizon 3 contains fmp 10YR3/2 root channels and few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Horizon 4 contains very few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Horizon 5 contains fcp 7.5YR5/6-8 root mottles with fmp 10RP4/12 cores (probably strengite precipitates).

g. Horizon 5 also contains fcd 10YR5/6 → ccd 10YR5/8 banded mottling below 64". Mottling extended to approximately 120".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-42A

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	7.5YR3/2	-	sil	2csbk	mvfr	1f-m	as	loess	none
2 (B21s)	11-16	7.5YR4/6	-	sil	1mgr	mvfr	0-1f	as	loess	none
3 (B22)	16-24	7.5YR5/4	-	sl-ls	2csbk	mfr-mfi	0-1f	aw	loess	partially Ce/Cp
4 (2B3)	24-33	7.5YR4/6 (v)	-	cosl	2csbk	mfr-mvfr	0-1f	cs	sandy till	partially Ce/Cp
5 (3C1)	33-53	7.5YR5/4 (v)	-	vcos	0-1csbk	mvfr-mfr	0	cs	outwash	none
6 (3C2)	53-63	10YR6/4	-	cos	sg	ml	0	as	outwash	none
7 (3C3)	63-65+	10YR6/4	-	ms	1csbk	mfr	0	-	outwash	none

3.5-14b-145

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 7. b. Soil saturated below 8'.

c. Horizon 2 contains few scattered, thin (< 2" thick/horizon), truncated remnants of A, E and Bhs horizons.

d. Portions of horizons 3 and 4 are partially cemented/compacted.

e. Horizon 7 contains ccd 7.5YR5/6-8 banded mottling below 9'.

prob. seasonal sat'n > 84"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-42B

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 78"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR3/2	-	sil	2csbk	mvfr	1f	as	loess	none
2 (A)	9-11	10YR2/2	-	sil	1msbk	mvfr	0-1f	as	loess	none
3 (2B2)	11-23	7.5YR5/4	-	scl-sl	2csbk	mfr-mfi	0-1f	cs	till	none
4 (3C1)	23-36	7.5YR4/6 (v)	-	ms-sl	1csbk	mfr	0-1f	cs	outwash	none
5 (3C2)	36-60	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none

3.5-14b-146

Remarks:

a. Pit was extended to approximately 9', soil similar to that encountered in horizon 5. b. Soil saturated below 90".

c. Pit was constructed to conduct a double-ring infiltrometer test. Tested infiltration surface was at 30'.

d. Visual observations following the infiltrometer test revealed that the outwash contained higher moisture contents within a 4' radius of the infiltrometer rings, and the maximum water contents were within a 2' radius of the infiltrometer rings.

e. The top of horizon 3 contains thin scattered traces of former E and Bs horizons.

prob. seasonal sat'n > 78"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-43

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 66"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	7.5YR2.5/2	-	sl-sil	2msbk	mfr	2f,1m	ai	loess	none
2 (B2hs → B2s)	8-14	5YR3/4 → 7.5YR5/6	-	m-cosl	1mgr	mvfr	0-1f	cw	outwash	none
3 (2B3)	14-19	10YR5/4	-	fsl	2msbk	mfr	0-1f	cw	outwash	none
4 (2C1)	19-27	10YR6/4	-	m-cos	0-1msbk	mvfr	0	as	outwash	none
5 (2C2)	27-32	10YR5/3	-	fsl	3msbk	mfr	0	as	outwash	none
6 (2C3)	32-61+	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none
6 (2C3)	61-84	10YR6/4	> 72" see remarks	m-cos	sg	ml	0	cs	outwash	none
7 (2C4)	84-96+	10YR5/3	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-147

Remarks:

a. Pit extended to approximately 8', soil as described above. b. Soil saturated below 6½'. c. Collected grab sample at 40".

d. Horizon 2 contains few thin remnants of a 5YR3/4, mfi-mvfi, Bhs horizon.

e. Horizon 5 contains cfd 7.5YR5/6 textural mottling at the base of the horizon.

f. Horizons 6 and 7 contain ccd 7.5YR5/6-8 banded mottling from 72-90".

prob. seasonal sat'n > 66"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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608-233-0297

Soil Test Pit: TPH-44

SOIL DESCRIPTION REPORT

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR3/2	-	sil-sl	2csbk	mfr	1f-m	as	loess	none
2 (B2s)	9-17	7.5YR4/6 (v)	-	sl-sil	1mgr-sbk	mvfr	0-1f	cs	loess	partially Ce/Cp
3 (2B31)	17-27	7.5YR5/6	-	sl-scl	1-3csbk	mfr-mfi	0-1f	cs	sandy till	partially Ce/Cp
4 (2B32)	27-41	10YR6/3	-	fsl-cl	2f-msbk	mvfr	0	cs	till	none
5 (3C1)	41-51	7.5YR6/4 (v)	-	m-cosl	2msbk	mfr	0	as	outwash	none
6 (3C2)	51-60+	10YR6/4	> 78" see remarks	m-cos	1csbk	mvfr	0	-	outwash	none

3.5-14b-148

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 6. b. Soil saturated below 7'.

c. Portions of horizons 2 and 3 are partially cemented/compacted.

d. Horizon 2 contains few thin truncated remnants of E, Bhs and Bs horizons at the top of the horizon.

e. Horizon 4 contains ffd 7.5YR5/6 textural mottles.

f. Horizons 5 and 6 contain few 7.5YR4/4 clay balls (2" diameter) and few 2" x 4" 7.5YR4/4 scl slabs with a variety of orientations along the boundary between the horizons.

g. Horizon 6 contains ccd 7.5YR5/6-8 banded mottling from 78-90".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-45

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9½	10YR3/3	-	sl-sil	2msbk	mvfr	1f	as	loess	none
2 (A/C)	9½-15	10YR6/4	-	sl	1fgr	mvfr	0-1f	cs	loess	partially Ce/Cp
3 (C1)	15-25	7.5YR5/4	-	sl	1mgr	mvfr	0-1f	cs	loess	partially Ce/Cp
4 (2C2)	25-32	7.5YR6/4	-	ms	0-1msbk	mvfr-ml	0	cs	sandy till	none
5 (3C3)	32-42	10YR6/4	-	ms	0-1msbk	mvfr-ml	0	cs	outwash	none
6 (3C4)	42-52	10YR5/3	-	fsl	2msbk	mvfr	0	cs	outwash	none
7 (3C5)	52-63	10YR6/4	-	m-cos	1csbk	mvfr	0	as	outwash	none
8 (3C6)	63-67+	10YR6/4	> 90" see remarks	cos	sg	ml	0	-	outwash	none

3.5-14b-149

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 8. b. Soil saturated below 8'.

c. Portions of horizons 2 and 3 are partially cemented/compacted. d. Horizon 4 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

d. Horizon 5 contains very few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Horizon 8 contains ccd 7.5YR5/6-8 banded mottling from approximately 90-108".

prob. seasonal sat'n > 84"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-46

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082698	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-7	10YR4/3	-	sil-sl	2f-msbk	mfr	1f-m	as	loess	none
2 (B2)	7-12	10YR5/3-4/3	-	sil	2msbk	mfr	0-1f	as	loess	partially Ce/Cp
3 (2B3)	12-29	7.5YR5/3 (v)	-	grm-cos	1csbk-gr	mfr-mvfr	0-1f	as	sandy till	partially Ce/Cp
4 (3C1)	29-46	10YR5/3	-	m-cos	1csbk	mvfr	0	as	outwash	none
5 (3C2)	46-65+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	none
5 (3C2)	65-96	10YR6/4	-	m-cos	1csbk → sg	mvfr → ml	0	cs	outwash	none
6 (3C3)	96-120+	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-150

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 8'.

c. Portions of horizons 2 and 3 are partially cemented/compacted.

d. Horizon 5 contains a 8" x 6' rafted till fragment in one pit wall at the top of the horizon.

prob. seasonal sat'n > 84"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-47

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR3/2-4/2	-	sl-sil	2msbk	mvfr	1f-c	as	loess	none
2 (B2)	9-13	7.5YR5/6	-	sil	0-1f-msbk	mvfr	0-1f-c	cs	loess	none
3 (B3)	13-28	10YR6/4	-	sil	1msbk	mfr	0-1f-m	cs	loess	partially Ce/Cp
4 (2C1)	28-58	variegated	-	sl-scl	0-2msbk	mfr-mfi	0-1f-m	cs	sandy till	partially Ce/Cp
5 (3C2)	58-63+	10YR6/4	-	ms	1msbk	mvfr	0	-	outwash	none
5 (3C2)	63-104	10YR6/4	-	ms	1msbk → sg	mvfr → ml	0	cs	outwash	none
6 (3C3)	104-108+	10YR5/3	-	cos	sg	w-ml	0	-	outwash	none

3.5-14b-151

Remarks:

a. Pit extended to approximately 9', soil as described above. b. b. Soil saturated below 8'.

c. Portions of horizons 3 and 4 are partially cemented/compacted.

d. Horizon 3 contains ff-md 7.5YR5/6 textural mottling in the lower 3" of the horizon.

e. Horizon 5 contains few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Pit was constructed to conduct a double-ring infiltrometer test. The tested infiltration surface was at 60". Grab samples were collected at the infiltration surface beneath the rings and at 2' west, and at 2' and 4' west. Additional grab samples were collected at depths of 1½' and 3' beneath the infiltration surface.

prob. seasonal sat'n > 84"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-48

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-7	7.5YR3/2	-	sil-sl	2mgr	mvfr	1f-m	as	loess	none
2 (2B)	7-19	7.5YR5/4 (v)	-	sl-scl	1csbk	mfr-mfi	0-1f	cs	sandy till	partially Ce/Cp
3 (3C1)	19-26	10YR5/3	-	cos	1-2csbk	mfr	0-1f-m	cs	outwash	none
4 (3C2)	26-58+	10YR6/4	> 96" see remarks	m-cos	1csbk	mvfr	0	-	outwash	none

3.5-14b-152

Remarks:

a. Pit extended to approximately 12', soil similar to that encountered in horizon 4. b. Soil saturated below 9'.

c. Portions of horizon 2 partially cemented/compacted.

d. Horizon 3 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Collected grab samples at 36" and at 66".

f. Horizon 4 contains ccd 7.5YR5/6-8 banded mottling between 96-120".

prob. seasonal sat'n > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
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608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-49

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR3/2	-	sil-sl	2csbk	mvfr	1f-m	as	loess	none
2 (B2)	8-17	10YR5/4 (v)	-	sl-sil	1f-msbk	mvfr	0-1f	cs	loess	none
3 (2C1)	17-32	10YR5/4 (v)	-	m-cos	0-1csbk	mvfr-mfr	0-1f	as	outwash	partially Ce/Cp
4 (2C2)	32-61+	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none
4 (2C2)	61-96	10YR6/4	> 78" see remarks	m-cos	0-1csbk → sg	mvfr → ml	0	cs	outwash	none
5 (2C3)	96-132+	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-153

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 7'.

c. Portions of horizon 3 partially cemented/compacted.

d. Horizon 3 contains few thin (<¾" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Horizon 4 contains very few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 also contains ccd 7.5YR5/6-8 banded mottling from 78-96".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-50

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-12	10YR3/2	-	sl	2msbk	mvfr	0-1f-m	as	outwash	none
2 (2B2)	12-20	7.5YR4/6 (v)	-	ls	2mgr	mvfr	0-1f	cs	sandy till	none
3 (2C1)	20-57+	7.5YR4/4	-	cl-scl-sl	1m-csbk	mfr	0	-	mixed till	none
3 (2C1)	57-72	7.5YR4/4	> 66" see remarks	cl-scl-sl	1m-csbk	mfr	0	cs	mixed till	none
4 (3C2)	72-108+	10YR5/3	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-154

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 6'.

c. Horizon 2 contains few thin, truncated fragments of former E, Bhs and Bs horizons at the top of the horizon.

d. The cl portions of horizon 3 contain cm-cd 7.5YR5/6-8 (accumulation) and 10YR5/2 (depletion) textural mottles above 6'.

e. Horizons 3 and 4 contain ccd 7.5YR5/6-8 banded mottling from 66-84".

prob. seasonal sat'n > 60"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-51

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	oats	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR3/3	-	sl-sil	2msbk	mvfr	2f,1m	as	loess	none
2 (B2)	10-22	10YR6/4	-	sil-sl	3msbk	mfr	0-1f	cs	loess	partially Ce/Cp
3 (2B3)	22-35	7.5YR5/4 (v)	-	m-cos	2csbk	mfr	0-1f	cs	outwash	partially Ce/Cp
4 (2C1)	35-65+	10YR6/3 → 10YR6/4	-	f-ms → ms	1csbk → 0-1csbk	mfr → mvfr	0	-	outwash	none
4 (2C1)	65-78	10YR6/4	> 72" see remarks	ms	0-1csbk → sg	mvfr → w-ml	0	cs	outwash	none
5 (2C2)	78-120"	10YR5/3	see remarks	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-155

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 6'.

c. Horizon 2 contains few truncated fragments of former E, Bhs and Bs horizons at the top of the horizon.

d. Portions of horizons 2 and 3 are partially cemented/compacted.

e. Horizon 3 contains few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Collected grab sample at 50". g. Horizons 4 and 5 contain ccd 7.5YR5/6-8 banded mottling from 72-96".

prob. seasonal sat'n > 60"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 228796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-52

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	oats	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR4/3-3/3	-	sl	0-1m-csbk	mvfr	1f	cs	loess	none
2 (B2)	8-13	10YR5/4	-	sl-sil	1-2msbk	mfr	0-1f	cw	loess	none
3 (2C1)	13-24	7.5YR5/4 (v)	-	grm-cos	0-1csbk	mfr-mfi	0-1f	cs	sandy till	partially Ce/Cp
4 (3C2)	24-40	10YR5/3 (v)	-	m-cos	1csbk	mfr	0	as	outwash	partially Ce/Cp
5 (3C3)	40-49	10YR5/4 (v)	-	fsl	3msbk	mfr	0	as	outwash	none
6 (3C4)	49-63+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	none
6 (3C4)	63-96	10YR6/4	-	m-cos	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
7 (3C5)	96-132+	10YR5/3 (v)	-	grvcos	sg	w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 7'.

c. Portions of horizons 3 and 4 are partially cemented/compacted.

d. Horizon 4 contains few fine (<½ thick) very discontinuous 7.5YR4/4 fsl strata. The horizon also contains a thin (<3" thick) grcos seam at the base of the horizon.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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3.5-14b-156

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-53

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR4/2-3	-	sil	2m-csbk	mvfr	1f-c	as	loess	none
2 (B2)	8-14	7.5YR4/6	-	sl	1msbk	mvfr	0-1f	cs	loess	none
3 (B3)	14-20	10YR5/6	-	sl	0-1mgr	mvfr	0-1f	cw	loess	none
4 (2C1)	20-48+	10YR6/4	-	ms	1csbk	mvfr	0-1f	-	outwash	partially Ce/Cp
5 (2C2)	48-120	10YR6/4	>96" see remarks	ms →ms m-cos	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
6 (2C3)	120-132+	10YR5/3	-	grcos	sg	w-ml	0	-	outwash	none

3.5-14b-157

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 9'.

c. Horizon 2 contains truncated fragments of former E and Bhs horizons at the top of the horizon.

d. Portions of horizon 4 are partially cemented/compacted. e. Horizon 4 contains small irregular patches of rafted till fragments (7.5YR4/4, scl-fsl) in lower 12" of horizon.

f. Horizon 4 contains also contains few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

g. Horizon 5 contains ccd 7.5YR5/6-8 banded mottling from 96-120".

prob. seasonal sat'n > 96"
Limiting Factors/Depth

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-54

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	oats	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 54"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-7	10YR4/3	-	sl	2csbk	mfr	1f-m	as	loess	none
2 (2B)	7-14	7.5YR5/4 (v)	-	vcos	1csbk	mfr-mvfr	0-1f-c	as	outwash	none
3 (2C1)	14-47+	10YR6/3	-	m-cos	1csbk	mvfr	0-1f-c	-	outwash	none
3 (2C1)	47-66	10YR6/3	> 60" see remarks	m-cos	1csbk → sg	mvfr → ml	0-1f	cs	outwash	none
4 (2C2)	66-108+	10YR5/4	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-158

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 5½'.

c. Horizons 2 and 3 contain fmp 10YR2/2 and fcd 7.5YR5/4-6 root mottles.

d. Collected grab sample at 22".

prob. seasonal sat'n > 54"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-55

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	oats	glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	7.5YR3/3	-	sl-ls	2csbk	mfr	1f-c	ai	outwash	none
2 (A/C)	8-30	7.5YR5/6 (v)	-	m-cos	1csbk	mvfr	0-1f-m	cw	outwash	none
3 (C1)	30-54+	10YR6/4	-	m-cos	1-2csbk	mfr	0-1m	-	outwash	none
3 (C1)	54-72	10YR6/4	> 66" see remarks	m-cos	1csbk → sg	mfr → ml	0	cs	outwash	none
4 (C2)	72-120+	10YR5/3	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-159

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 6'.

c. Horizon 2 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

d. Horizons 2 and 3 contain fcd 7.5YR5/6 root mottles.

e. Horizon 3 also contains a small wedge of cross bedded cos and grcos.

prob. seasonal sat'n > 60"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-56

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082798	oats	glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	7.5YR3/2	-	sl-ls	2csbk	mfr	1f-m	cw	outwash	none
2 (B2s)	10-17	7.5YR4/6	-	sl	2msbk	mvfr	0-1f	cw	outwash	none
3 (C1)	17-34	7.5YR5/6	-	sl-ls	sg → 1msbk	ml-mvfr	0-1f	cw	outwash	none
4 (C2)	34-42	7.5YR5/6-5YR5/6	-	grms	1csbk	mvfr	0-1f	cw	outwash	none
5 (C3)	42-48+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	none
5 (C3)	48-108	10YR6/4	-	m-cos	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
6 (C4)	108-144+	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-160

Remarks:

a. Pit extended to approximately 12', soil as described above. b. Soil saturated below 7'.

c. Horizon 2 contains truncated fragments of a very few cradle knoll sequences of E, Bhs and Bs horizons.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-57

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082898	grass	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR3/3-4/3	-	sl	2m-csbk	mvfr	2f,1mc	as	outwash	none
2 (A/B)	9-31	7.5YR4/6 → 10YR5/6	-	lcos	0-1csbk	mvfr	0-1f	cs	outwash	partially Ce/Cp
3 (2B2)	31-41	7.5YR4/4 (v)	-	sl-scl	1-2f-msbk	mfr	0-1f	cw	sandy till	partially Ce/Cp
4 (2C1)	41-49	7.5YR4/4	-	m-cos	0-1msbk	mvfr	0	cw	outwash	none
5 (2C2)	49-57	7.5YR4/4 (v)	-	scl-sl	1-2msbk	mfr	0	cw	sandy till	none
6 (3C3)	57-65+	10YR5/4	-	cos	0-1csbk	mvfr	0	-	outwash	none
6 (3C3)	65-84	10YR5/4	> 72" see remarks	cos → vcos	0-1csbk → sg	mvfr → ml	0	cs	outwash	none
7 (3C4)	84-102+	10YR5/3	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-161

Remarks:

a. Pit extended to approximately 8½', soil as described above. b. Soil saturated below 7'. c. Portions of horizons 2 and 3 are partially cemented/compacted.

d. Horizon 3 contains mcp 7.5YR6/2 (depletion) and fcd 7.5YR5/6 (accumulation) textural mottles. d. Horizon 5 contains f-ccp 7.5YR7/1 (depletion) and f-ccd 7.5YR5/6 (accumulation) textural mottles. f. Horizons 6 and 7 contain ccd 7.5YR5/6-8 banded mottling below 72".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-58

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082898	grass	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2-3	-	sl	2m-csbk	mfr	2f,1mc	cs	loess	none
2 (B2)	9-30	10YR5/3-6/4	-	sl-sil	1-2msbk	mfr	0-1f-m	gw	loess	partially Ce/Cp
3 (2B3)	30-51	7.5YR4/4 (v)	-	scl-sl	1-2msbk	mfr	0-1f	cw	sandy till	none
4 (3C1)	51-72+	10YR5/4	-	m-cos	1csbk	mvfr	0	-	outwash	none
4 (3C1)	72-96	10YR5/4	> 72" see remarks	m-cos	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
5 (3C2)	96-120+	10YR5/3	see remarks	grvcos	sg	w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 7'.

c. Portions of horizon 2 are partially cemented/compacted.

d. Horizon 3 contains fcp 7.5YR6/2 (depletion) and fmd 7.5YR5/6 (accumulation) textural mottles.

e. The color, texture, structure, and consistence of horizons 2 and 3 are highly variable.

f. Horizons 4 and 5 contain ccd 7.5YR5/6-8 banded mottling below 72".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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3.5-14b-162

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-59

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082898	grass	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR3/3	-	sl-sil	2m-csbk	mfr	1f-m	as	loess	none
2 (B2)	8-28	7.5YR5/6 → 10YR5/4	-	sil-sl	2msbk → 1csbk	mvfr	0-1f	cs	loess	none
3 (2B3)	28-52	7.5YR4/4	-	sl-scl	1csbk	mfr	0-1f	cw	sandy till	none
4 (3C1)	52-61+	10YR5/4	-	cos	1csbk	mvfr	0	-	outwash	none
4 (3C1)	61-90	10YR5/4	> 72" see remarks	cos	0-1csbk	ml-mvfr	0	cs	outwash	none
5 (3C2)	90-132+	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-163

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 7'.

c. Horizon 4 contains ccd 7.5YR5/6-8 banded mottling from 72-90".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-60

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082898	grass	glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 78"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/4	-	sl	2m-csbk	mvfr-mfr	1f-m	as	outwash	none
2 (B2)	9-14	7.5YR5/4	-	f-ms	1csbk	mvfr	0-1f	cs	outwash	none
3 (B3)	14-48	10YR6/6 (v)	-	m-cos	1-2csbk	mvfr	0-1f	as	outwash	none
4 (C1)	48-55+	10YR6/4	-	ms	1csbk	mvfr	0	-	outwash	none
4 (C1)	55-102	10YR6/4	> 80" see remarks	ms	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
5 (C2)	102-108+	10YR5/4	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-164

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 7½'.

c. Horizon 3 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata, and vfm-cp 10YR3/2 root mottles/channels.

d. Horizon 4 contains ccd 7.5YR5/6-8 banded mottling from 80-102".

prob. seasonal sat'n > 78"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-61

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082898	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 78"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (In.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR4/3	-	sl-sil	2csbk	mvfr	2f,1m	as	loess	none
2 (2B2)	8-25	10YR6/3 (v)	-	sl-grcos	2msbk-sg	mfr-ml	1-2f-m	cs	outwash	partially Ce/Cp
3 (2C1)	25-51+	10YR6/4	-	m-cos	1csbk	mvfr	0-1f-m	-	outwash	none
3 (2C1)	51-102	10YR6/4	> 78" see remarks	m-cos	1csbk → sg	mvfr → w-ml	0-1f → 0	cs	outwash	none
4 (2C2)	102-108+	10YR5/3	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-165

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 7½'.

b. Portions of horizon 2 partially cemented/compacted.

c. Horizons 2 and 3 contain ccp 10YR3/2 root mottles/channels.

d. Horizon 3 also contains very few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Horizons 3 and 4 contain ccd 7.5YR5/6-8 banded mottling below 78".

prob. seasonal sat'n > 78"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 228796

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-62

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	7.5YR3/2	-	sl	1msbk	mvfr	2f,1mc	as	loess	none
2 (B2)	10-18±4	7.5YR5/4-4/6	-	sl-l	2m-csbk	mvfr	0-1f	cw	loess	none
3 (2C1)	18-31	7.5YR5/6-8 (v)	-	grcosl	sg	ml	0-1f	cs	outwash	none
4 (2C2)	31-52	7.5YR5/6 (v)	-	m-cos	1csbk	mvfr	0	cs	outwash	none
5 (2C3)	52-55+	7.5YR6/6	-	m-cos	sg	ml	0	-	outwash	none

3.5-14b-166

Remarks:

a. Pit extended to approximately 11', soils similar to that encountered in horizon 5. b. Soil saturated below 9'.

c. Horizon 2 contains few truncated fragments of former E, Bhs and Bs horizons at the top of the horizon.

d. Horizon 2 also contains fcf 7.5YR5/6-7 (accumulation) and ccd 7.5YR6/2 (depletion) textural mottles, and ffp 10YR2/1 intrapedal mottles.

e. Horizon 4 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-63

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR3/3-4/3	-	sil-sl	1m-cgr	mvfr	1f,1m	as	loess	none
2 (B2)	9-16	10YR5/4	-	sil	2m-csbk	mvfr	0-1f	cs	loess	partially Ce/Cp
3 (2C1)	16-40	7.5YR6/4 (v)	-	m-cos	0-1csbk	mvfr-ml	0-1f	cs	outwash	partially Ce/Cp
4 (2C2)	40-71+	10YR6/4	> 96" see remarks	m-cos	1csbk → sg	mvfr → ml	0	-	outwash	none

3.5-14b-167

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 4. b. Soil saturated below 8'.

c. Portions of horizons 2 and 3 are partially cemented/compacted.

d. Horizon 3 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Horizon 4 contains very few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata. f. Horizon 4 also contains ccd 7.5YR5/6-8 banded mottling from 96-114".

g. On one side of the pit there are several rafted till fragments (7.5YR4/4, scl-sl) ranging in size from 2" x 2" to 1½' x 1½' along the interface between horizons 3 and 4.

prob. seasonal sat'n > 84"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 22379[illegible]

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-64

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR3/3	-	sl-sil	1-2m-csbk	mvfr	2f,1m	as	loess	none
2 (B2s)	10-26	7.5YR4/4	-	sil	2msbk	mvfr	0-1f	cs	loess	partially Ce/Cp
3 (2B3)	26-54	10YR6/4 (v)	-	m-cos	1csbk-sg	mfr-ml	0-1f	cs	outwash	partially Ce/Cp
4 (2C1)	54-64+	10YR6/4	-	m-cos	0-1csbk	mvfr-ml	0	-	outwash	none
4 (2C1)	64-96	10YR6/4	-	m-cos	0-1csbk	mvfr-ml	0	-	outwash	none
5	96-120+	see remarks	?						outwash	none

3.5-14b-168

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 8'.

c. Portions of horizons 2 and 3 are partially cemented/compacted.

d. Horizon 3 contains very few thin (<½ thick) discontinuous 7.5YR4/4 fsl strata, and few thin (<2" thick) grcos seams.

e. Horizon 5 consists of a buried sequence of aquod horizons including an O, E, and a thick Bhs/Bs horizon. The Bhs horizon is partially cemented and contains banded colors of black, reddish brown, orangish brown, and yellowish brown m-cos (from top to bottom). Similar to TPH-8A.

strongly cemented > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223768

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Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-65

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR3/2-4/2	-	sl	2m-csbk	mfi-mfr	1f-m	as	loess (fill ?)	none
2 (B2)	10-20	7.5YR4/3 (v)	-	scl-cl → ms	3mabk → 1msbk	mfi → mvfr	1f → 0	cw	sandy till (fill ?)	partially Ce/Cp
3 (C)	20-34+	10YR6/4	see remarks	m-cos	1csbk	mfr	0	-	outwash (fill ?)	partially Ce/Cp
3 (C)	34-84	10YR6/4	see remarks	m-cos	1csbk	mfr	0	cs	outwash (fill ?)	partially Ce/Cp
4	84-132+	see remarks	?	m-cos			0	-	outwash	none

3.5-14b-169

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 7'.

c. Horizon 2 contains several truncated fragments of former E, Bhs and Bs horizons at the top of the horizon.

d. Portions of horizons 2 and 3 are partially cemented/compacted.

e. Horizon 3 contains mcd 7.5YR5/6-8, cfp 5YR4/6 and fcp 2.5YR3/4-6 banded mottling.

f. Horizon 5 consists of a buried sequence of aquod horizons including an O, e, and a thick Bhs/Bs horizon. The Bhs/Bs horizon is partially cemented and contains banded colors of black, reddish brown, orangish brown, and yellowish brown (from top to bottom). Similar to TPH-64.

strongly cemented > 84"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 229796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-66

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 66"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR3/2	-	sil-sl	2m-csbk	mfr	2f,1mc	as	loess	none
2 (A)	8-13	10YR4/2	-	sil	1f-msbk	mvfr	0-1f	cs	loess	none
3 (E)	13-21	10YR5/2	-	sil	2f-msbk	mfr	0-1f	cs	loess	partially Ce/Cp
4 (B2)	21-44	10YR6/2 (v)	-	sil	1msbk → 2msbk	mfr-mfi	0-1f	cw	loess	partially Ce/Cp
5 (2C1)	44-61	10YR5/4 (v)	-	m-cos	sg-1csbk	ml-mvfr	0	cs	outwash	partially Ce/Cp
6 (2C2)	61-75+	10YR5/4	see remarks	m-cos	1csbk	mvfr	0	-	outwash	none

3.5-14b-170

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 6. b. Soil saturated below 6½'.

c. Portions of horizons 3-5 are partially cemented/compacted.

d. Horizon 5 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata and few thin (<2" thick) grcos seams.

e. Horizon 6 contains ccd 7.5YR5/6-8 banded mottling from 61-71". The banded mottling appears to be dipping to the north, towards the wetland.

prob. seasonal sat'n > 66"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-67

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2	-	sl-sil	2msbk	mvfr	1f-m	as	loess	none
2 (B2)	9-24±4	10YR5/4	-	sil	1m-csbk	mvfr	0-1f	cw	loess	none
3 (2B3)	24-36±3	10YR5/6 (v)	-	grm-cos	1csbk	mvfr	0	cw	outwash	none
4 (2C1)	36-63+	10YR6/4	-	ms	1csbk → sg	mvfr → ml	0	-	outwash	none
4 (2C1)	63-120	10YR6/4	> 84" see remarks	ms	sg	w-ml	0	cs	outwash	none
5 (2C2)	120-126	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 10½', soils as described above. b. Soil saturated below 8'.

c. Horizon 3 contains few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

d. Horizon 4 contains very few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Horizon also contains ccd 7.5YR5/6-8 banded mottling from 84-108".

f. Collected grab sample at 48".

prob. seasonal sat'n > 84"
Limiting Factors/Depth

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3.5-14b-171

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-68

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2	-	sil-sl	2msbk	mfr	2f,1m	as	loess	none
2 (A/E)	9-27±8	10YR5/4 → 10YR5/2	-	sil	2msbk → 1msbk	mfr → mvfr	0-1f	cvw	loess	none
3 (2C1)	27-61	10YR6/6 (v)	-	grm-cos	1csbk	mvfr	0	cw	outwash	none
4 (2C2)	61-74+	10YR6/4	-	m-cos	0-1csbk	mvfr	0	-	outwash	none
4 (2C2)	74-96	10YR6/4	> 84" see remarks	m-cos	0-1csbk → sg	mvfr → w-ml	0	cs	outwash	none
5 (2C3)	96-132+	10YR5/4	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-172

Remarks:

a. Pit extended to approximately 11', soils as described above. b. Soil saturated below 7'.

c. Horizon 3 contains several rafted till fragments (7.5YR4/4 scl-sl) ranging in size from 2" in diameter to 12' x 36" slabs along the base of the horizons. The till fragments contain fmp 7.5YR7/2 (depletion) and ffd 7.5YR5/6 (accumulation) textural mottles.

d. Horizons 4 and 5 contain ccd 7.5YR5/6-8 banded mottling below 84".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-69

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 90"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2	-	sl-sil	1m-csbk	mvfr	2f,1mc	as	loess	none
2 (2B)	9-35±5	7.5YR4/4 (v)	-	grcosl → scl	0-1csbk → 2m-csbk	mvfr → mfr	0-1f	cvw	sandy till → till	none
3 (3C1)	35-66	10YR6/4	-	m-cos	1csbk	mvfr	0	cs	outwash	none
4 (3C2)	66-70+	10YR5/4 (v)	-	grvcos	sg	ml	0	-	outwash	none
4 (3C2)	70-90	10YR5/4 (v)	-	grvcos	sg	ml	0	as	outwash	none
5 (3C3)	90-108	10YR6/4	see remarks	fsl	3mabk	w-mfr	0	as	outwash	none
6 (3C4)	108-120+	10YR6/4	see remarks	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-173

Remarks:

a. Pit extended to approximately 10', soils as described above. b. Soil saturated below 9'.

c. The lower part of horizon 2 (scl) contains mcd 10YR6/3 (depletion) mottles. The upper parts of horizon 3 beneath the convex-up portions of the horizon 2 base contains mcd 7.5YR5/8 (accumulation) mottles.

d. Horizon 3 also contains large (up to 10" x 30") irregular fragments of till (7.5YR4/4, scl).

e. Horizon 5 contains mcd 7.5YR5/6-8 banded mottling, and horizon 6 contains ccd 7.5YR5/6-8 banded mottling.

prob. seasonal sat'n > 96"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-70

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	7.5YR3/3	-	sl-sil	1-2msbk	mfr	2f,1m	as	loess	none
2 (B2s)	10-16	7.5YR4/4	-	sl	1msbk	mvfr	0-1f	cw	loess	none
3 (2C1)	16-23	7.5YR5/4 (v)	-	grcosl	0-1csbk-sg	mvfr-ml	0-1f	cw	sandy till	none
4 (3C2)	23-45	10YR5/3 (v)	-	ms → m-cos	1csbk	mvfr	0	cw	outwash	none
5 (3C3)	45-64+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	none

3.5-14b-174

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 5. b, Soil saturated below 7'.

c. Horizon 4 contains few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-71

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	7.5YR3/2	-	sl-sil	1m-csbk	mvfr	2f,1m	as	loess	none
2 (B2)	10-23	10YR5/4	-	sil	2msbk	mvfr	0-1f	cw	loess	none
3 (B31)	23-34±3	7.5YR5/4	-	sl-sil	1mgr	mvfr	0-1f	cw	loess	none
4 (2B32)	34-50±6	7.5YR4/4	-	scl-sl	1-2csbk	mfr	0	cw-i	till	none
5 (3C)	50-64+	10YR6/4	-	ms	1csbk	mvfr	0	-	outwash	none

3.5-14b-175

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 5. b. Soil saturated below 8'. c. Collected grab sample at 60".

d. Lower 4" of horizon 3 contains fcd 7.5YR5/6 (banded, accumulation) and ccp 7.5YR6/2 (depletion) mottles.

e. Upper 3" of horizon 4 contains fm-cd 7.5YR5/8 banded mottling.

f. The base of horizon 4 contains several till pendants which extend into horizon 5. The upper part of horizon 5 contains many small (<2" in diameter) till fragments. It appears that horizon 4 is part of a large rafted till fragment.

prob. seasonal sat'n > 84"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-72

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2-3	-	sl	2msbk	mvfr	1f-m	as	loess	none
2 (A/B)	10-16	10YR6/4	-	sl-sil	1f-msbk	mvfr	0-1f	cs	loess	none
3 (B)	16-21	7.5YR5/4-6	-	sl	1f-msbk	mvfr	0-1f	cw	loess	none
4 (2C1)	21-32	7.5YR5/3	-	cosl	1-2msbk	mfr	0	cw	sandy till	none
5 (3C2)	32-61+	10YR6/4	> 84" see remarks	ms	1csbk → sg	mfr → ml	0	-	outwash	none

3.5-14b-176

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 5. b. Soil saturated below 9'. c. Collected grab sample at 70".

d. Horizon 5 contains several rafted till fragments (7.5YR4/4, scl) ranging from 2" x 2" to 24" x 60" above 63". The entire horizon contains very few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Above the rafted till fragments horizons 4 and 5 contain fmd 7.5YR5/6 textural mottles.

f. Horizon 5 also contains ccd 7.5YR5/6-8 banded mottling below 84".

prob. seasonal sat'n > 96"
Limiting Factors/Depth

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-73

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	082998	grass	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-12	10YR4/2	-	sil-sl	1f-msbk	d-mvfr	2f,1m	as	loess	none
2 (B2)	12-20	10YR6/3-4	-	sil	2msbk	d-mvfr	0-1f	cw	loess	none
3 (2C1)	20-27	7.5YR6/4-6	-	grcos	0-1csbk	mvfr	0-1m	cw	outwash	none
4 (2C2)	27-70+	10YR6/4	> 84" see remarks	m-cos	1csbk → sg	mvfr → ml	0-1m → 0	-	outwash	none

3.5-14b-177

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 4. b. Soil saturated below 8'.

c. Horizons 3 and 4 contain vfcp 10YR2/1-3 root channels.

d. Horizon 4 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

e. Collected grab sample at 36".

f. Horizon 4 also contains ccd 7.5YR5/6-8 banded mottling below 84".

prob. seasonal sat'n > 84"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-74

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sil	2msbk	mvfr	2f,1m	as	loess	none
2 (2A/C)	10-18	7.5YR4/4	-	grvcos	1m-csbk	mvfr	0-1f	cs	sandy till	partially Ce/Cp
3 (3C1)	18-30	7.5YR6/4	-	ms	2msbk	mfr	0-1f	cs	outwash	partially Ce/Cp
4 (3C2)	30-67+	10YR6/4	-	m-cos	1msbk	mvfr	0	-	outwash	none
4 (3C2)	67-84	10YR6/4	> 72" see remarks	m-cos	1msbk → sg	mvfr → w-ml	0	cs	outwash	none
5 (3C3)	84-108+	10YR5/4	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-178

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 6'.

c. Collected 2 composite samples: 10-18" and 18-67". d. Portions of horizons 2 and 3 are partially cemented/compacted.

e. Horizon 3 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains few thin (<¾" thick) 7.5YR4/4 fsl strata, and few thin (<1" thick) grvcos seams.

g. Horizon 4 and 5 contain ccd 7.5YR5/6-8 banded mottling below 72".

prob. seasonal sat'n > 60"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Madison, WI 53705
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-75

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 66"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sil	1msbk	mvfr	2f,1m	as	loess	none
2 (B2)	10-14	10YR6/6 (v)	-	sil	2msbk	mfr-mfi	1f	cw	loess	partially Ce/Cp
3 (2C1)	14-38±6	7.5YR4/6 (v)	-	grcosl	sg	ml	0-1f	cw	sandy till	partially Ce/Cp
4 (3C2)	38-65+	10YR6/4	-	m-cos	sg-1csbk	ml-mvfr	0	-	outwash	none
4 (3C2)	65-96	10YR6/4	see remarks	m-cos	sg	w-ml	0	cs	outwash	none
5 (3C3)	96-102+	10YR5/4	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-179

Remarks:

a. Pit extended to approximately 8¼', soil as described above. b. Soil saturated below 6½'.

c. Portions of horizons 2 and 3 are partially cemented/compacted.

d. Horizon 3 contains few thin (<¼" thick) very discontinuous 7/5YR4/4 fsl strata.

e. Horizons 4 and 5 contain ccd 7.5YR5/6-8 banded mottling below 65".

prob. seasonal sat'n > 66"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
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SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-76

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 56"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (In.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2 (v)	-	sl-sil	1csbk	mvfr	2f,1mc	as	loess	none
2 (A/B)	9-15	10YR6/4	-	sil	1msbk	mvfr	1f	cw	loess	none
3 (B2)	15-18	7.5YR4/4	-	sl-sil	2msbk	mvfr-mfi	1f	cw	loess	partially Ce/Cp
4 (2C1)	18-55	7.5YR5/4 (v)	-	grcos	1csbk → sg	mvfr → ml	0-1f	as	outwash	partially Ce/Cp
5 (2C2)	55-68+	10YR5/4-6/4	> 65" see remarks	m-cos	1csbk	mvfr	0	-	outwash	none
5 (2C2)	68-96	10YR5/4-6/4	see remarks	m-cos	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
6 (2C3)	96-108+	10YR5/3	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-180

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 68". c. Collected 2 composite samples: 18-55" and 55-68".

d. Portions of horizons 3 and 4 are partially cemented/compacted. e. Horizon 3 contains mmd 7.5YR6/2 (depletion) mottles.

f. Horizon 4 contains very few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata, and few thin (<3" thick) grvcos seams (some contain ccd 7.5YR5/6-8 textural mottles).

g. Horizons 5 contains ccd 7.5YR5/6-7 banded mottling, and horizon 6 contains fcd 7.5YR5/6-8 banded mottling.

prob. seasonal sat'n > 56"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

092898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-77

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 32"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2-3	-	sl	2m-csbk	mfr	2f,1mc	as	loess	none
2 (2A/C)	10-32	7.5YR5/6 (v)	?	grcos	0-1csbk	mvfr-mfr	1f	cw	outwash	partially Ce/Cp
3 (2C1)	32-50	10YR5/4-6/4	c-mvcd 7.5YR5/6-8	m-cos	sg-1csbk	ml-mfr	0-1f	cs	outwash	none
4 (2C2)	50-59+	10YR4/3	gleyed	m-cos	1csbk	w-mvfr	0	-	outwash	none
4 (2C2)	59-72	10YR4/3	gleyed	m-cos	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
5 (2C3)	72-84+	10YR4/3	gleyed	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-181

Remarks:

a. Pit extended to approximately 7', soil as described above. b. Soil saturated below 50".

c. Portions of horizon 2 are partially cemented/compacted.

prob. seasonal sat'n > 32"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

092898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-78

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR4/2	-	sl-sil	1msbk	mvfr	2f,1mc	as	loess	none
2 (B2s)	8-14±2	7.5YR5/4	-	sl-sil	2msbk	mvfr	1f	cw	loess	partially Ce/Cp
3 (2B/C)	14-31	7.5YR6/6 → 7.5YR5/4	-	m-cos	1csbk	mvfr-mfr	0-1f	cs	outwash	none
4 (2C1)	31-67+	10YR6/4 → 10YR5/4	-	m-cos	1csbk → sg	mvfr → ml	0	-	outwash	none
4 (2C1)	67-114	10YR5/4	> 102" see remarks	m-cos	sg	w-ml	0	cs	outwash	none
5 (2C2)	114-126+	10YR5/4	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-182

Remarks:

a. Pit extended to approximately 10½, soil as described above. b. Soil saturated below 9'. c. Portions of horizon 2 are cemented/compacted.

d. Horizon 2 contains a small truncated cradle knoll sequence of E, Bhs and Bs horizons at the top of the horizon.

e. Horizon 3 contains few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata. g. Horizons 4 and 5 contain ccd 7.5YR5/6-8 banded mottling below 102".

prob. seasonal sat'n > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-79

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sil-sl	1m-csbk	mfr	2f,1mc	as	loess	none
2 (A/C)	10-26±6	10YR5/4	-	sil	0-1msbk	ml-mvfr	0-1f	cw	loess	partially Ce/Cp
3 (2C1)	26-54	7.5YR5/6 → 10YR5/4	-	grcos	0-1csbk	ml-mfr	0-1f	cs	outwash	partially Ce/Cp
4 (2C2)	54-63+	10YR6/4	-	m-cos	1csbk	mvfr	0	-	outwash	none
4 (2C2)	63-96	10YR6/4	> 66" see remarks	m-cos	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
5 (2C3)	96-120+	10YR5/4	see remarks	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-183

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 6'.

c. Portions of horizons 2 and 3 are partially cemented/compacted.

d. Horizons 4 and 5 contain ccd 7.5YR5/6-8 banded mottling below 66".

prob. seasonal sat'n > 60"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-80

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR3/2	-	sil-sl	1m-csbk	mvfr	2f,1mc	as	loess	none
2 (A/C)	10-22±3	10YR6/4	-	sl-sil	0-1f-msbk	mvfr	0-1f	cw	loess	partially Ce/Cp
3 (2C1)	22-53	7.5YR5/6 (v)	-	grcos	sg-1csbk	ml-mvfr	0-1f	cs	outwash	partially Ce/Cp
4 (2C2)	53-78+	10YR5/4	> 72" see remarks	grm-cos	1csbk → sg	mvfr → ml	0	-	outwash	none
4 (2C2)	78-96	10YR5/4	see remarks	grm-cos	sg	w-ml	0	cs	outwash	none
5 (2C3)	96-108+	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-184

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 7'. c. Collected composite 2 samples from: 22-53" and 53-78".

d. Portions of horizons 2 and 3 are partially cemented/compacted.

e. Horizon 3 contains very few thin (<¼" thick) discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata, and very few thin (<2" thick) grcos seams.

g. Horizon 4 contains ccd 7.5YR5/6-8 banded mottling below 72".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-81

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2-3	-	sil	1f-msbk	mvfr	2f,1m	as	loess	none
2 (B2)	10-20±5	7.5YR5/6 → 7.5YR6/4	-	sil	2f-msbk	mvfr	0-1f-m	cw	loess	none
3 (2C1)	20-44	7.5YR6/4	-	grm-cos	sg-1csbk	ml-mfr	0-1f-m	cs	outwash	partially Ce/Cp
4 (2C2)	44-73+	10YR6/4	> 60" see remarks	m-cos	1csbk → sg	mvfr → ml	0	-	outwash	none
4 (2C2)	73-114	10YR6/4	see remarks	m-cos	sg	w-ml	0	cs	outwash	none
5 (2C3)	114-122+	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-185

Remarks:

a. Pit extended to approximately 12', soil as described above. b. Soil saturated below 7'. c. Collected 2 composite samples from: 20-44" and 44-73".

d. Portions of horizon 3 are partially cemented/compacted.

e. Horizon 3 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata, and very few thin (<2" thick) grcos seams.

f. Horizon 4 contains very few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

g. Horizon 4 also contains ccd 7.5YR5/6-8 banded mottling below 60".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-82

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 58"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-8	10YR3/2	-	sil-sl	1f-msbk	mvfi	2f,1mc	as	loess	none
2 (2B2s)	8-31±6	7.5YR4/4 → 7.5YR5/4	-	vcosl	sg-1csbk	ml-mfr	0-1f	cw	outwash	partially Ce/Cp
3 (2C1)	31-71+	7.5YR6/4	> 44" see remarks	m-cos	1csbk	mvfr	0-1f	-	outwash	none
3 (2C1)	71-96	7.5YR6/4	see remarks	m-cos	1csbk	w-mvfr	0	cs	outwash	none
4 (2C2)	96-120+	10YR5/3	-	grvcos	sg	w-ml	0	-		

3.5-14b-186

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 70".

c. Portions of horizon 2 are partially cemented/compacted.

d. Horizon 2 contains several truncated cradle knoll sequences of former E, Bhs and Bs horizons at the top of the horizon.

e. Horizon 3 contains ccd 7.5YR5/6-8 banded mottling below 44".

prob. seasonal sat'n > 58"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-83

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	7.5YR4/2	-	sl	2csbk	mfr	2f,1mc	as	loess	none
2 (2A/C)	10-43	7.5YR5/6 → 10YR6/4	-	cosl	sg-1csbk	ml-mfr	0-1f-m	cs	outwash	partially Ce/Cp
3 (2C1)	43-49	10YR6/4 (v)	-	vcos	sg	ml	0	cs	outwash	none
4 (2C2)	49-62+	10YR6/4	> 72" see remarks	ms	1csbk	mvfr	0	-	outwash	none

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 4. b. Soil saturated below 7'. c. Collected grab samples at 20" and at 70".

d. Portions of horizon 2 are partially cemented/compacted.

e. Horizon 3 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains very few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

g. Horizon 4 contains ccd 7.5YR5/6-8 banded mottling below 72".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

3.5-14b-187

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-84

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/3	-	sil	1f-msbk	mvfr	2f,1mc	as	loess	none
2 (2B2s)	10-42	7.5YR5/6 → 10YR6/4	-	cosl	sg-1csbk	d-ml-mfr	0-1f-c	cs	outwash	partially Ce/Cp
3 (2C1)	42-48	10YR6/4	-	m-cos	sg	ml	0-1f-m	as	outwash	none
4 (2C2)	48-55	10YR6/4	-	vfsl	2-3mabk	mfr	0	as	outwash	none
5 (2C3)	55-64+	10YR6/4	> 60" see remarks	ms	1csbk	mvfr	0	-	outwash	none

3.5-14b-188

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 5. b. Soil saturated below 6'.

c. Portions of horizon 2 are partially cemented/compacted. d. Horizon 2 contains few truncated cradle knoll sequences of E, Bhs and Bs horizons at the top of the horizon.

d. Horizon 2 also contains few thin (<½ thick) discontinuous 7.5YR4/4 fsl strata, and few thin (<3" thick) grvcos seams.

e. Horizon 5 contains very few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata. g. Horizon 5 also contains ccd 7.5YR5/6-8 banded mottling below 60".

prob. seasonal sat'n > 60"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-85

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 96"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (In.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-12	10YR4/3	-	sil	2f-msbk	d-mvfr	2f,1mc	as	loess	none
2 (2A/C)	12-36	7.5YR5/4-6 (v)	-	m-cos	1csbk	mvfr-mfr	1f-m	cs	outwash	partially Ce/Cp
3 (2C1)	36-73+	10YR6/4	-	m-cos	1csbk	mvfr	0-1m	-	outwash	none
3 (2C1)	73-132	10YR6/4	> 96" see remarks	m-cos	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
4 (2C2)	132-156+	10YR5/3	see remarks	grvcos	sg	w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 13', soil as described above. b. Soil saturated below 9'. c. Collected grab sample at 50".

d. Portions of horizon 2 are partially cemented/compacted.

e. Horizon 2 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

f. Horizon 3 contains very few thin (<¼" thick) discontinuous 7.5YR4/4 fsl strata, and minor cross bedding in the sands.

g. Horizon 3 and 4 also contain ccd 7.5YR5/6-8 banded mottling below 96".

prob. seasonal sat'n > 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223706

092598
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

3.5-14b-189

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-86

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083098	alfalfa planted but short grasses and weeds growing	glacial sediments

Customer Address	Estimated Shallowest Groundwater Depth
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161	

County	Tax Parcel No.
Forest	Crandon Mine Site

Lot Legal Description
SE¼, T35N R13E, Section 17

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (A)	0-36	variegated	-	fill						
2 (C)	36-48	dk gray-white	gleyed	sandy fill						
3 (Oeb)	48-60	black	-	-						
4 (Eb)	60-66+	dk gray	-	sand						

3.5-14b-190

Remarks:

a. Pit dug in the center of a 60' diameter low area in which alfalfa does not grow.

b. Did not enter pit due to H_2S fumes, less odor than at THP-26.

c. Base of horizon 2 and top of horizon 3 contain large decomposing wood fragments.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-87

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/3	-	sil-sl	1f-msbk	d-mvfr	2f,1mc	as	loess	none
2 (A/C)	10-13	7.5YR6/4	-	sil-sl	1fgr	d-mvfr	0-1f	cw	loess	none
3 (2C1)	13-26±12	7.5YR4/4 (v)	-	grcosl	sg-1csbk	ml-mvfr	0-1f-c	cw	outwash	partially Ce/Cp
4 (2C2)	26-68+	7.5YR6/4-10YR6/4	-	m-cos	1csbk	mvfr	0-1f-m	-	outwash	none
4 (2C2)	68-120	10YR6/4	-	m-cos	1csbk → sg	mvfr → w-ml	-	cs	outwash	none
5 (2C3)	120-132+	10YR5/4	-	grvcos	sg	w-ml	-	-	outwash	none

3.5-14b-191

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 7'. c. Collected grab sample at 60".

d. Portions of horizon 3 are partially cemented/compacted.

e. Horizon 4 contains few thin (<1" thick) discontinuous 7.5YR4/4 fsl strata which appears to have 2mabk, mfr features.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-88

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sil	2f-csbk	d-mvfr	2f,1mc	as	loess	none
2 (B2)	10-23	10YR6/4	-	sil-sl	2f-msbk → 1mgr	d-mvfr	0-1f-m	cs	loess	partially Ce/Cp
3 (2C1)	23-34	7.5YR5/4 (v)	-	grm-cos	sg-1csbk	ml-mfr	0-1f	cs	outwash	partially Ce/Cp
4 (2C2)	34-64+	10YR6/4	> 59" see remarks	m-cos	1csbk	mvfr	0-1f	-	outwash	none
4 (2C2)	64-84	10YR6/4	see remarks	m-cos	1csbk → sg	mvfr → w-ml	0	cs	outwash	none
5 (2C3)	84-120+	10YR5/4	-	vcos	sg	w-ml	0	-	outwash	none

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 6'. c. Collected grab sample at 54".

d. Portions of horizons 2 and 3 are partially cemented/compacted. e. Horizon 3 contains few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains very few thin (<¾" thick) very discontinuous 7.5YR4/4 fsl strata.

g. Horizon 4 also contains ccd 7.5YR5/6-8 banded mottling below 59".

prob. seasonal sat'n > 60"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

092898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

3.5-14b-192

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-89

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083198	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 63"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR4/2-3	-	sil-sl	1f-msbk	d-mvfr	2f,1mc	as	loess	none
2 (B2)	11-23	10YR6/4	-	sil	1msbk	d-mvfr	0-1f	cw	loess	none
3 (2B3)	23-58±10	7.5YR4/4	-	scl-sl	2m-csbk	mvfr-mfi	0-1f-m	cw	till	partially Ce/Cp
4 (3C)	58-78+	10YR5/4	-	m-cos	1csbk	w-mvfr	0	-	outwash	none

3.5-14b-193

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 4. b. Soil saturated below 75". c. Collected grab sample at 73".

d. Pit contains several large root channels extending from 23-75" which are filled with sil.

e. Portions of horizon 3 are partially cemented/compacted.

f. Horizon 3 is a large rafted till fragment with many pendants of till extending into the top of horizon 4.

prob. seasonal sat'n > 63"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

092898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-90

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	083198	alfalfa	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 53"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/3	-	sl-sil	1f-mgr	d-mvfr	2f,1mc	as	loess	none
2 (A/C)	10-17	10YR6/6	-	sl-sil	1fgr	mvfr	0-1f-m	cw	loess	none
3 (C1)	17-37±5	10YR6/3 (v)	-	sl	1msbk	mvfr	0-1f-m	cw	loess	none
4 (2C2)	37-50±13	7.5YR4/4 (v)	-	grscl-sl	1csbk	mfr	0-1f-m	cw	till	partially Ce/Cp
5 (3C3)	50-73+	10YR6/6	-	ms	2csbk	mvfr	0	-	outwash	none

3.5-14b-194

Remarks:

a. Pit extended to approximately 8½', soil similar to that encountered in horizon 5. b. Soil saturated below 65".

c. One side of the pit contains a large (about 5' thick) truncated cradle knoll sequence of A, E, Bhs, and Bs horizons below the Ap horizon.

d. Portions of horizon 4 are partially cemented/compacted. e. Horizon 4 is a large rafted till fragment with many pendants extending into the top of horizon 5.

f. Horizon 5 contains several clay (scl) balls (about 2-3" in diameter) in the upper part of the horizon. These features have mcp 7.5YR5/2-3 (depletion) and 5YR4/6-7.5YR4/6 (accumulation) textural mottling similar to that observed in TPH-89.

prob. seasonal sat'n > 53"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-91

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	090198	alfalfa planted but short grasses and weeds growing	fill over glacial till

Customer Address	Estimated Shallowest Groundwater Depth
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161	

County	Tax Parcel No.
Forest	Crandon Mine Site

Lot Legal Description
SE¼, T35N R13E, Section 17

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	variegated		sil-sl					fill	
2 (C)	10-20	variegated		sil-sl					fill	
3 (Oib)	20-34	5YR2.5/2		-						
4 (C1b)	34-40	5GY5/1-5Y5/1	gleyed	scl					till	
5 (C2b)	40-44+	7.5YR5/2	gleyed	cl					till	

3.5-14b-195

Remarks:

a. Pit dug in a drainageway in which alfalfa does not grow.

b. Entered pit for only a short time due to mild H_2S fumes, less odor than at TPH-86.

c. Base of horizon 2 and top of horizon 3 contain large decaying wood fragments.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-92

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	090198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR4/2-3	-	sil-sl	2m-csbk	d-mfr	2f,1mc	as	loess	none
2 (B2)	11-24	10YR5/4 → 10YR6/4	-	sil-sl	2msbk → 1f-msbk	mfr → mvfr	0-1f	cs	loess	partially Ce/Cp
3 (2C1)	24-51	7.5YR6/4 → 7.5YR5/6	-	grm-cos	sg-0-1csbk	ml-mvfr	0-1f	cs	outwash	partially Ce/Cp
4 (2C2)	51-73+	10YR6/4	> 61" see remarks	m-cos	1csbk	mvfr	o	-	outwash	none
4 (2C2)	73-90	10YR6/4	see remarks	m-cos	1csbk	w-mvfr	o	cs	outwash	none
5 (2C3)	90-108"	10YR5/4	-	grvcos	sg	w-ml	o	-	outwash	none

3.5-14b-196

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 7'.

c. Portions of horizons 2 and 3 are partially cemented/compacted.

d. Horizon 4 contains ccd 7.5YR5/6-8 banded mottling below 61".

e. A large rafted till fragment (scl, 7.5YR4/4) was found on the opposite side of the pit between 43-63". Banded mottling beneath the rafted till is mcp 2.5YR3/6-4/8.

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-93

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	090198	alfalfa	loess over glacial outwash

Customer Address	Estimated Shallowest Groundwater Depth
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161	> 61"

County	Tax Parcel No.
Forest	Crandon Mine Site

Lot Legal Description
SE¼, T35N R13E, Section 17

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2-3	-	sil-sl	2m-csbk	d-mvfr	2f,1mc	as	loess	none
2 (B2)	9-16	10YR5/4	-	sil	2msbk → 1fsbk	d-mvfr	0-1f-m	cs	loess	partially Ce/Cp
3 (2C1)	16-36	10YR6/4 (v)	-	m-cos	1csbk	mvfr	0-1f	cs	outwash	none
4 (2C2)	36-73+	7.5YR6/3	> 52" see remarks	m-cos	1csbk	w-mvfr	0-1f	-	outwash	none
4 (2C2)	73-78	7.5YR6/3	see remarks	m-cos	1csbk	w-mvfr	0	cs	outwash	none
5 (2C3)	78-90	10YR6/4	see remarks	f-ms	1csbk	w-mvfr	0	cs	outwash	none
6 (2C4)	90-120+	10YR5/3	-	grvcos	sg	w-ml	0	-	outwash	none

3.5-14b-197

Remarks:

a. Pit extended to approximately 10', soil as described above. b. Soil saturated below 73".

c. Portions of horizon 2 are partially cemented/compacted.

d. Horizon 3 contains few thin (<½" thick) irregular and discontinuous 7.5YR4/4 fsl strata.

e. Horizon 4 contains fcp 10YR2/2-7.5YR5/6 root channels and mottles. Horizon 4 also contains ccd 7.5YR5/6-8 banded mottling below 52".

prob. seasonal sat'n > 61"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-94

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	090198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR4/3-5/3	-	sil	1f-msbk	mvfr	2f,1m	as	loess	none
2 (2C1)	11-15	10YR6/4	-	ls	sg-1mgr	ml-mvfr	0-1f	cs	outwash	none
3 (2C2)	15-51	10YR6/4 (v)	-	grm-cos	1csbk	mvfr	0-1f	cs	outwash	none
4 (2C3)	51-65+	10YR6/4 (v)	> 67" see remarks	grm-cos	sg	ml	0	-	outwash	none

3.5-14b-198

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 4. b. Soil saturated below 7'. c. Collected grab sample at 31".

d. Horizon 3 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata and a 6" x 24" lens of fsl (2msbk).

e. Horizon 4 contains ccd 7.5YR5/6-8 banded mottling below 67".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-95

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	090198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2-3	-	sl	1m-csbk	mfr-mvfr	2f,1m	as	loess	none
2 (B2)	9-15	7.5YR4/4	-	sil-sl	2msbk	mfr	0-1f	cs	loess	none
3 (2C1)	15-27	7.5YR5/4	-	grm-cos	2csbk	mfr-mvfr	0-1f	cs	outwash	partially Ce/Cp
4 (2C2)	27-70+	10YR6/4	> 70" see remarks	grm-cos	1csbk	mvfr	0-1f	-	outwash	none

3.5-14b-199

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 4. b. Soil saturated below 7'.

c. Portions of horizon 3 are partially cemented/compacted.

d. Horizon 3 contains few thin (<½" thick) irregular very discontinuous 7.5YR4/4 fsl strata.

e. Horizon 4 contains few thin (<1" thick) very discontinuous 7.5YR4/4 fsl strata and vfcp 10YR2/2-7.5YR5/6 root channels and mottles above 70".

f. Horizon 4 also contains ccd 7.5YR5/6-8 banded mottling below 70".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-96

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	090198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 68"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-9	10YR4/2-3	-	sil	1f-csbk	d-mvfr	2f,1mc	as	loess	none
2 (A/C)	9-13	10YR5/4	-	sil	1fgr	d-mvfr	1f	as	loess	none
3 (2C1)	13-34	7.5YR5/4	-	m-cos	0-1csbk	mvfr	0-1f-m	cs	outwash	partially Ce/Cp
4 (2C2)	34-80+	10YR6/4	> 65" see remarks	m-cos	1csbk	mvfr	0-1f-m	-	outwash	none

3.5-14b-200

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 4. b. Soil saturated below 80".

c. Portions of horizon 3 are partially cemented/compacted.

d. Horizon 3 contains few thin (<¼" thick) very discontinuous 7.5YR4/4 fsl strata.

e. Horizon 4 contains few thin (<¾" thick) discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 also contains ccd 7.5YR5/6 banded mottling between 65-96".

prob. seasonal sat'n > 68"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

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Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-97

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	090198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 68"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-11	10YR4/2-3	-	sil	2m-csbk	d-mfr	2f,1mc	as	loess	none
2 (B2)	11-15	7.5YR5/4	-	sil-sl	2msbk	d-mvfr	1f	cw	loess	none
3 (2C1)	15-39	7.5YR4/6 (v)	-	grm-cos	1csbk	mfr-mvfr	0-1f	cs	outwash	partially Ce/Cp
4 (2C2)	39-81+	10YR6/4	> 69" see remarks	grm-cos	1csbk	mvfr	0-1f	-	outwash	none

3.5-14b-201

Remarks:

a. Pit extended to approximately 10', soil similar to that encountered in horizon 4. b. Soil saturated below 80". c. Collected grab sample at 23".

d. Portions of horizon 3 are partially cemented/compacted.

e. Horizon 3 contains very few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata.

f. Horizon 4 contains very few thin (<½" thick) very discontinuous 7.5YR4/4 fsl strata, and very few thin (<4" thick) grvcos seams.

g. Horizon 4 also contains ccd 7.5YR5/8 banded mottling between 69-108".

prob. seasonal sat'n > 68"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

092898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPH-98

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	090198	alfalfa	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 17			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Cementation, Ce Compaction, Cp
1 (Ap)	0-10	10YR4/2	-	sil	2m-csbk	d-mvfr	1f-c	as	loess	none
2 (2A/C)	10-44	7.5YR5/4 (v)	-	grm-cos	sg-1csbk	ml-mfr	0-1f	cs	outwash	partially Ce/Cp
3 (2C)	44-71+	10YR6/4	> 65" see remarks	m-cos	1csbk	mvfr	0-1f	-	outwash	none

3.5-14b-202

Remarks:

a. Pit extended to approximately 8', soil similar to that encountered in horizon 3. b. Soil saturated below 7'.

c. Portions of horizon 2 are partially cemented/compacted.

d. Horizon 3 contains ccd 7.5YR5/6-8 banded mottling between 65-96".

prob. seasonal sat'n > 72"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 229796

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Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

Area J

Foth & Van Dyke
consultants · engineers · scientists

Client: Nicolet Minerals Company Scope I.D. 93C049
Project: Lincoln Township Area J Page: 1 of 1
Prepared by: Erik Silvola (EAS) Date: 6/7/98
Checked by: Date:

FIELD LOG OF TEST PIT

Test Boring No.: J-1

Start Date: 6/7/98 Location:

Completion Date: 6/7/98 Surface Elevation: Boring Depth: 12.8

Depth Fr. Lnd. Surf.	Sample No. Depth Interval	Type	N	Rec.	M Color	Description of Material	Class
						0-0.3 Dk brown (10YR2/1) organic topsoil, roots, w/fine blocky structure, damp (silty loam)	OL
						0.3-0.5 Dk. grey (7.5YR3/1) fine sand with minor silt (E-horizon)	SP
						0.5-1.3 Strong brown (7.5YR5/6) silty fine sand, mod. med. blocky structure, damp, soft, oxidized (sandy loam)	SM-SP
2						1.3-2 Brown (7.5YR5/5) fine sand, sl. oxidized, damp, w/stratification	SP
						2-3.9 Tan (7.5YR7/2) fine-med sand, stratified, damp, loose, outwash	SP
						3.9-5.2 Brown-grey (10YR6/1-6/2) fine-med. sand, oxidized with silt and silty sandy clay lenses, iron cemented above lenses (dense)	
4							
						5.2- Grey (2.5Y4/1) fine silty sand, locally oxidized, massive, v. damp, mottled, sand lenses in silt saturated, grades to brown 7.5YR4/4 as above with grey mottles, wet at 7.5 ft.	SM-ML
6							
8							
10							
12						E.O.P. - 12.8 ft	
14							
16							
18							

Excavating Method: Backhoe Rig: CAT 320 L Depth of Water: At Completion:
Excavating Contractor: Flannery Driller: Todd Hour Later:

Foth & Van Dyke
consultants · engineers · scientists

Client: Nicolet Minerals Company
Project: Lincoln Township Area J
Prepared by: Erik Silvola (EAS)
Checked by:

Scope I.D. 93C049
Page: 1 of 1
Date: 6/7/98
Date:

FIELD LOG OF TEST PIT

Test Boring No.: J-2

Start Date: 6/7/98
Location:
Completion Date: 6/7/98
Surface Elevation:
Boring Depth: 14.5

Depth Fr. Lnd. Surf.	Sample No. Depth Interval	Type	N	Rec.	M Color	Description of Material	Class
						No topsoil	
						0-1.2 Brown (7.5YR5/5) silty fine sand with gravel, damp, sl. firm (sandy loam).	SM-SP
						1.2-4.6 Brown (10YR6/2) fine sand with v. minor silt, compact, massive, stratified with clay lenses, outwash - lacustrine deformed bedding.	SP
2							
4						4" Silty sand lense on as above near contact.	
						4.6-6.8 Brown (10YR7/2) v. fine sand, stratified, damp, compact, w/coarse platy structure.	(SP-SM)
6							
						6.8-10.5 Lt. brown (10YR7/2) fine-med. sand, dominantly fine sand w/mod. med. platy structure, abundant silt and clay lenses.	SP
8							
10						Wet at ~10 ft	
						10.5+ Brown (10YR5/4) silty fine sand, oxidized, massive, wet.	SP-SM
12							
14						Collapse at 14.5 ft	
16							
18							

Excavating Method: Backhoe
Rig: CAT 321 L
Depth of Water: At Completion:
Excavating Contractor: Flannery
Driller: Todd
Hour Later:

Foth & Van Dyke
consultants · engineers · scientists

Client: Nicolet Minerals Company Scope I.D. 93C049
Project: Lincoln Township Area J Page: 1 of 1
Prepared by: Erik Silvola (EAS) Date: 6/7/98
Checked by: Date:

FIELD LOG OF TEST PIT

Test Boring No.: TP-J-3

Start Date: 6/7/98 Location:

Completion Date: 6/7/98 Surface Elevation: Boring Depth: 12.5

Depth Fr. Lnd. Surf.	Sample No. Depth Interval	Type	N	Rec.	M Color	Description of Material	Class
						0-0.2 Dk brown (10YR1/1) organic topsoil (silt loam) w/fine crumb structure, roots, damp, soft.	OC
						0.2-0.4 Orange brown (7.5YR5/7) fine silty sand, oxidized, loose.	SP
						0.4-1.2 Orange brown (7.5YR5/7) fine silty sand with gravel and cobbles, oxidized (gravel and cobble ~30%), weak, c. blocky structure, damp, hard.	SP-
2						1.2-3.5 Brown (7.5YR6/4) fine silty sand with gravel, abundant c. sand lenses, oxidized.	SM
							SP
							(SM)
						3.5-12.5 Brown (7.5YR5/5) silty fine sand to sandy silt, mottled (2.5YR4/1) and oxidized with sandy clay lenses, locally iron cemented, v. damp, mottling decreases with depth, minor sand lenses.	SM
4							
6							
8							
						Wet at 9 ft.	
10							
12						Collapse at 12.5 ft	
14							
16							
18							

Excavating Method: Backhoe Rig: CAT 321 L Depth of Water: At Completion:
Excavating Contractor: Flannery Driller: Todd Hour Later:

Foth & Van Dyke
consultants · engineers · scientists

Client: Nicolet Minerals Company | Scope I.D. 93C049
Project: Lincoln Township Area J | Page: 1 of 1
Prepared by: Erik Silvola (EAS) | Date: 6/7/98
Checked by: | Date:

FIELD LOG OF TEST PIT

Test Boring No.: TP-J-4

Start Date: 6/7/98 Location:

Completion Date: 6/7/98 Surface Elevation: Boring Depth: 15.8

Depth Fr. Lnd. Surf.	Sample No. Depth Interval	Type	N	Rec.	M Color	Description of Material	Class
						0-0.3 Black (10YR1/1) organic topsoil (silt layers w.f. crumb structure, roots, damp, soft)/	OL
						0.3-0.7 Brown (10YR6/3) fine-med. sand with minor gravel.	SP
						0.7-2.1 Brown (10YR6/3) silty fine-med. sand w.c. blocky structure, gravel and cobbles,	SP-SM
						locally oxidized, damp, dense abundant silt and clay lenses, w. stratified, high oxidation	
2						on root traces.	
						2.1-2.9 Brown (10YR5/4) silty sand with gravel and cobbles, massive, hard (till).	SM
						2.9-14 Brown (10YR6/2) med. sand with minor gravel, structureless, damp, loose sand	(SP)
						basins to get finer with depth at 9 ft, stratified over all fine-med. sand.	
4							
6							
8							
10							
12							
14						14+ Brown (10YR5/4) silty fine sand, wet, massive.	
						E.O.B. at 15.8 ft - Collapse	
16							
18							

Excavating Method: Backhoe Rig: CAT 321 L Depth of Water: At Completion:

Excavating Contractor: Flannery Driller: Todd Hour Later:

Foth & Van Dyke
consultants · engineers · scientists

Client: Nicolet Minerals Company Scope I.D. 93C049
Project: Lincoln Township Area J Page: 1 of 1
Prepared by: Erik Silvola (EAS) Date: 6/7/98
Checked by: _____ Date: _____

FIELD LOG OF TEST PIT

Test Boring No.: TP-J-5

Start Date: 6/7/98 Location: _____

Completion Date: 6/7/98 Surface Elevation: _____ Boring Depth: 13

Depth Fr. Lnd. Surf.	Sample No. Depth Interval	Type	N	Rec.	M Color	Description of Material	Class
						0-0.3 Brown (10YR2/1) organic topsoil (silt loam) w/f. crumb structure, damp, soft, roots.	OL
						0.3-0.5 Grey (2.5Y3/1) fine sand, structureless, loose, dry (E horizon)	
						0.5-1.8 Brown (7.5YR5/6) silty fine-med sand w/gravel, w.c. blocky structure, damp, sl. firm, dense, oxidized.	SP-SM
2						1.8-8 Brown (7.5YR5/4) silty sand with gravel and clay, massive, minor sand lenses (till), (silty clay loam) minor gravel and boulders, oxidized around cobbles and boulders, minor mottling (reworked and deformed till with stratification locally), abundant silt and sand lenses at depth, water perched.	
4							
6							
8						8-13 Brown (10YR5/4) med. sand with gravel and abundant fine sand and silt lenses, wet at ~9.5 ft (reworked till).	SP (SM)
10							
12							
						E.O.B. at 13 ft	
14							
16							
18							

Excavating Method: Backhoe Rig: CAT 321 L Depth of Water: At Completion: _____

Excavating Contractor: Flannery Driller: Todd _____ Hour Later: _____

LXB\93C049\GBAPP\64361.61\14000

FORM EES011 (9/97)

Area XB

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXB-1

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072398	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-1½	10YR2/1	-	-	-	mvfr	2f,1mc	aw	-	-
2 (E)	1½-4	7.5YR5/1-6/1	-	sil	1vfgr	mvfr	1f-c	aw	loess	none
3 (B2hs)	4-11	7.5YR4/4	-	sl	1vfgr	mvfr	3f,1mc	aw	loess	none
4 (B2s)	11-25	7.5YR5/4	-	sl	1mgr	mvfr	1f-m	cs	loess	none
5 (C1)	25-47	7.5YR6/4 (v)	-	sl	0	mvfi	0-1f	cs	loess	vy strong Ce/Cp
6 (2C2)	47-60+	10YR6/4	-	ms	0-1csbk	mvfr-ml	0	-	outwash	none

3.5-14b-210

Remarks:

a. Pit extended to approximately 8', soil similar to that encountered in horizon 6. b. Soil saturated below 7'.

c. Horizon 6 contains several vcos strata ≤ 12" thick.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

101498
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXB-2

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072398	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 26"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-1	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (E)	1-7	7.5YR6.2	-	sl	1mgr-sbk	mfr	1f-c	aw	loess	none
3 (B2hs)	7-17	7.5YR3/4	-	sl	2-3msbk	mfr-mfi	0-1f-c	cw	loess	partial Ce/Cp
4 (B3)	17-41	7.5YR4/6	> 26" cmd 5YR4/6	sl-ls	2msbk → 0-1msbk	mfr	0-1f-m	cw	loess	partial Ce/Cp
5 (2C)	41-55+	10YR6/4	see remarks	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-211

Remarks:

a. Pit extended to approximately 6', soil similar to that encountered in horizon 5. b. Soil saturated below 54".

c. A thin strata (½-1" thick) of 5YR3/4, sl, mfi, partially Ce/Cp exists at the interface between horizons 4 and 5.

d. Horizon 5 contains cmp 5YR4/4-5/4 (accumulation) and mcd 10YR6/2 (depletion) mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 226796

101498
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXB-3

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072398	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	3f,1mc	aw	-	-
2 (E)	2-4	5YR6/1-2	-	sil	1f-mgr	mvfr	1f-c	ai	loess	none
3 (B2hs)	4-14	5YR4/4	-	sil-sl	1msbk	mfr-mfi	1f-c	ai	loess	partial Ce/Cp
4 (B3)	14-22	10YR5/4 → 10YR6/4	-	sl	2m-csbk	mfr	0-1f	cs	loess	partial Ce/Cp
5 (2C1)	22-50+	10YR6/4	> 41" see remarks	mls → ms	0-1msbk → sg	mvfr-ml	0	-	outwash	none
5 (2C1)	50-60	10YR6/4	see remarks	ms	sg	ml	0	cs	outwash	none
6 (2C2)	60-84+	10YR4/2	see remarks	m-cos	sg	w-ml	0	-	outwash	none

3.5-14b-212

Remarks:

a. Pit extended to approximately 7', soil as described above. b. Soil saturated below 6'.

c. Horizons 5 and 6 contain mottles consisting of cmp 7.5YR4/6 streaks and patches.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXB-4

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072398	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-1½	10YR2/1	-	-	-	mvfr	3f	aw	-	-
2 (E)	1½-5	5YR6/1-2	-	msl	1fgr	mvfr	1f-c	aw	loess	none
3(B2hs)	5-16	2.5YR3/6-5YR3/4	-	msl	0-3msbk	mvfr-mvfi	1f-c	aw	loess	portions have strong Ce
4 (2B3)	16-45	7.5YR5/6	-	m-cos	0-1msbk	mvfr-mfi	0-1f	cs	outwash	partial Ce/Cp
5 (2C1)	45-61+	10YR6/2	-	fs	sg	ml-mfi	0-1f	-	outwash	partial Ce/Cp
5 (2C1)	61-72	10YR6/2	-	fs	sg	ml-mfi	0	cs	outwash	partial Ce/Cp
6 (2C2)	72-84	10YR5/3	-	m-cos	sg	ml	0	cs	outwash	none
7 (2C3)	84-96+	10YR5/3	-	vcos	sg	w-ml	0	-	outwash	none

3.5-14b-213

Remarks:

a. Pit extended to approximately 8', soil as described above. b. Soil saturated below 7'.

c. Horizon 4 contains fcd 5YR3/4 textural mottles. d. The firm portions of horizon 5 contain cfp 7.5YR5/6 (patches) and ffp 7.5YR4/6 (streaks) textural mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/14/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXB-5

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072498	forested	loess over glacial outwash and till
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 53"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
SE¼, T35N R13E, Section 19			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-1	10YR2/1	-	-	-	mvfr	2f,1mc	-	-	-
2 (E)	1-3	5YR6/1-2	-	fsl	1f-csbk	mvfr	1f-c	aw	loess	none
3 (B2hs)	3-12	5YR3/3	-	sl	1f-msbk	mvfr	2f-c	aw	loess	none
4 (Eb)	12-14	5YR5/2	-	sl	1fsbk	mvfr	0-1f	aw	loess	none
5 (B2sb)	14-27	5YR4/4	-	sl	1msbk	mvfr	0-1f-c	cw	loess	none
6 (2C1)	27-40	10YR6/4	-	m-cos	0-1msbk	mvfr	0-1f-c	cs	outwash	none
7 (2C2)	40-46	10YR5/3	-	fs	0-1csbk	mfr	0	as	outwash	none
8 (2C3)	46-55	10YR4/3	-	vfsl	2msbk	mfr	0	cs	outwash	none
9 (2C4)	55-70+	10YR6/4-5/4	-	ms	0-1csbk	mvfr	0	-	outwash	none
9 (2C4)	70-72	10YR5/4	-	ms	0-1csbk	mvfr	0	cs	outwash	none
10 (3C5)	72-84+	10YR5/3	-	grscl-sl	1csbk	mfr	0	-	till	none

3.5-14b-214

Remarks:

a. Pit extended to approximately 7', soil as described above. b. Soil saturated below 65". c. Collected grab sample at 6'.

d. Horizon 5 contains fmp 2.5YR3/4 and mmd 7.5YR4/6 textural (accum.) mottles. Horizon 6 contains fmd 7.5YR4/6 and 2.5YR3/6 textural (accum.) mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

Area XC

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXC-1

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072298	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 29			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (E)	2-7	10YR6/1	-	sil	1vfgr	mvfr	0-1f	aw	loess	none
3 (B2hs)	7-9	5YR3/3	-	sil-sl	1mgr	mvfr	0-1f	cw	loess	none
4 (B2s)	9-19	7.5YR4/6	-	sil	1msbk	mvfr	1f	cs	loess	none
5 (B3)	19-32	7.5YR5/6	-	sil	0-1msbk	mvfr	0-1f	cs	loess	none
6 (2C1)	32-45+	10YR5/4	-	fsl	2msbk	mfr	0	-	outwash	weak Cp
6 (2C1)	45-60	10YR5/4	-	fsl	2msbk	mfr	0	cs	outwash	weak Cp
7 (2C2)	60-132+	7.5YR4/3	> 84" see remarks	sl	1csbk	w-mfr	0	-	outwash	none

3.5-14b-216

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil wet below 7' and saturated below 10'.

c. Horizon 7 contains a ½" thick 2.5YR4/6 zone of banded mottling at 7', and cmd 7.5YR5/6 mottling below that depth.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

101498
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXC-2

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072298	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 108"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 29			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	3f	as	-	-
2 (E)	2-5	10YR6/1	-	sil	2f-mgr	mvfr	1f-m	as	loess	none
3 (B21s)	5-10	7.5YR4/4	-	sl	1csbk	mfr-mfi	1f	cs	loess	strong Ce
4 (B22s)	10-16	7.5YR3/4 (v)	-	fsl	1f-msbk	mfr	0-1f	cs	loess	strong Cp
5 (B3)	16-29	7.5YR5/6	-	sl	0-1f-msbk	mvfr	0-1f	cw	loess	none
6 (2C1)	29-44	10YR6/4	-	fsl	1msbk	mvfr-mfi	0	cw	outwash	see remarks
7 (2C2)	44-54+	10YR6/2-3	-	fsl	0-1csbk	mfr	0	-	outwash	none

3.5-14b-217

Remarks:

a. Pit extended to approximately 11', soil similar to that encountered in horizon 7. b. Soil saturated below 10'.

c. Horizon 5 contains fmd 5YR4/6 textural mottles.

d. The top 3" of horizon 6 are strongly compacted, and the compacted portion contains cmd 7.5YR5/6 textural mottles. The lower portion of horizon 6 contains few thin (<½ " thick) discontinuous 7.5YR4/4 fsl strata.

e. Horizon 7 contains few very thin (¼-½" thick) irregular and very discontinuous 10YR4/4 fsl strata.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/14/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXC-3

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072298	forested	loess over glacial till and outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 29			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-1	10YR2/1	-	-	-	mvfr	2f,1mc	as	-	-
2 (E)	1-4	10YR6/1	-	sil	1fgr	mvfr	1f-m	aw	loess	none
3 (B2hs)	4-10	5YR3/3	-	sil-sl	1msbk	mfr	0-1f-m	cw	loess	partial Ce/Cp
4 (2B2s)	10-25	7.5YR3/4	-	slgr	2msbk	mfr-mfi	0-1f	cw	sandy till	partial Ce/Cp
5 (2B3)	25-53	7.5YR4/6	-	ms	0-1msbk	mvfr-mfr	0	cw	sandy till	partial Ce/Cp
6 (2C1)	53-63	7.5YR4/3	-	grsl	1msbk	mfr	0	cw	sandy till	partial Ce/Cp
7 (3C2)	63-72+	10YR5/6 (v)	-	ms	0-1msbk	mfr	0	-	outwash	none

3.5-14b-218

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 7.

b. Horizon 5 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata.

c. Horizon 7 contains thin (2-3" thick) continuous fs and fsl strata within the horizon.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/14/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXC-4

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072398	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 84"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 29			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-2	10YR2/1	-	-	-	mvfr	2f,1mc	aw	-	-
2 (E)	2-4	7.5YR6/2	-	sil	1vfgr	mvfr	1f-m	aw	loess	none
3 (B2hs)	4-9	7.5YR3/4	-	sil-sl	1mgr	mvfr	1f-m	aw	loess	none
4 (B3)	9-19	7.5YR5/6	-	vfsl	1f-msbk	mvfr	0-1f	cs	loess	none
5 (2C1)	19-43	10YR5/4 → 10YR6/4	-	vfs → ms	1msbk → sg	mvfr → ml	0-1f	cs	outwash	none
6 (2C2)	43-45+	10YR6/4	-	fs	2msbk	mfr	0	-	outwash	weak Cp

3.5-14b-219

Remarks:

a. Pit extended to approximately 9', soil similar to that encountered in horizon 6. b. Soil saturated below 8'. c. Collected grab sample at 6'.

d. Horizon 6 contains few thin (<¼" thick) irregular 7.5YR5/6 strata.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXC-5

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072398	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 72"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 29			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (E)	0-3	7.5YR5/2-6/2	-	sil	0-1fgr	mvfr	2fm,1c	aw	loess	none
2 (B2hs)	3-5	7.5YR3/4	-	sil	0-1mgr	mvfr	1fm	aw	loess	partial Ce/Cp
3 (B2s)	5-10	7.5YR4/6 (v)	-	sil	0-1fgr	mvfr	0-1f	cs	loess	none
4 (B3)	10-21	7.5YR5/6 (v)	-	sil-sl	1fsbk	mvfr	0-1f-m	cs	loess	none
5 (2C1)	21-44	10YR6/4	-	f-ms	0-1msbk	mvfr	0-1f	cs	outwash	none
6 (2C2)	44-54+	10YR4/2	-	vfsl	2msbk	w-mvfr	0	-	outwash	none
6 (2C2)	54-60	10YR4/2	-	vfsl	2msbk	w-mvfr	0	cs	outwash	none
7 (2C3)	60-108+	10YR5/4	-	fs	0-1msbk	w-mvfr	0	-	outwash	none

3.5-14b-220

Remarks:

a. Pit extended to approximately 9', soil as described above. b. Soil saturated below 7'.

c. Horizon 5 contains a 6" band of 7.5YR5/6 textural mottles from 43-49".

d. Horizon 7 consists of an alternating sequence of ms/fs/fsl strata with fs predominating. Each strata is separated by a ½-1" thick zone of 7.5YR5/6 textural mottles.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXC-6

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072398	forested	loess over glacial sediments
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 120"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 29			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-3	10YR2/1	-	-	-	mvfr	3f,1mc	as	-	-
2 (E)	3-6	7.5YR5/2		sil	1msbk	mvfr	1f	aw	loess	none
3 (B2s)	6-22	7.5YR4/6		sil-sl	2msbk	mvfr	1f-c	cs	loess	none
4 (2B3)	22-60+	7.5YR4/4 (v)		grsl	0-1csbk	mfr	0-1f	-	sandy till	none
5 (3C1)	60-70	7.5YR3/4		vcos	sg	w-ml	0	cs	outwash	none
6 (4C2)	70-120+	5YR3/4		scl-sl	1csbk	mfr	0	-	till	none

3.5-14b-221

Remarks:

a. Pit extended to approximately 10', soil as described above.

b. Horizon 4 contains cf-mp 2.5YR4/8-5YR4/6 (accumulation) and fcp 7.5YR7/1-2 (depletion) textural mottles.

c. Horizon 5 is nearly saturated but horizon 6 is only moist.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/14/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXC-7

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072498	forested	loess over glacial outwash
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 90"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 29			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1 (Oe)	0-1	10YR2/1	-	-	-	mvfr	2f,1mc	aw	-	-
2 (E)	1-2	5YR6/2	-	sil	1f-mgr	mvfr	1f-c	as	loess	none
3 (B21s)	2-10	7.5YR4/6	-	sil-sl	1f-msbk	mvfr	0-1f	cs	loess	none
4 (B22s)	10-16	7.5YR4/6	-	sil-sl	1msbk	mvfr	0-1f	cs	loess	none
5 (B31)	16-32	7.5YR4/6	-	sl-ls	2msbk	mfr	0	cs	loess	partial Ce/Cp
6 (B32)	32-43	10YR5/6	-	sl	3m-csbk	mfr	0	cs	loess	partial Ce/Cp
7 (2C1)	43-53+	10YR6/4	-	f-ms	2msbk	mfr	0	-	outwash	partial Ce/Cp
7 (2C1)	53-114	10YR6/4	> 90" see remarks	f-ms	2msbk	w-mfr	0	cs	outwash	partial Ce/Cp
8 (2C2)	114-132+	10YR5/4		vfsl	2msbk	w-mfr	0	-	outwash	none

3.5-14b-222

Remarks:

a. Pit extended to approximately 11', soil as described above. b. Soil saturated below 9½'.

c. Horizon 7 contains few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata, and ccd 7.5YR5/6-8 banded mottling below 90".

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXC-8

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	072498	forested	glacial till
Customer Address		**Estimated Shallowest Groundwater Depth**	
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 36"	
County	**Tax Parcel No.**		
Forest	Crandon Mine Site		
Lot Legal Description			
NE¼, T35N R13E, Section 29			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Materials	Cementation, Ce Compaction, Cp
1	0-36+	5YR4/4 (v)	-	grscl-sl	var.	mfr-mfi	var.	-	till	partial Ce/Cp

3.5-14b-223

Remarks:

a. Pit abandoned at 3'.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

10/4/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

Area XF

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXF-1

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073098	sand and gravel quarry	interbedded glacial outwash and till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 168"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	0.2	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T36N R13E, Section 33			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (C1)	0-16	7.5YR3/4 (v)	-	sl-ls	1msbk	mfr	0	as	sandy till	0.6
2 (C2)	16-23	10YR6/4	-	ms	sg	ml	0	as	outwash	0.8
3 (C3)	23-49	10YR4/4	-	vfs → vfsl	1f-msbk → 2f-msbk	w-mfr	0	as	outwash	0.2
4 (C4)	49-54+	10YR6/4	-	ms	sg	ml	0	-	outwash	0.4
4 (C4)	54-96	10YR6/4	-	ms	sg	ml	0	cs	outwash	0.4
5 (C5)	96-168+	7.5YR3/4	-	grscl-sl	sg-0-1csbk	ml-mfr	0	-	sandy till	0.2

3.5-14b-225

Remarks:

a. Pit extended to approximately 14', soil sequence similar to that described above.

b. Horizon 2 contains ccd 7.5YR4/6 banded mottling in the lower 3" of the horizon.

c. Horizon 3 contains few thin (<½" thick) discontinuous 5YR3/3 cl strata.

d. Horizon 4 contains very few thin (<¼" thick) → few thin (<½" thick) discontinuous 7.5YR4/4 fsl strata. Frequency and thickness both increase with depth.

e. Horizon 5 contains some boulders, especially below 12'.

fine sediments at 23"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

081898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXF-2

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073098	sand and gravel quarry	interbedded glacial outwash and till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 138"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	<0.4	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T36N R13E, Section 33			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (C1)	0-10	7.5YR4/4 (v)	-	sl-ls	0-1msbk	mvfr	0	as	sandy till	0.4
2 (C2)	10-35	10YR6/2-3	-	ms	0-1msbk → sg	mvfr → ml	0	as	outwash	0.4
3 (C3)	35-60	10YR4/3	-	vfsl	2f-msbk	w-mfr	0	as	outwash	0.4
4 (C4)	60-72+	7.5YR4/4 (v)	-	grm-cos	sg	ml	0	-	sandy till	1.0
4 (C4)	72-96	7.5YR4/4 (v)	-	grm-cos	sg	ml	0	as	sandy till	1.0
5 (C5)	96-108	10YR5/3	-	vfsl	2m-csbk	w-mfr	0	as	outwash	0.4
6 (C6)	108-138+	7.5YR4/4	-	m-cos	sg	ml	0	-	sandy till	0.8

3.5-14b-226

Remarks:

a. Pit extended to approximately 11½', soil as described above.

b. Horizon 2 is slightly cross bedded and contains few thin (<1" thick) 7.5YR4/4 vfsl strata.

c. Horizon 3 contains few thin (<1" thick) 7.5YR4/4 cl strata.

d. Horizon 5 contains few thin (<¼" thick) 10YR2/1 vfs strata.

Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

08/18/98
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXF-3

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073098	sand and gravel quarry	glacial outwash and till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 58"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	<0.1	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T36N R13E, Section 33			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-7	10YR4/2-3	-	m-cos	1mgr	w-ml	0-1f	as	outwash	
2 (2C1)	7-12	7.5YR3/4	-	m-cos	0-1m-csbk	mfr	0	as	sandy till	<0.1
3 (2C2)	12-26	7.5YR4/4	-	sl-scl	1m-csbk	mfr	0	as	sandy till	0.1
4 (2C3)	26-58+	7.5YR4/4	-	m-cos	sg	ml	0	-	sandy till	0.8

3.5-14b-227

Remarks:

a. Horizon 1 nearly saturated.

b. Horizons 2 and 3 are compacted and dense.

compacted till at 7"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

081898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXF-4

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073098	sand and gravel quarry	glacial outwash and till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		120"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	<0.1	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T36N R13E, Section 33			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-4	10YR4/3-4	-	sil	2msbk	d-mfr	1f	as	loess	
2 (C1)	4-17	10YR6/4	-	sl-sil	1f-msbk	mfr-mfi	0	as	loess	
3 (2C2)	17-25	7.5YR4/4	-	cos	1csbk	mfi	0	cs	sandy till	0.8-1.0
4 (2C3)	25-47	7.5YR5/6 (v)	-	vcgrs	sg	ml	0	as	sandy till	1.0
5 (2C4)	47-56+	7.5YR4/4	-	scl-sl	0-1csbk	mvfr	0	-	till	<0.1

3.5-14b-228

Remarks:

a. Pit extended to approximately 13', soil similar to that encountered in horizon 5. b. Soil saturated below 10'.

c. Horizon 2 contains cf-mf10YR5/4 textural mottling.

d. Portions of horizon 5 are compacted and dense.

compacted till at 47"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 223796

081898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

SOIL DESCRIPTION REPORT

Soil Test Pit: TPXF-5

Customer Name	Soil Evaluation Date	Current Land Use or Vegetative Cover	Parent Materials
Nicolet Minerals Company	073098	sand and gravel quarry	loess over glacial outwash and till
Customer Address		**Estimated Shallowest Groundwater Depth**	**Flood Plain Elevation**
7 N. Brown Street, 3rd Floor, Rhinelander, WI 54501-3161		> 60"	
County	**Tax Parcel No.**	**System Loading Rate (GPD/ft²)**	
Forest	Crandon Mine Site	<0.4	
Lot Legal Description		**System Geometry and Depth**	**Test Pit Topography**
NW¼, T36N R13E, Section 33			

Horizon	Depth (in.)	Dominant Color	Mottles Qu,Sz,Co,Color	Texture	Structure Gr,Sz,Sh	Consistence	Roots	Boundary	Parent Material	Loading GPD/ft²
1 (A)	0-5	10YR4/1-2	-	sil	2msbk	d-mvfr	2f,1m	as	loess	
2 (A/C)	5-14	10YR6/4	-	sil	2m-csbk	d-mfi	0-1f	aw	loess	
3 (2C1)	14-64+	10YR6/4-4	-	m-cos	0-1csbk	d-mvfr	0-1f	-	outwash	0.6
3 (2C1)	64-96	10YR6/4-6	-	m-cos	0-1csbk → sg	mvfr → ml	0	as	outwash	0.6
4 (2C2)	96-108	10YR5/3	-	vfsl	2msbk	w-mfr	0	as	outwash	0.4
5 (2C3)	108-156	10YR6/4	-	m-cos	sg	ml	0	cs	outwash	1.0
6 (3C4)	156-180+	7.5YR4/3	-	grcos	1csbk-sg	mfr-ml	0	-	sandy till	1.0

3.5-14b-229

Remarks:

a. Pit extended to approximately 15', soils as described above.

b. Horizon 3 contains many very thin (<¼" thick) very discontinuous, generally irregular in shape, 7.5YR4/4 fsl strata.

c. Sands in horizons 3 and 5 are slightly cross bedded.

fine sediments at 96"
Limiting Factors/Depth

John E. Thresher, Jr., CST No. 225796

081898
Date Signed

Thresher & Son, Inc.
2828 Regent St.
Madison, WI 53705
608-233-0297

Appendix 3.5-14c

Soil Boring Logs and Abandonment Forms for the 1998 Soil Absorption System Investigation

- Area A
- Area E
- Area G
- Area H
- Area K

[Note: Bore holes for Area A, Area G, the southern part of Area H (borings BH-02, -03, and -05), and Area K were completed and reclaimed prior to surveying. The coordinates noted on the logs area approximate based on visual mapping.]

Area A

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area A		BA-02

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Boart Longyear Mike Mueller	09/01/98	09/01/98	4¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1565	8¼ inches

Boring Location
State Plane ~119656 N, ~2273771 E S/C/N Lat
NE 1/4 of SW 1/4 of Section 25, T35 N, R12 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	24	2/2 4/7		0-0.2 Dark brown (10YR3/2) organic topsoil, fibrons, roots (silt loam)	OL SM									300 lb hammer 3" s.s.
				0.2-0.5 Grey (10YR4/1) sandy silt	ML									
				0.5-0.8 Yellow brown (7.5YR6/6) fine sandy (silt loam) w.f. b/w/structure (loess)	ML SM									2½" s.s.
				0.8-1.5 Yellow brown (7.5YR7/4) fine sandy silty (loess)	SP									
2	18	5/5 4/8	2	1.5-2 Yellow brown (10YR7/4) silty fine sand with gravel, strong, medium, blocky structure cemented (sandy loam) (till)	SM									2" s.s.
3	17	7/4 6/7	4	2-4 Yellow brown (10YR6/6) fine-medium sand c. sand lenses, stratified damp, loose (outwash) c. lenses oxidized vs. iron cemented	SP									3" s.s.
4	15	14/6 9/8	6	4-6 Yellow brown (10YR7/4) med - c. sand stratified with fine-med sand lenses damp, loose (outwash)	SP									2½" s.s.
5	16		8	6-8 As above	SP									
		8/9 8/7		8-10 As above, v. damp at 9.5 (10YR5/4) color										
6	16	6/8 6/9	10	10-12 As above (10YR7/4), damp, predominantly fine sand	SP									3" s.s.
7	17	3/4 6/5	12	12-14 Brown (10YR5/4), med. c. sand, minor gravel, stratified, wet, loose (outwash), wet at 12'	SP									2½" s.s.
8	4	1/2 3/3	14	14-16 Brown (10YR4/4), silty sand with clay, wet, massive sticky (reworked till)	SM									2" s.s.
9	8	4/4 9/8	16	16-18 As above	SM									2" s.s.
10	4	50/3	18	18-20 As above	SM									
11	16	4/8 12/9	20	20-22 As above	SM									

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BA-02

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
12	12	47/18 35/31	22	22-24 Brown (7.5YR5/4) silty sand with clay and gravel, massive wet, sticky (till)	SM									2" s.s.
13	14	4/16 21/21	24	24-26 As above	SM									2" s.s.
14	0	50/0"	26	26-28 Spoon refusal on boulder	-									2" s.s.
15	8	4/5 5/13	28	28-30 As above, brown till	SM									2" s.s.
16	0	50/0"	30	30-32 Spoon refusal on boulder	-									2" s.s.
17	18	15/38 16/29	32	32-34 As above, brown till	SM									2" s.s.
18	10	6/10 10/11	34	34-36 Red brown (5YR4/4) silty sand with gravel and clay, massive dense, damp (saturated) (till)	SM									2" s.s.
19	15	9/16 36/50	36	36-38 As above	SM									2" s.s.
20	12	12/12 13/11	38	38-40 As above	SM									2" s.s.
			40	EOB 40 ft										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Nicolet Minerals Company		BA-03

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Boart Longyear Perry Williamson	05/05/98	05/05/98	4" Rotosonic

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1582	4 inches

Boring Location
State Plane ~117939 N, ~2274826 E S/C/N Lat
NW 1/4 of SE 1/4 of Section 25, T35 N, R12 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest		Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	44"			0-5 Core run										
				0-0.3 Dk brown (7.5YR2/1) organic topsoil	OL									
				weak, fire blocky structure, dry, sl. hard.										
				leaves and roots										
			2	0.3-2.8 Brown (7.54YR4/.4) sandy clay-clayey	SC-									
				sand with silt minor gravel, locally oxidized	SM									
2	120"			weak coarse blocky structure, v. damp, soft										
			4	2.8.5 Brown (7.54YR4/4) fine-med silty	SM									
				sand with gravel, locally oxidized										
				minor cobbles, damp, weak, coarse blocky										
				structure (till)										
			6	5-15 Core run										
				5-11.8 As above silty sand	SM									
				(till)										
			8											
			10	11.8-15 Brown (7.54YR5/4) silty	SP-									
				fine-coarse sand with gravel and	SM									
				cobbles, structure less damp, loose										
				(till)										
			12											
			14											
3	58			15-20 Core run										
				15-20 As above with minor sand	SP-									
				layers and slight increase in silt 18-20	SM									
			16											
			18											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BA-03

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
4	57		20	20-25 Core run										
				20-25 Brown (7.54YR5/5) silty	SP-									
				fine-med. sand with gravel	SM									
				and cobbles, structure less damp-										
				dry, loose, soft, minor oxidation										
			22	(till)										
5	33		24	25-28 Core run										
				25-28 As above, sl. coarser	SP-									
				matrix, with more cobbles and boulders	SM									
				(till)										
			26											
6	34		28	28-31 Core run										
				28-30 As above										
				30-31 Lt brown (7.54YR6/4)	SP									
				fine sand with minor gravel										
				dry, structureless, loose (outwash)										
			30											
			32	31-35 Brown (7.54YR4/4) fine-										
				med sand with gravel, structureless	SP-									
7	66			massive (till)	SM									
8	70		34	35-41 Core run										
				35-36 As above										
				36-41 Layered outwash										
			36											
			38	36-38 Brown (7.54YR6/2) med. coarse	SP									
				sand with gravel and cobbles, structureless										
				damp, loose (outwash)										
				38-40 Brown (7.54YR6/4) fine sand										
				with gravel, structureless, damp	SP									
			40	40-41 Cobble										
				41-45 Core run										
9	45			41-43 Fine-med. sand as above	SP									
				collect bulk sample										
				43-45 Cobbles										
			42											
			44	45-55 Core run										
				45-55 Brown (7.54YR5/4) silty	SP/									
10	115			fine-med. sand with gravel	SP-									
				cobbles and boulders, massive,	SM									
				damp, sl. firm (till) abundant										
			46	sand lenses										
			48											

State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: BA-03 | Page 3 of 3

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	60		50	55-60 Red brown (5YR5/4) clayey silty sand with abundant gravel and cobbles, massive, firm, hard (till)	SC-SM									
			52											
			54											
			56											
			58											
			60	E.O.B. 60										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Nicolet Minerals Company (NMC)		BA-05

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Boart & Longyear Perry Williamson	05/05/98	05/05/98	4" Rotasonic

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1677	

Boring Location
State Plane ~118074 N, ~2275565 E S/C/N Lat
NE 1/4 of SW 1/4 of Section 25, T35 N, R12 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest		Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	55			Core 0-5 0-0.2 Dk brown (7.54YR2/1) organic topsoil, weak fine blocky structure damp soft	OL									
			2	0.2-3.6 Brown (7.54YR3/4) silty sand with clay, massive-coarse strong block structure, v. damp, minor gravel (till)	SM-SC									
			4	3.6-5 Brown (7.54YR5/4) silt sand with minor gravel, v. damp, massive, soft 5-15 Core	SM									
2	116		6	5-9.2 As above										
			8											
			10	9.2-12 Brown (7.54YR4/4) silty sand with gravel, massive to weak coarse blocky structure	SM-SP									
			12	12-15 As above sl. more sand (till)										
			14											
3	46			15-19 Core										
			16	15-19 As above, sl. more sand, gravel and cobbles (till)	SM-SP									
			18											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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DML\CER1\93C049\GBAPP\65729.61\14000

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BA-05

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
4			20	19-25 Core										
				19-25 As above	SP-									
				20-24.5 Brown (7.54YR6/5)	SM									
				fine-med. sand with gravel and										
				minor silt, structureless										
			22	dry-damp, loose (till)										
4	47		24	Core 25-29 Brown (7.54YR4/4)	SM									
				silty sand with gravel and minor										
				clay, massive, dense, clay lenses										
				(till)										
			26											
			28											
5	70		30	29-35 Core										
				29-30 As above	SP									
				30-35 Brown (7.54YR7/3)										
				fine, med. sand with minor										
				gravel damp soft, locally oxidized										
			32	(layered outwash)										
			34											
6	60			35-40 As above, very minor	SP									
				gravel, stratified, (outwash)										
			36											
			38											
7	60		40	40-45 As above, outwash										
				large cobble 44-45										
			42											
8	24		44	45-47 As above										
			46											
9	20			47-49 Core										
				47-49 Grey (2.5Y4/1) sandy silt	ML-									
				with clay very firm and compact	SM									
				massive, hard (till)										
			48											
				E.O.B. 49										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area A		BA-06

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Boart-Longyear Mike Mueller	09/01/98	09/01/98	4¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1577	8¼ inches

Boring Location
State Plane ~120150 N, ~2274718 E S/C/N Lat
SE 1/4 of NW 1/4 of Section 25, T35 N, R12 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	14	1/4 4/4	-	0-0.1 Dark grey brown (10YR211) organic topsoil (silt loam) structureless, dry, loose	OL									300 lb hammer, 2½" s.s.
			-	0.1-0.3 Grey (10YR7/1) silty sand (loam) w.f. granular structure, dry (soft)	SM									
			-	0.3-2 Yellow brown (10YR7/6) silty sand with gravel (loam-sandy loam) with medium blocky structure, dry, soft (loess)	SM									
2	18	4/8 8/8	- 2	2-3.2 As above	SM									2" s.s.
3	20	3/7 9/10	- 4	3.2-4 Yellow brown (10YR6/6) fine-med sand with silt and gravel, blocky structure, dry, soft (highly reworked till)	SR SM									3" s.s.
			-	4-4.4 As above										
4	19	5/5 6/6	- 6	4.4-6 Brown (10YR6/4) med. to c. sand stratified with fine sand lense, structureless, damp, loose (outwash)	SP									2½" s.s.
			-	6-8 Brown (10YR6/3) fine-med sand stratified with c. sand and gravel lenses. structureless, damp, loose (outwash)	SP									2" s.s.
5	16	3/4 4/6	- 8	8-10 Brown (10YR6/4) fine-med sand as above, fewer and thinner c. sand lenses, less gravel (outwash)	SP									
6	16	4/7 7/7	- 10	10-12 As above, slightly more gravel	SP									3" s.s.
7	21	5/5 4/6	- 12	12-14 As above, very damp at tip of spoon	SP									2½" s.s.
8	17	3/3 5/7	- 14	14-16 Yellow brown (10YR6/6) fine-med sand stratified with c. sand lenses, minor gravel, wet at 15.7, loose	SP									2" s.s.

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Signature [signature] Firm Foth & Van Dyke

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SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	17	3/4 3/4	16	16-18 Yellow brown (10YR5/4) fine-med sand stratified with c. sand and minor gravel lenses (outwash), wet, loose	SP									2" s.s.
10	23	3/4 2/5	18	18-20 As above, v. tip brown (10YR4/4) fine silty sand lense	SP									2" s.s.
11	0	1/1 2/6	20	20-22 No recovery, fine silty sand runs out of spoon	-									
12	16	1/2 1/1	22	22-24 Yellow brown (7.5YR4/6) silty sand with minor gravel and clay, massive, wet, slightly sticky (reworked till)	SP SM									2" s.s.
13	4	1/1 1/1	24	24-26 As above (10YR6/4) much less silt, more sand	SP SM									2" s.s.
14	16	1/1 1/8	26	26-28 Brown (7.5YR5/4) silty sand with clay and gravel, wet, soft, massive (reworked till) till at tip	SM									2" s.s.
15	14	4/5 13/15	28	28-30 Brown (7.5YR5/4) silty sand with clay and gravel, massive dense, wet, firm (till)	SM									2" s.s.
16	16	5/25 12/17	30	30-32 As above, damp, saturated, drills very rough	SM									2" s.s.
17	8	6/13 12/73	32	32-34 As above	SM									2" s.s.
18	17	5/18 18/22	34	34-36 As above, slightly less consolidated, still drills rough, till still dense	SM									2" s.s.
19	12	3/12 19/3	36	36-38 As above										
20	16	3/12 19/11	38	38-40 As above	SM									
21	12	12/21 14/15	40	40-42 As above, slightly less silt	SM									
			42	EOB 42 ft										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area A		BA-07

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Boart-Longyear Mike Mueller	08/31/98	08/31/98	4¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1580	8¼ inches

Boring Location
State Plane ~126877 N, ~2275959 E S/C/N Lat
NE 1/4 of NE 1/4 of Section 25, T35 N, R12 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	24	2/3 7/7	-	0-0.2 Brown (7YR2/2) organic topsoil with fine granular structure (sandy silt loam) dry, soft	OL SM-ML									300 lb hammer, 3" s.s.
			-	0.2-0.7 Brown (10YR5/4) sandy silt, silty soft (loess) loam-silt loam	SM SP									2½" s.s.
			-	0.7-1.6 Brown (7.5 YR5/4) silty sand with gravel, iron cemented massive, hard dense (till) dry (loam)										2" s.s.
			-	1.6-2 Yellow brown (7YR6/6) med c, sand, gravel, stratified, dry, loose (outwash)	SP									
2	20	4/6 5/6	- 2	2-4 Yellow brown (10YR6/3) fine-med sand, stratified, damp, loose	SP									2" s.s.
3	16	3/2 4/5	- 4	4-6 Yellow brown (10YR7/3) fine sand stratified, slightly damp, loose (outwash)	SP									2" s.s.
4	13	1/2 3/4	- 6	6-8 Light brown (10YR7/2) fine-med sand with minor gravel, stratified damp, loose (outwash)	SP									3" s.s.
5	20	5/5 5/5	- 8	8-8.4 As above										
6	12	1/1 2/4	- 10	8.4-10 Lt brown (10YR6/2) med-c. sand stratified, damp, loose (outwash) 10-12 As above v.sl finer	SP									2" s.s.
7	16	2/2 1/3	- 12	12-13.9 As above	SP									
			-	13.9 - 14 Red brown (2.5YR5/6) silty fine sand, massive very damp, soft (till)	SP-SM									2" s.s.
8	17	1/2 2/3	- 14	14-14.6 As above 14.6-16 Light brown (10YR6/3) fine sand stratified damp, soft (outwash)	SP									2" s.s.
9	16	4/5 3/4	- 16	16-18 Brown (7.5YR5/4) c. sand with silt and massive, wet, soft (reworked till), wet at ~17 ft	SP-SM									3" s.s.
10	11	5/4 3/5	- 18	18-20 As above										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm Foth & Van Dyke

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State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: BA-07 |

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	8	3/3 3/2	20	20-22 As above, more silt, abundant gravel	SP SM									2" s.s.
12	8	5/3 2/2	22	22-24 As above, very gravelly, brown (7.5YR8/4) gravel with silt and c. sand, wet, loose (reworked till)	GP GM									2" s.s.
13		20/73 17/9	24	24-26 Brown (7.5YR4/9) silty gravel with c. sand and cobbles - massive, wet, loose (reworked till)	GP GM									3" s.s.
14	17	1/2 20/13	26	26-28 Brown (7.5YR4/15) silty sand with gravel and cobbles, massive, dense, hard, wet (till)	SM									2" s.s.
15	0	50/0"	28	28-30 Pound cobble	-									2" s.s.
16	10	23/17 23/17	30	30-32 Brown (7.5YR4/5) silty sand with gravel and cobbles and clay, massive, dense, hard, damp (till) 30-32 drills very hard	SM									2" s.s.
17	10	12/13 17/22	32	32-34 As above										
18	12	12/31 31/50	34	34-36 As above										
19	12	10/20 25/30	36	36-38 As above. Slightly more clay	SM									2" s.s.
20	12	1/1 1/18	38	38-40 Brown (7.5YR6/2) fine-med sand with silt and gravel, stratified, wet, soft (reworked till)	SP SM									2" s.s.
21	11	6/10 9/7	40	40-42 Strong brown (7.5YR4/6) c. sand with silt and gravel, no evident stratification, wet, massive (reworked till)	SP SM									2" s.s.
22	13	10/6 11/17	42	42-43.9 As above. More sand with minor silt 43.9-44 Till as 30-38	SP SM									2" s.s.
23	14	12/15 18/12	44	44-46 Brown (7.5 YR4/4) silty sand with gravel, damp (saturated) dense, hard (till), drills hard	SM									2" s.s.
24	13	19/21 42/35	46	46-48 As above.	SM									
25	6	12/37 31	48	48-50 As above										
			50	EOB 50 ft										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Nicolet Minerals Company		BA-08

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Boart-Longyear Perry Williamson	05/06/98	05/06/98	4" Rotasonic

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1577	

Boring Location
State Plane ~116976 N, ~2274205 E S/C/N Lat
SW 1/4 of SE 1/4 of Section 25, T35 N, R12 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest		Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1		59		0-5 Core										
				0-0.4 Dk brown (7.54YR2/1) organic topsoil	OL									
				weak fine blocky structure, damp, soft										
				roots, leaves										
			2	0-4.4 Brown (7.54Y5/4) silty fine-	SM-									
				med. sand with gravel, sandy organic	SP									
				material mixed in (disturbed soil)	OL									
			4	4-5 Brown (7.54YR5/5) silty sand	SM									
				with gravel, v. damp, massive,										
				minor clay oxidized, wet (till)										
				5-12 Core										
				5-12 As above, sl. more sand	SM-									
2	80		6	at 7', locally oxidized, abundant	SP									
				gravel and cobbles, boulder at										
				11.8										
			8											
			10											
3	38		12	Core 12-15										
				12-15 As above, sl. increase										
				in sand										
			14											
4	62			15-20 As above silty sand	SM									
				with gravel and cobbles (till)										
			16											
			18											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

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State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: BA-08 |

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
5	16		20	Core 20-22 as above	SM									
			22	Core 22-25 as above sl.	SM-									
6	39			sandier near 25 (till)	SP									
			24											
7	62			25-30 Core										
				25-30 As above, very compact and dense, with boulders (till)	SM									
			26											
			28											
8	57		30	30-35 Core										
				30-35 Brown (7.54YR5/4) silty sand with gravel and cobbles very dense, massive, damp (till)	SM									
			32											
			34											
9	58			35-40 Core										
				35-40 As above more cobbles v. dense	SM									
			36											
			38											
10	58		40	Core 40-45										
				40-41 Lt. brown (7.54YR5/6) silty fine sand with gravel structureless, loose, damp	SP-SM									
				41-43 Brown (7.54YR4/5) silty sand with gravel and clay massives, dense, till	SM									
			42											
			44	43-45 Lt. brown (7.5Y7/3) fine sand with gravel and minor silt	SP									
11	55			structureless, loose (till)										
				45-51 Core										
				45-46.5 As above sand										
			46	46.5-48 Lt. brown v. fine sand (7.54YR7/2), dry, soft	SP									
				48-51 Brown (7.54YR4/5) silty sand with gravel and boulders	SM									
			48	(till) massive, boulder 50-51										

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BA-08

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
12	57		50	Core 50-55 50-55 As above (till)	SM									
			52											
			54											
				E.O.B. 55'										
			56											
			58											
			60											
			62											
			64											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area A		BA-09

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Boart-Longyear Mike Mueller	08/02/98	09/02/98	4¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1595	8¼ inches

Boring Location
State Plane 125640.83N, 2272600.80E S/C/N Lat
NE 1/4 of NE 1/4 of Section 25, T35 N, R12 E Long

Local Grid Location (if applicable)
Feet ____ N ____ S Feet ____ E ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	16	3/3 11/10	-	0-0.4 Dark brown (7.5YR4/3) silty clay with boulders, cobbles, organics (silty clay loam) mod. med. blky structure	OL CL									300 lb hammer, 3" s.s.
			-	0.4-1.6 Yellow brown (10YR6/6) silt with fine sand (silt loam) mod. med. s. blky structure, damp, hard	ML									
			-	1.6-2 Yellow brown (7.5YR5/6) silty sand with gravel and boulders w. med. blky structure, damp, slightly loose (sandy loam)	SP-SM									2½" s.s.
2	12	12/16 10/10	- 2	2-2.4 Yellow brown (7.5YR6/6) fine-med sand, structureless, very damp, loose	SP									2" s.s.
			-	2.4-4 Red brown (5YR4/4) silty sand with gravel and clay, massive, dense, damp, hard (till) (silty clay loam)	SM-SC									2" s.s.
3	20	4/5 6/7	- 4	4-6 As above, wet at 4.5 ft	SP-SM									
4	10	7/6 7/10	- 6	6-8 Yellow brown (7.5YR5/4) silty sand with gravel and cobbles, massive - loose damp (till) (sandy loam)	SP SM									2" s.s.
5	13	11/11 13/15	- 8	8-10 As above	SP SM									2" s.s.
6	20	10/16 22/50	- 10	10-10.5 As above 10.5-12 Yellow brown (7.5YR5/6) silty sand with gravel and cobbles, massive, dense, hard, damp, (till) (sandy loam)	SM									2" s.s.
7	16	23/39 50/3	- 12	12-14 As above	SM									2" s.s.
8			- 14	14 Drilling boulder	-									

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BA-09

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	9	22/ 50/4	16	16-18 As above, yellow brown till	SM									2" s.s.
10	16	30/40 53/50	18	18-20 As above	SM									2" s.s.
11	18	21/24 29/48	20	20-22 As above, till	SM									2" s.s.
			22											
12	18	3/18 22/31	24	24-26 As above	SM									2" s.s.
			26											2" s.s.
			28											
				29-31 As above	SM									
13	16	15/17 29/49	30											
			32											
14		15/24 35/30	34	34-36 Yellow brown (7.5YR5/6) silty with gravel, massive, dense, very damp, wet (till)	SM									
			36											
			38											
				EOB 38 ft										

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BA-2
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BA-2
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 09/01/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	40.0	10 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 9-8-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BA-3
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BA-3
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 05/05/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	60.0	14 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 5-14-98
Street or Route
Telephone Number
City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

3.5-14c-19

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BA-5
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BA-5
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 05/05/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available?
☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	49.0	11 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 5-14-98

Street or Route

Telephone Number

City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY
3.5-14c-20

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BA-6
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine
Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BA-6
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 09/01/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	42.0	10 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 9-8-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BA-07
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable) ____ Gov't Lot ____ Grid Number
Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BA-07
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 08/31/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	50.0	12 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 9-8-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY
3.5-14c-22

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BA-8
County: Forest
___ 1/4 of ___ 1/4 of Sec. ___ ; T. ___ N; R. ___ ☐ E ☐ W
(If Applicable)
___ Gov't Lot ___ Grid Number
Grid Location
___ ft. ☐ N. ☐ S., ___ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BA-8
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 05/05/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ___

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ___

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ___ Casing Diameter (in.) ___ Casing Depth (ft.) ___

Lower Drillhole Diameter (in.) ___

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) ___

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ___

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	55.0	13 Bags	

(8) Comments ___

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 5-14-98
Street or Route:
Telephone Number:
City, State, Zip Code:

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

3.5-14c-23

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BA-8 (9/96 RJH per 10/1/96)
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W

(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BA-89 SOIL 11/23/99

WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 09/02/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	38.0	13 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 9-8-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

Area E

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-01 (TPE-10)

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Todd Shmafelet Boart-Longyear	05/14/98	05/14/98	3¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1595.5	5¼ inches

Boring Location
State Plane 124753.10 N, 2271304.93 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N Feet ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-2 Pit Collapse										300-lb hammer
1	16	1/1 2/1	2	2-3 Brown (7.5YR2/2) organic topsoil mixed with brown fine-med SAND (pit backfill)	OL/ SP									3-in split-spoon (S.S.)
				3-4 As above, more SAND										
2	10	½ 2/2	4	4-6 Brown (7.5YR5/5) fine-med. SAND, minor topsoil (pit backfill)	SP									2½-in S.S.
3	14	3/1 1/1	6	6-8 Brown (7.5YR6/3) med-coarse SAND, structureless, wet, loose (pit backfill)	SP									2-in S.S.
4	18	4/8 11/18	8	8-10 Brown (7.5YR6/2) med-coarse SAND, structureless, weakly stratified, V. damp, loose (outwash)	SP									3-in S.S.
5	8	3/3 5/4	10	10-12 As above	SP									2½-in S.S.
6	7	15/11 8/9	12	12-14 As above	SP									2-in S.S.
7	15	8/9 16/8	14	14-16 As above slightly coarser outwash, damp, med sand with coarse sand lenses	SP									3-in S.S.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin Route to: SOIL BORING LOG INFORMATION

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
8	16	10/8 9/12	16	16-18 As above, silty, fine, med-fine sand with coarse SAND	SP									2½-in S.S.
9	20	9/10 11/9	18	18-20 As above. Stratified outwash, damp	SP									2-in S.S.
10	19	6/9 5/4	20	20-22 As above, outwash	SP									3-in S.S.
11	5	11/10 7/6	22	22-24 As above, outwash, wet	SP									2½-in S.S.
12	14	6/9 5/4	24	24-25 Weathered rock										2-in S.S.
				25-26 Brown (7.5YR5/4) fine-coarse SAND with silt, sl. dense, wet (reworked v. sandy till)	SP-SM									
13	8	18/30 31/6	26	26-28 As above interfingered with outwash and cobbles but easy drilling	SP-SM (SM)									3-in S.S.
14	16	15/7 9/8	28	28-30 Brown (7.5YR5/5) fine-coarse SAND with silt, structureless, wet, soft, reworked till and interfingered outwashed	SP (SM)									2½-in S.S.
15	24	5/2 1/4	30	30-31 As above										2-in S.S.
				31-32 Brown (7.5YR4/5) silty fine SAND with sand and clay, massive, wet, soft (till) Note: till drills very easy-like outwash	SM (SP)									
16	12	6/8 5/4	32	32-34 As above										2-in S.S.
17	6	100 f .6	34	34-36 Red brown (5YR5/4) silty SAND with gravel, dense, wet, v. damp, firm (till)	SM									2-in S.S.
18	5	100f .6	36	E.O.B. 36										2-in S.S.
			38											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste ☐ Underground Tanks
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-02 (TPE-08)

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Todd Shmafelet Boart-Longyear	05/12/98	05/12/98	3¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.9	5¼ inches

Boring Location
State Plane 124634.04 N, 2272261.37 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-1 Surface to 1' collapsed pit. No sample										300-lb hammer
1	10	2/1 1/2	2	1-1.2 Brown (7.5YR2/2) organic topsoil, w., med. blocky structure, damp, soft	OL									3" S.S.
				1.2-2 Brown (7.5YR5/5) med-fine SAND, minor gravel and organic soil, structureless, damp, (backfill)	SP									
2	11	2/1 2/3	4	2-4 As above	SP									2½ -in S.S.
				4-5.5 As above	SP									
3	11	3/5 11/4	6	5.5-6 Brown (7.5YR6/4) med-coarse SAND with gravel, structureless, very damp (backfill)	SP									2-in S.S.
				6-7 Brown backfill with organics as above, more silt	SM									3-in S.S.
4	20	21/6 6/3	8	7-8 Brown (7.5YR) fine-coarse SAND structureless, wet to damp (outwash)	SP									
				8-10 As above (outwash)	SP									2½-in S.S.
5	11	6/3 2/1												
			10	10-12 As above, wet	SP									
6	22	3/1 2/2												2½-in S.S.
			12	12-14 As above, rock in 3-in spoon and shoe (outwash)	SP									
7	7	11/12 9/15												
8	12	16/12 9/16	14	14-16 As above, sl. coarser with more gravel, weakly stratified	SP									2-in S.S.

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Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BE-02 (TPE-08)

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	17	21/25 30/19	16	16-18 Lt. brown (7.5YR6/3) fine-med/coarse SAND, structureless, damp, loose (outwash)	SP									3-in S.S.
10	7	12/16 21/23	18	18-20 As above, silt with fine SAND	SP									2½-in S.S.
11	5	19/24 26/22	20	20-22 As above, rock in shoe	SP									2-in S.S.
12	19	12/11 13/19	22	22-24 As above (outwash) damp										2-in S.S.
13	15	35/31 19/25	24	24-26 As above, minor coarse gravel and cobbles, rock in shoe	SP									3-in S.S.
14	0	50f.2	26	26-28 Drill boulder to ~27.5										2-in S.S.
15	0	12/ 50f.1	28	28-30 No recovery										3-in S.S.
16	7	16/9 8/7	30	30-32 Cobbles										2-in S.S.
				31-32 Brown (7.5YR4/4) silty SAND with gravel, damp, structureless - loose, soft (reworked till)	SM -SP									
17	7.5	16/11 12/10	32	32-34 As above										2-in S.S.
18	8.5	12/10 5/4	34	34-36 As above, water at ~35' reworked till - very sandy	SM -SP									2-in S.S.
19	19	18/26 25/27	36	36-38 As above.										2-in S.S.
			38	E.O.B. 38'										

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-03 (TPE-05)

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Todd Shmafelet Boart-Longyear	05/12/98	05/12/98	3¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.2	5¼ inches

Boring Location
State Plane 125242.02 N, 2273527.70 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-0.5 No Sample - Pit Collapse										300 lb Hammer
1	11	3/6 4/5		0.5-2.5 Lt. brown (7.5YR5/5) fine-med. SAND with silt and gravel, structureless, damp, loose (pit backfill)	SP									3-in S.S.
			2											
2	5	3/2 3/3		2.5-4 As above	SP									2½-in S.S.
3	7	6/5 6/7	4	4-6 As above - v. damp	SP									2-in S.S.
4	17	2/2 1/2	6	6-8 As above, roots and organics (pit backfill)	SP									3-in S.S.
5	4	2/4 4/5	8	8-10 Lt. brown SAND with cobbles (weathered granite, rock in shoe)	SP									2½-in S.S.
6	16	3/5 4/6	10	10-12 Brown (7.5YR6/3) fine-coarse SAND, stratified, w. fine sand lenses, loose, (outwash)	SP									2-in S.S.
7	16	19/16 7/6	12	12-14 As above with fine sand and minor gravel lenses, locally oxidized along lenses	SP									3-in S.S.
8	15	12/16 15/16	14	14-16 As above, 1 minor organic silt laminae ~3mm at 14.6	SP									2-in S.S.

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Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin Route to: SOIL BORING LOG INFORMATION
Department of Natural Resources Form 4400-122 7-91
BORING NUMBER: BE-03 (TPE-05)

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	9	16/11 8/9	16	16-18 Brown (7.5YR6/2) fine SAND, structureless, v. damp, soft (outwash) minor coarse sand lenses	SP									2-in S.S.
10	17	25/32 16/9	18	18-20 Lt. brown (7.5YR7/2) med. SAND, stratified, minor cobbles, structureless, damp	SP									3-in S.S.
11	8	12/4 3/5	20	20-22 As above	SP									2½ S.S.
12	0	50f.2	22	22-24 Drill through cobbles	SP									2-in S.S.
13	12	35/29 18.10	24	24-26 Brown (7.5YR6/3) med. fine SAND, with minor silty sand lense at 25.2-25.4, structureless, damp	SP									3-in S.S.
14	13	18/12 15/13	26	26-26.3 As above										2½-in S.S.
				26.3-28 Brown (7.5YR5/4) fine-med. SAND with silt, gravel and cobbles, very sandy reworked till, structureless, relatively loose, soft, damp	SP (SM)									
15	15	10/12 16/11	28	28-30 As above, very sandy till with med. SAND lenses. Sample of till only, wet at ~29.2.	SP (SM)									2-in S.S.
			30	30-ft boulder Auger Refusal 30.5										
			32											
			34											
			36											
			38											

LMC\LXB\DML\93C049\GBAPP\63489.61\14000

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-04 (TPE-06)

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Todd Shmafelet Boart-Longyear	05/13/98	05/13/98	3¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1594.2	5¼ inches

Boring Location
State Plane 125472.40 N, 2272885.40 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-1 Air Collapse										300 lb hammer
1	17	1/1 1/1	2	1-3 Brown (7.5YR4/4) SANDY silt with clay and gravel, massive, wet, soft, oxidized with organic soil mixed (pit backfill)	SM -ML									3-in S.S.
2	6	1/1 1/1	4	3-5 Brown (7.5YR6/2) fine SAND with silt and mixed organic soil, structureless, loose, damp, (pit backfill)	SP									2½ -in S.S.
3	12	5/4 6/3	6	5-7 As above	SP									2-in S.S.
4	15	5/10 12/9	8	7-9 Brown (7.5YR6/2) med.-coarse SAND with minor gravel, structureless, damp stratified (outwash)	SP									3-in S.S.
5	16	6/8 5/7	10	9-11 As above, v. damp - wet	SP									2½-in S.S.
6	16	6/12 9/8	12	11-13 As above. Sl. finer, stratified SAND (outwash)	SP									2-in S.S.
7	18	6/5 7/10	14	13-15 As above, outwash	SP									3-in S.S.

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Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin Route to: SOIL BORING LOG INFORMATION
Department of Natural Resources Form 4400-122 7-91
BORING NUMBER: BE-04 Page 2 of 2

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
8	18	13/12 10.16	16	15-17 As above, outwash med. SAND, minor oxidation	SP									2½-in S.S.
9	21	13/9 6/7	18	17-19 As above, Sl. coarser near bottom of sample	SP									2-in S.S.
10	7	6/9 6/10	20	19-21 As above, rock in shoe	SP									3-in S.S.
11	7	16/50 f.1	22	21-23 As above	SP									2½-in S.S.
12	4	50f.4	24	23-25 Brown (7.5YR4/4) fine SAND with silt and gravel, massive, dense (till) v. damp	SP-SM									2-in S.S.
13	9	31/50 f.3	26	25-27 Brown (7.5YR5/4) fine-med SAND with gravel and cobbles, massive, dense, v.damp (till)	SP-SM									3-in S.S.
14	2	50f.2	28	27-29 Rock in shoe, very little recovery, poss. wet.										2½ -in S.S.
15	20	16/25 36/35	30	29-31 As above with interfingered (outwash) fine-coarse sand lenses, wet.	SP-SM (SP)									2-in S.S.
16	13	26/18 50f.1	32	31-33 As above with cobbles.	SP-SM									2-in S.S.
17	9	46/ 50f.3	34	33-34 As above.	SP-SM									2-in S.S.
				E.O.B. 34 ft										
			36											
			38											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		MWE-04

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Larry Erdman Boart-Longyear	05/28/98	05/28/98	4¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1595.14	8¼ inches

Boring Location
State Plane 125469.36 N, 2272880.87 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0 Blind drill 0-4 Pit backfill										
			2											
			4	4-20 Brown (7.5YR6/3) fine-med sand with minor gravel (outwash)										
			6											
			8											
			10											
			12											
			14											

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Signature Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: MWE-04

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91
Page 2 of 2

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			16											
			18											
			20	20-21 Gravelly sand										
				21-24 As above										
			22											
			24	24-28 Gravel cobbles (till)										
			26											
			28											
			30											
			32	32-34 Brown (7.5YR5/3) med-coarse sand, wet (outwash)										
			34											
				E.O.B. 35 ft										
			36											
			38											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-05

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Todd Shmafelet Boart-Longyear	05/13/98	05/13/98	3¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1601.2	5¼ inches

Boring Location
State Plane 123946.57 N, 2272123.97 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N Feet ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	24	1/2 3/3	0	0-0.3 Dk. Grey (7.5YR2/1) organic topsoil w. med. blocky structure, damp, roots	OL									300-lb hammer
				0.3-2 Brown (7.5YR5/3) fine sandy silt with clay and gravel, mod. coarse blocky structure, damp, oxidized (till)	SM -ML									3-in S.S.
2	18	2/3 3/5	2	2-3.8 As above	SM -ML									2½ -in S.S.
				3.8-4 Brown (7.5YR6/3) med. SAND weakly stratified, v. damp loose (outwash)	SP									2-in S.S.
3	23	9/13 15/2	4	4-6 As above, minor fine SAND lenses	SP									
4	12	16/10 9/8	6	6-8 As above (wet)	SP									3-in S.S.
5	14	2/3 3/4	8	8-10 Brown (12.5YR6/2) med-coarse SAND with fine sand lenses, structureless, loose, wet	SP									2½-in S.S.
6	5	6/4 6/5	10	10-12 As above, silty SAND with minor clay lense (11.6-11.8)	SP									2-in S.S.
7	15	16/23 15//27	12	12-13 As above										3-in S.S.
				13-14 Red brown (5YR5/4) silty SAND with gravel & clay, massive, firm, cobbley, dense (till)	SP-SM									
8	9	12/18 25	14	14-16 Brown (7.5YR5/4) Silty SAND with gravel, massive, reworked, (till) very sandy, loose	SP-SM to SP									2½ -in S.S.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BE-05

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
10	5	10/9 5/6	16	16-18 As above, very sandy, loose, damp (till with sand lenses)	SP-SM									2-in S.S.
11	4	5/3 2/4	18	18-20 As above with gravel and cobbles, dense, massive										3-in S.S.
12	4	5/3 2/4	20	20-22 As above, rocks in shoe										2½ -in S.S.
13	5	2/4 16/50f.1	22	22-24 As above, gravel and rocks in shoe drilling cobbles	SP-SM									2-in S.S.
14	0	50f.1	24	24-26 Spoon refusal on rock										2-in S.S.
				E.O.B. 25 Refusal										
			26											
			28											
			30											
			32											
			34											
			36											
			38											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-06

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Todd Shmafelet Boart-Longyear	05/12/98	05/12/98	3¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1595.2	5¼ inches

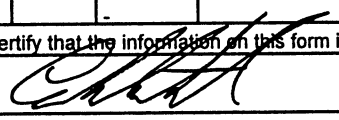
Boring Location
State Plane 126230.15 N, 2273700.42 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N Feet ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	22	5/7 9/8	0	0-1.2 Lt brown (7.5YR5/5) fine sandy SILT with few pebbles, locally oxidized, strong, coarse blocky structure (loess)	ML									300-lb hammer 3-in spoon
				1.2-2 Brown (7.5YR5/4) med.-coarse SAND with med. blocky structure, damp, sl. firm (till)	SP-SM									
2	15	22/16 12/11	2	abundant boulders										2½ -in S.S.
				2-4 As above SAND lense 2-3.2 oxidized damp, till is sandy	SP-SM									
3	21	6/5 5/6	4	4-6 As above, v. damp, massive boulders at 5.5'. Move rig forward										2-in S.S. 3-in S.S.-2nd hole
4	5	10/16 12/9	6	6-8 As above. Sandy till, v. damp	SP-SM									3-in S.S.
5	4	8/15 10/9	8	8-10 As above, rock in shoe										2½-in S.S.
6	12	8/7 12/11	10	10-12 As above	SP-SM									2-in S.S.
7	2	50f.3	12	12-14 Pound boulder										3-in S.S.
8	8	50f.6	14	14-16 As above - pound on banded iron formation boulder	SP-SM									3-in S.S.

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Signature  Firm Foth & Van Dyke

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State of Wisconsin Route to: SOIL BORING LOG INFORMATION

Department of Natural Resources Form 4400-122 7-91

BORING NUMBER: BE-06

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	15	47/ 50f.6	16	16-18 As above Sandy till with gravel and boulders, damp, sl. firm	SP-SM									2" S.S.
10	8	38/53 50f.1	18	18-20 As above pounding boulders and and cobbles	SP-SM									3" S.S.
11	7	13/26 19/20	20	20-22 As above	SP-SM									2½" S.S.
12	0	50f.1	22	22-24 Spoon refusal										2" S.S.
			24	Auger Refusal E.O.B. 25 ft										
			26											
			28											
			30											
			32											
			34											
			36											
			38											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-07 (TPE-12)

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Todd Shmafelet Boart-Longyear	05/13/98	05/13/98	3¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1603	5¼ inches

Boring Location
State Plane 126594.00 N, 2272304.29 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N Feet ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-0.5 Pit collapse - no sample										300 lb hammer
1	14	1/1 2/1		0.5-1 Dk. brown (7.5YR2/2) organic topsoil mixed with brown (7.5YR5/5) med-coarse SAND with silty & gravel (it backfill)	(SP)									3-in S.S.
				1-2 Brown (7.5YR4/5) fine-med. SAND with	SP									
2	2	1/1 1/1	2	organic soil mixed, structureless, wet, loose (pit backfill)										2½-in S.S.
				2-4 As above	SP									
3	14	1/1 1/1	4	4-6 As above	SP									2-in S.S.
4	16	6/5 5/10	6	6-8 As above SAND with mixed topsoil and wood fragments (backfill)	SP									3-in S.S.
5	12	8/12 10/11	8	8-10 As above to 9.										2½-in S.S.
				(9-10) Brown (7.5YR5/5) fine-med SAND with c. sand lenses, weak stratification, wet, soft structureless (outwash)	SP									
6	22	16/11 18/10	10	10-12 Lt brown (7.5YR6/3) med. SAND, weakly stratified, v. damp, structureless (outwash)	SP									2-in S.S.
7	23	22/21 11/9	12	12-14 As above	SP									3-in S.S.
8	14	6/4 9/12	14	14-15 As above										
				15-16 Brown (7.5YR4/4) v. fine SAND with silt, massive, wet soft	SP									2½-in S.S.

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Signature	Firm
	Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BE-07 (TPE-12)

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	20	6/9 11/13	16	16-18 Brown (7.5YR6/3) med. SAND with few fine sand layers, stratified (outwash) v. damp, wet at tip	SP									2-in S.S.
10	15	10/9 5/9	18	18-20 As above, slightly finer (outwash) wet, water at ~19? (perched)?	SP									3-in S.S.
12	7	3/4 4/4	20	20-22 Brown (7.5YR5/4) fine silty SAND - sandy silt, (silty sand layer in outwash) massive wet, soft 3' blowup in augers	SP-SM									2½-in S.S.
13	12	22/16 25/19	22	22-24 Brown (7.5YR5/5) red SAND with brown silty sand and red brown clay lenses, wet (outwash)	SP									3-in S.S.
14	12	12/16 25/19	24	24-26 Brown (7.5YR5/5) med-coarse SAND with silt lenses, wet and minor gravel (outwash)	SP									2-in S.S.
15	8	10/12 16/13	26	26-28 Red brown (5YR5/5) fine-med SAND with gravel, silt and clay, massive, wet (till)	SP-SM									2-in S.S.
16	8	12/17 16/15	28	28-30 Red brown (5YR5/4) silty SAND with gravel and clay, massive, dense, hard, v. damp-wet (till)	SM									2-in S.S.
17	0	50f.0	30	E.O.B. 30.1										
			32											
			34											
			36											
			38											

LMC\LXB\DML\93C049\GBAPP\63576.61\14000

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-08 (TPE-11)

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Todd Shmafelet Boart-Longyear	05/14/98	05/14/98	3¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.5	5¼ inches

Boring Location
State Plane 124080.52 N, 2271397.74 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-2 Pit collapse										300-lb hammer
1	14	1/3 4/5	2	2-4 Brown (7.5YR4/4) mixed organic topsoil, med.-fine sand and sandy silt, (pit backfill)	OL/ SP/ SM									3-in S.S.
2	3	1/1 1/1	4	4-6 As above										2½ - S.S.
3	15	4/7 9/15	6	6-8 Brown (7.5YR5/6) fine-med. SAND with silt (pit backfill), wet, structureless	SP									2-in S.S.
4	14	8/10 9/6	8	8-10 Brown (7.5YR6/3) fine-med. SAND with minor gravel, weakly stratified, structureless, loose, damp (outwash)	SP									3-in S.S.
5	17	5/6 8/10	10	10-12 As above	SP									2½-in S.S.
6	19	5/4 3/5	12	12-14 As above, stratified v. damp - wet	SP									2-in S.S.
7	15	15/11 18/20	14	14-16 As above, damp	SP									3-in S.S.

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Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BE-08

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
8	16	7/12 16/13	16	16-18 As above, locally oxidized, stratified	SP									2½-in S.S.
9	7	12/10 9/11	18	18-20 As above, more gravelly and denser (outwash)	SP									2-in S.S.
10	13	10/19 8/12	20	20-22 As above, outwash with gravel & cobbles mostly SAND, denser, damp	SP (GP)									3-in S.S.
11	14	9/7 14/23	22	22-24 Brown (7.5YR4/4) silty fine SAND with gravel, massive damp, soft (till)	SP- SM									2½-in S.S.
12	17	13/18 23/41	24	24-24.8 As above										2-in S.S.
				24.8-26 Brown (7.5YR5/5) fine SAND with silt gravel & cobbles (reworked till) structureless loose, very sandy, damp	SP- SM to SP									
13	17	21/36 50f.1	26	26-28 Brown (7.5YR5/4) SANDY, gravelly till as above	SP- SM									3-in S.S.
14	10	29/41 50f.1	28	28-30 As above, damp, cobbley and bouldery	SP- SM									2½-in S.S.
15	o	50f.1	30	30-32 Pound cobbles										2-in S.S.
16	2	50f.2	32	32-34 Till as above, bouldery & cobbley and very sandy	SP- (SM)									2-in S.S.
17	6	50f.5	34	34-37 As above, very granular, dry, (till), reworked, wet at bottom 3 in	SP- (SM)									2-in S.S.
18	6	50f.5	36											
				Auger Refusal Drilling on Rock										
			38	E.O.B. 37.5										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		MWE-08

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Larry Erdman/Dan Zielowzowski Boart-Longyear	05/28/98	05/28/98	4¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.55	8¼ inches

Boring Location
State Plane 124080.52 N, 2271394.74 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-34 Blind drill 0-.4 Dk brown (7.5YR2/2) organic topsoil. .4-4.2 Brown (7.5YR4/4) fine-med. sand with silt and gravel.	OL SP (SP-SM)									
			2											
			4	4.2-19.8 Brown (7.5YR6/3) fine-med. sand with gravel (outwash)										
			6											
			8											
			10											
			12											
			14											

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3.5-14c-44

State of Wisconsin
Department of Natural Resources
BORING NUMBER: MWE-08

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			16											
			18											
				19.8-25 As above with cobbles.										
			20											
			22											
			24											
				25-26 As above.										
			26	26- Brown (7.5YR4/4) silty sand with gravel, cobbles and boulders, drills hard (till)										
			28											
			30	30-33 Drilling boulders										
			32											
				33-37 Shoe plugged.										
			34	34-										
			36											
			38	38.5-40.5 Brown (7.5YR4/4) silty sand with gravel and cobbles, wet (till).										
			40											
			45	E.O.B. 45 ft										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-09 (TPE-07)

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Todd Shmafelet Boart-Longyear	05/13/98	05/13/98	3¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1598.95	5¼ inches

Boring Location
State Plane 125640.83 N, 2272554.56 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N ___ E
Feet ___ S ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-2 Pit collapse										300-lb hammer
1	16	3/3 3/3	2	2-2.5 Brown organic topsoil (7.5YR2/2)	OL									3-in S.S.
				2.5-4 Brown (7.5YR5/5) silty SAND with gravel organic soil mixed (test pit backfill)	SP OL									
2	5	1/2 2/2	4	4-6 As above, rock plugged shoe	SP									2½-in S.S.
3	17	2/3 4/6	6	6-6.5 As above										2-in S.S.
				6.5-8 Brown (7.5YR6/3) fine-med. SAND with coarse sand/gravel lenses, structureless, wet, loose (outwash)	SP									
4	15	5/4 4/5	8	8-10 As above	SP									3-in S.S.
5	13	12/11 8/13	10	10-12 Brown (7.5YR6/4) fine-med. SAND with minor coarse sand lenses, wet, loose, (outwash)	SP									2⅛-in S.S.
6	19	8/11 15/19	12	12-14 As above, wet	SP									2-in S.S.
7	13	16/38 50f.2	14	14-14.6 As above	SP									3-in S.S.
				14.6-16 Brown (7.5YR4/4) silty SAND with gravel & cobbles, massive, wet, sandy & soft drill cobbles at 16 (till)	SP-SM									

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Signature	Firm
	Foth & Van Dyke

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LMC\LXB\DML\93C049\GBAPP\63578.61\14000

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BE-09

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
8	13	31/26 50f.1	16	16-18 Brown (7.5YR5/3) med.-fine SAND with coarse sand & gravel & minor silt, damp, soft loose (till/outwash interfingered)	SP (SM)									2-in S.S.
9	6	25/29 50f.1	18	18-20 As above	SP (SM)									3-in S.S.
10	14	21/16 15/12	20	20-22 As above, till with sand lenses, damp sl. firm	SP (SM)									2½-in S.S.
11	2	36/44 50f.2	22	22-24 As above Rock in shoe	SP-SM									2-in S.S.
12	7	31/ 50f.2	24	24-26 As above, v. damp (till) massive	SM									3-in S.S.
13	10	26/31 25/16	26	26-28 As above with SAND lenses, damp to very damp, massive, sand lenses are saturated	SP-SM									2-in S.S.
14	14	16/23 19/20	28	28-30 As above	SP SM									2-in S.S.
15	14	16/21 50f.2	30	30-32 As above, wet at ~31'	SM									2-in S.S.
			32	E.O.B. 32'										
			34											
			36											
			38											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-10

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Larry Erdman Boart-Longyear	05/29/98	05/29/98	4¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1564.5	8¼ inches

Boring Location
State Plane 123881.11 N, 2272600.80 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N Feet ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	16	2/2 3/2	0	0-0.3 Dk. brown (7.5YR2/2) organic topsoil 0.3-2.2 Brown (7.5YR4/4) fine sandy silt with sand lenses.	OL									
2	18	5/7 8/8	2	2.2-4 Brown (7.5YR5/5) fine-med. sand with silt, stratified, damp (outwash)	SM (SP)									
3	13	3/7 14/18	4	4-6 As above, sl. coarser, weakly oxidized	SP									
4	18	6/10 16/23	6	6-6.8 As above. 6.8-7.5 Med. coarse sand lense 7.5-8 As above, fine-med. sand	SP SP SP									
5	17	5813 14/16	8	8-10 As above with 3-1-in c. sand lenses, c. lenses v. damp	SP									
6	19	15/11 13/15	10	10-12 As above, v. damp	SP									
7	17	12/11 12/14	12	12-14 As above, v. damp, tip of spoon sample wet	SP									
8	14	11/6 8/6	14	14-16 As above, wet.	SP									

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: BE-10 |

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	22	5/6 6/10	16	16-18 As above with gravel, wet.	SP									
10	21	15/5 6/9	18	18-20 As above	SP									
			20	E.O.B. 20 ft										
			22											
			24											
			26											
			28											
			30											
			32											
			34											
			36											
			38											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		MWE-11

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Larry Erdman Boart-Longyear	05/29/98	05/29/98	4¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1565.33	8¼ inches

Boring Location
State Plane 124102.60 N, 2273399.69 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ____ N Feet ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	15	5/4 6/10	0	0-6.2 Dk. grey (7.5YR2/1) organic topsoil 0.2-0.3 Grey (2.5YR3/1) fine sand 0.3-1.2 Brown (7.5YR5/5) silty sand 1.2-4 Brown (7.5YR4/5) silty sand with gravel and roots, weak med. blocky structure, dry.	OL SP SM SP-SM									
2	13	8/9 11/11	2											
3	14	6/6 8/11	4	4-6 Brown (7.5YR6/3) fine-med. sand, stratified, structureless - weak, fine platy structure, damp, loose (outwash)	SP									
4	4	5/14 15/15	6	6-8 As above, root plugs shoe	SP									
5	14	8/10 12/14	8	8-10 As above, coarser 9-10 Wet at ~9.4	SP									
6	15	10/14 14/16	10	10-12 As above, with gravel, wet	SP									
7	13	11/8 9/16	12	12-14 As above, wet	SP									
8	16	6/5 6/8	14	14-16 As above, wet	SP									

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LXB\DML\93C049\GBAPP\64347.61\14000

State of Wisconsin
Department of Natural Resources
BORING NUMBER: MWE-11

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	20	7/8 13/21	16	16-18 As above, fine-c. sand, minor gravel	SP									
			18											
				E.O.B. 19.5 ft										
			20											
			22											
			24											
			26											
			28											
			30											
			32											
			34											
			36											
			38											

LXB\DML\93C049\GBAPP\64347.61\14000

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		BE-12

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Larry Erdman Boart-Longyear	05/28/98	05/28/98	4¼ IDHSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.04	8¼ inches

Boring Location
State Plane 125689.16 N, 2274708.96 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	7	1/3 4/6	0	0-0.6 Stump and grass 0.6-2 Lt. brown (7.5YR5/5) fine sandy silt with clay, w. med. blocky structure, oxidized.	ML									140-lb hammer
			2											
2	15	3/5 5/9		2-4 Brown (7.5YR6/3) fine-med. sand, structureless, loose, stratified, damp (outwash)	SP									
3	16	11/8 16/19	4	4-6 As above.	SP									
4	17	6/7 12/20	6	6-8 As above with med.-coarse sand lsnes 6.8-7.2	SP									
5	19	8/10 14/5	8	8-10 As above, sl. lighter (7.5YR6/4)	SP									
6	19	7/14 18/12	10	10-12 As above.	SP									
7	22	7/11 9/12	12	12-14 As above. 13-13.5 Sand silty lense, wet	SP									
8	18	8/7 7/10	14	14-16 Sand as above, damp	SP									

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BE-12

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	20	8/11 20/21	16	16-18 As above, damp	SP									
10	19	10/14 15/18	18	18-20 As above, damp	SP									
11	17	8/12 12/15	20	20-22 As above, wet at 20.5	SP									
12	21	6/5 5/7	22	22-24 Brown (7.5YR5/4), v. fine-fine sand, massive, wet, minor silt (outwash)	SP									
			24	E.O.B. 24 ft										
			26											
			28											
			30											
			32											
			34											
			36											
			38											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area E		BE-13

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Pat Jensen	07/09/98	07/09/98	4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1583.46	8¼ inches

Boring Location
State Plane 123236.06 N, 2271290.60 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/Comm
1	18	1/1 2/2		0-1.2 Brown (10YR2/2) organic topsoil (silt loam) mod. med. blocky structure, damp, soft roots 1.2-2.3 Brown (10YR6/3) fine sandy silt, mod. med, blocky structure, damp, soft (loess)	OL ML									300 lb Hammer 2" SS
2	12	2/6 15/10	2	2.3-4 Brown (7.5YR6/3) fine-med. sand with silt and gravel, w.f. platy structure, damp, loose, oxidized, (outwash)	SP									3" SS
3	6	7/6 5/8	4	4-6 Pound rock as above	SP									2½" SS
4	4	9/7 9/11	6	6-8 Pound rock as above	SP									2" SS
5	19	4/4 5/5	8	8-10 Lt. brown (10YR6/2) fine-med. sand with c. sand lenses, stratified, damp, loose, (outwash)	SP									3" SS
6	16	3/4 5/4	10	10-12 As above w. minor gravel, v. damp	SP									2½" SS
7	10	1/2 2/2	12	12-14 As above, v. damp, fine sand lenses retaining water	SP									2" SS
8	19	15/9 8/12	14	14-16 As above, damp	SP									3" SS
9	16	3/4 4/4	16	16-18 As above	SP									2½" SS
10	15	1/2 2/2	18	18-20 As above	SP									2" SS

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Signature Firm: Foth & Van Dyke

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State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: BE-13 | Page 2 of 2

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	21	4/6 6/6	20	20-22 As above w/ c. sand lense, v. damp, fine sand lenses retaining water	SP									3" SS
12	14	3/3 4/5	22	22-24 As above, v. damp	SP									2½" SS
13	14	3/3 4/4	24	24-26 As above, damp	SP									2" SS
14	21	5/7 7/7	26	26-28 As above, v. damp, c. and fine sand lenses	SP									3" SS
15	16	4/6 6/6	28	28-30 Lt. brown (10YR6/2) med.-coarse sand with gravel and fine sand lenses, structureless, stratified, wet at 27.8, (outwash)	SP									2½" SS
16	14	2/3 4/6	30	30-32 As above, drilling very rough at 32.2, drill to 33	SP									2" SS
17	15	10/12 13/14	32	33-35 Lt. brown sand as above, interfingered with gravelly brown (7.5YR5/4) silty sand (reworked till and outwash), dense, damp	SP/ SP-SM									2" SS
18	4	12/20 21/18	34	35-37 As above, rock in shoe, drills very rough, v. damp	SP/ SP-SM									2" SS
19	0	6/6 8/8	36	37-39 Pound 2", no recovery/pound 3" 37-39 As above interfinger till and outwash, wet	SP/ SP-SM									2" SS
20	12	4/4 5/6												
21	20	12/11 12/13	38	39-40 Brown (7.5YR5/4) med.-c. sand with gravel and silt, loose, wet (reworked till)	SP-SM									3" SS
			40	40-41 Brown (7.5YR4/4) silty sand with gravel, dense, massive, wet (till)	SM									3" SS
				E.O.B. 41										
			42											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area E		BE-14

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart-Longyear Pat Jensen	07/07/98	07/07/98	4¼ ID HSA 4" Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1557.33	8¼ inches

Boring Location
State Plane 123315.24 N, 2271930.58 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	21	1/1 1/2	-	0-0.3 Dk grey (10YR2/1) organic topsoil (silt w.f. blocky structure, damp, soft, roots	OL									300 lb Hammer
			-	0.3-0.4 Brown (10YR5/5) fine sand with silt	SM									2" SS
			-	silty loam) and minor gravel, structureless, damp, soft										
2	23	2/4 6/5	- 2	0.4-2 Brown (10YR5/5) sandy silt with minor clay, mod., med. blocky structure, damp, sl. firm, faint grey mottle's roots. locally oxidized (B-horizon)	ML									3" SS
			-	2-4 As above with more sand and clay lenses	S									
3	16	2/3 3/4	- 4	(reworked till) 4-5 As above	ML SM									2½" SS
4	15	4/4 4/4	- 6	5-8 Brown (7.5YR6/3) fine-med. sand with minor gravel, stratified, damp, loose (outwash)	SP									2" SS
5	16	2/3 4/3	- 8	8-10 As above, lt. brown (10YR6/3)	SP									3" SS
6	16	5/4 3/2	- 10	10-12 As above	SP									2½" SS
7	15	1/1 2/2	- 12	12-14 As above, wet, brown (10YR5/5) minor med.-coarse sand lenses (outwash)	SP									2" SS
8	22	4/5 5/6	- 14	14-16 As above	SP									3" SS
9	15	1/1 2/3	- 16	16-18 As above	SP									2" SS
10	13	1/1 1/2	- 18	18-20 As above, sl. coarser	SP									2" SS

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Signature Firm Foth & Van Dyke

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DML\LMC\93C049\GBAPP\65822.61\14000

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	14	1/1 2/2	- 20 -	20-22 As above	SP									2" SS
12	12	1/1 1/2	- 22 -	22-24 As above	SP									2" SS
13	10	3/4 11/25	- 24 -	24-26 As above, blowup switch to mud	SP									2" SS
14	4	2/4 4/6	- 26 -	26-28 As above	SP									2" SS
15	12	3/5 6/7	- 28 -	28-30 As above	SP									2" SS
16	2	4/3 3/4	- 30 -	30-32 As above, poor recovery	SP									2" SS
17	8	4/3 4/4	- 32 -	33-35 As above	SP									2" SS
18	12	4/6 8/10	- 34 -	35-37 As above-more stratified with 2-4" coarse sand and fine sand lenses in fine-med. sand	SP									2" SS
19	12	5/4 8/9	- 36 -	37-39 Brown (7.5YR4/4) silty sand with minor gravel and clay, massive, wet, soft (reworked till) drilling more rocky	SP-SM									2" SS
20	12	4/8 11/10	- 38 -	39-41 As above with sand lense 40-40.5 sand silt lense ~40.5-40.8 (reworked till)	SP-SM									2" SS
21	14	8/11 14/22	- 40 -	41-43 Red brown - brown (5YR5/4 and 7.5YR5/4) silt sand with gravel, cobbles and clay, minor sand lenses, massive, hard, dense (till), drills hard and rocky	SP-SM									2" SS
22	17	20/29 25/29	- 42 -	43-43.6 Weathered rock 43.6-45 Brown (7.5YR5/4) till as above, no sand lenses, wet	SP-SM									2" SS
23	20	32/37 41/25	- 44 -	45-47 As above, sand lense at 44.7	SP-SM									2" SS
24	4	7/5 1/2	- 46 -	47-49 Brown (7.5YR5/5) silty sand (reworked till)	SP-SM									2" SS
25	6	6/4	-	49-51 As above	SP-SM									2" SS
25	6	5/11	- 48 -	E.O.B. 51										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		MWE-14

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Pat Jensen	07/08/98	07/08/98	4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1557.78	8¼ inches

Boring Location
State Plane 1237319.62 N, 2271929.5 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest		Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
				0-20' Blind drill see boring log BE-14			Bent							
			2				FINE							
			4											
			6				TOF							
			8				TOS							
			10											
			12											
			14											
			16											
			18				BOS							

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm
Foth & Van Dyke

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DML\93C049\GBAPP\65833.61\14000

State of Wisconsin
Department of Natural Resources
BORING NUMBER: MWE-14

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			20	E.O.B. 20										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Site E		BE-15

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Pat Jensen	07/07/98	07/07/98	4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1581.80	8¼ inches

Boring Location
State Plane 123527.03 N, 2273152.39 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest		Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	17	1/1 3/4	-	0-0.1 Grass and leaf letter 0.1-0.3 Dk brown (7.5YR2/2) organic topsoil (silt loam), w.f. blky str., damp, soft, roots	OL									300 lb Hammer 2" SS
			-	0.3-0.8 Yellow brown (10YR5/5) fine sandy silt, mod. med. blocky structure, damp, soft (loess)	ML									
2	19	1/3 8/13	- 2	0.8-3.1 Brown (7.5YR5/6) fine-med. sand, w.f., platy structure , damp, loose, minor gravel, oxidized (outwash)	SP									3" SS
3	14	5/10 10/14	- 4	3.1-4 Lt. brown (10YR6/3) fine sand with minor gravel, stratified, damp, loose (outwash)	SP									2½" SS
			-	4-6 Lt. brown (10YR6/3) fine-med. sand with red-brown clay laminae, stratified, damp, loose (outwash)	SP									
4	15	5/4 5/9	- 6	6-8 As above										2" SS
5	20	4/4 6/10	- 8	8-10 As above with occassional med.-coarse lenses, minor oxidation along lense boundaries	SP									3" SS
6	16	5/6 6/6	- 10	10-12 As above	SP									2½" SS
7	14	4/3 2/2	- 12	12-14 As above	SP									2" SS
8	21	4/6 8/9	- 14	14-16 As above	SP									3" SS
9	18	5/7 7/8	- 16	16-18 Lt. brown (10YR7/2) fine sand, stratified, damp, loose, (outwash)	SP									2½" SS
10	17	2/3 3/6	- 18	18-20 As above	SP									2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
	Foth & Van Dyke

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DML\93C049\GBAPP\65907.61\14000

State of Wisconsin Route to: SOIL BORING LOG INFORMATION

Department of Natural Resources Form 4400-122 7-91

BORING NUMBER: BE-15

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	16	2/3 3/2	20	20-22 Lt. brown (10YR6/2) fine sand, stratified, minor c. lenses, damp, loose	SP									2" SS
12	17	2/4 4/5	22	22-24 As above	SP									2" SS
13	16	2/2 2/2	24	24-26 As above	SP									2" SS
14	18	1/1 3/3	26	26-28 As above, damp	SP									2" SS
15	16	1/2 3/5	28	28-30 As above	SP									2" SS
16	18	1/3 4/4	30	30-32 As above	SP									2" SS
17	19	1/1 3/3	32	32-34 As above, wet at ~32.8	SP									2" SS
18	20	1/1 2/2	34	34-36 As above, wet	SP									2" SS
19	15	1/1 1/2	36	36-38 As above, wet	SP									2" SS
20	17	1/2 2/3	38	38-40 As above, wet, fine, sandy silt lense in tip spoon	SP									2" SS
			40	E.O.B. 40										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area E		BE-16

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart-Longyear Pat Jensen	07/08/98	07/08/98	4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1568.13	8¼ inches

Boring Location
State Plane 123988.44 N, 2273958.31 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest		Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	22	2/3 4/6	-	0-0.2 Brown (7.5YR2/2) organic topsoil (silt w.f. blky structure, damp, soft	OL									300 lb Hammer
			-	0.2-1.2 Brown (10YR4/5) fine,sandy silt, m. med. blky structure, roots (loess)	ML									2" SS
			-	1.2-1.6 Brown (10YR5/5) silty fine sand w/ med.	SM									
2	16	2/4	- 2	platy str., damp, soft, oxidized										3" SS
		4/6	-	1.6-2 Brown (7.5YR5/5)fine-med. sand with silt	SP/									
			-	and minor gravel, w/ med. platy str., damp, loose,	SP-									
			-	(outwash)	SM									
			-	2-4 Brown (7.5YR6/3) fine-med. sand w.c. platy	SP									
3	18	4/6	- 4	blky structure, damp, loose (outwash), oxidized										2½" SS
		8/8	-	4-6 As above, minor fine sand lense	SP									
			-	5.6-6 Damp, stratified										
			-											
			-											
4	18	3/5	- 6	6-8 Brown (7.5YR6/3) fine-med. sand structures,	SP									2" SS
		5/7	-	stratified, damp, loose, coarse sand lense										
			-	7.7-8 v. damp (outwash)										
			-											
			-											
5	22	2/3	- 8	8-10 As above with coarse sand lenses 2-4"	SP									3" SS
		7/8	-	v. damp, c. sand lenses (7.5YR6/2), fine-med.										
			-	sand (7.5YR6/3)										
			-											
			-											
6	20	3/4	- 10	10-12 As above, lenses of c. sand are thinner	SP									2" SS
		5/7	-	fine and less gravel, v. damp										
			-											
			-											
			-											
7	18	2/3	- 12	12-14 Lt. brown (7.5YR7/2) fine-med. sand,	SP									2" SS
		4/5	-	stratified, damp, loose, wet at ~13' (wet color										
			-	7.5YR5/4)										
			-											
			-											
8	20	1/2	- 14	14-15.2 As above										3" SS
		2/3	-	15.2-16 Brown (7.5YR6/2) med.-coarse sand	SP									
			-	with gravel, stratified, wet, loose (outwash)										
			-											
			-											
9	23	2/2	- 16	16-18 Brown (7.5YR5/4) fine-med. with coarse	SP									2" SS
		2/4	-	sand lense, stratified, structureless, wet										
			-											
			-											
			-											
10	21	1/1	- 18	18-20 As above, fewer coarse sand lenses	SP									2" SS
		2/3	-											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin Route to: SOIL BORING LOG INFORMATION

Department of Natural Resources Form 4400-122 7-91

BORING NUMBER: BE-16 Page 2 of 2

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	24	2/3 3/3	20	20-22 As above	SP									2" SS
12	21	2/3 4/6	22	22-24 As above	SP									2" SS
13	19	1/2 2/1	24	24-26 As above, sl. finer	SP									2" SS
				Switch to mud rotary										
14	9	3/3 3/3	26	26-28 As above	SP									2" SS
15	11	2/3 3/3	28	28-30 As above	SP									2" SS
16	12	2/2 2/3	30	30-32 As above	SP									2" SS
17	10	3/2 3/4	32	32-34 As above, sl. finer (outwash)	SP									2" SS
18	12	3/3 4/50 f.1	34	34-36 As above, minor coarse sand lenses, rock at 35.5'	SP									2" SS
19			36	36-38 Drill boulder										–
20	2	8/10 10/12	38	38-40 Brown (7.5YR5/4) fine sandy gravel?, poor recovery in spoon-drilling very rough (till)										2" SS
21	12	8/8 10/11	40	40-42 Brown (7.5YR4/4) silty sand with gravel, massive, wet, sl. dense (till)	SP-SM/ SM									2" SS
22	22	8/10 11/15	42	42-44 As above (till)	SM									2" SS
23	18	12/10 12/19	44	44-46 As above (till)	SM									2" SS
24	20	11/16 17/19	46	46-48 As above (till)	SM									2" SS
25			48	E.O.B. 48										2" SS

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-SAP II - Area E		MWE-16

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Pat Jensen	07/08/98	07/08/98	4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1567.77	8¼ inches

Boring Location
State Plane 123987.77 N, 2273950.86 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
Feet ___ N ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest		Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-20.5' Blind drill see boring log BE-16										
			2											
			4											
			6											
			8											
			10											
			12											
			14											
			16											
			18				BOS							

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State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: MWE-16 | Page 2 of 2

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			20	E.O.B. 20.5										

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area E		BE-17

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Boart Longyear Pat Jensen	MM/DD/YY 07/09/98	MM/DD/YY 07/09/98	4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1584.41	8¼ inches

Boring Location
State Plane 124656.02 N, 2274062.00 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest		Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/Comm
1	16	1/2 2/2		0-0.3 Dk brown (10YR2/2) organic topsoil (silt loam) w.f. blocky structure, damp, soft, roots 0.3-2 Lt brown (10YR5/4) fine sandy silt with mod. med. blky structure, damp, sl. firm, (loess) (loam-sandy silt loam)	OL ML									300 lb Hammer 2" SS
2	17	1/2 4/5	2	2-3 As above, v. minor gravel 3-4 Lt. brown (7.5YR6/3) fine-med. sand, damp, loose, (outwash)	ML SP									3" SS
3	17	4/6 6/8	4	4-6 Lt. brown (7.5YR6/3) fine-med. sand, damp, loose, (outwash)	SP									2½" SS
4	15	4/5 7/7	6	6-8 Lt. brown (10YR6/2) fine-med. sand, damp, loose, (outwash)	SP									2" SS
5	4	12/10 12/13	8	8-10 Pound rock, as above	SP									3" SS
6	18	5/4 4/4	10	10-12 As above, with 2" c. sand lenses	SP									2½" SS
7	19	3/2 2/3	12	12-14 As above, with coarse sand lenses, v. bottom 3" of sample	SP									2" SS
8	21	2/3 4/4	14	14-16 As above, fine sand lenses at 14.8 (wet) but damp in c. sand lenses below	SP									3" SS
9	18	3/2 3/3	16	16-18 As above, with minor gravel, wet at 17.7	SP									2½" SS
10	18	1/2 2/2	18	18-20 As above, sand slightly coarser, wet	SP									2" SS

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State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 7-91

BORING NUMBER: BE-17 | Page 2 of 2

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	12	2/2 2/2	20	20-22 As above, wet	SP									
12	12	1/2 3/10	22	22-24 As above, wet, blow count high due to rod into sand										
			24	E.O.B. 24										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC-Sap II - Area E		MWE-18

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Pat Jensen	07/09/98	07/09/98	4¼" ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1574.47	8¼ inches

Boring Location
State Plane 124936.08 N, 2274754.29 E S/C/N Lat
1/4 of 1/4 of Section , T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest		Nashville

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	14	1/1 1/1	-	0-0.2 Black (10YR1/1) organic topsoil (silt loam) w.f. platy structure, roots damp, soft	OL									300 lb Hammer
			-	0.2-0.3 Grey (10YR3/1) silty sand	SM									
			-	0.3-1.8 Brown (10YR5/5) fine sandy silt, w/ med. blocky structure, damp, soft, oxidized (loess)	ML									
2	14	3/2 3/3	- 2	1.8-2 Brown (7.5YR5/6) silty sand, w.f. platy structure, damp, soft	SP-SM									2"
			-	2-4 Brown (7.5YR6/3) fine-med. sand, v. minor silt, w.f. platy structure, damp, loose, (outwash), oxidized	SP									
3	16	2/2 3/4	- 4	4-6 Brown (10YR6/2) fine-med. sand, structure-less, stratified, damp, loose (outwash)	SP									3"
4	17	1/2 3/4	- 6	6-8 As above	SP									2½"
5	16	8/4 3/4	- 8	8-10 Pound rock, as above	SP									2"
6	18	3/3 4/4	- 10	10-12 As above, wet at ~10.8	SP									3"
7	20	2/2 1/2	- 12	12-14 As above, wet	SP									2½"
8	20	5/4 5/8	- 14	14-16 As above, wet	SP									2"
9			- 16											3"
			- 18	NEXT PAGE										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

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State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: MWE-18 | Page 2 of 2

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
10			18	E.O.B. 19										
			20											

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-01
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-01
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 05/13/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available?
☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	34.0	9 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work
Date Signed: 5-20-98

Street or Route
Telephone Number

City, State, Zip Code

3.5-14c-70

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-02
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name:

Street Address of Well:

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):

Present Well Owner: Crandon Mine

Street or Route:

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-02
WI Unique Well No.:

Reason For Abandonment: Test Boring

Date of Abandonment: 05/12/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	38.0	10 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 5-20-98

Street or Route:
Telephone Number:

City, State, Zip Code:

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-71
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-03
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME: Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-03
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 05/12/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	30.5	8 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 5-20-98

Street or Route
Telephone Number

City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY
3.5-14c-72

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-04
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-04
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 05/14/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	34.0	8 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 5-20-98

Street or Route
Telephone Number

City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY
3.5-14c-73

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-05
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-05
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 05/14/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available?
☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	25.0	8 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work
Date Signed: 5-20-98

Street or Route
Telephone Number

City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

3.5-14c-74

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-06
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-06
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 05/14/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	25.0	8 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work [signature] Date Signed 5-20-98

Street or Route Telephone Number

City, State, Zip Code

3.5-14c-75

DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-07
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-07
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 05/14/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	31.0	6 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work
Date Signed: 5-20-98

Street or Route
Telephone Number

City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-76

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-08
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-08
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 05/14/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	37.5	10 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 5-20-98

Street or Route
Telephone Number

City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-77
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-09
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandonk Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-09
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 05/13/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available?
☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	30.0	12 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work
Date Signed: 5-20-98

Street or Route
Telephone Number

City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-78
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-10
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BE-10
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 05/29/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) 13.0

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	20.0	6 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR
Signature of Person Doing Work
Date Signed: 6-4-98
Street or Route
Telephone Number
City, State, Zip Code

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-79

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-12
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ T. ____ N. R. ____ ☐ E ☐ W
(If Applicable) ____ Gov't Lot ____ Grid Number
Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BE-12
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 05/28/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☐ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	24.0	7 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 6-4-98
Street or Route: Telephone Number:
City, State, Zip Code:

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-80
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-13
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine
Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BE-13
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 07/09/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	41.0	17 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR
Signature of Person Doing Work
Date Signed: 7-14-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-81
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-14
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W (If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location: ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine
Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BE-14
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 07/07/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	53.0	15 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 7-14-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-82

DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected:
District/County:
Reviewer/Inspector:
☐ Complying Work
☐ Noncomplying Work
Follow-up Necessary:

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-15
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W

(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-15

WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 07/07/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	40.0	18 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR

Signature of Person Doing Work

Date Signed: 7-14-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109

Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-83

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-16
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W

(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BE-16

WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 07/08/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe - Gravity ☒ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☒ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Grout	Surface	48.0	20 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 7-14-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-84

DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BE-17
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine
Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BE-17
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 07/10/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☒ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	24.0	8 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 7-14-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-85
DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

Area G

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Nicolet Minerals Company		BG-02

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart-Longyear Larry Erdman	07/20/98	07/20/98	4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1562 ft MSL	

Boring Location
State Plane ~122324 N, ~2276348 E S/C/N Lat
SW 1/4 of SW 1/4 of Section 19, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	24	2/3 4/5	-	0-0.2 Grey (10YR3/1) organic topsoil, l. silt, loam, med planty structure, dry, roots	OL									300 lb 3" SS
			-	0.2-0.5 Grey (10YR4/1) silty sand, dry structureless, loose	SP-SM									
			-	0.5-2 Light brown (10YR5/3) fine sandy silt, med blocky structure, minor rocks, oxidized on peds, soft (loess)	SP									2" SS
2	20	2/4 4/6	- 2	2-2.2 As above										
3	22	5/5 7/8	- 4	2.2-4 Brown (10YR5/4) fine to med sand w/ silt w.c. blocky structure, dry, loose, (outwash)	SP									3" SS
			-	4-6 Brown (10YR6/3) fine to med sand, stratified, minor oxidation, damp, loose, (outwash)	SP									
4	17	6/7 8/12	- 6	6-8 As above										2½" SS
5	15	6/8 10/13	- 8	8-10 As above with gravel	SP									2" SS
6	24	10/12 10/13	- 10	10-11.8 As above	SP									3" SS
			-	11.8-12 Brown (10YR5/4) very fine sand w/ minor silty massive, damp (outwash)	SP									
7	24	2/4 3/3	- 12	12-14 Brown (10YR5/4) very fine sand clay laminae, weak, fine platy structure (outwash-lacustrine) very damp, perched on silt lenses	SP (SM ML)									2" SS
8	20	10/10 12/12	- 14	14-16 Light brown (10YR7/2) fine sand with very minor silt lenses, stratified damp, loose (outwash)	SP									3" SS
9	23	6/5 4/6	- 16	16-16.3 As above										2½" SS
			-	16.3-17.9 Brown (7.5YR5/4) silty fine sand with silt and clay laminae, wet sticky (lacustrine)	SM-ML									
10	20	10/7 7/8	- 18	17.9-19.6 Light brown (10YR7/2) fine to coarse sand with gravel, dry (outwash)	SP-GP									2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: BG-02 |

SAMPLE No.	SAMPLE Rec (In)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	24	12/13 13/15	20	19.6-20 Brown (7.5YR4/4) silty sand with gravel, massive, damp, dense (till)	SP-SM									3" SS
12	19	9/10 9/11		20-21 Brown (10YR5/4) fine sand with silt (outwash)	SP									
				21-21.4 Lt. brown (10YR7/2) red-coarse sand with gravel (outwash)	SP-GP									3" SS
				21.4-22 Brown (7.5YR5/4) silty sand with gravel (reworked till)	SR-SM									
13	20	10/7 8/9	22	22-24 Light brown (10YR7/2) fine sand (outwash) stratified, damp	SP									
			24	24-26 As above, wet at ~25' (outwash)	SP									2½" SS
14	2	2/1 2/2	26	26-27 Wet, soft, fine sand 27-28 ,Brown (7.5YR4/4) silty sand with gravel & clay, massive, wet (till)	SP SM									2" SS
15	19	3/2 2/1	28	28-30 As above (till) wet, soft										2" SS
16	14	1/1 1/2	30	30-32 As above (till)	SM									2" SS
17	12	3/4 4/3	32	32-34 As above (till) wet	SM									2" SS
18	3	5/5 6/5	34	34-36 As above, rock in shoe, (till) wet	SM									2" SS
19	18	5/7 7/7	36	36-38 As above (till) wet, slightly more sand	SM/SP-SM									2" SS
20	18	4/6 10/2	38	38-40 As above (till) wet	SM/SP-SM									2" SS
			40	E.O.B. 40'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Nicolet Minerals Company - SAP II		BG-03

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart-Longyear Larry Erdman	07/21/98	07/21/98	4" Mud Rotary 4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1582 feet MSL	8¼ inches

Boring Location
State Plane ~122873 N, ~2278172 E S/C/N Lat
NE 1/4 of SW 1/4 of Section 19, T 35 N, R 13 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	24	4/7		0-0.2 Grey organic topsoil (10YR3/1) (silt loam)	OL									300 lb.
		10/12		0.1-0.5 Grey (10YR5/1) silt with fine platy	ML									3" SS
				structure dry, soft (loess)	SP-SM									
2	17	4/4		0.5-1 Grey (10YR5/1) silt with sand, med. red	SP									
		6/7	2	platy structure, dry, hard (loess)										2" SS
				1-1.5 Orange (7.5YR6/5) med-coarse sand with	SM-SP									
				gravel and silt, w/ coarse bulky structure or d. red, hard										
3	18	10/13		1.5-2 Brown (10YR6/2) med-c. sand with gravel										
		10/14	4	w/ med. blocky structure, damp, loose (outwash)										3" SS
				2-4 As above with gravel										
4	17	7/6		4-6 Lt. brown (10YR6/2) med sand with gravel	SP									
		6/6		and fine sand lenses, w.c. blocky structure, damp, loose (outwash)										
			6	6-8 As above										2½" SS
5	16	4/4	8	8-10 As above with fine-med sand lenses	SP									2" SS
		5/4		(outwash)										
6	22	7/6	10	10-11.5 As above, damp (outwash)	SP									3" SS
		7/6												
7	18	3/2		11.5-12 Brown (10YR5/2) coarse sand with gravel	SP-GP									
		1/1	12	structureless, stratified, wet, loose (outwash)										2" SS
				12-14 Brown (7.5YR5/5) med sand with coarse	SP									
				sand and gravel lenses, minor silt, stratified, wet, loose (outwash)										
8	10	12/25	14	14-16 Brown (7.5YR5/4) fine med sand with c.	SP									3" SS
		26/17		sand lenses, stratified, wet, loose (outwash)										
9	16	3/1	16	16-18 As above	SP									2" SS
		1/2												
10	12	0/1		18-20 Dk grey (2.5YR3/1) v. fine sand with silt,	SP									
		0/1	18	lenses of highly oxidized fine sand, massive, wet, soft (outwash - lacustrine?)										2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature _____ Firm Foth & Van Dyke

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DML\93C049\GBAPP\65788.61\14000

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BG-03

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	15	1/0 1/1	20	20-22 As above with sandy silt lenses	SP-SM									2" SS
12	10	1/0 1/0	22	22-24 As above	SP									2" SS
13	10	2/10 8/4	24	24-26 As above coarse sand and gravel lenses at 25.2	SP-GP									
14	10	3/12 12/1	26	26-28 As above, with silt lenses	SP-ML									2" SS
15	2	50/2"	28	28-30 As above, rock at 28.4 29' Auser refusal on boulder; drilling very rough from 28.5 to 29' switch to mud boulder drill 29'-33	SP									2" SS
			30	30-32 No recovery										2" SS
17	6	12/15 12/19	32	33-35 Green-grey weathered metavolcanic rock	-									2" SS
18	8	20/25 23/20	34	35-37 As above										2" SS
			36	E.O.B. 37										
			38											
			40											
			42											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Nicolet Minerals Company - SAP II		BG-09

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart-Longyear Larry Erdman	07/20/98	07/20/98	4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1575 feet MSL	

Boring Location
State Plane ~123023 N, ~2276788 E S/C/N Lat
NW 1/4 of SW 1/4 of Section 19, T 35 N, R 13 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	24	1/2 3/4	-	0-0.4 Dk grey (10YR2/1) organic topsoil (silt loam) w.f. clay structure, dry	OL									300 lb. Hammer
			-	0.4-1.6 Lt. brown (10YR5/5) silty fine sand, w. m. blky structure, dry (loess)	SM									3" SS
			-	1.6-2 Lt. brown (10YR5/6) fine sand with minor silt, stratified, damp (outwash)	SP-SM									2" SS
			-											
2	12	3/4 5/6	- 2	2-4 Lt. brown (10YR5/4) fine sand w/ minor silt (as above) (outwash)	SP									
			-											
3	23	5/5 4/6	- 4	4-6 As above sl. coarser minor iron cemented lenses of fine-med. sand (outwash)	SP									3" SS
			-											
4	19	5/5 6/6	- 6	6-8 Lt. brown (10YR7/2) med sand w/ minor gravel structureless, damp, loose (outwash)	SP									2½" SS
			-											
5	15	5/6 6/8	- 8	8-10 As above										2" SS
			-											
6	18	9/10 10/12	- 10	10-12 As above, rock at ~10.3	SP									3" SS
			-											
7	24	1/2 2/3	- 12	12-14 Brown (7.5YR5/5) med to fine sand, stratified, wet, loose (outwash)	SP									2" SS
			-											
8	23	1/1 1/2	- 14	14-16 As above, mostly fine sand, wet (outwash)	SP									2" SS
			-											
9	22	2/1 1/2	- 16	16-18 As above with fine sandy silt lenses, wet (outwash/lacustrine?)	SP (SM)									2" SS
			-											
10	21	1/1 2/1	- 18	18-19.5 As above 19.5-20 Fine sand silt lense as above	SP (ML)									2" SS
			-											
11	21	WOR 0/0 1/1	- 20	20-22 Brown (7.5YR5/5) fine sandy silt with fine sand lenses, massive, wet, sticky (lacustrine)	SM-ML									2" SS
			-											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BG-09

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
12	16	3/4 4/3	22	22-24 Brown (7.5YR4/5) silty sand with gravel massive, wet (reworked till)	SP-SM									2" SS
13	14	2/1 1/2	24	24-26 Brown (7.5YR5/5) fine sand with silt lenses and oxidized sand (med) lenses (outwash) minor black sand lenses	SP									2" SS
14	14	3/1 2/1	26	26-27 As above 27-28 Brown (10YR6/2) med to coarse sand, structureless, wet, loose (outwash)	SP									2" SS
15	13	4/1 1/4	28	28-30 As above										
			30	E.O.B. 30'										

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BG-2
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable) ____ Gov't Lot ____ Grid Number
Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine
Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BG-2
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 07/20/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	40.0	14 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 7-28-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-93

DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY
Date Received
Reviewed
Follow-up Needed

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BG-03
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BG-03
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 07/21/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Grout	Surface	37.0	10 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR
Signature of Person Doing Work: [signature]
Date Signed: 7-28-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected
District/County
Reviewed/Inspected
☐ Complying Work
☐ Non-complying Work
Follow-up Necessary

3.5-14c-94

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BG-09
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable) ____ Gov't Lot ____ Grid Number
Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BG-09
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 07/20/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	30.0	9 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 7-28-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-95
DNR/COUNTY

(10) DNR OR COUNTY USE ONLY
Date Received
District/County
Reviewed
Approved
Rejected
Follow-up

Area H

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other Mitigation Site

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project - SAP II - Area H		BH-01

Boring Drilled by (Firm name and name of crew chief)	Date Started	Date Completed	Drilling Method
Boart Longyear Pat Jensen	MM/DD/YY 07/20/98	MM/DD/YY 07/20/98	HSA-0'-16' 16'-80' MND Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1585 Feet MSL	4¼" IB, 8" OD, 3⅞" Tri-Cone

Boring Location
State Plane ~125126 N, ~2285674 E S/C/N Lat
NE 1/4 of NE 1/4 of Section 20 , T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ____ N Feet ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow* Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	18"	1/1/2	-	0 - .2', dk-red-brown silty fine sand, tr organics										2" SS
			-	.2' - 2', lt-brn (10YR5/4) fine to med sand tr silt, loose (outwash)										
2	18"	2/2/5	- 2	2' - 4', lt-brn (10YR6/4) fine to med sand, tr silt, loose (outwash)	SM/ SP									3" SS
3	10"	2/2/5	- 4	4' - 6', brn (7.5YR4/3) med and coarse sand, tr silt, loose (outwash)	SP									2.5" SS
4	20	3/3/9	- 6	6' - 8', brn (7.5YR4/3) fine to med sand, tr silt saturated, loose (outwash)	SP									2" SS
5	17"	2/2/5	- 8	8' - 9.3', brn (10YR5/3) med to coarse sand w/ fine	SP									3" SS
			-	9.3' - 10', lt-brn (10YR6/1) fine to med sand with fine gravel, fine sand stained black	SP									2.5" SS
6	NR	1/1/2	- 10	10' - 12', No recovery	--									2" SS
7	13"	2/1/2	- 12	12' - 14', brn (10YR5/3) fine to med sand tr silt w/ fine gravel (outwash)	SP									3" SS
8	6"	2/2/8	- 14	14' - 16', lt-grey (10YR5/2) fine sand, tr silt (outwash)	SP									18" Blowup 3 ⅞" Tri-cone
9	10"	2/2/4	- 16	16' - 18', lt grey (10YR5/2) fine to med sand, tr silt and fine gravel (outwash)	SP									3" SS
10	13"	2/2/4	- 18	18' - 19', lt-grey (10YR5/2) fine sand, tr gravel	SP									3" SS
			-	19' - 20', grey, med to coarse sand w/ fine gravel (outwash)										
11	13"	2/2/6	- 20	20' - 22', lt-grey (10YR5/2) fine sand	SP									3" SS
			-	21.5' - 22', grey, med to coarse sand w/ fine gravel (outwash)										
12	12"	1/2/5	- 22	22' - 24', grey (10YR5/1) fine to med sand w/ fine to coarse gravel (outwash)	SP									3" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Firm
Foth & Van Dyke

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Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

DML\LMC\93C049\GBAPP\65745.61\14000

SAMPLE No.	SAMPLE Rec (in)	Blow* Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
13	15"	2/2/7	24	24' - 25.5', very loose, grey (10YR5/1) med to coarse sand w/ fine gravel	SP									3" SS
				25.5' - 26', fine sand (outwash)										
14	14"	2/3/8	26	26' - 27', med to coarse sand (10YR5/1)	SP									3" SS
				27' - 28', fine sand (outwash)										
15	16"	1/2/3	28	28' - 29.5', grey, loose, fine sand w/ fine gravel	SP									3" SS
				29.5' - 30' , med to coarse sand w/ fine gravel										
16	10"	1/2/5	30	30' - 32', grey, loose, fine to med sand w/ fine gravel, tr silt (outwash)	SP									3" SS
			32											3" SS
17	10"	2/2/8	34	34' - 36', grey (10YR5/1) loose fine to med sand, tr fine gravel (outwash)	SP									3" SS
			36											3" SS
18	17"	4/4/10	38	38' - 40', grey (10YR5/2) loose fine sand, tr silt (outwash)	SP									3" SS
			40											3" SS
19		5/5/11	42	42' - 44', grey (10YR5/2) loose, fine sand tr silt (outwash)	SP									3" SS
			44											3" SS
20		5/5/12	46	46' - 48', grey (10YR5/2) loose, fine sand tr silt and fine gravel (outwash)	SP									3" SS
			48											3" SS
21	15"	5/5/13	50	51' - 53', grey (10YR5/2) loose, fine sand, tr silt (outwash)	SP									3" SS
			52											
			54											
			56											
22	15"	8/9/20	58	58' - 60', grey (10YR5/2) firm, fine sand, tr silt (outwash)	SP									3" SS
			60											
23		7/19/13	62	63' - 65', pale red (10YR6/2) firm, fine sand, tr silt w/ ⅛" to ¼" laminae of red-brn silty clay & grey clayey silt (lacustrine outwash)	CL, ML, SP									3" SS
			64											
			66											
24	18"	4/6/26	68	68' - 68.5', laminated (¼"- ⅛") dk-grey (10YR5/3) fine, sandy silt & silty fine sand w/ laminae of clay (5YR5/4) (rd-brn)	SM, ML, CL									3" SS
				68.5' - 70', brn (10YR5/4) fine sand, tr silt	SP									3" SS
			70											
			72											

State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: BH-01 | Page 3 of 3

SAMPLE No.	SAMPLE Rec (in)	Blow* Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			74											3" SS
					SP									
			76											
25	16"	7/7/16	78	78' - 80', layered ¼" dk-grey (10YR5/3) clay silt (4") grey, very fine, sandy (ML) 1½" silty fine sand (SM) remainder is brn (10YR5/4) fine sand w/ silt (SP) (lacustrine/outwash)	ML, SM, SP									3" SS
			80	80' E,O,B,										

*Blow counts are for a 300 lb hammer

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other Mitigation Site

SOIL BORING LOG INFORMATION
Form 4400-122 7-91
Drilling Rig Arrives 12:45

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project - SAP II - Area H		BH-02

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear/Mike Miller	08/03/98	08/03/98	4¼ inch HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1593.40	8"

Boring Location
State Plane 129420.85 N, 2284835.2 E S/C/N Lat
NW 1/4 of SE 1/4 of Section 17, near TPH-07 T N, R E Long

Local Grid Location (if applicable)
Feet ____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
														4¼" HSA
				0-3", bl (10YR4/2) fine, sandy silt topsoil	OL									3" SS
				3" - 2', fine, sandy silt, lt-yel brn, loess	ML									
1	20"	4/5/10	2	2 - 3½', lt-yel to gray-brown, fine sandy silt	ML									2½" SS
		3/5/7		3½ - 4', brn (10YR6/2), fine sandy silt w/ gravel and clay (till)	SC/ ML									2" SS
2	17"		4	4 - 6', brn (10YR6/4), fine to med sand w/coarse sand and fine gravel (outwash)	SP									3" SS
3	15"	2/2/15	6	6 - 7½', lt-brn (10YR6/6), fine sand w/ fine gravel, streaked red-brn & bl	SP									2½" SS
				7½ - 8', lt-brn med sand (outwash)										
4	17"	3/4/10	8	8 - 10', brn fine and fine to med sand w/ fine gravel, saturated @ 9' (outwash)	SP									2" SS
5	17"	2/2/11	10	10 - 12', brn (10YR6/4) fine to med sand	SP									3" SS
				11½ - 12', med to coarse sand (outwash)										
6	17"	3/3/8	12	12 - 14', brn (10YR6/4) layered brn fine to med and med to coarse sand w/ gravel	SP									3" SS
7	15"	4/4/4	14	14 - 16', brn (10YR6/2) layered fine to med and fine sand, tr fine gravel	SP									2½" SS
8	16"	2/2/4	16	16 - 18', brn (10YR6/2) med to coarse sand w/ fine gravel (outwash)	SP									3" SS
9	9"													
10	13"	2/1/2	18	18 - 20', lt-brn to grey (10YR6/2) fine and fine to med sand w/ fine to med gravel (outwash)	SP									2" SS
11	NR	1/1/2	20	20 - 22', no recovery	SP									3" SS
12	13"	3/1/3	22	22 - 24', lt-grey (10YR6/1) fine to med sand w/ fine gravel, tr silt (outwash)	SP									2" SS
			24	24 - 26', lt-grey & brn (10YR6/2) fine to med sand & fine sand w/ fine gravel, tr silt (outwash)										
13	13"	4/3/3	26	26 - 27½', lt-grey (10YR6/2), fine sand tr silt	SP									3" SS
				27½ - 28', fine sand silt, grey, saturated										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Ken Meister Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-02

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
14	12"	1/1/2	28	28 - 29½', grey, fine sand, tr silt	SP/ GP									2" SS
				29½ - 30', med to coarse sand w/ fine to med gravel (outwash)										
15	9"	2/1/2	30	30 - 32', grey (10YR6/1) fine and fine to med sand layered w/ fine gravel (outwash)	SP/ GP									3" SS
16	10"		32	E.O.B. - 32'	SP									2" SS

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project - SAP II - Site H		BH-03

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Pat Jensen	07/21/98	07/21/98	HSA - 4¼" ID

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1586 Feet MSL	8 inches

Boring Location
State Plane ~125876 N, ~2284916 E S/C/N Lat
NE 1/4 of NE 1/4 of Section 20, T35N, R13E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow* Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	24"	1/1/2	-	0 - .2': organic silt (topsoil)	OL									2" SS
			-	.2' - .4': h gr (10YR7/1) fine sandy silt (loess)	ML									
			-	.4' - 1.5': yel-brn (10YR6/1) silty fine sand (loess)	SM									
			-	1.5' - 2': yel-brn (10YR5/6) fine to med sand w/ silt (outwash)	SP									
2	15"	1/2/2	- 2	2' - 4': yel-brn (10YR6/6) fine to med sand w/ silt loose (outwash)	SP									3" SS
3		1/1/4	- 4	4' - 6': lt-brn (10YR6/4) fine to med sand w/ silt, loose (outwash)	SP									2½" SS
4	12"	2/2/2	- 6	6' - 8': lt-brn (10YR6/4) fine to med sand w/ silt, loose (outwash) saturated @ 6'	SP									2" SS
5	12"	9/10/10	- 8	8' - 10': brn (10YR6/4) fine to med sand w/ silt, loose (outwash)	SP									3" SS
6	12"	1/1/2	- 10	10' - 11': brn (10YR6/2) fine to med sand w/ silt, loose	SP									3" SS
			-	11' - 12': (10YR6/2) grey-brn fine to med sand w/ silt										
7	12"	1/1/2	- 12	12' - 14': brn (10YR6/2) med to coarse sand w/ fine tr silt, loose (outwash)	SP									2½" SS
8	10"	1/1/3	- 14	14' - 16': grey-brn (10YR6/2) fine to med sand, tr silt loose (outwash)	SP									2" SS
9	9"	4/4/4	- 16	16' - 18': grey-brn (10YR6/2) layered very fine and fine sand, tr silt, loose (outwash)	SP									3" SS
10	4"	1/1/2	- 18	18' - 20': grey-brn (10YR6/2) very fine sand, tr. silt loose (outwash)	SP									3" SS
11	4"	1/1/2	- 20	20' - 22': grey-brn (10YR6/2) very fine & fine sand tr silt, loose (outwash)	SP									3" SS
12	3"	1/1/1	- 22	22' - 24': same as above, fine sand	SP									3" SS
13	12"	1/1/3	- 24	24' - 26': fine to med sand, tr silt, loose (outwash)	SP									2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Ron Meister Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-03

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow* Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
14	8"	4/2/6	26	26' - 28': fine & very fine sand, grey-brn (10YR6/2) loose (outwash)	SP									2" SS
	NR	1/1/1	28	28' - 30': auger sample (no recover y from SS)										2" SS
				E.O.B. 30'										
				*Blow counts are for a 300 lb hammer										

DML\DMW\93C049\GBAPP\65756.61\14000

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area H		BH-04

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Miller	08/03/98	08/03/98	4¼"

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1591.68	8"

Boring Location
State Plane 128957.10 N, 2285934.77 E S/C/N Lat
NW 1/4 of SE 1/4 of Section 17, T N, R E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			-	0-3", black (10YR4/2) fine sandy silt w/ clay	OL									3" SS
			-	3-15", light yel-brown (10YR4/2) blocky fine sandy (loess)	ML									
1	24"	4/5/10	-	15"-2', brown (10YR6/2) fine sandy silt w/ fine to gravel (till)	SM-ML									2½" SS
2	24"	12/14/28	- 2	2-3', brown (10YR6/2) siltly fine sand w/ fine to gravel (reworked till)	SM									2" SS
			-	3-4', light brown, fine sand, tr. silt (outwash)	SP									3" SS
3	11"	8/10/27	- 4	4-6', light brown fine sand w/ fine to med gravel, tr. silt	SP									2½" SS
			-	5½-6', med to coarse sand (outwash)										
4	16"	5/3/6	- 6	6-8', layered brown fine sand, tr. silt & fine to med sand w/ fine to coarse gravel (outwash)	SP									2" SS
5	14"	4/5/7	- 8	8-10', brown (10YR6/4) fine sand w/ fine to coarse gravel, saturated (outwash)	SP									3" SS
6	14"	2/2/4	- 10	10-12', brown to grey, fine sand, tr. silt, then med to coarse sand w/ fine gravel, saturated (outwash)	SP									2" SS
7	6"	1/1 1/1	- 12	12-14', brown (10YR5/4) med to coarse sand w/ gravel & cobbles, rock in shoe, structureless, wet, loose (outwash)	SP									2" SS
8	4"	3/3 1/2	- 14	14-16', as above, push cobble	SP									2" SS
9	22"	8/2 4/7	- 16	16-18', brown (10YR5/4) fine to med sand with coarse sand & gravel lenses, stratified, structureless, wet, loose (outwash)	SP									2" SS
10	18"	4/7 9/13	- 18	18-20', as above at 20', outwash changes to grey (2.5Y5/1) w/ limestone clasts	SP									2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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DMW\93C049\GBAPP\67954.61\14000

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-04

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	4"	2/2 2/2	20	20-22', brown (10YR5/4) outwash as above	SP									2" SS
12	12"	6/6 4/6	22	22-24', grey brown (10YR5/1) fine sand	SP									2" SS
13	10"	5/7 8/12	24	24-26', grey (10YR4/1) med to coarse sand w/ gravel, stratified, structureless, wet (outwash)	SP									2" SS
14	10"	6/6 4/6	26	26-28', as above	SP									2" SS
15	12"	5/5 3/4	28	28-30', as above	SP									3" SS
16	5"	3/3 3/2	30	30-32', as above	SP									2" SS
17	15"	6/4 4/3	32	32-34', as above	SP									2" SS
18	10"	5/5 4/4	34	34-36', grey brown (10YR5/2) fine to med sand, weakly stratified, structureless, wet, loose (outwash)	SP									2" SS
19	12"	3/3 3/3	36	36-38', as above w/ gravel lense at 38'	SP									3" SS
20	14"	2/3 5/4	38	38-40', as above	SP									2" SS
21	4"	0/0 0/0	40	40-42', fine sand, as above	SP									2" SS
22	12"	2/3 5/5	42	42-44', med to coarse sand w/ gravel, as above	SP									2" SS
23	12"	16/3 4/16	44	44-46', as above, fine sand w/ coarse sand & gravel lenses	SP									2" SS
24	12"	10/10 10/10	46	46-48', as above, more dense and tighter	SP									2" SS
25	5"	2/4 6/8	48	48-50', as above	SP									2" SS
			50	E.O.B. 50'										
			52											
			54											
			56											
			58											
			60											
			62											
			64											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☑ Other Mitigation Site

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project - SAP II - Area H		BH-05

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Pat Jensen	07/20/98	07/21/98	4¼" HSA & Mud Rotary

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1585	8"

Boring Location
State Plane ~125279 N, ~2284736 E S/C/N Lat
NE ¼ of NE ¼ of Section 20, T35N, R13E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow* Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	20"	1/1/4		0-.3', black organic silt loam topsoil	OL									2" SS
				.3'-2', brn-yel (10YR6/8) silty fine sand w/ gravel (till)	SM									
2			2	2'-3', as above	SM									3" SS
				3'-4', (10YR6/6) very fine sand, tr silt, loose (outwash)	SP									
3	24"	7/8/17	4	4'-6', (10YR6/6) lt-brn, fine to med. sand, tr silt, loose (outwash)	SP									2½" SS
4	18"	7/10/7	6	6'-8', (10YR4/6) brn, 4" fine sand, 9" med sand, saturated @ 7½" in layers then fine sand and med and coarse sand, loose (outwash)	SP									2" SS
5	18"	1/1/4	8	8'-10', brn (10YR5/4) fine sand, tr silt, loose (outwash) saturated	SP									3" SS
6	14"	1/2/4	10	10'-12', brn (10YR5/4) fine sand w/ some layers of med to coarse sand, loose, saturated (outwash)	SP									2½" SS
7		1/2/5	12	12'-14', grey-brn (10YR5/2) fine to med sand some coarse sand, loose (outwash)	SP									2" SS
8		1/1/2	14	14'-16', grey-brn (10YR5/2) fine to med sand, tr of coarse sand, loose (outwash)	SP									3" SS
9	16"	1/2/5	16	16'-18', grey-brn (10YR5/2) fine to med sand, tr silt, loose (outwash)	SP									
10	17"	2/2/3	18	18'-20', grey-brn (10YR6/3) fine & very fine sand, tr silt, loose (outwash)	SP									

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Ron Meister Firm Foth & Van Dyke

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State of Wisconsin Route to: SOIL BORING LOG INFORMATION

SAMPLE No.	SAMPLE Rec (in)	Blow* Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	12"	3/2/5	20	20'-22', grey-brn (10YR6/2) med to coarse sand w/ fine to med gravel, tr silt, loose (outwash)	SP									3" SS
12	12"	1/1/4	22	22'-24', same as above, change to (sample fine sand only) grey-brn (10YR6/3) fine & very fine sand, tr silt (23'-24'), loose (outwash)										3" SS
13	12"	1/2/3	24	24'-26', grey-brn (10YR6/3) fine sand, tr silt, loose (outwash)	SP									3" SS
14	7"	2/3/7	26	26'-28', grey-brn (10YR6/2) fine to med sand w/ fine gravel and silt, loose (outwash)	SP									3" SS
15	18"	2/3/8	28	28'-30', grey-brn (10YR6/2) layered fine sand & fine to med sand w/ fine gravel, loose (outwash)	SP									3" SS
			30											3" SS
16	12"	5/3/8	32	32'-34', grey-brn (10YR6/2) fine to med sand w/ fine gravel and silt, loose (outwash)	SP									3" SS
			34											3" SS
17	15"	4/4/8	36	36'-38', grey-brn (10YR6/2) fine sand, tr silt, loose (outwash)	SP									3" SS
18	16"	4/4/11	38	38'-40', grey-brn (10YR5/2) fine sand, tr silt & fine to med gravel, dense (outwash)	SP									3" SS
			40											3" SS
19	16"	4/5/11	42	43'-43.5', grey-brn (10YR5/2) fine to med sand, tr silt	SP									
				43.5'-45', grey-brn (10YR5/2) fine to very fine sand, tr silt, dense (outwash)	SP									
			44											3" SS
			46											3" SS
20	16"	5/6/14	48	48'-50', Grey-brn alternating ½" to 1½" layer of very fine sand and fine to med sand, dense (outwash)	SP									3" SS
			50											
			52											
			54											
			56											

State of Wisconsin | Route to: | SOIL BORING LOG INFORMATION

Department of Natural Resources | Form 4400-122 | 7-91

BORING NUMBER: BH-05 |

SAMPLE No.	SAMPLE Rec (in)	Blow* Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			58											
			60											
21	17"		62	62'-63.5', (10YR5/4) grey-brn, fine sand, tr. silt outwash grading to silty fine sand	SP									3" SS
				63.5'-64', fine sandy silt, grey-brn (10YR4/2)	ML									
			64	E.O.B. 64'										

*Blow counts are for a 300 lb hammer.

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area H		BH-06

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/04/98	08/04/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1590.20	8 ¼"

Boring Location
State Plane 128067.11 N, 2284720.66 ES/C/N Lat
SW ¼ of SE ¼ of Section 17, T35 N, R13 E Long

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	23	3/5 7/12		0-1.2', brown (10YR5/2) fine sand silt with organics, plagen, disturbed	ML-OL									3" SS
				1.2-1.7', lt-brown (10YR6/3) fine sandy silt to silty sand, moderate med platy str dry (loess)	ML-									
2	20	7/12 10/10	2	1.7-2', brown (10YR6/4) fine sand with silt and minor gravel, fragipan, hard dense strong coarse blocky structure to massive, dense 2-4', as above	SP-SM									2½" SS
3	18	5/6 7/9	4	4-6', lt-brown (10YR7/4) fine sand, structureless, weakly oxidized damp, loose (outwash)	SP									2" SS
4	18	4/5 4/5	6	6-8', brown (10YR5/4) fine to med sand, structureless, stratified, wet, loose (outwash) coarse sand with gravel lense 7.8-8.0, wet at 6.2'	SP									3" SS
5	22	5/4 4/5	8	8-10', as above, slightly coarser	SP									2 ½" SS
6	14	3/4 4/6	10	10-12', brown (10YR5/5) fine to med sand, structureless, stratified, wet, loose	SP									2" SS
7	20	1/1 1/1	12	12-14', brown (10YR5/5) fine to med sand as above with minor gravel lenses	SP									2" SS
8	4	4/3 3/3	14	14-16', as above	SP									2" SS
9	9	0/1 0/1	16	16-18', as above with coarse sand lenses	SP									2" SS
10	2	0/1 0/1	18	18-20', as above	SP									2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-06

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	2	0/0 0/1	20	20-22', as above	SP									2" SS
12	8	2/2 2/2	22	22-24', as above	SP									2" SS
13	16	1/1 1/2	24	24-26', as above	SP									2" SS
			26	E.O.B. 26'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area H		BH-07

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/04/98	08/04/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1588.48	8¼"

Boring Location
State Plane 127029.86 N, 2285829.03 E S/C/N Lat
SE ¼ of SE ¼ of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	23	2/5 7/11	-	0-1.1', lt-brown (10YR4/2) sandy silt with organics, plagen, disturbed	OL-ML									3" SS
			-	1.1-1.5', brown (10YR6/2) fine, sandy silt with minor gravel, w/ fine, blocky structure day (loess)	ML									
2	20	7/7 9/12	- 2	1.5-2.1', lt-brown (10YR6/1) fine silty sand with gravel, cemented, massive, dense, hard, dry	ML-SM									2½" SS
			-	2-4', brown (10YR6/3) fine-med sand with gravel, stratified, loose; sl. damp, (outwash)	SP									
3	16	7/7 7/11	- 4	4-6', brown (10YR6/2) fine-med sand with coarse sand lenses, damp, structureless, loose, very damp near tip of spoon	SP									2" SS
4	18	11/5 5/5	- 6	6-8', as above, wet at ~6.8', color (10YR4/4) minor gravel & coarse sand lenses	SP									3" SS
5	18	4/5 4/5	- 8	8-10', brown (10YR4/4) coarse sand with gravel and cobbles, structureless, stratified, wet (outwash)	SP-GP									2½" SS
6	0	2/1 1/1	- 10	10-12', no recovery	-									2" SS
7	8	4/3 3/3	- 12	12-14', as above with fine-med sand lenses	SP									3" SS
8	13	3/2 1/1	- 14	14-16', as above	SP									2" SS
9	2	0/0 0/1	- 16	16-18', as above, less gravel	SP									2" SS

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-07

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
10	8	2/2 2/2	18	18-20', as above, less gravel	SP									2" SS
11	17	1/2 2/3	20	20-22', as above, med Sand	SP									2" SS
12	18	1/1 1/1	22	22-24', as above	SP									2" SS
13	8	1/2 2/3	24	24-26', grey (2.5YR4/1) med sand, structureless stratified, wet (outwash)	SP									2" SS
14	2	1/2 3/3	26	26-28', as above, poor recovery, fine-med sand	SP									2" SS
15	10	2/2 3/3	28	28-30', as above, fine-med grey sand	SP									2" SS
			30	E.O.B. 30'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area H		BH-08

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/05/98	08/05/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1586.19	8¼"

Boring Location
State Plane 126899.53 N, 2284956.62 E S/C/N Lat
SW ¼ of SE1/4 of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln TWP

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/Comm
1	22	6/7 8/10	-	0-1.2', lt-Brown (10YR5/3) fine sandy silt with organic m+l, plagen, disturbed, moderate med blocky structure, dry	OL-ML									300 lb hammer 3" s.s
			-	1.2-1.7', lt-brown (7.5YR6/2) fine sandy silt, with fine, blocky structure, dry, soft (loess)	ML									
			-	1.7-2', brown (7.5YR6/3) fine sand with minor silt and gravel										
2	22	5/7 9/13	- 2	2-4', brown (10YR6/3) fine-med sand with very minor gravel, damp, stratified with coarse sand lenses, loose, (outwash)	SP									2" SS
3	12	3/3 5/8	- 4	4-6', brown (10YR5/5) fine-med sand as above, wet at 5.1', locally oxidized	SP									2" SS
4	19	2/1 1/1	- 6	6-8', as above, med to slightly finer sand	SP									2" SS
5	16	0/1 1/1	- 8	8-10', as above	SP									2" SS
6	10	0/1 1/1	- 10	10-12', as above	SP									2" SS
7	10	2/2 2/2	- 12	12-14', as above with gravel	SP									2" SS
8	22	3/4 3/7	- 14	14-16', as above, less gravel, grey at tip	SP									2" SS
9	8	0/1 1/1	- 16	16-18', as above	SP									2" SS

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-08

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
10	14	1/1 1/2	- 18 -	18-20', brown (10YR3/4) fine sand with med sand lenses, stratified, wet, (outwash)	SP									2" SS
11	12	1/1 1/1	- 20 -	20-22', as above	SP									2" SS
12	13	4/4 3/5	- 22 -	22-24', as above	SP									2" SS
13	6	1/1 2/2	- 24 -	24-26', brown (10YR4/4) fine sand (outwash)	SP									2" SS
			- 26	E.O.B. 26'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area H		BH-09

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/05/98	08/05/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1591.66	8¼ in

Boring Location
State Plane 128830.78 N, 2284131.85 E S/C/N Lat
NW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ____ N ____ S Feet ____ E ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	23	6/6 5/4		0-1.3', grey (2.5YR4/1) sandy silt with minor gravel (plagen) distrurbed, mod med platy structure	CL-ML									300 lb hammer
				1.3-1.6', brown (10YR5/2) sandy silt, cemented, hard, dry, locally oxidized	ML									3" s.s
				1.6-2', brown (7.5YR6/3) fine-med sand with gravel, damp, structureless (outwash)										
2	23	6/6 7/10	2	2-3', as above	SP									2½" SS
				3-4', brown (10YR4/4) fine to med with coarse sand lenses, stratified, wet at ~3.5'	SP									
3	23	4/5 7/9	4	4-6', as above	SP									2" SS
4	6	2/1 2/2	6	6-8', as above, slightly finer	SP									2" SS
5	20	3/3 3/4	8	8-10', grey-brown (10YR4/2) med to coarse sand w/ fine sand and coarse sand with gravel lenses, stratified, structureless, wet, loose	SP									3" SS
6	12	0/1 0/1	10	10-12', grey-brown, fine to med sand as above	SP									2" SS
7	11	0/1 0/1	12	12-14', as above with coarse sand lenses	SP									2" SS
8	6	3/3 3/4	14	14-16', as above	SP									2" SS
9	14	3/4 4/5	16	16-18', as above	SP									2" SS

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-09

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
10	12	0/1 1/1	18	18-20', as above with lenses of coarse sand 19.5-20'	SP									2" SS
11	14	1/1 2/2	20	20-22', brown (10YR4/2) fine to med sand as above, wet (outwash)	SP									2" SS
12	17	1/1 2/3	22	22-24', as above w/ coarse sand lenses	SP									2" SS
13	11	1/1 1/3	24	24-26', as above	SP									2" SS
14	10	0/1 0/1	26	26-28', as above	SP									2" SS
15	14	3/2 2/3	28	28-30'. as above	SP									3" SS
			30	E.O.B. 30'										

State of Wisconsin
Department of Natural Resources

Route to:
- ☐ Solid Waste
- ☐ Emergency Response
- ☐ Wastewater
- ☐ Haz. Waste
- ☐ Underground Tanks
- ☐ Water Resources
- ☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-09

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/26/98	08/26/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1591.23	8¼ in

Boring Location
State Plane 128827.63 N, 2284111.34 E S/C/N Lat Long
NW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-15 Blind drill, see boring log BH-9										
			2											
			4											
			6											
			8											
			10											
			12											
			14											
				E.O.B. 15'										
			16											

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-09P

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/26/98	08/26/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1591.22	8¼ in

Boring Location
State Plane 128827.77 N, 2284111.79 E S/C/N Lat
NW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ____ N ____ S Feet ____ E ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln TWP

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			5	0-35 Blind drill, see boring log BH-9										
			10											
			15											
			20											
			25											
			30											
1	18	1/1 1/1	35	32-34 Grey (10YR5/1) fine Sand (outwash)	SP									
				E.O.B. 35'										

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAP II - Area H		BH-10

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/05/98	08/05/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.33	8¼ in

Boring Location
State Plane 128530.22 N, 2284998.06 E S/C/N Lat Long
NW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	22	4/6 6/7		0-1.4', lt-brown (10YR6/2) fine sandy silt, disturbed, dry, soft	OL-ML									3" SS
				1.4-1.8', lt-brown (10YR6/2) fine sandy silt, cemented, dense, hard, minor gravel, dry	ML									
				1.8-2', brown (7.5YR6/3) fine to med sand with gravel, oxidized, structureless, damp, loose										
2	20	7/8 8/8	2	2-4', brown (10YR6/3) fine to med sand with gravel, stratified, damp, loose	SP									2½" SS
				3.7-4', fine sand, loose (outwash)										
3	17	4/4 5/5	4	4-6', lt-brown (10YR7/3) fine sand with med sand lenses, stratified, damp, loose (outwash)	SP									2" SS
4	18	5/4 5/4	6	6-8', lt-brown (10YR7/8) fine to med sand with coarse sand lenses & minor gravel, stratified, very damp, loose (outwash)	SP									3" SS
5	20	3/1 2/3	8	8-10', brown (10YR5/4) fine to med sand with coarse sand & gravel lense at 9.6', stratified, wet, loose (outwash), wet at 8.2'	SP									2½ SS
6	14	1/2 2/2	10	10-12', brown (7.5YR5/4) med to coarse sand with fine sand lenses, stratified, wet, loose (outwash)	SP									2" SS
7	12	3/2 1/1	12	12-14', as above	SP									2" SS
8	23	1/1 2/2	14	14-16', as above	SP									2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature

Firm: Foth & Van Dyke

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LMC\93C049\GBAPP\67422.61\14000

State of Wisconsin Route to: SOIL BORING LOG INFORMATION

Department of Natural Resources Form 4400-122 7-91

BORING NUMBER: BH-10

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
9	16	1/1 1/1	16	16-18', as above	SP									2" SS
10	22	1/2 2/3	18	18-20', as above, slightly coarser	SP									2" SS
11	0	0/1 0/1	20	20-22', no recovery	-									2" SS
12	0	0/0 0/1	22	22-24', no recovery	-									2" SS
13	5	1/1 1/1	24	24-26', brown (10YR5/4) fine to med sand as above	SP									3" SS
14	14	4/3 3/2	26	26-28', as above	SP									2" SS
15	8	2/3 3/3	28	28-30', as above, slightly finer sand	SP									2" SS
16	13	1/1 1/2	30	30-32', as above	SP									3" SS
			32	E.O.B. 32'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-10

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/26/98	08/26/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.46	8¼ in

Boring Location
State Plane 128524.62 N, 2284996.76 E S/C/N Lat Long
NW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			2	0-18 Blind drill, see boring log BH-10										
			4											
			6											
			8											
			10											
			12											
			14											
			16											
			18	E.O.B. 18'										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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LMC\93C049\GBAPP\67557.61\14000

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-10P

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/26/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.37	8¼ in

Boring Location
State Plane 128534.44 N, 2284996.57 E S/C/N Lat
NW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ___ N Feet ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
				0-38 Blind drill, see boring log BH-10										
			5											
			10											
			15											
			20											
			25											
			30											
1	12	2/2 2/2	35	Grey (10YR4/2) fine-med. Sand, stratified, wet	SP									
				E.O.B. 38'										
			40											

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		BH-11

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/24/98	08/24/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1585.07	8¼ in

Boring Location	Local Grid Location (if applicable)
State Plane 128232.29 N, 2285320.44 E S/C/N Lat NE 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long	____ N ____ E Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	19	2/2 3/4		0-0.1', 0-Horizon										3" SS
				0.1-0.5', brown (7.5YR3/4) organic topsoil, w/ med granular structure, damp, soft	OL									
				0.5-0.8', yel-brown (7.5YR5/6) fine to med sand, structureless, loose	SP									2½" SS
				0.8-2', brown (10YR3/4) silty fine sand with gravel, massive, cemented (till)	SM									
2	16	3/1 1/2	2	2-3', lt-brown (7.5YR5/5) silty fine sand with gravel as above (till)	SM									2½" SS
				3-4', strong yel-brown (7.5YR5/6) fine to med sand with minor gravel, structureless, stratified, damp, loose (outwash) oxidized, molted	SP									
3	13	6/7 3/5	4	4-6', brown (7.5YR4/3) fine to med sand, stratified wet at 4', minor oxidation, fine sand & coarse sand lenses abundant (outwash)	SP									2" SS
4	12	3/5 5/7	6	6-8', brown (7.5YR4/5) fine to med sand with gravel & silt, massive, wet, soft, (reworked till)	SP-SM									2" SS
5	2	2/2 4/4	8	8-10', brown (10YR4/3) fine to med sand with abundant gravel (outwash)	SP									3" SS
6	14	11/8 3/2	10	10-12', brown (10YR4/3) fine to med sand with coarse sand and gravel lense, abundant (outwash)	SP-GP									2" SS
7	13	3/1 1/4	12	12-14', brown (10YR5/2) med to coarse sand with gravel, stratified, wet, loose (outwash)	SP									2" SS

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Signature	Firm
	Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-11

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
8	23	3/3 5/4	14	14-16', as above	SP									2" SS
9	14	2/3 3/3	16	16-18', as above - slightly finer	SP									2" SS
10	16	1/1 1/1	18	18-20', as above - med to fine sand (outwash)	SP									2" SS
11	6	1/1 1/1	20	20-22', as above, poor recovery	SP									2" SS
12	10	1/1 1/1	22	22-24', lt-brown (10YR5/2) fine to med sand with stratified, wet, loose (outwash)	SP									2" SS
13	14	1/1 1/1	24	24-26', as above with minor med sand lenses	SP									2" SS
14	13	1/1 1/4	26	26-28', as above	SP									2" SS
15	9	1/1 1/3	28	28-30', as above	SP									2" SS
			30	E.O.B. 30'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-11

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/27/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1585.0	8¼ in

Boring Location
State Plane 128234.40 N, 2285323.43 E S/C/N Lat
NE 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ____ N ____ S Feet ____ E ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
				0-15 Blind drill, see boring log BH-11										
			2											
			4											
			6											
			8											
			10											
			12											
			14											
				E.O.B. 15'										
			16											

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-11P

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/27/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
					8¼ in

Boring Location
State Plane 128240.76 N, 2285325.07 E S/C/N Lat Long
NE 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			5	0-36 Blind drill, see boring log BH-11										
			10											
			15											
			20											
			25											
			30											
			35											
				E.O.B. 36'										
			40											

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Signature

Firm
Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Lincoln Area H		BH-12

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/24/98	08/24/98	4¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1591.43	8¼ in

Boring Location
State Plane 128274.90 N, 2284134.29 E S/C/N Lat
NW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	24	1/2 2/3	-	0-0.9', dark-brown (7.5YR3/2) orgainc topsoil, with med subangular blocky structure, damp, soft (silt loam)	OL									3" SS
			-	0.9-1.1', brown (7.5YR5/6) silty fine sand (loamy sand) w/ med blocky structure, dry, slightly hard	SM									
			-	1.1-2', brown (7.5YR5/5) fine to med sand, oxidized layers, slightly coarser, dry, soft (outwash)	SP									
2	24	1/2 3/2	- 2	2-4', as above	SP									2½" SS
3	24	4/4 4/5	- 4	4-6', yel-brown (7.5YR5/6) fine to med sand, stratified, slightly damp, loose (outwash)	SP									2" SS
4	18	2/2 3/4	- 6	6-6.6', as above	SP									2" SS
			-	6.6-8', brown (10YR4/4) med sand with coarse sand lenses, stratified, wet, loose (outwash)										
5	17	1/2 4/3	- 8	8-10', as above with fine sand lenses, minor gravel in coarse sand lenses	SP									2" SS
6	6	1/2 1/2	- 10	10-12', as above, gravel lenses	SP									2" SS
7	22	2/2 1/1	- 12	12-14', brown (10YR4/4) med sand with fine sand lenses, minor gravel, stratified, wet, loose, (outwash)	SP									2" SS
8	23	0/1 4/4	- 14	14-16', lt-brown (10YR6/4) fine to med sand with fine sand and coarse sand lenses, stratified, wet, loose	SP									2" SS
9	19	2/2 2/2	- 16	16-18', grey-brown (7.5YR5/2) fine to med sand with med to coarse sand lenses, stratified, wet, loose (outwash)	SP									2" SS

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Signature | Firm: Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-12

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
10	6	0/1 1/1	18	18-20', as above	SP									2" SS
11	6	0/1 1/1	20	20-22', as above, fine grey sand lenses	SP									2" SS
12	11	1/1 1/1	22	22-24', as above	SP									2" SS
13	6	1/0 1/1	24	24-26', as above, bottom of spoon grey (10YR4/2) silty fine sand, massive, wet, soft blowup 3rd attempt	SP-SM									2" SS 3" SS
14	16	0/1 1/2	26	26-28', grey-brown (10YR4/2) med to coarse sand with gravel, structureless (outwash)	SP									
15	0	2/1 1/5	28	28-30', no recovery, fine sand ran out of spoon	–									2" SS
16	12	1/1 3/4	30	30-32', as above	SP									2" SS
			32	E.O.B. 32'										
			34											
			36											
			38											
			40											

LMC\DMW\93C049\GBAPP\67429.61\14000

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		BH-13

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/25/98	08/25/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1594.03	8¼ in

Boring Location
State Plane 130347.91 N, 2285052.06 E S/C/N Lat
SW 1/4 of NE 1/4 of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	19	2/3 4/6	-	0-1.1', dark brown (10YR3/2) organic topsoil (sandy silt loam) med, blocky structure	OL									3" SS
			-	1.1-1.4', light grey-brown (10YR6/2) silty sand (sandy loam) with minor gravel, structureless, dry, loose	SM									
			-	1.4-2', brown (7.5YR4/5) fine-med sand with silt and gravel, w/ fine platy structure, damp, loose	SP-SM									2½" SS
2	0	4/4 5/6	- 2	2-4', no recovery	–									
3	15	1/1 2/6	- 4	4-4.6', brown (10YR4/5) silty sand with gravel & clay lenses, molted, massive, damp	SM									2" SS
			-	4.6-5.6', grey (2.5Y5/1) silty clay oxidized, massive, damp	CL									2" SS
			-	5.6-6', brown (10YR5/6) fine to med sand, stratified, damp (wet at 5.9') loose	SP									
4	16	1/1 2/2	- 6	6-8', as above	SP									2" SS
			-	6.4', lt brown (10YR5/2) fine to med sand lenses (outwash)										
5	12	1/1 1/1	- 8	8-10', grey (10YR4/1) very fine sand with very minor silt & med sand lenses, stratified, wet, massive	SP									2" SS
6	20	1/1 1/1	- 10	10-12', grey-brown (10YR5/2) med to coarse sand, stratified, wet, loose	SP									2" SS
7	14	1/1 2/3	- 12	12-14', lt grey-brown (10YR5/2) med to coarse sand as above	SP									2" SS
8	8	5/4 3/4	- 14	14-16', as above, fine sand lense at tip of spoon	SP									2" SS
9	15	3/1 1/4	- 16	16-18', brown (10YR5/3) med sand as above	SP									2" SS

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Signature [signature] Firm Foth & Van Dyke

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SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
10	14	1/1 1/1	- 18	18-20', brown (10YR4/3) med sand, weakly stratified, wet, loose (outwash)	SP									2" SS
11	22	1/1 1/1	- 20	20-22', as above with minor coarse sand lenses	SP									2" SS
12	21	1/2 1/1	- 22	22-24', as above										2" SS
13	6	4/4 5/6	- 24	24-26', as above, poor recovery, blowup	SP									2" SS
14	18	4/5 3/8	- 26	26-28', as above	SP									2" SS
15	6	1/2 1/1	- 28	28-30', as above	SP									2" SS
16	10	1/2 1/1	- 30	30-32', as above	SP									2" SS
17	0	1/1 1/1	- 32	32-34', no recovery, fine sand ran out of spoon	–									2" SS
18	0	1/1 2/2	- 34	34-36'	–									2" SS
19	5	1/2 3/1	- 36	36-38', brown (10YR4/4) fine to med sand, weakly stratified, weak oxidation at top, wet, loose (outwash)	SP									2" SS
			- 38	Note: moved to 2.5' sample interval										
20	10	1/3 1/1	-	39-41', brown (10YR4/4) fine to med sand, weakly stratified, wet, no gravel, loose (outwash)	SP									2" SS
			- 40											
21	6	1/1 1/5	- 42	42-44', brown (10YR4/4) fine to med sand, wet, loose (outwash)	SP									2" SS
			- 44											
22	12	1/2 1/5	-	45-46.6', brown (10YR4/4) same	SP									2" SS
			- 46	46.6-47', brown (10YR4/3) fine to coarse sand, wet, little gravel, loose, (outwash)	SP									
23	0	10/11 8/6	- 48	48-49.5', no recovery										
			- 50	(1.5' sand in auger cleaned w/ 3" SS)										
24	15	2/6 8/5	-	51-53', brown (10YR4/4) fine to med sand, w/ coarse sand lenses, 1" coarse gravelly sand at base, wet, loose (outwash)	SP									2" SS
			- 52											
25	16	3/1 1/6	- 54	54-56', brown (10YR/4) fine to med sand, wet, loose (outwash)	SP									2" SS

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-13

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			56											
26	12	1/1 2/4		57-59', same as above	SP									2" SS
			58											
27	20	3/4 4/4	60	60-62', same as above except finer, BTM 6", weakly stratified	SP									2" SS
			62											
28	10	2/2 4/8		63-65', brown (10YR4/4) fine to med sand, weakly stratified w/ 2" coarse, gravelly sand near base, wet, loose (outwash)	SP									2" SS
			64											
29	19	2/2 3/5	66	66-68', brown (10YR4/4) fine to med sand, weakly stratified, wet, loose (outwash)	SP									2" SS
			68											
30	10	1/2 1/4		69-71', brown (10YR4/4) fine to med sand, weakly stratified, few gravel, wet, loose (outwash)	SP									2" SS
			70											
			72		SP									2" SS
				E.O.B. 71'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-13

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/27/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1594.42	8¼ in

Boring Location
State Plane 130355.72 N, 2285041.29 E S/C/N Lat Long
SW 1/4 of NE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ____ N ____ Feet ____ E ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			2	0-16 Blind drill, see boring log BH-13										
			4											
			6											
			8											
			10											
			12											
			14											
			16	E.O.B. 16'										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		BH-14

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Todd Schmanfelt	08/26/98	08/26/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1588.36	8¼ in

Boring Location
State Plane 127088.44 N, 2284436.56 E S/C/N Lat
SW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	24	2/2 3/4	-	0-0.2', brown (7.5YR3/3) fine to med sand with organics and minor silt	SP									140 lb hammer
			-	0.2-0.5', brown (10YR2/2) organic topsoil (sandy loam) w/fine granular structure, dry	OL									2" SS
			-	0.5-2', yel-brown (7.5YR5/6) fine sand with silty, highly oxidized (sandy loam) w/ fine granular structure (loess)	SP-SM									
2	16	3/4 2/4	- 2	2-2.5', lt brown (7.5YR6/2) fine to med sand, stratified, damp, loose, (outwash)	SP									2" SS
			-	2.5-4½ lt brown (7.5YR6/2) med to coarse sand, stratified, damp, loose (outwash)	SP									
3	20	2/3 3/4	- 4	4-6', as above										2" SS
4	22	1/2 3/4	- 6	6-8', as above, brown (10YR5/3), wet at 6' oxidized, fine-med sand lense at 6.6'	SP									2" SS
5	22	1/1 3/3	- 8	8-9.2', as above	SP									2" SS
			-	9.2-10', brown (10YR6/2) fine sand w/ med sand lense, minor oxidation, wet, loose (outwash)	SP									
6	24	1/1 1/1	- 10	10-12', as above, alternating 4-8" lenses of fine to med and med to coarse sand, wet, (outwash)	SP									2" SS
7	23	3/4 4/5	- 12	12-14', brown (10YR5/2) fine to med sand, stratified w/ coarse sand lenses, wet, loose (outwash)	SP									2" SS
8	14	1/1 1/1	- 14	14-16', brown (10YR5/2) fine sand with coarse sand lenses as above	SP									2" SS
9	23	2/3 4/4	- 16	16-18', as above, coarse sand lense 16-16.4'	SP									2" SS

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LMC\93C049\GBAPP\67448.61\14000

BORING NUMBER: BH-14

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
10	12	1/2 2/3	18	18-20', brown (10YR4/4) med sand, stratified, wet, loose (outwash)	SP									2" SS
11	23	1/1 1/1	20	20-22', brown (10YR4/4) med sand, stratified, wet, soft	SP									2" SS
12	18	2/3 4/4	22	22-24', as above	SP									2" SS
13	12	2/2 3/4	24	24-26'. as above	SP									2½" SS
14	12	2/2 3/3	26	26-28', grey (2.5Y4/2) med sand with coarse sand lenses, stratified, wet, loose (outwash)	SP									2" SS
15	18	3/3 5/6	28	28-30', as above with fine sand lense 28.2-29'	SP									2" SS
16	20	4/4 5/6	30	30-32', grey (2.5Y4/1) fine sand w/ med & coarse sand lenses, wet, loose, stratified (outwash)	SP									2" SS
			32											
17	0	4/5 5/6		33-35', no recovery, fine sand running out of spoon (outwash?? 2½" SS also no recovery)	SP									2" SS
			34											
18	20	2/4 4/5	36	36-38', grey (3.5Y4/1) med to coarse sand with fine sand lenses stratified, wet, loose (outwash)	SP									2" SS
			38											
19	18	3/4 4/4		39-41', as above, slightly more fine sand lenses	SP									2" SS
			40											
20	22	2/4 4/5	42	42-44', as above, slightly finer, fine sand lenses, thicker	SP									2" SS
			44											
21	8	5/5 6/6		45-47', as above	SP									2" SS
			46											
22	4	5/5 6/7	48	48-50', as above	SP									2" SS
			50											
				51-53', as above										2" SS
23	18	4/4 5/6	52											
24	14	5/6 6/7	54	54-56', as above										2" SS

State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-14

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			56											
25	16	4/5 7/7		57-59', as above										2" SS
			58											
			60											
			62											
26	18	4/5 6/6	64	64-66', as above										2" SS
			66	E.O.B 66'										

LMC\93C049\GBAPP\67448.61\14000

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-14

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Todd Schmanfelt	08/26/98	08/26/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1588.69	8¼ in

Boring Location
State Plane 127088.73 N, 2284444.46 E S/C/N Lat Long
SW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			2 4 6 8 10 12 14 16	0-16 Blind drill, see boring log BH-14 E.O.B. 16'										

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Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		BH-15

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Todd Schmanfelt	08/27/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1583.63	8¼ in

Boring Location
State Plane 127537.17 N, 2284157.65 E S/C/N Lat Long
SW 1/4 of SE 1/4 of Section 1, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1		1/2 2/3	-	0-0.9, dk brown (7.5YR3/2) organic topsoil (sandy silt loam) w/ fine granular structure, dry, soft	OL									140 lb hammer 2" SS
			-	0.9-1.2, yel-brown (7.5YR5/7) silty fine sand (loamy sand) oxidized, damp (loess)	SP-SM									2" SS
			-	1.2-2, yel-brown (7.5YR5/3) fine sand, damp, soft, mottled (loess)	SP									
2	14	2/3 3/3	- 2	2-4, (7.5YR5/3) fine sand with gravel and grey clay and silt lenses mixed, very strong mottles (till)	SP (ML									2" s.s
3	14	2/4 6/6	- 4	4-5, as above	CL)									
			-	5-6, yel-brown (7.5YR5/5) med to coarse sand stratified w/fine sand	SP									2" SS
4	18	2/4 4/5	- 6	6-8, brown (7.5YR4/4) fine to med sand, stratified w/ coarse sand lenses, wet, loose (outwash)	SP									2" SS
5	17	4/5 6/6	- 8	8-10, brown (7.5YR5/4) med sand with fine sand and coarse sand lenses, stratified, wet (outwash)	SP									2" SS
6	21	2/3 4/5	- 10	10-12, brown (7.5YR5/4) med to coarse sand with gravel, stratified, wet, loose (outwash)	SP									2" SS
7	16	1/1 2/1	- 12	12-14, brown (7.5YR4/4) fine to med sand, stratified w/ coarse sand lenses, wet, loose (outwash)	SP									2" SS
8	20	2/2 3/4	- 14	14-16, as above with oxidized very fine sand lenses 14.6-14.8	SP									2" SS
9	23	1/1 1/1	- 16	16-18, brown (7.5YR5/3) fine sand with minor med to coarse sand, stratified, wet, soft (outwash)	SP									2" SS
10	17	1/1 1/1	- 18	18-20, as above, more med sand	SP									2" SS

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-15

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	22	1/2 1/1	20	20-21, as above	SP									2" SS
				21-22, brown (7.l5YR5/4) very fine sand, stratified, wet, soft (outwash)										
12	16	4/2 4/4	22	22-24, grey (2.5Y5/1) very fine sand with coarse sand lenses at 23.5, stratified, wet, soft (outwash)	SP									2" SS
13	11	4/5 5/6	24	24-26, grey (2.5Y5/1) fine to med sand with minor gravel, stratified, wet, soft (outwash)	SP									
14	24	4/3 2/4	26	26-28, grey (2.5Y4/1) very fine to fine sand, with stratified, wet, soft (outwash)	SP									
15	18	2/4 3/3	28	28-30, grey (10YR5/2) fine sand w/ stratified, wet, soft (outwash)	SP									
16	19	5/4 4/5	30	30-32, as above	SP									
			32	E.O.B. 32'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-15

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Todd Schmanfelt	08/27/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1588.76	8¼ in

Boring Location
State Plane 127542.29 N, 2284156.78 E S/C/N Lat Long
SW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			2	0-16 Blind drill, see boring log BH-15										
			4											
			6											
			8											
			10											
			12											
			14											
			16	E.O.B. 16'										

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		BH-16

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Todd Schmanfelt	08/27/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.44	8¼ in

Boring Location
State Plane 129334.33 N, 2285471.98 E S/C/N Lat
SW 1/4 of NE 1/4 of Section17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ___ N Feet ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	19	3/3 4/5		0-0.9 Dr. brown (10YR2/2) orgainc topsoil (sandy silt loam) dry	OL									140 lb hammer
				0.9-2 Strong yellow brown (7.5YR5/6) fine sand with minor silt, dry	SP									2" SS
2	24	4/4 4/4	2	2-2.5 As above 2.5-4 Yellow brown (10YR6/5) fine sand with minor gravel, damp, soft, stratified (outwash)	SP									2" SS
3	23	2/2 3/4	4	4-6 As above, mottled lt yellow brown	SP									2" SS
4	16	2/3 4/4	6	6-8 (10YR6/4) fine to med sand stratified w/ coarse sand lenses, very damp, gravel, mottled (outwash)	SP									2" SS
5	22	2/2 4/5	8	8-10 As above, wet at ~9	SP									2" SS
6	17	2/2 3/3	10	10-12 Yellow brown (10YR5/4) med to coarse sand with gravel, stratified, wet, loose (outwash)	SP									2" SS
7	24	1/1 1/2	12	12-13 As above										2" SS
				13-14 Dk yellow brown (10YR3/4) coarse Sand with gravel, wet, soft, (outwash) (weathered rock)	SP									2" SS
8	23	2/2 1/1	14	14-16 As above, very dark in color, weathered, coarse, zone?	SP									2" SS
9	4	4/4 5/6	16	16-18 Dk grey brown (2.5YR4/2) coarse sand with gravel, stratified, wet, loose	SP									2" SS
10	6	1/1 1/1	18	18-20 Grey brown (10YR4/2) coarse sand with gravel, stratified, wet, loose (outwash)	SP									2" SS

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-16

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm.
11	7	1/1 1/1	20	20-22 As above	SP									2" SS
12	13	2/1 3/3	22	22-24 As above, med to coarse sand	SP									2" SS
13	6	2/2 2/1	24	24-26 No recovery	--									
14	14	2/2 2/1	26	26-28 Grey brown (10YR4/2) med sand, wet, stratified (outwash)	SP									2" SS
15	19	2/3 3/4	28	28-30 As above with fine sand lenses	SP									2" SS
16	6	1/2 2/2	30	30-32 As above	SP									2" SS
			32	E.O.B. 32'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-16

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/27/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1592.92	8¼ in

Boring Location
State Plane 129341.85 N, 2285471.77 E S/C/N Lat Long
SW 1/4 of NE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ____ N ____ Feet ____ E
Feet ____ S ____ Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			2	0-16 Blind drill, see boring log BH-16										
			4											
			6											
			8											
			10											
			12											
			14											
			16	E.O.B. 16'										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		BH-17

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Todd Schmanfelt	08/27/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1585.38	8¼ in

Boring Location
State Plane 126791.61 N, 2284420.79 E S/C/N Lat Long
SW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
				0-0.7 Dk brown (10YR2/2) organic topsoil (sandy silt loam)	OL									140 lb hammer
				0.7-2 Yellow brown (7.5YR5/6) fine sand with silt (sandy loam) highly oxidized mottled	SP-SM									2" SS
1	12	2/2 4/5	2	2-3 As above	SP									2" SS
				3-4 Lt. brown (10YR7/3) fine to med sand, stratified with coarse sand lenses (outwash) wet at 3.9	SP									
2	12	2/2 2/4	4	4-6 Brown (10YR5/3) med to coarse sand w/ fine sand lenses, stratified, wet, loose (outwash)	SP									2" SS
3	20	4/3 2/2	6	6-8 As above	SP									2" SS
4	23	1/1 2/2	8	8-10 As above with oxidized lenses 7.9-9.4, slightly finer	SP									2" SS
5	24	1/2 2/2	10	10-11 Brown yellow (10YR6/8) fine to med sand, stratified, wet, loose (outwash)	SP									2" SS
				11-12 Brown (10YR5/3) med to coarse sand stratified, wet, loose (outwash)	SP									
6	20	2/4 4/5	12	12-14 As abaove with minor gravel	SP									2" SS
7	16	2/2 3/4	14	14-15.5 As above	SP									2" SS
				15.5-16 Grey brown (10YR5/2) very fine sand, wet, soft, massive, (outwash)	SP									
8	24	2/1 3/4	16	16-18 Grey brown (10YR5/2) fine sand, stratified w/ very fine sand lenses, wet, soft, (outwash)	SP									2" SS
9	22	2/4 4/5	18	18-20 As above	SP									2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature _____ Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-17

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			20											
10	23	4/3 4/5		21-23 As above	SP									2" SS
			22											
			24											
11	6	3/2 2/1		25-27 As above, slightly coarser, fine to med w/ fine sand lenses	SP									2" SS
			26											
12	20	3/2 1/3		27-29 Grey (10YR5/2) fine to med sand w/ coarse sand lenses, stratified, wet, loose (outwash)	SP									2" SS
			28											
13		3/1 1/2	30	30-32 As above (10YR4/2) with fine sand, minor silt lense 31.5-31.7 31.7-32 Grey med sand as above	SP (SP-SM)									2" SS
			32	E.O.B. 32'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		BH-18

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Todd Schmanfelt	08/27/98	08/27/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1586.42	8¼ in

Boring Location
State Plane 127537.98 N, 2284761.83 E S/C/N Lat Long
SW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ___ N Feet ___ E
Feet ___ S Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	22	2/2 3/4	-	0-1 Dk brown (2.5YR2/2) organic topsoil (sandy loam) 1-1.4 Yellow brown (7.5YR4/6) silty sand, oxidized (sandy loam) 1.4-2 Yellow brown (7.5YR5/4) fine to med sand, oxidized, few faint mottles, wet, slightly blocky structure, damp, soft (outwash)	OL SP-SM SP									140 lb hammer 2" SS
2	19	1/2 3/2	2	2-2.4 Yellow brown (7.5YR1/4) fine-med sand w/ minor gravel, stratified, damp, soft (outwash 2.4-4 Yellow brown (7.5YR6/3) fine to med sand as above	SP SP									2" SS
3	18	3/4 4/5	4	4-6 Lt brown (10YR7/2) med to coarse sand, mottle at 5.5-5.7, wet at 5.7, wet color (10YR6/3) stratified w/ fine sand lenses (outwash)	SP									2" SS
4	20	2/3 3/4	6	6-8 Brown (10YR5/3) fine to med sand, stratified w/coarse sand lenses, few faint mottles, wet, soft (outwash)	SP									2" SS
5	23	1/1 3/3	8	8-10 As above, minor gravel	SP									2" SS
6	24	1/2 2/3	10	10-12 Brown (10YR4/3) med to coarse sand stratified w/fine sand lenses, wet, loose, (outwash)	SP									2" SS
7	17	1/1 1/1	12	12-14 As above, slightly more fine sand lenses	SP									2" SS
8	0	2/3 4/5	14	14-16 No recovery - fine sand ran out of spoon	–									2" SS
9	12	1/1 1/1	16	16-18 Brown (10YR4/3) med to coarse sand w/fine sand lenses as above	SP									2" SS
10	16	2/4 2/2	18	18-20 Brown (10YR5/3) coarse sand with gravel stratified w/ med and minor fine sand lenses, wet, loose (outwash)	SP									2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin Route to: SOIL BORING LOG INFORMATION

LMC\93C049\GBAPP\67525.61\14000

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
11	11	1/2 2/2	20	20-22 As above	SP									2" SS
12	12	6/4 4/6	22	22-24 Grey (2.5Y5/1) coarse sand with gravel stratified, wet, loose	SP									2" SS
13	14	2/3 4/4	24	24-26 Grey (2.5Y4/1) med to coarse sand stratified, minor gravel, wet, loose	SP									2" SS
14	13	2/7 3/6	26	26-28 As above	SP									2" SS
15	14	1/1 3/2	28	28-30 Grey (2.5Y5/1) fine to med sand w/ coarse sand lense, wet, stratified (outwash)	SP									2" SS
16	13	1/1 2/2	30	30-32 As above	SP									2" SS
			32	E.O.B. 32'										
			34											
			36											
			38											
			40											

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		BH-19

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/26/98	08/26/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1586.55	8¼ in

Boring Location
State Plane 127616.63 N, 2285675.31 E S/C/N Lat Long
SE 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	21	1/2 3/4	-	0-0.8 Dk. brown (10YR3/2) organic topsoil (silt loam), w/ med blocky structure, damp, soft 0.8-2 Yellow brown (7.5YR5/4) fine to med sand w/gravel, damp, structureless, stratified, fine, few mottles (outwash)	OL SP									300 lb hammer 3" SS
2	16	1/1 2/3	2	2-4 As above, oxidized	SP									2½" SS
3	13	1/1 ½	4	4-6 Yellow brown (10YR5/4) fine to med sand w/ gravel, coarse sand lenses, stratified, damp, loose (outwash)	SP									2" SS
4	5	½ 2/2	6	6-8 Brown (10YR4/4) med sand with gravel, stratified, wet at 6', loose (outwash)	SP									2" SS
5	12	½ 2/1	8	8-10 As above	SP									2" SS
6	14	1/1 1/1	10	10-12 Brown (10YR4/4) fine to med sand with minor gravel and coarse sand lenses, stratified, wet, loose	SP									2" SS
7	12	1/1 1/1	12	12-14 As above	SP									2" SS
8	14	4/4 12/-	14	Pound spoon 18" had ~1' blowup in augers 14-15.5 Brown (10YR5/4) fine & med sand with minor gravel, stratified, wet, soft	SP									2" SS
9	17	2/2 5/10	16	16-18 As above	SP									2" SS
10	4	0/1 0/1	18	18-20 Grey brown (10Y5/2) fine sand w/ med sand lenses, stratified, wet, very soft	SP									2" SS
11	3	0/1 1/2	20	20-22 As above, fine sand running out of spoon	SP									2" SS

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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State of Wisconsin
Department of Natural Resources
BORING NUMBER: BH-19

Route to:

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
12	9	0/1 1/2	22	22-24 As above with coarse sand lense at 24.6	SP									2" SS
13	14	1/2 4/6	24	24-26 As above, w/ coarse sand lenses (outwash)	SP									2" SS
14	9	1/1 1/3	26	26-28 As above	SP									2" SS
15	6	0/1 1/1	28	28-30 As above	SP									2" SS
			30	E.O.B. 30'										

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		MWH-19

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear Mike Mueller	08/26/98	08/26/98	4 ¼ ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1586.24	8¼ in

Boring Location
State Plane 127614.63 N, 2285679.80 E S/C/N Lat Long
SE 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E

Local Grid Location (if applicable)
Feet ___ N ___ S Feet ___ E ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
				0-16 Blind drill, see boring log BH-19										
			2											
			4											
			6											
			8											
			10											
			12											
			14											
			16	E.O.B. 16'										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature [signature] Firm Foth & Van Dyke

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HAND AUGER LOG

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAS - AREA H		HAH-01

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Foth & Van Dyke	10/15/98	10/15/98	4½" HA to 4' 3½" HA to 6'

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1580.5	

Boring Location
State Plane ~126765 N, ~2284523 E S/C/N Lat
SW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ____ N ____ E
Feet ____ S ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			0	0-4.5, black, 7.5YR2/0, fibrous peat, wet, soft (root mat 8"-0.2')										
AS-1			1-2											
			3											
			4	4.5-6.2, dusty red, 10YR5/2, coarse, fibrous peat w/ wood pieces, saturated, very soft	PT									
			5											
			6	EOB 6.2'										
				3.3', hole caved with water										
				Note: Hole caving during drilling - could retrieve a sample from below 5.5'										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Ken Meister Firm Foth & Van Dyke

HAND AUGER LOG

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAS - AREA H		HAH-02

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Foth & Van Dyke	10/15/98	10/15/98	3½" HA to 0' - 5.5'

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1580.5	

Boring Location	Local Grid Location (if applicable)
State Plane ~126956 N, ~2284863 E S/C/N Lat	____ N ____ E
SW 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long	Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
				Humhocky surface - drilled in depression										
			0	0-4, black, 7.5YR2/0, fibrous peat, saturated, very soft (root mat 0-0.2')	PT									
AS-1			0-2											
AS-2			2-4											
			4	4-5, dusky red, coarse, fibrous peat, wet, very soft	PT									
AS-3			5	4.5-5.5, grey-brown, 10YR5/2, silty sand w/ fine to coarse gravel and clay, saturated, loose to firm (till)	SM-SC									
				EOB 5.5'										
				5.5' refusal - cobble										
				Notes: 1. Hole caving during drilling 2. Water level - 1.0' after boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Ron Meister	Foth & Van Dyke

HAND AUGER LOG

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAS - Area H		HAH-03

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Foth & Van Dyke	10/15/98	10/15/98	4½" HA to 0'-4' 3½" HA to 4'-6.2'

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1580.5	

Boring Location	Local Grid Location (if applicable)
State Plane ~127387 N, ~2284949 E S/C/N Lat SW ¼ of SE ¼ of Section 17, T 35 N, R 13 E Long	____ N ____ E Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			-	0-0.2, root mat (spagnum)										
			-	0.2-3.5, black, 7.5YR2/0, fibrous peat, saturated very soft	PT									
			1											
			2											
			3											
			-	3.5-4, black to dark red-brown, 10YR3/1, peat w/ spruce logs, branches, etc., saturated, very soft	PT									
			4	4-6, black, 75YR2/0, peat, wet, very soft (could not retrieve auger sample below 4.5')										
			5											
			6											
			-	E.O.B. 6.2'										
			-	1.7', hole caved in with water										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Ken Meister	Foth & Van Dyke

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HAND AUGER LOG

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAS - Area H		HAH - 04

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Foth & Van Dyke	10/15/98	10/15/98	4½" HA to 4.5' 3½" HA to 6.2'

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1582	

Boring Location	Local Grid Location (if applicable)
State Plane ~127660 N, ~2285286 E S/C/N Lat SE 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long	Feet ____ N ____ E Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			1	0-1, root mat (spagnum) and roots w/ peat, wet	PT									
			2	1-4, black, 10YR2/1, fibrous peat, saturated, very soft	PT									
			3											
			4	4-5, dark red-brown, 5YR5/3, fibrous peat, saturated, very soft	PT									
			5	5-5.2, fine to coarse gravel (no auger recovery)										
AS-1			5.2-6	Grey-brown, 10YR5/2, silty fine to med sand w/ fine to coarse gravel & clay w/ layer of dark red-brown, 5YR5/3, peat (till)	SM/ SC									
			6											
				E.O.B. - 6.2'										
				Water level - 3.3' after boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Ken Meister	Foth & Van Dyke

HAND AUGER LOG

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAS - Area H		HAH-05

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY JWS	Date Completed MM/DD/YY JWS	Drilling Method
Foth & Van Dyke	10/15/98	10/15/98	4½" HA - 0-4' 3½" HA - 4-6'

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1582	

Boring Location
State Plane ~128167 N, ~2285433 E S/C/N Lat
SE 1/4 of NE 1/4 of Sectio 17, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ___ N ___ Feet ___ E
Feet ___ S ___ Feet ___ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
				0-1, root mat (spagnum) roots and peat	PT									
			1	1-4, black, 7.5YR2/0, fibrous peat, very soft, wet	PT									
ST-1			0.8 - 2.8'											
			2											
AS-2			2.8 - 3.8'											
			3											
			4	4-5.1, gray 10YR5/1, silty clayey fine to medium sand w/ fine to coarse gravel, trace of organics, firm (till)	SC									
			5	5.1-6, grey-brown, 10YR5/2, medium to coarse sand w/ layer of fine to coarse gravel, water-bearing, loose (outwash)	SP									
			6	E.O.B. - 6'										
				Water level - 2' after boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Ken Meister Firm Foth & Van Dyke

HAND AUGER LOG

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAS - Area H		HAH-06

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Foth & Van Dyke	10/15/98	10/15/98	4½" HA to 0' - 4' 3½" HA to 4' - 6'

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				~1581	

Boring Location	Local Grid Location (if applicable)
State Plane ~128423 N, ~2285762 E S/C/N Lat NE 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long	____ N ____ E Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
				0-1, root mat and spagnum w/ peat, black, fibrous	PT									
			1	water entering hole at 1'										
				1-3, black, 7.5YR2/0, fibrous peat, saturated, very soft	PT									
			2											
			3	3-3.7, grey-brown, 10YR5/1, silty or clayey fine to med sand w/ fine to coarse gravel & cobbles, wet, dense (till)	SM/ SC									
				3.7, auger refusal, cobble										
				E.O.B. 3.7'										
				Water level - 0.9' after boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Ron Meister	Foth & Van Dyke

HAND AUGER LOG

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - SAS - Area H		HAH-07

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Foth & Van Dyke	10/15/98	10/15/98	4½" HA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1581	

Boring Location	Local Grid Location (if applicable)
State Plane ~129189 N, ~2285712 E S/C/N Lat NE 1/4 of SE 1/4 of Section 17, T 35 N, R 13 E Long	____ Feet ____ N ____ Feet ____ E / S / W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm.
				0-1, root mat w/ peat	PT									
			1											
				1-4.5, black, 7.5YR2/0, fibrous peat, wet, very soft	PT									
ST-1	9		1-2											
			2											
			3											
			4	4.5 - 6.2, dark brown, 5YR5/2, peat w/ wood & twigs, wet, very soft	PT									
			5											
			6											
				E.O.B. - 6.2										
				Water level - 1.9' after boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Ron Mewster	Foth & Van Dyke

HAND AUGER LOG

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
NMC - Area H		HAH-08

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Foth & Van Dyke	10/15/98 JWS	10/15/98 JWS	4½" HA to 0' - 4' 3½" HA to 4' - 6.2'

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1581	

Boring Location	Local Grid Location (if applicable)
State Plane ~129634 N, ~2285778 E S/C/N Lat SE 1/4 of NE 1/4 of Section 17, T 35 N, R 13 E Long	____ N ____ E Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
				(Hole located ~10' N of flowing stream in the wetland)										
				0-0.9, root mat and peat	PT									
				0.9-3.5, black, 7.5YR5/0, fibrous peat w/ wood	PT									
			1											
AS-1			1-2											
			2											
			3	3.5-6.2, black to dark red-brown, 5YR5/2, fibrous peat w/ thin (1/16 -1/8") partings of grey fine sand	PT									
			4											
			5											
			6											
				E.O.B. - 6.2'										
				Water level - 1.1' after boring										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Ron Wentek	Foth & Van Dyke

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-01
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name:

Street Address of Well:

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):

Present Well Owner: Crandon Mine

Street or Route:

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-01
WI Unique Well No.:

Reason For Abandonment: Test Boring

Date of Abandonment: 07/20/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) _____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) _____
Casing Diameter (in.) _____
Casing Depth (ft.) _____

Lower Drillhole Diameter (in.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☒ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Benonite Grout	Surface	8.0	3 Bags	

(8) Comments _____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 7-28-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-158

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-02
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-02
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 08/03/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	32.0	7 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work

Date Signed: 8-11-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109

Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-159

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-03
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)

____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-03

WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 07/21/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	30.0	12 Bags	

(8) Comments ____

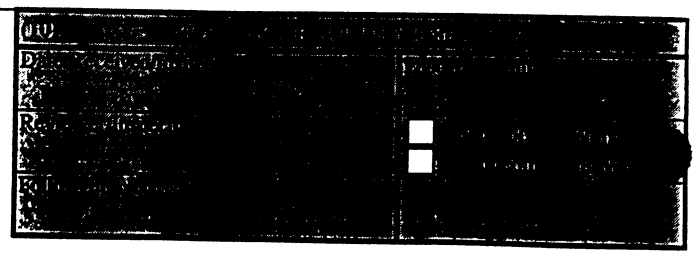
(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 7-28-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-160



DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-04
County: Forest

___ 1/4 of ___ 1/4 of Sec. ___ ; T. ___ N; R. ___ ☐ E ☐ W
(If Applicable)
___ Gov't Lot ___ Grid Number

Grid Location
___ ft. ☐ N. ☐ S., ___ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-04
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 08/03/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ___

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available?
☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ___

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ___
Casing Diameter (in.) ___
Casing Depth (ft.) ___

Lower Drillhole Diameter (in.) ___

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) ___

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ___

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	50.0	11 Bags	

(8) Comments ___

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work
Date Signed: 8-11-98

Street or Route
101 ALDERSON ST., P.O. BOX 109

Telephone Number
715-359-7090

City, State, Zip Code
SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-161
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-05
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number
Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine
Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BH-05
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 07/20/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	64.0	12 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR
Signature of Person Doing ~~Work~~
Date Signed: 7-28-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) [redacted]
Date Received [redacted]
Reviewed [redacted]
Follow [redacted]

DNR/COUNTY
3.5-14c-162

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-06
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable) ____ Gov't Lot ____ Grid Number
Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BH-06
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 08/03/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	26.0	6 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 8-11-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-163
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-07
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-07
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 08/04/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available?
☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	30.0	6 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 8-11-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-164
DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-08
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-08
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 08/05/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	26.0	7 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 8-11-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-165
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-09
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-09
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 08/05/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available?
☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	30.0	6 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 8-11-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-166

DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-10
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable) ____ Gov't Lot ____ Grid Number
Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine
Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BH-10
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 08/05/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____
Casing Diameter (in.) ____
Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	32.0	8 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 8-11-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-167
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-11
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable) _____ Gov't Lot _____ Grid Number
Grid Location _____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BH-11
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 08/24/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) _____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) _____ Casing Diameter (in.) _____ Casing Depth (ft.) _____

Lower Drillhole Diameter (in.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) 4.0

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	30.0	6 Bags	

(8) Comments _____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work
Date Signed: 9-1-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-168
DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-12
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-12
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 08/24/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) 7.0

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	32.0	7 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 9-1-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-13
County: Forest
____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable) ____ Gov't Lot ____ Grid Number
Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BH-13
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 08/25/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	71.0	12 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 9-1-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

D-268

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected: District/County:
Reviewer/Inspector: ☐ Complying Well ☐ Noncomplying Well
Follow-up Necessary:

DNR/COUNTY
3.5-14c-170

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-14
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name:

Street Address of Well:

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):

Present Well Owner: Crandon Mine

Street or Route:

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-14
WI Unique Well No.:

Reason For Abandonment: Test Boring

Date of Abandonment: 08/26/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	66.0	10 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 9-1-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY
3.5-14c-171

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-15
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-15
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 08/27/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	32.0	10 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 9-1-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-16
County: Forest
___ 1/4 of ___ 1/4 of Sec. ___ ; T. ___ N; R. ___ ☐ E ☐ W
(If Applicable)
_____ Gov't Lot _____ Grid Number
Grid Location
_____ ft. ☐ N. ☐ S., _____ ft. ☐ E. ☐ W.
Civil Town Name
Street Address of Well
City, Village: Crandon

(2) FACILITY NAME Crandon Mine
Original Well Owner (If Known)
Present Well Owner: Crandon Mine
Street or Route
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BH-16
WI Unique Well No.
Reason For Abandonment: Test Boring
Date of Abandonment: 08/26/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) _____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) _____ Casing Diameter (in.) _____ Casing Depth (ft.) _____

Lower Drillhole Diameter (in.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	32.0	7 Bags	

(8) Comments _____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work
Date Signed: 9-1-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

DNR/COUNTY
3.5-14C-173

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-17
County: Forest
___ 1/4 of ___ 1/4 of Sec. ___ ; T. ___ N; R. ___ ☐ E ☐ W
(If Applicable) ___ Gov't Lot ___ Grid Number
Grid Location ___ ft. ☐ N. ☐ S., ___ ft. ☐ E. ☐ W.
Civil Town Name:
Street Address of Well:
City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):
Present Well Owner: Crandon Mine
Street or Route:
City, State, Zip Code: Crandon, WI
Facility Well No. and/or Name (If Applicable): BH-17
WI Unique Well No.:
Reason For Abandonment: Test Boring
Date of Abandonment: 08/26/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ___

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ___

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ___ Casing Diameter (in.) ___ Casing Depth (ft.) ___

Lower Drillhole Diameter (in.) ___

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ___ Feet

(4) Depth to Water (Feet) ___

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ___

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	32.0	7 Bags	

(8) Comments ___

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 9-1-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-174

DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-18
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W

(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME: Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-18

WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 08/27/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	32.0	5 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature] Date Signed: 9-1-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	☐ Complying Work ☐ Noncomplying Work
Follow-up Necessary	

3.5-14c-175

DNR/COUNTY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BH-19
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name

Street Address of Well

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known)

Present Well Owner: Crandon Mine

Street or Route

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BH-19
WI Unique Well No.

Reason For Abandonment: Test Boring

Date of Abandonment: 08/26/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	30.0	5 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 9-1-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

3.5-14c-176
DNR/COUNTY

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected
District/County
Reviewer/Inspector
☐ Complying Work
☐ Noncomplying Work
Follow-up Necessary

Area K

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project - SAP II - Area K		BK-02

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear	07/21/98	07/21/98	4¼" ID HSA

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			1587 Feet MSL	1591 Feet MSL	8 inches

Boring Location
State Plane ~127704 N, ~2279855 E S/C/N Lat
SW 1/4 of SE 1/4 of Section 18, T 35 N, R 13 E Long

Local Grid Location (if applicable)
Feet ____ N ____ E
Feet ____ S Feet ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
1	19"	1/1/2		0-.3 Black, loose, organic silt (OL) topsoil .3-.8 Black-brown (10YR7/4) loose, fine sandy silt (loess) .8-2 Brown (10YR5/6) from fine sandy silt w/ gravel (till)	OL ML SM									2" SS
2	18"	6/6/18	2	2-3 Same as above (till) 3-4 Wet, med to coarse sand w/ fine gravel w/ silt (outwash)	SP									3" SS 2½" SS
3	18	4/4/13	4	4-6 Brown (10YR5/6) med to coarse sand w/ fine to med gravel, saturated, firm (outwash)	SP									
4	15"	6/6/15	6	6-8 Brown (10YR5/6) med to coarse sand w/ fine to med gravel and boulder, saturated, dense, turning grey brown (5YR4/1) at 7.8'	SP									2" SS
5	12"	6/2/5	8	8-10 Grey brown (10YR5/2) fine to med sand, tr. silt, saturated (outwash)	SP									3" SS
6	9"	2/3/6	10	10-12 Grey brown (10YR5/2) same as above	SP									2" SS
7	18"	3/3/7	12	12-14 Grey brown (10YR5/2) fine to med sand, tr. silt, change to red brown (10YR5/6) fine to med sand (outwash)	SP									3" SS
8	12"	2/2/4	14	14-16 Red brown (10YR5/6) fine to med sand (outwash)	SP									2" SS
			16	E.O.B. 16'										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Ron Meister Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

Route to:
☐ Solid Waste ☐ Haz. Waste
☐ Emergency Response ☐ Underground Tanks
☐ Wastewater ☐ Water Resources
☐ Other

SOIL BORING LOG INFORMATION
Form 4400-122 7-91

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Crandon Project - SAP II - Area K		BK-04

Boring Drilled by (Firm name and name of crew chief)	Date Started MM/DD/YY	Date Completed MM/DD/YY	Drilling Method
Boart Longyear	07/21/98	07/21/98	HSA - 4¼" ID

DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
				1588 Feet MSL	8 inches

Boring Location
State Plane ~126963 N, ~2280273 E S/C/N Lat
SE 1/4 of SE 1/4 of Section 18, T 35 N, R 13 E Long

Local Grid Location (if applicable)
____ N
Feet ____ S Feet ____ E ____ W

County	DNR County Code	Civil Town/City/or Village
Forest	21	Town of Lincoln

SAMPLE No.	SAMPLE Rec (in)	Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	USCS	Graph Log	Well Diag	PID/ FID	Soil Properties: Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	RQD/ Comm
			-	0-.5' black organic silt (topsoil)	OL									2" SS
			-	.5'-1.3' lt gr to lt yel br (10YR6/4) fine sandy silt	ML									
	24"	2/2/4	-	(loess)	SM									
			-	1.3'-2' (10YR7/6) H br silty, fine sand w/ gravel, bn, firm (till)										
			-											
			-											
	18"	2/3/7	- 2	2'-3' H bn (10YR6/6) silty fine sand w/ gravel, firm, (till)	SM									3" SS
			-	3'-4' F to med sand, h br (10YR6/6) w/ silt	SP-SM									2½" SS
			-	(reworked till)										
			-											
			-											
	15"	5/5/12	- 4	4'-6' Med to c sand w/ f to med gravel with silt	SP-SM									3" SS
			-	bn (10YR6/4) wet (till)										
			-											
			-											
	14"	5/5/12	- 6	6'-8' Layered, bn (10YR6/4), f sand, med to c	SP									2" SS
			-	sand w/ gravel, tr silt, saturated (outwash)										
			-											
			-											
	12"	7/8/15	- 8	8'-10' Bn f sand and f to med sand, saturated, firm	SP									3" SS
			-	(outwash)										
			-											
			-											
	NR	8/7/12	- 10	10'-12' No recovery										2½" SS
			-											
			-											
	18"	2/2/6	- 12	12'-14' H bn, (10YR6/4), fine sand, saturated	SP									2" SS
			-	(outwash)										
			-											
			-											
			- 14	E.O.B. 14'										
			-											
			-											
			-											
			-											
			-											
			-											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Ron Meister
Firm: Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than $10 nor more then $5,000 for each violation. Fined not less than $10 or more than $100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: BK-02
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name:

Street Address of Well:

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):

Present Well Owner: Crandon Mine

Street or Route:

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BK-02
WI Unique Well No.:

Reason For Abandonment: Test Boring

Date of Abandonment: 07/21/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On
(Date) _____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available?
☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) _____
Casing Diameter (in.) _____
Casing Depth (ft.) _____

Lower Drillhole Diameter (in.) _____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet) _____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain _____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	16.0	7 Bags	

(8) Comments _____

(9) Name of Person or Firm Doing Sealing Work
BOART LONGYEAR

Signature of Person Doing Work: [signature]
Date Signed: 7-28-98

Street or Route: 101 ALDERSON ST., P.O. BOX 109
Telephone Number: 715-359-7090

City, State, Zip Code: SCHOFIELD, WI 54476

(10) [redacted]

DNR/COUNTY

3.5-14c-180

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 4-97

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or 141, Wis. Admin. Code, whichever is applicable.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location: 04 BK-01
County: Forest

____ 1/4 of ____ 1/4 of Sec. ____ ; T. ____ N; R. ____ ☐ E ☐ W
(If Applicable)
____ Gov't Lot ____ Grid Number

Grid Location
____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name:

Street Address of Well:

City, Village: Crandon

(2) FACILITY NAME Crandon Mine

Original Well Owner (If Known):

Present Well Owner: Crandon Mine

Street or Route:

City, State, Zip Code: Crandon, WI

Facility Well No. and/or Name (If Applicable): BK-0[illegible] SVD 11/3/98
WI Unique Well No.:

Reason For Abandonment: Test Boring

Date of Abandonment: 07/20/98

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☒ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft) (From groundsurface) ____ Casing Diameter (in.) ____ Casing Depth (ft.) ____

Lower Drillhole Diameter (in.) ____

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet) ____

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ____

Was Casing Cut Off Below Surface?	☐ Yes	☐ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☒ Conductor Pipe - Gravity ☐ Conductor Pipe - Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☐ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☒ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite-Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)		Mix Ratio or Mud Weight
Bentonite Chips	Surface	14.0	7 Bags	

(8) Comments ____

(9) Name of Person or Firm Doing Sealing Work: BOART LONGYEAR
Signature of Person Doing Work: [signature] Date Signed: 7-8-98
Street or Route: 101 ALDERSON ST., P.O. BOX 109 Telephone Number: 715-359-7090
City, State, Zip Code: SCHOFIELD, WI 54476

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected:
District/County:
Reviewer/Inspector:
☐ Complete
☐ Not Complete
Follow-up Necessary:

DNR/COUNTY

3.5-14c-181

Appendix 3.5-14d

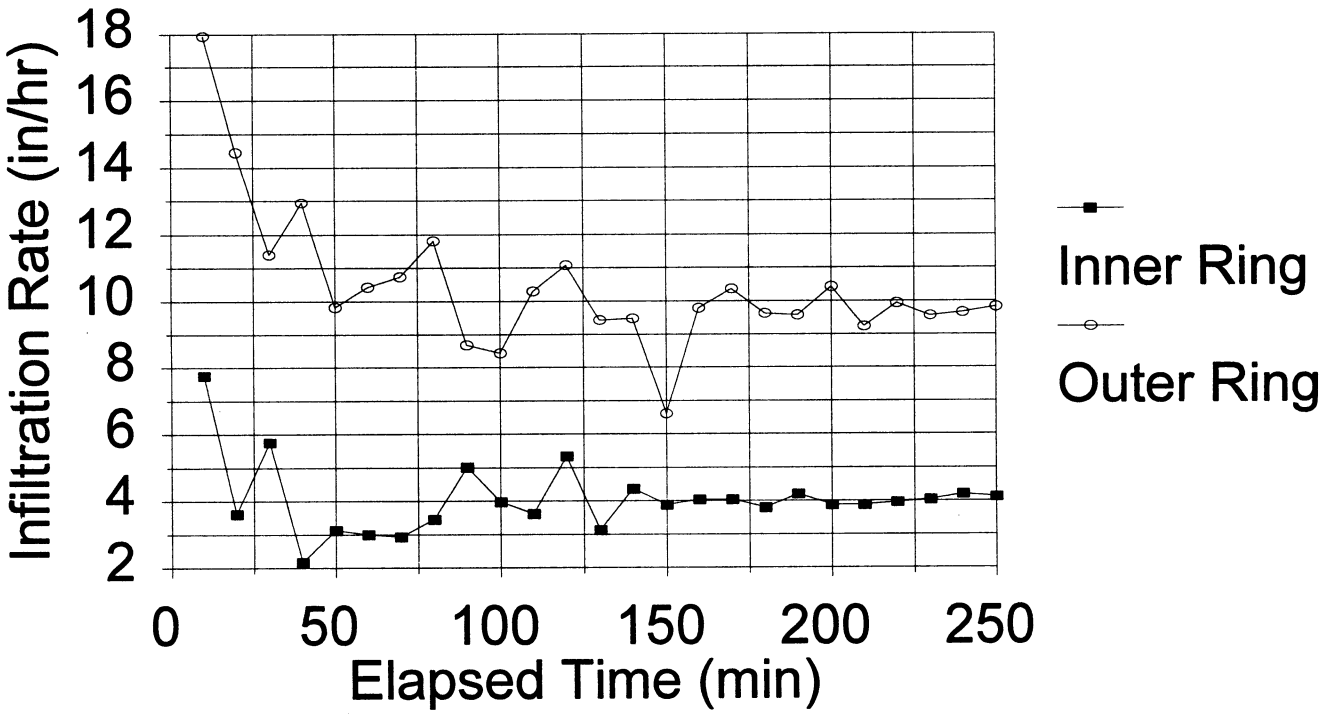
Soil Testing Data for the 1998 Soil Absorption System Investigation

- Area E Infiltrometer Tests
- Area H Infiltrometer Tests
- Area E Grain Size, Hydrometer and Constant Head Hydraulic Conductivity Analyses
- Area H Grain Size, Hydrometer and Constant Head Hydraulic Conductivity Analyses
- Bulk Density Test Results and Moisture Content of Soils from the Area H Double-Ring Infiltrometer Tests

Area E Infiltrometer Tests

Infiltration Test

TPE-09B

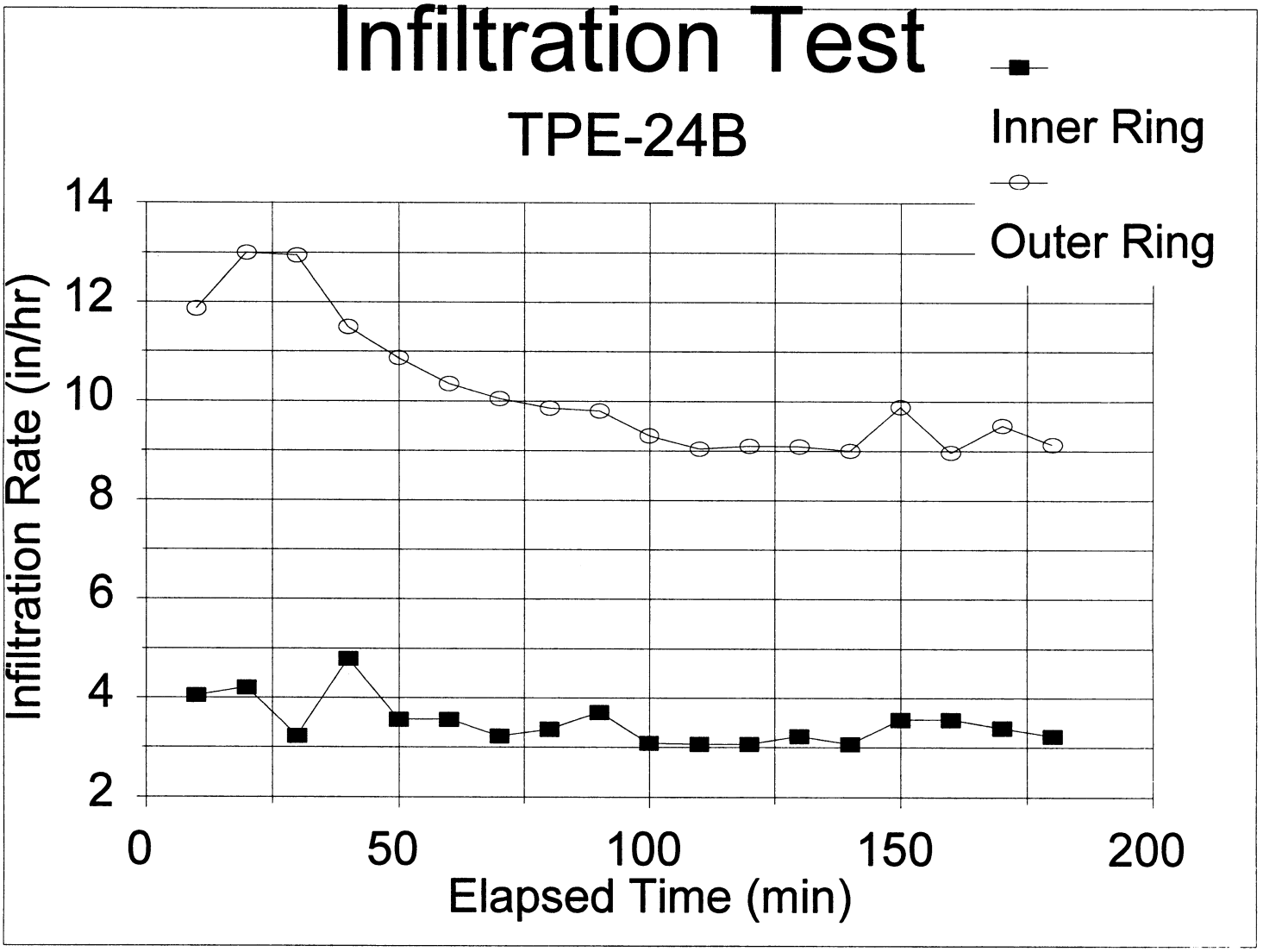


Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Site E
Location: TPE-09B
Water Source: TW-02
Date: June 1, 1998
Estimated Depth to Water Table: Approx. 31.5

Inner Ring (in2): 113.1
Annular Space (in2): 141.4
Depth (Surface to Inner Ring Top): 40 inches
Penetration of Rings: Inner: 4 inches Outer: 5 inches

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	2402	146.57	6930	422.87	7.78	17.94
2	20	1119	68.28	5584	340.74	3.62	14.46
3	30	1781	108.68	4400	268.49	5.77	11.39
4	40	669	40.82	5003	305.28	2.17	12.95
5	50	969	59.13	3795	231.57	3.14	9.83
6	60	929	56.69	4023	245.48	3.01	10.42
7	70	909	55.47	4145	252.93	2.94	10.73
8	80	1069	65.23	4563	278.43	3.46	11.81
9	90	1550	94.58	3351	204.48	5.02	8.68
10	100	1230	75.05	3259	198.86	3.98	8.44
11	110	1120	68.34	3977	242.68	3.63	10.30
12	120	1650	100.68	4275	260.86	5.34	11.07
13	130	969	59.13	3644	222.36	3.14	9.44
14	140	1350	82.38	3662	223.46	4.37	9.48
15	150	1200	73.22	2556	155.97	3.88	6.62
16	160	1250	76.28	3779	230.59	4.05	9.78
17	170	1250	76.28	4000	244.08	4.05	10.36
18	180	1175	71.70	3718	226.87	3.80	9.63
19	190	1300	79.33	3700	225.77	4.21	9.58
20	200	1200	73.22	4023	245.48	3.88	10.42
21	210	1200	73.22	3565	217.54	3.88	9.23
22	220	1225	74.75	3840	234.32	3.97	9.94
23	230	1250	76.28	3695	225.47	4.05	9.57
24	240	1300	79.33	3730	227.60	4.21	9.66
25	250	1275	77.80	3793	231.45	4.13	9.82


Infiltration Test
TPE-24B
Inner Ring
Outer Ring
Infiltration Rate (in/hr)
14
12
10
8
6
4
2
0
50
100
150
200
Elapsed Time (min)

Data Form for Infiltration Test (ASTM D 3385)

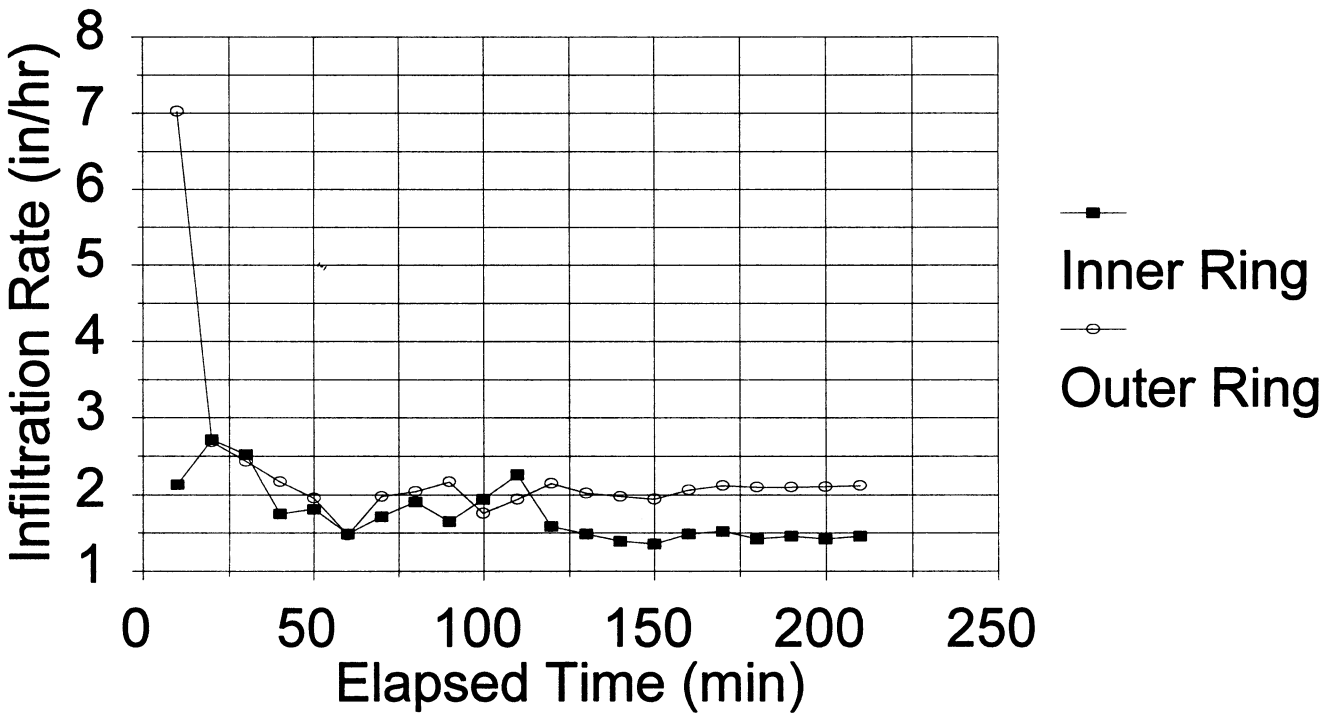
Project: SAPII - Site E
Location: TPE-24B
Water Source: TW-02
Date: June 2, 1998
Estimated Depth to Water Table: Approx. 20 Feet

Inner Ring (in2): 113.1
Annular Space (in2): 141.4
Depth (Surface to Inner Ring Top): 36 inches
Penetration of Rings: Inner: 7.0 inches Outer: 5.5 inches

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	1250	76.28	4582	279.59	4.05	11.86
2	20	1300	79.33	5023	306.50	4.21	13.01
3	30	1000	61.02	5000	305.10	3.24	12.95
4	40	1481	90.37	4442	271.05	4.79	11.50
5	50	1100	67.12	4200	256.28	3.56	10.87
6	60	1100	67.12	4000	244.08	3.56	10.36
7	70	1000	61.02	3882	236.88	3.24	10.05
8	80	1041	63.52	3810	232.49	3.37	9.87
9	90	1146	69.93	3786	231.02	3.71	9.80
10	100	956	58.34	3592	219.18	3.09	9.30
11	110	950	57.97	3493	213.14	3.08	9.04
12	120	950	57.97	3512	214.30	3.08	9.09
13	130	1000	61.02	3510	214.18	3.24	9.09
14	140	950	57.97	3478	212.23	3.08	9.01
15	150	1100	67.12	3820	233.10	3.56	9.89
16	160	1100	67.12	3463	211.31	3.56	8.97
17	170	1050	64.07	3674	224.19	3.40	9.51
18	180	1000	61.02	3525	215.10	3.24	9.13
19	190		0.00		0.00	0.00	0.00
20	200		0.00		0.00	0.00	0.00
21	210		0.00		0.00	0.00	0.00
22	220		0.00		0.00	0.00	0.00
23	230		0.00		0.00	0.00	0.00
24	240		0.00		0.00	0.00	0.00
25	250		0.00		0.00	0.00	0.00

Infiltration Test

TPE-25



Data Form for Infiltration Test (ASTM D 3385)

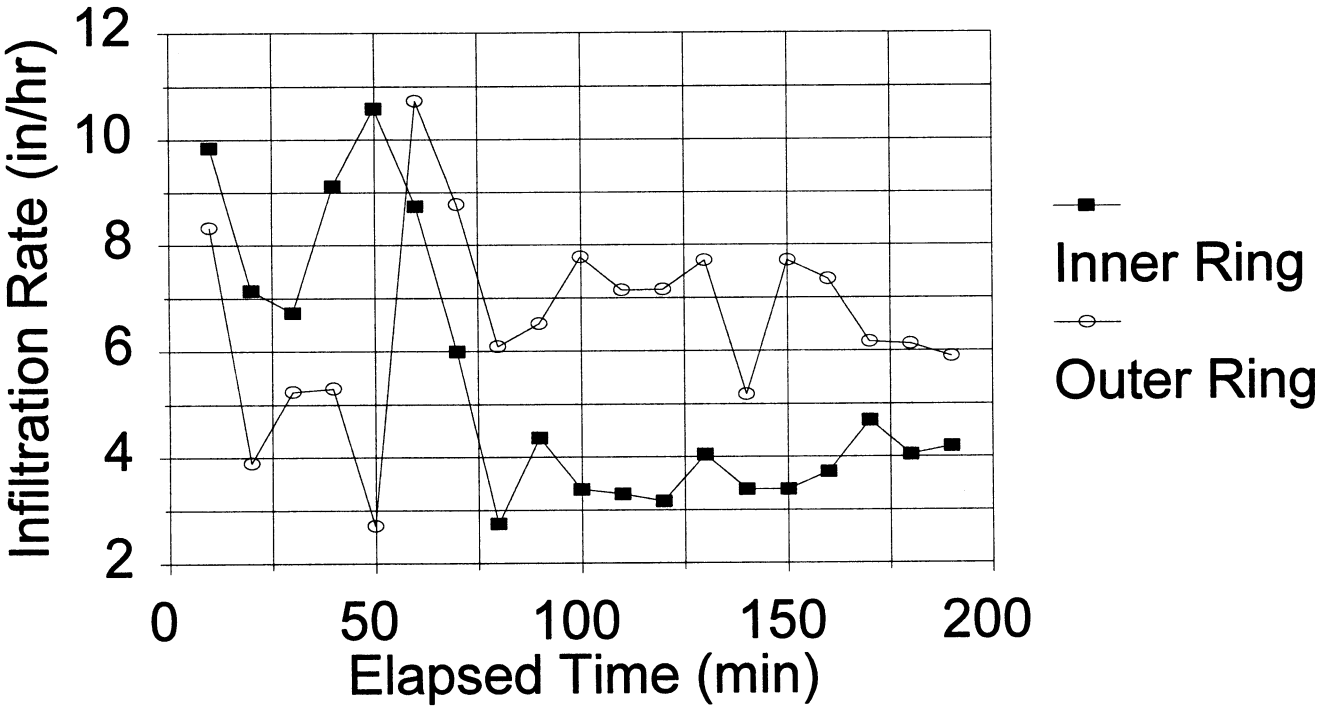
Project: SAPII - Site E
Location: TPE-25
Water Source: TW-02
Date: June 4, 1998
Estimated Depth to Water Table: Approx. 18

Inner Ring (in2): 113.1
Annular Space (in2): 141.4
Depth (Surface to Inner Ring Top): 50 inches
Penetration of Rings: Inner: 9.8 inches Outer: 10.5 inches

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	660	40.27	2715	165.67	2.14	7.03
2	20	840	51.26	1040	63.46	2.72	2.69
3	30	780	47.60	940	57.36	2.52	2.43
4	40	540	32.95	838	51.13	1.75	2.17
5	50	560	34.17	755	46.07	1.81	1.95
6	60	460	28.07	570	34.78	1.49	1.48
7	70	530	32.34	765	46.68	1.72	1.98
8	80	590	36.00	790	48.21	1.91	2.05
9	90	510	31.12	840	51.26	1.65	2.17
10	100	600	36.61	680	41.49	1.94	1.76
11	110	700	42.71	750	45.77	2.27	1.94
12	120	490	29.90	830	50.65	1.59	2.15
13	130	460	28.07	780	47.60	1.49	2.02
14	140	430	26.24	765	46.68	1.39	1.98
15	150	420	25.63	750	45.77	1.36	1.94
16	160	460	28.07	798	48.69	1.49	2.07
17	170	470	28.68	820	50.04	1.52	2.12
18	180	440	26.85	812	49.55	1.42	2.10
19	190	450	27.46	810	49.43	1.46	2.10
20	200	440	26.85	815	49.73	1.42	2.11
21	210	450	27.46	818	49.91	1.46	2.12
22	220		0.00		0.00	0.00	0.00
23	230		0.00		0.00	0.00	0.00
24	240		0.00		0.00	0.00	0.00
25	250		0.00		0.00	0.00	0.00

Infiltration Test

TPE-30B

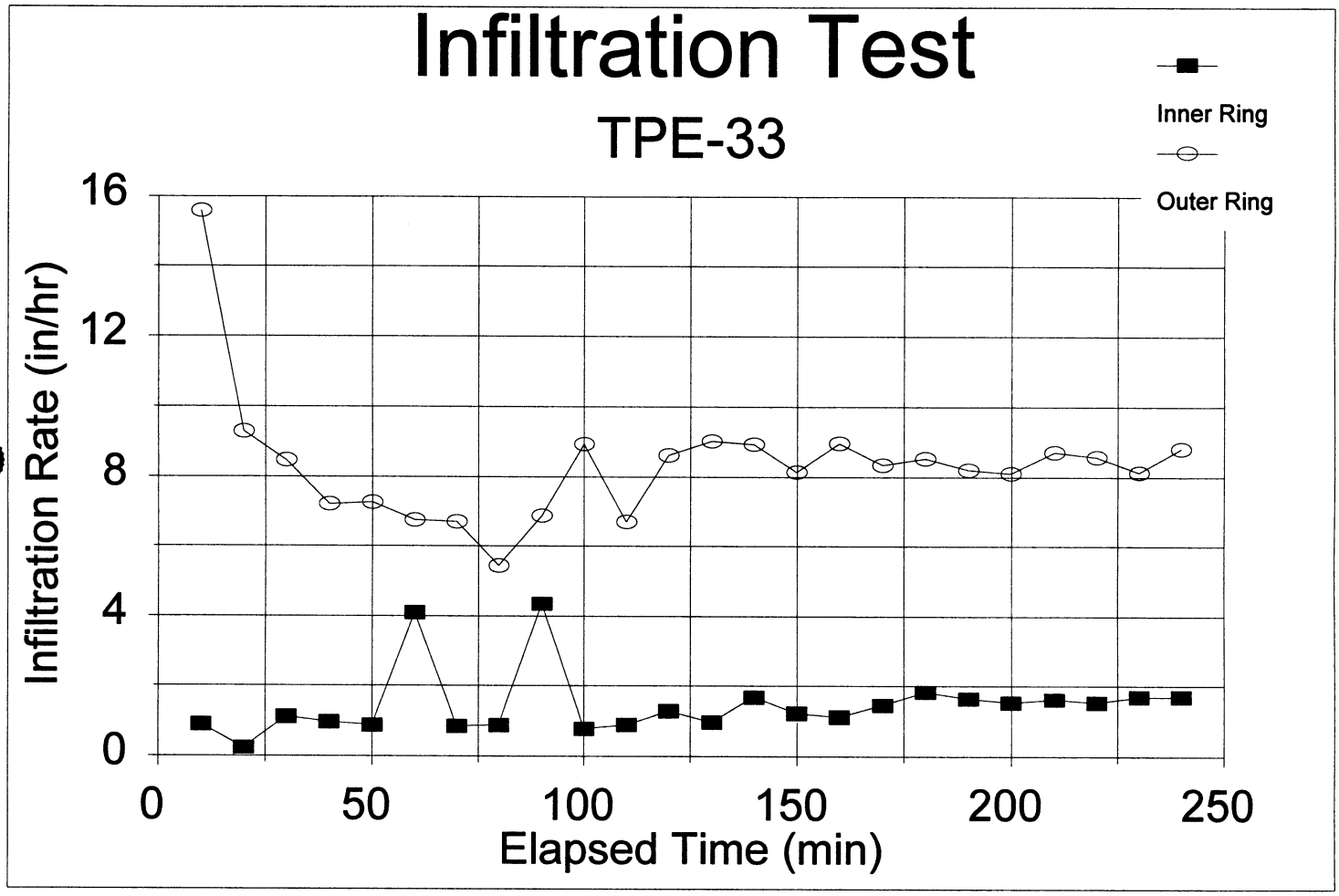


Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Site E
Location: TPE-30B
Water Source: TW-02
Date: June 2, 1998
Estimated Depth to Water Table: Approx. 25 Feet

Inner Ring (in2): 113.1
Annular Space (in2): 141.4
Depth (Surface to Inner Ring Top): 48 inches
Penetration of Rings: Inner: 2.5 inches Outer: 3.4 inches

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	3039	185.44	3220	196.48	9.84	8.34
2	20	2208	134.73	1506	91.90	7.15	3.90
3	30	2078	126.80	2023	123.44	6.73	5.24
4	40	2819	172.02	2046	124.85	9.13	5.30
5	50	3269	199.47	1046	63.83	10.58	2.71
6	60	2700	164.75	4142	252.74	8.74	10.72
7	70	1850	112.89	3387	206.67	5.99	8.77
8	80	850	51.87	2350	143.40	2.75	6.08
9	90	1350	82.38	2515	153.47	4.37	6.51
10	100	1050	64.07	3000	183.06	3.40	7.77
11	110	1020	62.24	2760	168.42	3.30	7.15
12	120	980	59.80	2765	168.72	3.17	7.16
13	130	1250	76.28	2977	181.66	4.05	7.71
14	140	1050	64.07	2000	122.04	3.40	5.18
15	150	1050	64.07	2977	181.66	3.40	7.71
16	160	1150	70.17	2840	173.30	3.72	7.35
17	170	1450	88.48	2380	145.23	4.69	6.16
18	180	1250	76.28	2365	144.31	4.05	6.12
19	190	1300	79.33	2275	138.82	4.21	5.89
20	200		0.00		0.00	0.00	0.00
21	210		0.00		0.00	0.00	0.00
22	220		0.00		0.00	0.00	0.00
23	230		0.00		0.00	0.00	0.00
24	240		0.00		0.00	0.00	0.00
25	250		0.00		0.00	0.00	0.00


Infiltration Test
TPE-33
Inner Ring
Outer Ring
Infiltration Rate (in/hr)
16
12
8
4
0
0
50
100
150
200
250
Elapsed Time (min)

Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Site E
Location: TPE-33
Water Source: TW-02
Date: June 3, 1998
Estimated Depth to Water Table: Approx. 16 Feet

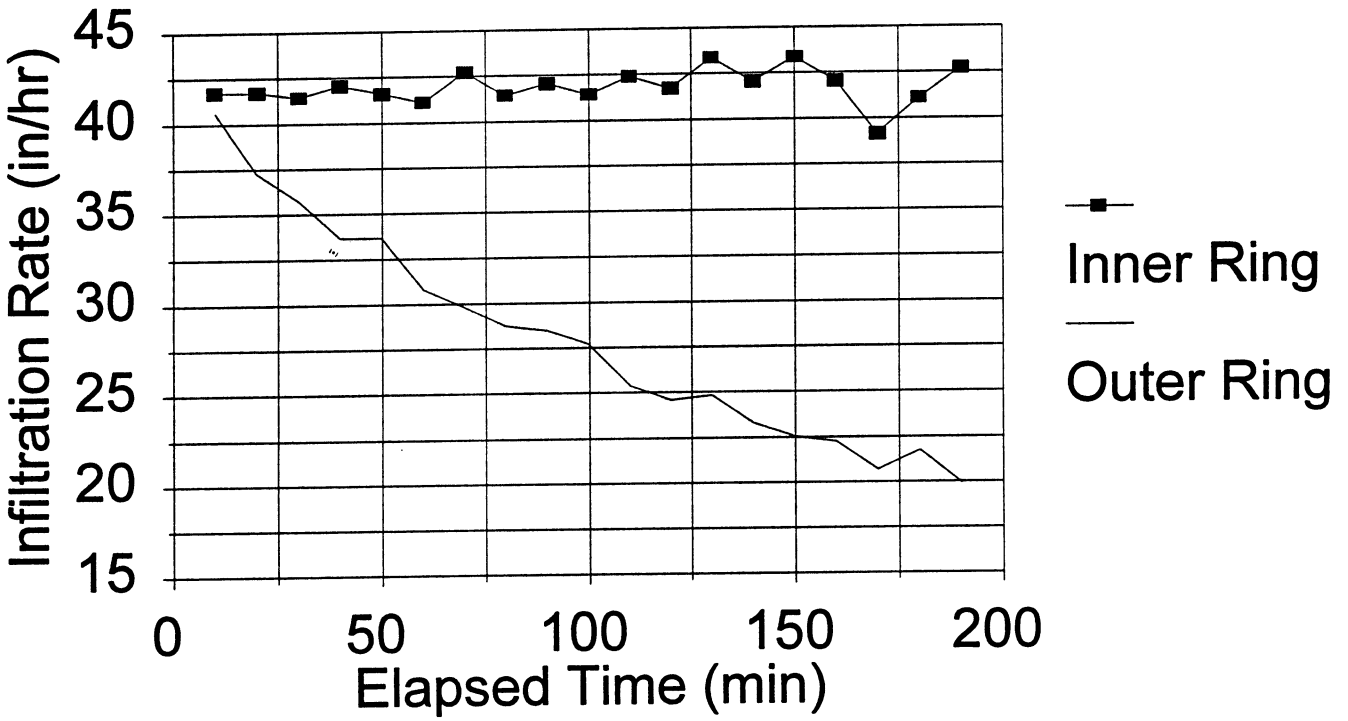
Inner Ring (in2): 113.1
Annular Space (in2): 141.4
Depth (Surface to Inner Ring Top): 40 inches
Penetration of Rings: Inner: 5.4 inches Outer: 6.1 inches

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	281	17.15	6023	367.52	0.91	15.60
2	20	75	4.58	3586	218.82	0.24	9.29
3	30	350	21.36	3272	199.66	1.13	8.47
4	40	300	18.31	2784	169.88	0.97	7.21
5	50	275	16.78	2802	170.98	0.89	7.26
6	60	1266	77.25	2610	159.26	4.10	6.76
7	70	265	16.17	2590	158.04	0.86	6.71
8	80	275	16.78	2102	128.26	0.89	5.44
9	90	1344	82.01	2658	162.19	4.35	6.88
10	100	242	14.77	3448	210.40	0.78	8.93
11	110	280	17.09	2587	157.86	0.91	6.70
12	120	400	24.41	3330	203.20	1.29	8.62
13	130	300	18.31	3482	212.47	0.97	9.02
14	140	520	31.73	3450	210.52	1.68	8.93
15	150	380	23.19	3145	191.91	1.23	8.14
16	160	350	21.36	3460	211.13	1.13	8.96
17	170	450	27.46	3220	196.48	1.46	8.34
18	180	565	34.48	3295	201.06	1.83	8.53
19	190	510	31.12	3170	193.43	1.65	8.21
20	200	475	28.98	3128	190.87	1.54	8.10
21	210	500	30.51	3360	205.03	1.62	8.70
22	220	475	28.98	3310	201.98	1.54	8.57
23	230	525	32.04	3140	191.60	1.70	8.13
24	240	525	32.04	3400	207.47	1.70	8.80
25	250		0.00		0.00	0.00	0.00

Area H Infiltrometer Tests

Infiltration Test

TPH-06B



Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Area H
Location: TPH-06B
Water Source: Flannery Shop
Date: August 28, 1998
Estimated Depth to Water Table: Approx. 6 Feet from Ground Surface

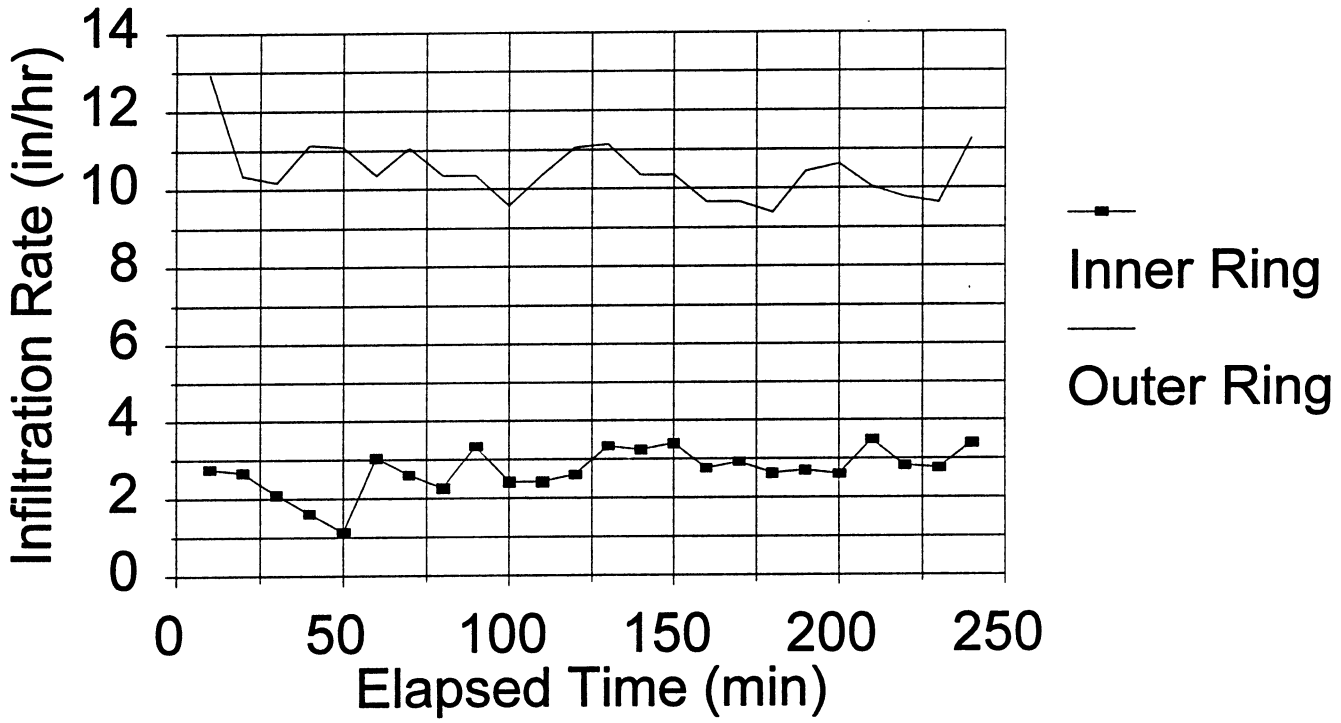
Inner Ring (in2): 113.1
Annular Space (in2): 141.4

Penetration of Rings: Inner: 5.5 inches Outer: 6.5 inches

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	12900	787.16	15700	958.01	41.76	40.65
2	20	12900	787.16	14400	878.69	41.76	37.29
3	30	12800	781.06	13800	842.08	41.44	35.73
4	40	13000	793.26	13000	793.26	42.08	33.66
5	50	12860	784.72	13000	793.26	41.63	33.66
6	60	12700	774.95	11900	726.14	41.11	30.81
7	70	13200	805.46	11500	701.73	42.73	29.78
8	80	12800	781.06	11100	677.32	41.44	28.74
9	90	13000	793.26	11000	671.22	42.08	28.48
10	100	12800	781.06	10700	652.91	41.44	27.70
11	110	13100	799.36	9800	598.00	42.41	25.37
12	120	12900	787.16	9500	579.69	41.76	24.60
13	130	13400	817.67	9600	585.79	43.38	24.86
14	140	13000	793.26	9000	549.18	42.08	23.30
15	150	13400	817.67	8700	530.87	43.38	22.53
16	160	13000	793.26	8600	524.77	42.08	22.27
17	170	12100	738.34	8000	488.16	39.17	20.71
18	180	12700	774.95	8400	512.57	41.11	21.75
19	190	13200	805.46	7700	469.85	42.73	19.94
20	200	13600	829.87	7700	469.85	44.03	19.94

Infiltration Test

TPH-8D



Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Area H
Location: TPH-8D
Water Source: Flannery Shop
Date: August 26, 1998
Estimated Depth to Water Table: Approx. 6 Feet from Ground Surface

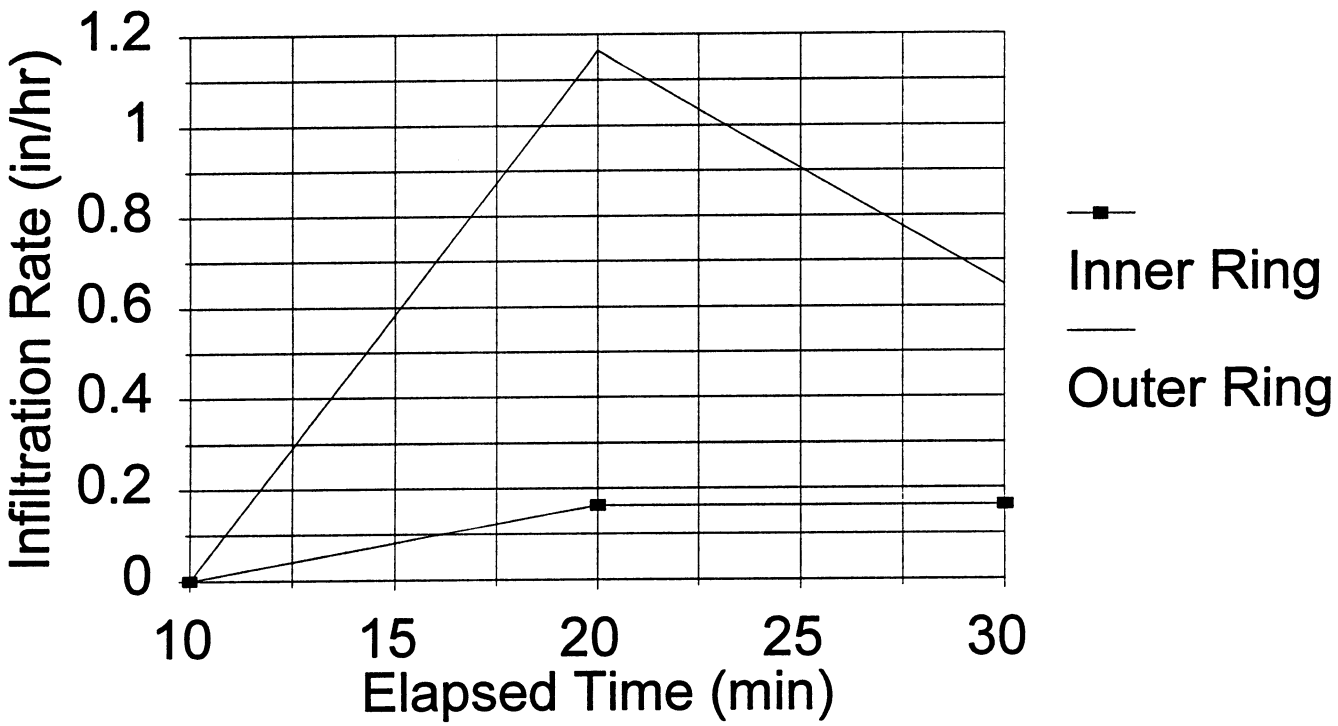
Inner Ring (in2): 113.1
Annular Space (in2): 141.4

Penetration of Rings: Inner: 5.75 inches Outer: 6 inches

		Inner Ring		Annular Space		Infiltration Rate	
Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	850	51.87	5000	305.10	2.75	12.95
2	20	825	50.34	4000	244.08	2.67	10.36
3	30	650	39.66	3930	239.81	2.10	10.18
4	40	500	30.51	4300	262.39	1.62	11.13
5	50	350	21.36	4280	261.17	1.13	11.08
6	60	940	57.36	4000	244.08	3.04	10.36
7	70	800	48.82	4270	260.56	2.59	11.06
8	80	700	42.71	4000	244.08	2.27	10.36
9	90	1030	62.85	4000	244.08	3.33	10.36
10	100	750	45.77	3700	225.77	2.43	9.58
11	110	750	45.77	4000	244.08	2.43	10.36
12	120	800	48.82	4270	260.56	2.59	11.06
13	130	1030	62.85	4300	262.39	3.33	11.13
14	140	1000	61.02	4000	244.08	3.24	10.36
15	150	1050	64.07	4000	244.08	3.40	10.36
16	160	850	51.87	3730	227.60	2.75	9.66
17	170	900	54.92	3730	227.60	2.91	9.66
18	180	810	49.43	3620	220.89	2.62	9.37
19	190	830	50.65	4025	245.61	2.69	10.42
20	200	800	48.82	4100	250.18	2.59	10.62
21	210	1080	65.90	3875	236.45	3.50	10.03
22	220	870	53.09	3775	230.35	2.82	9.77
23	230	850	51.87	3720	226.99	2.75	9.63
24	240	1050	64.07	4350	265.44	3.40	11.26

Infiltration Test

TPH-33B



Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Area H
Location: TPH-33B
Water Source: Flannery Shop
Date: August 28, 1998
Estimated Depth to Water Table: Approx. 6 Feet Till

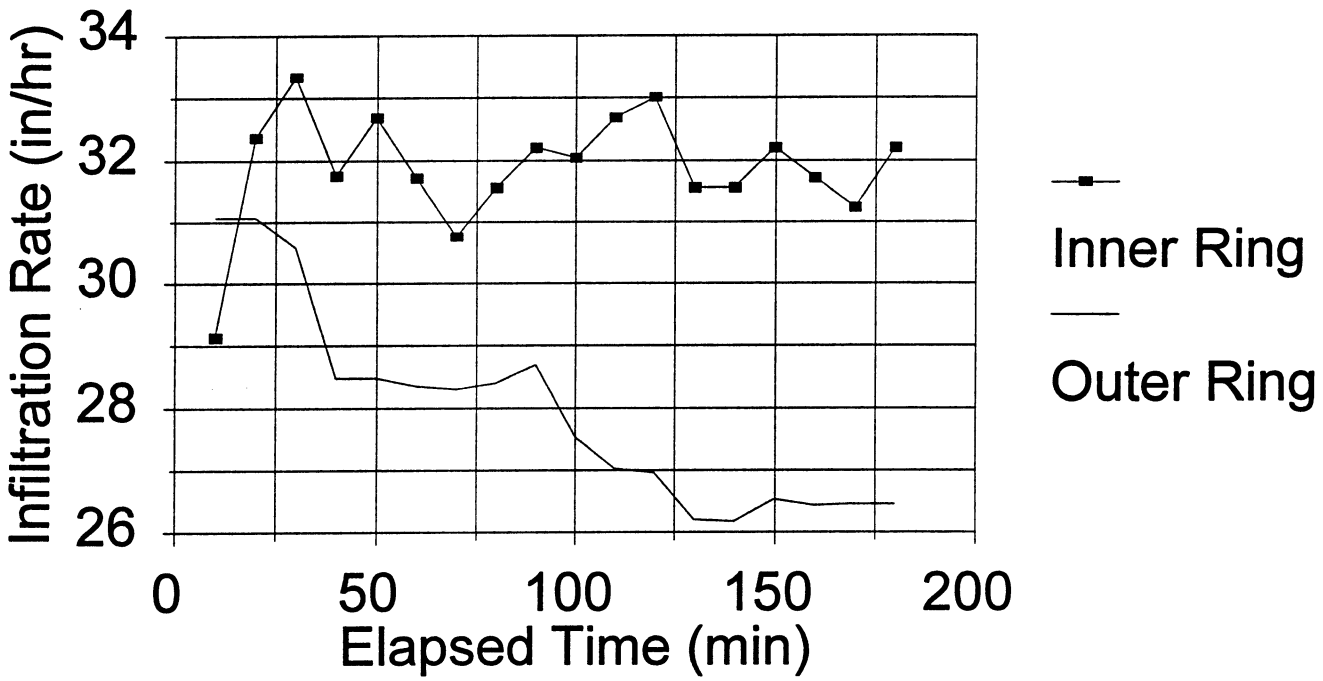
Inner Ring (in2): 113.1
Annular Space (in2): 141.4

Penetration of Rings: Inner: 5.5 inches Outer: 6 inches

		Inner Ring		Annular Space		Infiltration Rate	
Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	0	0.00	0	0.00	0.00	0.00
2	20	50	3.05	450	27.46	0.16	1.17
3	30	50	3.05	250	15.26	0.16	0.65

Infiltration Test

TPH-38B



Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Area H
Location: TPH-38B
Water Source: Flannery Shop
Date: August 25, 1998
Estimated Depth to Water Table: Approx. 6.0 feet

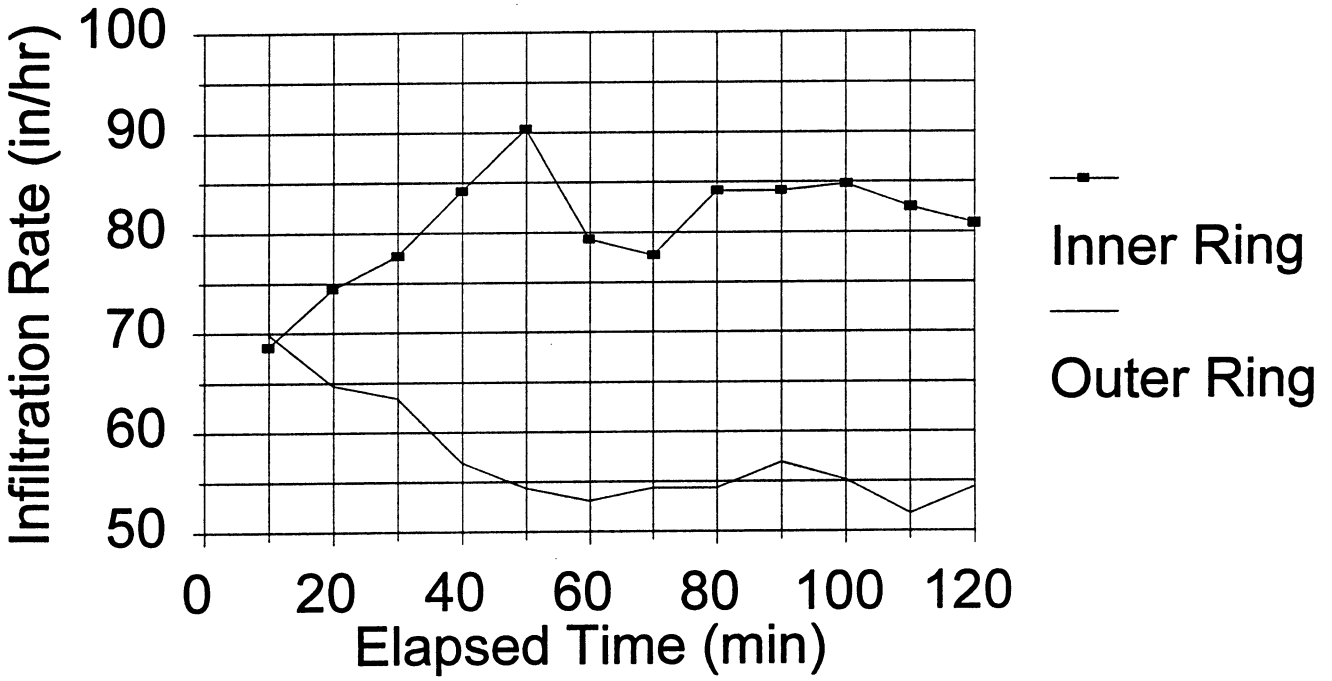
Inner Ring (in2): 113.1
Annular Space (in2): 141.4

Penetration of Rings: Inner: 5 inches Outer: 6 inches

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	9000	549.18	12000	732.24	29.13	31.07
2	20	10000	610.20	12000	732.24	32.37	31.07
3	30	10300	628.51	11810	720.65	33.34	30.58
4	40	9810	598.61	11000	671.22	31.76	28.48
5	50	10100	616.30	11000	671.22	32.70	28.48
6	60	9800	598.00	10950	668.17	31.72	28.35
7	70	9500	579.69	10930	666.95	30.75	28.30
8	80	9750	594.95	10970	669.39	31.56	28.40
9	90	9950	607.15	11080	676.10	32.21	28.69
10	100	9900	604.10	10635	648.95	32.05	27.54
11	110	10100	616.30	10440	637.05	32.70	27.03
12	120	10200	622.40	10410	635.22	33.02	26.95
13	130	9750	594.95	10120	617.52	31.56	26.20
14	140	9750	594.95	10110	616.91	31.56	26.18
15	150	9950	607.15	10250	625.46	32.21	26.54
16	160	9800	598.00	10210	623.01	31.72	26.44
17	170	9650	588.84	10220	623.62	31.24	26.46
18	180	9950	607.15	10220	623.62	32.21	26.46

Infiltration Test

TPH-42



Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Area H
Location: TPH-42
Water Source: Flannery Shop
Date: August 26, 1998
Estimated Depth to Water Table: Approx. 6 feet

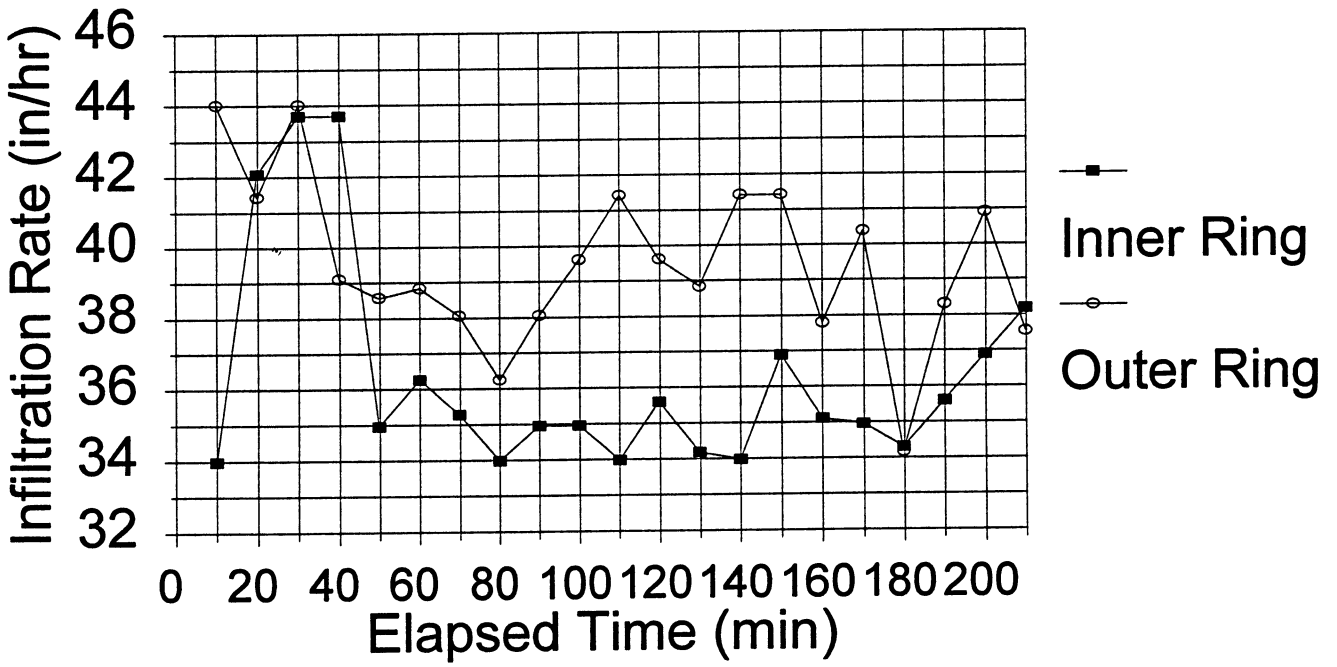
Inner Ring (in2): 113.1
Annular Space (in2): 141.4

Penetration of Rings: Inner: 5.25 inches Outer: 6 inches

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	21200	1293.62	27000	1647.54	68.63	69.91
2	20	23000	1403.46	25000	1525.50	74.45	64.73
3	30	24000	1464.48	24500	1494.99	77.69	63.44
4	40	26000	1586.52	22000	1342.44	84.17	56.96
5	50	27900	1702.46	21000	1281.42	90.32	54.37
6	60	24500	1494.99	20500	1250.91	79.31	53.08
7	70	24000	1464.48	21000	1281.42	77.69	54.37
8	80	26000	1586.52	21000	1281.42	84.17	54.37
9	90	26000	1586.52	22000	1342.44	84.17	56.96
10	100	26200	1598.72	21300	1299.73	84.81	55.15
11	110	25500	1556.01	20000	1220.40	82.55	51.79
12	120	25000	1525.50	21000	1281.42	80.93	54.37

Infiltration Test

TPH-47



Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Area H
Location: TPH-47

Inner Ring (in2): 113.1

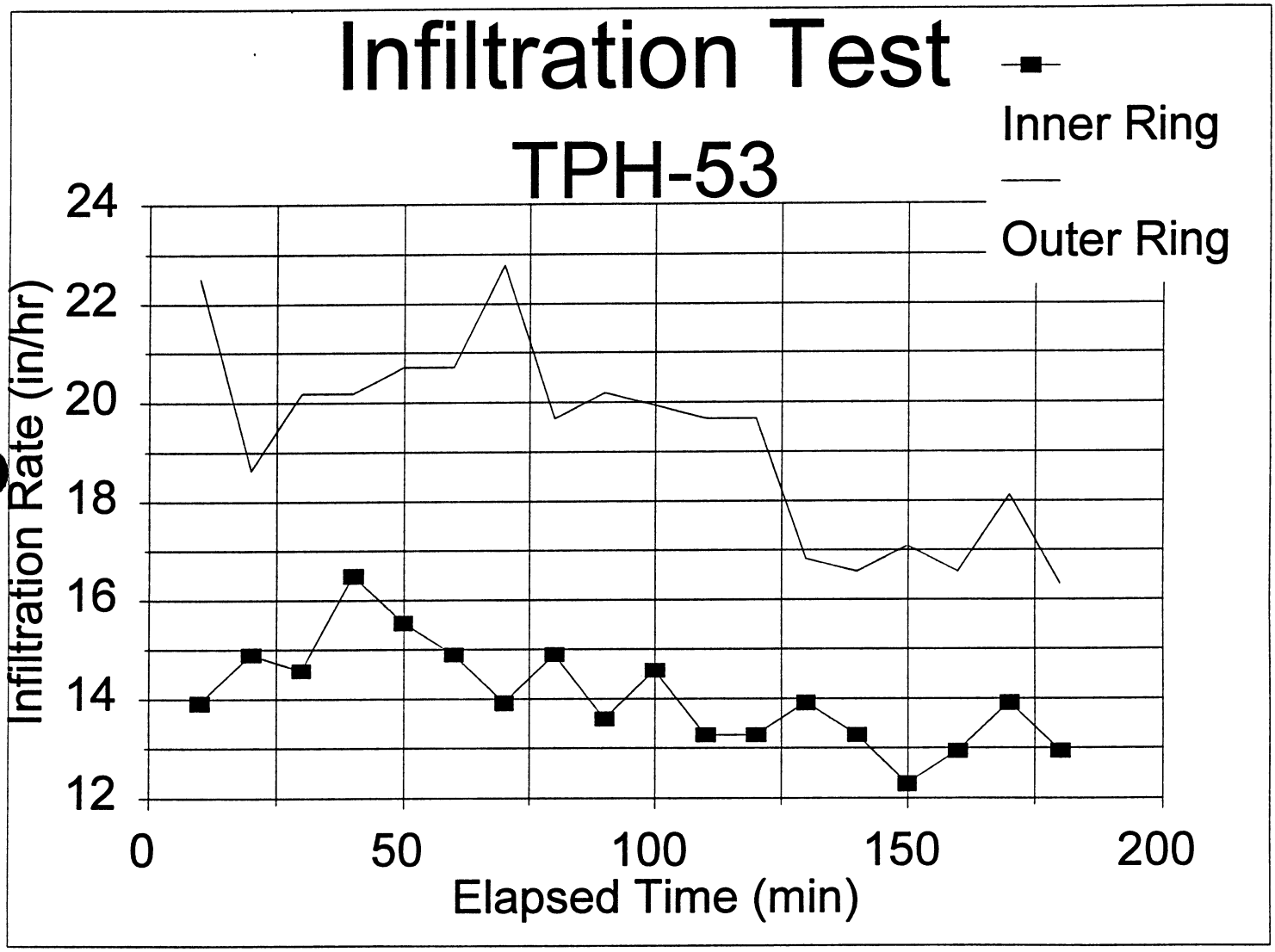
Annular Space (in2): 141.4

Water Source: TW-02 Flannery Shop
Date: August 28, 1998

Penetration of Rings: Inner: 5.25 inches Outer: 6 inches

Estimated Depth to Water Table: Approx. 6 Feet from Ground Surface

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	10500	640.71	17000	1037.34	33.99	44.02
2	20	13000	793.26	16000	976.32	42.08	41.43
3	30	13500	823.77	17000	1037.34	43.70	44.02
4	40	13500	823.77	15100	921.40	43.70	39.10
5	50	10800	659.02	14900	909.20	34.96	38.58
6	60	11200	683.42	15000	915.30	36.26	38.84
7	70	10900	665.12	14700	896.99	35.28	38.06
8	80	10500	640.71	14000	854.28	33.99	36.25
9	90	10800	659.02	14700	896.99	34.96	38.06
10	100	10800	659.02	15300	933.61	34.96	39.62
11	110	10500	640.71	16000	976.32	33.99	41.43
12	120	11000	671.22	15300	933.61	35.61	39.62
13	130	10560	644.37	15000	915.30	34.18	38.84
14	140	10500	640.71	16000	976.32	33.99	41.43
15	150	11400	695.63	16000	976.32	36.90	41.43
16	160	10850	662.07	14600	890.89	35.12	37.80
17	170	10800	659.02	15600	951.91	34.96	40.39
18	180	10600	646.81	13200	805.46	34.31	34.18
19	190	11000	671.22	14800	903.10	35.61	38.32
20	200	11400	695.63	15800	964.12	36.90	40.91
21	210	11800	720.04	14500	884.79	38.20	37.54


Infiltration Test
TPH-53
Inner Ring
Outer Ring
Infiltration Rate (in/hr)
24
22
20
18
16
14
12
0
50
100
150
200
Elapsed Time (min)

Data Form for Infiltration Test (ASTM D 3385)

Project: SAPII - Area H
Location: TPH-53
Water Source: Flannery Shop
Date: August 27,1998
Estimated Depth to Water Table: Approx. 6 Feet from Ground Surface

Inner Ring (in2): 113.1
Annular Space (in2): 141.4

Pentration of Rings: Inner: 5.20 Inches Outer: 6 Inches

		Inner Ring		Annular Space		Infiltration Rate	
Trial Number	Time (min.)	Reading (ml)	Flow (in2)	Reading (ml)	Flow (in2)	Inner (in/hr)	Annular (in/hr)
1	10	4300	262.39	8700	530.87	13.92	22.53
2	20	4600	280.69	7200	439.34	14.89	18.64
3	30	4500	274.59	7800	475.96	14.57	20.20
4	40	5100	311.20	7800	475.96	16.51	20.20
5	50	4800	292.90	8000	488.16	15.54	20.71
6	60	4600	280.69	8000	488.16	14.89	20.71
7	70	4300	262.39	8800	536.98	13.92	22.79
8	80	4600	280.69	7600	463.75	14.89	19.68
9	90	4200	256.28	7800	475.96	13.60	20.20
10	100	4500	274.59	7700	469.85	14.57	19.94
11	110	4100	250.18	7600	463.75	13.27	19.68
12	120	4100	250.18	7600	463.75	13.27	19.68
13	130	4300	262.39	6500	396.63	13.92	16.83
14	140	4100	250.18	6400	390.53	13.27	16.57
15	150	3800	231.88	6600	402.73	12.30	17.09
16	160	4000	244.08	6400	390.53	12.95	16.57
17	170	4300	262.39	7000	427.14	13.92	18.12
18	180	4000	244.08	6300	384.43	12.95	16.31
19	190	4100	250.18	6500	396.63	13.27	16.83
20	200	4000	244.08	6500	396.63	12.95	16.83

Area E Grain Size, Hydrometer and Constant Head Hydraulic Conductivity Analyses

NTS NUMMELIN TESTING SERVICES, INC.

CENTRAL WISCONSIN AREA:
332 N. Georgia Street
Stevens Point, WI 54481
(715) 341-7974 • Fax (715) 341-8654

MADISON AREA:
5620 Woodland Drive
Waunakee, WI 53597
(608) 849-9120 • Fax (608) 849-9122

July 09, 1998

Foth & Van Dyke
2737 South Ridge Road
P.O. Box 19012
Green Bay, WI 54307-9012

Project No. 1154701.lab

Report No. 01

Attention: Mr. Ronald E. Meister, P.G.

Re: Laboratory Analyses
Crandon Project #93C049
SAP II - Area E

Dear Mr. Meister:

Please find enclosed the laboratory test results for the 25 soil samples obtained from your office on June 22, 1998. Grain size distribution, consisting of nested sieves and hydrometer were performed on all 25 samples. Permeability tests were performed on the 5 designated samples and performed at a sample density of 100 lbs/ft^3, as requested. All tests were performed in general conformance with ASTM standards. Due to the small percentages passing the #200 sieve and the accuracy of the hydrometer test, the hydrometer test results do show some variation from the nested sieve results.

If you have any questions please feel free to call me.

Sincerely,

Bruce Nummelin, President
NUMMELIN TESTING SERVICES, INC.

encl. Grain size graphs, permeability summary, sample list.

NTS NUMMELIN TESTING SERVICES, INC.

CENTRAL WISCONSIN AREA:
332 N. Georgia Street
Stevens Point, WI 54481
(715) 341-7974 • Fax (715) 341-8654

MADISON AREA:
5620 Woodland Drive
Waunakee, WI 53597
(608) 849-9120 • Fax (608) 849-9122

July 27, 1998

Foth & Van Dyke
2737 South Ridge Road
P.O. Box 19012
Green Bay, WI 54307-9012

Project No. 1154702.lab

Report No. 02

Attention: Mr. Ronald E. Meister, P.G.

Re: Laboratory Analyses
Crandon Project #93C049
SAP II - Area E

Dear Mr. Meister:

Please find enclosed the laboratory test results for the 32 soil samples obtained from your office on July 14, 1998. Grain size distribution, consisting of nested sieves and hydrometer were performed on all 32 samples. All tests were performed in general conformance with ASTM standards. Due to the small percentages of soil passing the #200 sieve and the accuracy of the hydrometer test, some variation is expected between the nested sieve analysis and the hydrometer analysis.

If you have any questions please feel free to call me.

Sincerely,

Bruce Nummelin, President
NUMMELIN TESTING SERVICES, INC.

encl. Grain size graphs, sample list.

HYDRAULIC CONDUCTIVITY SUMMARY SHEET
(CONSTANT HEAD)

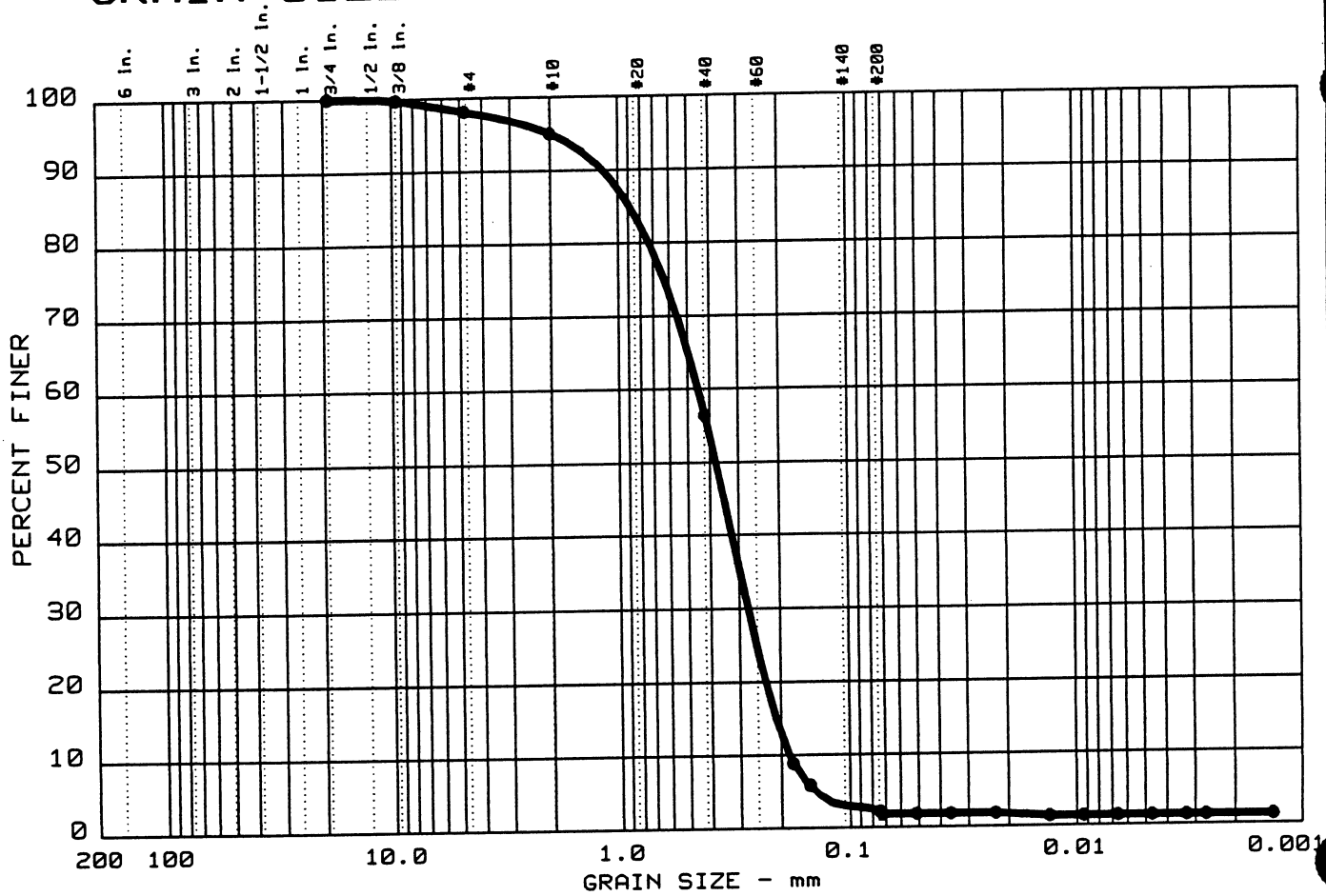
CLIENT: FOTH & VAN DYKE
PROJECT: CRANDON
PROJECT #: 1154701.H
REPORT #:

SAMPLE #	SAMPLE DENSITY	NATURAL MOISTURE	FINAL MOISTURE	**HYDRAULIC CONDUCTIVITY**
TPE-17, 12'	100 lbs/ft^3	12.2%	22.5%	**3.1×10^{-2}**
TPE-18, 10'	100 lbs/ft^3	7.2%	20.4%	**2.6×10^{-2}**
TPE-30, 10'	100 lbs/ft^3	9.5%	20.8%	**4.1×10^{-2}**
MWE-04, 32'-34'	100 lbs/ft^3	17.5%	23.0%	**4.3×10^{-2}**
MWE-11, 16'-18'	100 lbs/ft^3	18.5%	16.0%	**4.7×10^{-2}**

1154701H

NTS, INC.

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.9	95.9	0.8	1.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.89	0.45	0.38	0.275	0.2089	0.1839	0.92	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-01, 6-8'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

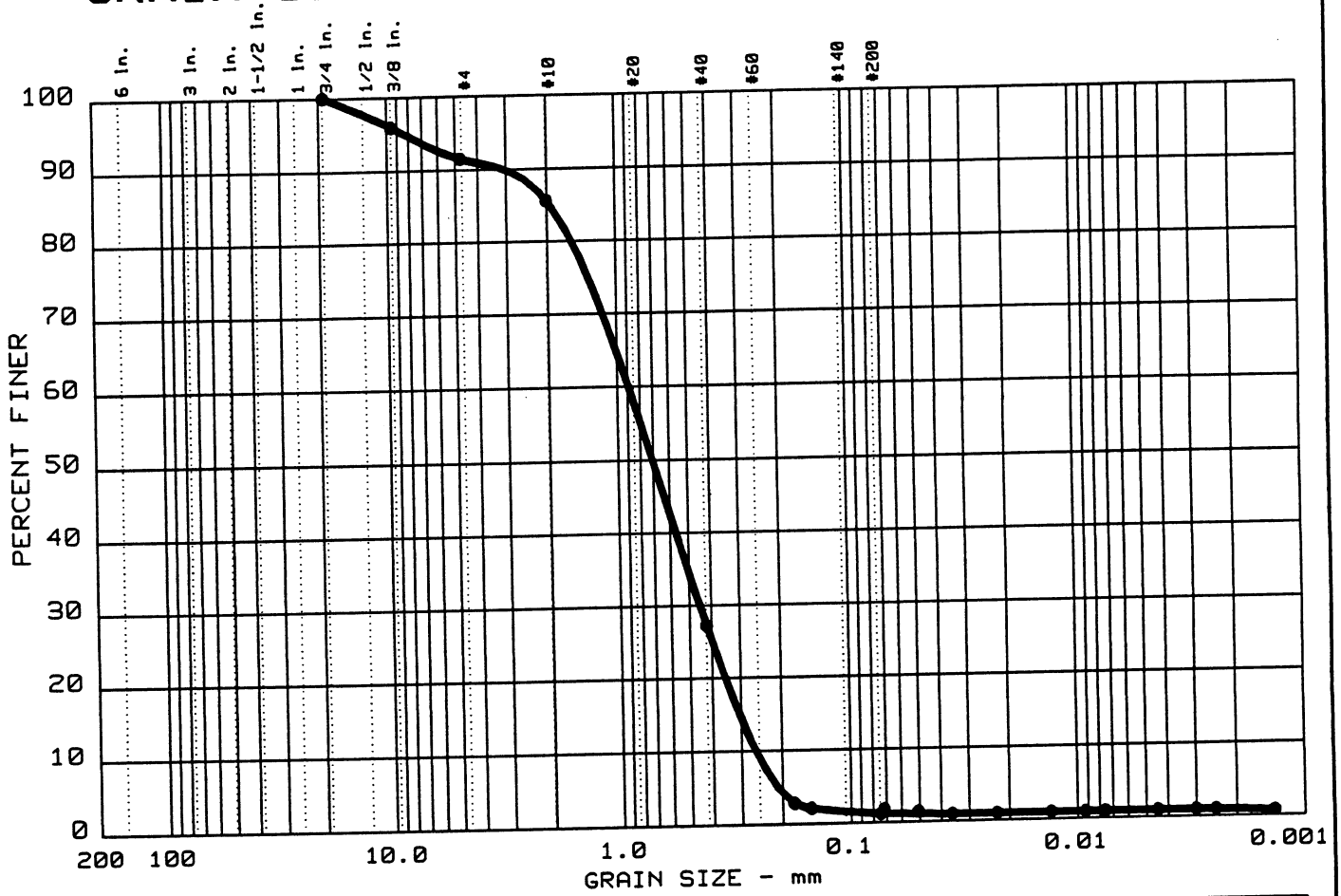
Remarks:

Checked By: BH

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	8.5	90.3	0.2	1.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.93	0.89	0.71	0.449	0.3051	0.2597	0.87	3.4

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-01, 14-16'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BN

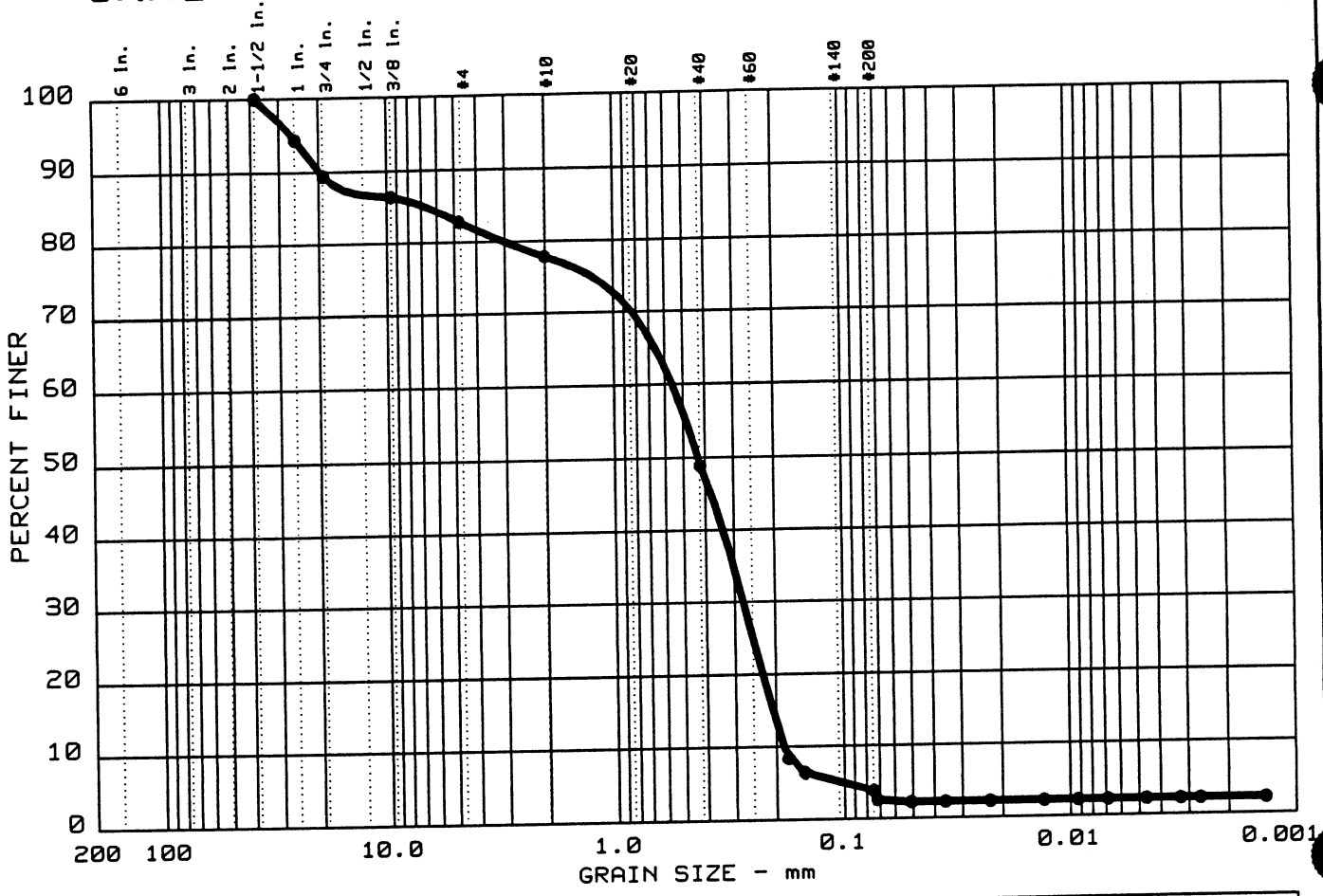
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	17.2	78.9	1.7	2.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			6.68	0.56	0.43	0.275	0.2061	0.1837	0.74	3.0

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-02, 8-10'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BM

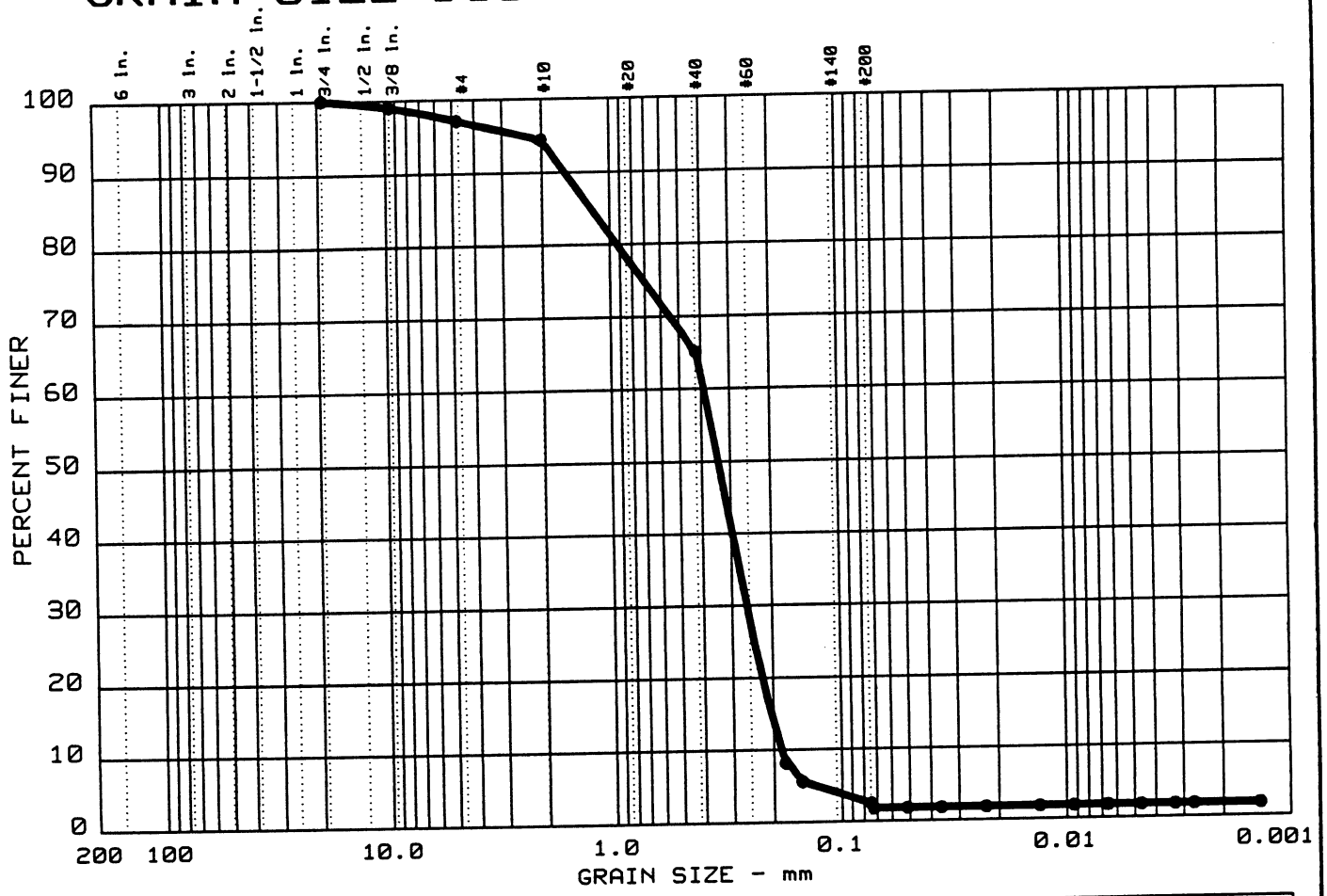
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	2.9	94.6	0.7	1.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.20	0.39	0.34	0.258	0.2039	0.1839	0.93	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-02, 10-12'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

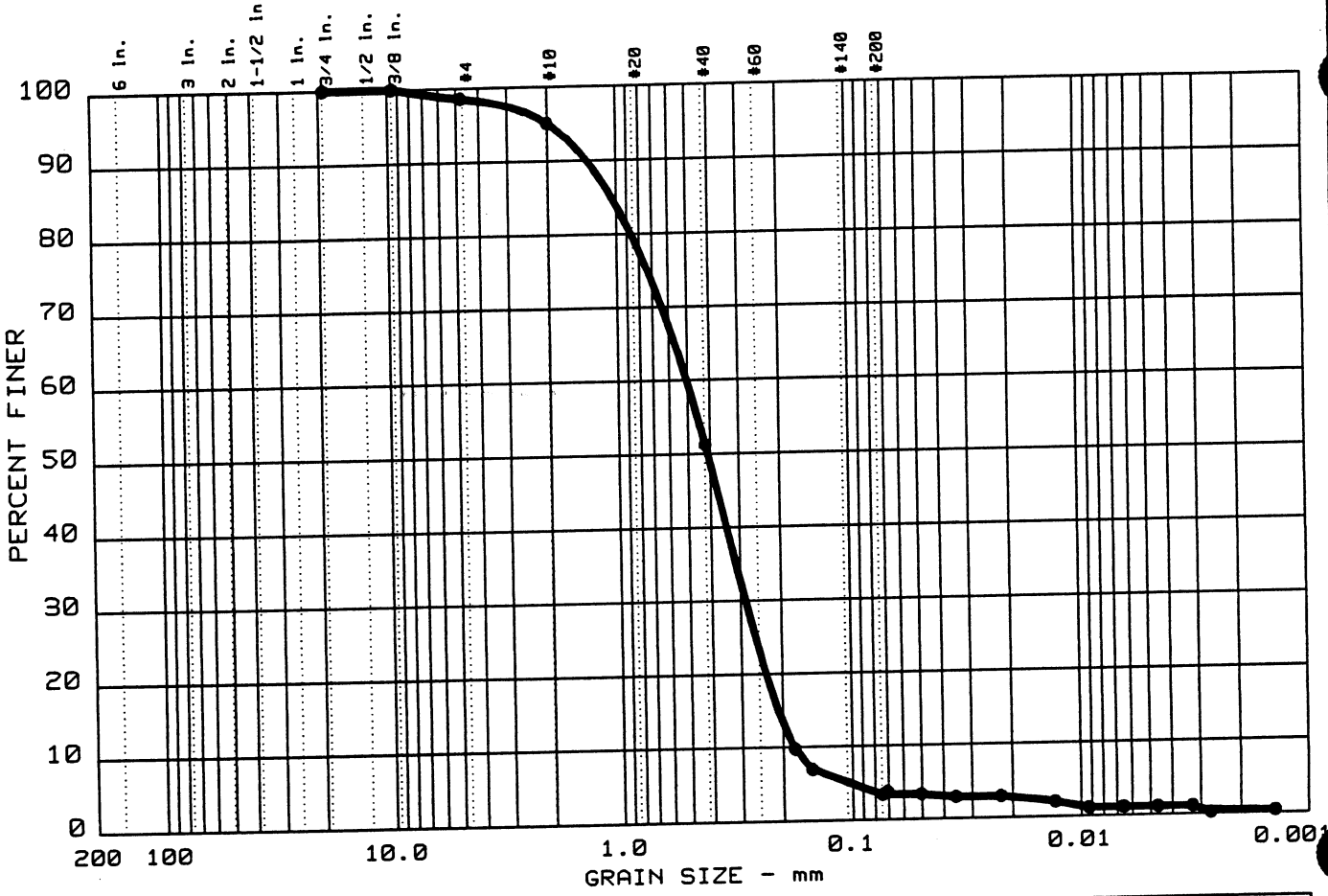
Remarks:
Checked By: BN
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	1.4	95.2	2.3	1.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.05	0.50	0.41	0.286	0.2092	0.1780	0.92	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● BE - 02, 22-24'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BM

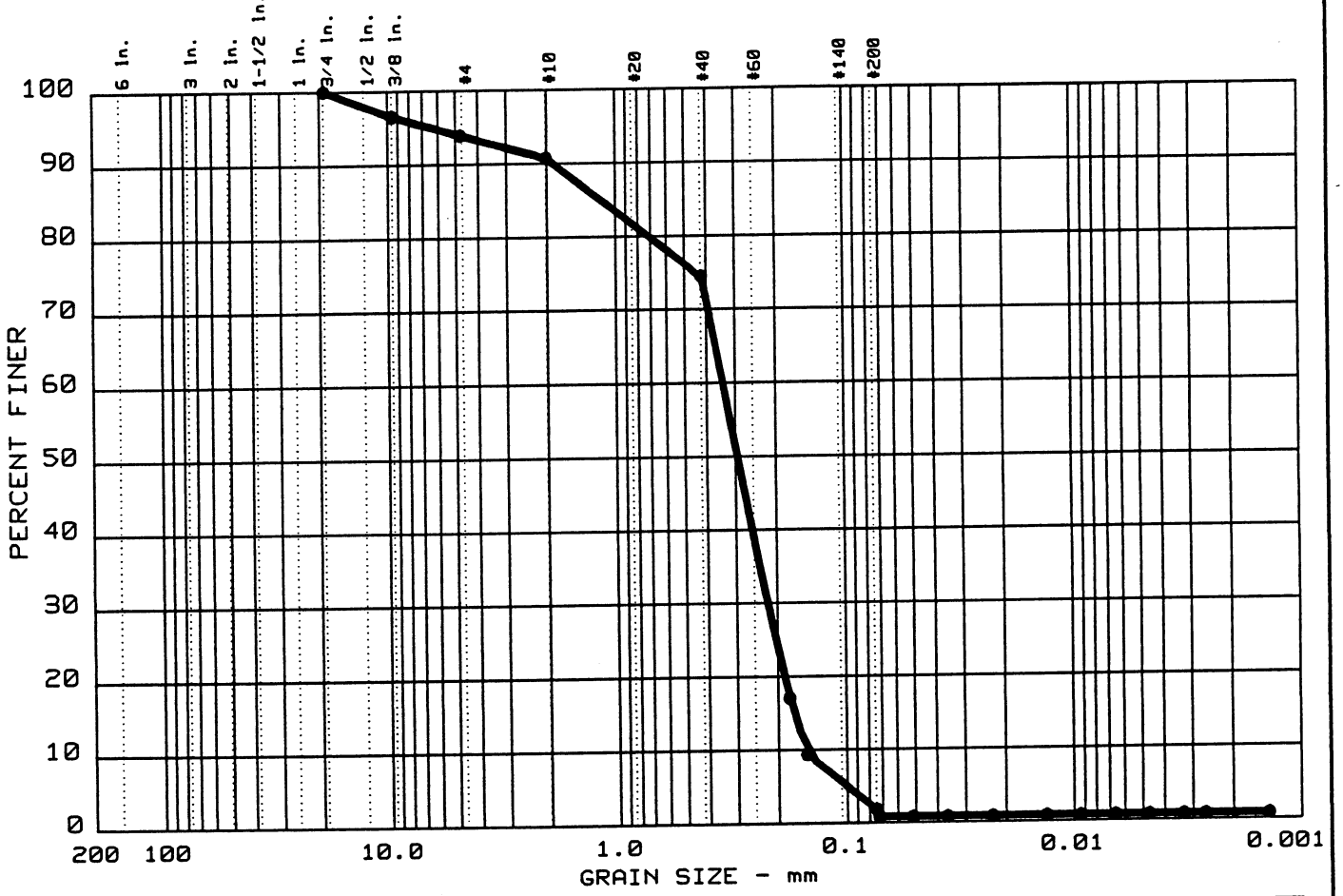
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	6.1	92.1	1.0	0.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.15	0.34	0.29	0.220	0.1685	0.1510	0.94	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-03, 12-14'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BM

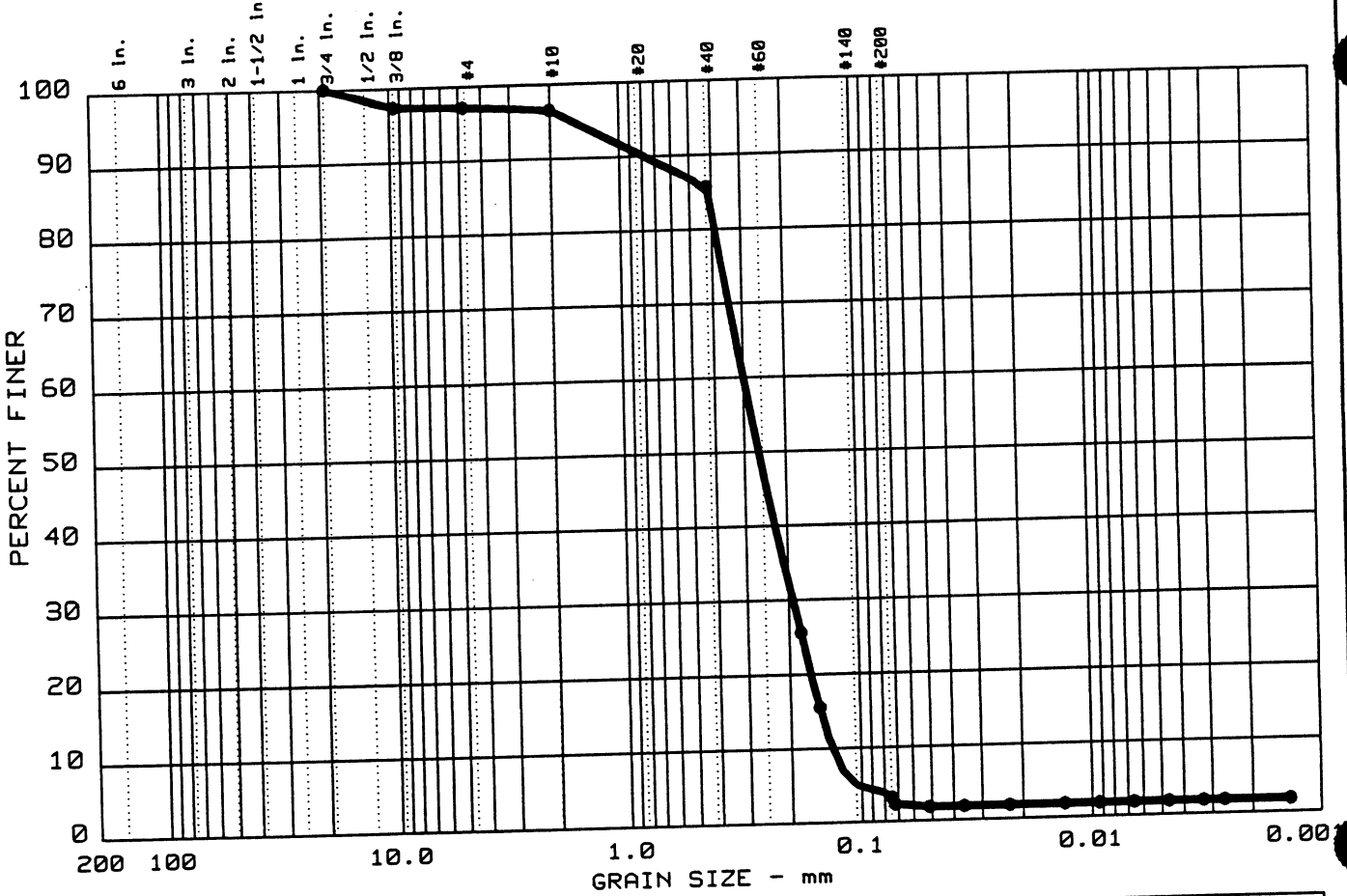
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	2.9	93.9	1.4	1.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.42	0.30	0.26	0.191	0.1474	0.1329	0.92	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-03, 18-20'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BN

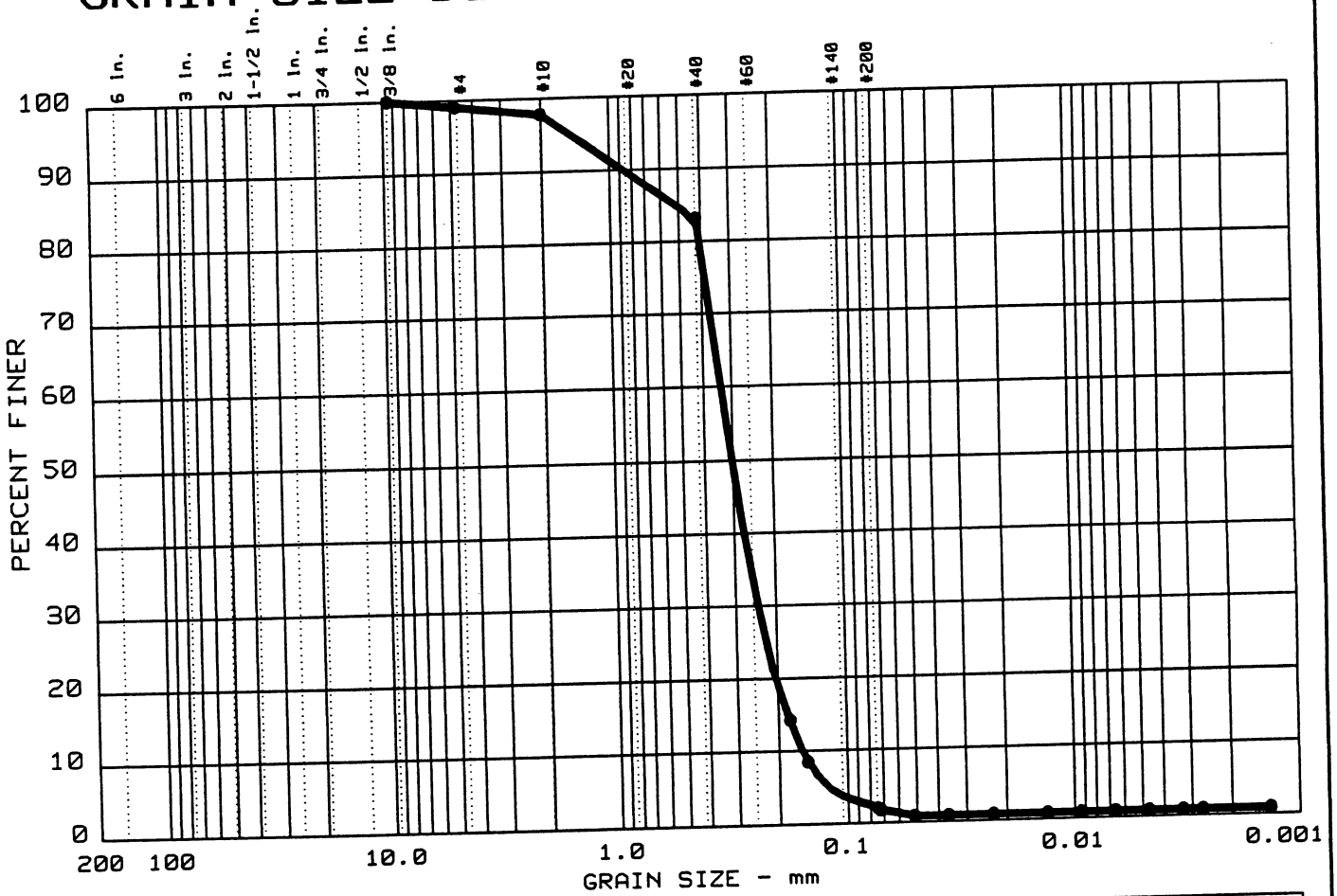
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.0	97.0	1.1	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.50	0.34	0.30	0.240	0.1811	0.1576	1.09	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-04, 11-13'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BM

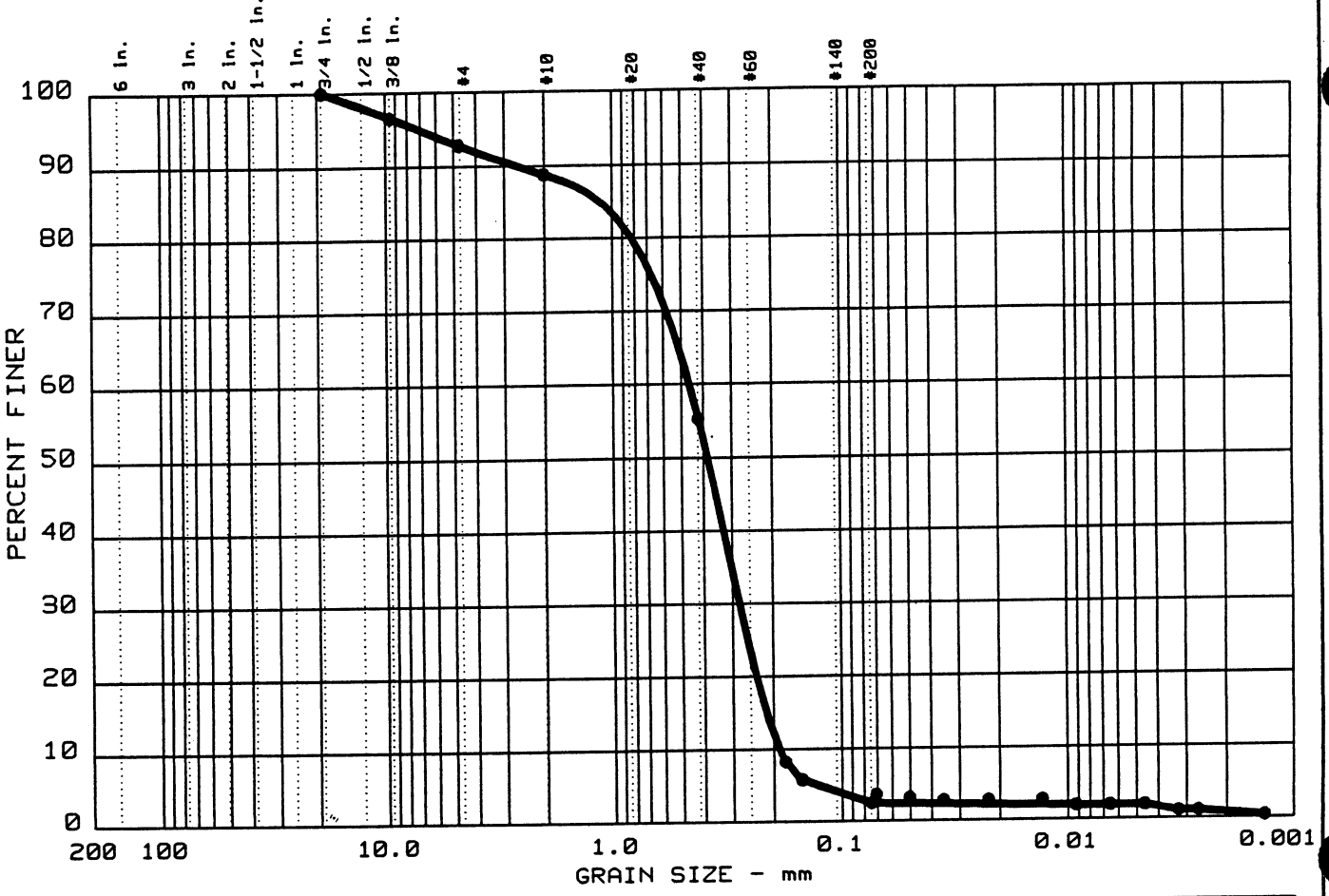
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	7.2	90.3	0.5	2.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.12	0.46	0.38	0.280	0.2140	0.1881	0.91	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● BE - 04, 17-19'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BN

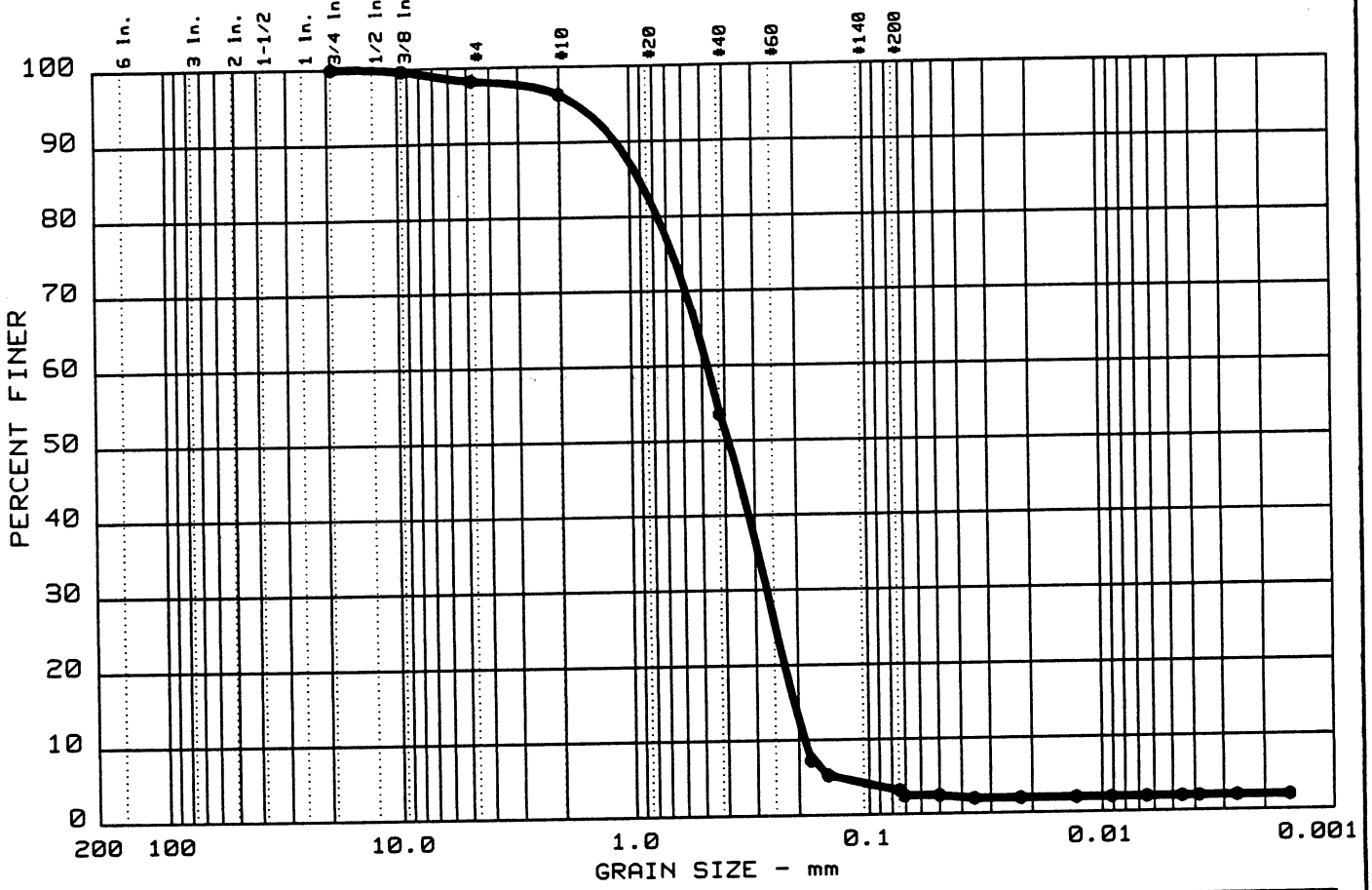
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.8	95.0	1.2	2.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.91	0.47	0.39	0.269	0.2080	0.1875	0.82	2.5

MATERIAL DESCRIPTION	USCS	AASHTO
● MWE-04, 32-34'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

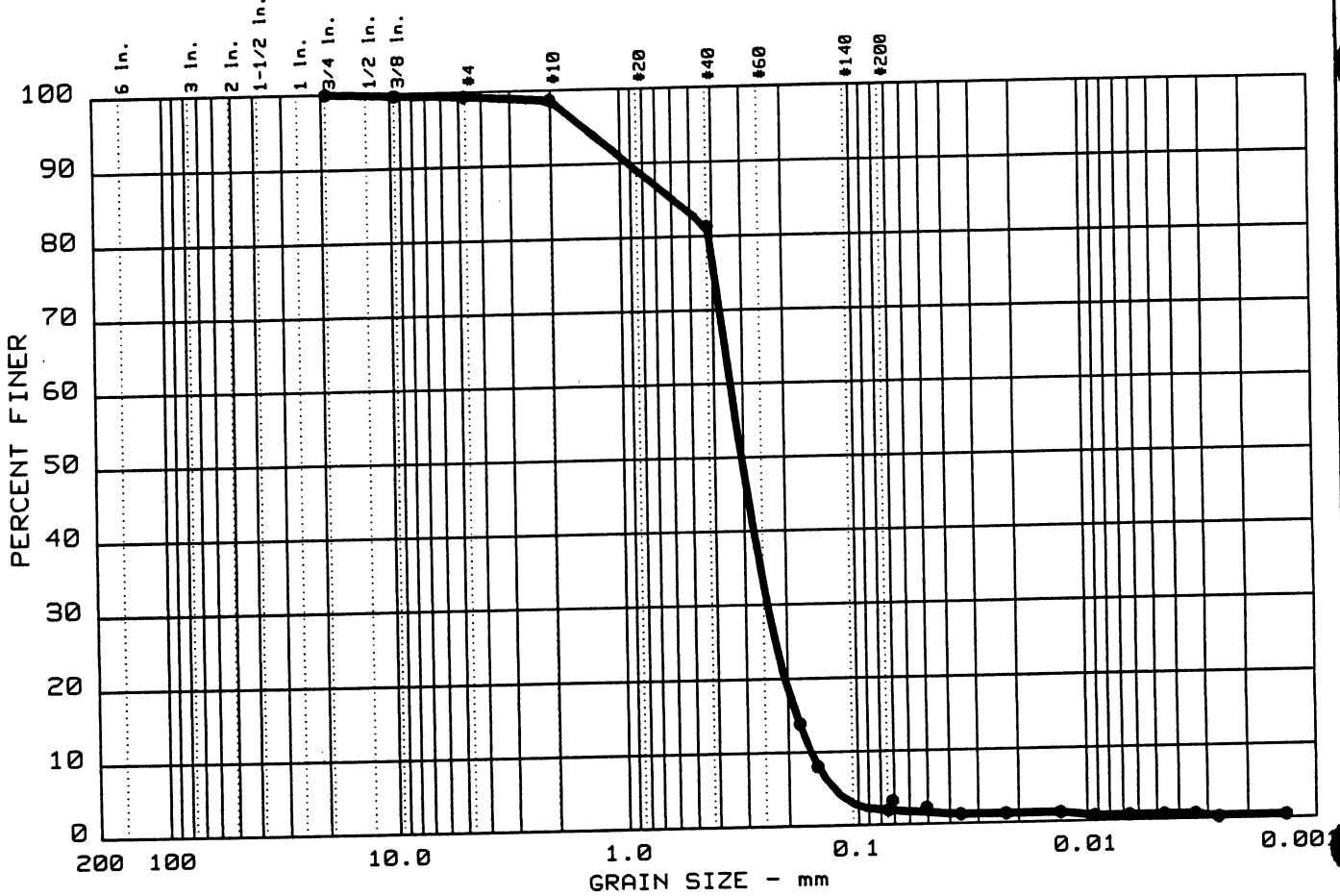
Remarks:

Checked By: BN

ASTM D1140 & D422

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.7	97.3	1.2	0.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.58	0.34	0.31	0.242	0.1832	0.1596	1.07	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● BE - 08, 12-14'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BN

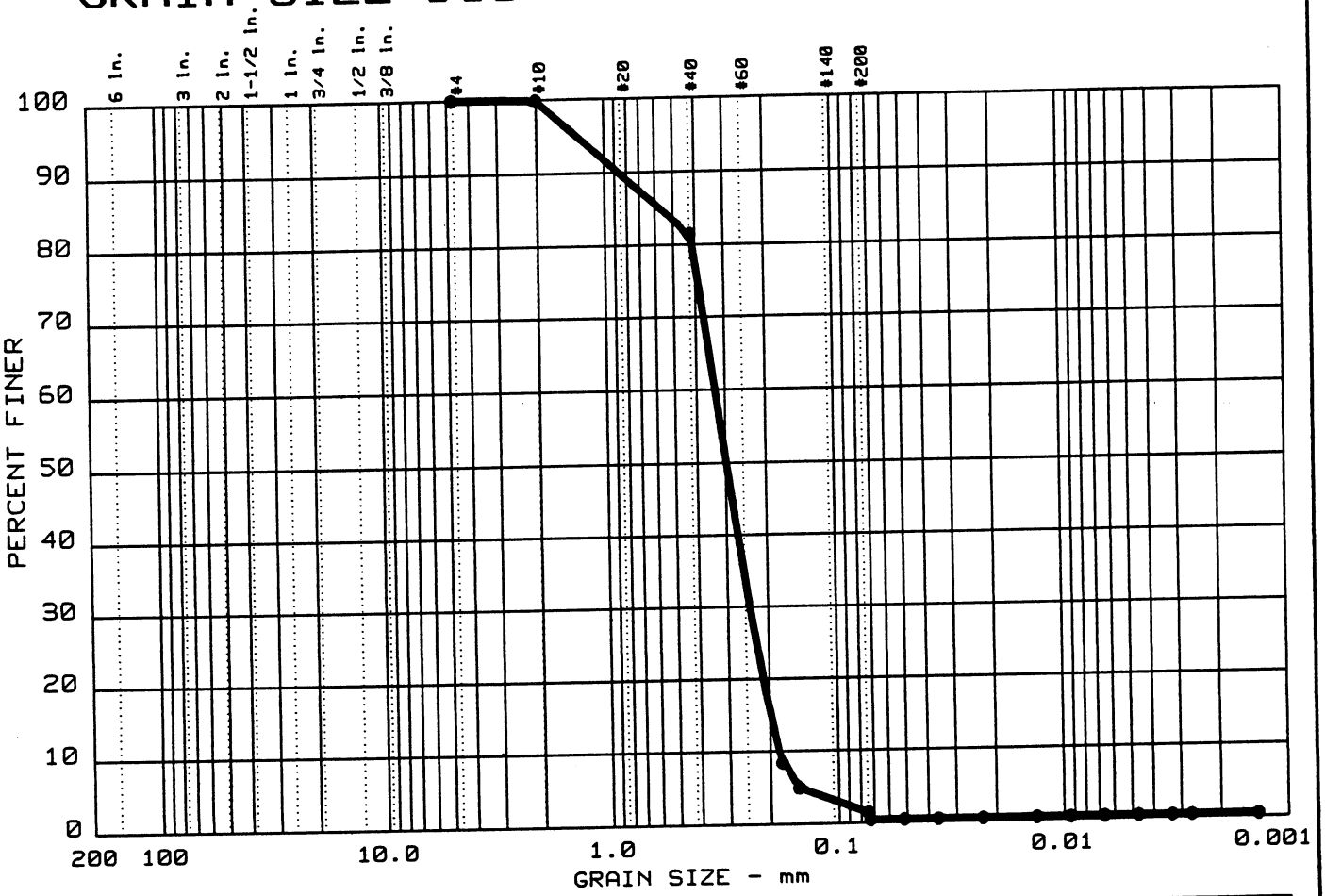
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	98.6	1.0	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.56	0.33	0.30	0.240	0.1975	0.1822	0.95	1.8

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-08, 16-18'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BM

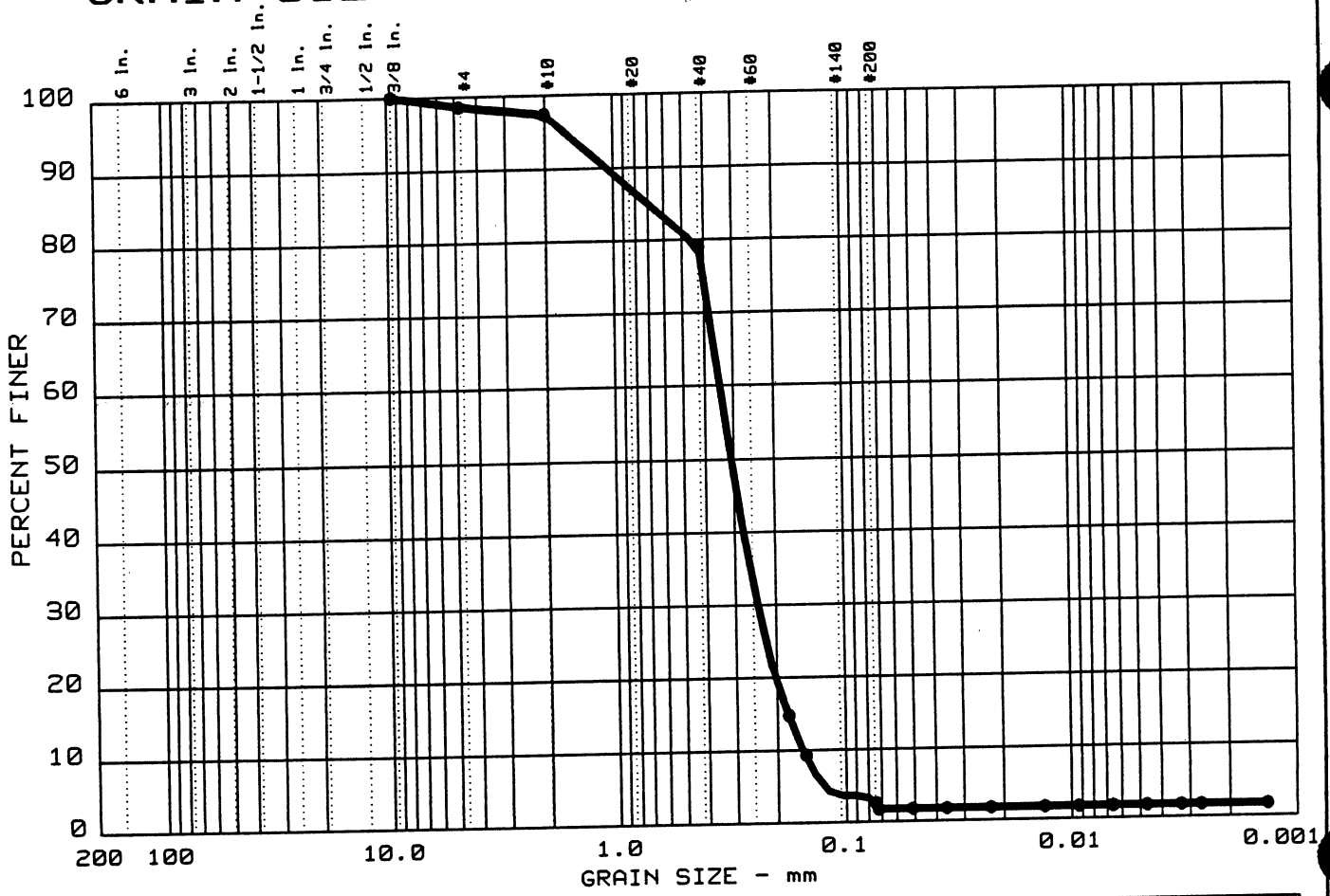
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.4	96.0	0.9	1.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.69	0.34	0.31	0.240	0.1776	0.1529	1.09	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-09, 8-10'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BM

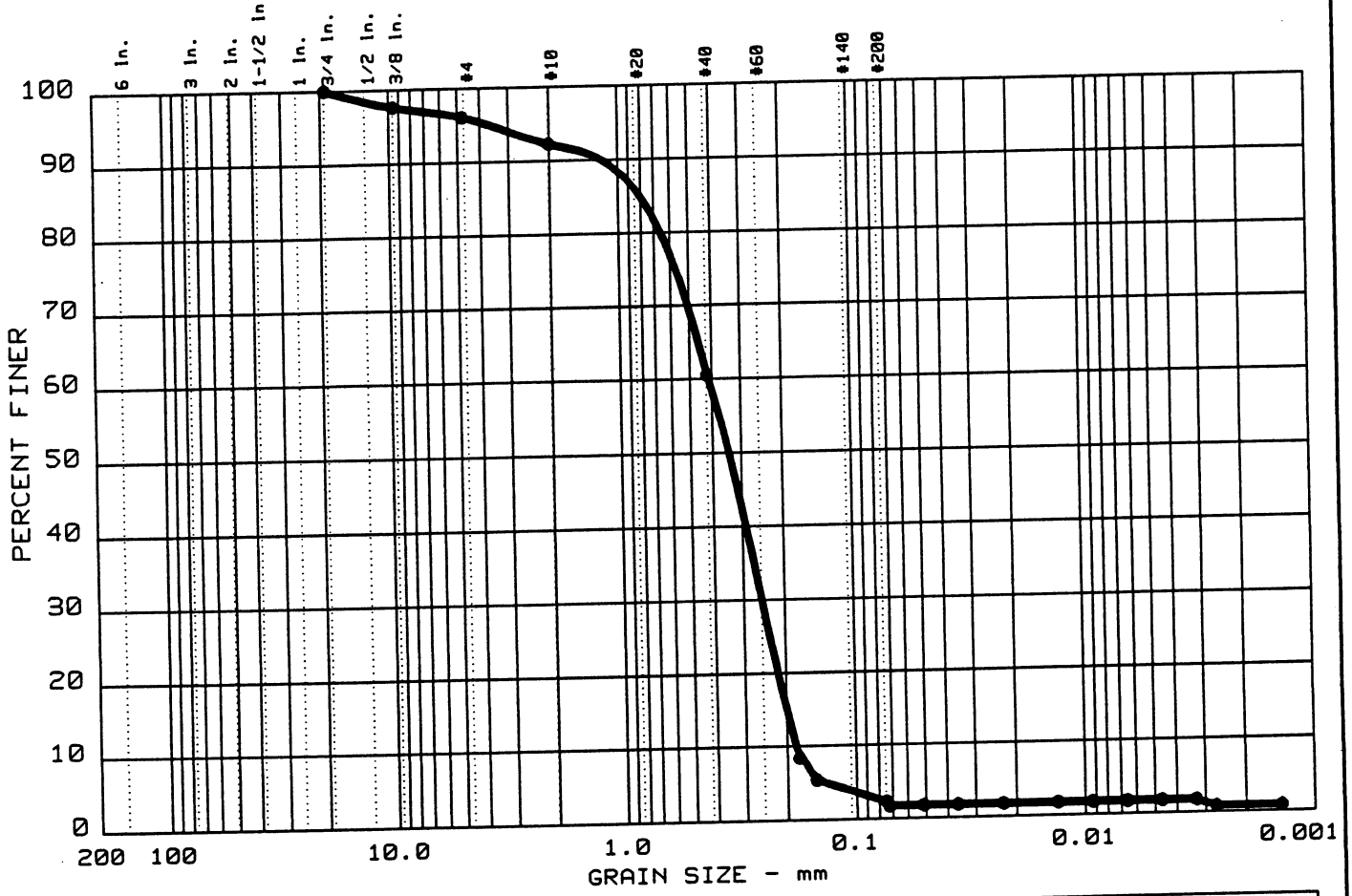
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	3.9	93.8	0.6	1.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.80	0.41	0.34	0.251	0.1991	0.1824	0.83	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-10, 6-8'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-01-98

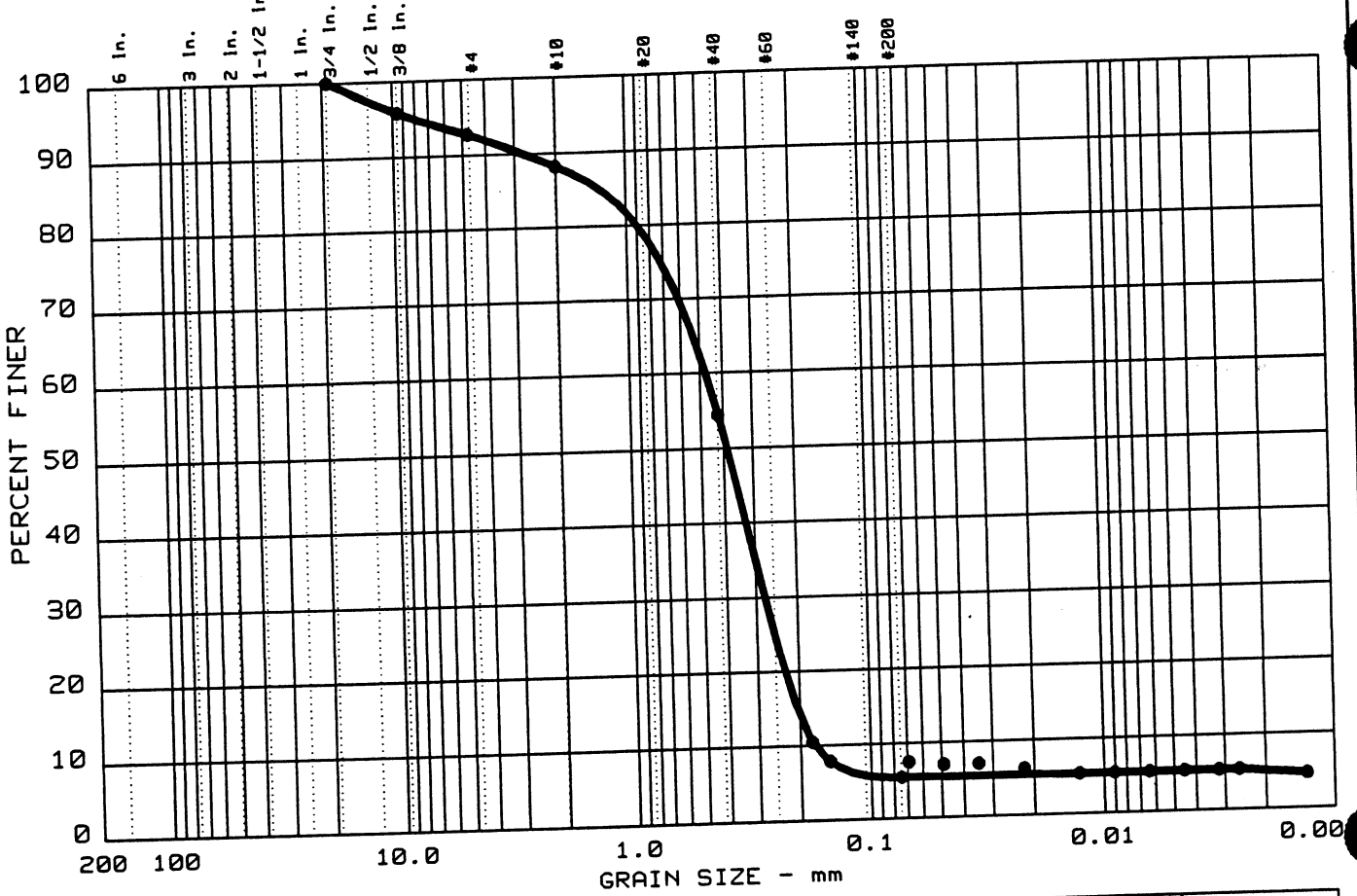
Remarks: BH

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	. 1	0.0	7.3	87.2	0.1	5.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.29	0.47	0.39	0.276	0.2042	0.1718	0.94	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-10, 16-18'	SP-SM	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BM

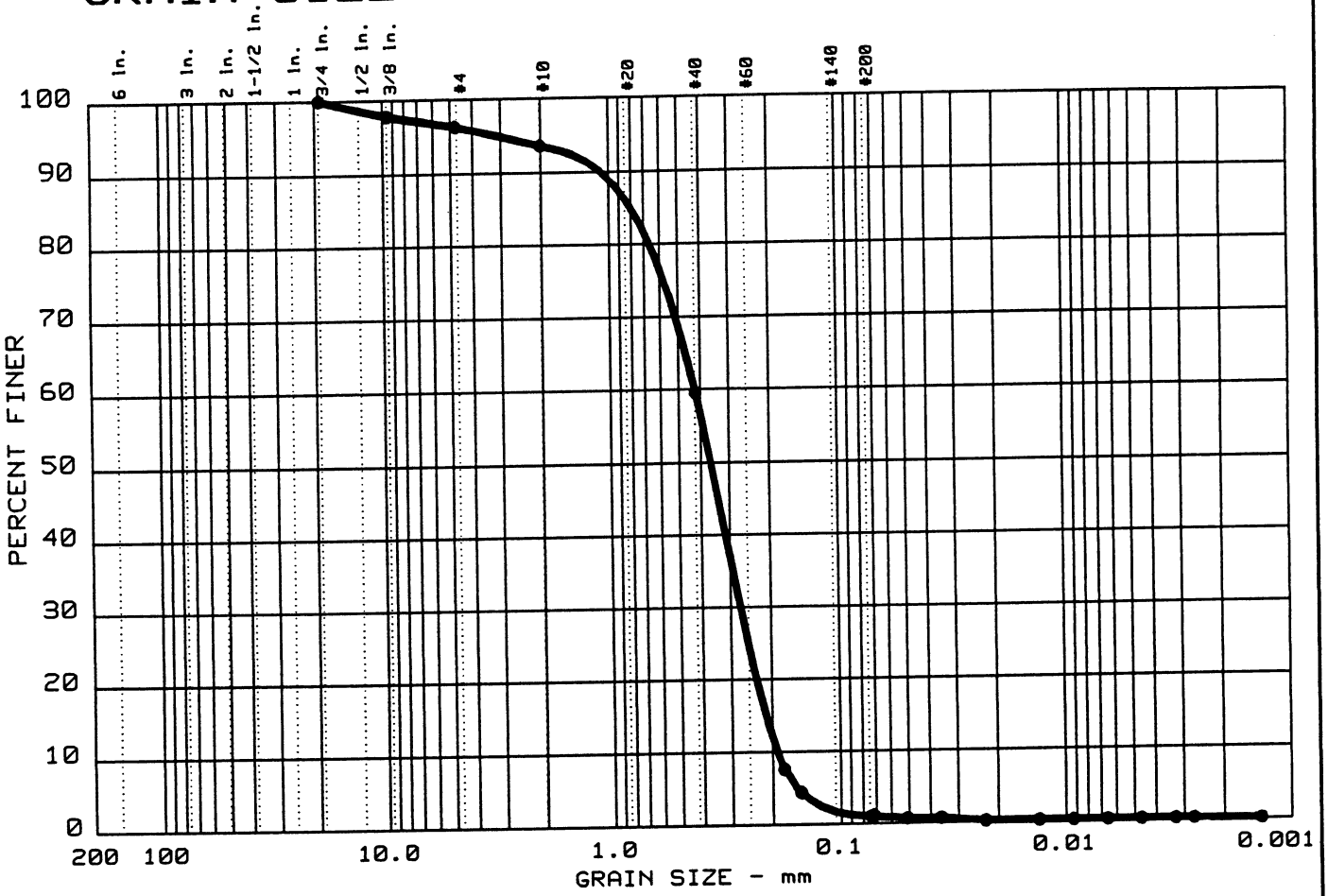
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	3.7	95.3	0.7	0.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.79	0.42	0.36	0.272	0.2126	0.1895	0.92	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● MWE - 11, 16-18'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

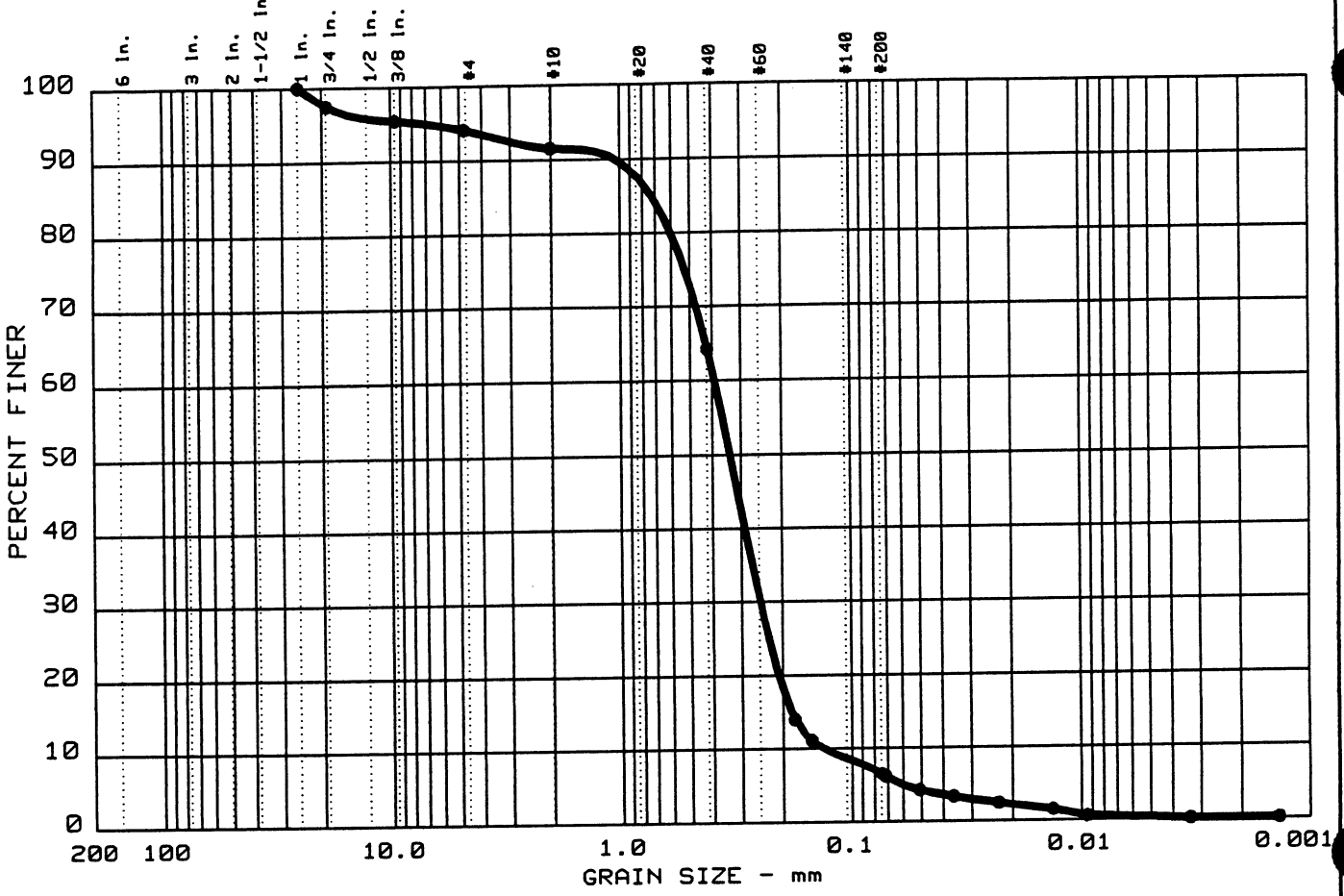
Remarks:

Checked By: BN

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	5.9	87.6	6.2	0.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.72	0.39	0.34	0.249	0.1822	0.1320	1.20	3.0

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-13, 14'-16'	SP-SM	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

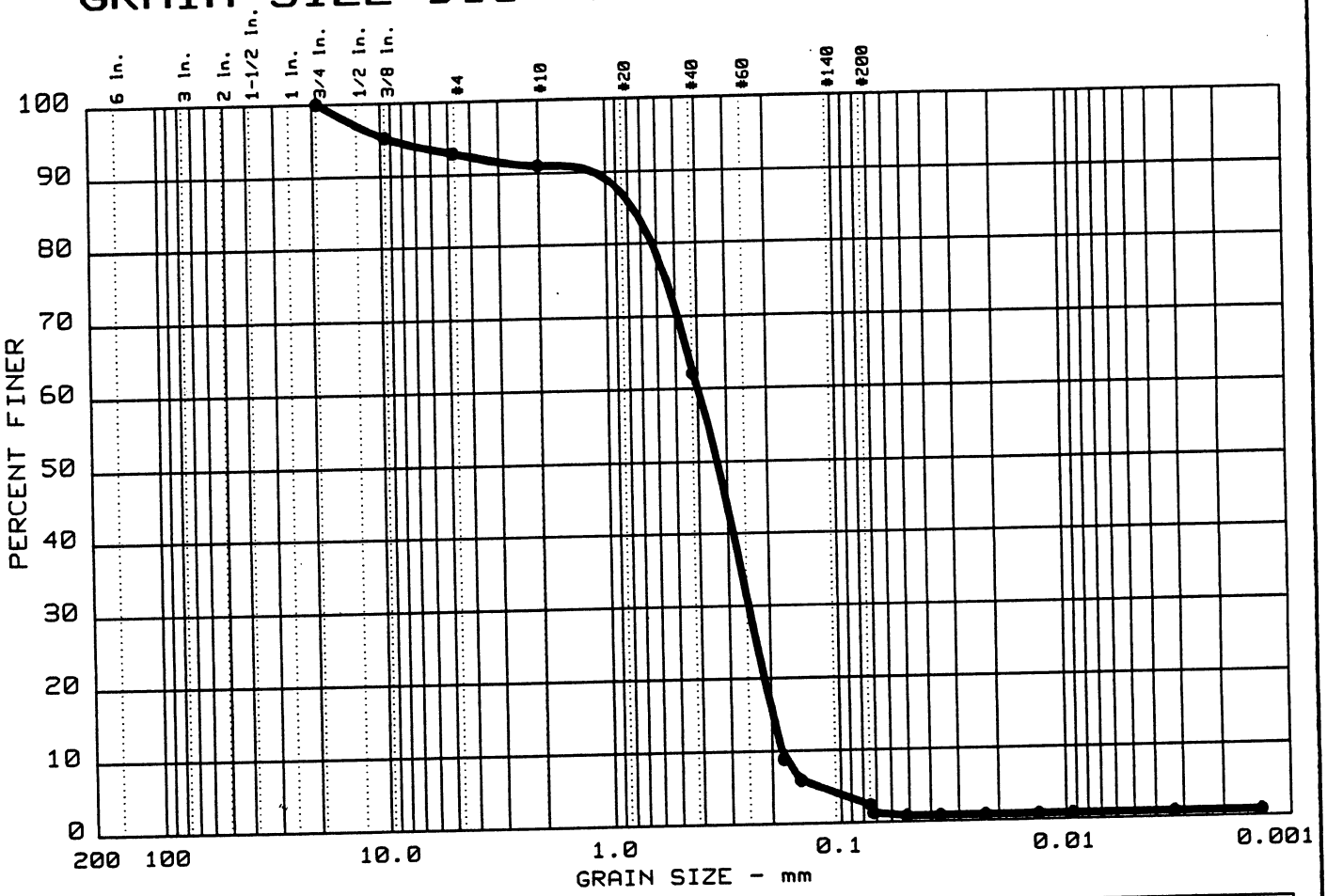
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	7.1	90.5	1.5	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.76	0.40	0.33	0.247	0.1972	0.1807	0.85	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-14, 14'-16'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

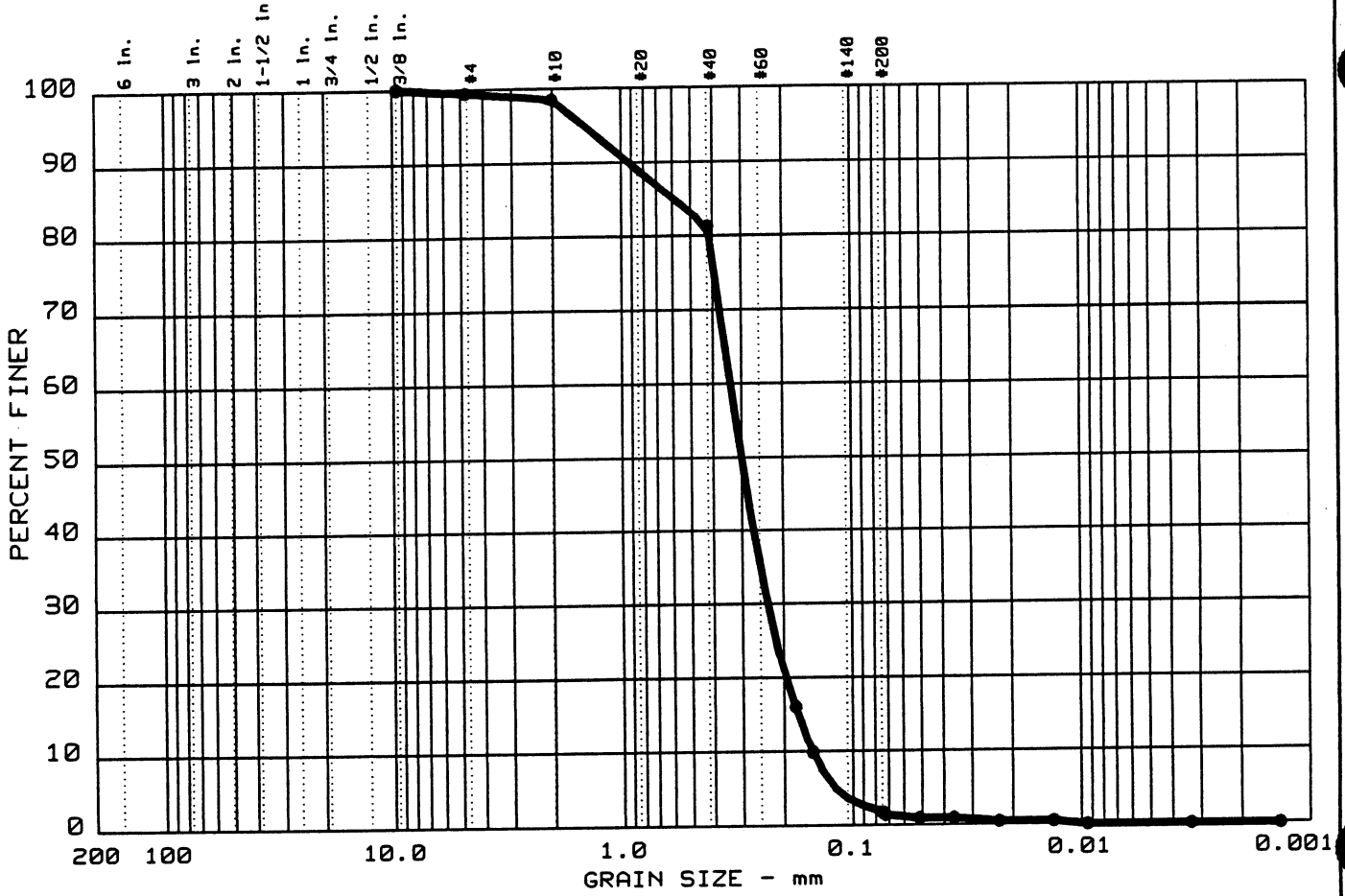
Remarks:

Checked By: Bn

ASTM D1140 & D422

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.6	97.7	1.7	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.58	0.34	0.30	0.234	0.1726	0.1486	1.09	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-15, 8'-10'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BM

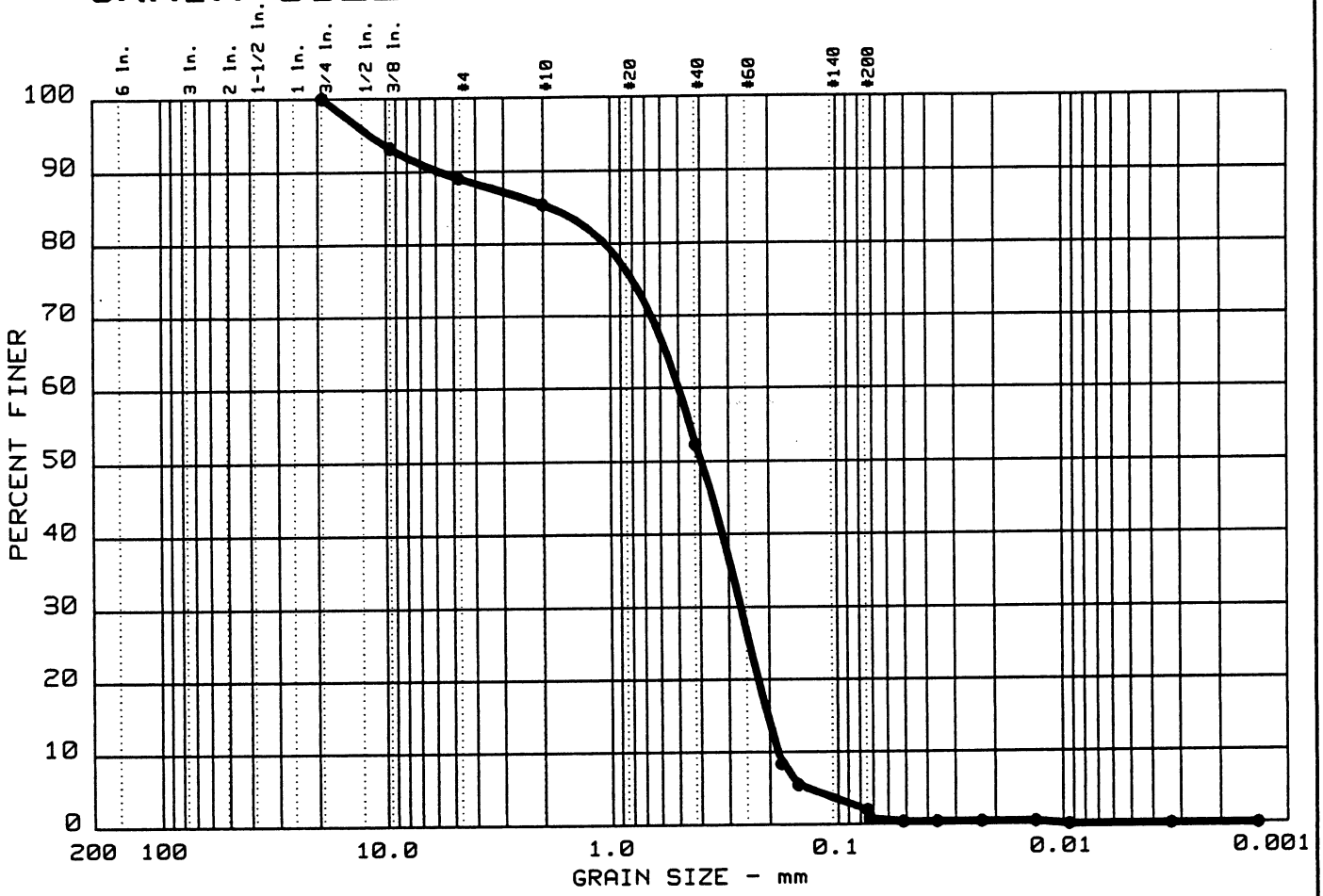
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	10.9	87.1	2.0	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.84	0.50	0.39	0.266	0.2032	0.1832	0.78	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-15, 30'-32'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

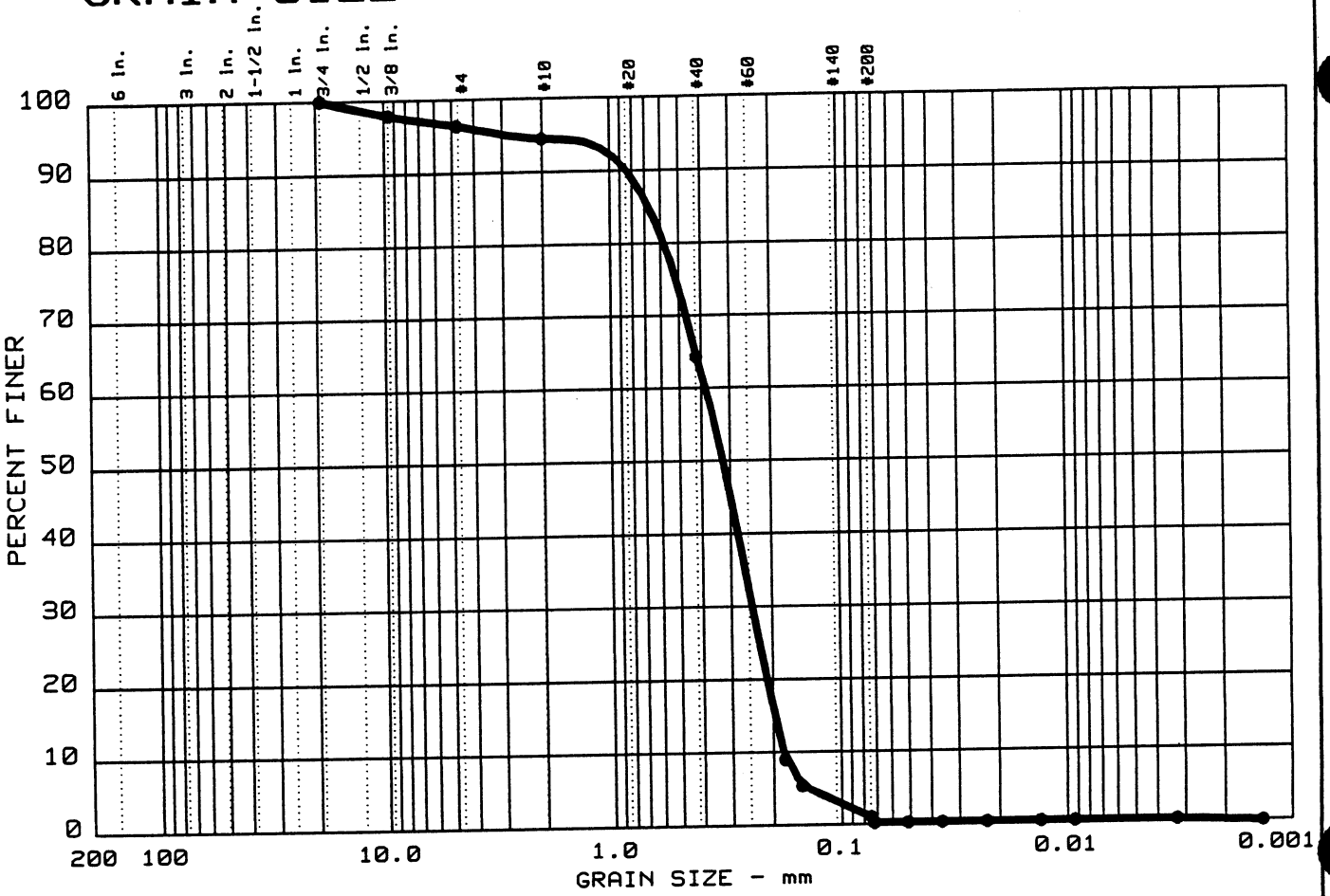
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	3.6	95.4	0.7	0.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.67	0.38	0.32	0.244	0.1957	0.1801	0.86	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-16, 14'-15.2'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

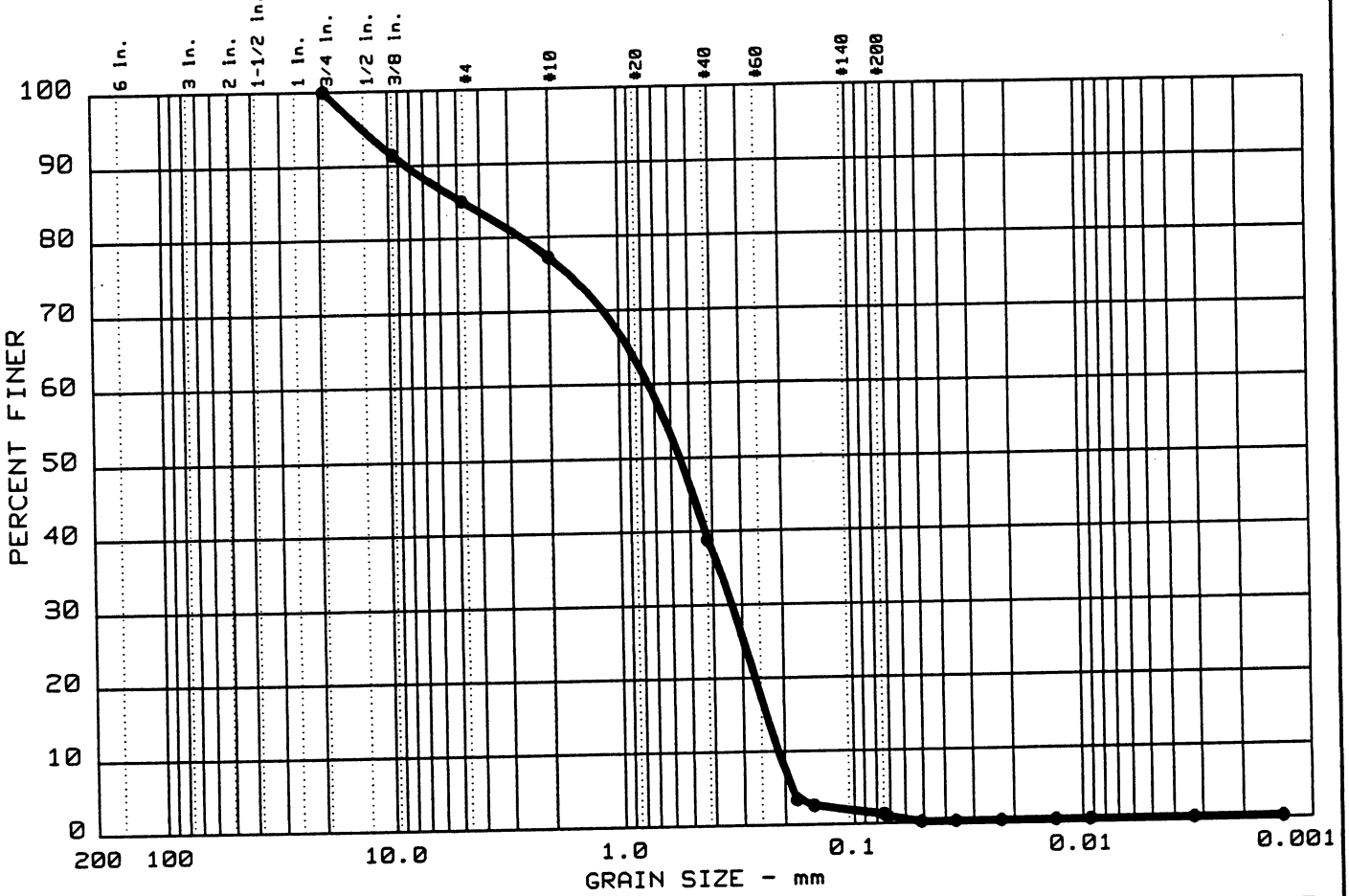
Remarks:

Checked By: BM

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	15.0	83.7	1.1	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			4.73	0.75	0.55	0.332	0.2391	0.2128	0.69	3.5

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-16, 15.2'-16'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BM

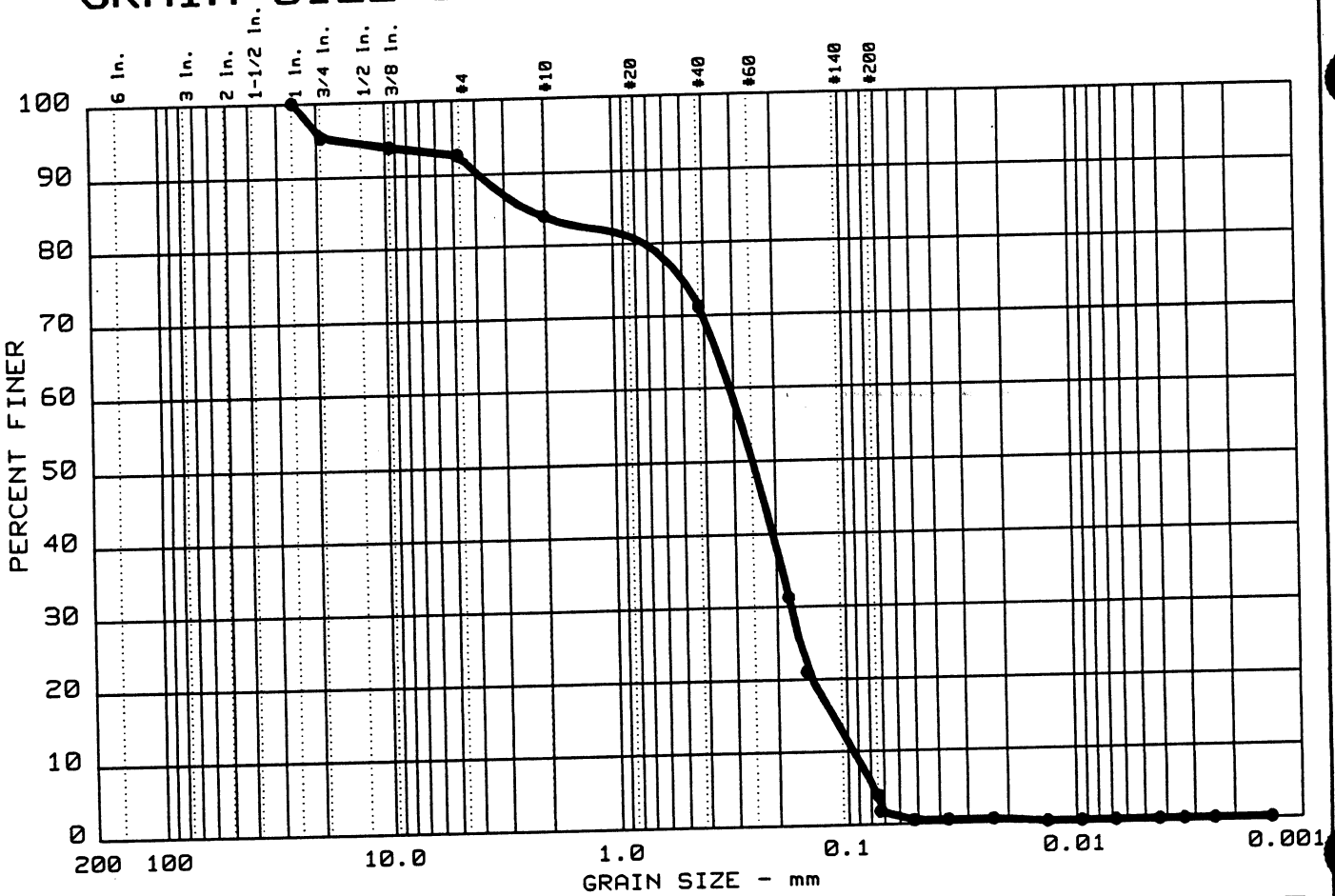
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	7.4	88.6	3.9	0.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.34	0.31	0.25	0.173	0.1156	0.0940	1.02	3.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BE-17, 14'-16'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

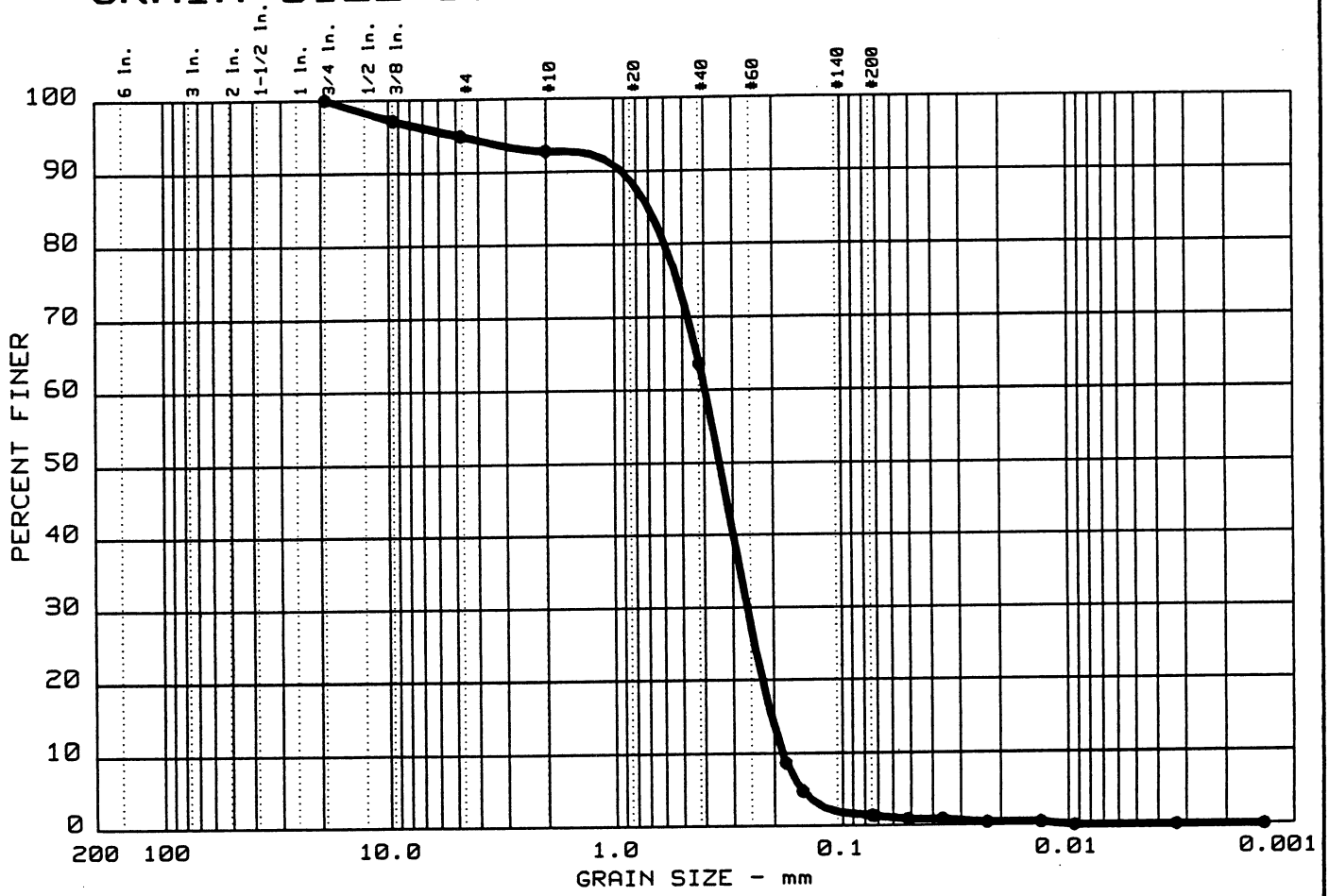
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	5.0	93.6	1.4	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.70	0.40	0.34	0.260	0.2044	0.1834	0.93	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● MWE-18, 14'-16'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

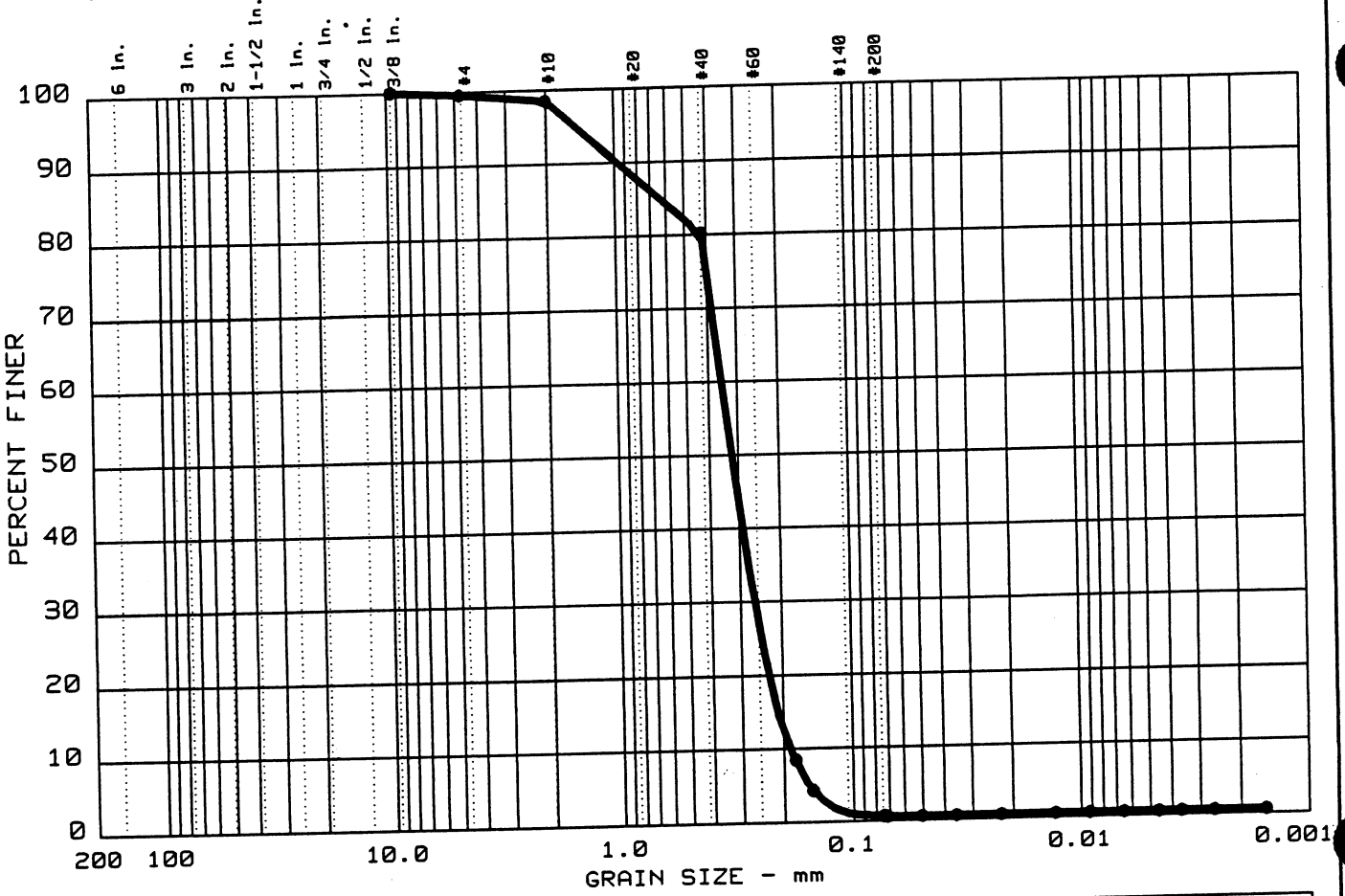
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.5	98.8	0.1	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.63	0.35	0.32	0.261	0.2109	0.1877	1.03	1.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-14, 68"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BN

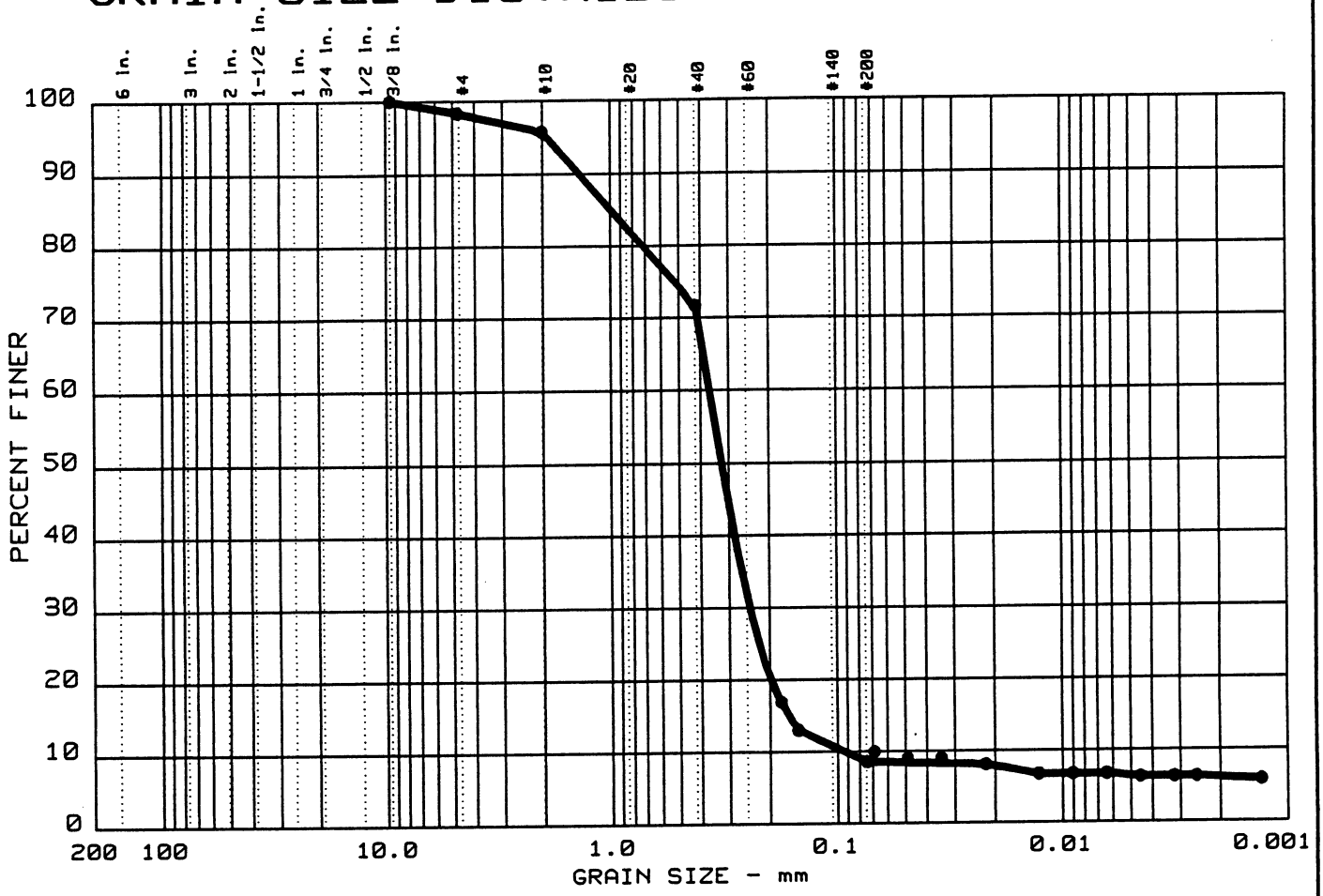
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.7	89.7	2.1	6.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.99	0.37	0.32	0.244	0.1648	0.0916	1.77	4.0

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-14, 12'	SP-SM	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BM

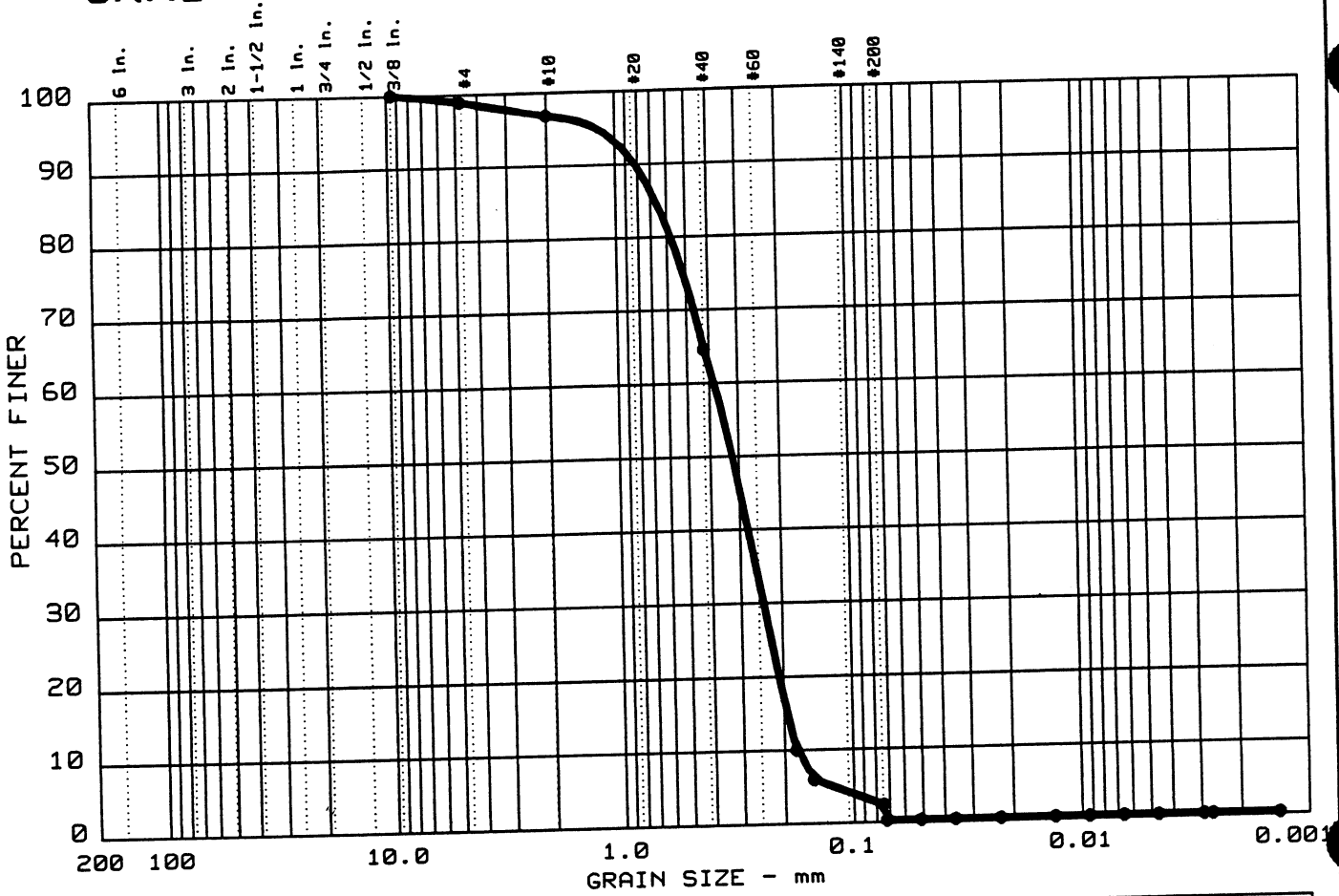
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.1	96.5	2.1	0.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.67	0.38	0.32	0.240	0.1925	0.1756	0.87	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE 17, 12'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BN

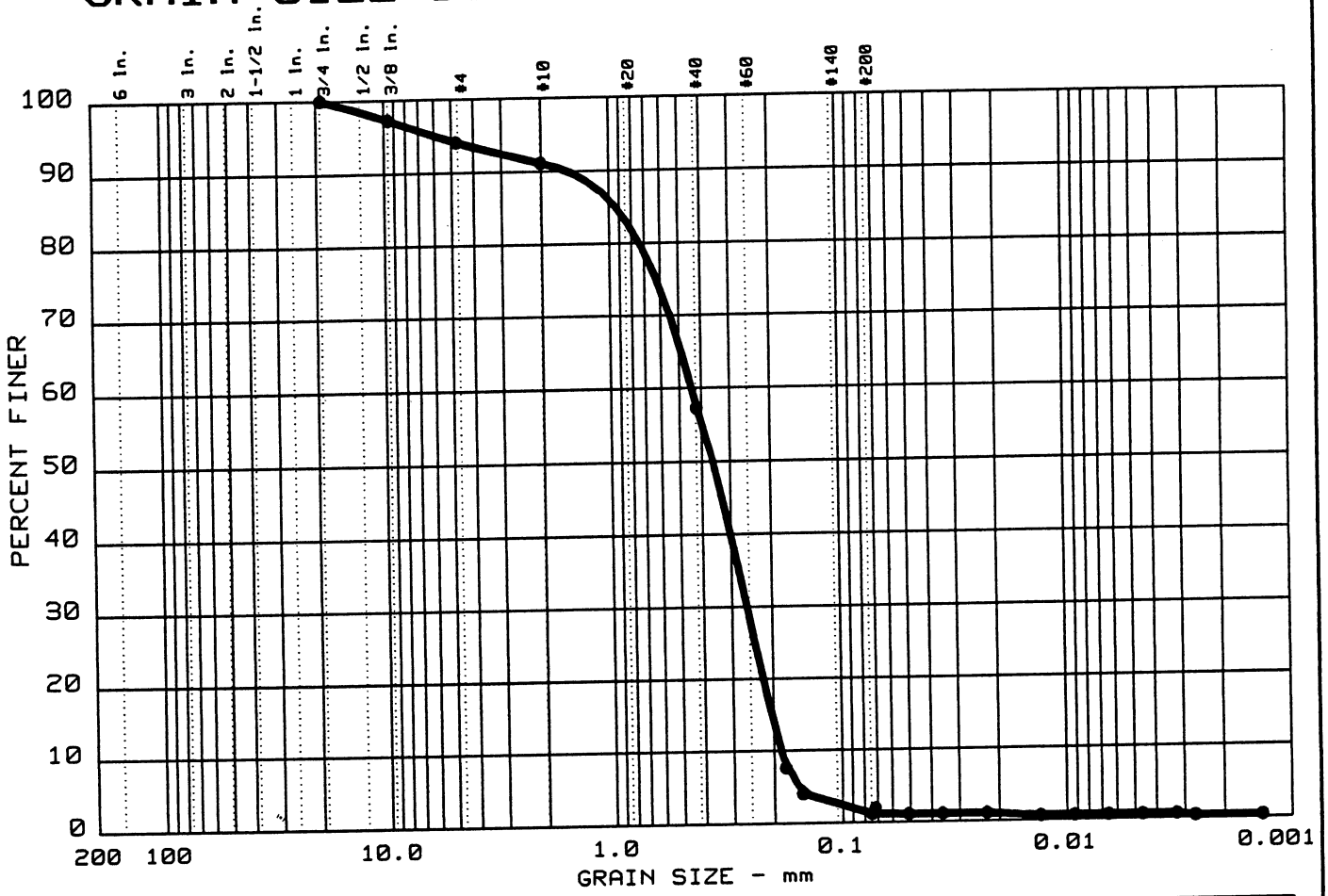
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	5.9	92.9	0.5	0.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.93	0.44	0.36	0.258	0.2025	0.1856	0.81	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE - 18, 10'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

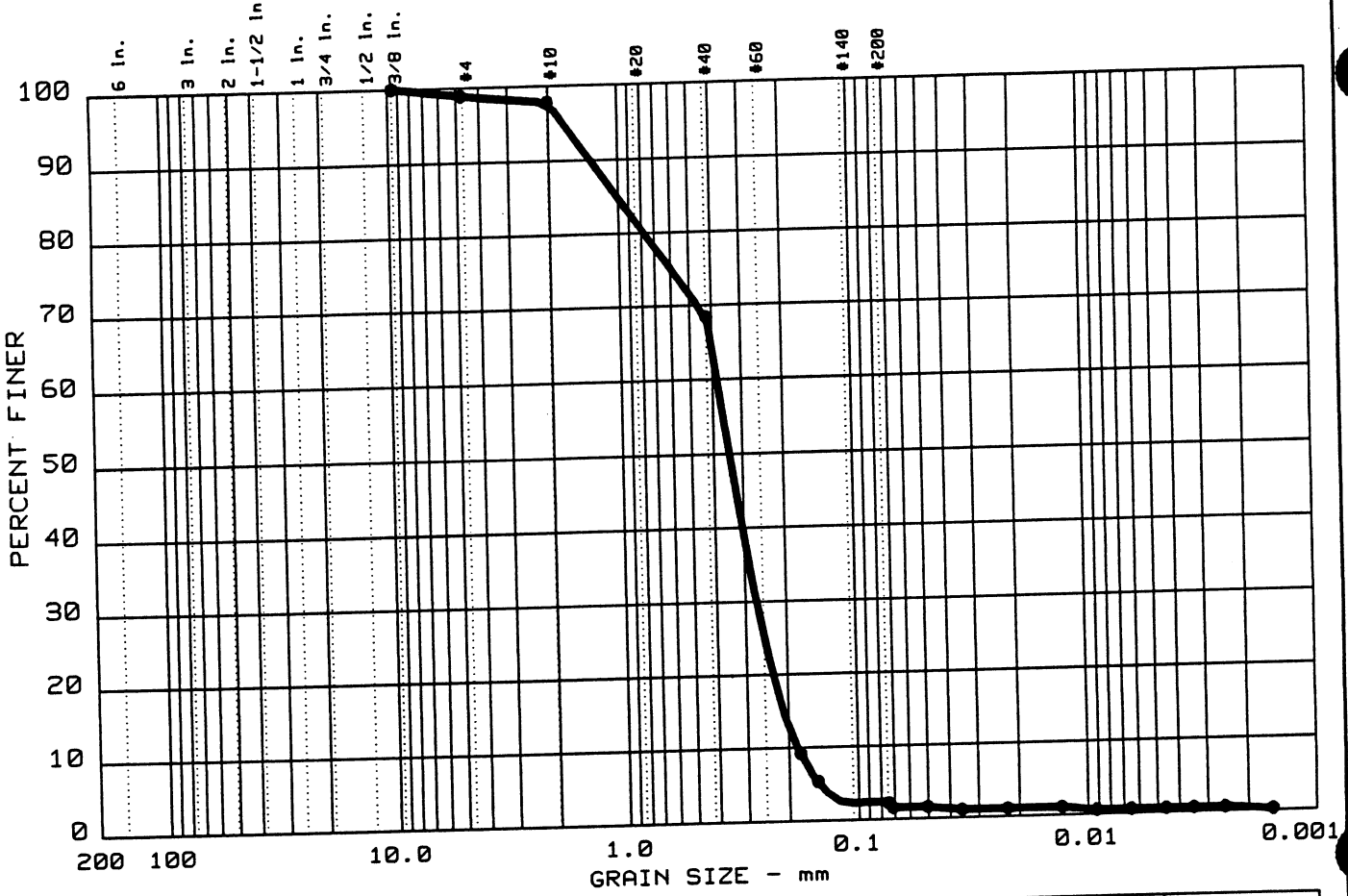
Remarks:

Checked By: BM

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.1	96.7	1.6	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.01	0.38	0.34	0.269	0.2101	0.1830	1.03	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-19, 14'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BA

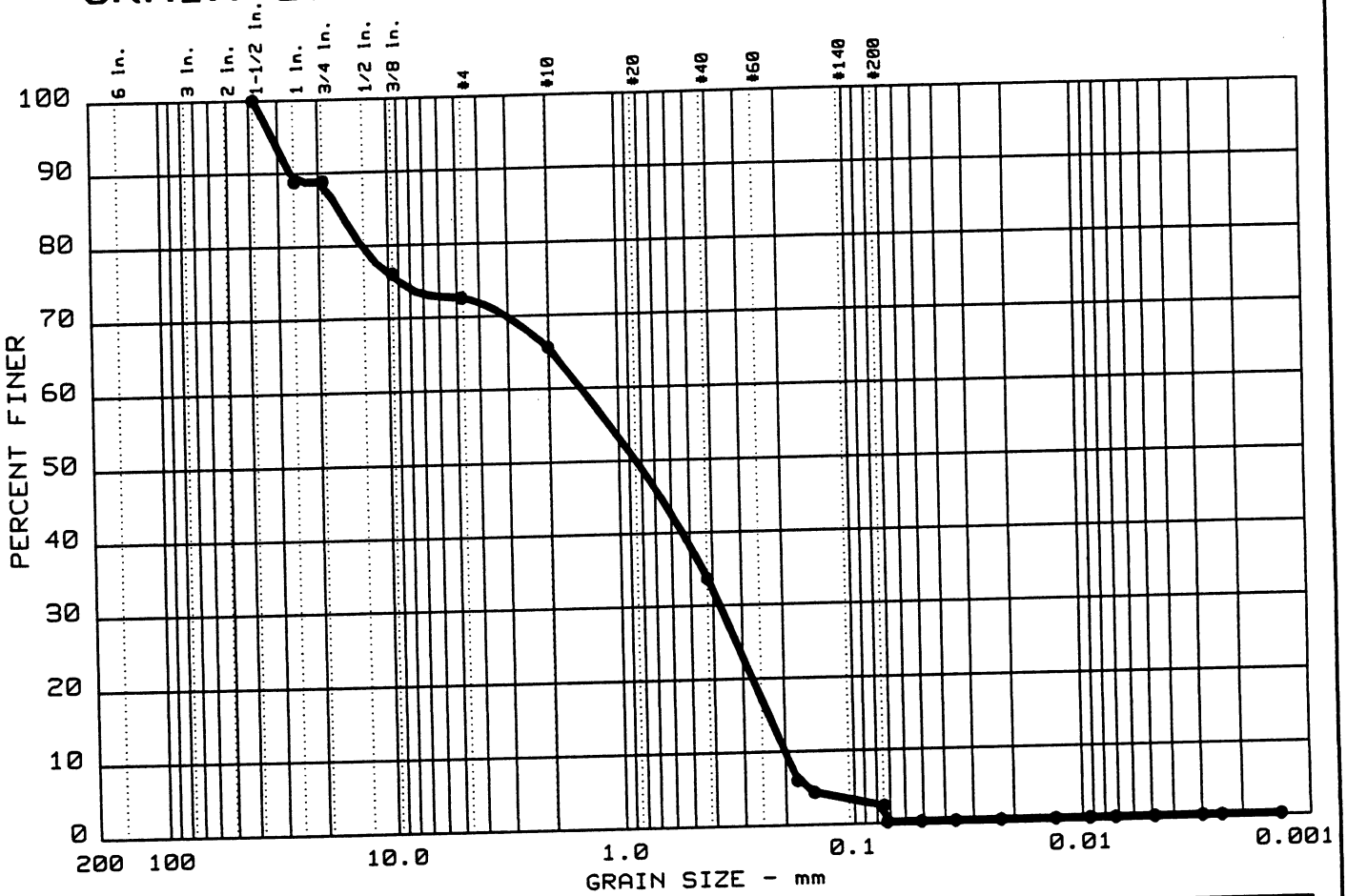
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ———

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	27.4	70.2	2.2	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			16.22	1.45	0.84	0.375	0.2339	0.1991	0.49	7.3

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-20, 9'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BA

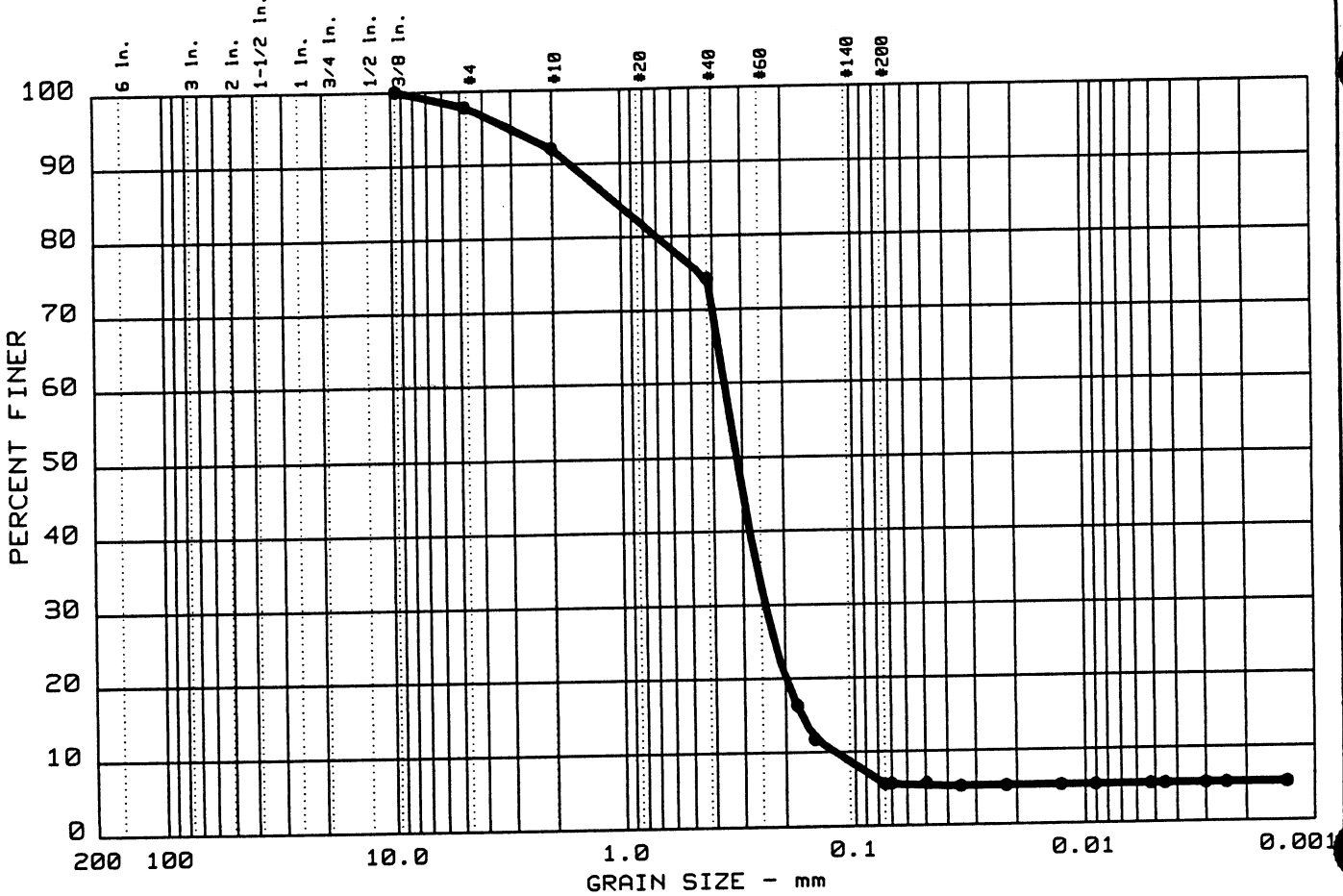
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	2.2	92.2	0.4	5.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.07	0.36	0.32	0.242	0.1694	0.1213	1.35	2.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-21, 12'	SP-SM	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BN

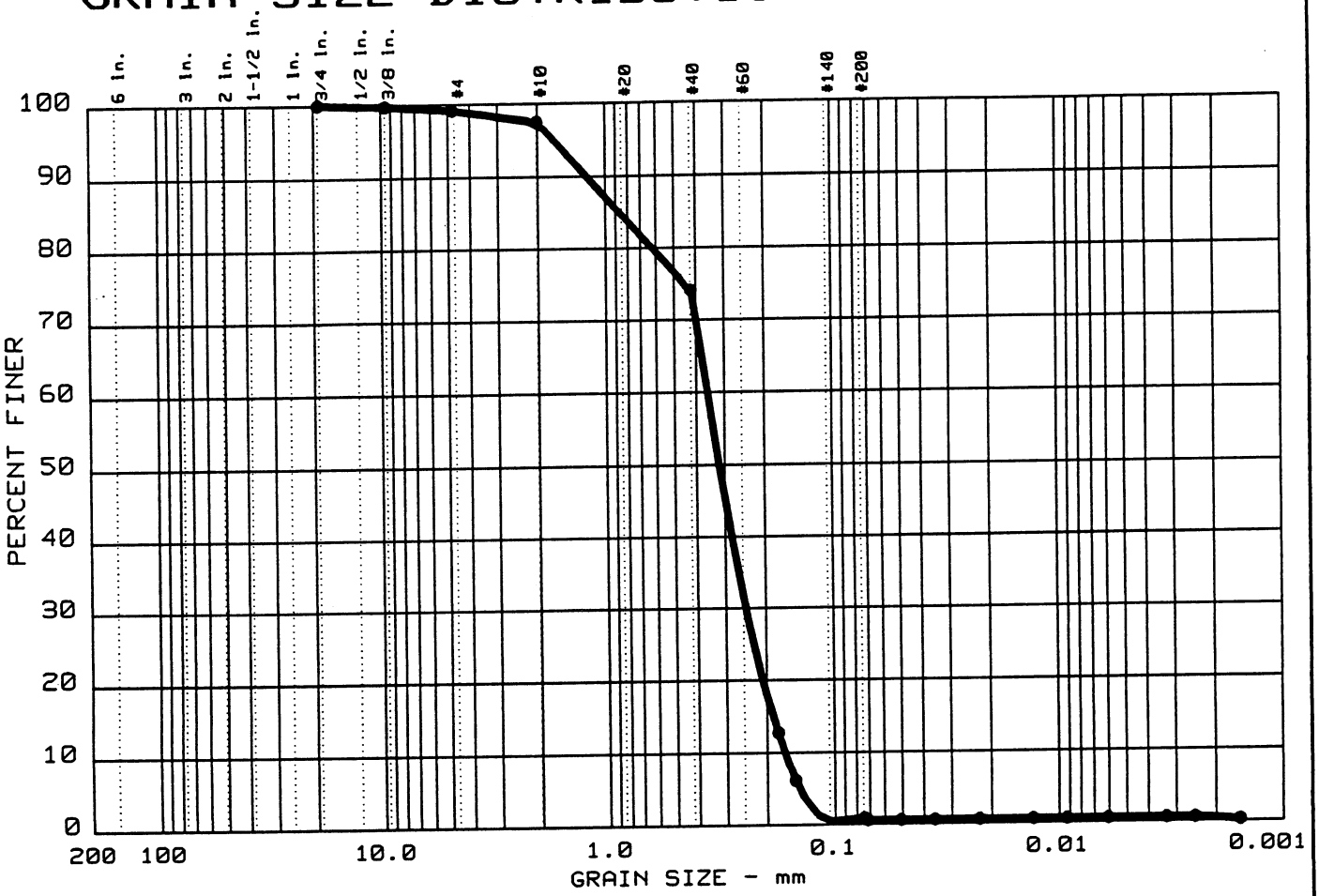
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.9	98.2	0.3	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.87	0.36	0.32	0.245	0.1873	0.1661	1.01	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-22, 12'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

Remarks:

Checked By: BN

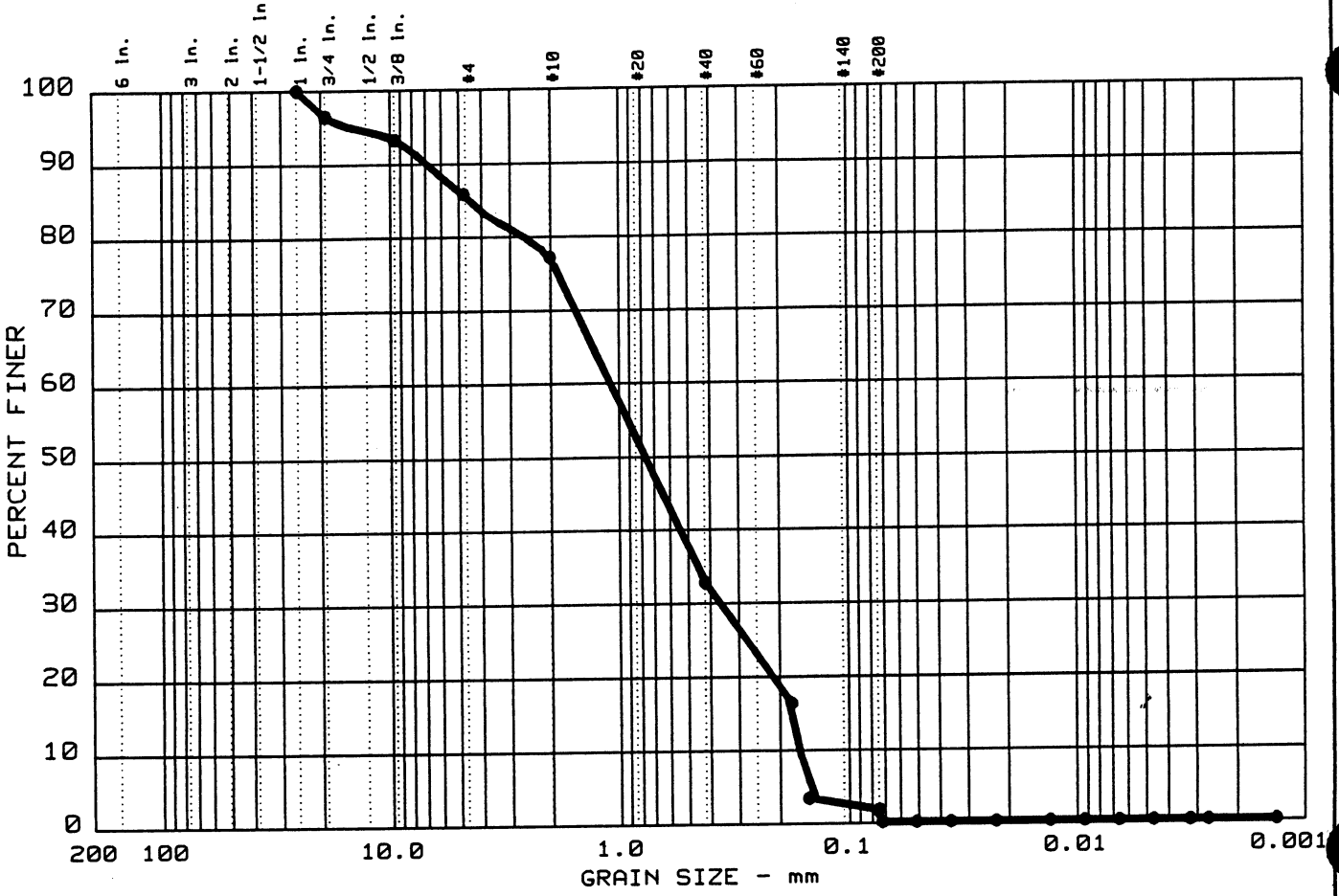
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	14.1	84.0	1.7	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			4.47	1.09	0.76	0.361	0.1736	0.1624	0.74	6.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-30, 10'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-07-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

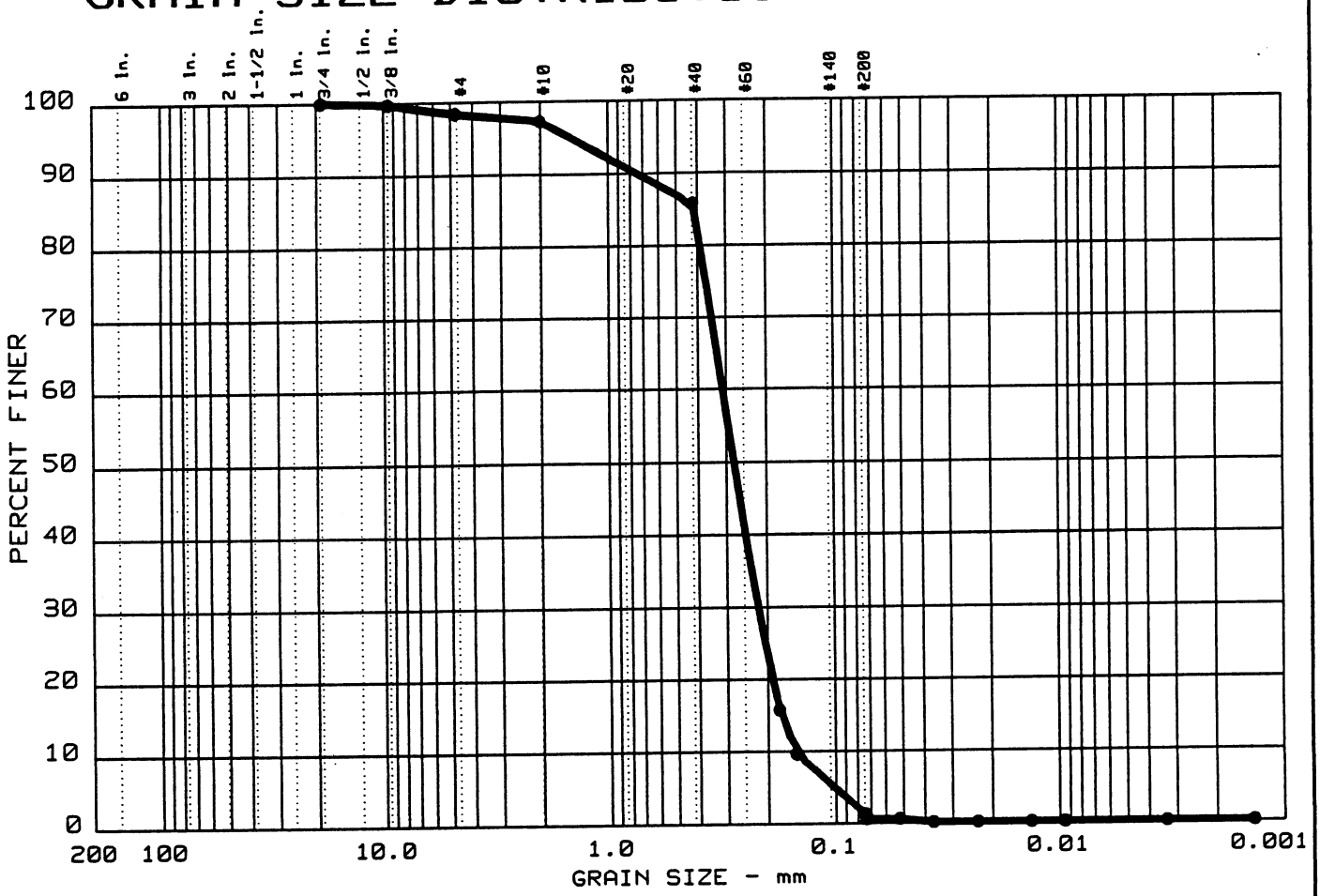
Remarks:

Checked By: BN

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	1.6	97.1	1.1	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.42	0.31	0.28	0.219	0.1730	0.1490	1.03	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-38, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

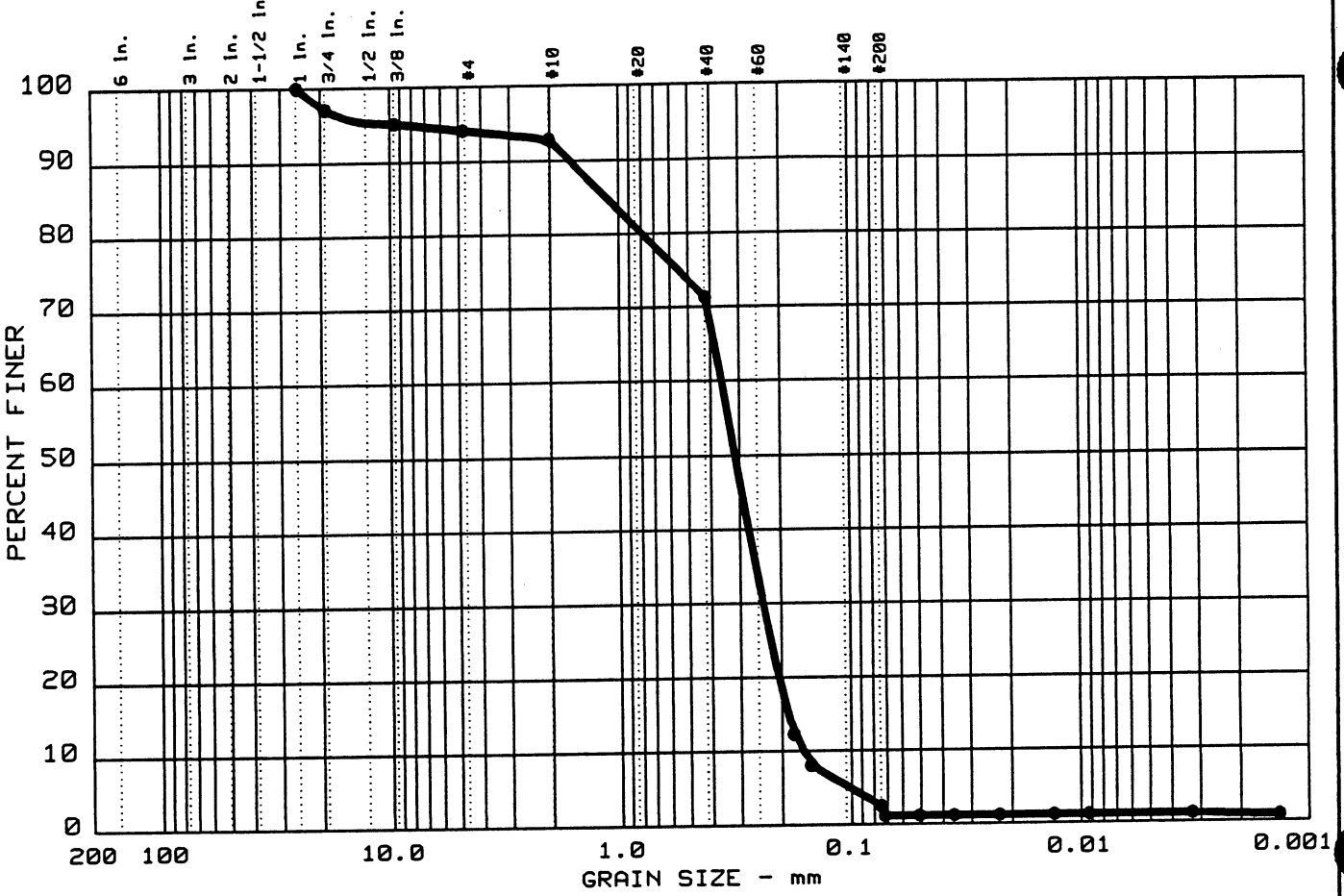
Remarks:

Checked By: BN

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	5.9	91.6	1.3	1.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.12	0.36	0.31	0.239	0.1871	0.1611	0.99	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-39, 11'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

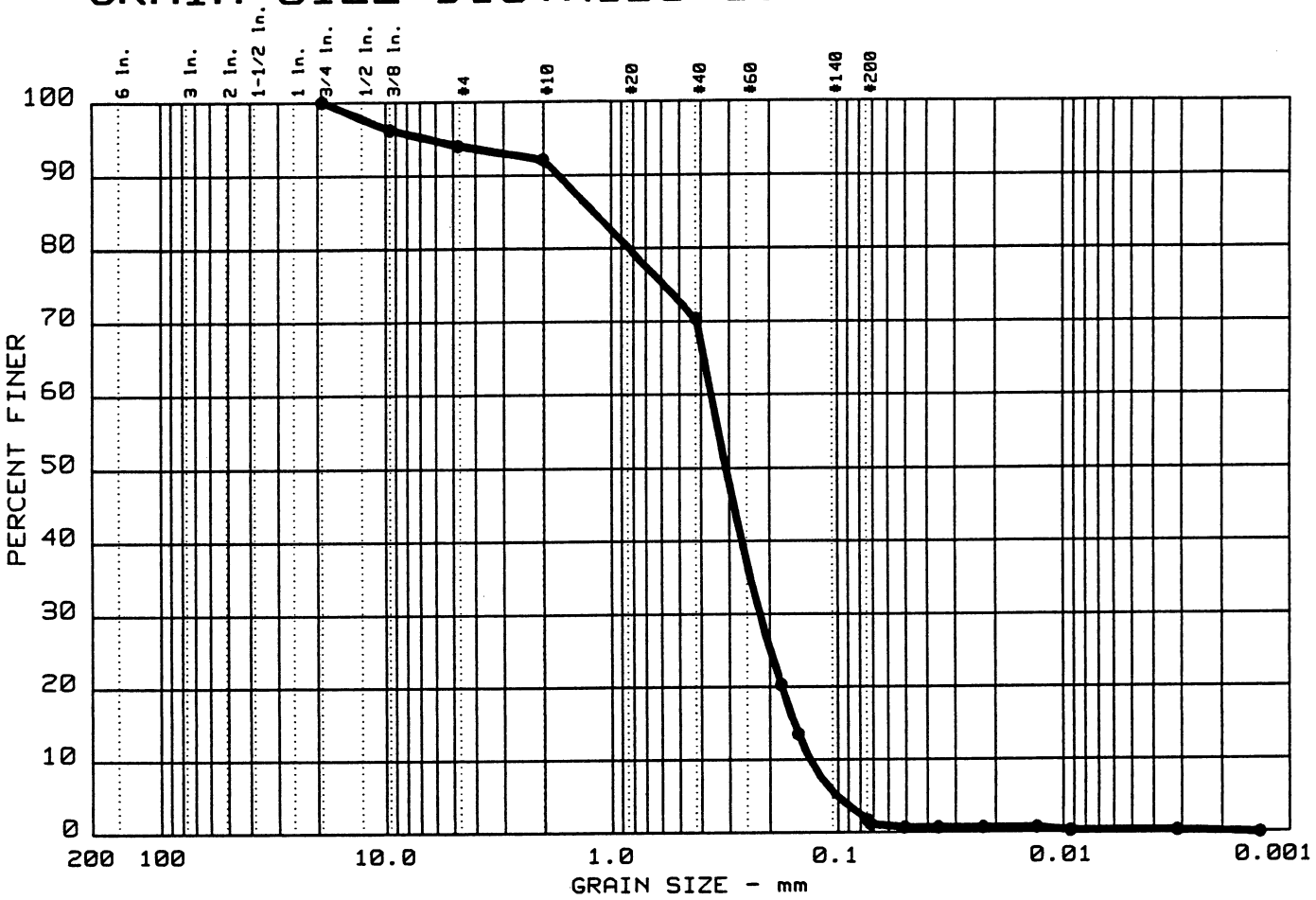
Remarks:

Checked By: bn

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	6.0	92.3	1.4	0.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.19	0.36	0.31	0.221	0.1547	0.1327	1.02	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-40, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

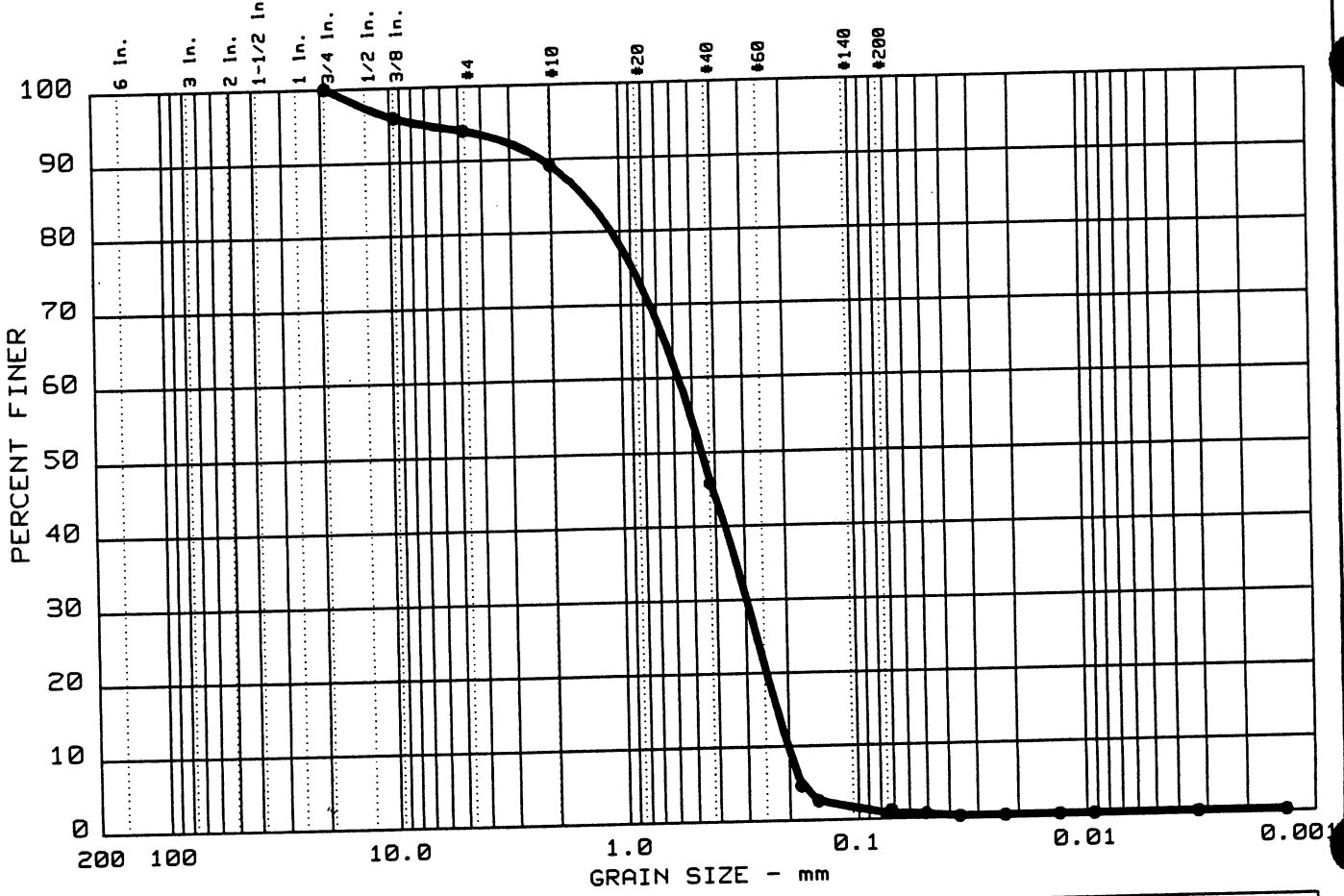
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	6.0	93.2	0.6	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.43	0.57	0.46	0.298	0.2231	0.2011	0.77	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-41, 5'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BM

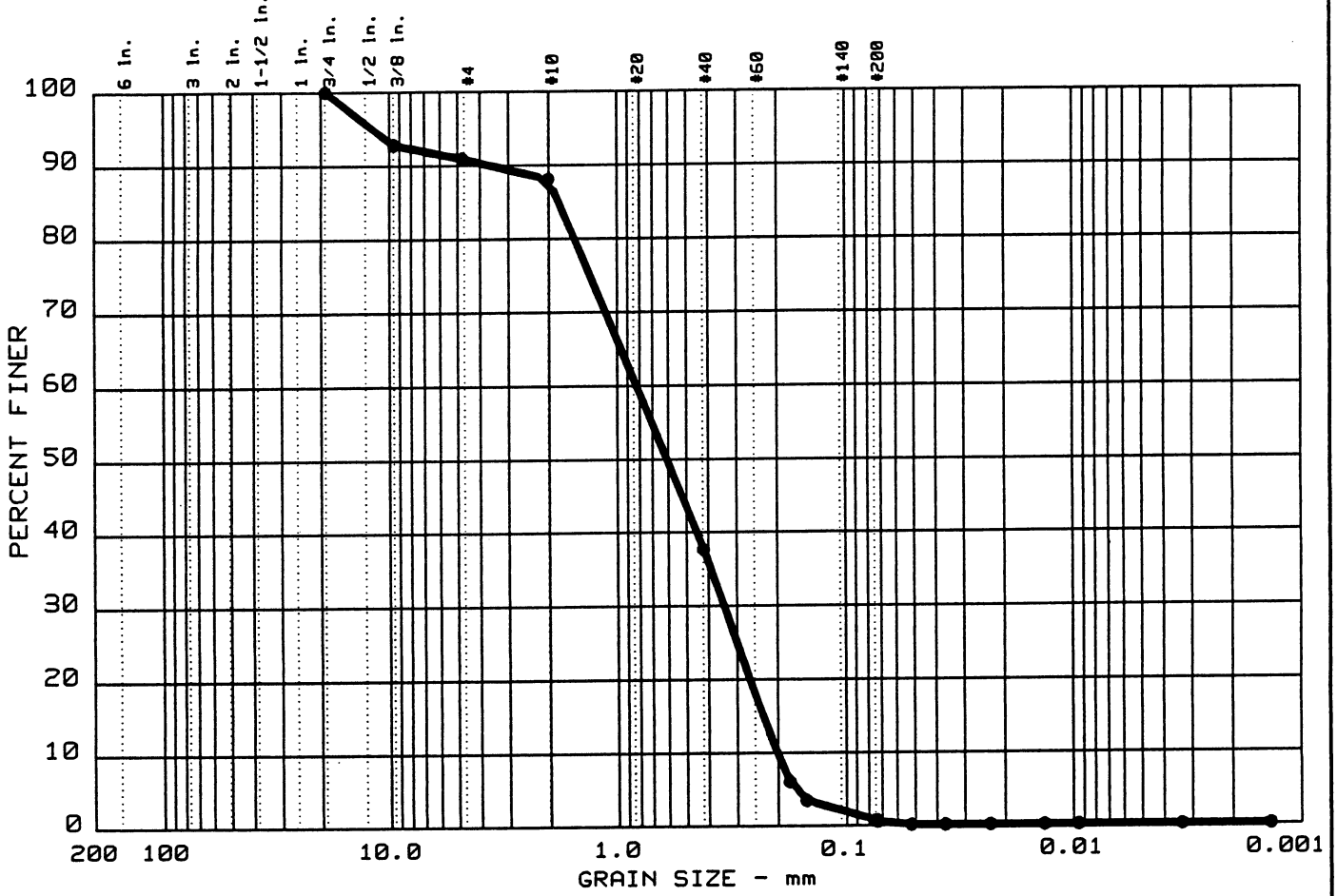
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	9.1	90.1	0.7	0.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.81	0.82	0.60	0.342	0.2315	0.2007	0.71	4.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-42, 73"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

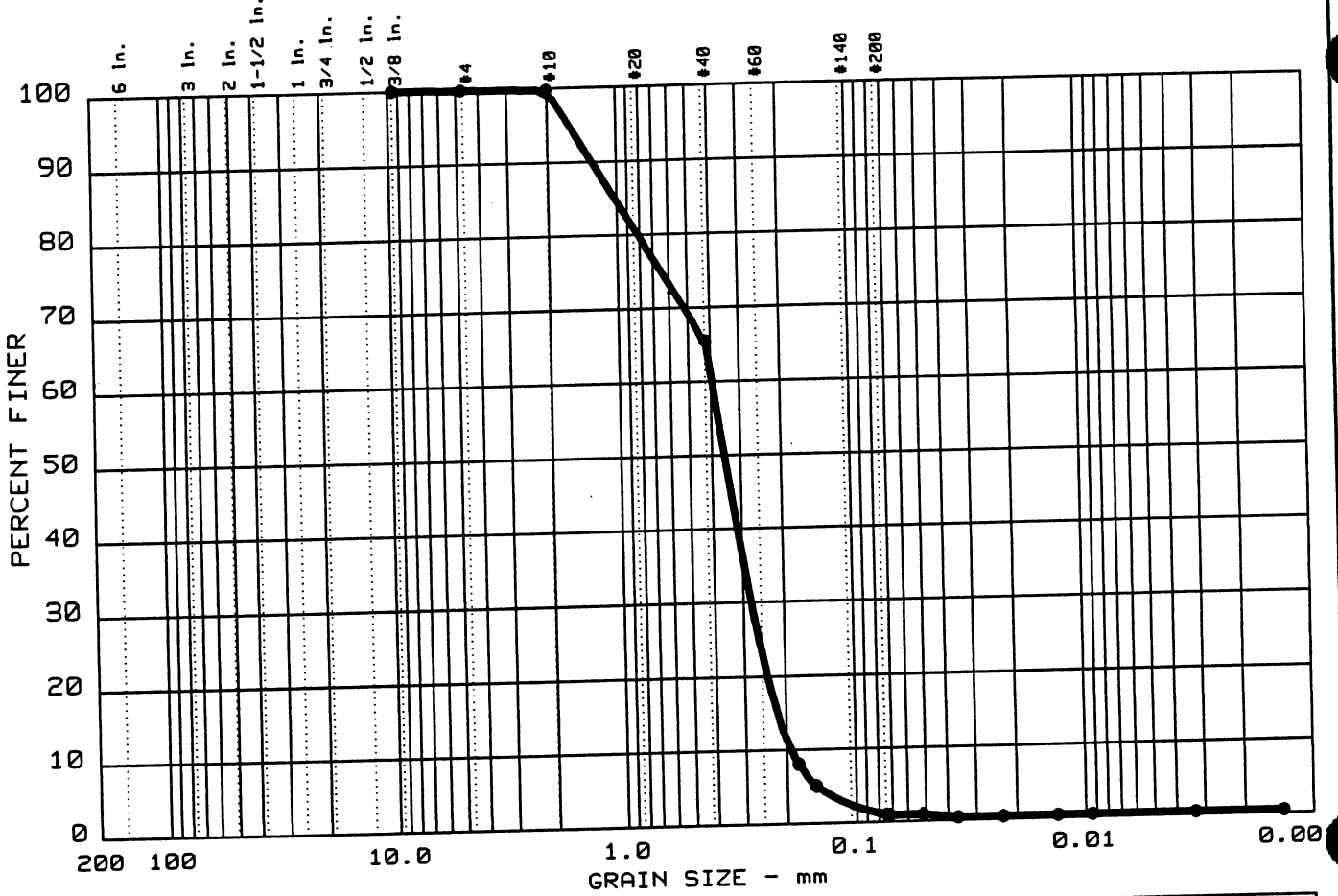
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0.1	98.9	0.6	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.02	0.40	0.35	0.278	0.2183	0.1923	1.02	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-43, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

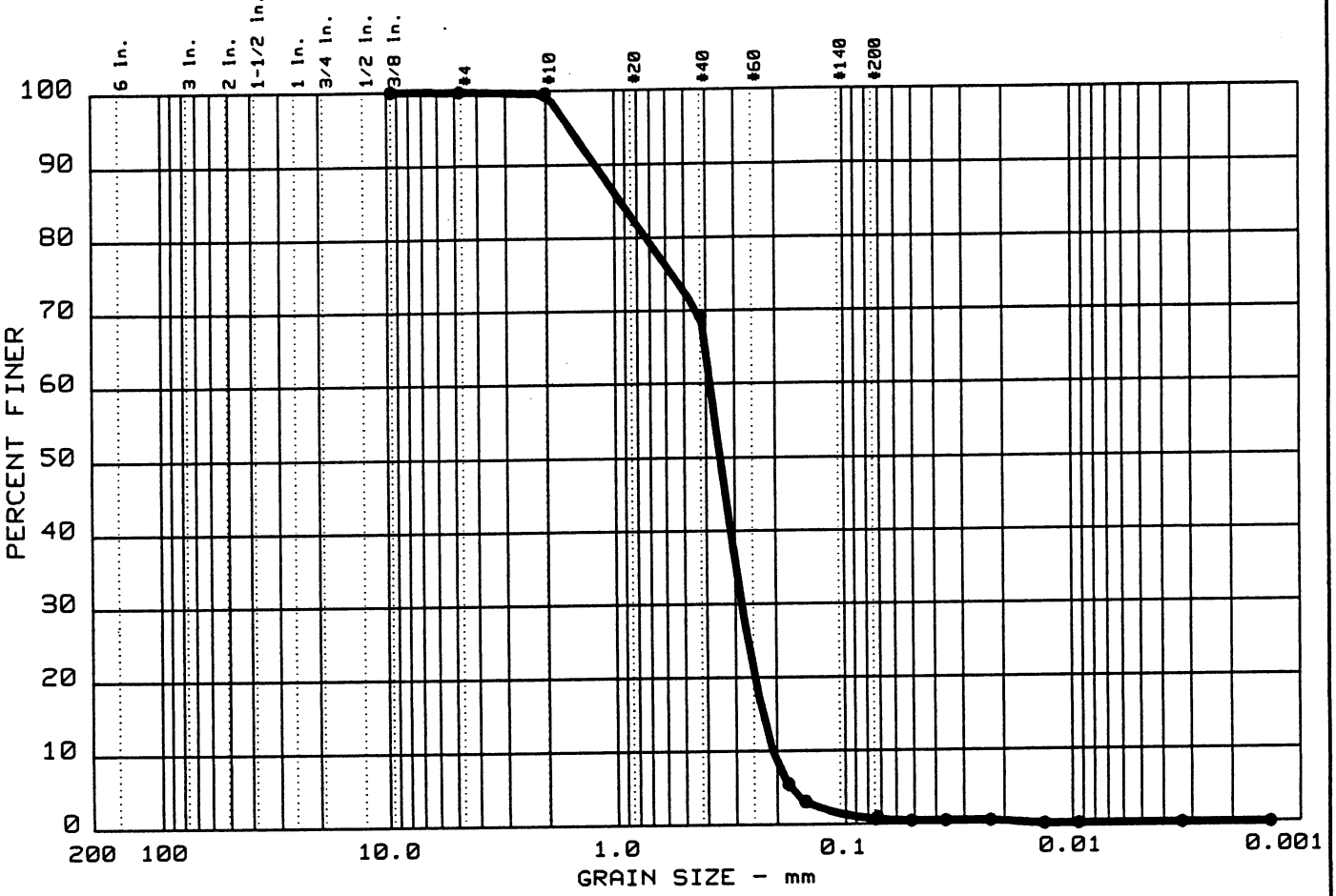
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.1	99.2	0.7	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.93	0.38	0.35	0.282	0.2291	0.2082	0.99	1.8

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-44, 80"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

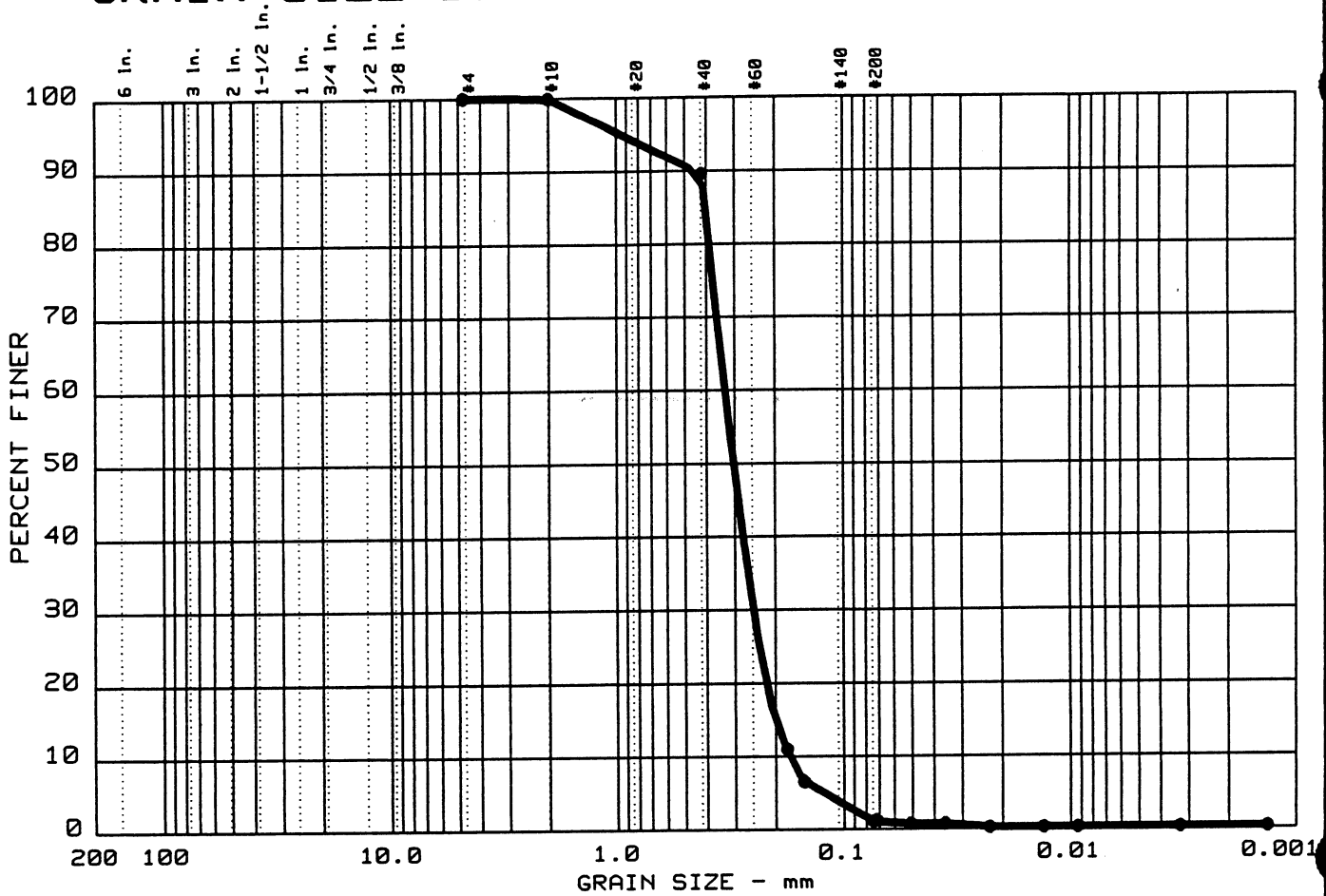
Remarks:

Checked By: BD

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	0.0	98.9	0.8	0.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.41	0.33	0.30	0.249	0.2002	0.1722	1.09	1.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-45, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

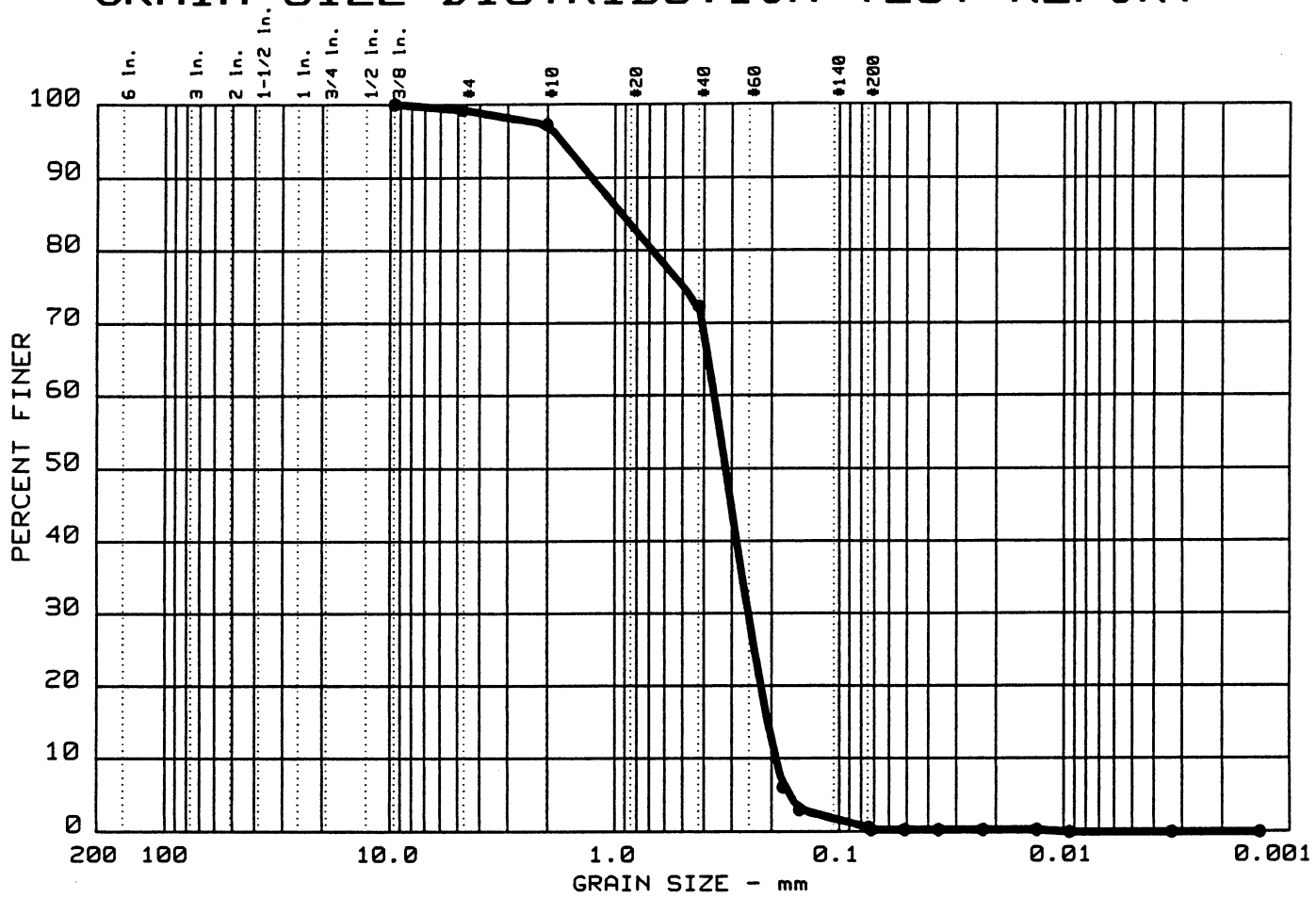
Remarks:

Checked By: BM

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.8	98.6	0.6	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.92	0.36	0.32	0.254	0.2075	0.1910	0.94	1.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-46, 70"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BM

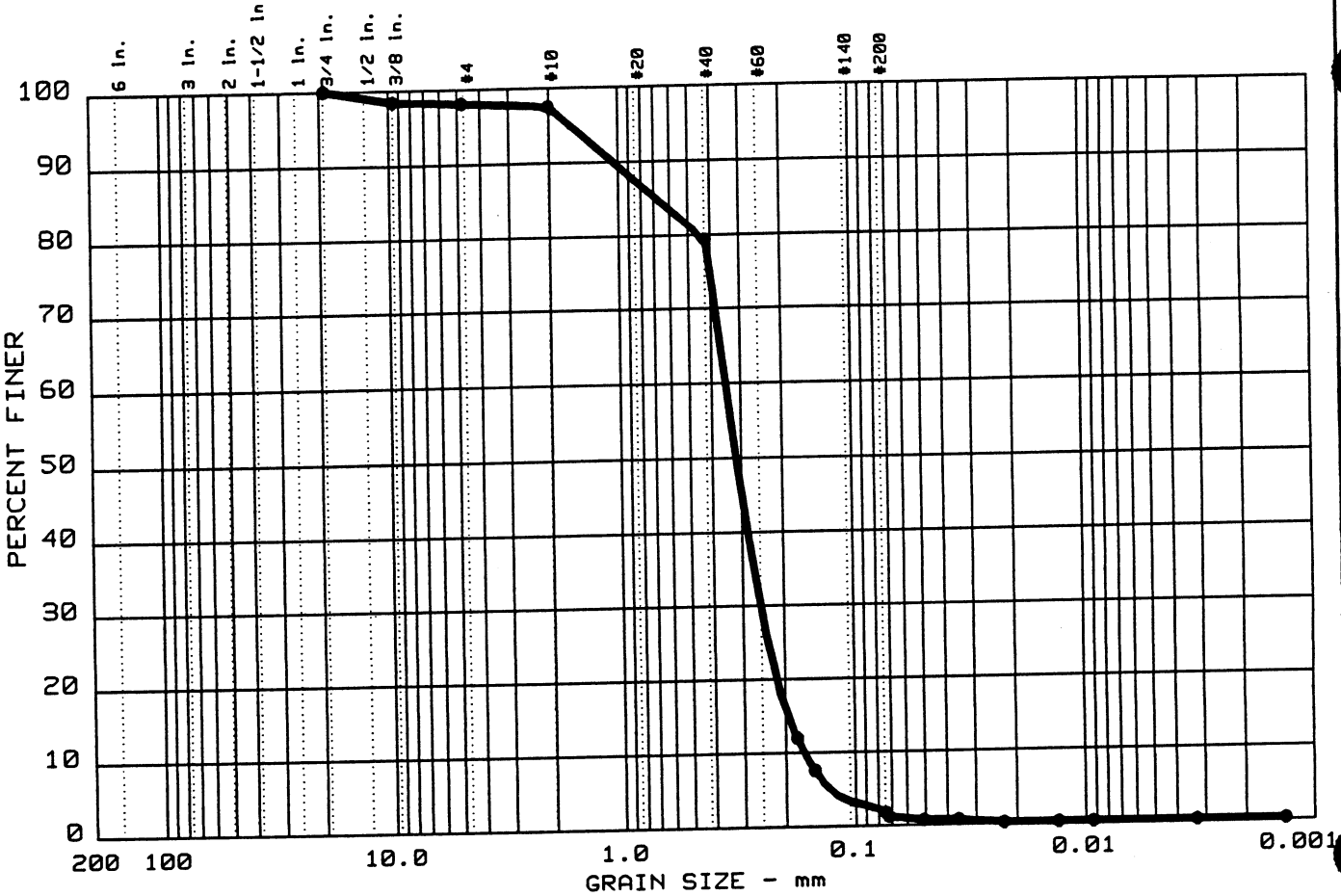
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	1.9	96.3	1.5	0.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.68	0.35	0.32	0.252	0.1954	0.1663	1.09	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● Tpe-47, 70"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

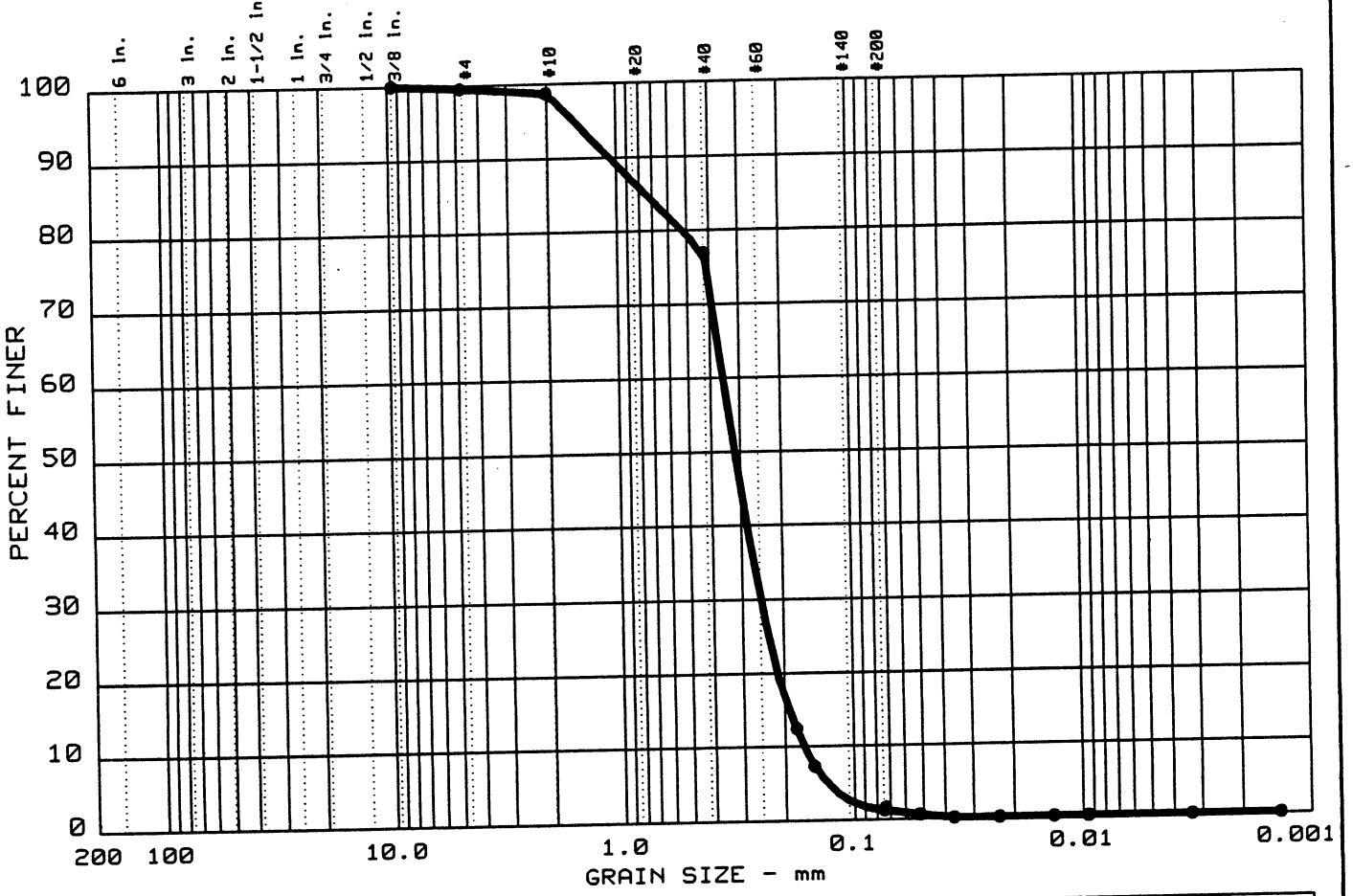
Remarks:

Checked By: BN

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.5	98.2	1.1	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.75	0.35	0.32	0.250	0.1914	0.1648	1.07	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-48, 4'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BM

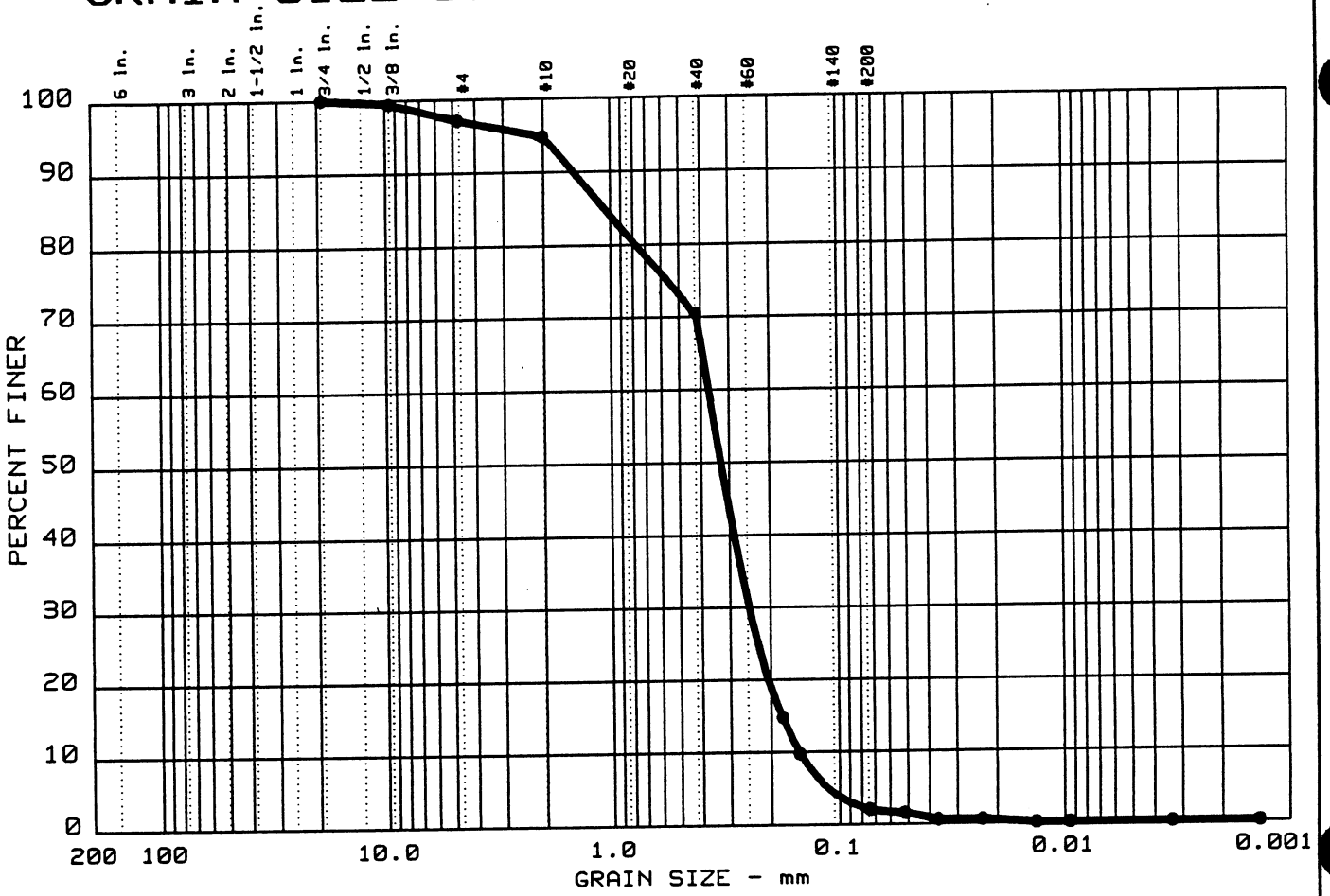
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	2.9	95.0	1.9	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.06	0.37	0.33	0.248	0.1774	0.1493	1.11	2.5

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-49, 12'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

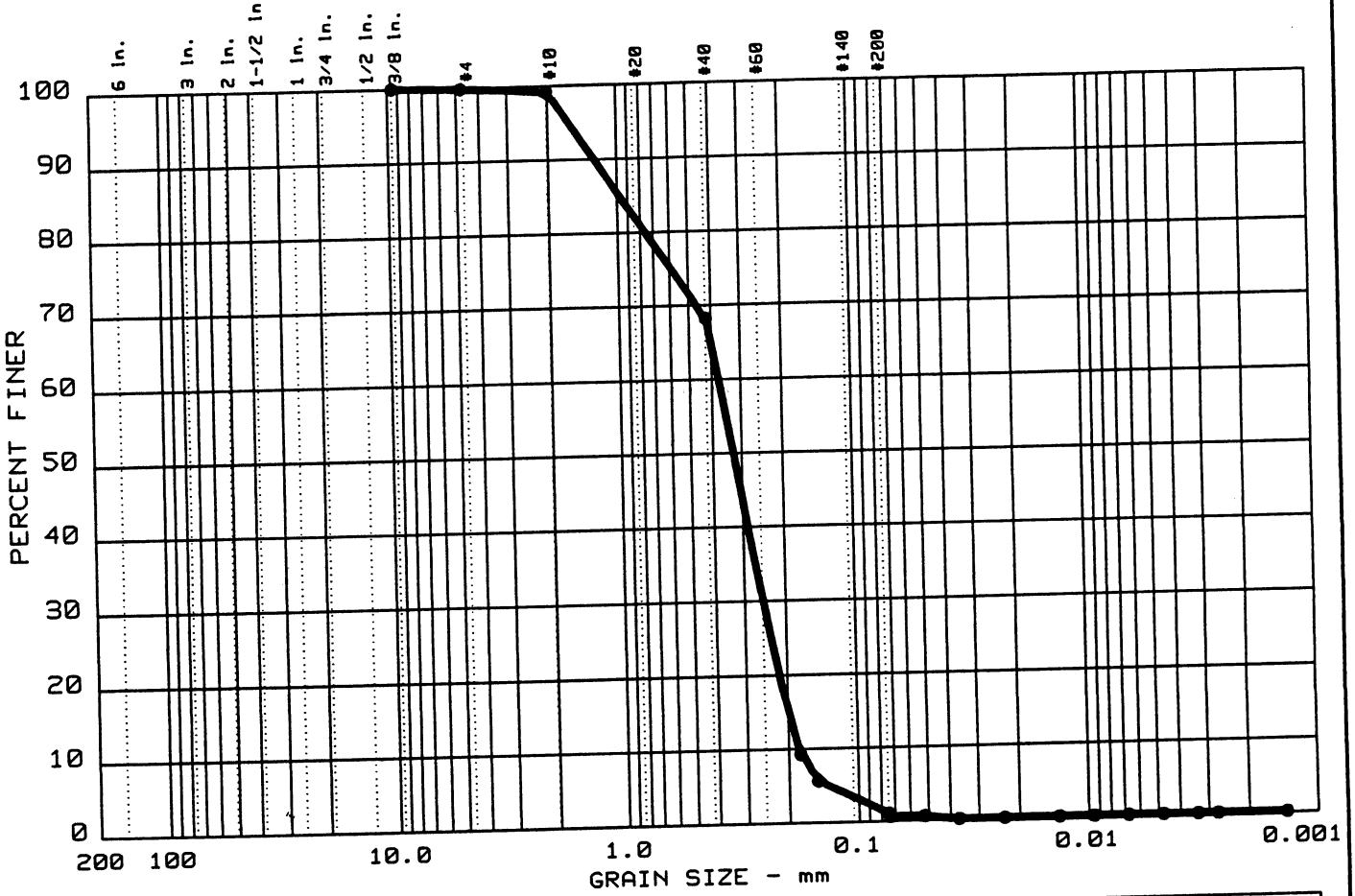
Remarks:

Checked By: BN

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.2	98.7	0.9	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.98	0.37	0.33	0.250	0.1982	0.1797	0.93	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-50, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

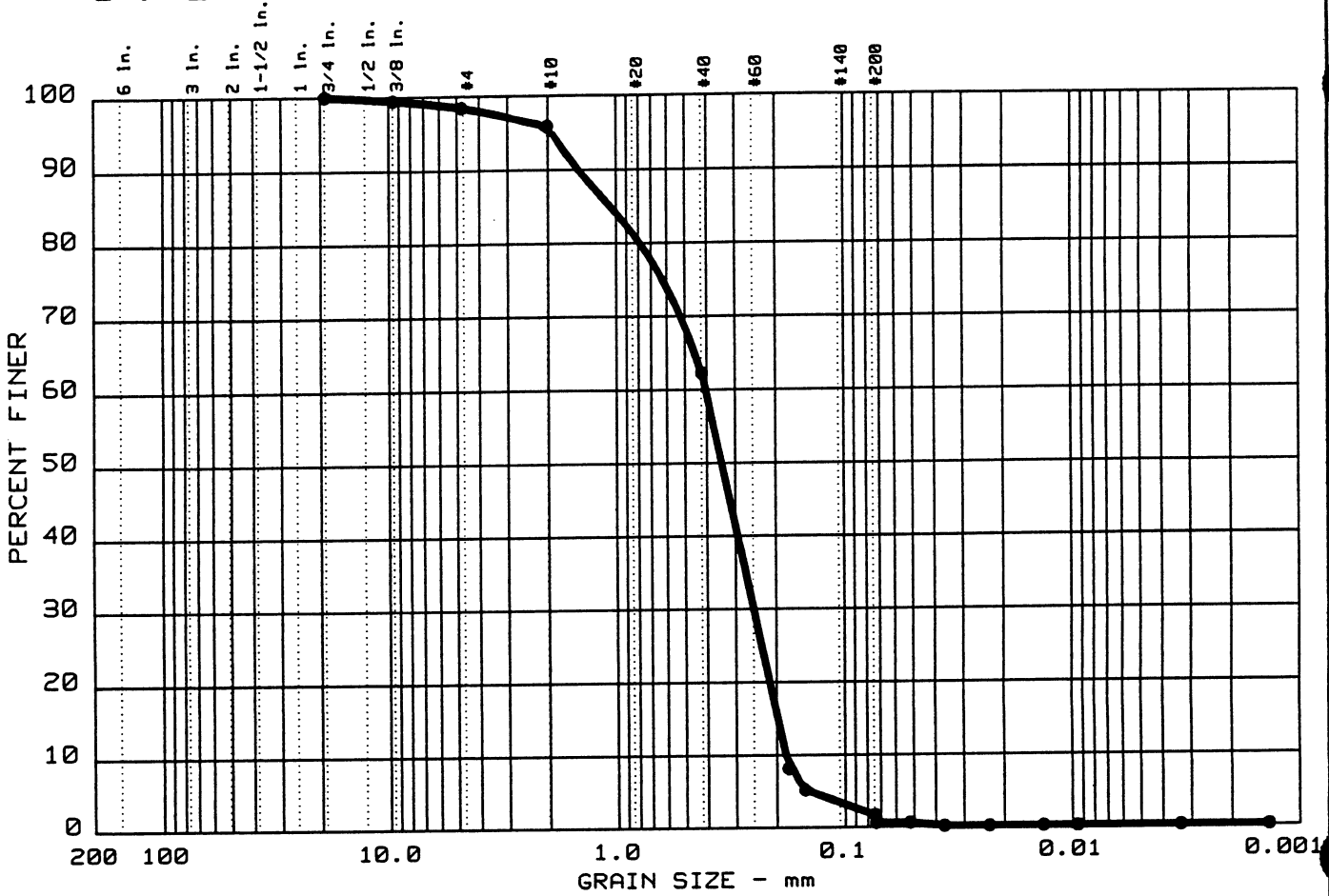
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	1.6	96.7	1.5	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.06	0.40	0.34	0.251	0.1968	0.1820	0.85	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-51, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

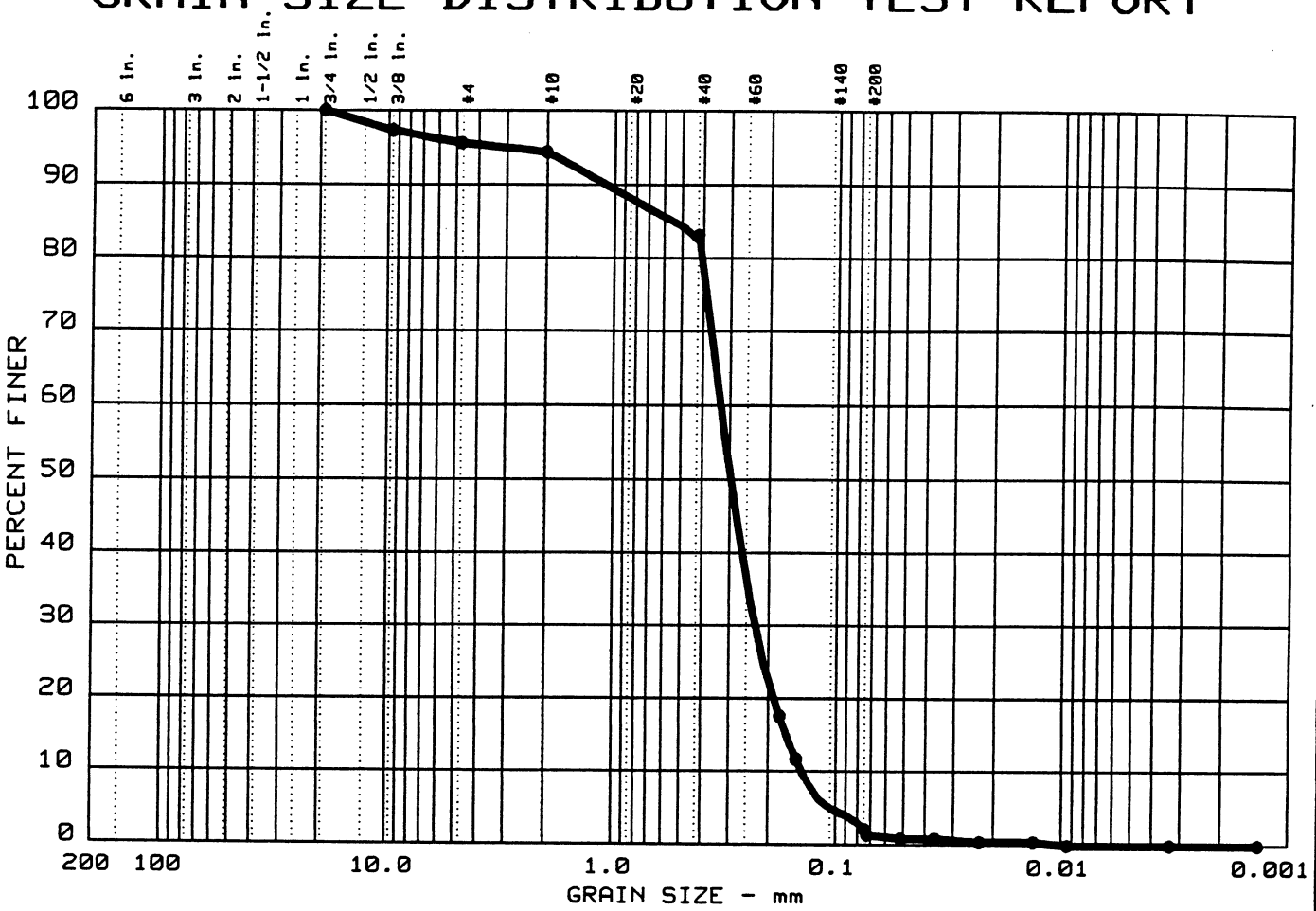
Remarks:

Checked By: Bh

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	4.4	93.5	2.1	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.54	0.33	0.30	0.229	0.1661	0.1414	1.12	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-52, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

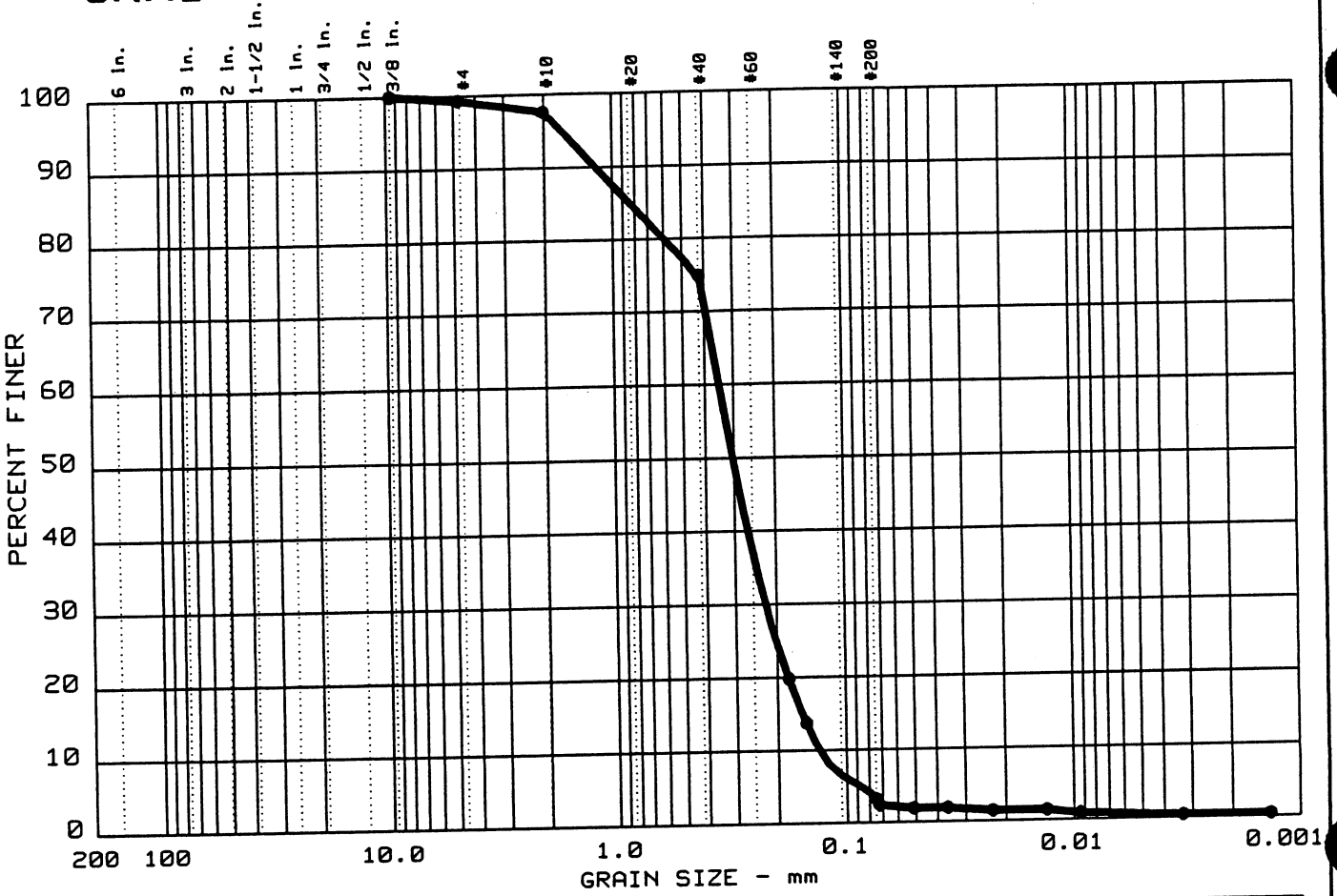
Remarks:

Checked By: BN

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	0.7	96.1	2.6	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.83	0.35	0.30	0.223	0.1554	0.1308	1.10	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-53, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

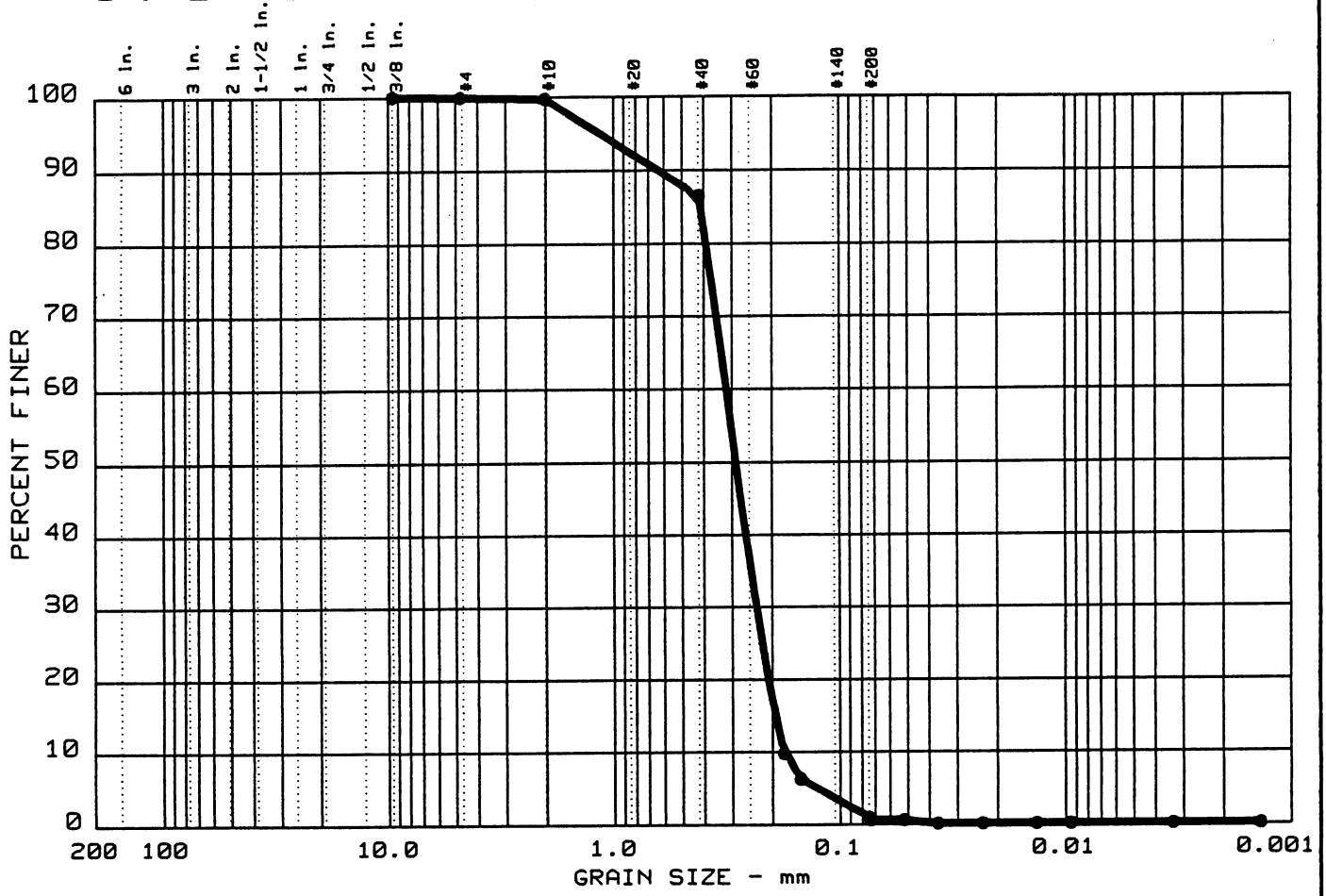
Remarks:

Checked By: BM

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	0.1	98.9	0.8	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.41	0.32	0.29	0.234	0.1932	0.1770	0.97	1.8

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-54, 6'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BA

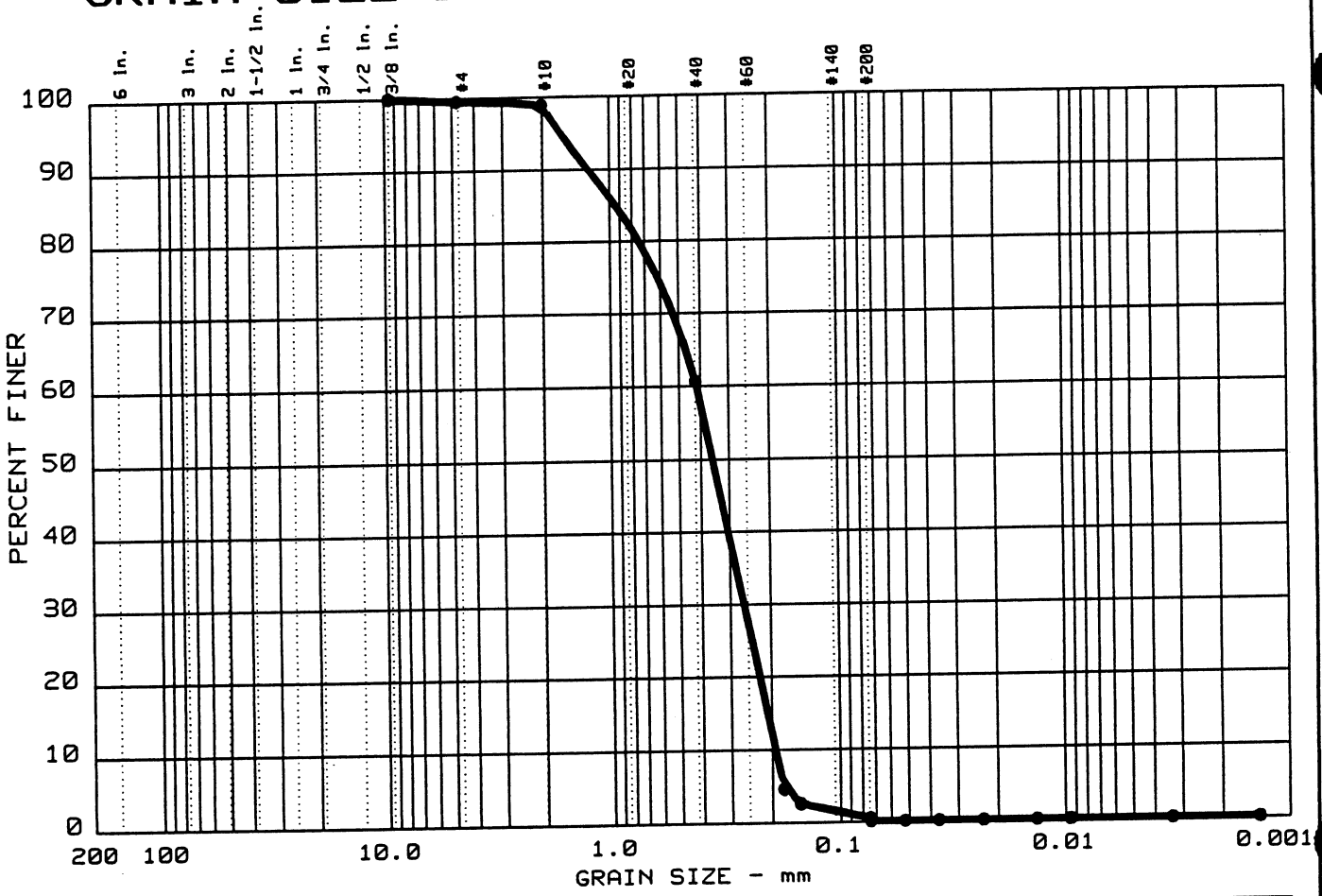
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	0.5	98.9	0.4	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.93	0.42	0.36	0.262	0.2077	0.1923	0.86	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-55, 5'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

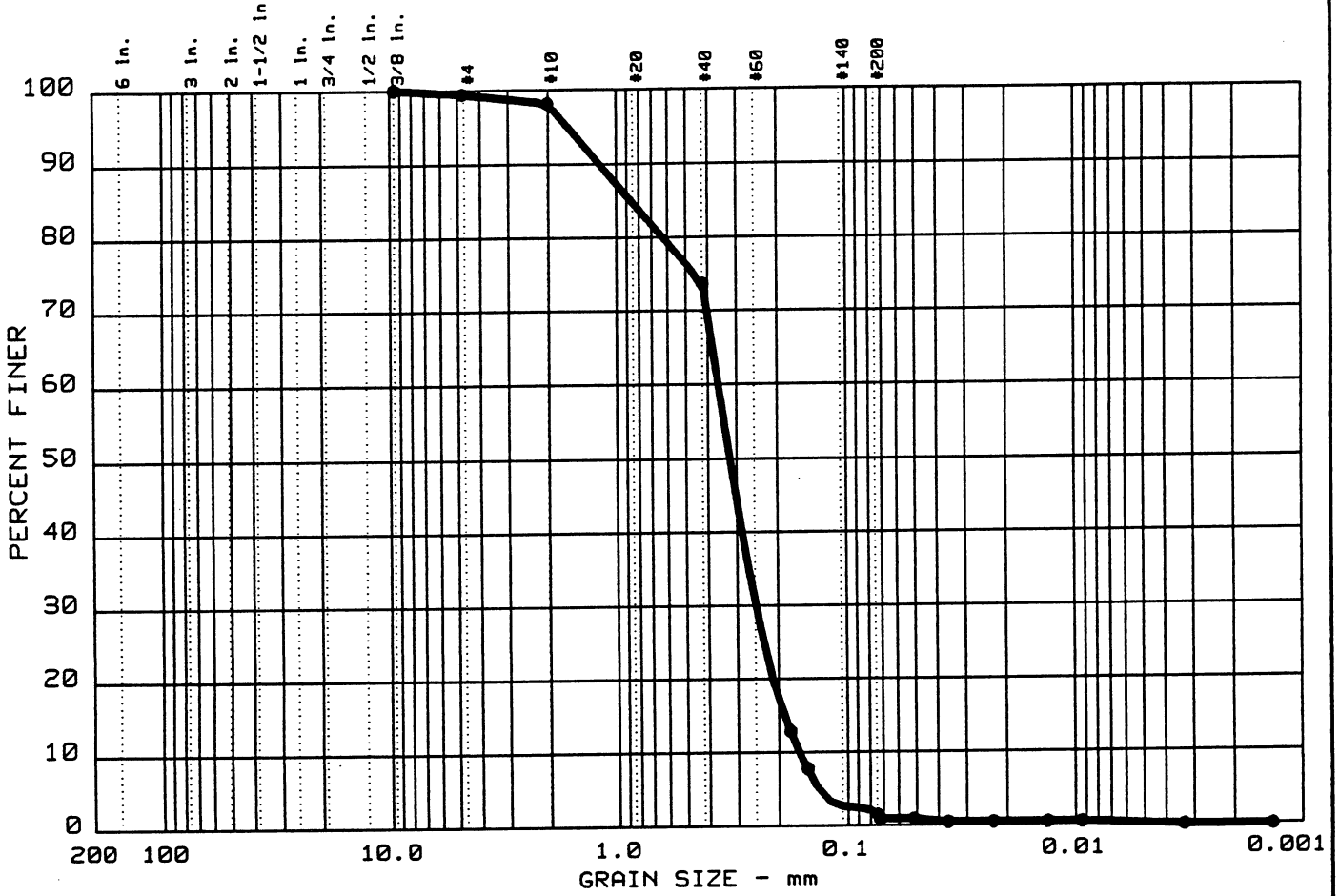
Remarks:

Checked By: BN

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.6	97.9	1.4	0.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.86	0.36	0.32	0.250	0.1890	0.1627	1.06	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-56, 35"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

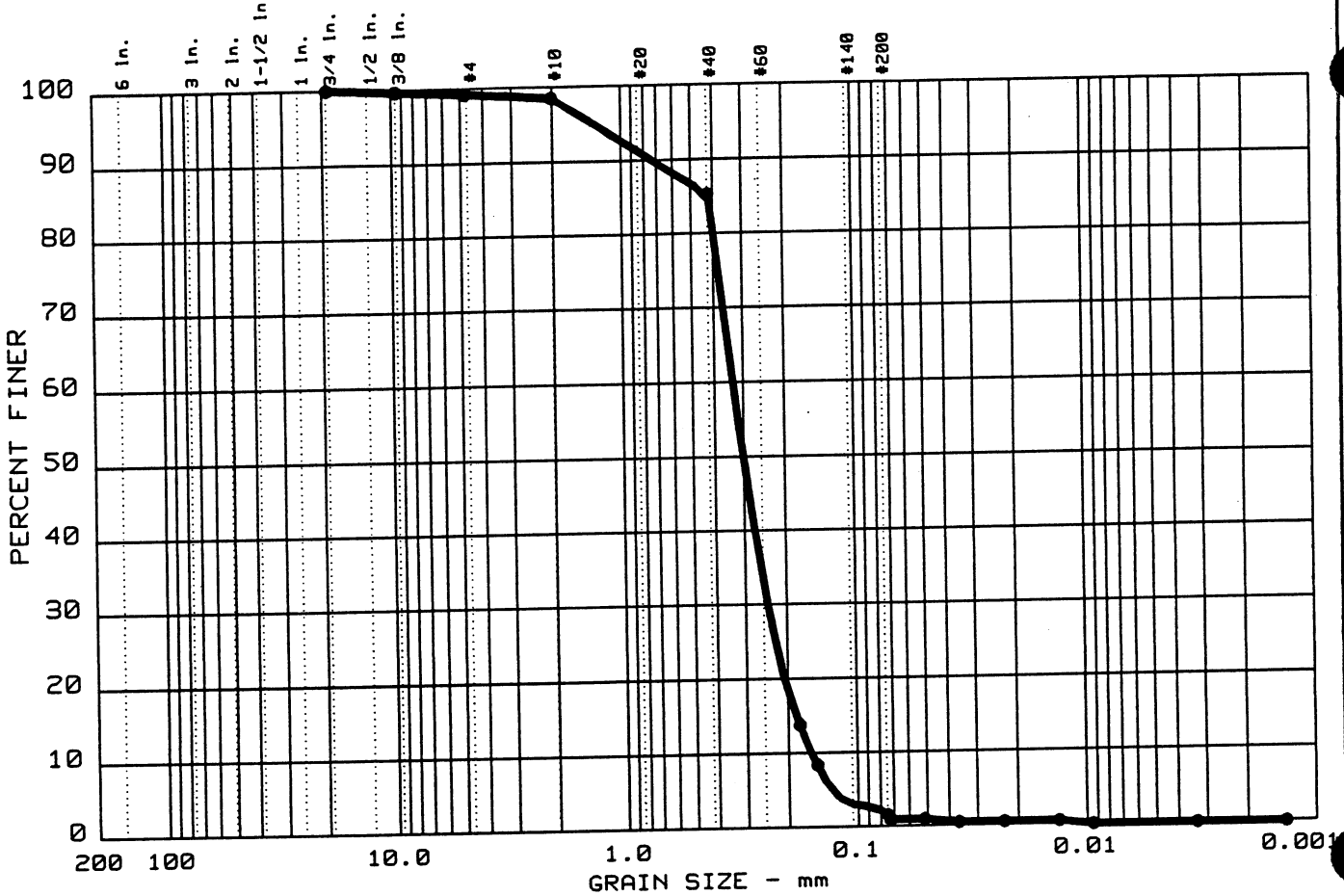
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.8	97.7	1.5	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.42	0.33	0.30	0.241	0.1843	0.1587	1.10	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-57, 50"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

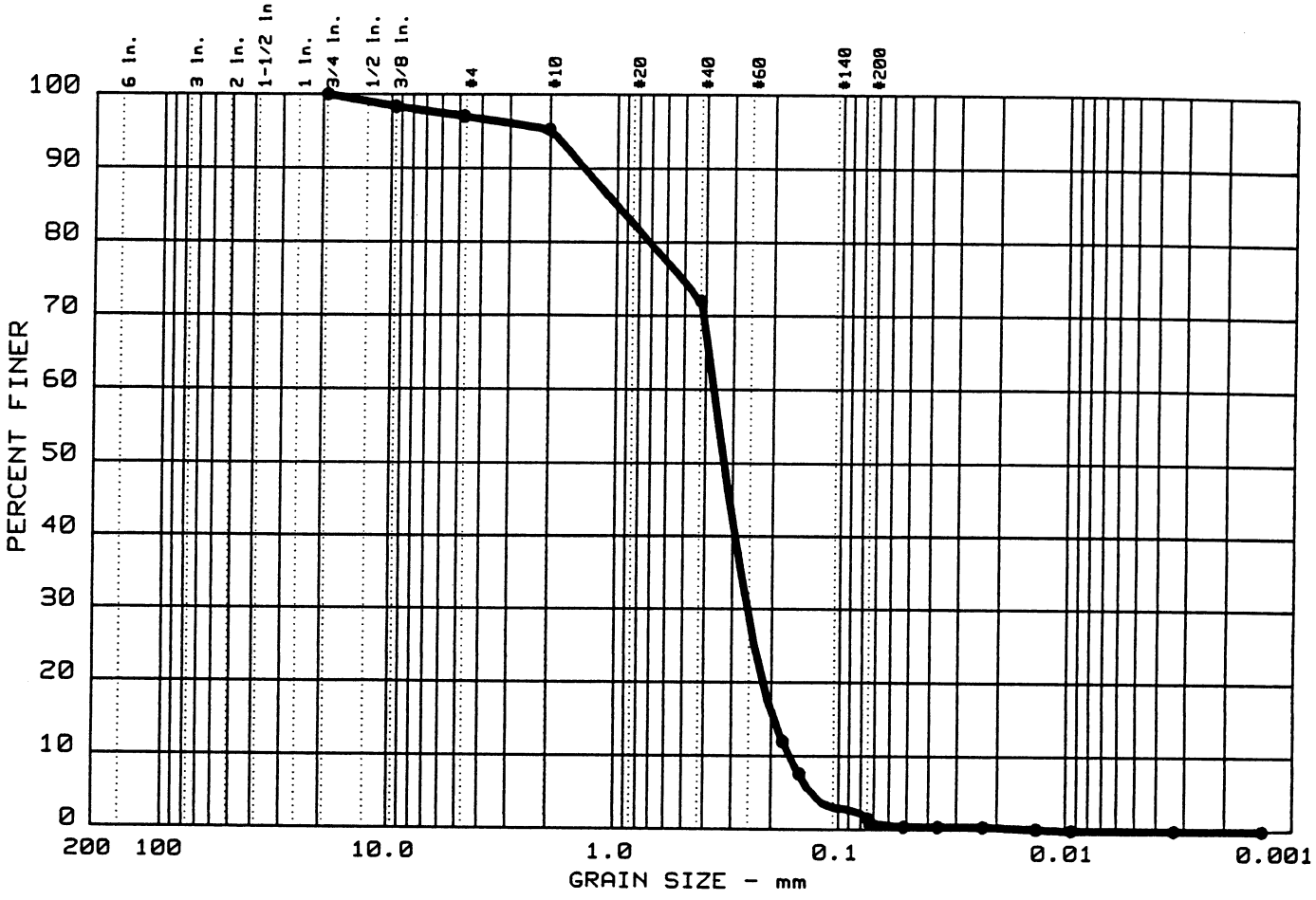
Remarks:

Checked By: BN

ASTM D1140 & D422

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	3.0	95.5	1.5	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.00	0.37	0.33	0.256	0.1952	0.1661	1.07	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-58, 8'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

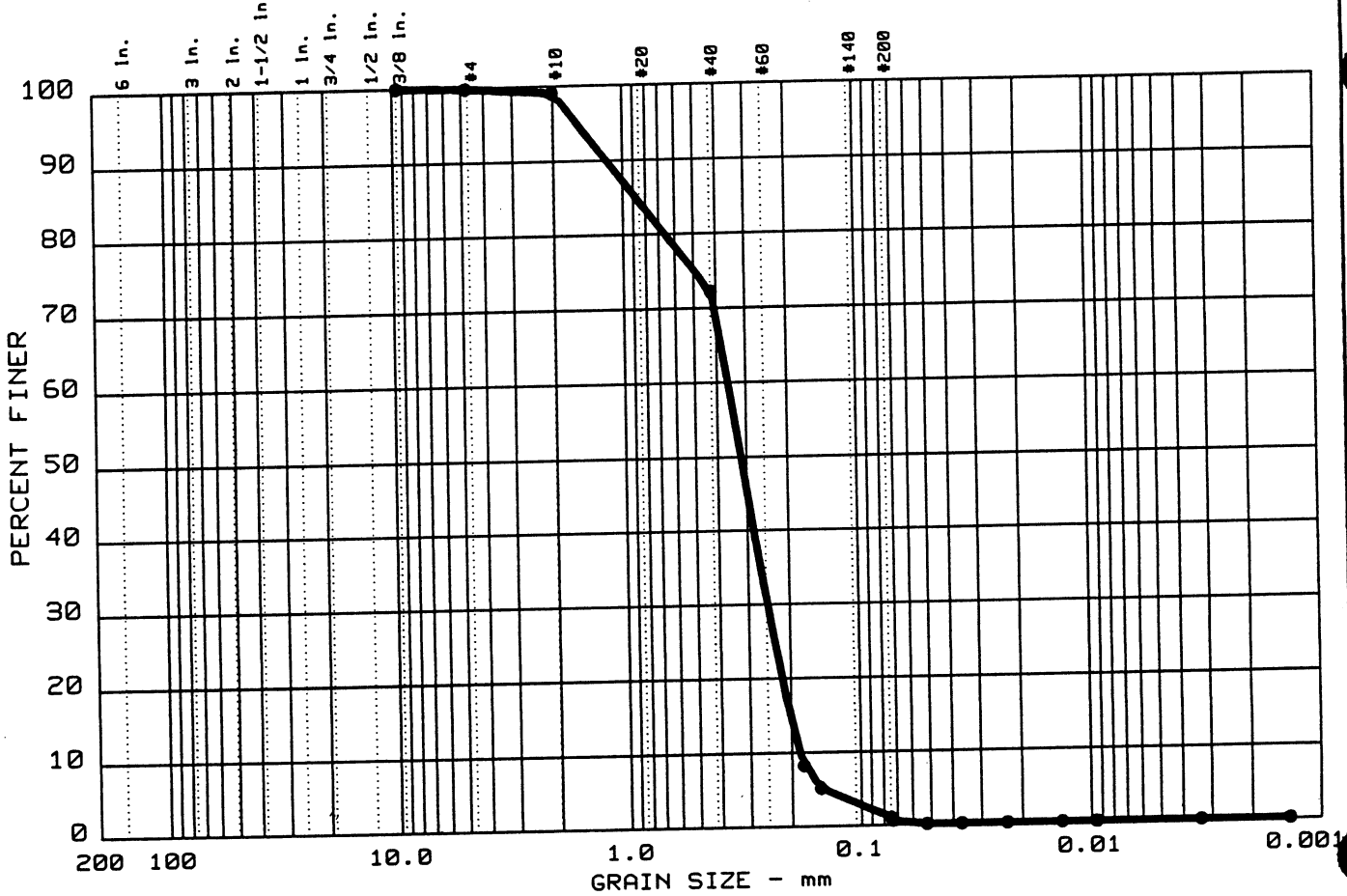
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GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	0.2	98.7	0.9	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.88	0.36	0.32	0.249	0.2007	0.1830	0.94	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-60, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

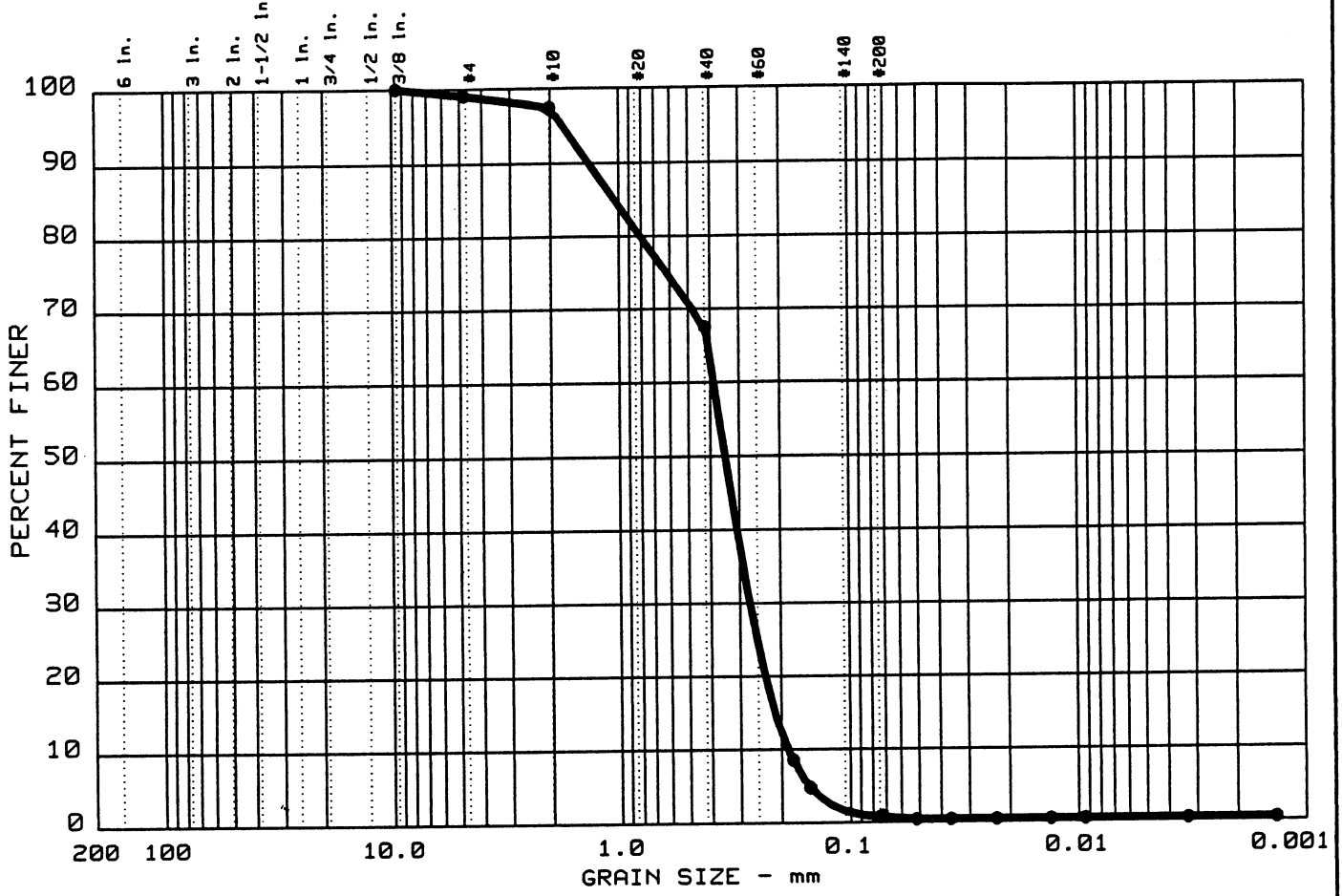
Remarks:

Checked By: BM

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Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	1.0	98.2	0.4	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.05	0.39	0.35	0.272	0.2133	0.1875	1.02	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-61, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

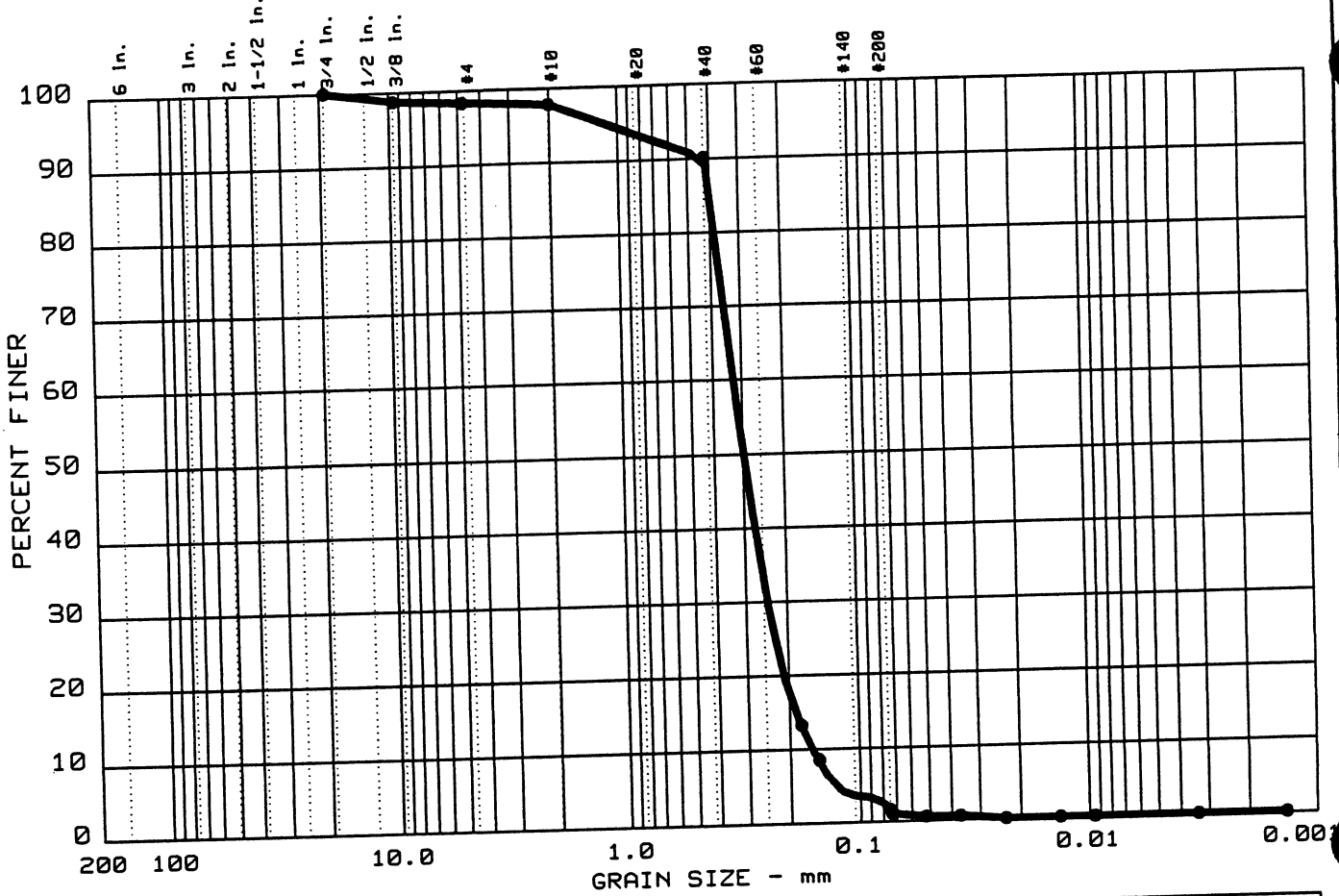
Date: 07-27-98

Remarks:
Checked By: BM
ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT
NUMMELIN TESTING SERVICES

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.7	96.7	1.4	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.40	0.33	0.30	0.242	0.1879	0.1600	1.12	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● TPE-62, 54"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Crandon

Date: 07-27-98

Remarks:

Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

Figure No. ———

Area H Grain Size, Hydrometer and Constant Head Hydraulic Conductivity Analyses

NTS NUMMELIN TESTING SERVICES, INC.

CENTRAL WISCONSIN AREA:
332 N. Georgia Street
Stevens Point, WI 54481
(715) 341-7974 • Fax (715) 341-8654

MADISON AREA:
5620 Woodland Drive
Waunakee, WI 53597
(608) 849-9120 • Fax (608) 849-9122

September 29, 1998

Foth & Van Dyke
2737 South Ridge Road
P.O. Box 19012
Green Bay, WI 54307-9012

Project No. 1154703.lab

Report No. 03

Attention: Mr. Ronald E. Meister, P.G.

Re: Laboratory Analyses
Crandon Project #93C049
SAP II - Area H

Dear Mr. Meister:

Please find enclosed the laboratory test results for the 66 soil samples obtained from your office on September 14, 1998. Grain size distribution, consisting of nested sieves and hydrometer were performed on all 66 samples. Permeability tests were performed on the 5 out of the 8 designated samples, not enough soil was obtained for the 3 perms not performed. All permeability tests were performed at a sample density of 100 lbs/ft^3, as requested. All tests were performed in general conformance with ASTM standards. Due to the small percentages passing the #200 sieve and the accuracy of the hydrometer test, the hydrometer test results do show some variation from the nested sieve results.

If you have any questions please feel free to call me.

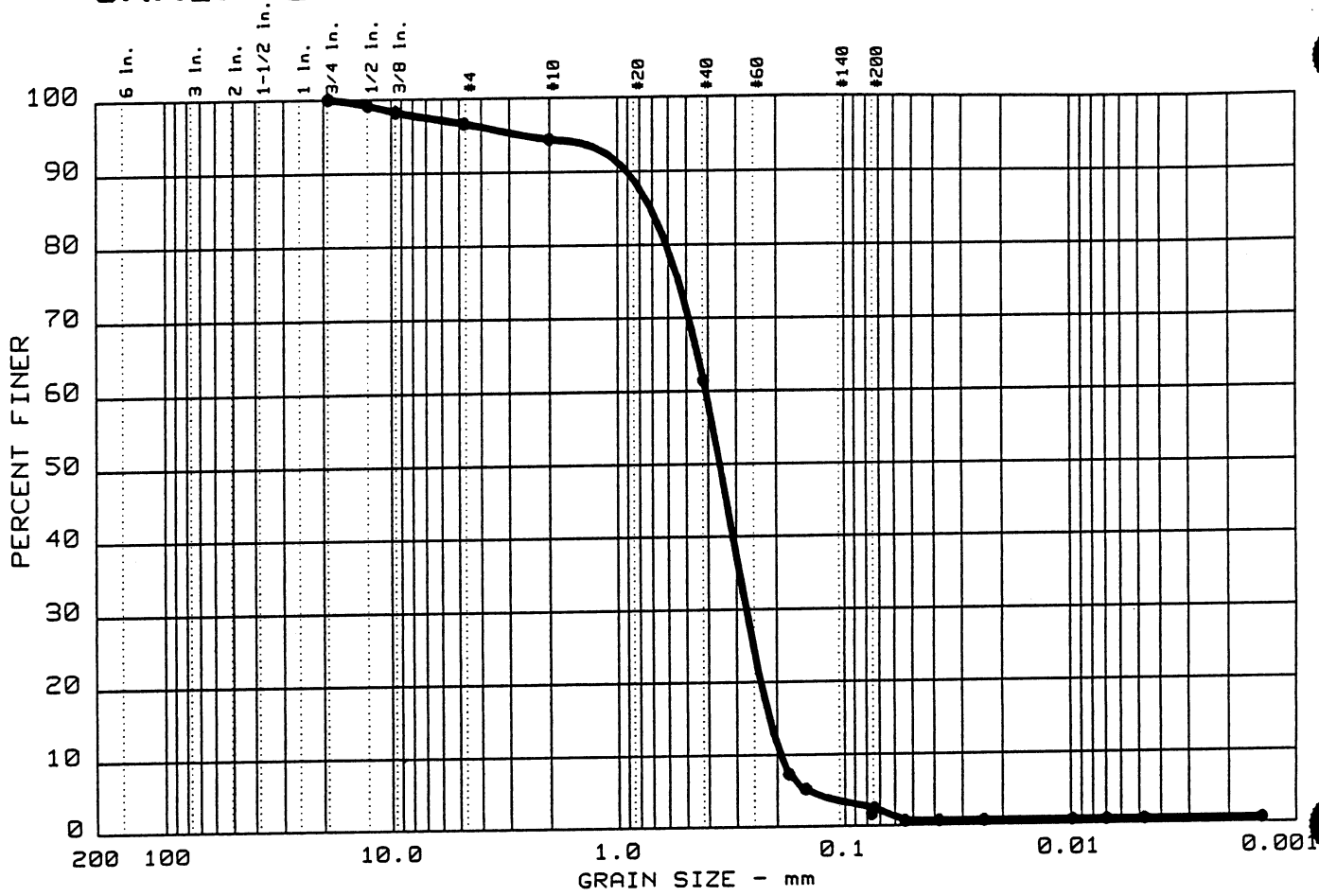
Sincerely,

Bruce Nummelin, President
NUMMELIN TESTING SERVICES, INC.

encl. Grain size graphs, permeability summary, sample list.

GEOTECHNICAL ENGINEERING ■ ENVIRONMENTAL ■ SOIL ANALYSIS ■ CONSTRUCTION MATERIALS TESTING

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	3.4	94.1	1.8	0.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.72	0.41	0.36	0.273	0.2158	0.1932	0.94	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-02, 12'-14'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

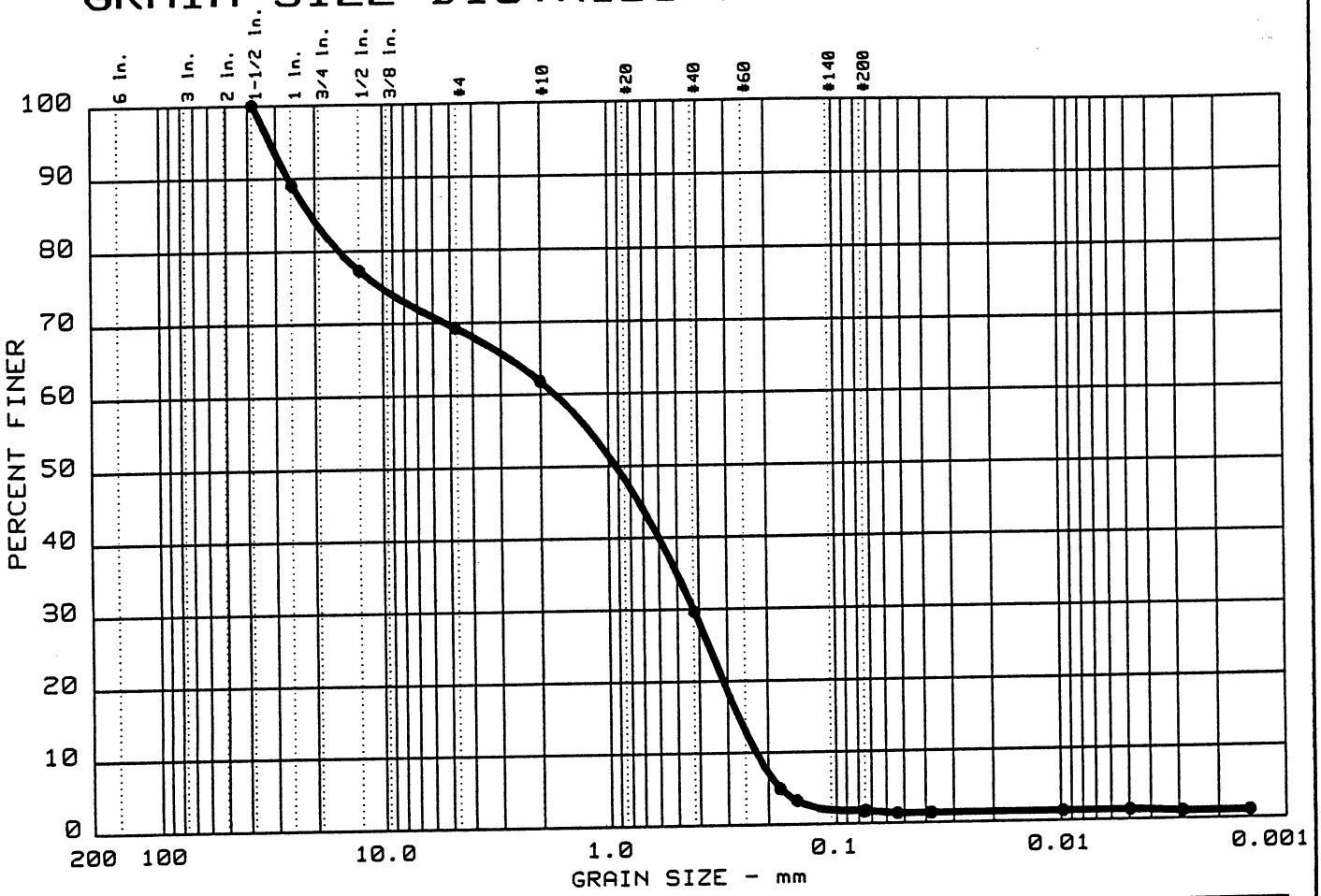
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	30.7	67.5	0.4	1.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			21.11	1.72	0.92	0.425	0.2682	0.2257	0.47	7.6

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-04, 6'-8'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-10-98

Remarks:

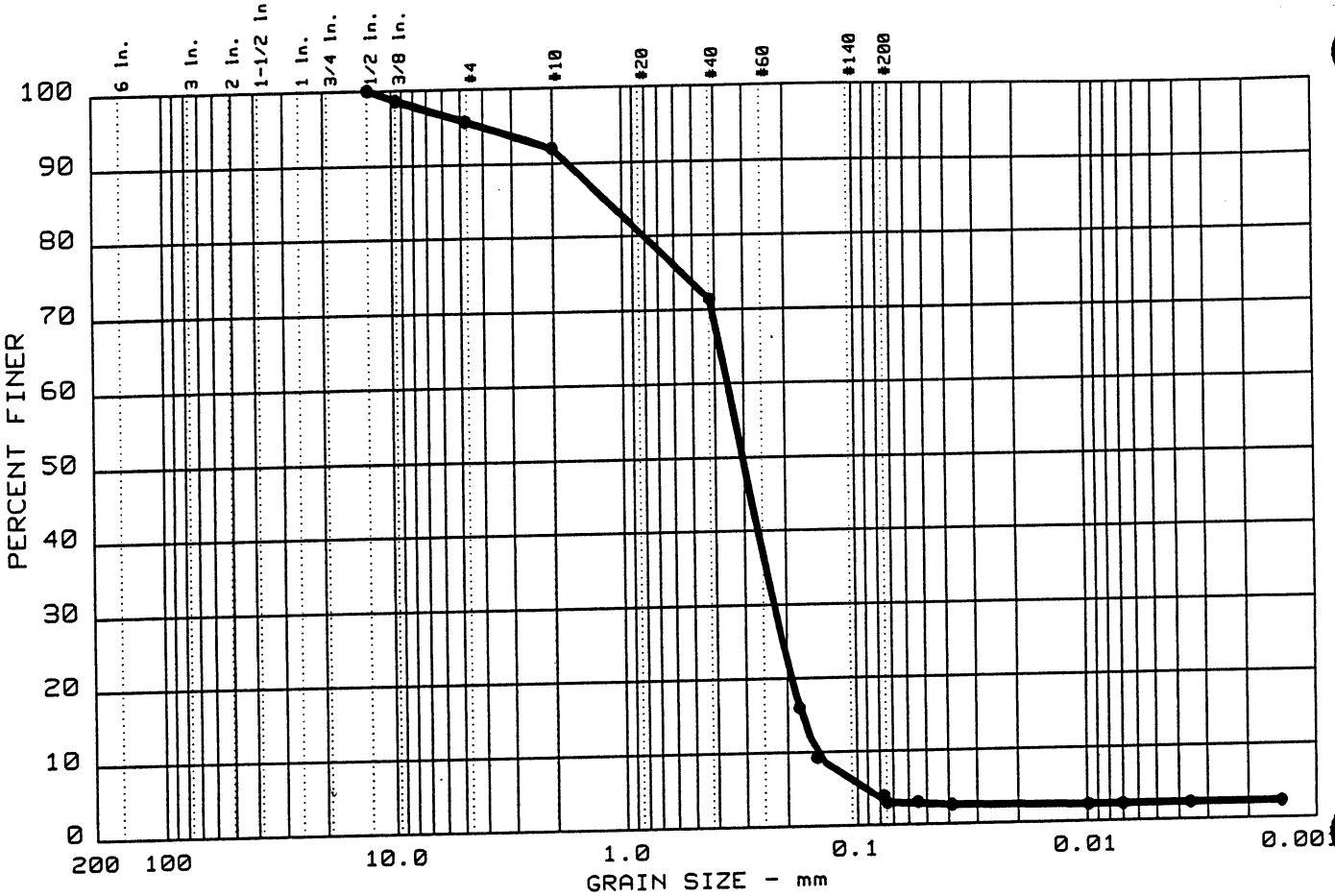
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	4.3	92.7	0.7	2.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.17	0.35	0.31	0.226	0.1718	0.1514	0.96	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-06, 12'-14'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-11-98

Remarks:

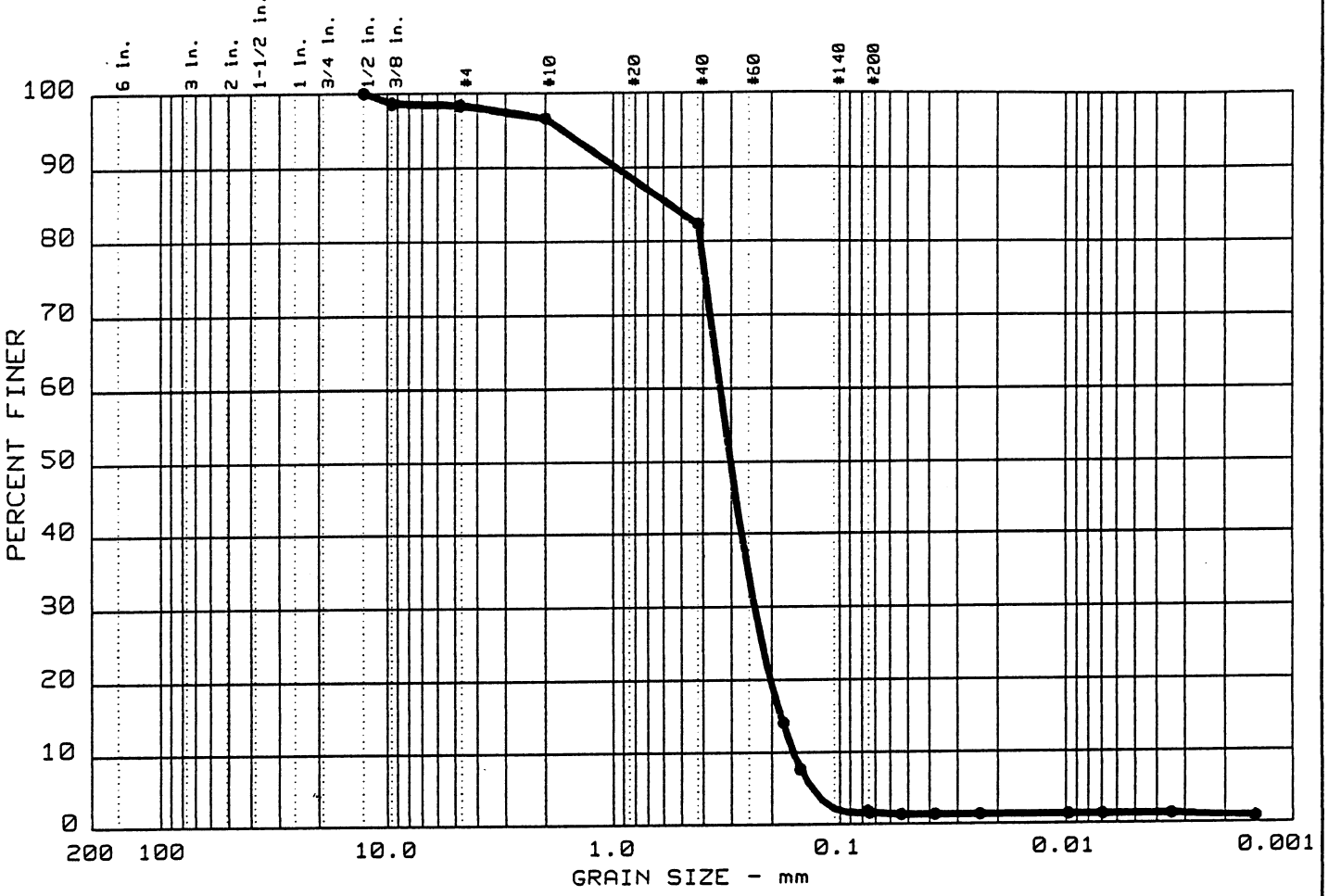
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	1.7	96.7	0.2	1.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.56	0.34	0.30	0.239	0.1809	0.1603	1.05	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-07, 6'-8'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-16-98

Remarks:

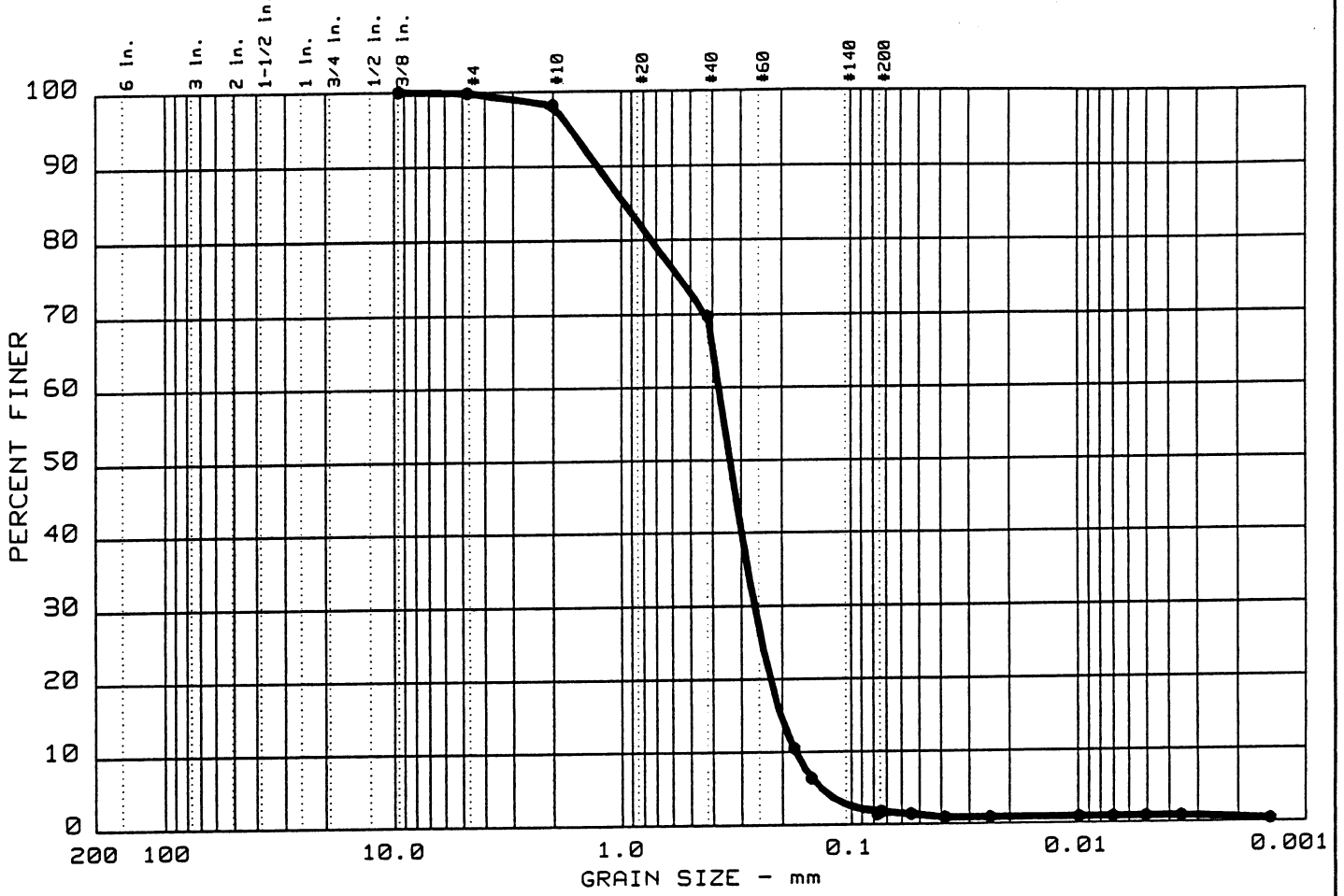
Checked By: BM

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GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.2	98.0	0.9	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.97	0.38	0.34	0.264	0.2037	0.1734	1.06	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-08, 14'-16'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

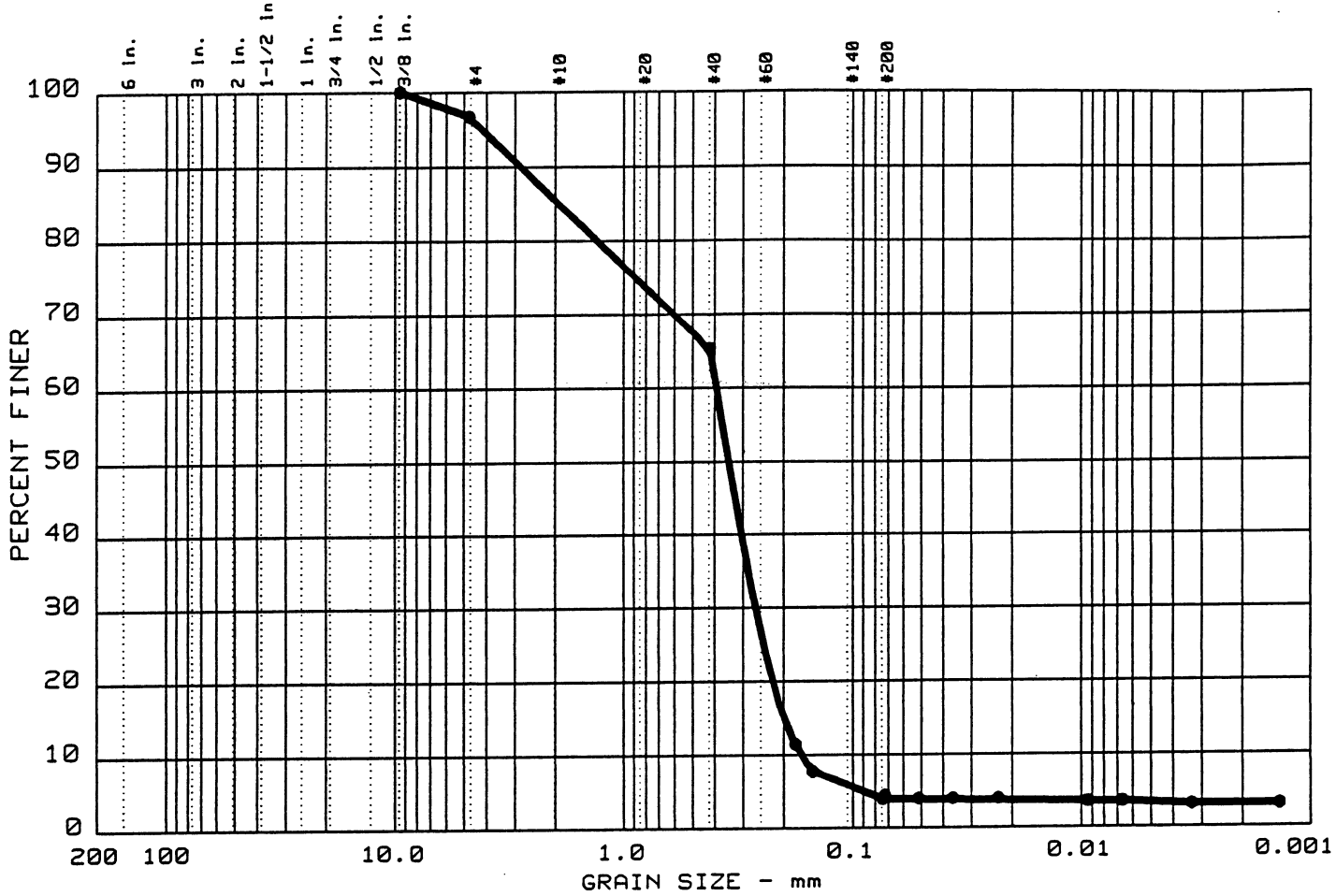
Checked By: BS

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GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	3.3	92.7	0.6	3.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.91	0.39	0.35	0.266	0.1993	0.1658	1.08	2.4

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-09, 8-10'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

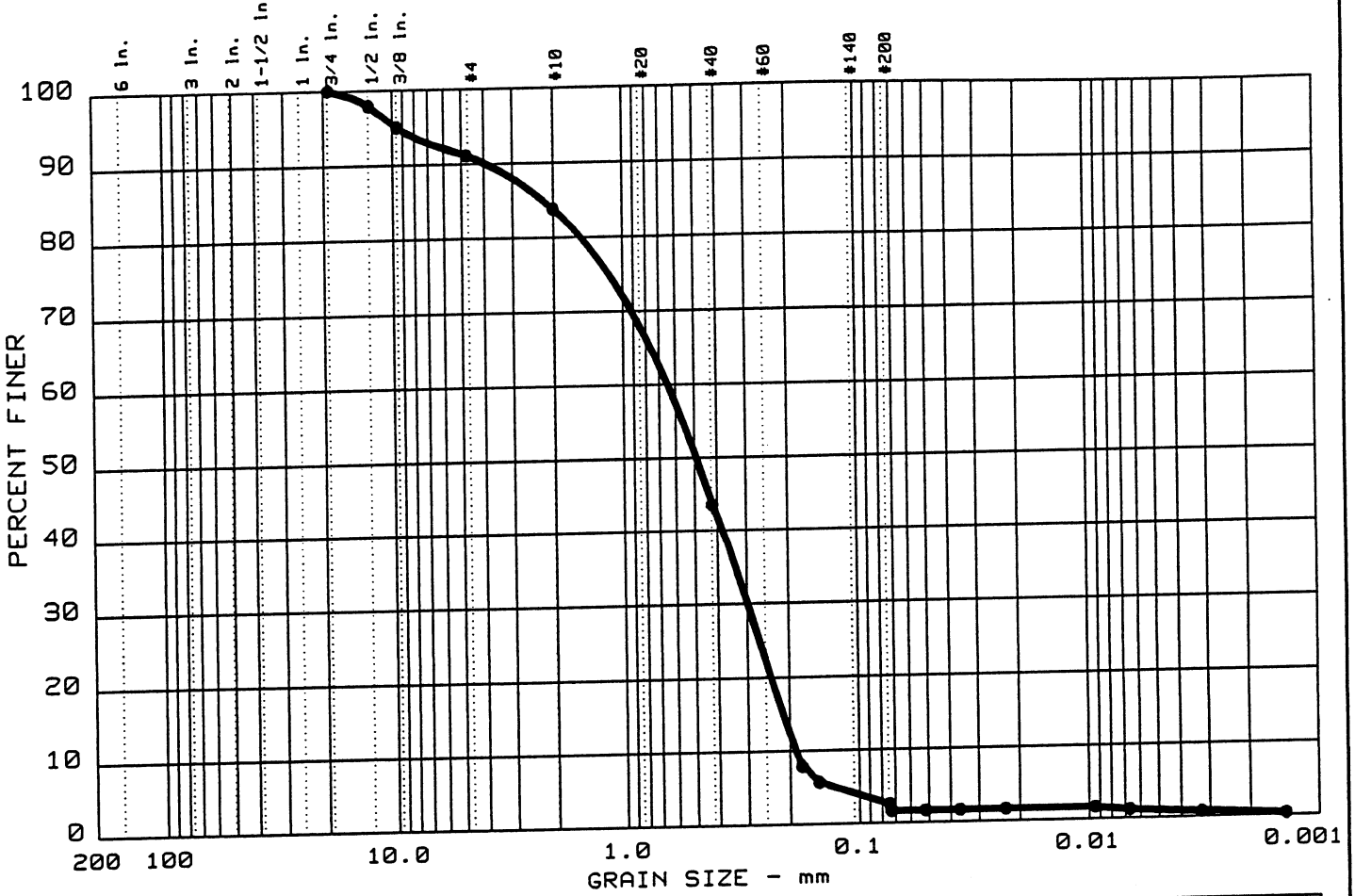
Checked By: BN

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GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	8.9	88.5	1.6	1.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.19	0.65	0.49	0.299	0.2133	0.1877	0.74	3.4

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-10, 14-16'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-16-98

Remarks:

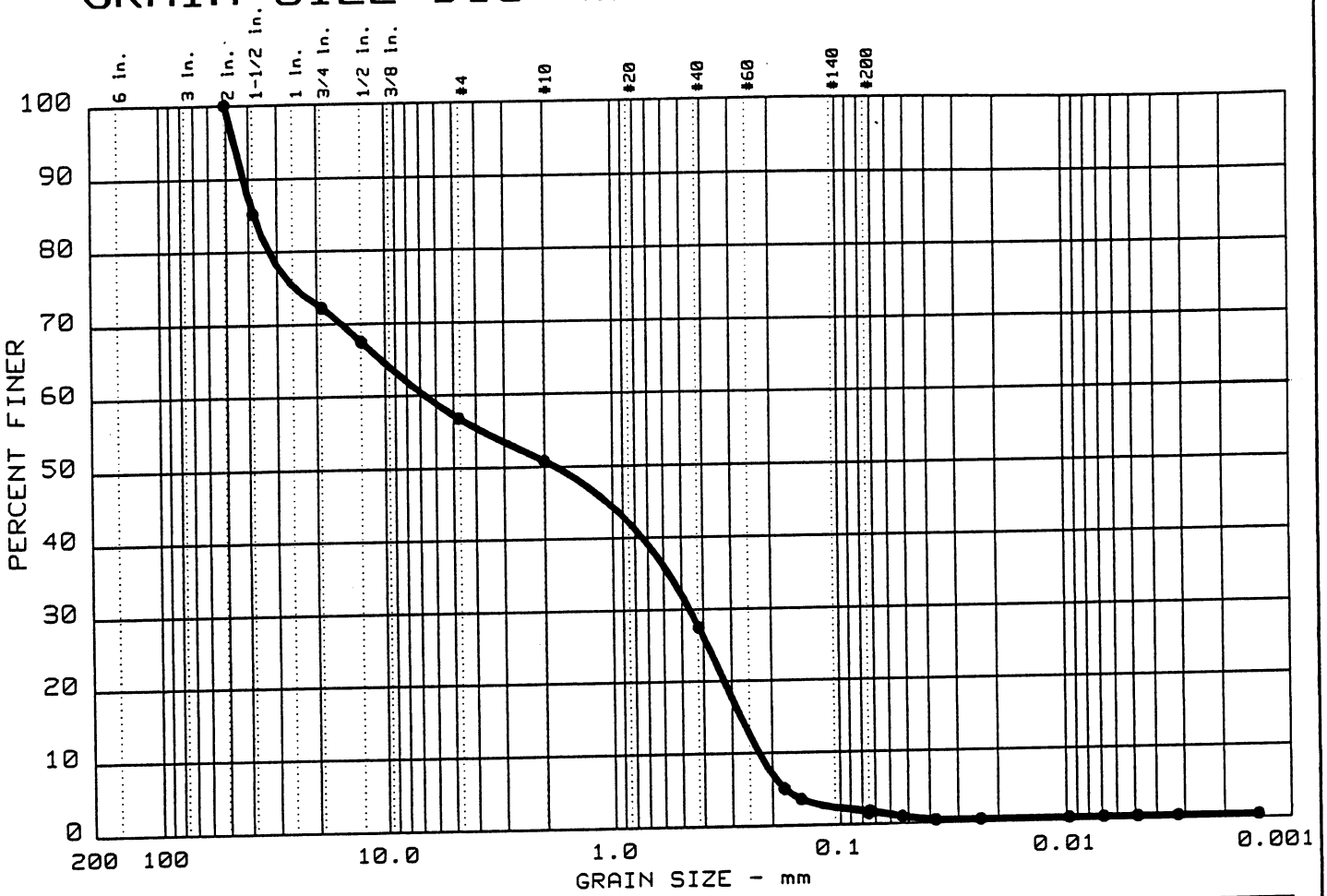
Checked By: BA

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GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	43.2	55.0	1.3	0.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			37.89	6.66	1.77	0.461	0.2745	0.2283	0.14	29.2

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-11, 10'-12'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

GRAIN SIZE DISTRIBUTION TEST REPORT

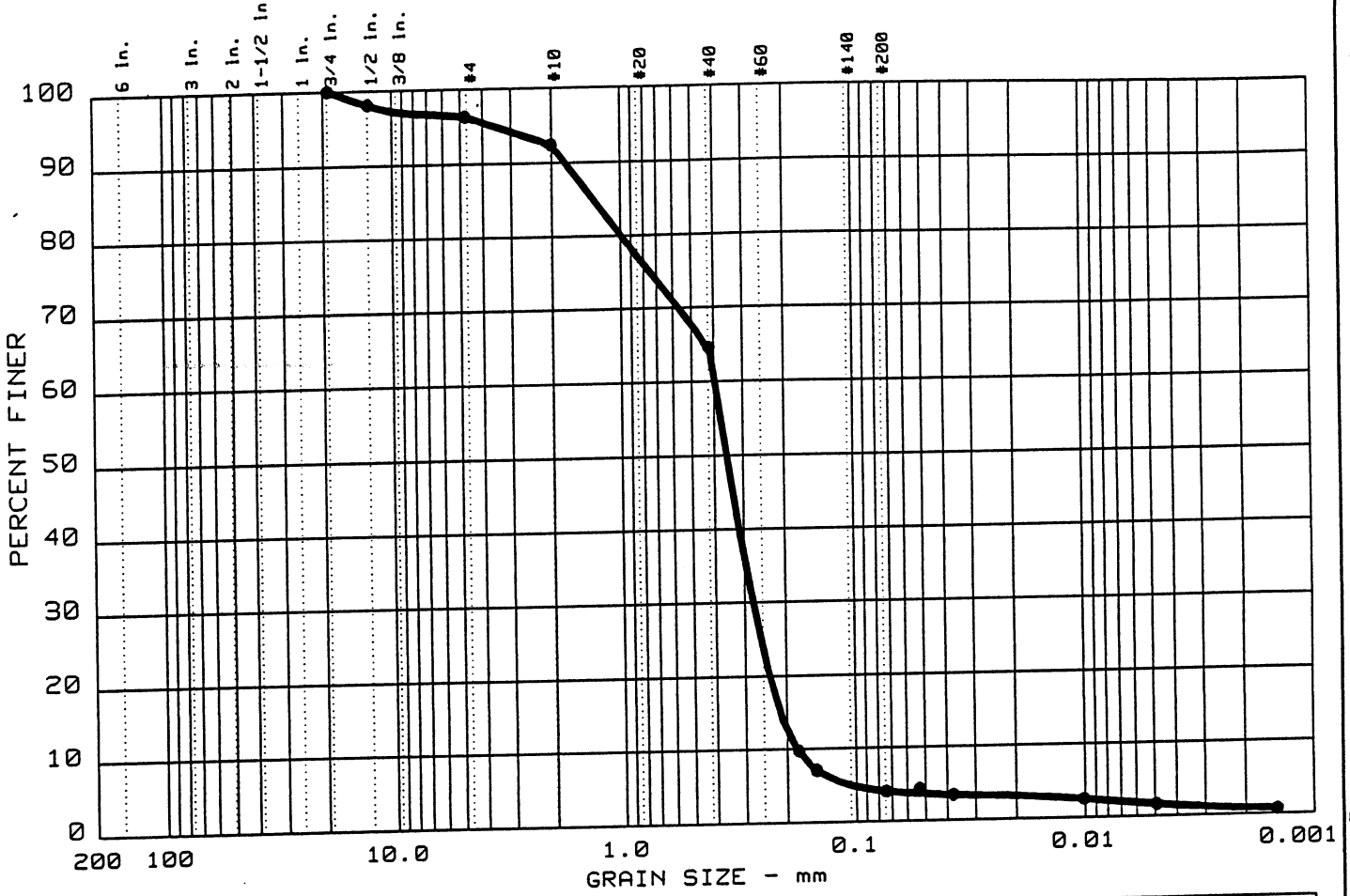
NUMMELIN TESTING SERVICES

Remarks:

Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	3.7	92.2	2.5	1.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.32	0.40	0.36	0.277	0.2138	0.1799	1.07	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-12, 14'-16'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-10-98

Remarks:

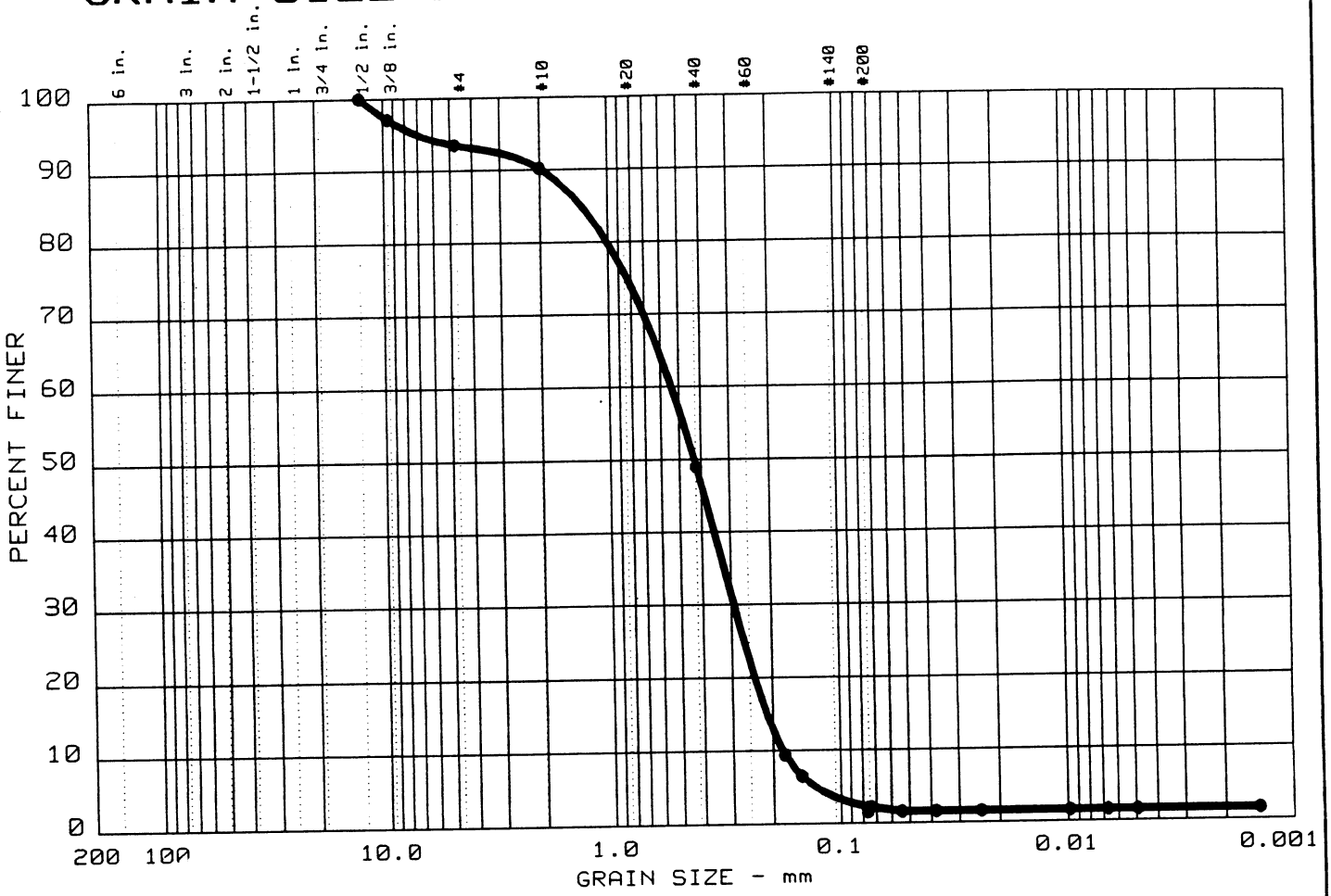
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	6.5	91.3	0.6	1.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.30	0.54	0.43	0.293	0.2118	0.1803	0.89	3.0

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-13, 10'-12'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

GRAIN SIZE DISTRIBUTION TEST REPORT

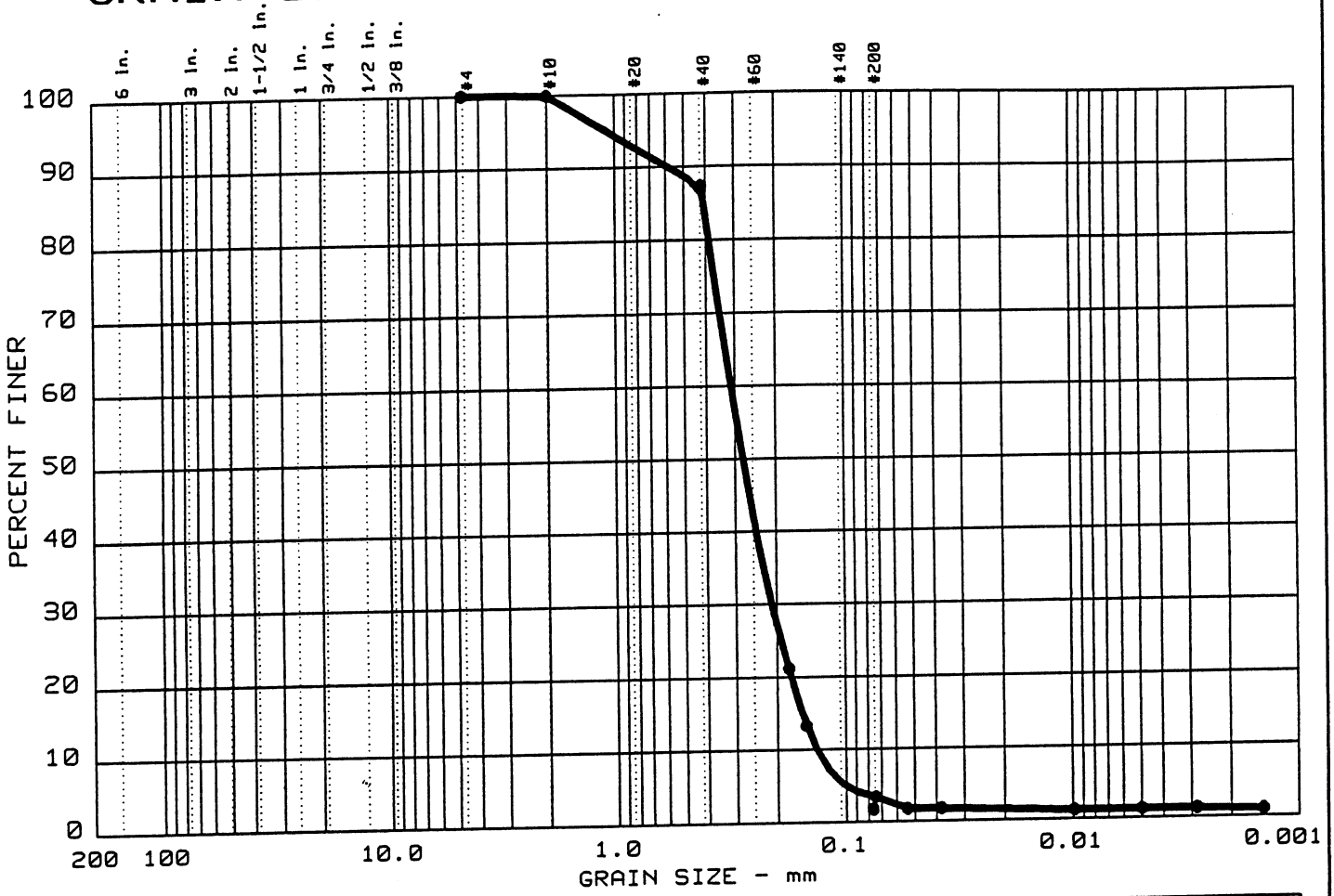
NUMMELIN TESTING SERVICES

Remarks:

Checked By: BJ

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	96.6	2.2	1.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.41	0.31	0.28	0.211	0.1556	0.1340	1.06	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-13, 54'-56'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-10-98

Remarks:

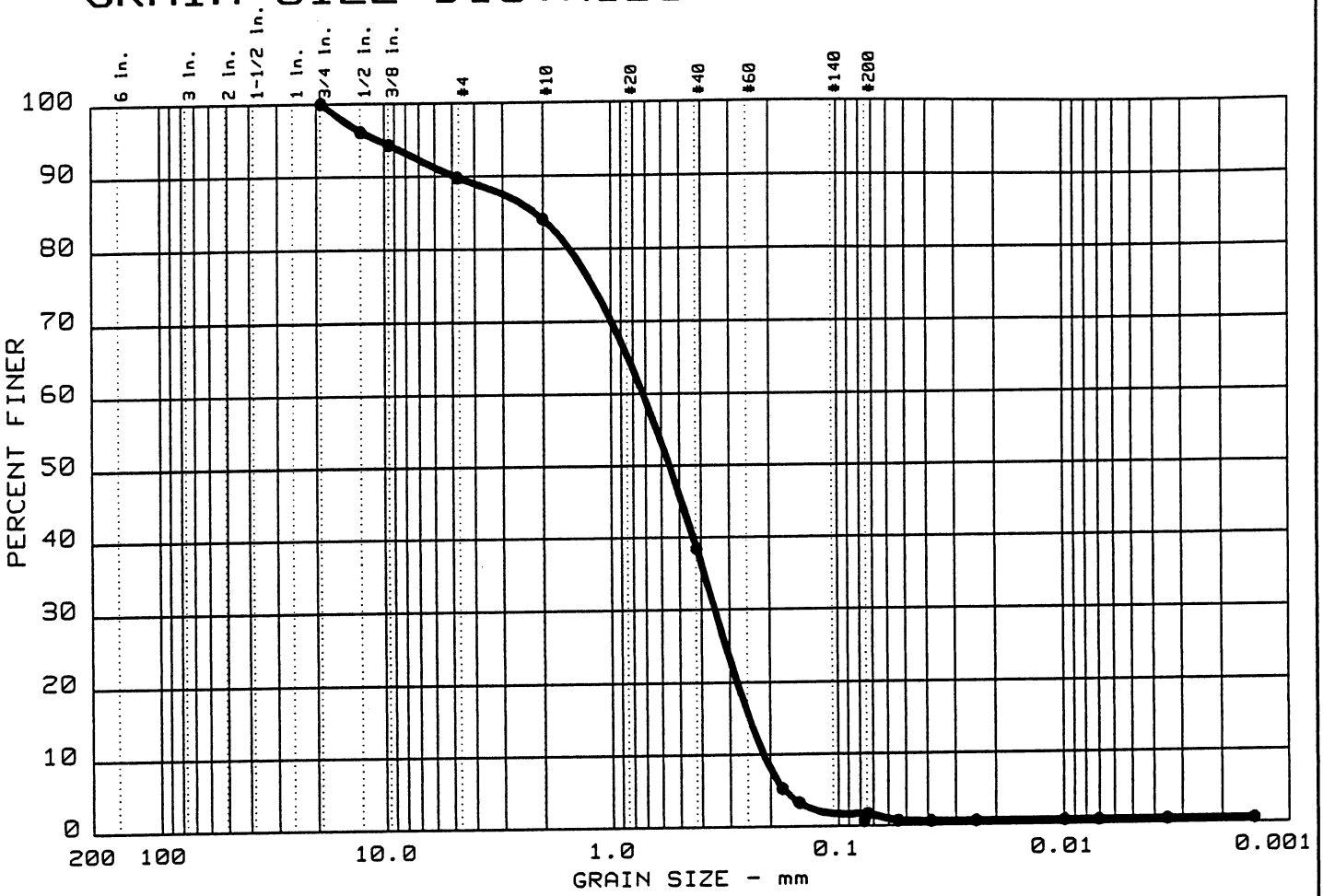
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	10.2	88.1	1.1	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.16	0.72	0.55	0.348	0.2466	0.2145	0.78	3.4

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-14, 8'-10'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-11-98

Remarks:

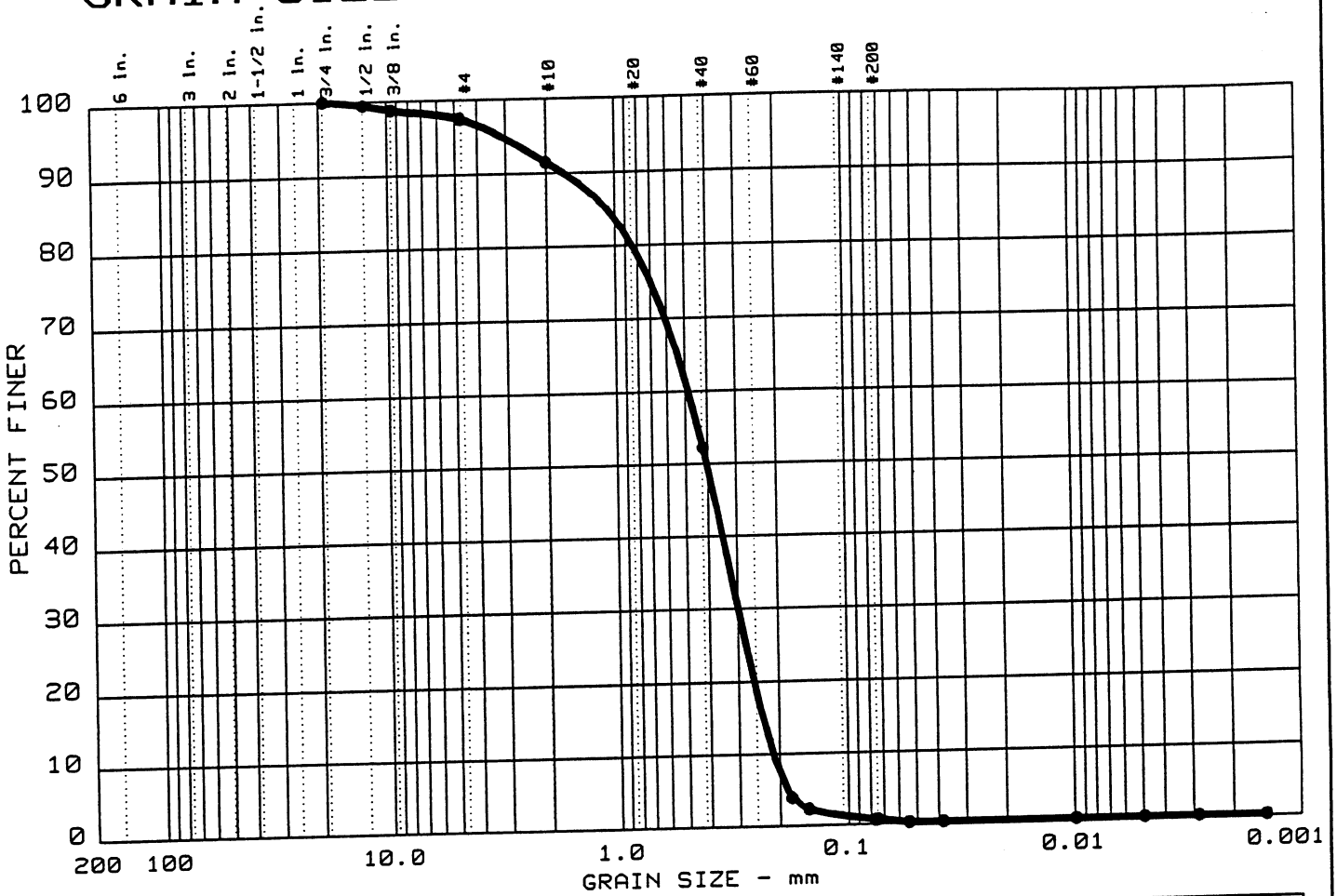
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	2.6	96.7	0.5	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.08	0.48	0.41	0.300	0.2358	0.2126	0.88	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-14, 36'-38'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-10-98

Remarks:

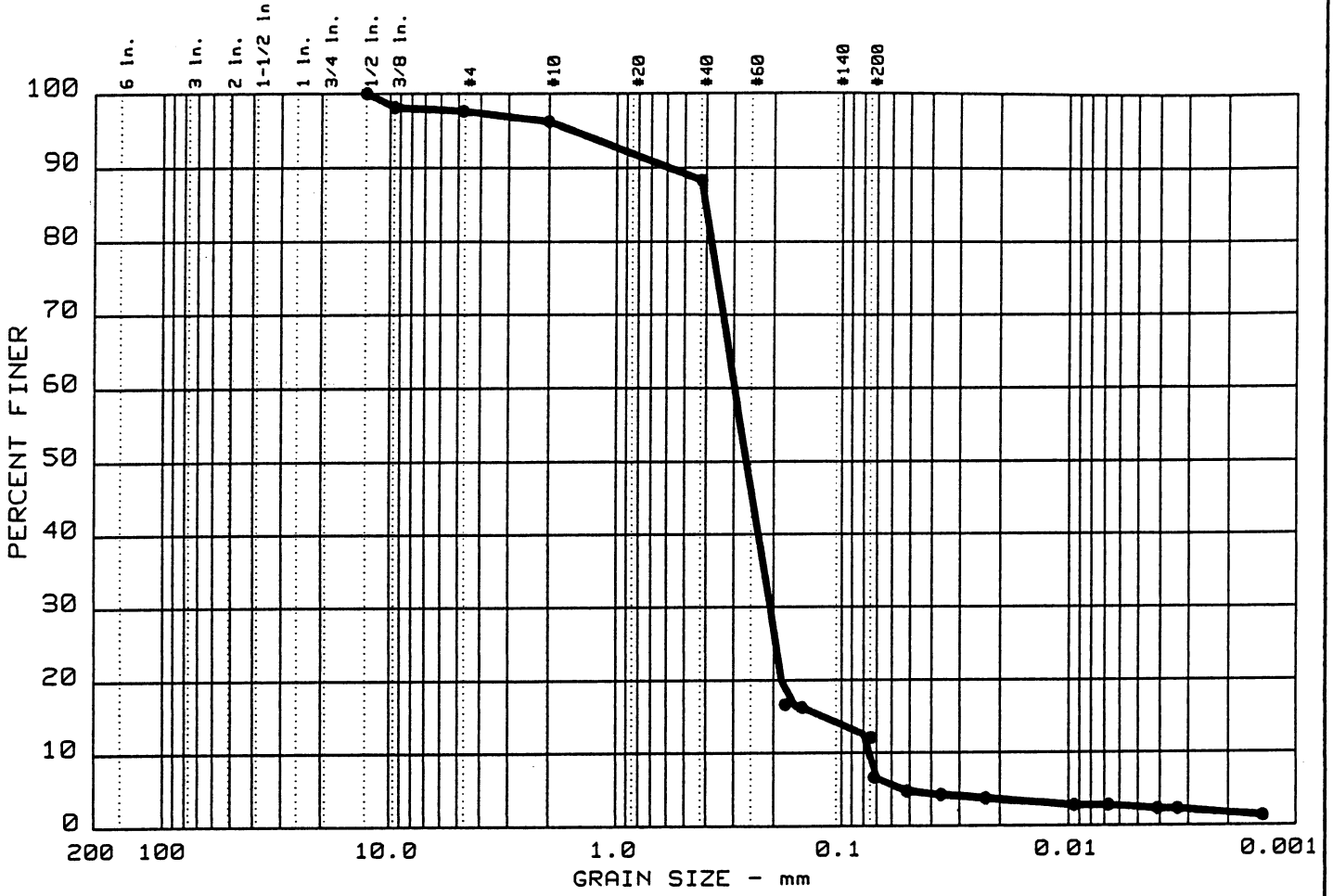
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	2.4	85.5	9.5	2.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.40	0.30	0.26	0.208	0.1182	0.0730	1.98	4.1

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-14, 64'-66'	SM	A-2-4(0.3)

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

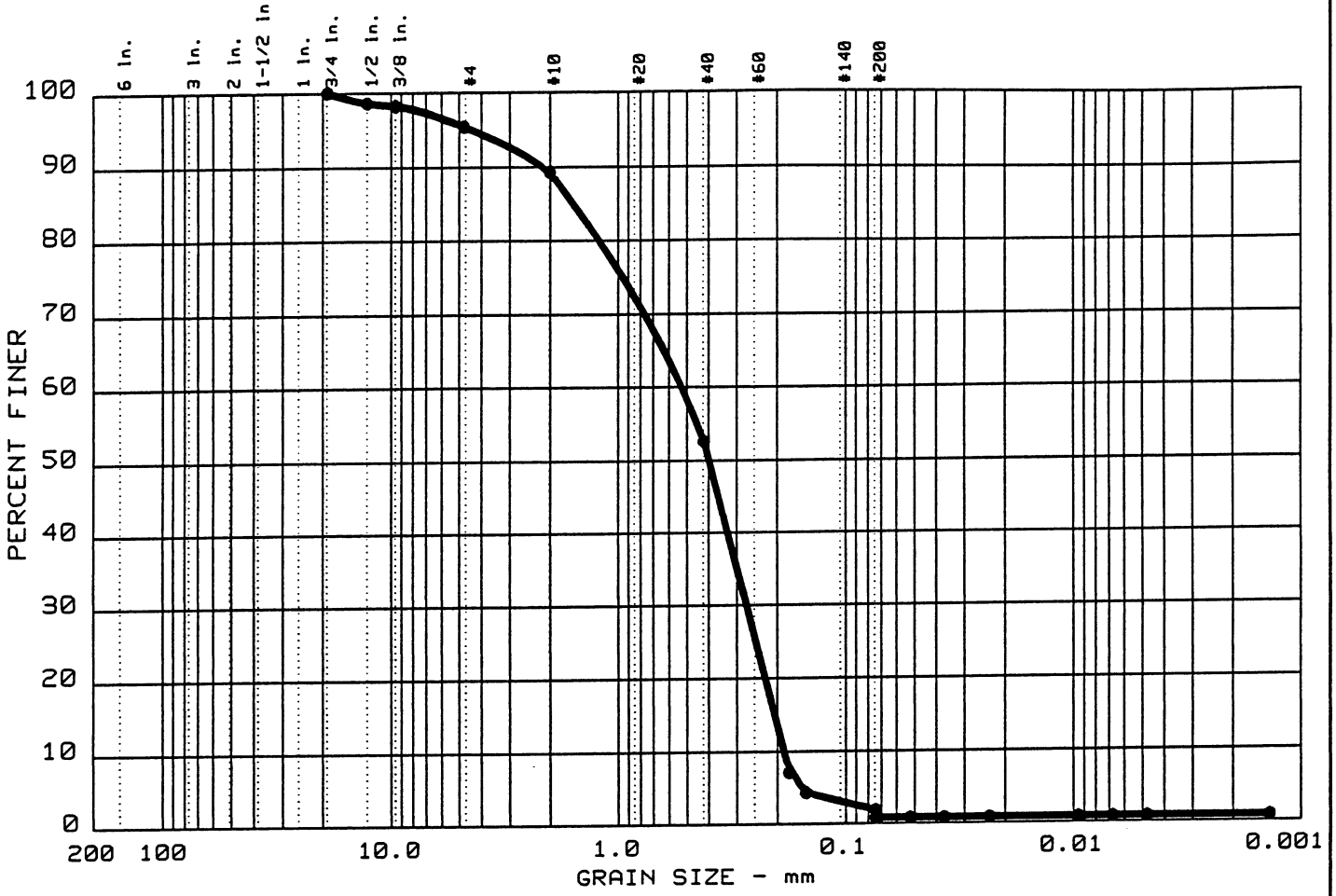
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	4.6	93.5	1.0	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.58	0.53	0.40	0.273	0.2049	0.1869	0.76	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-15, 10'-12'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

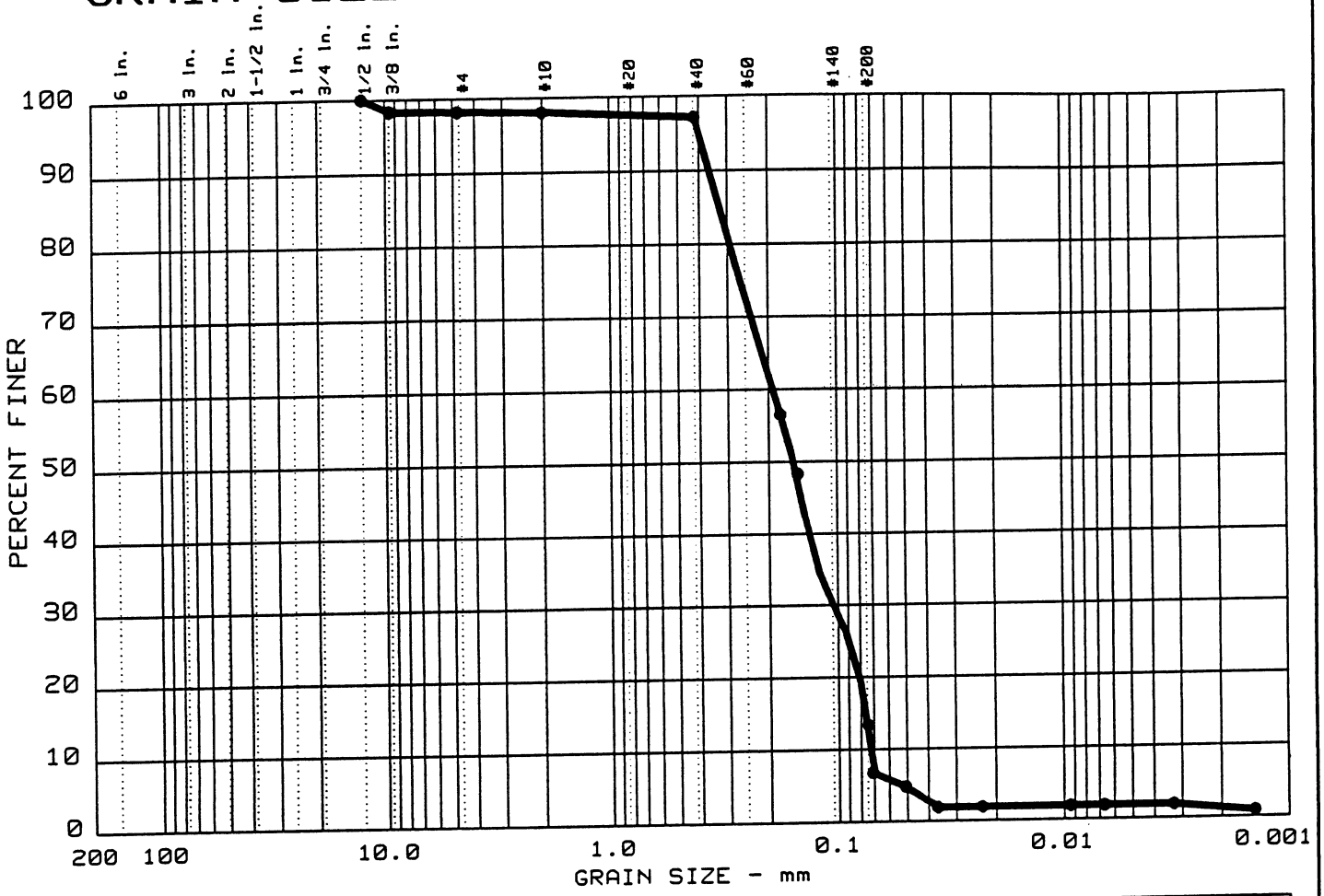
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	1.8	84.8	11.5	1.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.33	0.19	0.16	0.105	0.0752	0.0724	0.80	2.6

	MATERIAL DESCRIPTION	USCS	AASHTO
●	BH-15, 26'-28'	SM	A-2-4(0.2)

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-16-98

Remarks:

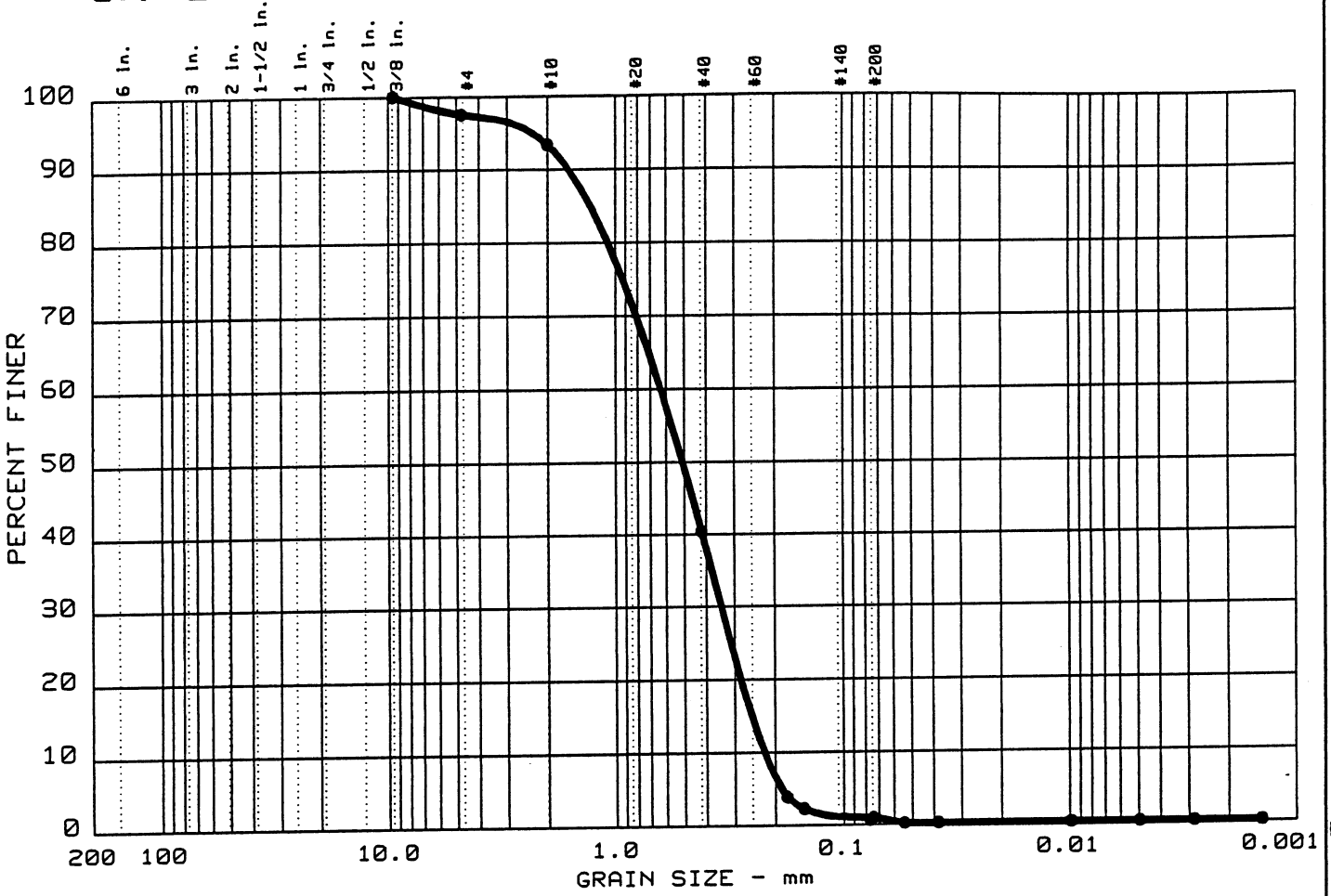
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	2.5	96.5	0.8	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.29	0.63	0.51	0.344	0.2532	0.2231	0.84	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-16, 10'-12'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

Remarks:

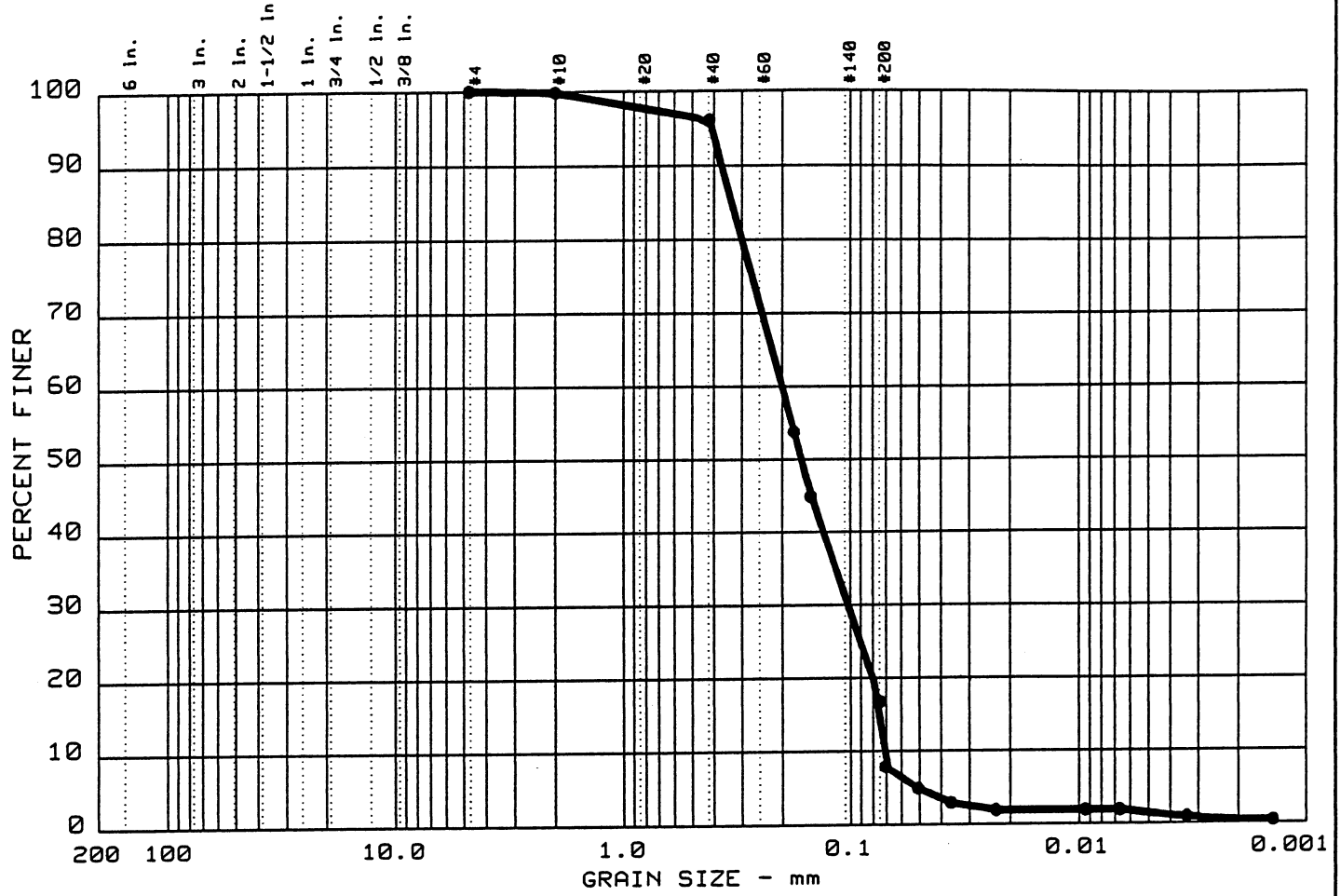
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	83.2	15.4	1.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.33	0.20	0.16	0.103	0.0732	0.0712	0.74	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-17, 18-20'	SM	A-2-4(0.0)

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

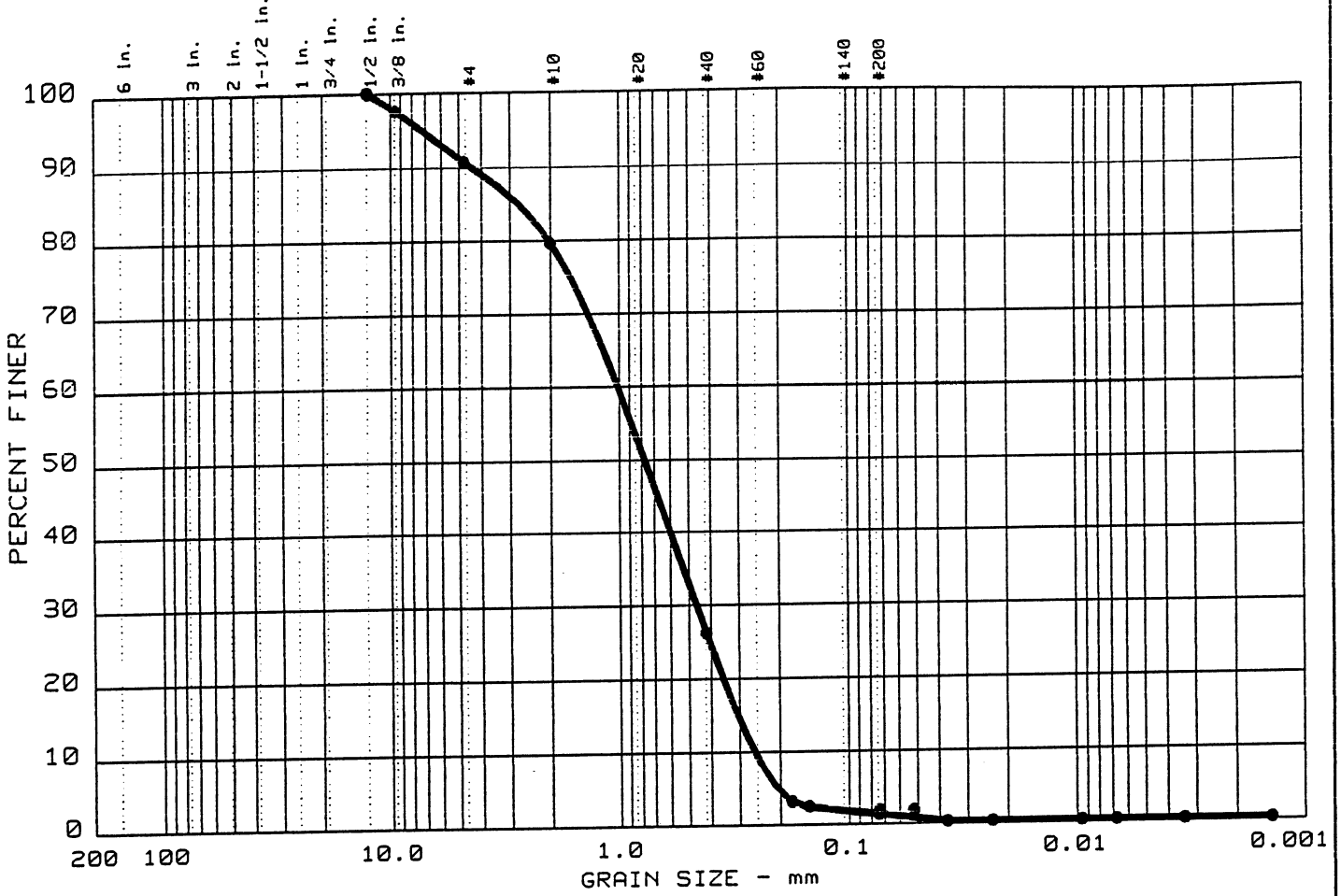
Checked By: _____

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	9.3	89.3	1.1	0.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.75	1.02	0.78	0.462	0.3055	0.2570	0.82	4.0

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-18, 22'-24'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-16-98

Remarks:

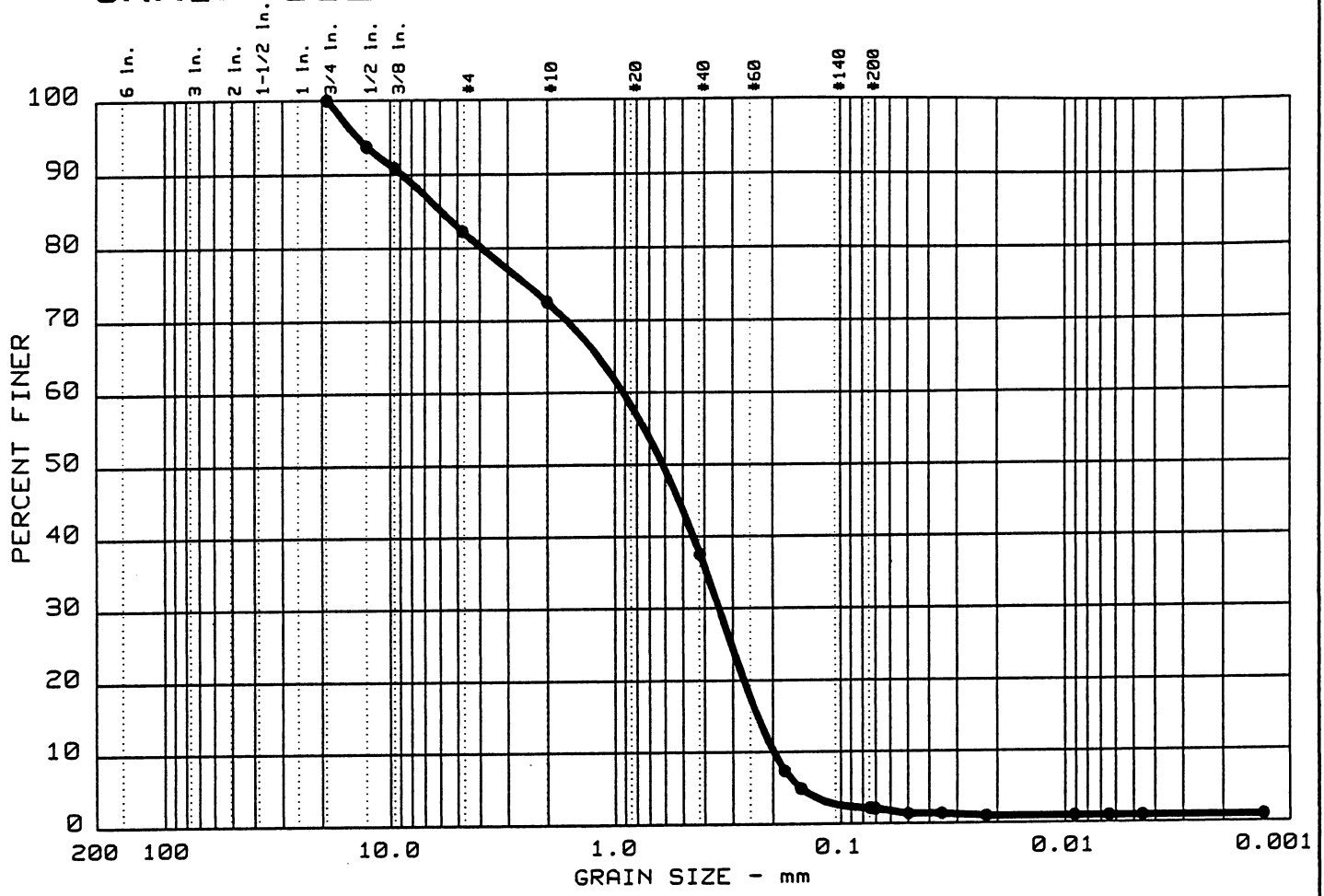
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	17.7	80.1	1.2	1.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			5.89	0.91	0.61	0.346	0.2336	0.1982	0.66	4.6

MATERIAL DESCRIPTION	USCS	AASHTO
● BH-19, 14'-15.5'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

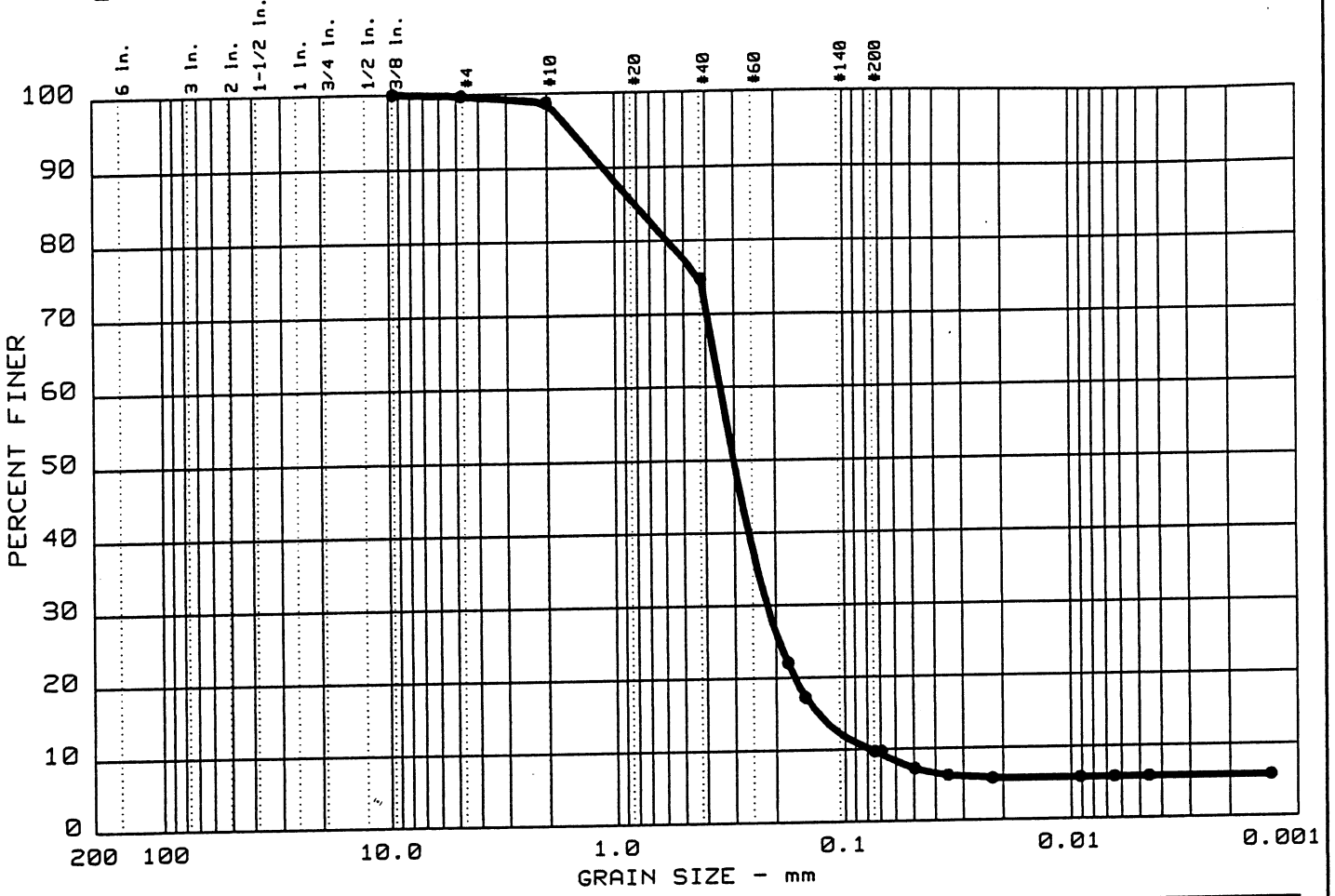
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.3	90.0	3.9	5.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.81	0.35	0.30	0.219	0.1305	0.0768	1.80	4.5

MATERIAL DESCRIPTION	USCS	AASHTO
● MWH-09P, 32-34'	SP-SM	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

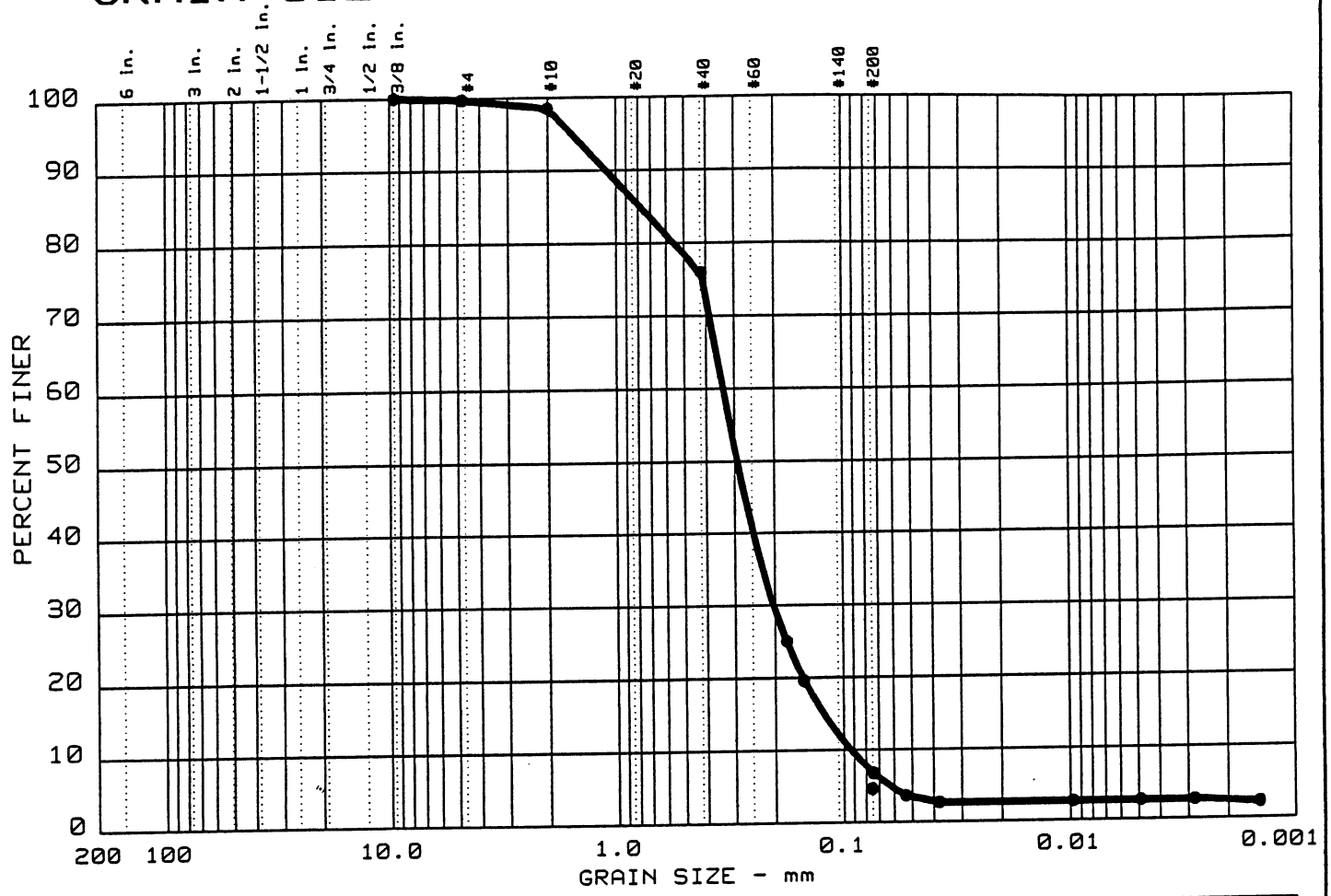
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ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.3	92.9	4.1	2.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.79	0.34	0.29	0.204	0.1227	0.0931	1.32	3.6

MATERIAL DESCRIPTION	USCS	AASHTO
● MWH-10P 34'-36'	SP-SM	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-10-98

Remarks:

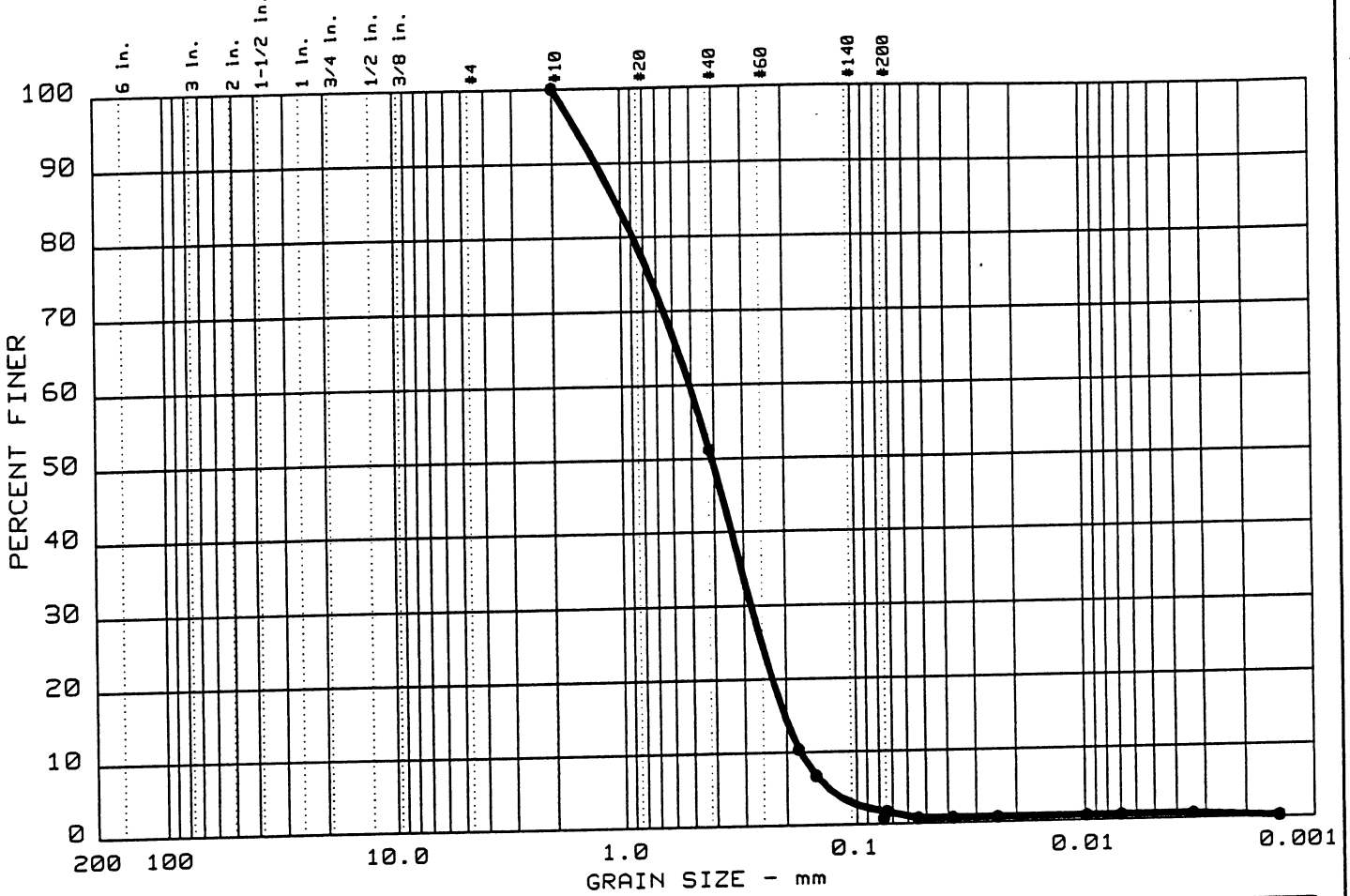
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	98.3	0.9	0.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.06	0.51	0.41	0.280	0.2030	0.1744	0.89	2.9

MATERIAL DESCRIPTION	USCS	AASHTO
● MWH-11P, 32'-34'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-11-98

Remarks:

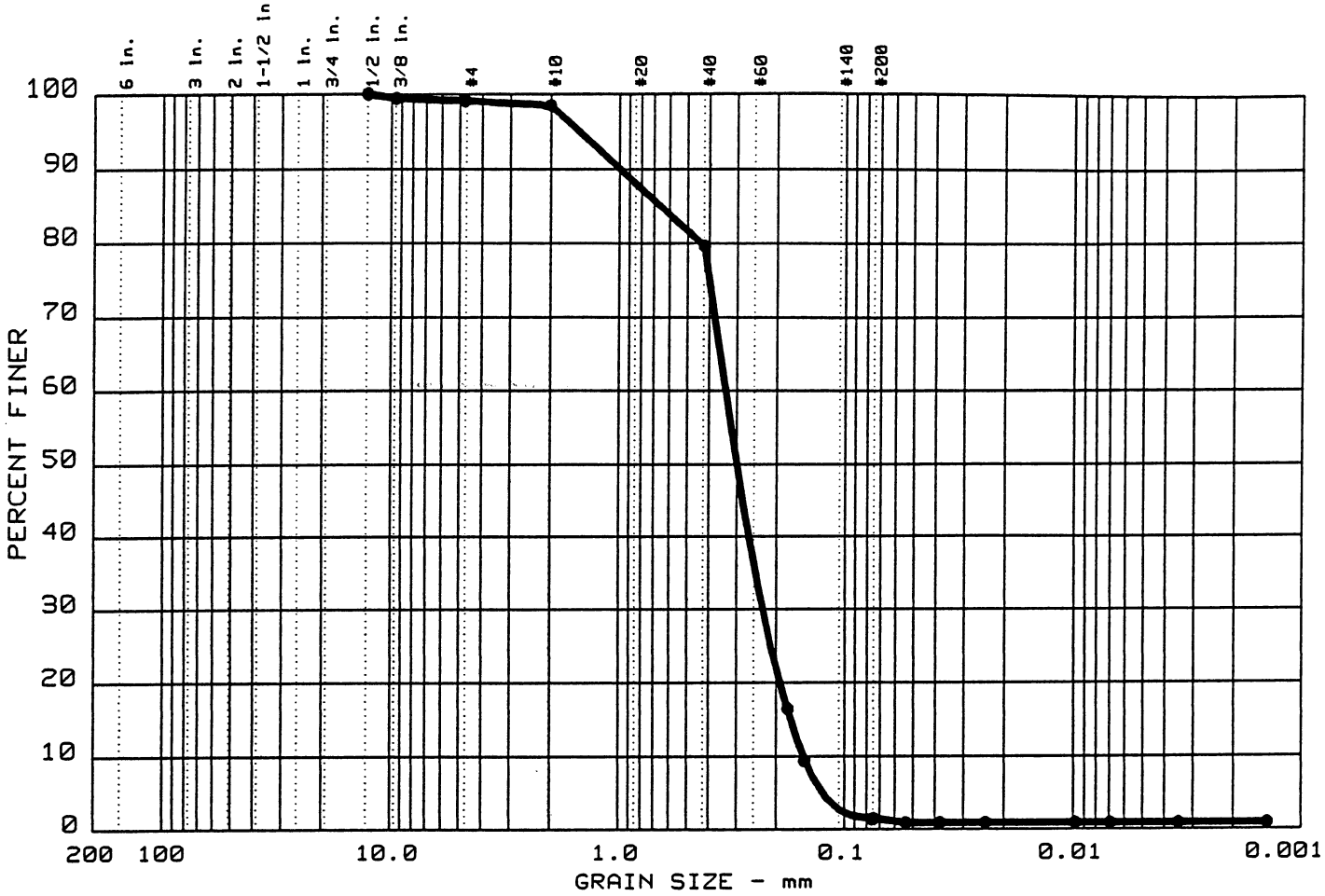
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ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.9	97.6	0.6	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.65	0.34	0.30	0.230	0.1716	0.1512	1.04	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-5, 10'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

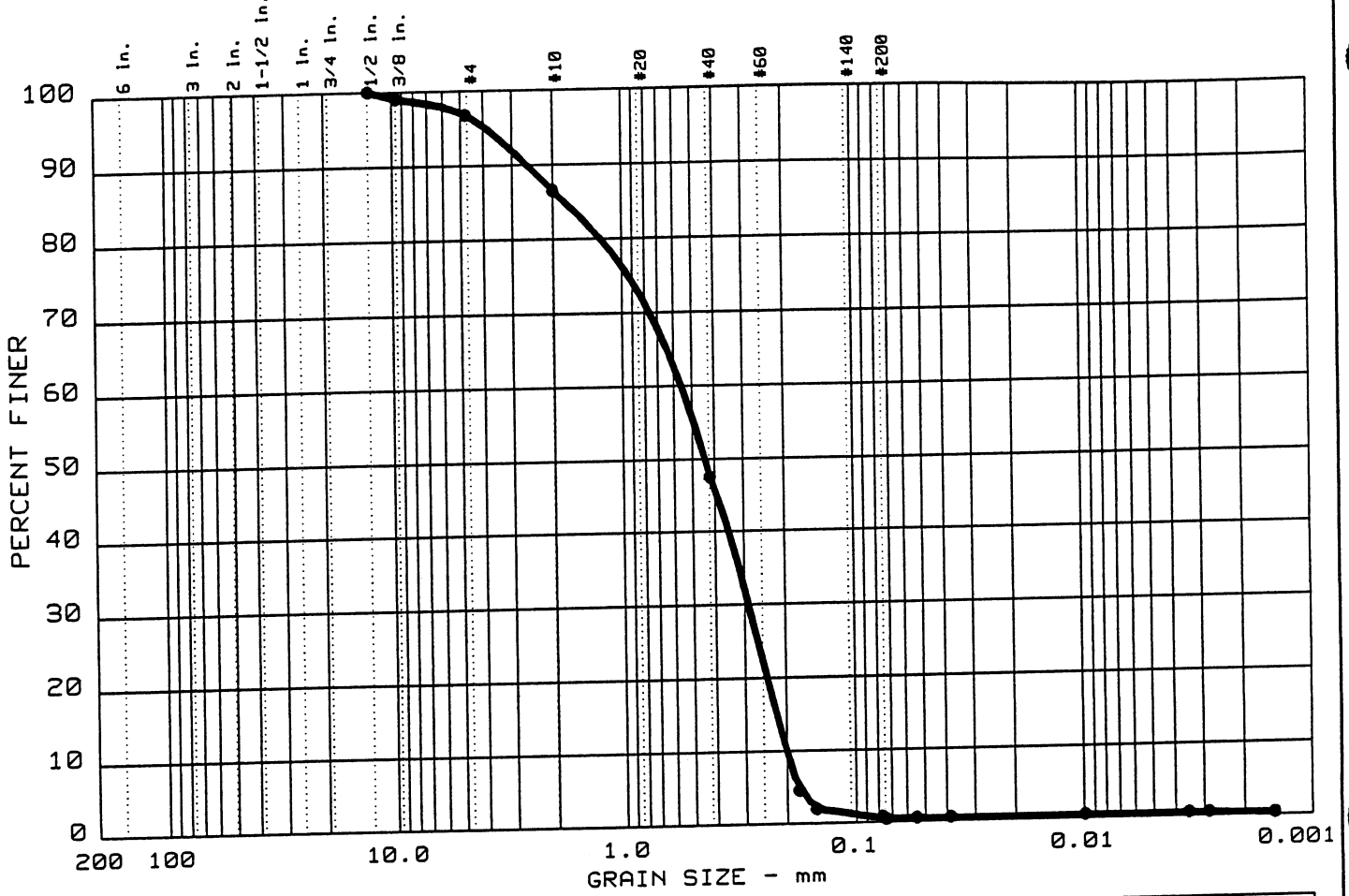
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	3.3	96.2	0.1	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.78	0.56	0.44	0.289	0.2205	0.1998	0.75	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● H-12, 6'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-10-98

Remarks:

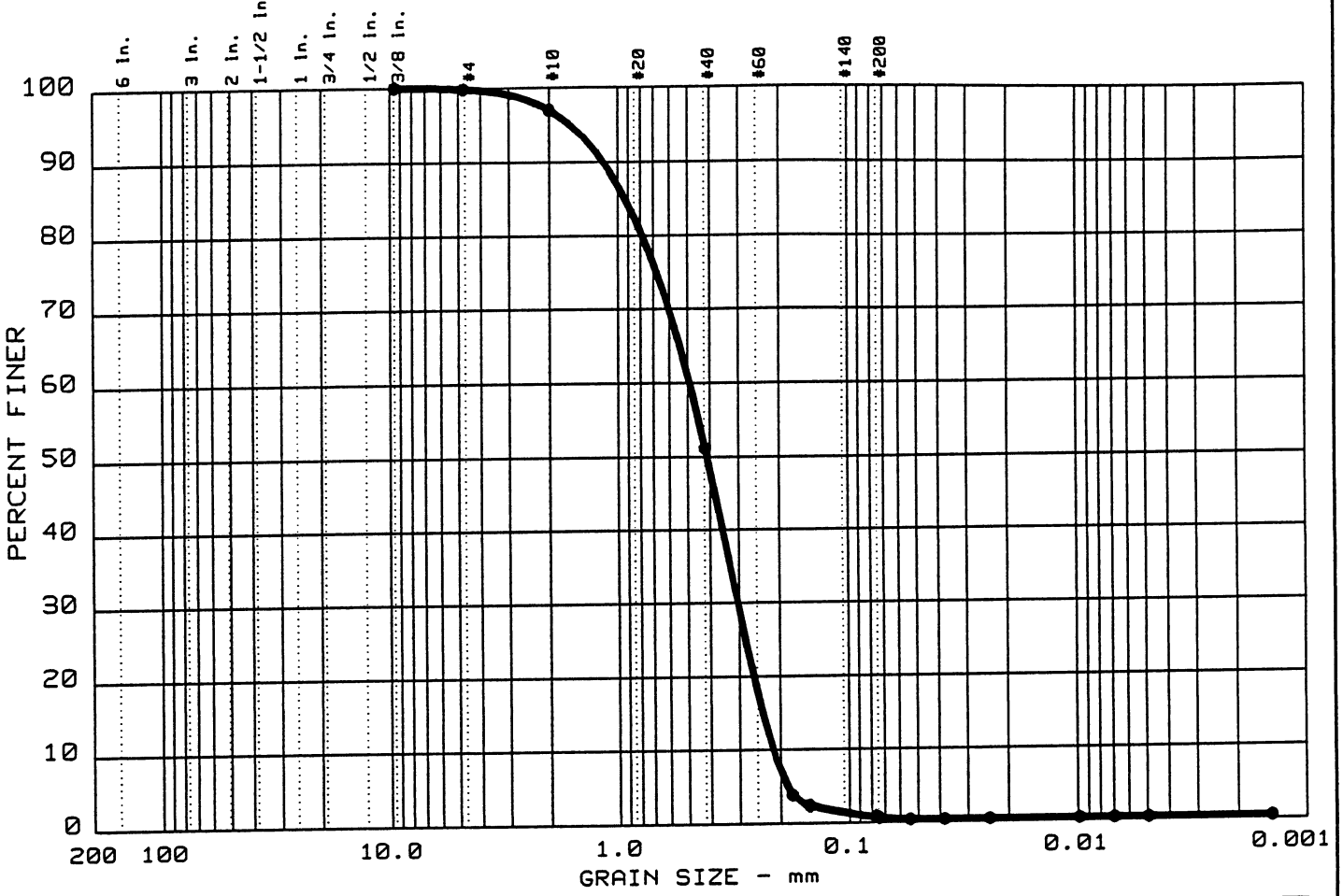
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ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.2	99.1	0.3	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.93	0.49	0.41	0.305	0.2391	0.2155	0.88	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● H-13, 4.5'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

Remarks:

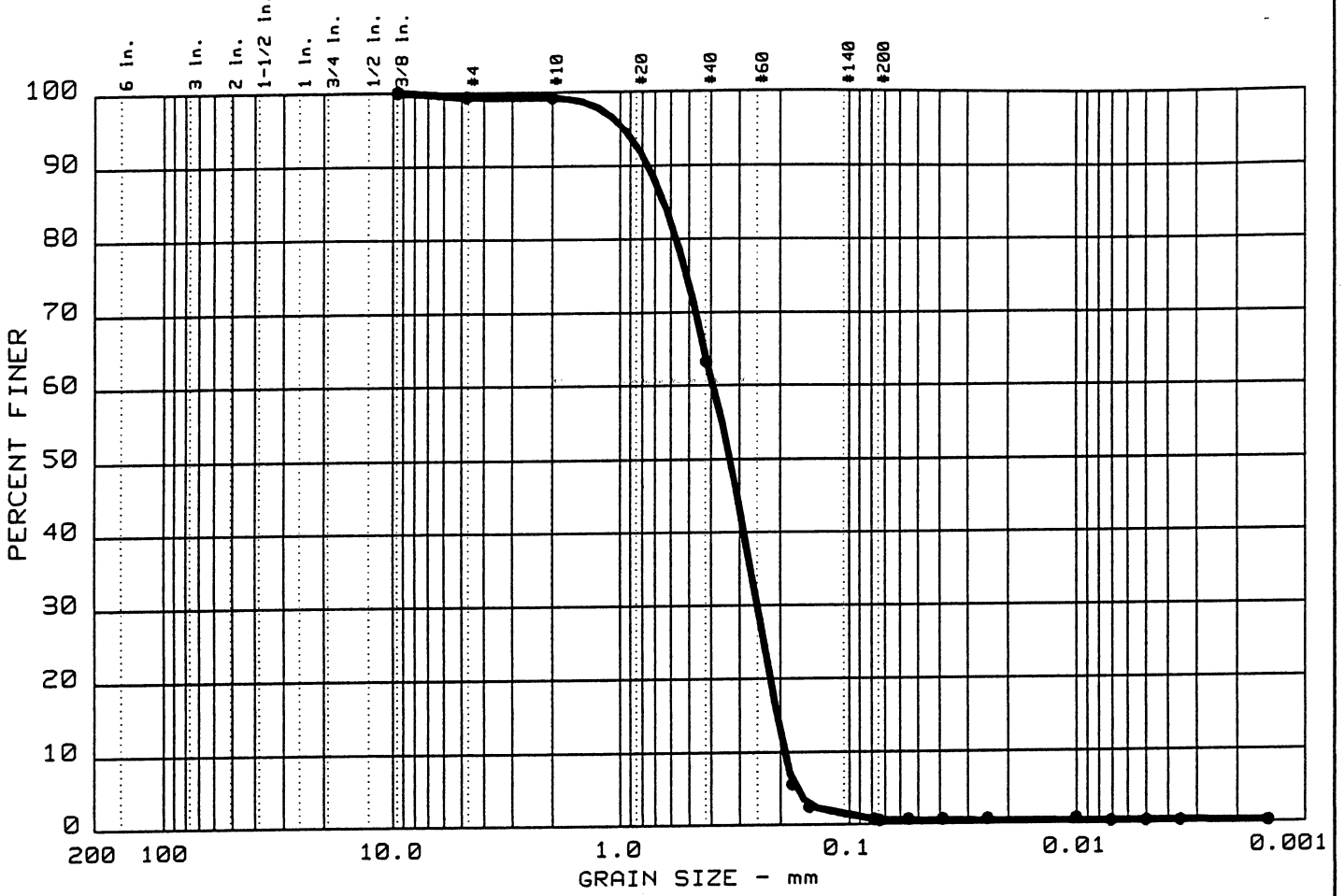
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ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.7	98.7	0.2	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.64	0.39	0.33	0.253	0.2056	0.1908	0.86	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-14, 6'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

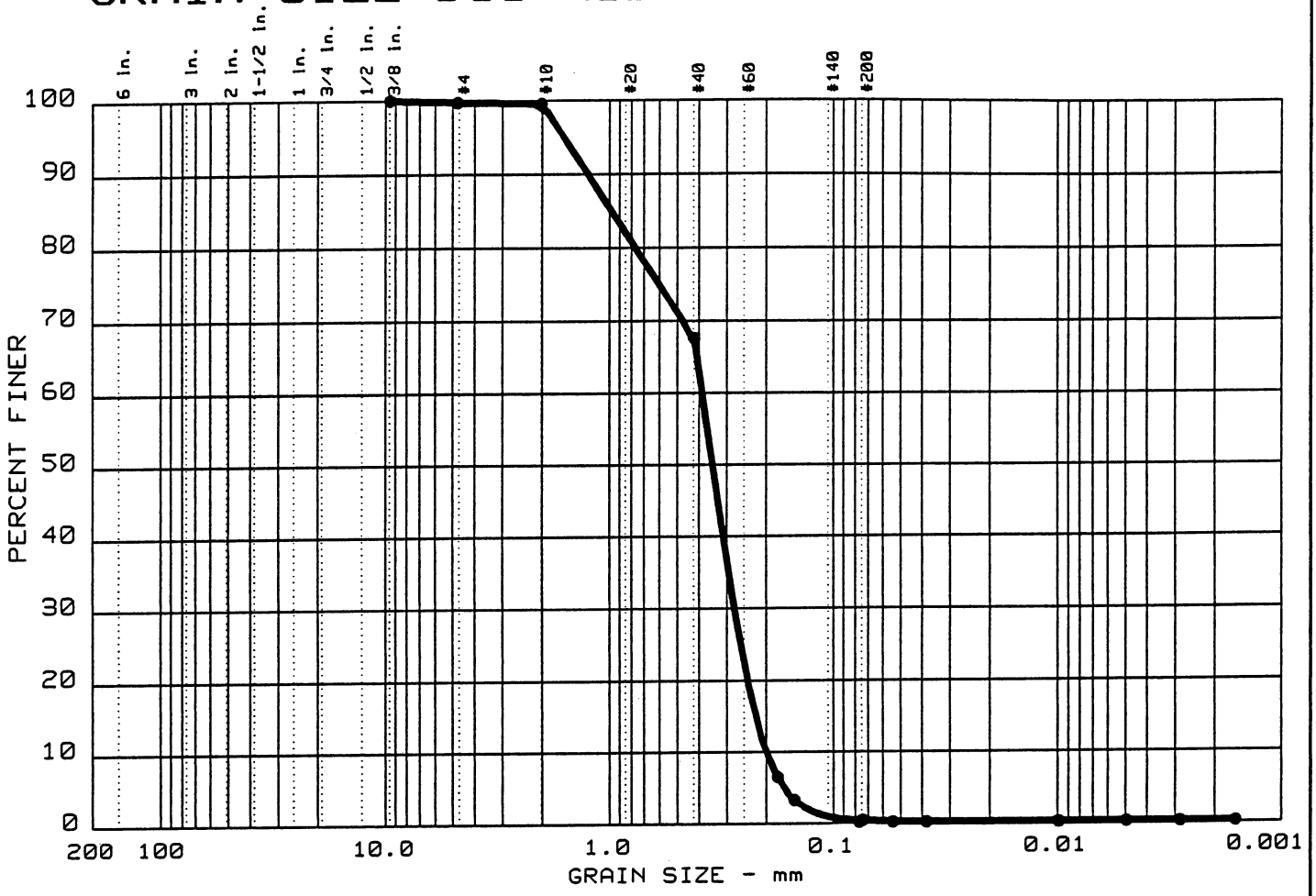
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.3	99.2	0.3	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.98	0.39	0.35	0.279	0.2236	0.2007	1.00	1.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-15, 5'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-10-98

GRAIN SIZE DISTRIBUTION TEST REPORT

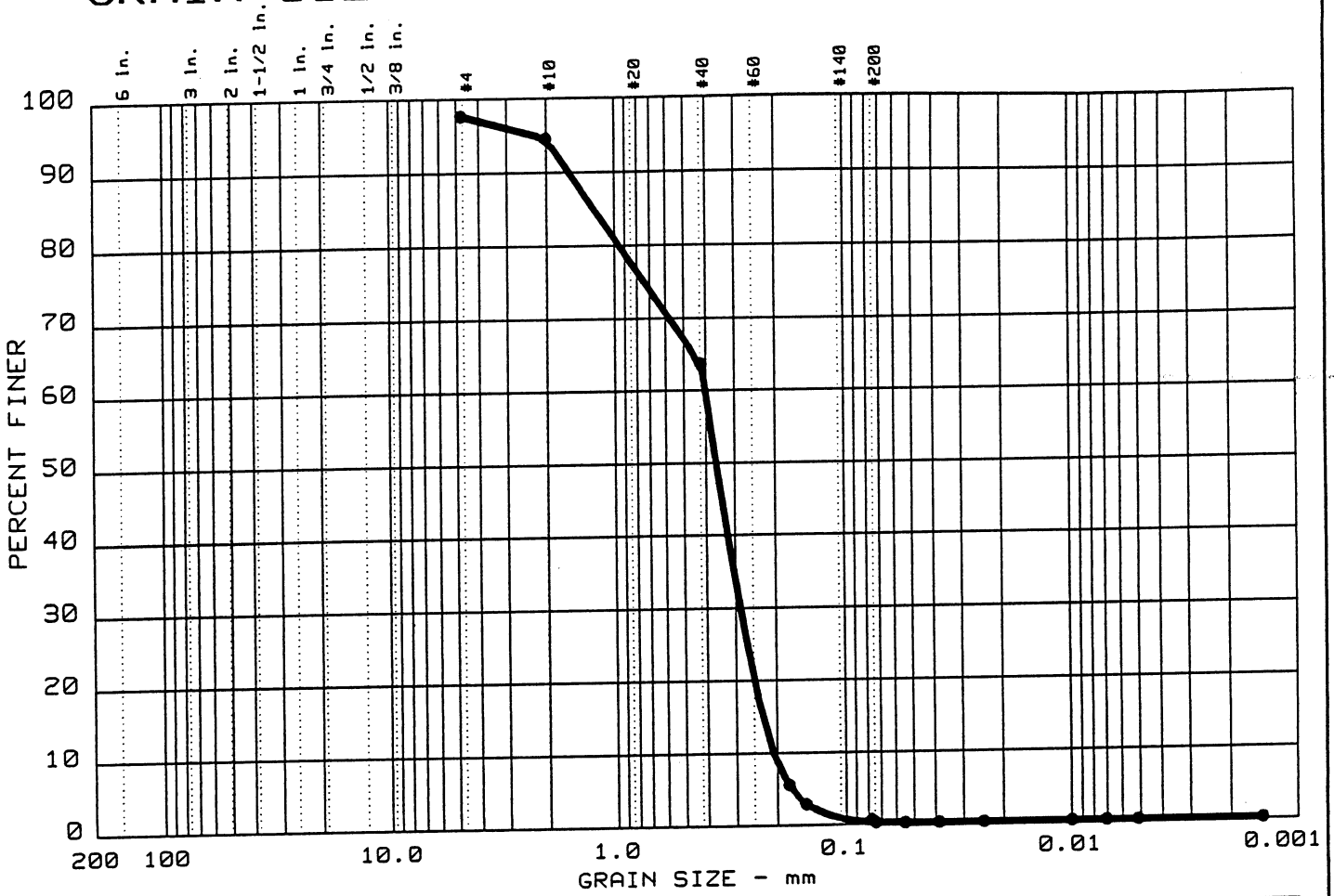
NUMMELIN TESTING SERVICES

Remarks:

Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	2.4	97.3	0.1	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.23	0.40	0.36	0.287	0.2304	0.2077	0.99	1.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-16, 8'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

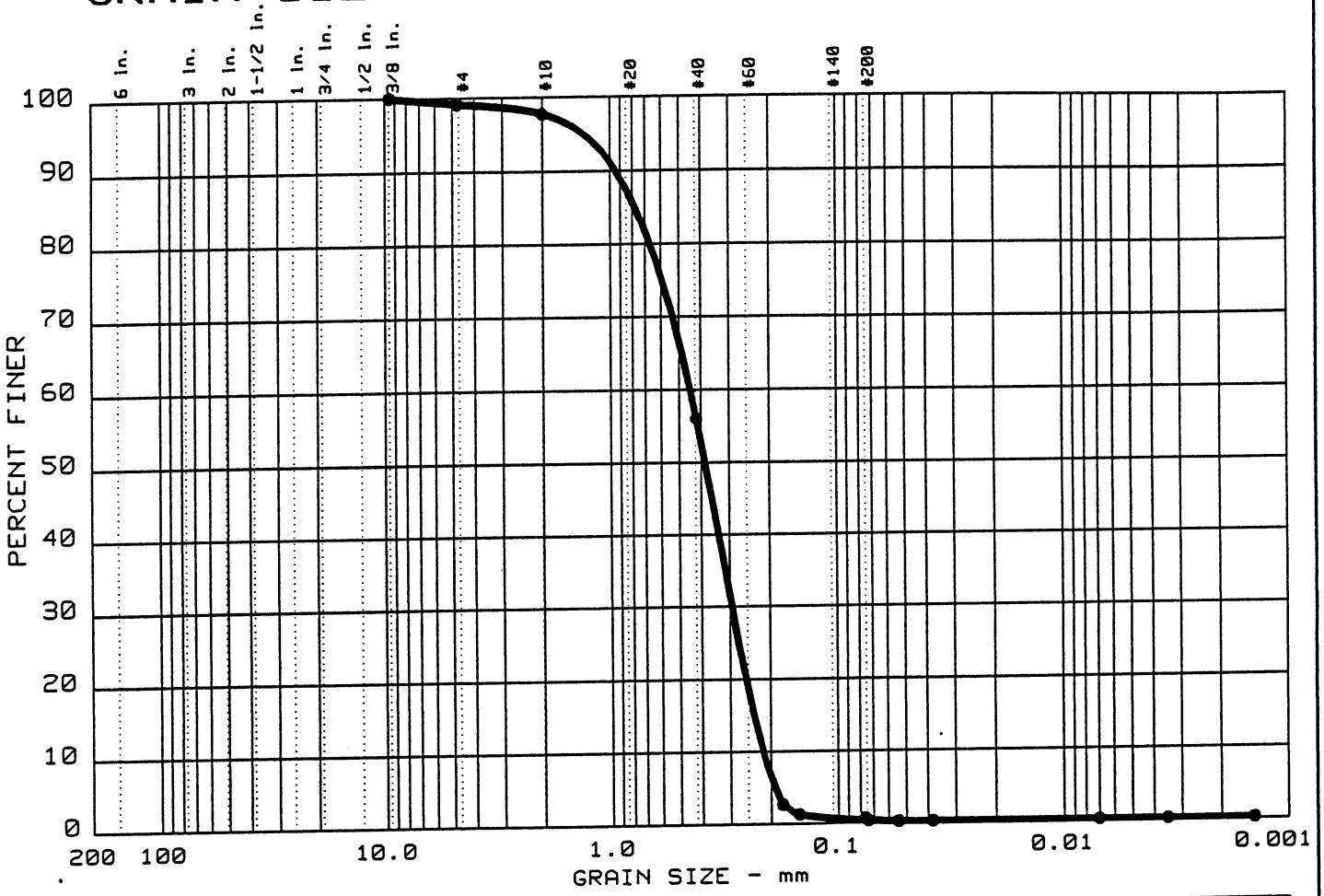
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.9	98.7	0.2	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.78	0.45	0.38	0.295	0.2371	0.2163	0.90	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-17, 5'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-10-98

Remarks:

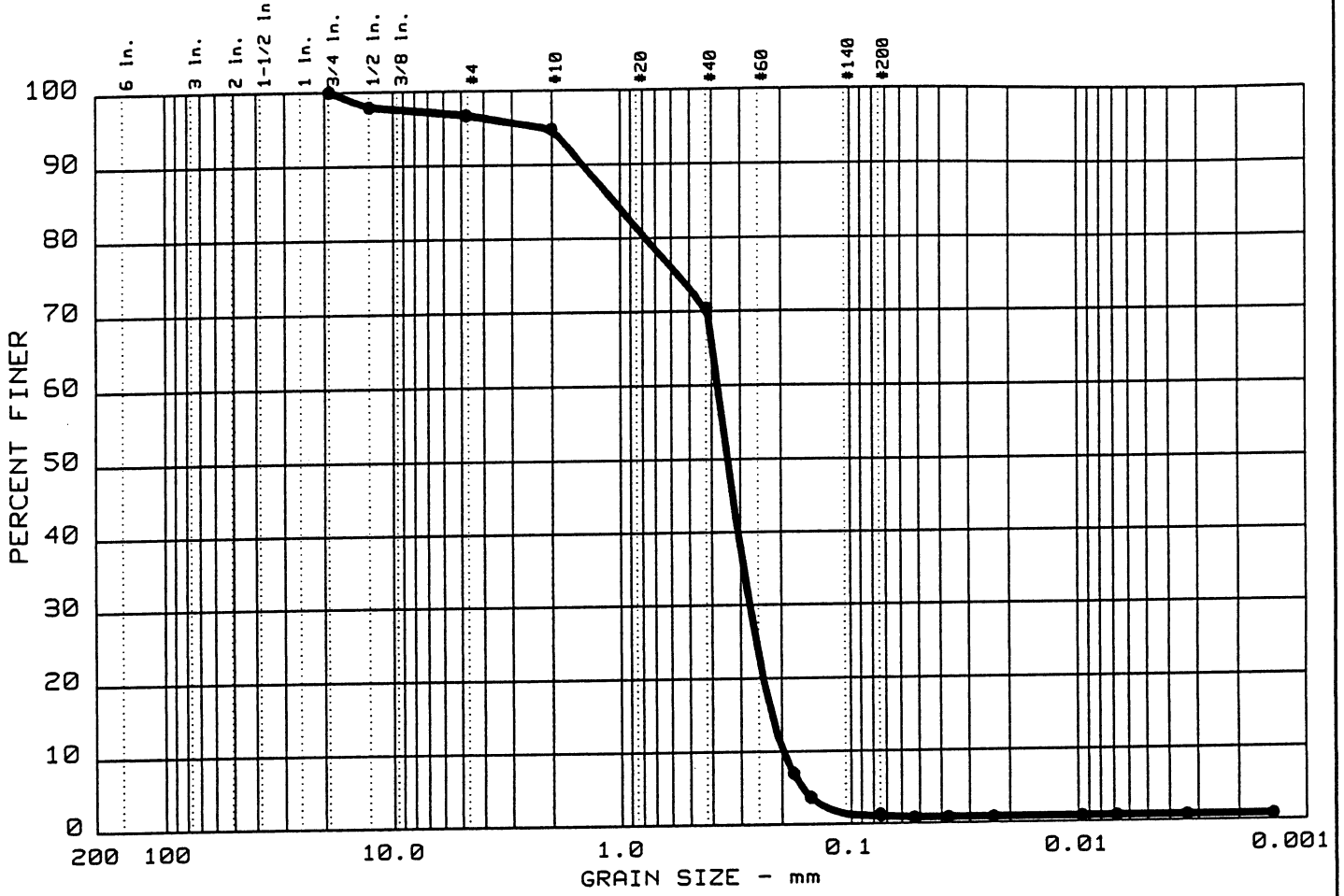
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	3.3	95.6	0.2	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.06	0.38	0.34	0.275	0.2208	0.1984	1.00	1.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-28, 8'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

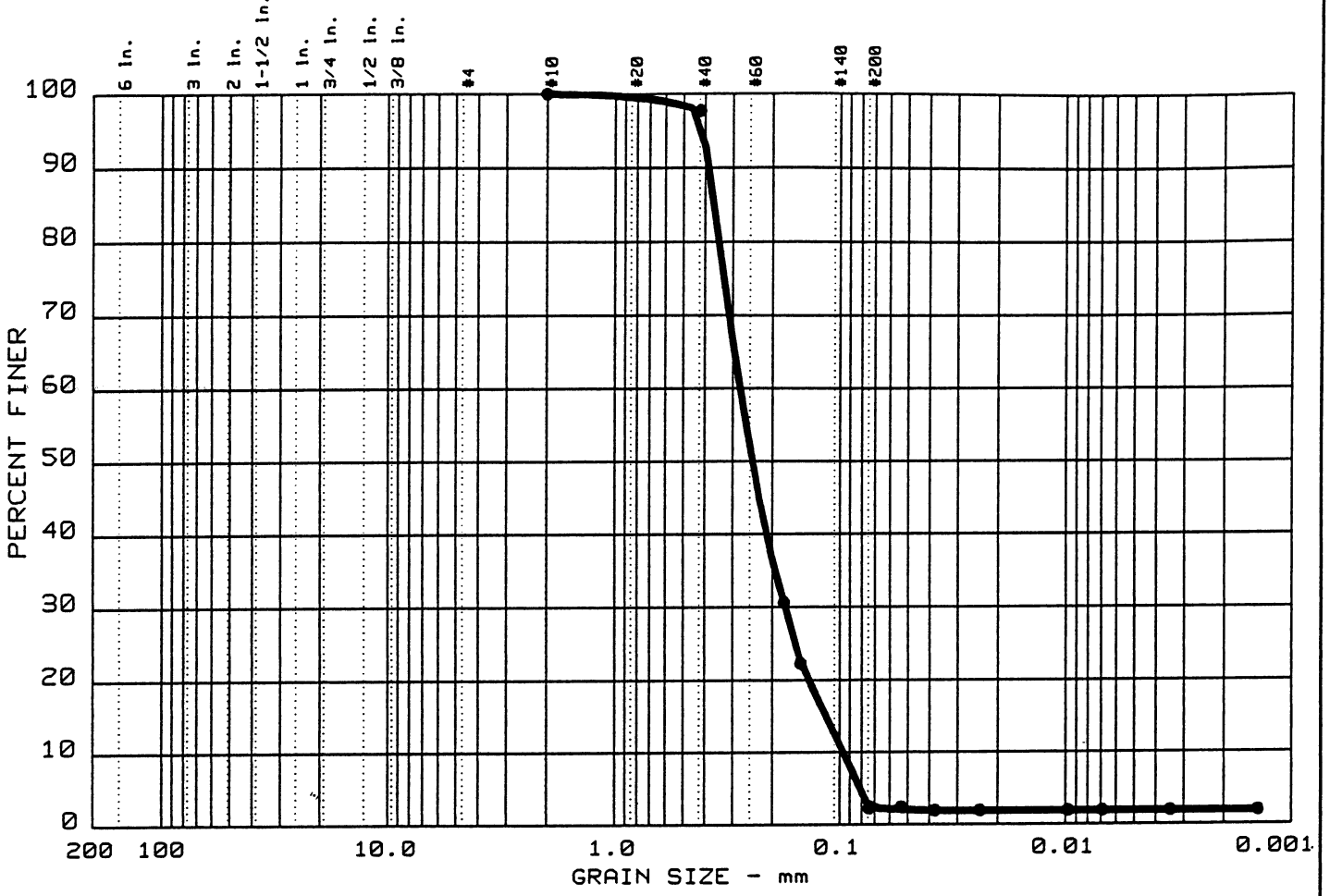
Checked By: Bn

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.0	97.7	0.3	2.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.37	0.28	0.25	0.175	0.1153	0.0968	1.14	2.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-29, 4.5'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

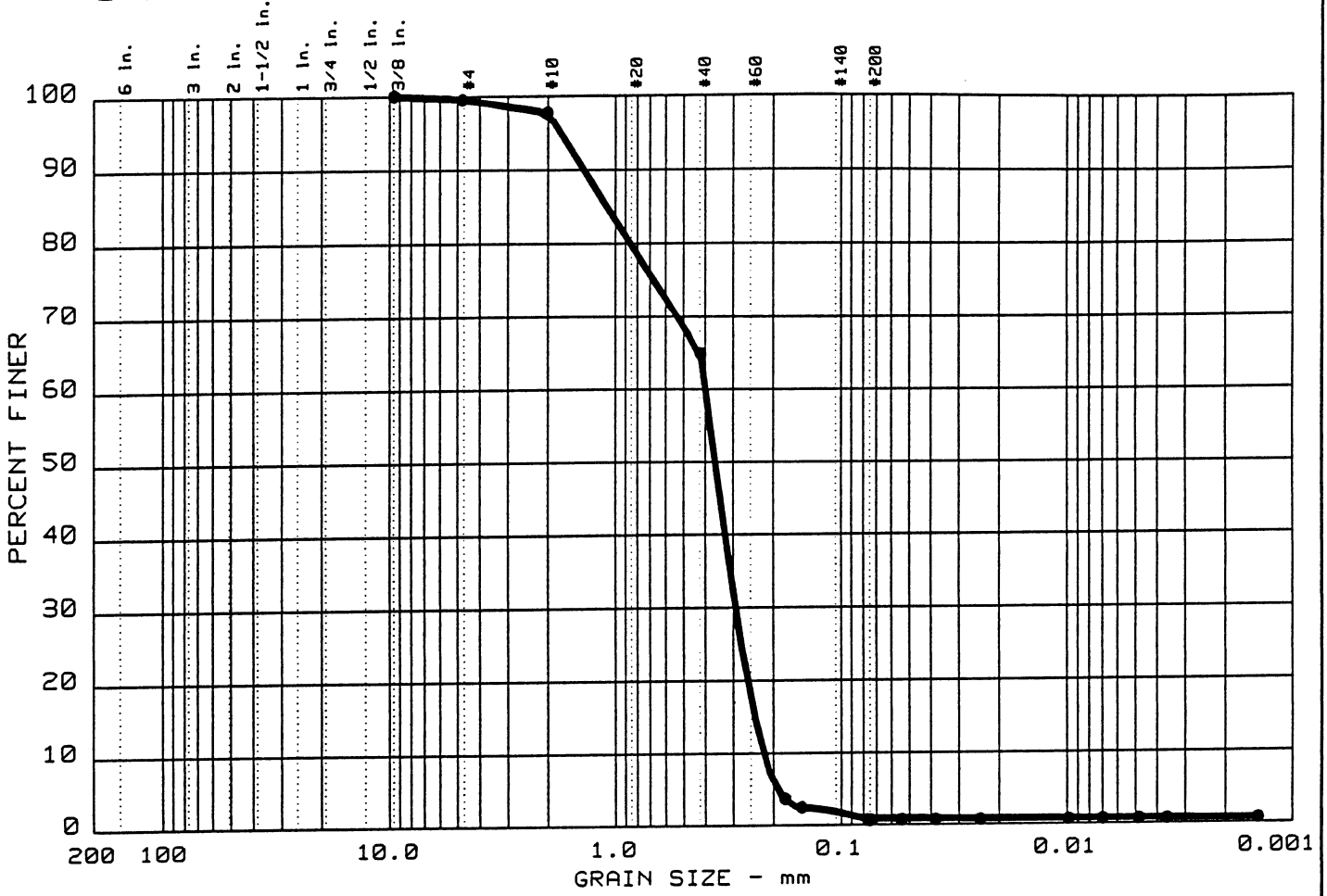
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.5	98.8	0.7	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.08	0.40	0.36	0.294	0.2418	0.2205	0.98	1.8

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-30, 4.5'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

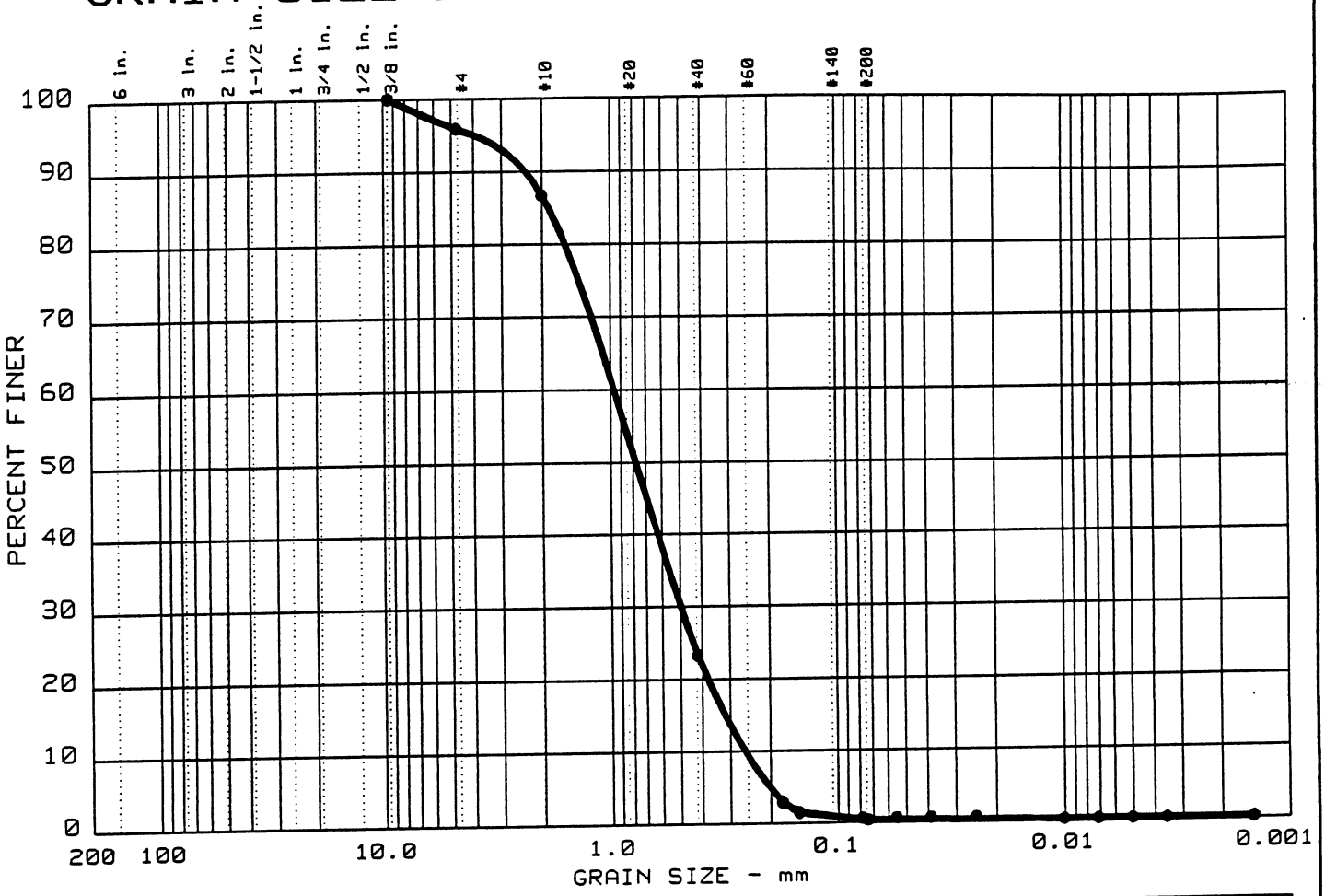
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	4.1	95.5	0.2	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.86	0.97	0.78	0.498	0.3173	0.2579	0.99	3.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-31, 9'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

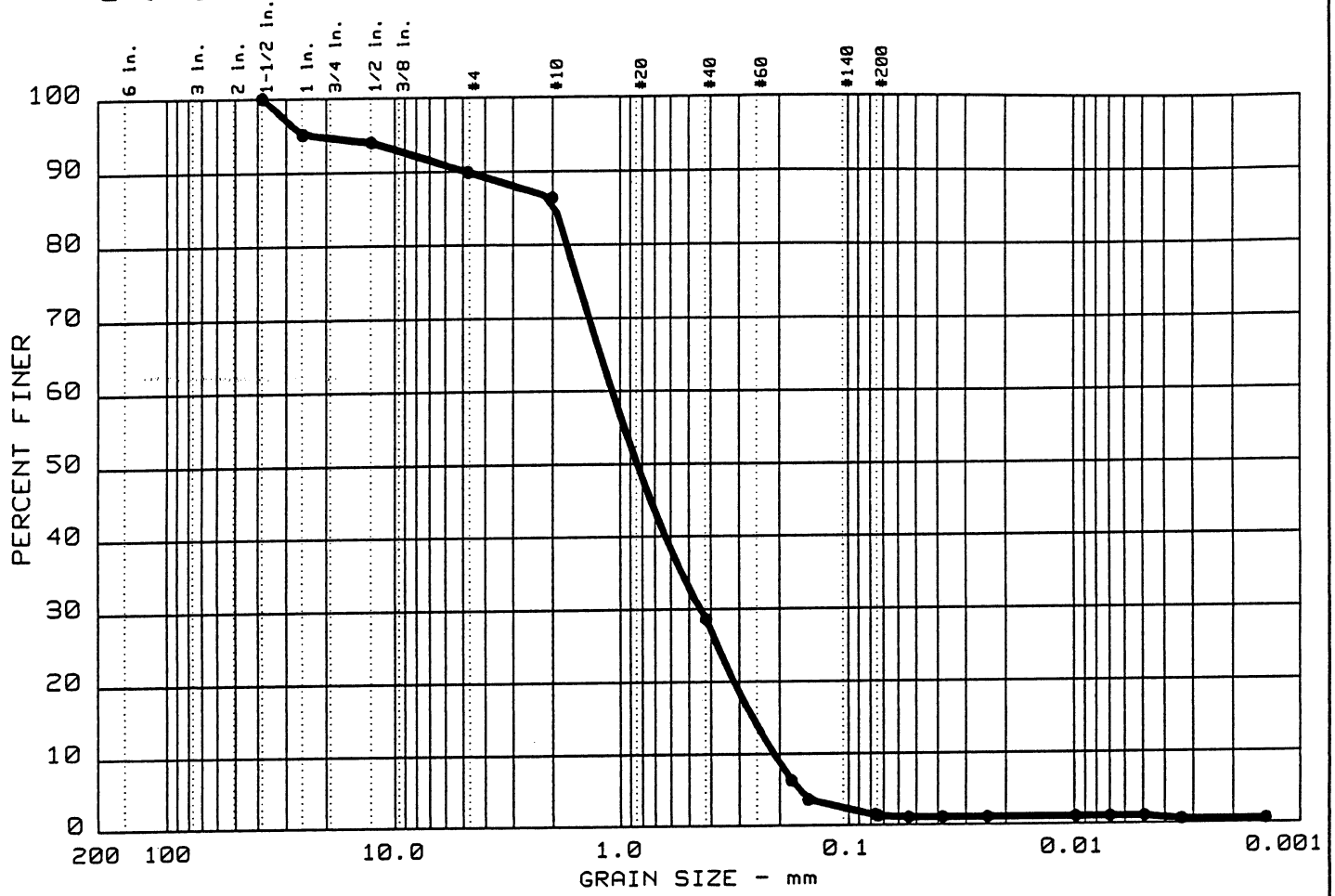
Checked By: BH

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	10.1	88.6	0.2	1.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.94	1.09	0.84	0.443	0.2627	0.2111	0.85	5.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-32, 5'	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

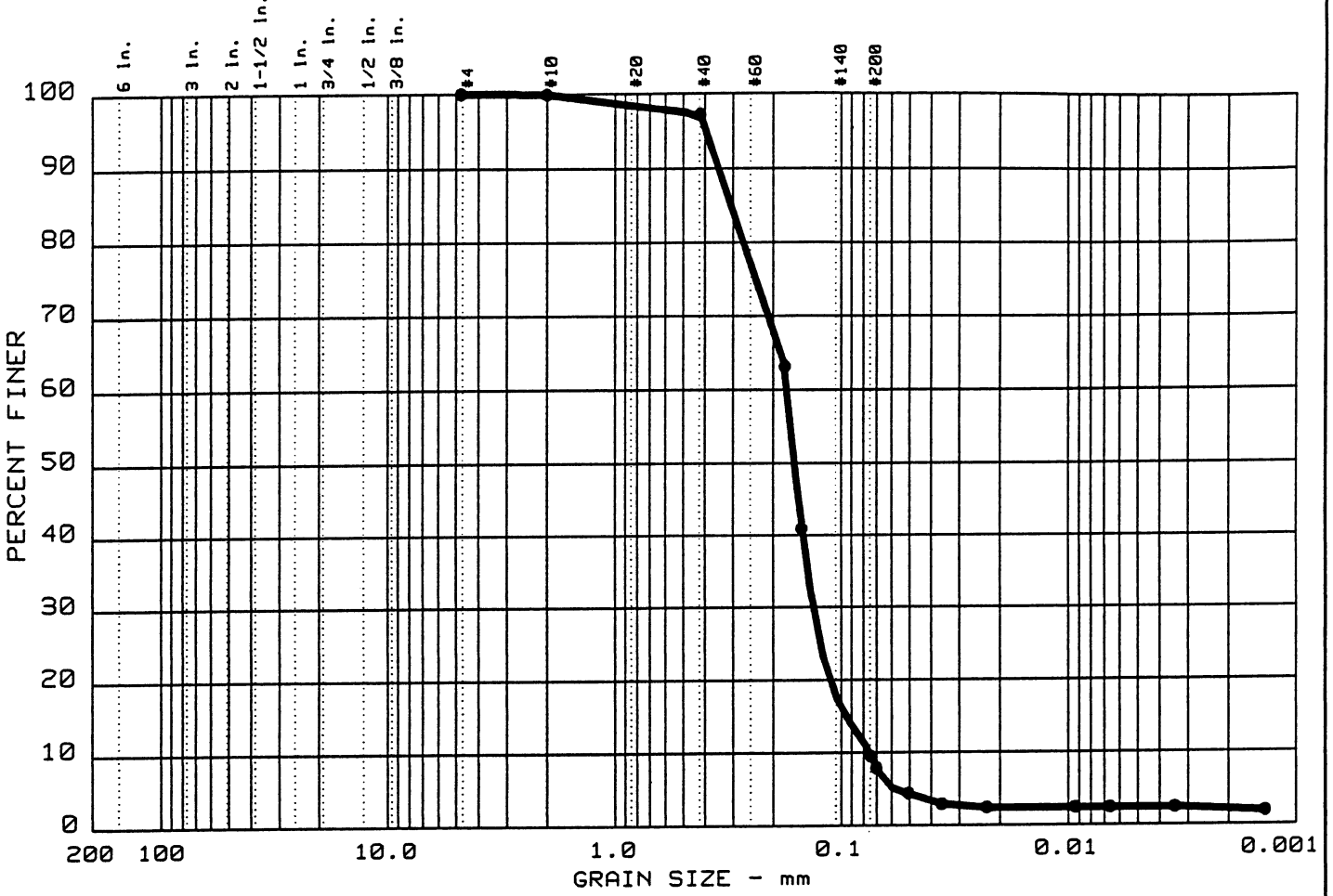
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	90.5	7.1	2.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.31	0.17	0.16	0.133	0.0954	0.0749	1.37	2.3

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-33C, 60"	SP-SM	A-3

Project No.: 115.47 ·
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

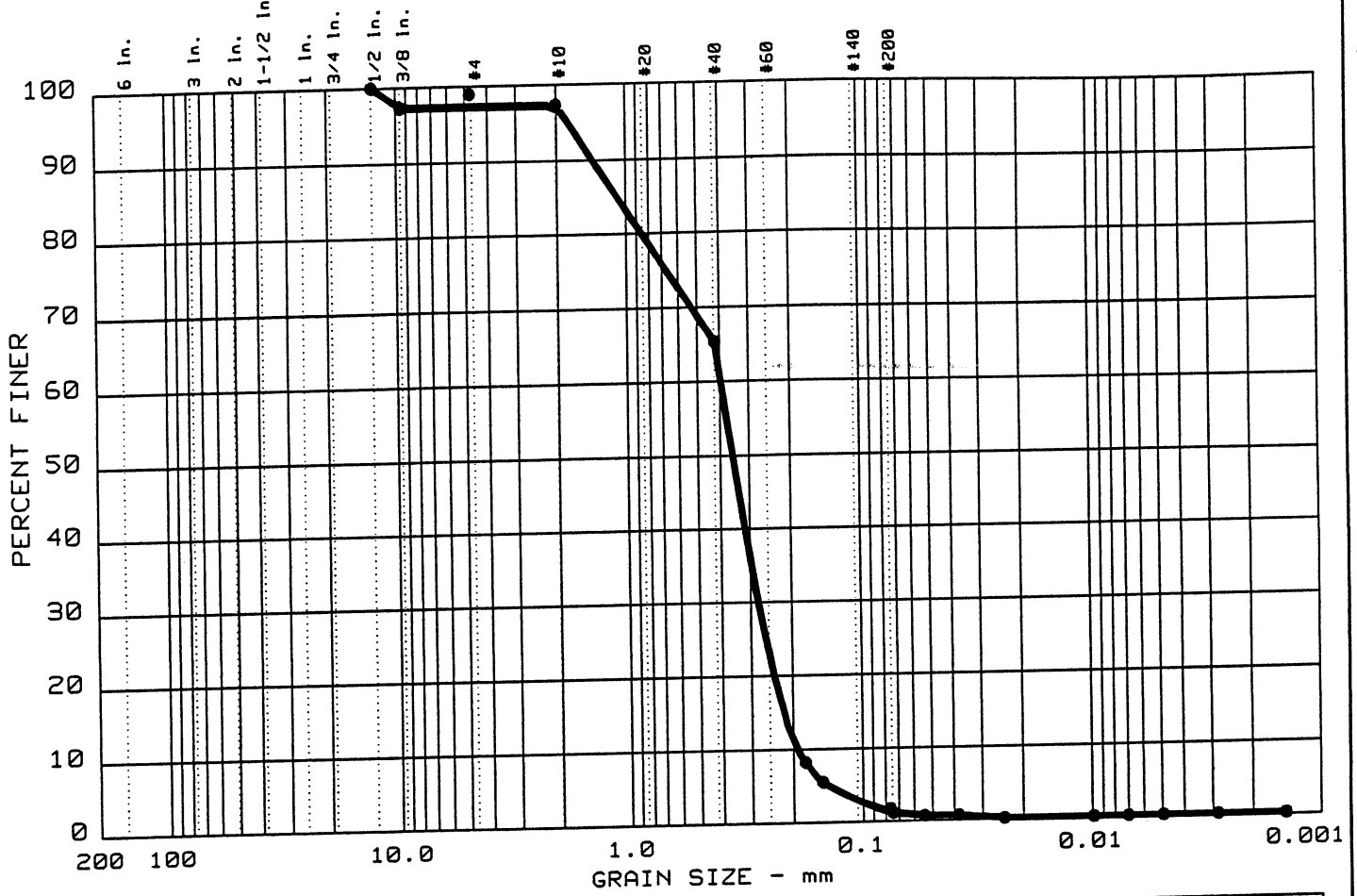
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	2.7	96.1	1.0	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.10	0.40	0.35	0.279	0.2188	0.1925	1.02	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH 35, 3'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-10-98

Remarks:

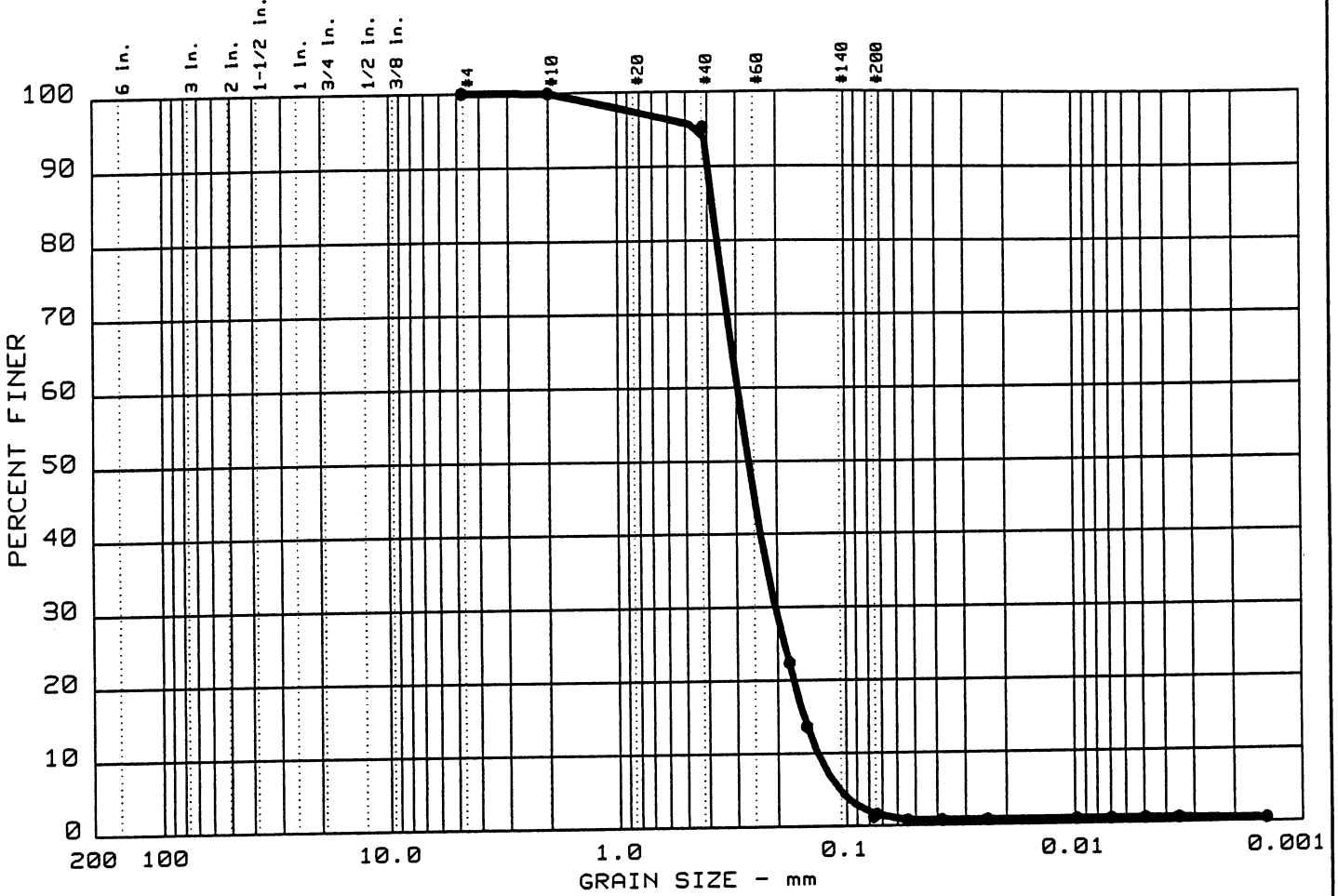
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	98.4	0.8	0.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.38	0.30	0.27	0.205	0.1535	0.1337	1.05	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-36, 5'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

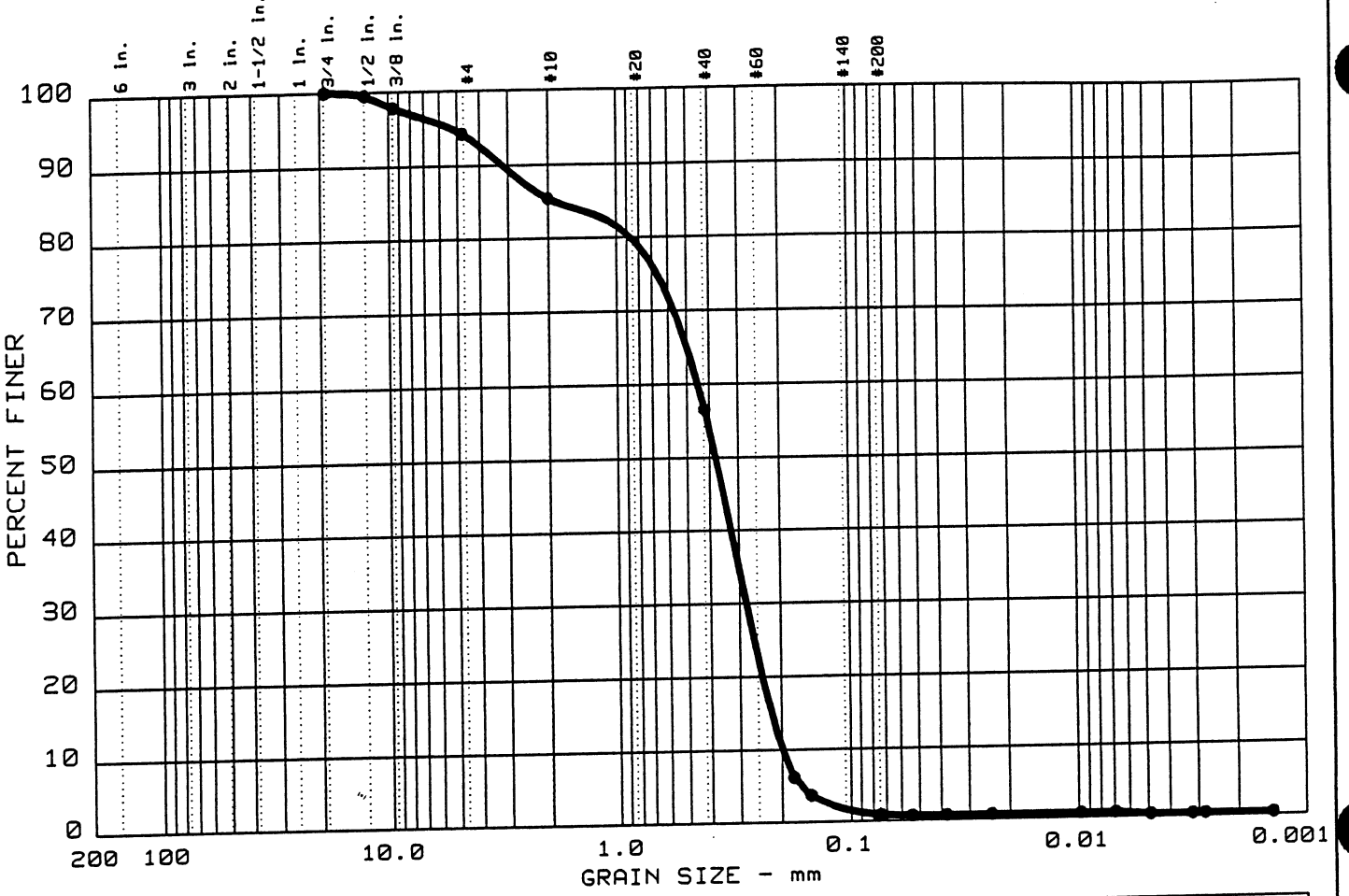
Checked By: BR

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	5.8	93.3	0.5	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.86	0.45	0.38	0.282	0.2208	0.1986	0.89	2.2

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-37, 3'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

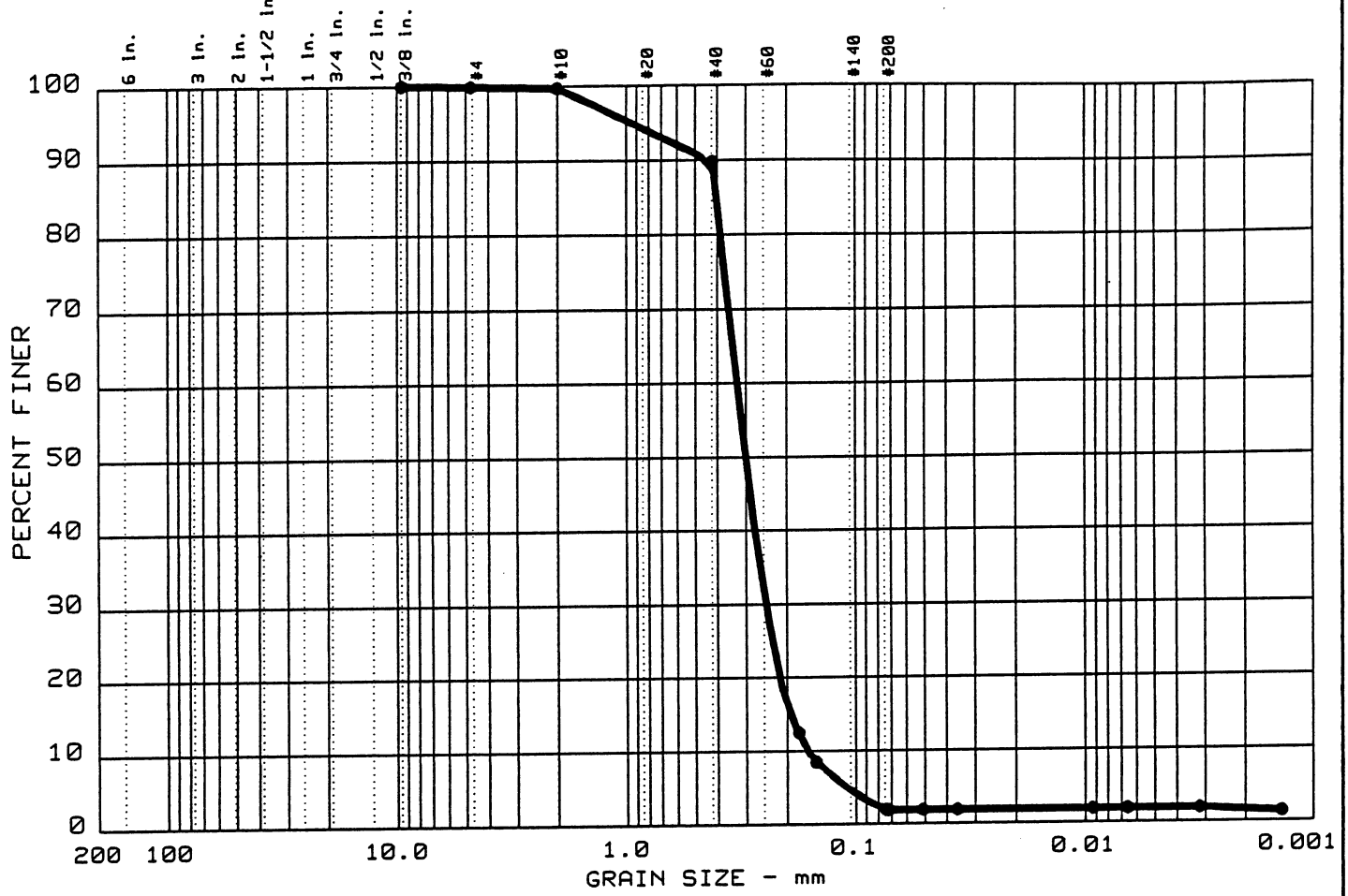
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.1	97.9	0.1	1.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.40	0.33	0.30	0.247	0.1939	0.1613	1.15	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-38B, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-16-98

Remarks:

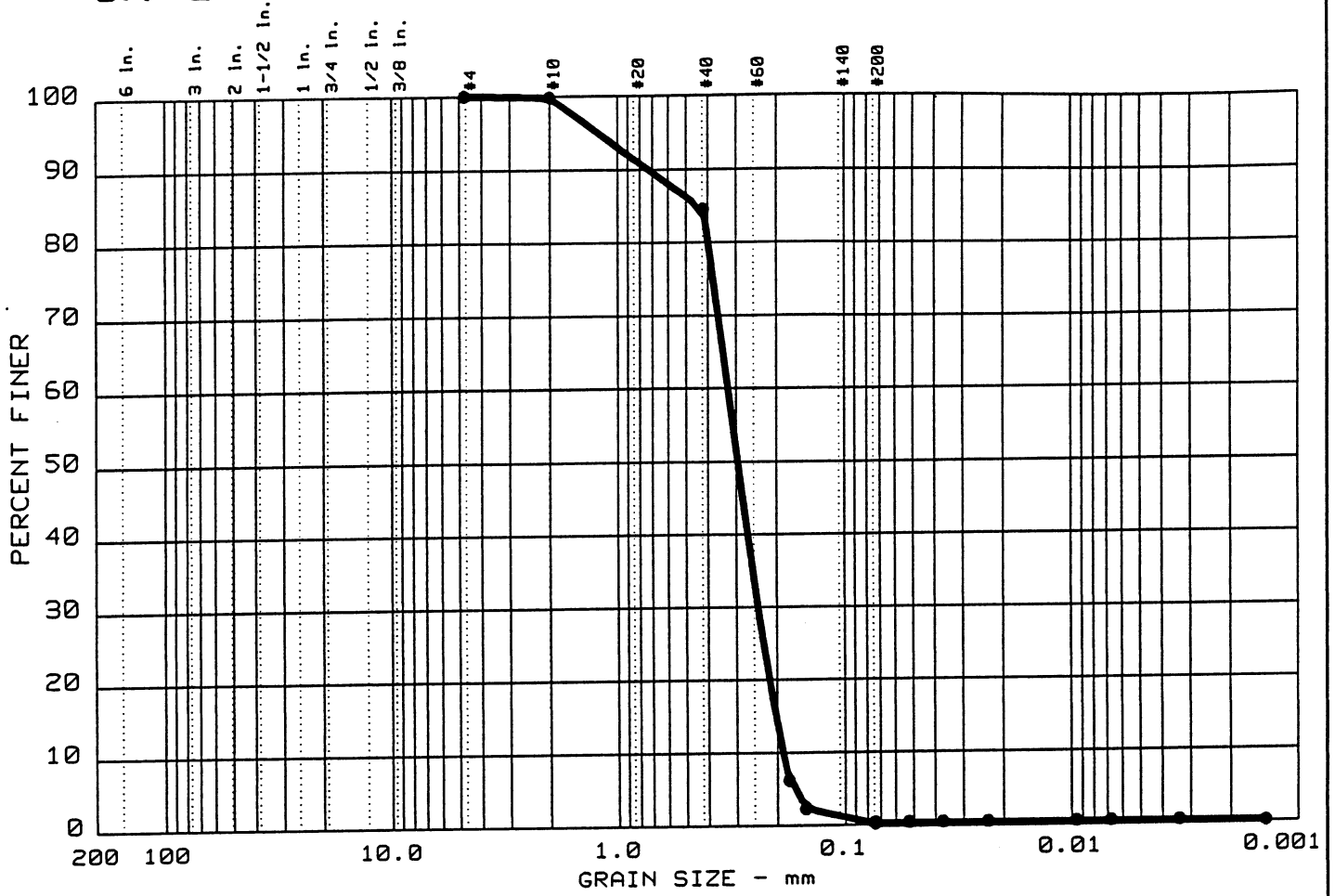
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.0	99.8	0.0	0.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.44	0.33	0.30	0.242	0.2028	0.1888	0.95	1.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TBH-42B, 90"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-16-98

Remarks:

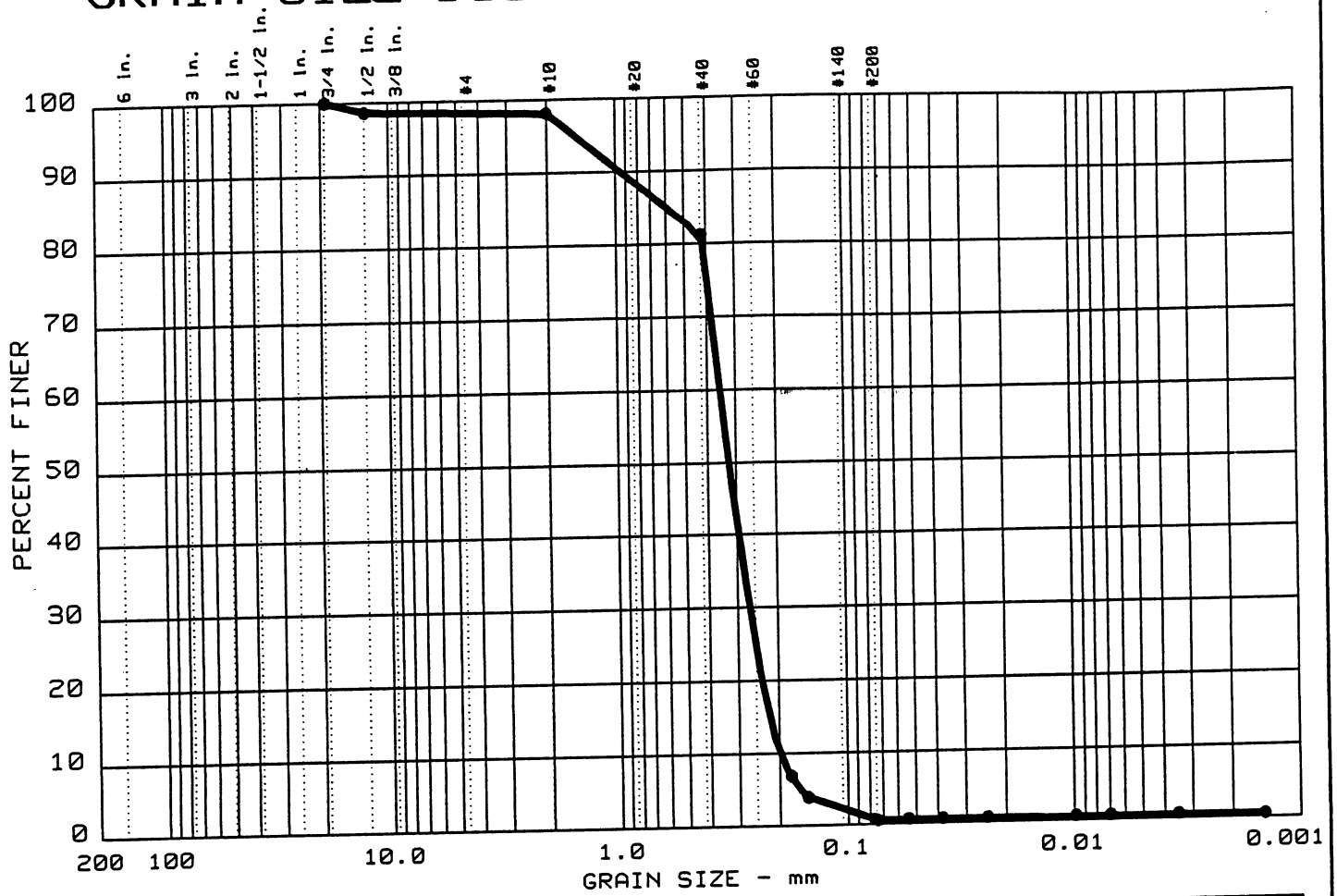
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	1.7	97.7	0.0	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.60	0.35	0.32	0.267	0.2193	0.1991	1.01	1.8

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-43, 40"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-12-98

Remarks:

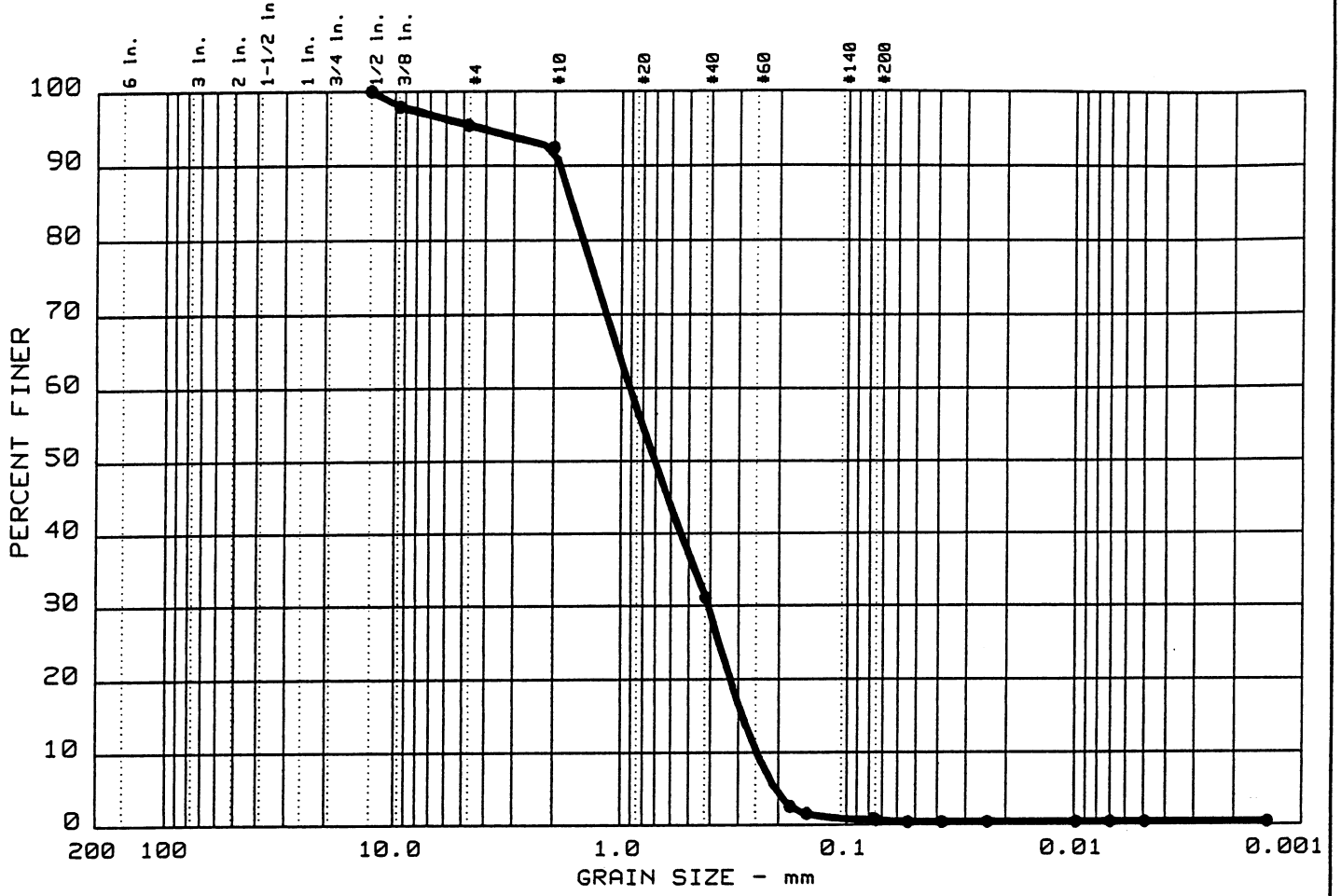
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ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	4.6	94.7	0.3	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.68	0.91	0.71	0.410	0.2884	0.2483	0.74	3.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-48, 36"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

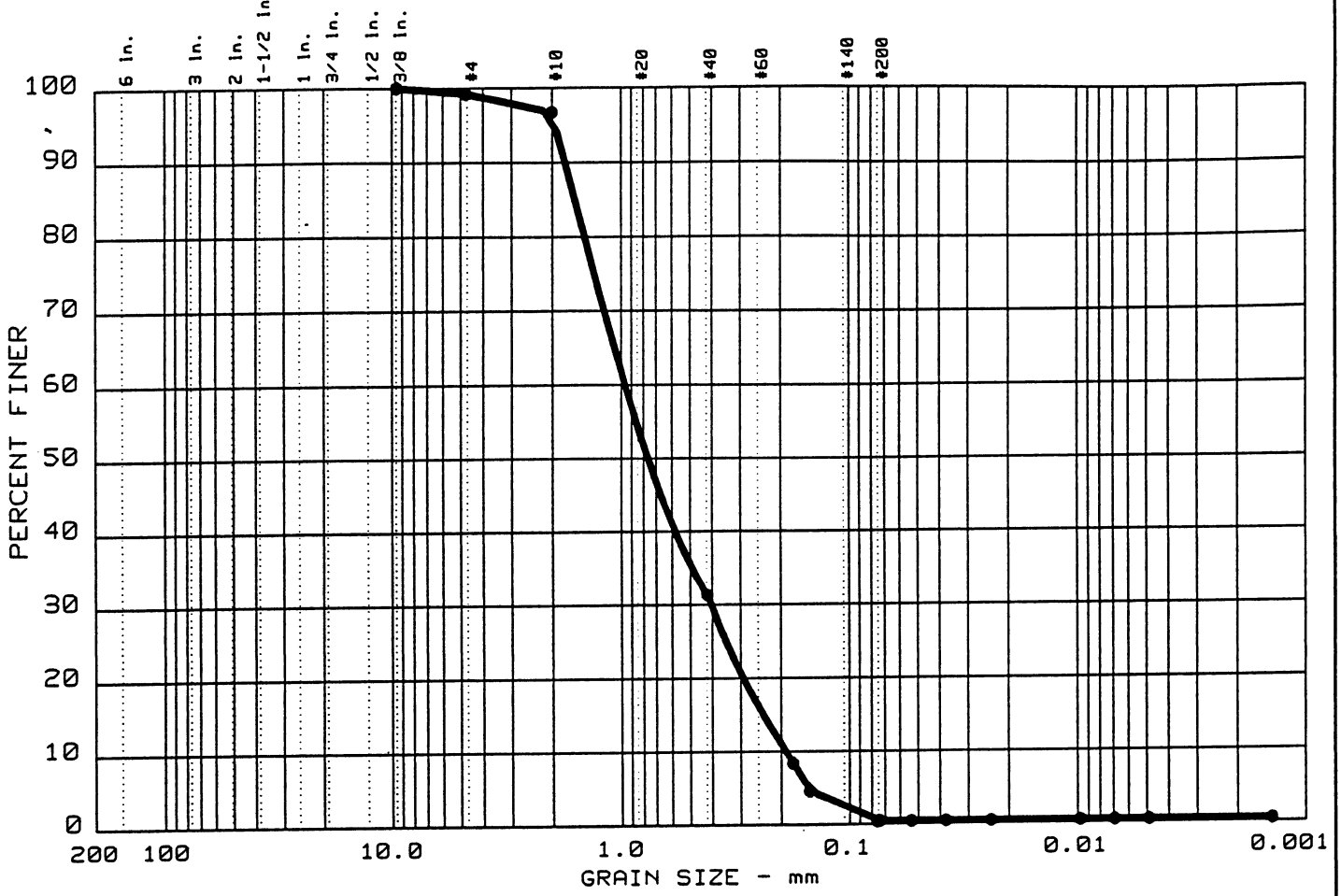
Checked By: BH

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.8	98.7	0.1	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.60	0.96	0.76	0.406	0.2388	0.1897	0.90	5.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-48, 66"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

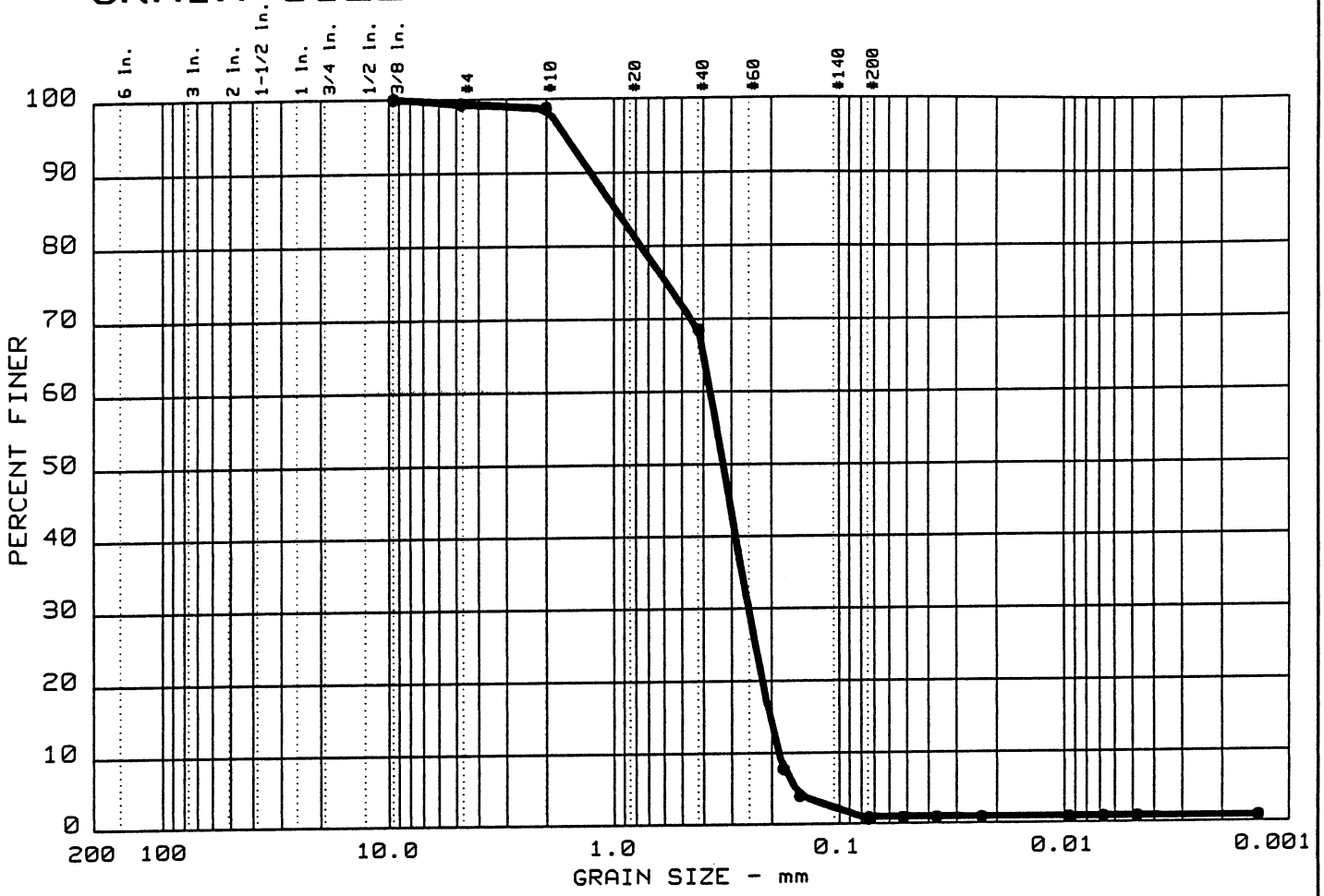
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.7	98.6	0.7	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.98	0.37	0.33	0.254	0.2030	0.1851	0.93	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-51, 50"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

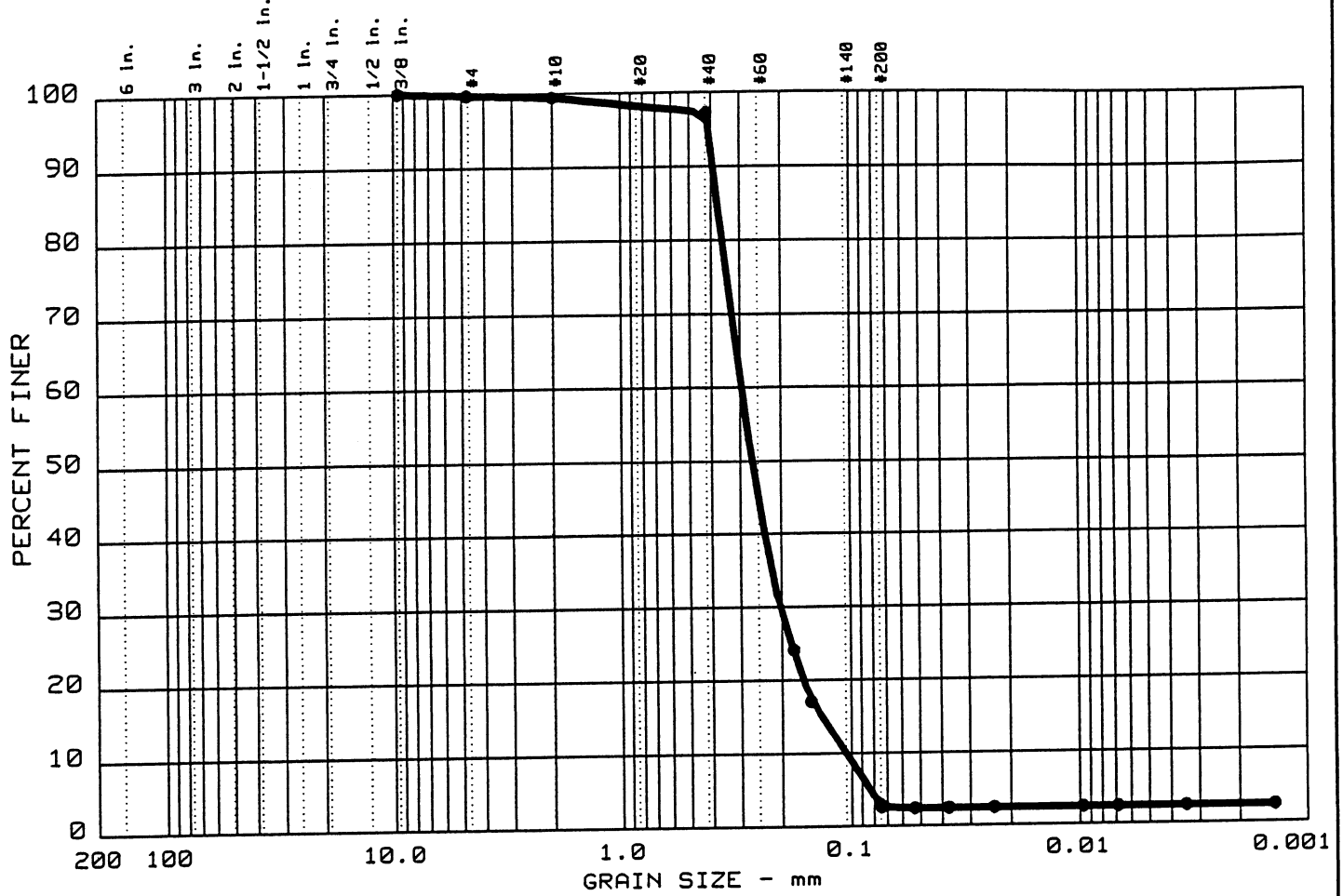
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ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.3	97.1	0.2	2.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.38	0.30	0.27	0.203	0.1338	0.1051	1.32	2.8

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-54, 22"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-16-98

Remarks:

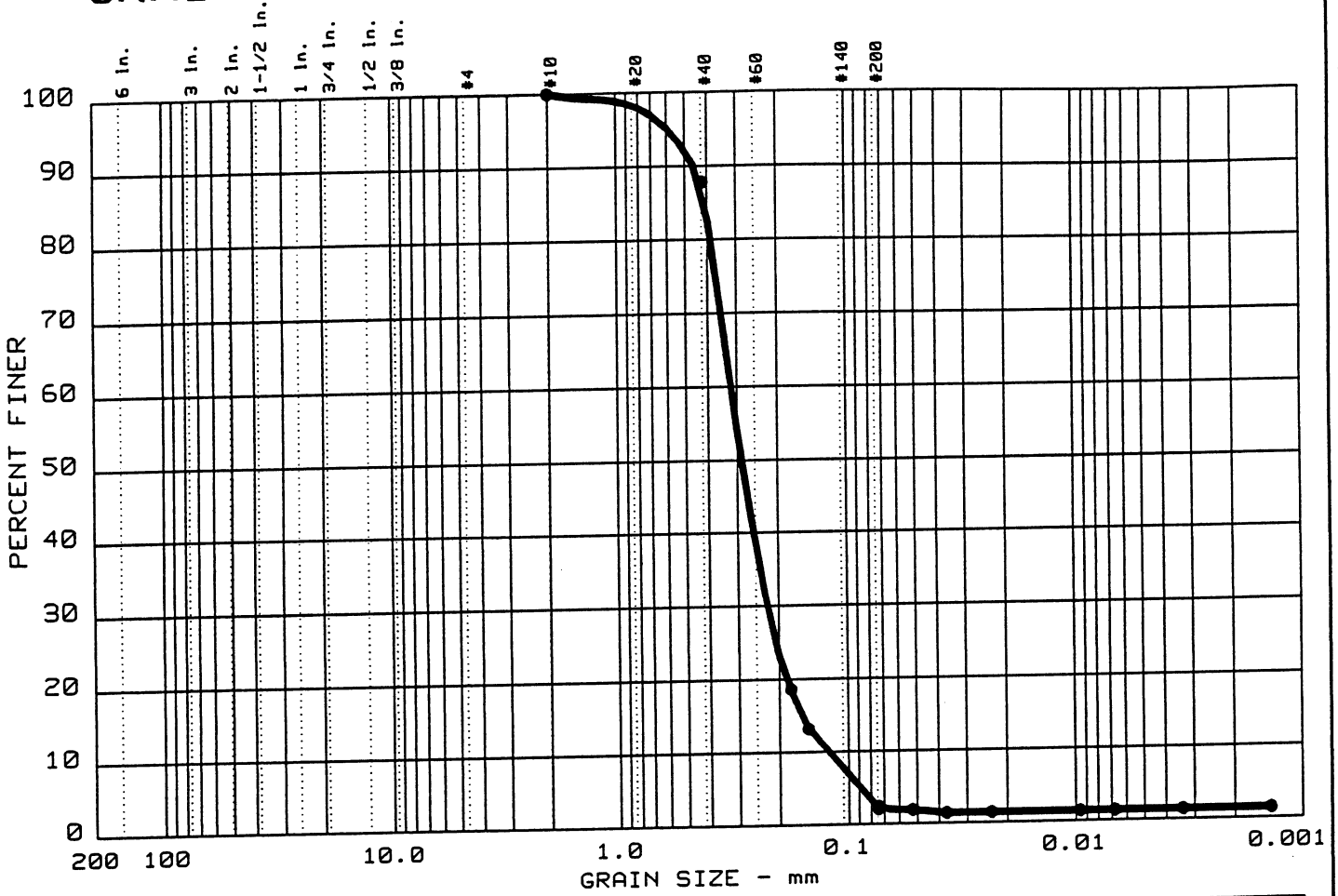
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ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	97.9	0.7	1.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.41	0.32	0.29	0.225	0.1590	0.1206	1.31	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-67, 48"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

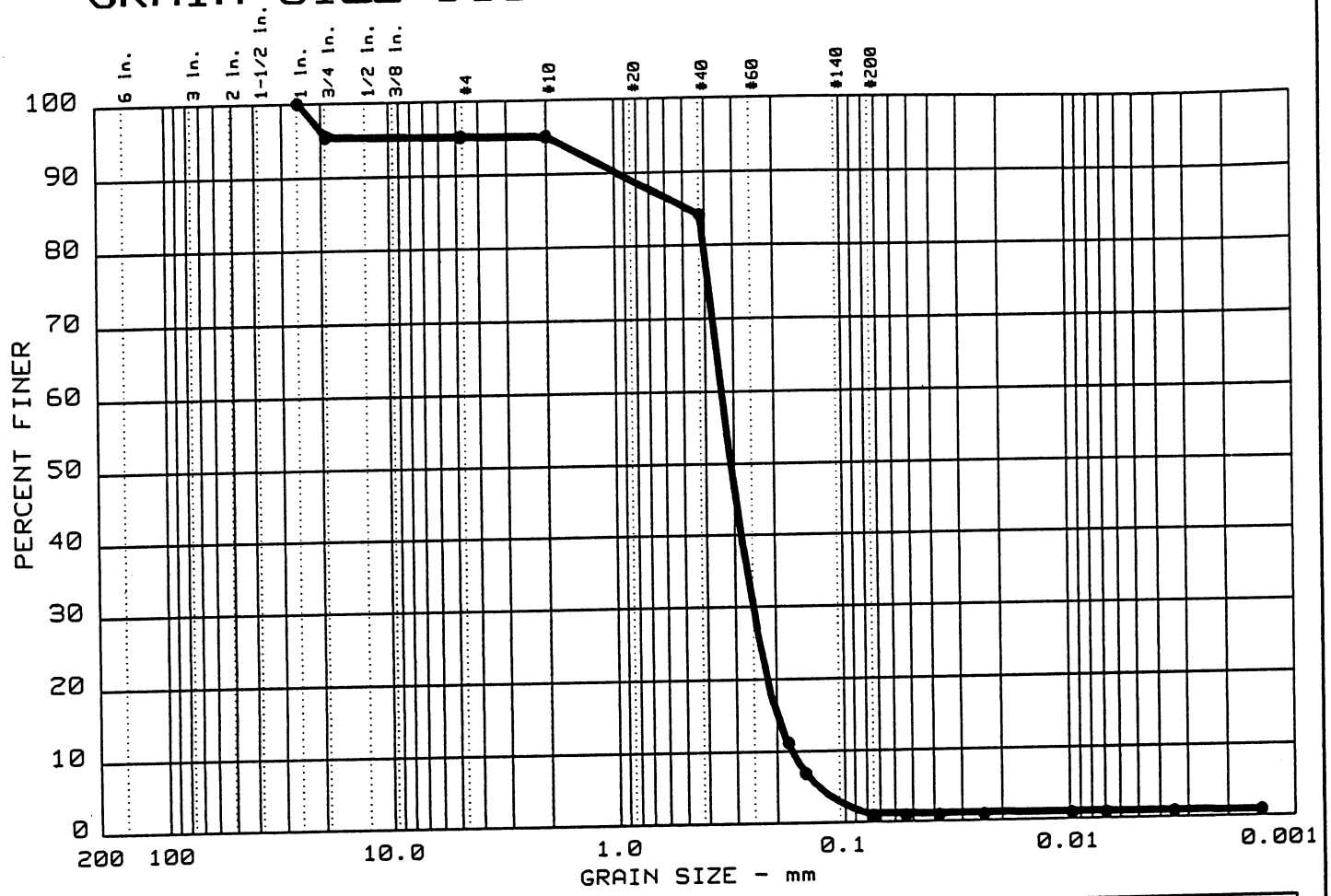
Checked By: BH

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	4.8	94.3	0.9	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.47	0.34	0.31	0.252	0.2000	0.1702	1.10	2.0

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-70, 5'	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

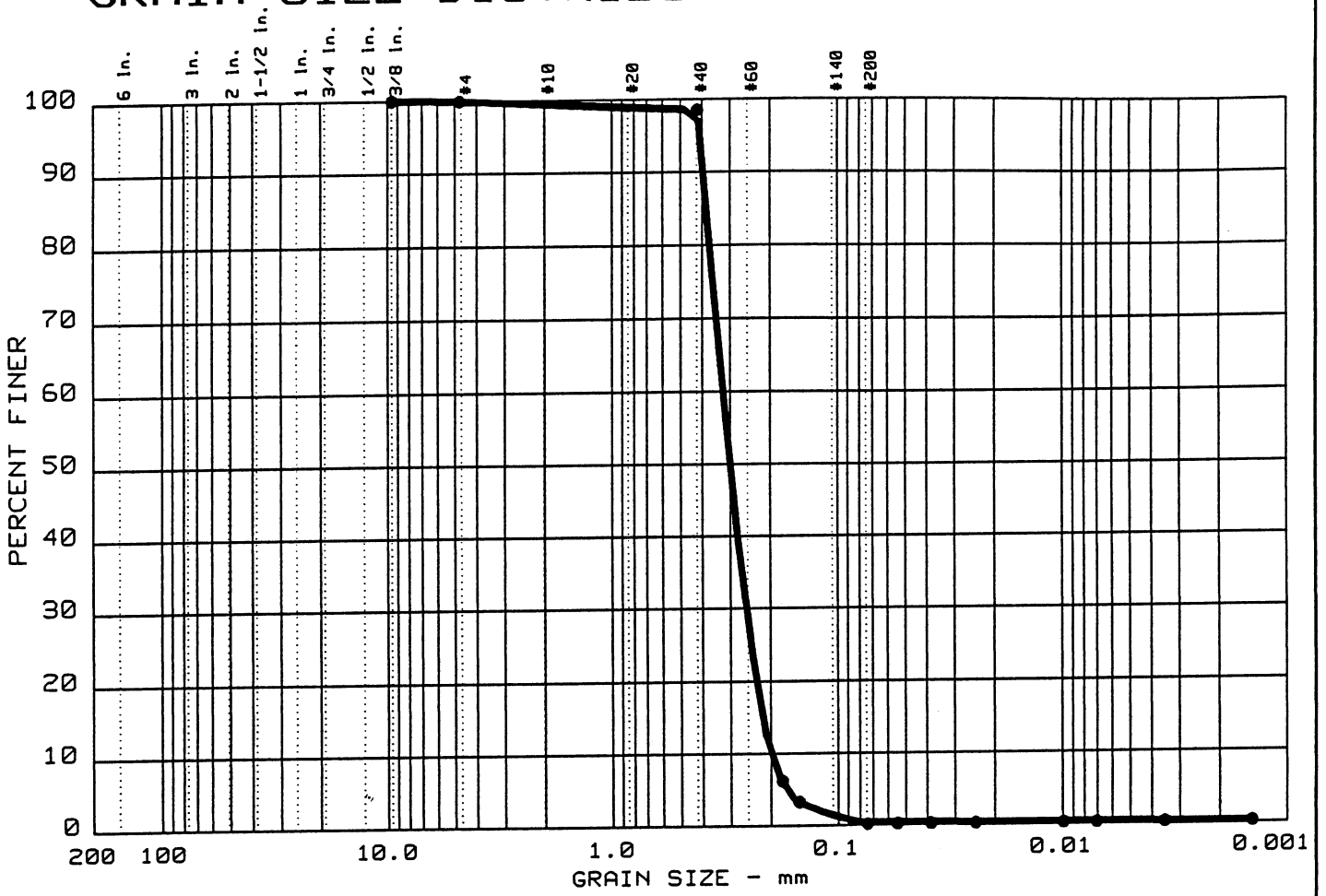
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GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.1	99.7	0.2	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.38	0.32	0.30	0.256	0.2168	0.1998	1.01	1.6

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-72, 70"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

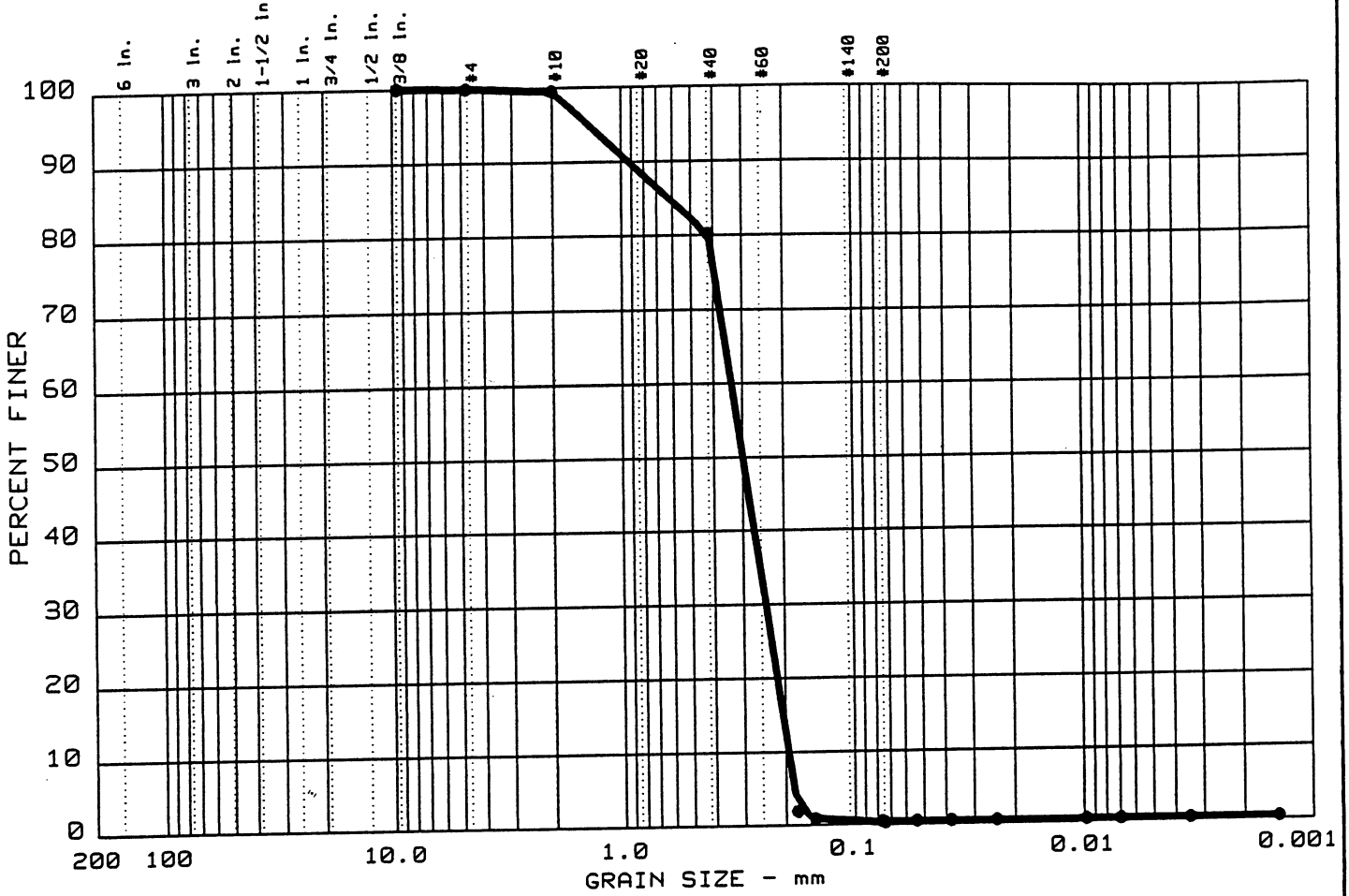
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.1	99.6	0.3	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.62	0.34	0.30	0.241	0.2044	0.1934	0.90	1.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-73, 36"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

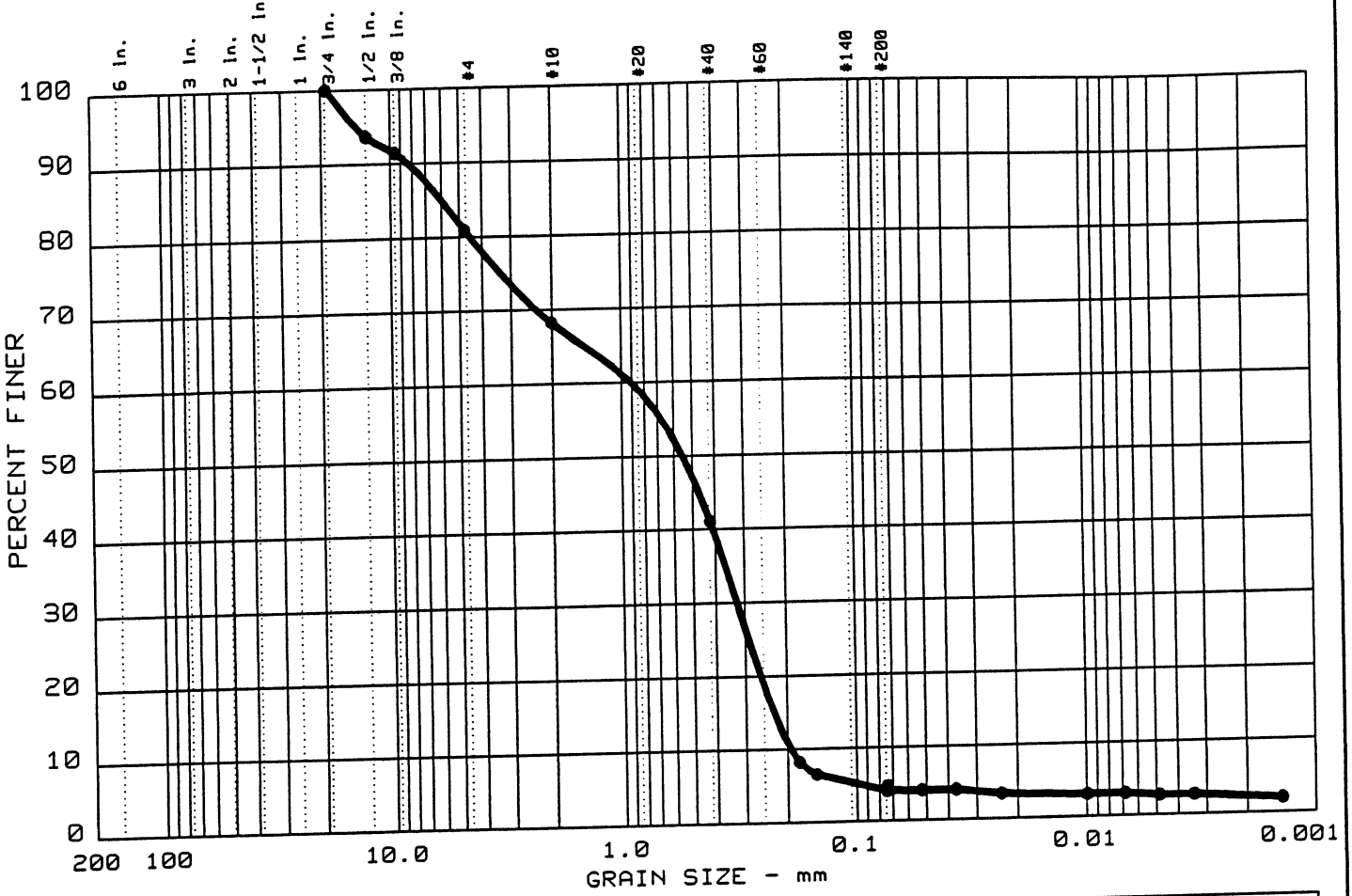
Checked By: Bn

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	19.1	76.8	1.4	2.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			5.96	0.90	0.55	0.325	0.2275	0.1934	0.61	4.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-74, 10-18"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

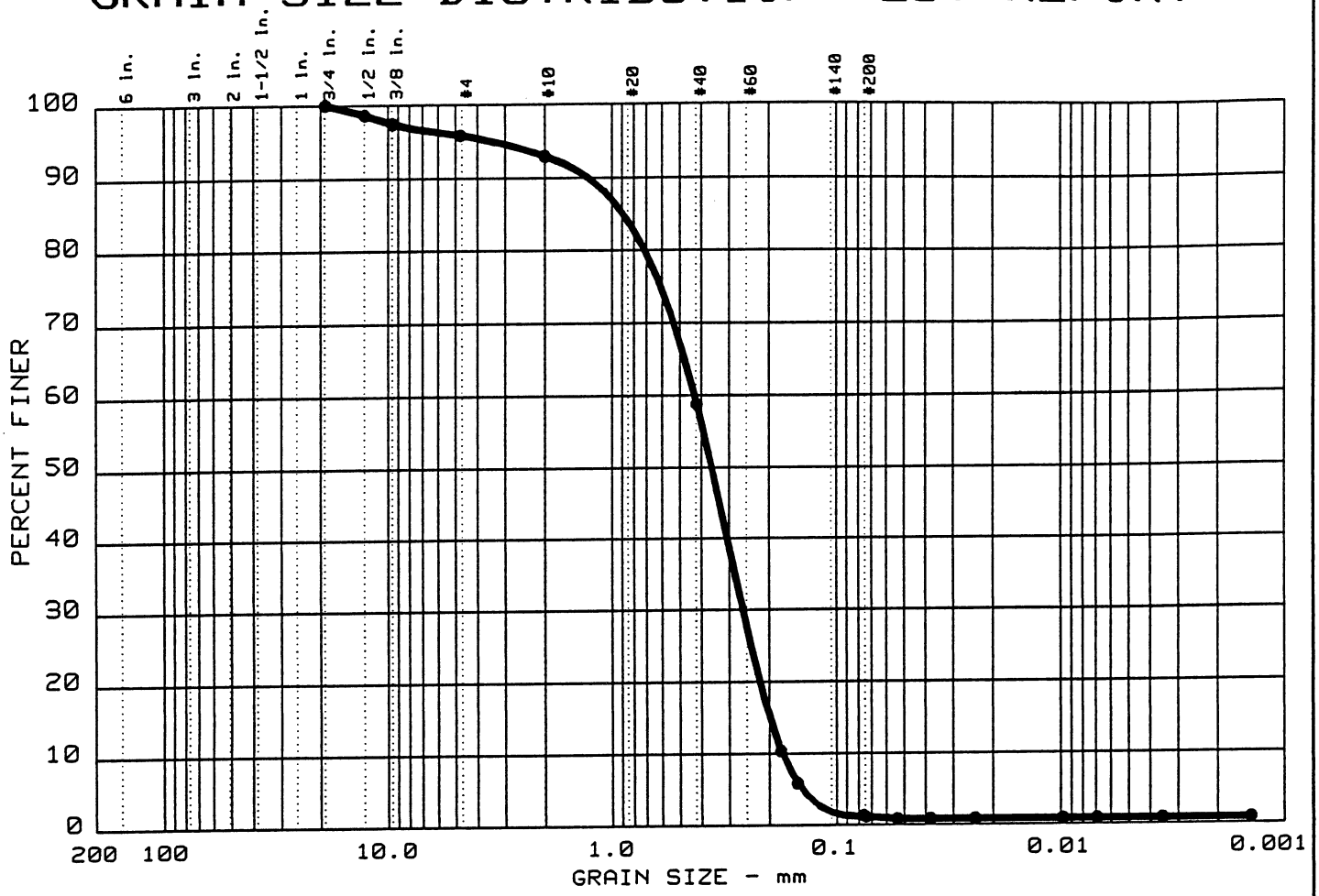
Checked By: Bn

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	4.2	94.6	0.3	0.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.89	0.43	0.36	0.262	0.1986	0.1748	0.91	2.5

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-74, 18-67"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

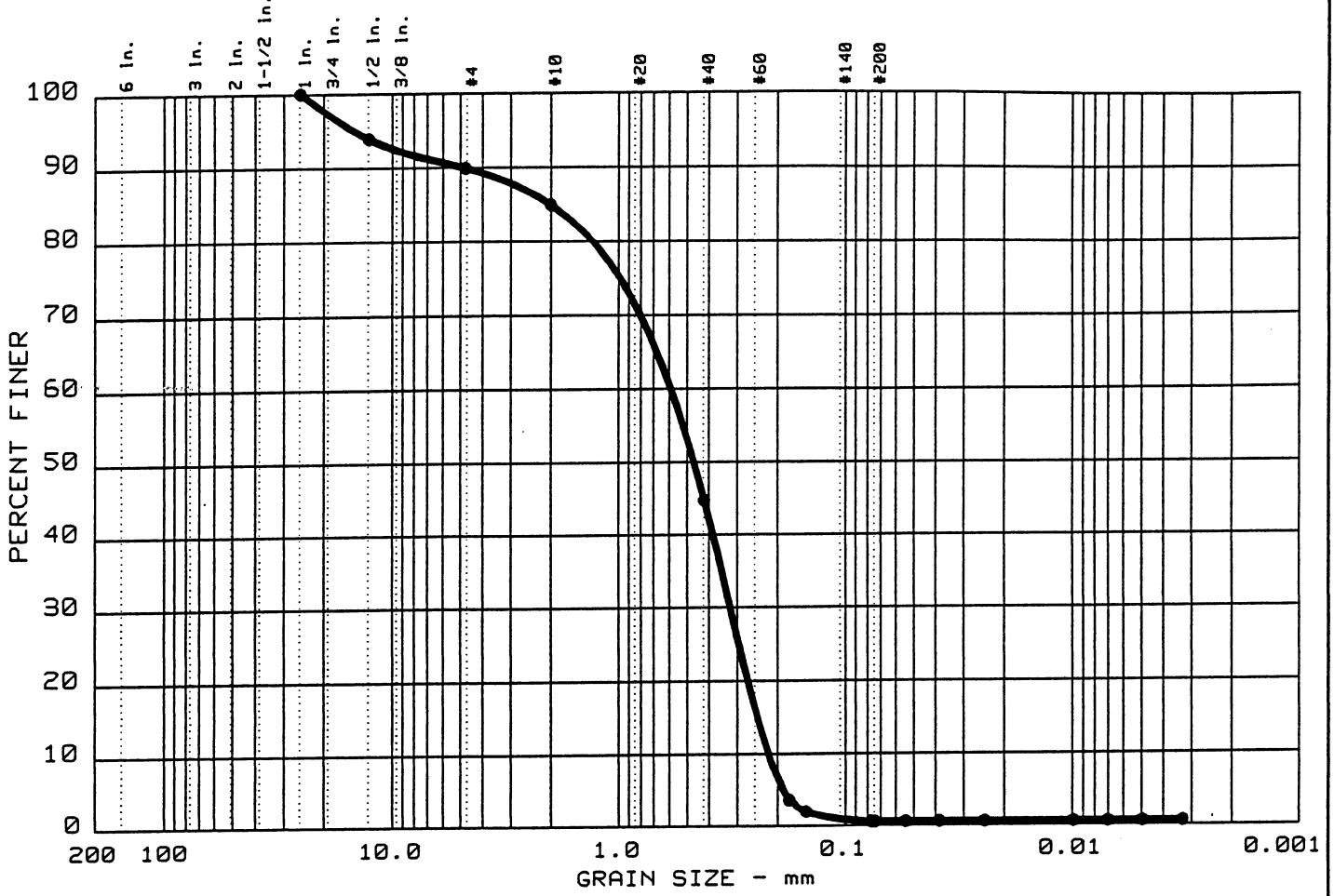
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	10.1	89.3	0.6	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.02	0.59	0.47	0.323	0.2449	0.2198	0.81	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-76, 18-55"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

Remarks:

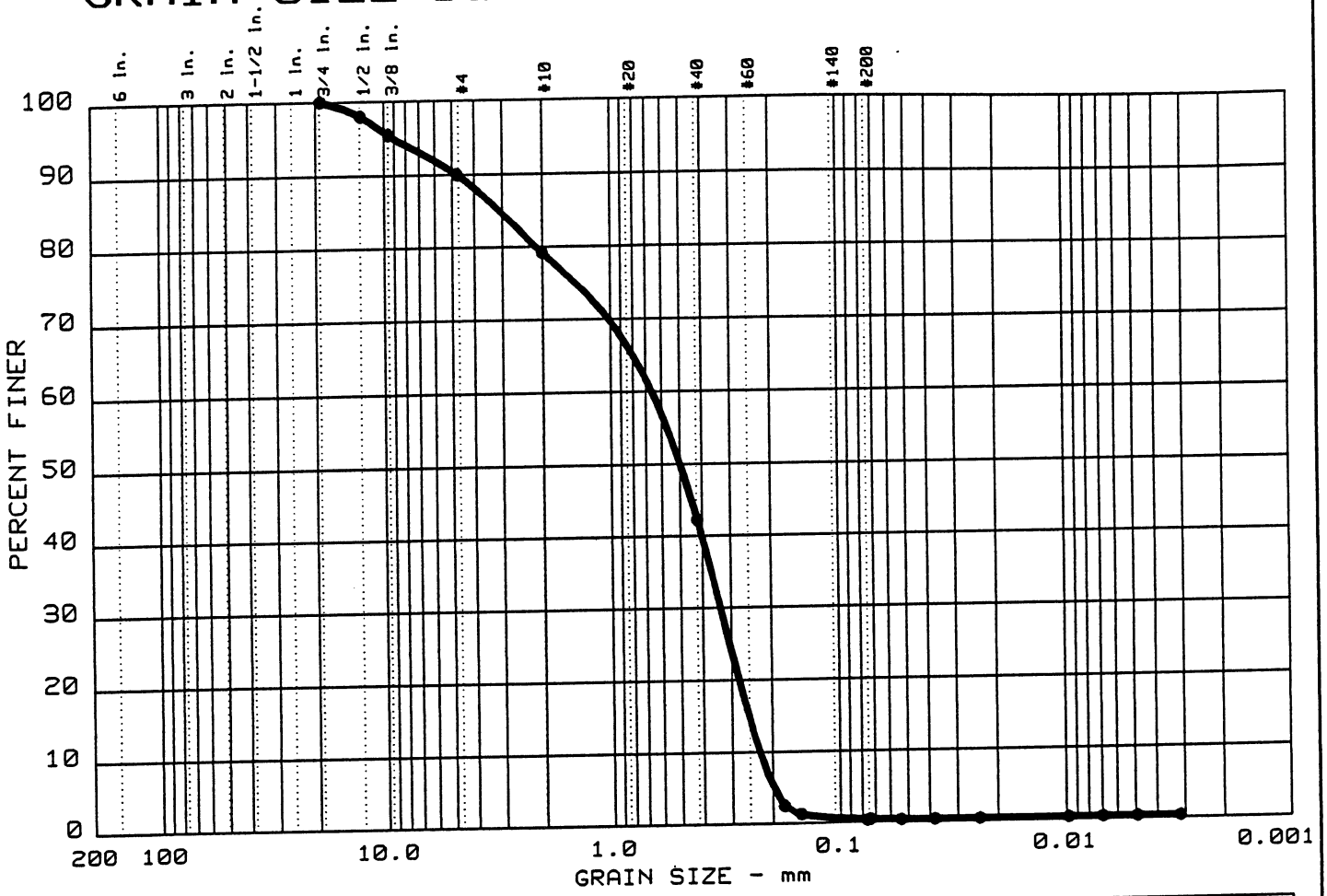
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	10.0	89.5	0.1	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			3.09	0.66	0.50	0.335	0.2541	0.2280	0.74	2.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-76, 55-68"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

GRAIN SIZE DISTRIBUTION TEST REPORT

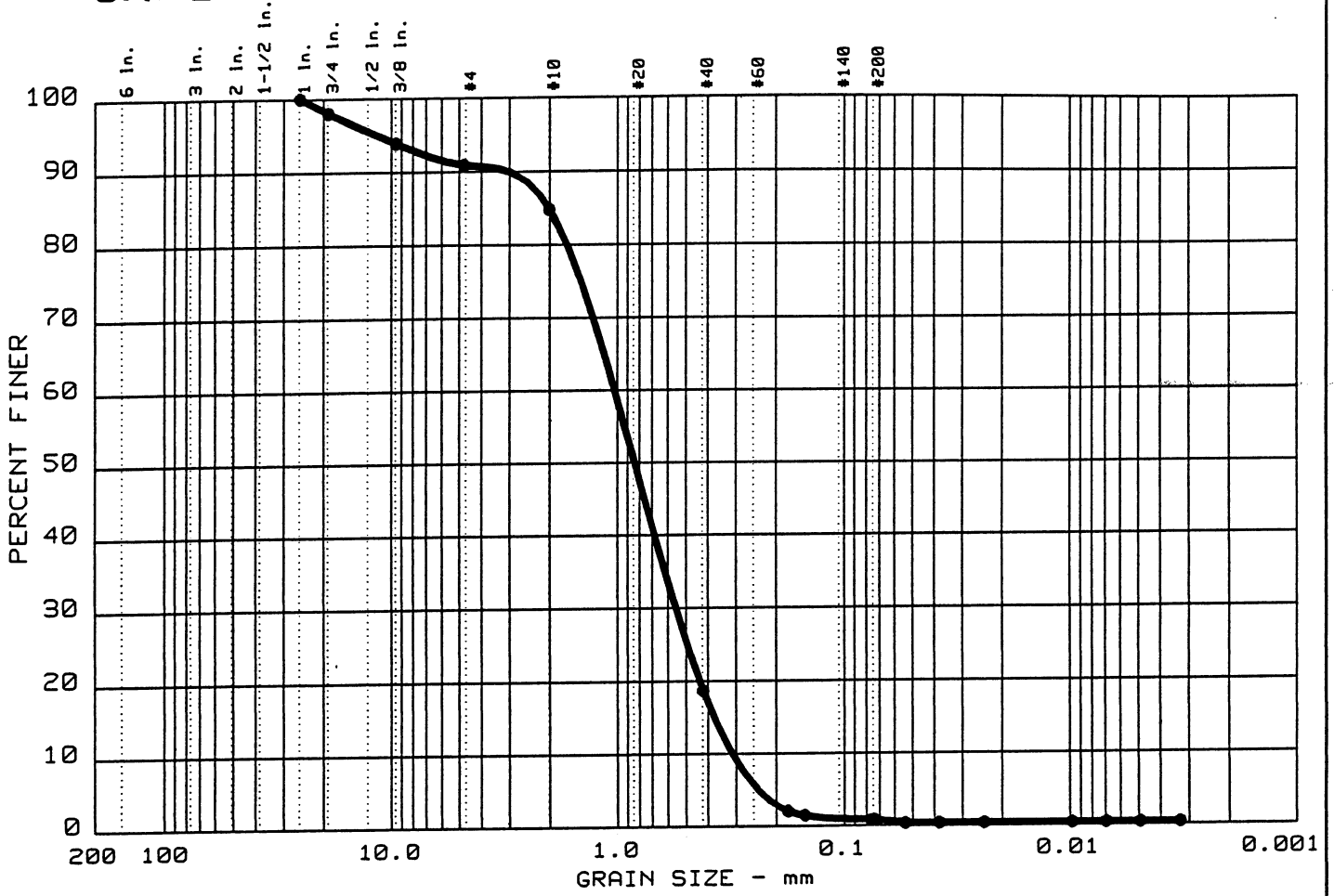
NUMMELIN TESTING SERVICES

Remarks:

Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	9.1	90.0	0.5	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.00	1.03	0.84	0.554	0.3746	0.3115	0.95	3.3

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-80, 22-53"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

Remarks:

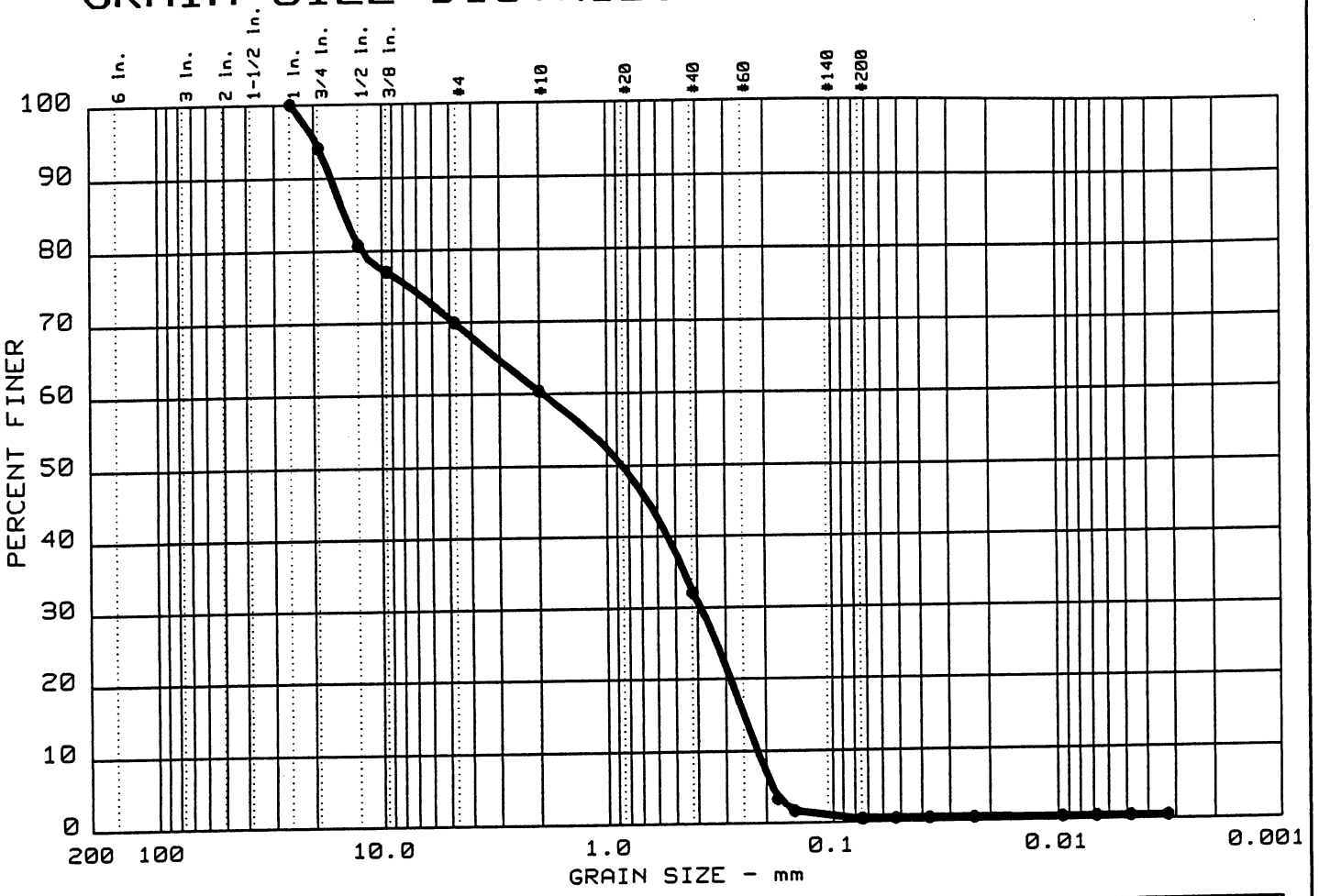
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	30.0	69.5	0.5	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			14.62	1.91	0.85	0.385	0.2509	0.2185	0.36	8.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-80, 53-78"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

GRAIN SIZE DISTRIBUTION TEST REPORT

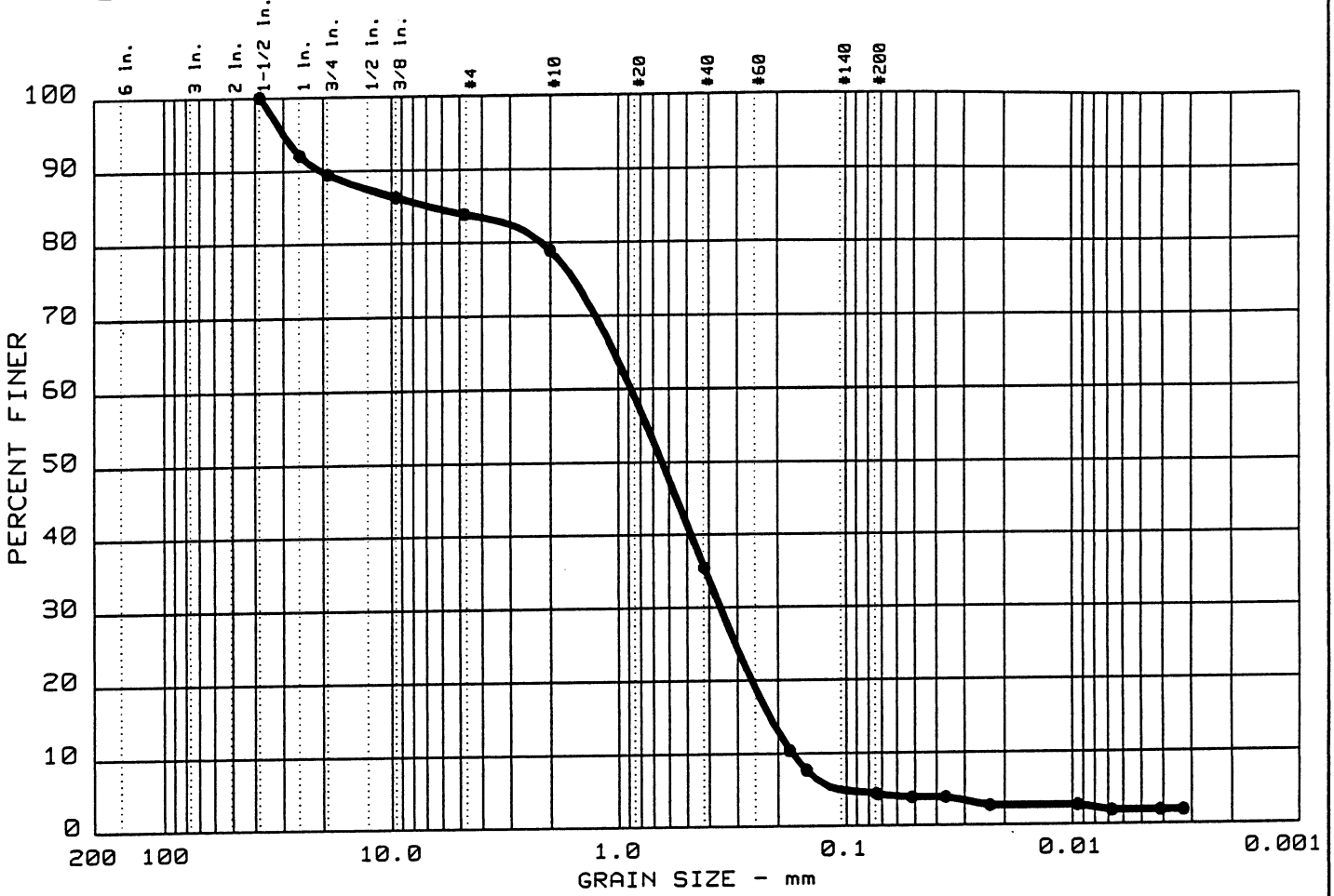
NUMMELIN TESTING SERVICES

Remarks:

Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	16.1	79.5	2.5	1.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			6.68	0.88	0.64	0.358	0.2175	0.1728	0.84	5.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-81, 20-44"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

Remarks:

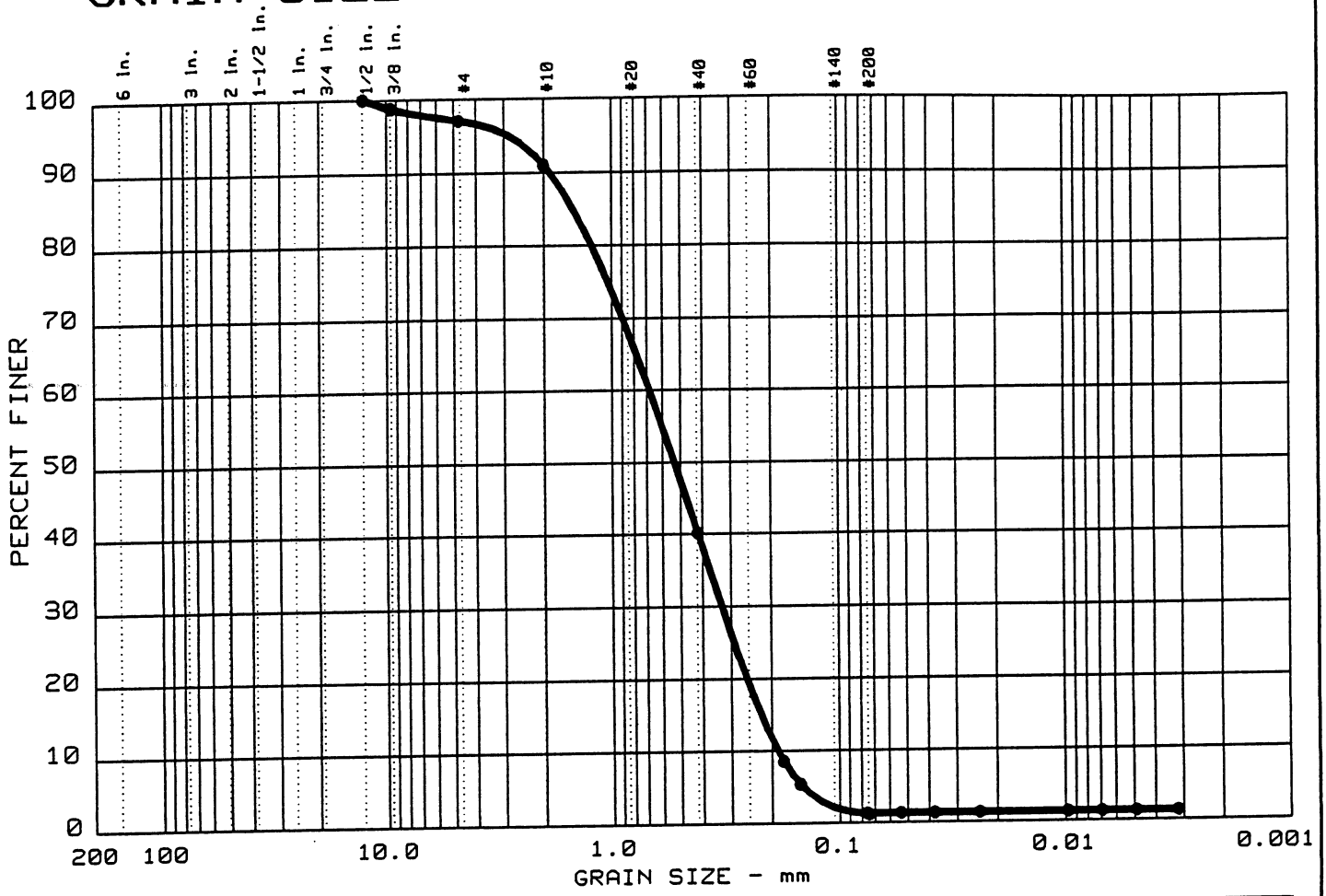
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	2.9	95.9	1.2	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.48	0.68	0.53	0.331	0.2226	0.1873	0.86	3.6

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-81, 44-73"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

Remarks:

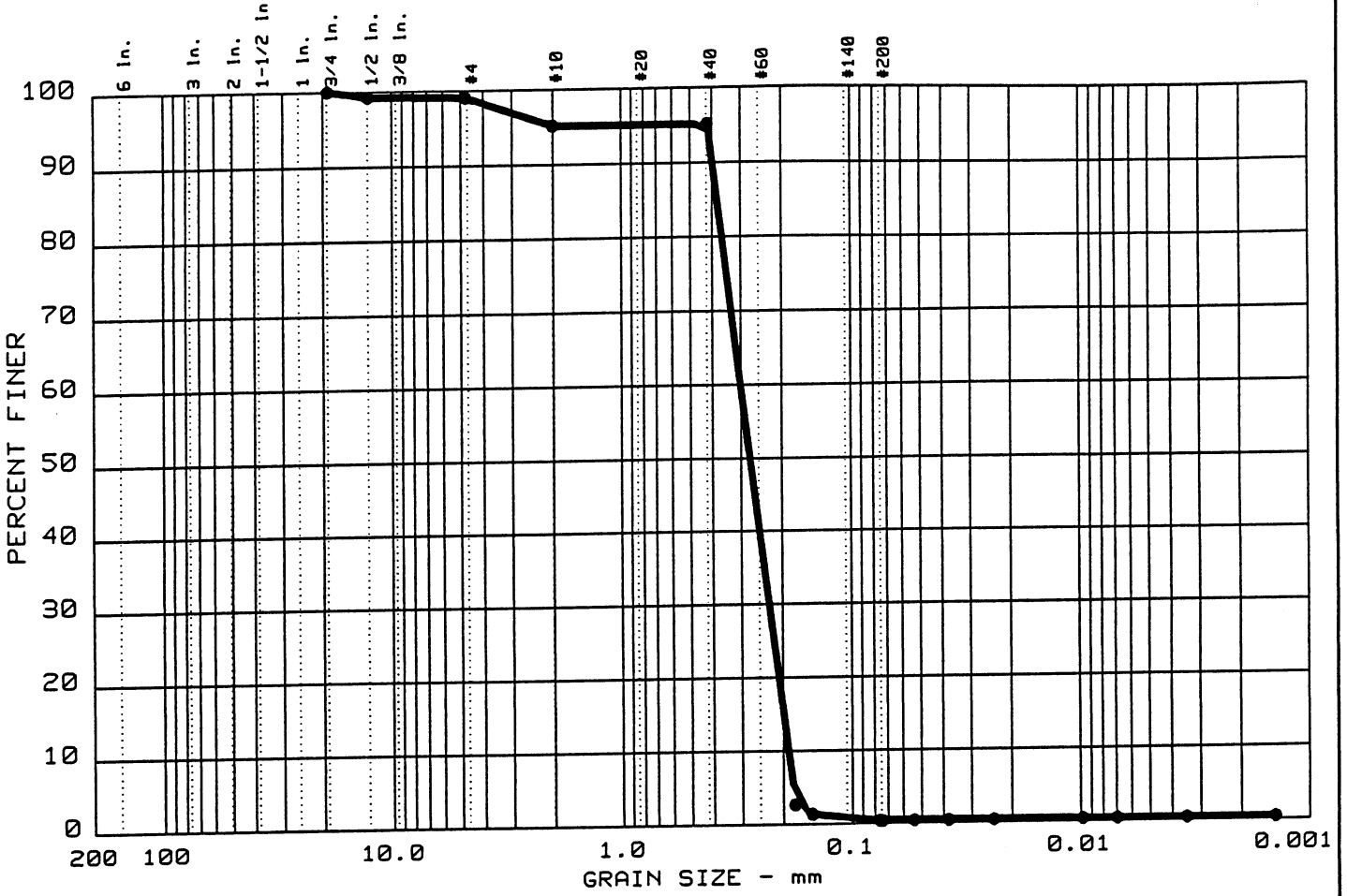
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	1.0	98.6	0.4	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.38	0.30	0.28	0.228	0.1984	0.1895	0.91	1.6

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-85, 50"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

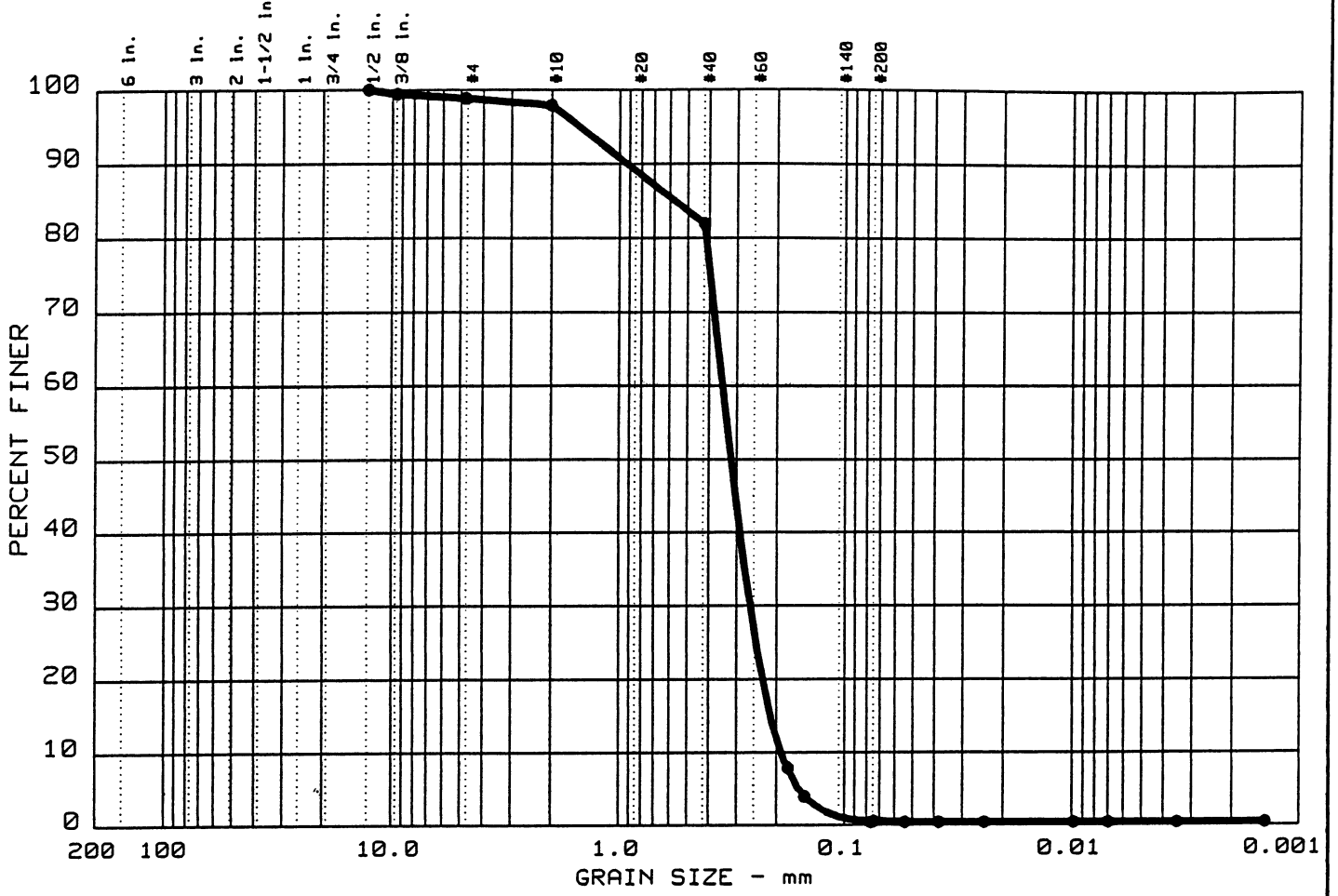
Checked By: BR

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	1.2	98.2	0.2	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.56	0.35	0.32	0.262	0.2138	0.1919	1.02	1.8

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-87, 60"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

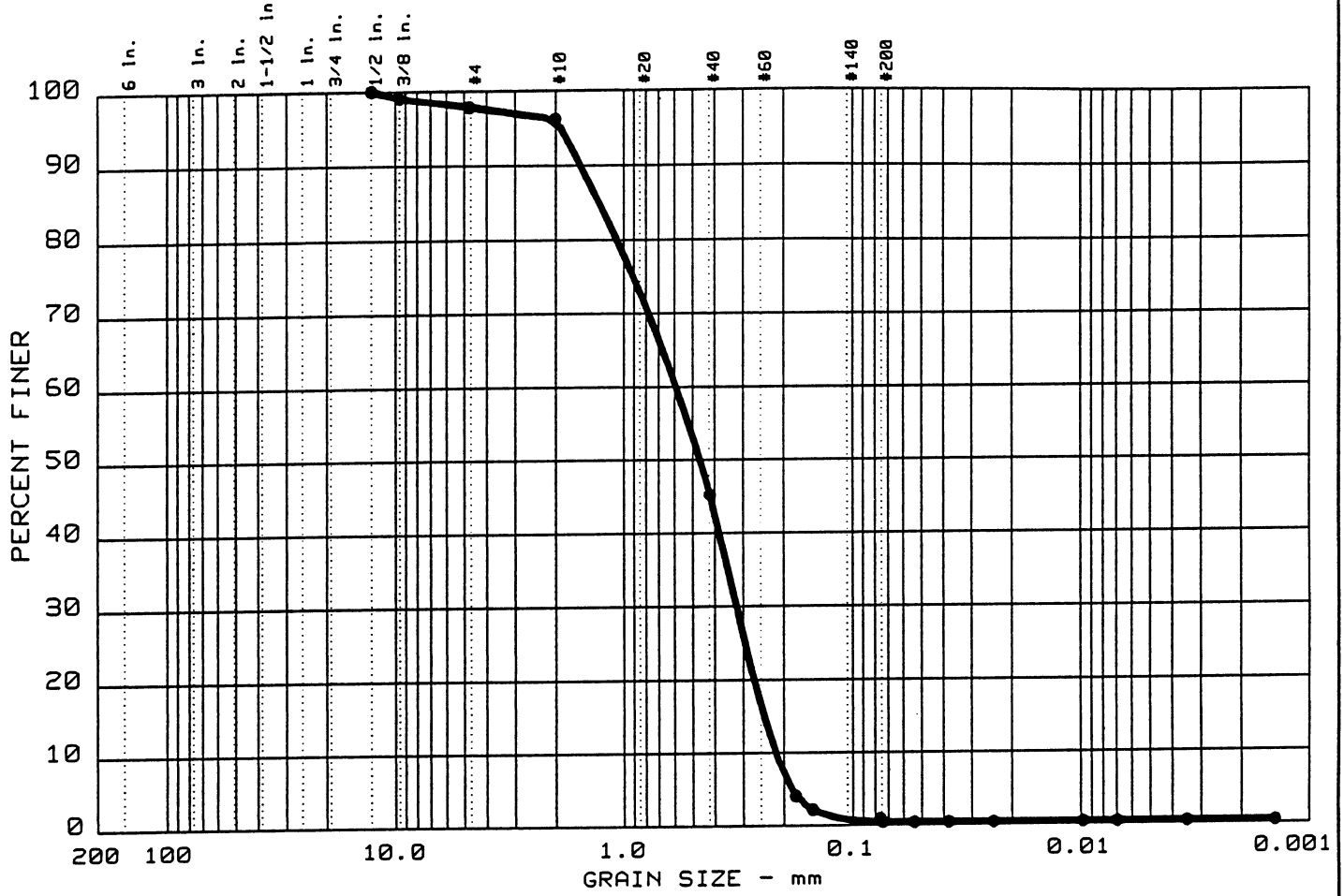
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	2.2	97.3	0.1	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.29	0.59	0.47	0.322	0.2438	0.2168	0.81	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-88, 54"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

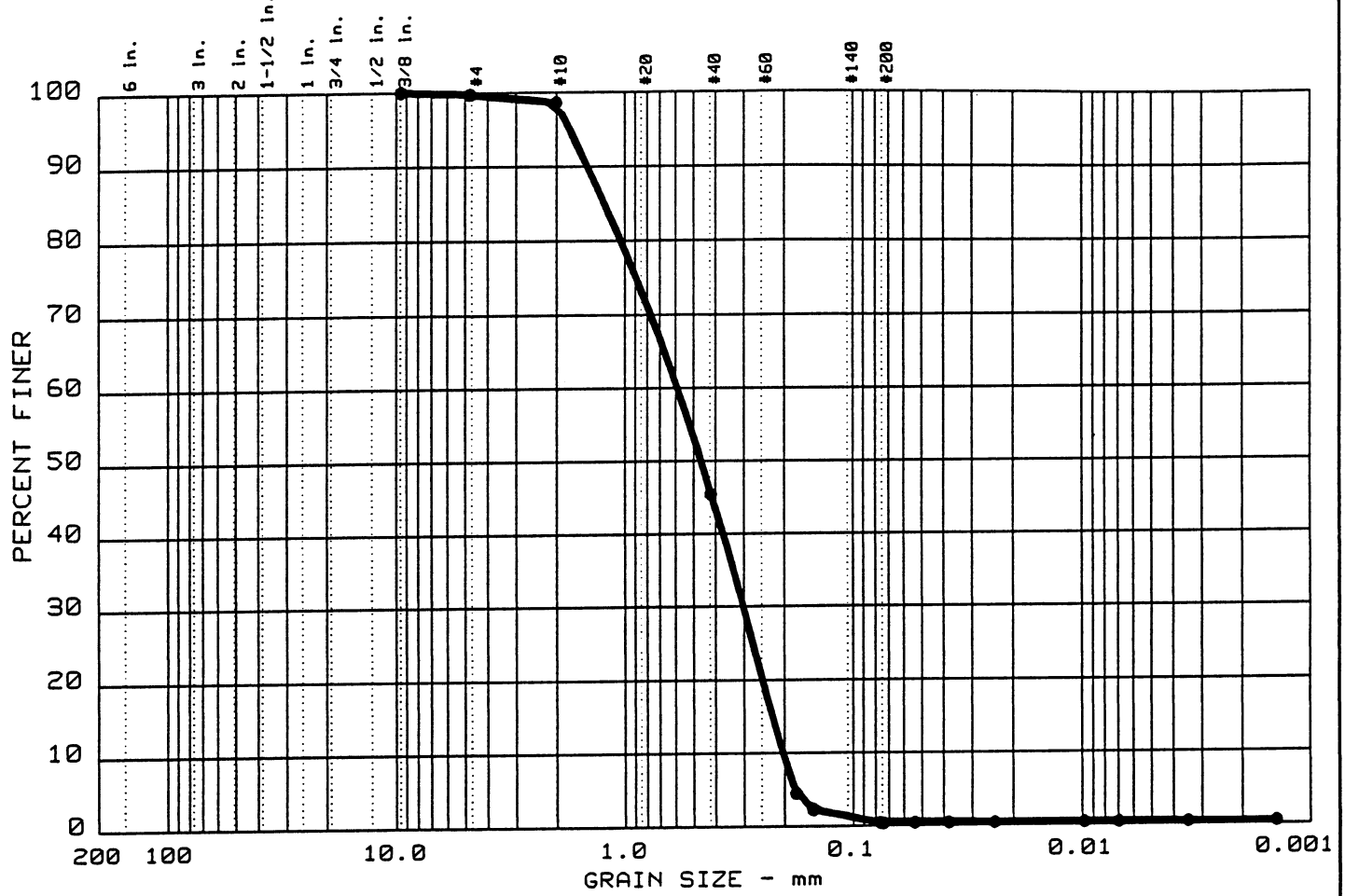
Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.3	99.3	0.4	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.23	0.59	0.46	0.303	0.2262	0.2032	0.77	2.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-89, 73"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

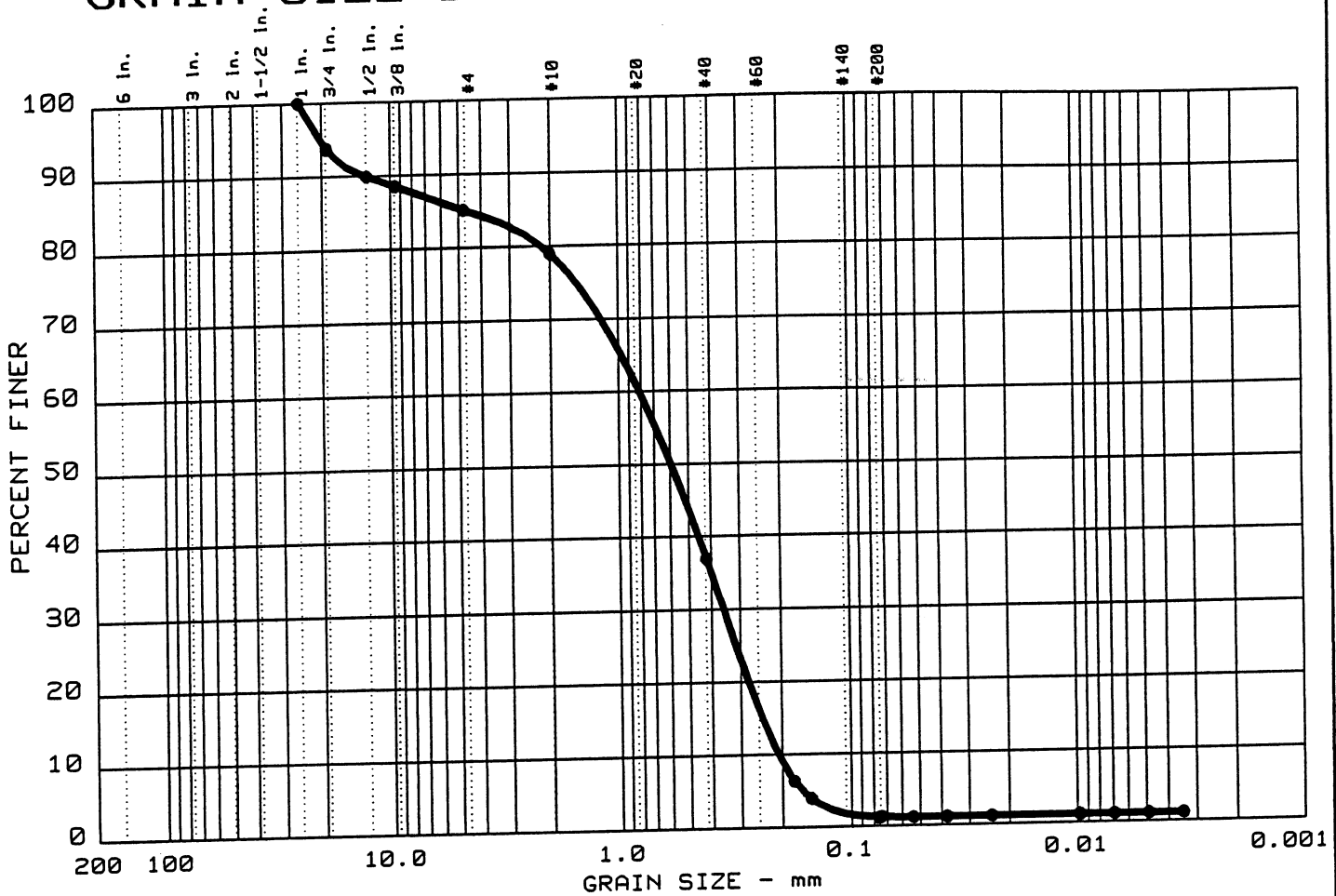
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	14.9	83.8	0.1	1.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			4.62	0.81	0.59	0.354	0.2424	0.2063	0.75	3.9

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-92, 24-51"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

Remarks:

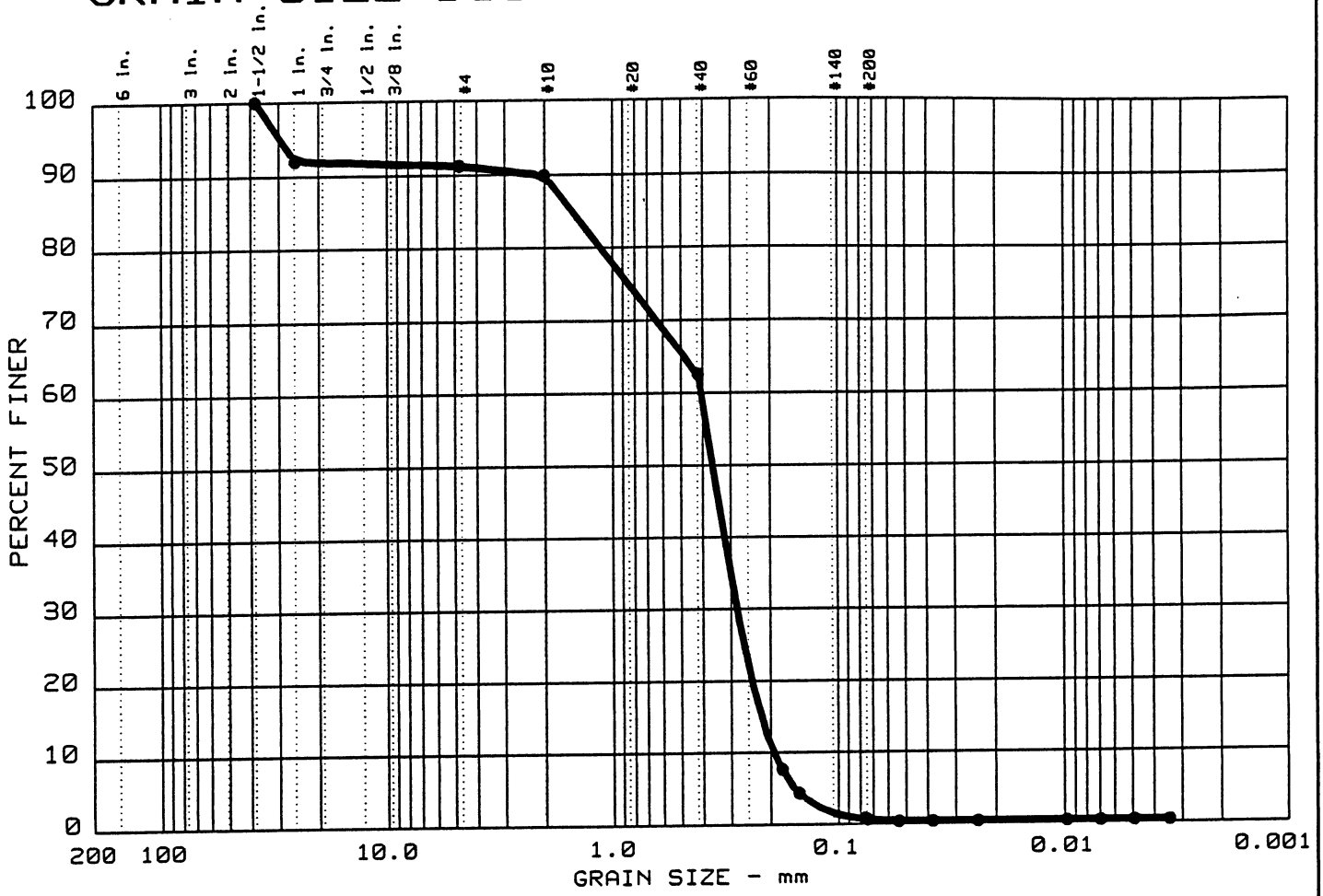
Checked By: Bm

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	8.8	90.5	0.3	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.50	0.41	0.36	0.282	0.2208	0.1945	1.00	2.1

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-92, 51-73"	SP	A-3

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-21-98

Remarks:

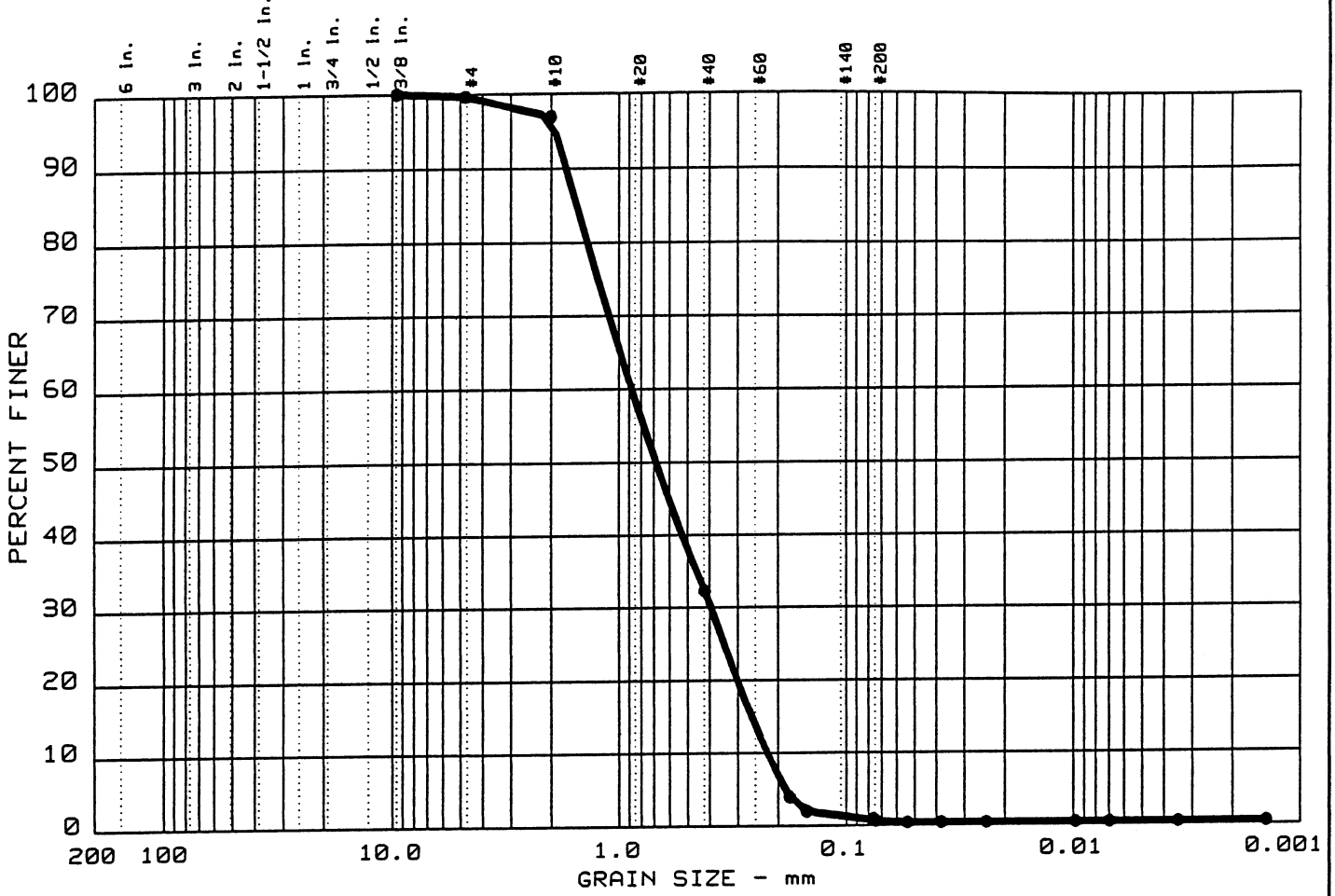
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.4	98.9	0.3	0.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.55	0.88	0.69	0.395	0.2612	0.2223	0.80	4.0

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-94, 31"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

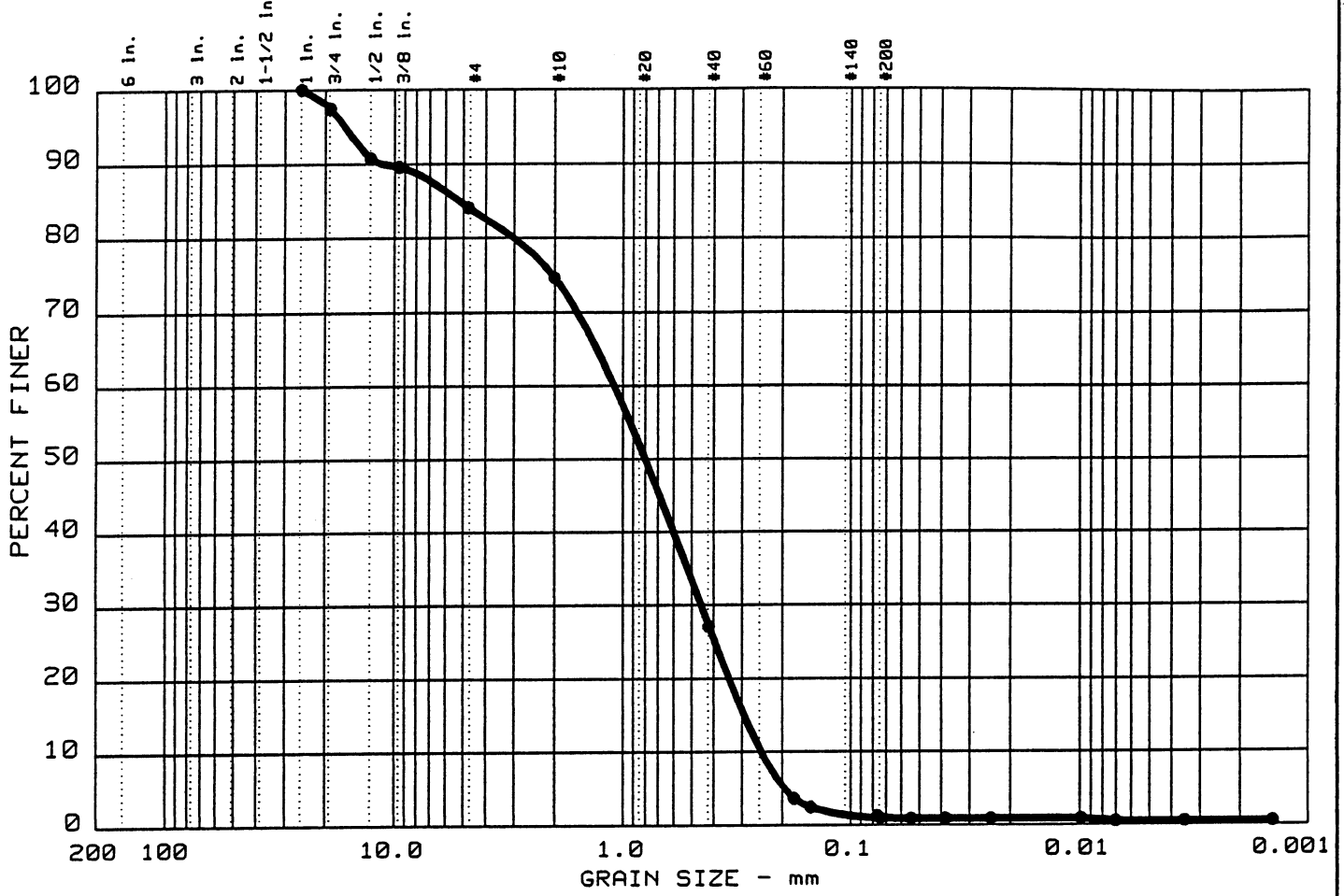
Checked By: BN

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	15.9	83.1	0.4	0.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			5.19	1.10	0.80	0.455	0.2938	0.2472	0.76	4.4

MATERIAL DESCRIPTION	USCS	AASHTO
● TPH-97, 23"	SP	A-1-b

Project No.: 115.47
Project: Foth & Van Dyke
● Location: Nicolet Minerals Co.

Date: 09-18-98

Remarks:

Checked By: BM

ASTM D1140 & D422

GRAIN SIZE DISTRIBUTION TEST REPORT

NUMMELIN TESTING SERVICES

HYDRAULIC CONDUCTIVITY SUMMARY SHEET
(CONSTANT HEAD)

CLIENT: FOTH & VAN DYKE
PROJECT: NICOLET MINERALS CO.
PROJECT #: 1154702.H
REPORT #: 03

SAMPLE #	SAMPLE DENSITY	NATURAL MOISTURE	FINAL MOISTURE	**HYDRAULIC CONDUCTIVITY**
MWH-11P, 32'-34'	100 lbs/ft^3	17.1%	23.0%	**1.8×10^{-2}**
BH-09, 8'-10'	100 lbs/ft^3	18.7%	21.9%	**2.4×10^{-3}**
BH-11, 10'-12'	100 lbs/ft^3	9.7%	18.2%	**2.2×10^{-2}**
MWH-09P, 32'-34'	100 lbs/ft^3	15.4%	22.1%	**1.5×10^{-2}**
BH-10, 14'-16'	100 lbs/ft^3	16.2%	23.3%	**1.8×10^{-2}**
* BH-14, 8'-10'				
* BH-13, 10'-12'				
* MWH-10P, 34'-36'				

* NOT ENOUGH SAMPLE

1154702H

NTS, INC.

Bulk Density Test Results and Moisture Content of Soils from the Area H Double-Ring Infiltrometer Tests

Thresher & Son, Inc.
Memorandum

6 November 1998

TO: Jerry W. Sevick, Foth & Van Dyke
Steve A. Dischler, Foth & Van Dyke

CC: Gordon Reid, Nicolet Minerals Company
Ken Black, Nicolet Minerals Company
Master File

FR: John E. Thresher, Jr., Thresher & Son, Inc.

RE: Moisture Content of Soils from the Double-Ring Infiltrometer Tests

1 Introduction

Soil grab samples were collected at and beneath the infiltrative surface from three of the double-ring infiltrometer test sites (TPH-6B, TPH-47 and TPH-53) having intermediate infiltrative capacities. These samples were analyzed for their soil moisture content and distribution as recommended in ASTM D 3385.

The calculated volumetric soil moisture contents for each test site were plotted and contoured to show the soil moisture conditions existing at the end of each test. These figures show that the highest moisture contents concentrated vertically beneath the infiltrometer rings, with the greatest moisture contents in the 1- to 4-foot range below the infiltrative surface. These results confirm the field observations of the apparent wetting front and the vertical nature of infiltration beneath the infiltrometer rings.

2 Sample Collection

The soil grab samples collected at and beneath the infiltrative surfaces from the double-ring infiltrometer test sites conducted at TPH-6B, TPH-47 and TPH-53 were stored in double plastic bags and were analyzed in the laboratory for their moisture content and distribution. Water remaining within the double-ring apparatus was allowed to percolate into the soil prior to the removal of the apparatus. A trench intersecting the center of the double-ring location site was then dug by backhoe. Grab samples were collected from the exposed soil surface on the XZ plane intersecting the center of the double-ring location. Sampling was completed within about one-half hour following the termination of each test. The samples collected at the three test sites was as follows:

TPH-6B Sampling. The infiltrative surface at TPH-6B was 24 inches below the land surface. Grab samples were collected at the infiltrative surface beneath the rings, and at 2' and 4' north and south of the rings. Additional grab samples were collected at

depths of 1½', 3' and 4½' beneath the infiltrative surface samples. A total of 20 grab samples were collected from this test site.

TPH-47 Sampling. The infiltrative surface at TPH-47 was 60 inches below the land surface. Grab samples were collected at the infiltrative surface beneath the rings, and at 2' east of, and at 2' and 4' west of the rings. Additional grab samples were collected at depths of 1½' and 3' below the infiltrative surface samples. A total of 12 grab samples were collected from this test site.

TPH-53 Sampling. The infiltrative surface at TPH-53 was 48 inches below the land surface. Grab samples were collected at the infiltrative surface beneath the rings, and at 2' and 4' east of, and at 2' west of the rings. Additional grab samples were collected at depths of 1½' and 3' below the infiltrative surface samples. A total of 12 grab samples were collected from this test site.

3 Laboratory Analyses

Undisturbed core samples were collected from sandy soil horizons in five soil test pits during the Phase I evaluation of Area H, before the double-ring infiltrometer tests were conducted. The bulk density (D_b) and soil moisture content (weight %, θ_m) of the samples were determined using the core method of sample collection and bulk density determination as described by Blake and Hartge (in SSSA 1986, Method 13-2). The results of these analyses were averaged to determine the average site sand bulk density.

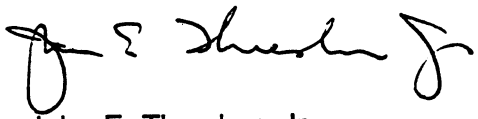
Soil samples were collected on an XZ grid pattern beneath three of the double-ring infiltrometer test sites to determine the soil moisture content (both by % weight, θ_m, and % volume, θ_v) of the samples and the distribution of soil moisture content (θ_v) beneath the test rings. The moisture content (weight %, θ_m) of each samples was determined using ASTM Method D 2216. The volumetric (%) moisture content (θ_v) of each sample collected on the XZ grid was calculated by multiplying the moisture content (weight %, θ_m) by the average site sand bulk density.

4 Results and Discussion

The results of the bulk density and soil moisture (θ_m) determinations of the undisturbed core samples are included in Table 1. The average bulk density of the sands at the site was determined to be 1.52 g/cm^3 (approximately 95 lbs/cf).

The results of the soil moisture (θ_m) determinations and calculations (θ_v) of the grab samples collected at and beneath the infiltrative surface are included in Table 2. The calculated volumetric soil moisture contents (θ_v) of the samples have been plotted and contoured for each test site, as shown in Figures 1 through 3. These figures show that the highest moisture contents are concentrated vertically beneath the infiltrometer rings, especially at TPH-6B (Figure 1). The greatest soil moisture contents at each test site were in the 1- to 4-foot depth range below the infiltrative surface.

Respectfully submitted,



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110697

Reference Cited

Blake, G. R. and K. H. Hartge. 1986. *Bulk Density.* in A. Klute, ed. *Methods of Soil Analysis. Part 1, Physical and Mineralogical Methods.* 2nd edition. Soil Science Society of America Monograph No. 9. Madison, Wisconsin.

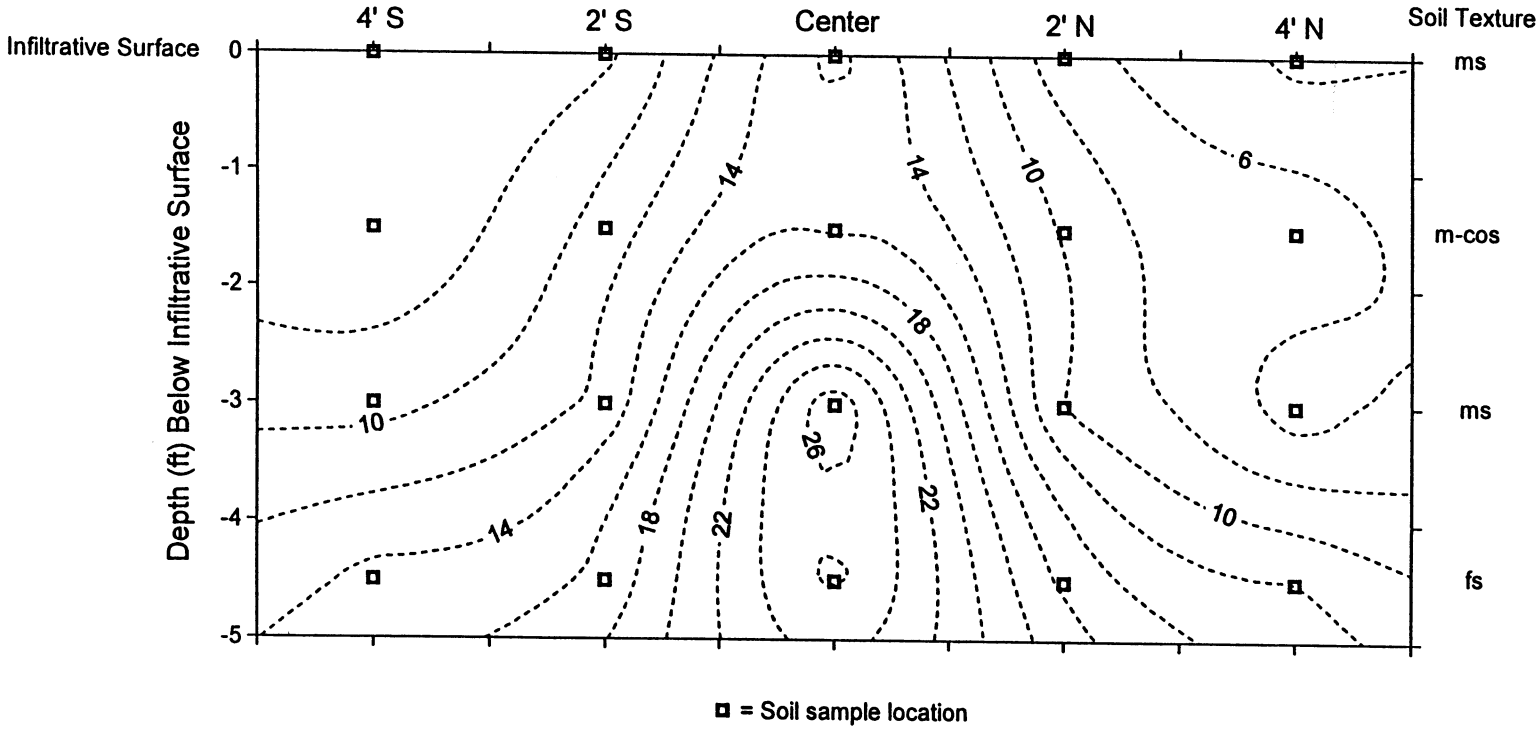


Figure 1. Moisture Content (vol., %) and Soil Texture of Samples Collected Following the Double-Ring Infiltrometer Test at TPH-6B.

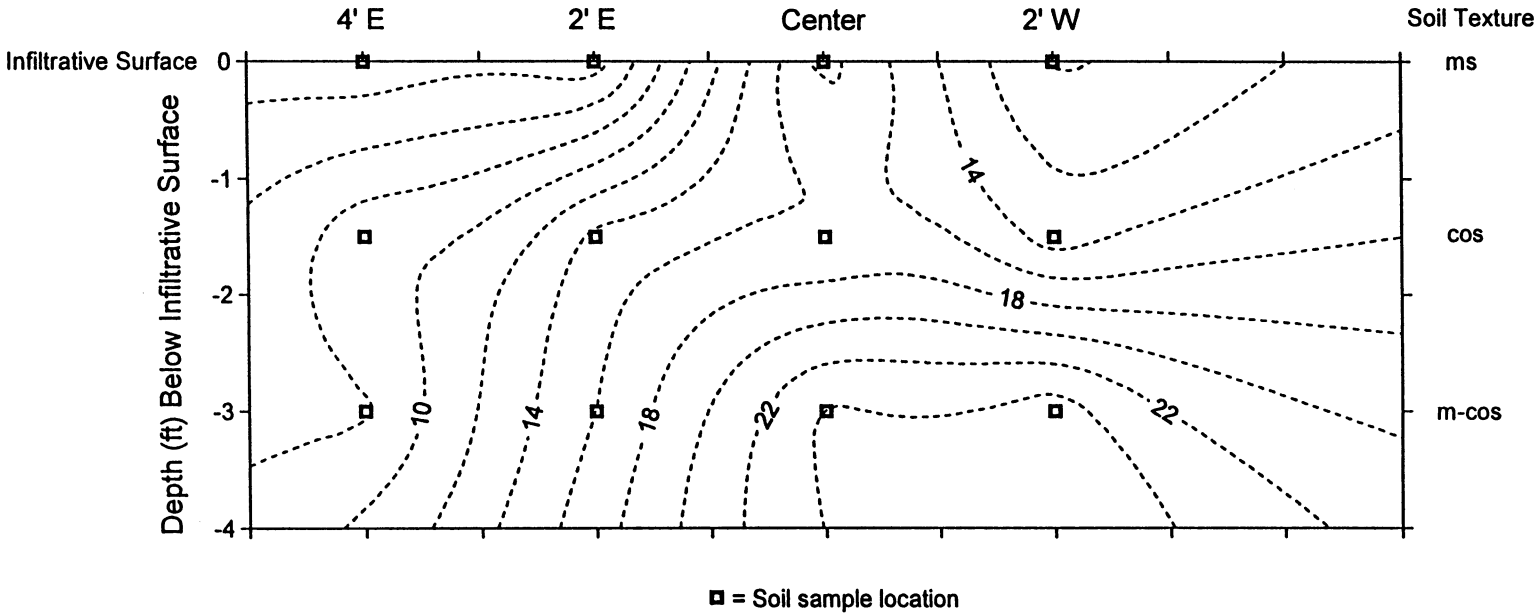


Figure 2. Moisture Content (vol., %) and Soil Texture of Samples Collected Following the Double-Ring Infiltrometer Test at TPH-47.

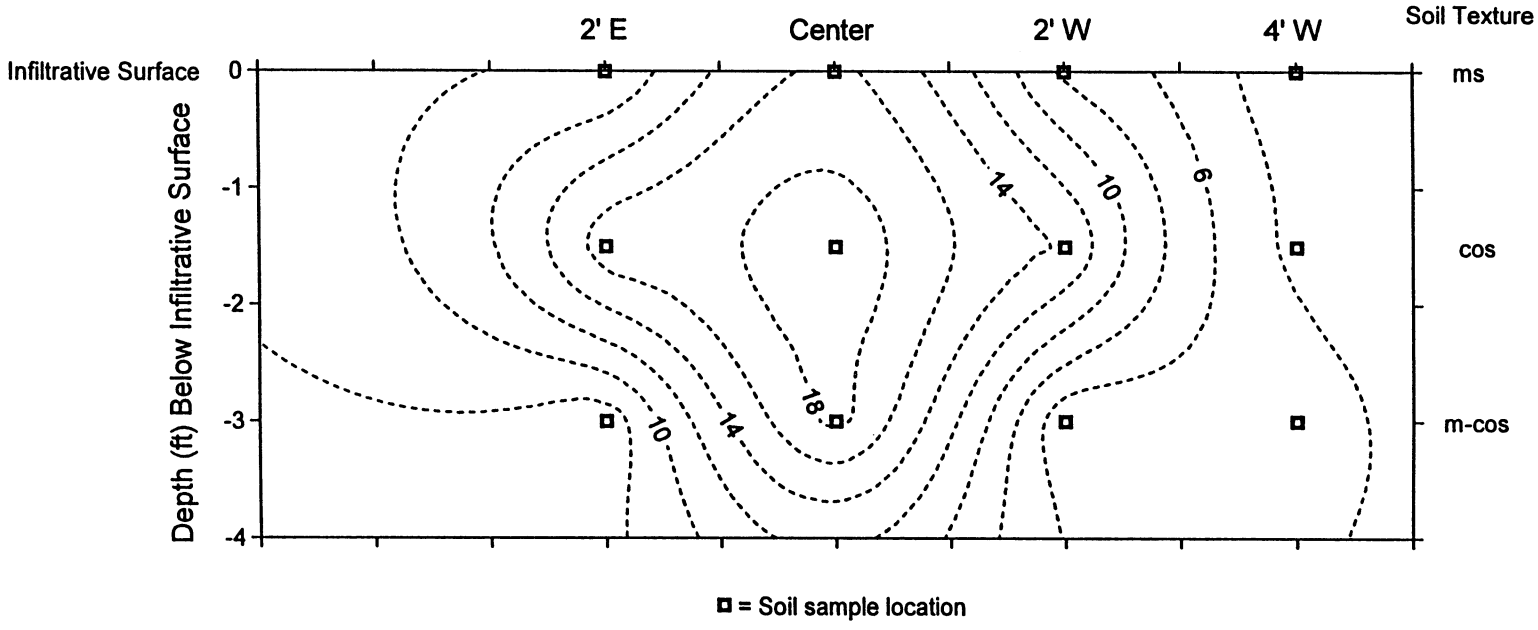


Figure 3. Moisture Content (vol., %) and Soil Texture of Samples Collected Following the Double-Ring Infiltrometer Test at TPH-53.

Table 1. Bulk Density (D_b) and Soil Moisture (θ_m) Determinations of Soil Samples Collected at the Rudloff Property

(SSSA: 13-2 and ASTM: D 2216)

Nicolet Minerals Company, Crandon Wisconsin

Sample	TPH-5, 52"	TPH-13, 54"	TPH-21, 48"	TPH-32, 60"	TPH-38A, 42"		
Ring no.	12	7	4	3	6		
Wt. ring + moist soil (g)	179.14	181.59	181.92	181.27	184.37		
Wt. ring + dry soil (g)	173.93	176.60	177.45	173.87	177.98		
Wt. of ring (g)	73.06	73.02	73.19	72.95	73.04		
Wt. of water (g)	5.21	4.99	4.47	7.40	6.39		
Wt. of dry soil (g)	100.87	103.58	104.26	100.92	104.94		
Bulk Density, D_b (g/cm^3)	1.49	1.53	1.54	1.49	1.55		
Moisture content, θ_m (wt., %)	5.17	4.82	4.29	7.83	6.09		
Soil Texture (SCS, field)	m-cos	m-cos	ms	m-cos	m-cos		

Bulk density, D_b (g/cm^3) = (wt. of dry soil, g) / (vol. of ring, cm^3); ring vol. = 67.7 cm^3

Moisture content, θ_m (wt., %) = [(wt. of water, g) / (wt. of oven dry soil, g)] x 100

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3.5-14d-164

Table 2. Moisture Content (θ_m and θ_v) of Soil Samples Collected Following the Completion of the Double-Ring Infiltrometer Tests at the Rudloff Property.

(ASTM: D 2216)

Nicolet Minerals Company, Crandon Wisconsin

Sample	TPH-6B C, surf.	TPH-6B C, 1½'	TPH-6B C, 1½'*	TPH-6B C, 3'	TPH-6B C, 4½'	TPH-6B 4S, surf.	TPH-6B 4S, 1½'
Tin No.	35	9	34	22	12	25	29
Wt. Tin + Moist Soil (g)	58.55	61.83	60.00	72.44	64.22	60.39	56.54
Wt. Tin + Dry Soil (g)	54.33	57.73	55.59	63.75	57.02	58.45	54.93
Wt. of Tin (g)	15.51	15.25	15.59	15.41	15.54	15.35	15.53
Wt. of Water (g)	4.22	4.10	4.41	8.69	7.20	1.94	1.61
Wt. of Dry Soil (g)	38.82	42.48	40.00	48.34	41.48	43.10	39.40
Moisture Content, θ_m (wt., %)	10.9	9.65	11.0	18.0	17.4	4.50	4.09
Moisture Content, θ_v (vol. %)	16.6	14.7	16.7	27.4	26.4	6.84	6.22
Soil Texture (SCS)	ms	m-cos	m-cos	ms	fs	ms	m-cos

Moisture content, θ_m (wt., %) = [(wt. of water, g) / (wt. of oven dry soil, g)] x 100

Moisture content, θ_v (vol., %) = θ_m x (bulk density, D_b); av. D_b = 1.52 g/cm^3

* = duplicate sample

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3.5-14d-165

Table 2 (continued). Moisture Content (θ_m and θ_v) of Soil Samples Collected Following the Completion of the Double-Ring Infiltrometer Tests at the Rudloff Property.

(ASTM: D 2216)

Nicolet Minerals Company, Crandon Wisconsin

Sample	TPH-6B 4S, 3'	TPH-6B 4S, 4½'	TPH-6B 2S, surf.	TPH-6B 2S, surf.*	TPH-6B 2S, 1½'	TPH-6B 2S, 3'	TPH-6B 2S, 4½'
Tin No.	11	32	13	15	1	3	28
Wt. Tin + Moist Soil (g)	60.28	59.51	54.19	56.52	54.42	59.59	58.57
Wt. Tin + Dry Soil (g)	57.70	55.66	52.34	54.61	51.82	56.25	54.34
Wt. of Tin (g)	15.57	15.51	15.29	15.54	15.50	15.56	15.52
Wt. of Water (g)	2.58	3.85	1.85	1.91	2.60	3.34	4.23
Wt. of Dry Soil (g)	42.13	40.15	37.05	39.07	36.32	40.69	38.82
Moisture Content, θ_m (wt., %)	6.12	9.59	4.99	4.89	7.16	8.21	10.9
Moisture Content, θ_v (vol. %)	9.30	14.6	7.58	7.43	10.9	12.5	16.6
Soil Texture (SCS)	ms	fs	ms	ms	m-cos	ms	fs

Moisture content, θ_m (wt., %) = [(wt. of water, g) / (wt. of oven dry soil, g)] x 100

Moisture content, θ_v (vol., %) = θ_m x (bulk density, D_b); av, D_b = 4.52 g/cm^3

* = duplicate sample

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Table 2 (continued). Moisture Content (θ_m and θ_v) of Soil Samples Collected Following the Completion of the Double-Ring Infiltrometer Tests at the Rudloff Property.

(ASTM: D 2216)

Nicolet Minerals Company, Crandon Wisconsin

Sample	TPH-6B 2N, surf.	TPH-6B 2N, 1½'	TPH-6B 2N, 3'	TPH-6B 2N, 3'*	TPH-6B 2N, 4½'	TPH-6B 2N, 4½'*	TPH-6B 4N, surf.
Tin No.	7	27	14	4	33	30	21
Wt. Tin + Moist Soil (g)	55.56	53.91	58.14	59.35	58.11	62.89	55.97
Wt. Tin + Dry Soil (g)	53.87	51.59	55.48	56.77	54.40	58.25	55.04
Wt. of Tin (g)	15.34	15.51	15.36	15.55	15.53	15.60	15.39
Wt. of Water (g)	1.69	2.32	2.66	2.58	3.71	4.64	0.93
Wt. of Dry Soil (g)	38.53	36.08	40.12	41.22	38.87	42.65	39.65
Moisture Content, θ_m (wt., %)	4.39	6.43	6.63	6.26	9.54	10.9	2.35
Moisture Content, θ_v (vol., %)	6.67	9.77	10.1	9.52	14.5	16.6	3.57
Soil Texture (SCS)	ms	m-cos	ms	ms	fs	fs	ms

Moisture content, θ_m (wt., %) = [(wt. of water, g) / (wt. of oven dry soil, g)] x 100

Moisture content, θ_v (vol., %) = θ_m x (bulk density, D_b); av D_b = 1.52 g/cm^3

* = duplicate sample

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Table 2 (continued). Moisture Content (θ_m and θ_v) of Soil Samples Collected Following the Completion of the Double-Ring Infiltrometer Tests at the Rudloff Property.

(ASTM: D 2216)

Nicolet Minerals Company, Crandon Wisconsin

Sample	TPH-6B 4N, 1½'	TPH-6B 4N, 3'	TPH-6B 4N, 4½'	TPH-47 C, surf.	TPH-47 C, 1½'	TPH-47 C, 1½'*	TPH-47 C, 3'
Tin No.	36	16	24	19	15	35	3
Wt. Tin + Moist Soil (g)	51.86	63.52	61.77	63.14	67.48	64.20	69.67
Wt. Tin + Dry Soil (g)	50.17	61.97	58.34	57.87	62.43	59.65	62.20
Wt. of Tin (g)	15.61	15.41	15.29	15.47	15.53	15.51	15.56
Wt. of Water (g)	1.69	1.55	3.43	5.27	5.05	4.55	7.47
Wt. of Dry Soil (g)	34.56	46.56	43.05	42.40	46.90	44.14	46.64
Moisture Content, θ_m (wt., %)	4.89	3.33	7.97	12.4	10.8	10.3	16.0
Moisture Content, θ_v (vol. %)	7.43	5.06	12.1	18.8	16.4	15.6	24.3
Soil Texture (SCS)	m-cos	ms	fs	ms	cos	cos	m-cos

Moisture content, θ_m (wt., %) = [(wt. of water, g) / (wt. of oven dry soil, g)] x 100

Moisture content, θ_v (vol., %) = θ_m x (bulk density, D_b); av. D_b = 1.52 g/cm^3

* = duplicate sample

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Table 2 (continued). Moisture Content (θ_m and θ_v) of Soil Samples Collected Following the Completion of the Double-Ring Infiltrometer Tests at the Rudloff Property.

(ASTM: D 2216)

Nicolet Minerals Company, Crandon Wisconsin

Sample	TPH-47 4E, surf.	TPH-47 4E, 1½'	TPH-47 4E, 3'	TPH-47 2E, surf.	TPH-47 2E, surf.*	TPH-47 2E, 1½'	TPH-47 2E, 3'
Tin No.	22	25	24	4	18	30	14
Wt. Tin + Moist Soil (g)	56.49	59.49	61.65	56.27	54.42	61.13	61.94
Wt. Tin + Dry Soil (g)	55.75	56.93	59.40	55.52	53.69	57.15	57.52
Wt. of Tin (g)	15.41	15.35	15.29	15.55	15.48	15.60	15.37
Wt. of Water (g)	0.74	2.56	2.25	0.75	0.73	3.98	4.42
Wt. of Dry Soil (g)	40.34	41.58	44.11	39.97	38.21	41.55	42.15
Moisture Content, θ_m (wt., %)	1.83	6.16	5.10	1.88	1.91	9.58	10.5
Moisture Content, θ_v (vol. %)	2.78	9.36	7.75	2.86	2.90	14.6	16.0
Soil Texture (SCS)	ms	cos	m-cos	ms	ms	cos	m-cos

Moisture content, θ_m (wt., %) = [(wt. of water, g) / (wt. of oven dry soil, g)] x 100

Moisture content, θ_v (vol., %) = θ_m x (bilk density, D_b); av. D_b = 1.52 g/cm^3

* = duplicate sample

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Table 2 (continued). Moisture Content (θ_m and θ_v) of Soil Samples Collected Following the Completion of the Double-Ring Infiltrometer Tests at the Rudloff Property.

(ASTM: D 2216)

Nicolet Minerals Company, Crandon Wisconsin

Sample	TPH-47 2W, surf.	TPH-47 2W, 1½'	TPH-47 2W, 3'	TPH-53 C, surf.	TPH-53 C, 1½'	TPH-53 C, 3'	TPH-53 C, 3'*
Tin No.	23	16	32	27	7	8	17
Wt. Tin + Moist Soil (g)	58.05	59.48	65.61	62.19	72.37	65.41	69.49
Wt. Tin + Dry Soil (g)	55.47	56.01	58.53	57.59	65.95	60.05	63.49
Wt. of Tin (g)	15.31	15.41	15.51	15.51	15.34	15.59	15.26
Wt. of Water (g)	2.58	3.47	7.08	4.60	6.42	5.36	6.00
Wt. of Dry Soil (g)	40.16	40.60	43.02	42.08	50.61	44.46	48.23
Moisture Content, θ_m (wt., %)	6.42	8.55	16.5	10.9	12.7	12.1	12.4
Moisture Content, θ_v (vol. %)	9.76	13.0	25.1	16.6	19.3	18.4	18.8
Soil Texture (SCS)	ms	cos	m-cos	ms	cos	m-cos	m-cos

Moisture content, θ_m (wt., %) = [(wt. of water, g) / (wt. of oven dry soil, g)] x 100

Moisture content, θ_v (vol. %) = θ_m x (bulk density, D_b); av. D_b = 1.52 g/cm^3

* = duplicate sample

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Table 2 (continued). Moisture Content (θ_m and θ_v) of Soil Samples Collected Following the Completion of the Double-Ring Infiltrometer Tests at the Rudloff Property.

(ASTM: D 2216)

Nicolet Minerals Company, Crandon Wisconsin

Sample	TPH-53 2E, surf.	TPH-53 2E, 1½'	TPH-53 2E, 3'	TPH-53 2W, surf.	TPH-53 2W, 1½'	TPH-53 2W, 3'	TPH-53 4W, surf.
Tin No.	21	28	1	11	29	36	13
Wt. Tin + Moist Soil (g)	61.12	62.30	57.67	58.36	64.84	58.94	59.02
Wt. Tin + Dry Soil (g)	58.33	57.54	55.91	56.33	60.70	57.73	58.22
Wt. of Tin (g)	15.39	15.53	15.50	15.58	15.53	15.60	15.28
Wt. of Water (g)	2.79	4.76	1.76	2.03	4.14	1.21	0.80
Wt. of Dry Soil (g)	42.64	42.01	40.41	40.75	45.17	42.13	42.94
Moisture Content, θ_m (wt., %)	6.50	11.3	4.36	4.98	9.17	2.87	1.86
Moisture Content, θ_v (vol., %)	9.88	17.2	6.63	7.57	13.9	4.36	2.83
Soil Texture (SCS)	ms	cos	m-cos	ms	cos	m-cos	ms

Moisture content, θ_m (wt., %) = [(wt. of water, g) / (wt. of oven dry soil, g)] x 100

Moisture content, θ_v (vol., %) = θ_m x (bulk density, D_b); av. D_b = 1.52 g/cm^3

* = duplicate sample

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Table 2 (continued). Moisture Content (θ_m and θ_v) of Soil Samples Collected Following the Completion of the Double-Ring Infiltrometer Tests at the Rudloff Property.

(ASTM: D 2216)

Nicolet Minerals Company, Crandon Wisconsin

Sample	TPH-53 4W, surf.*	TPH-53 4W, 1½'	TPH-53 4W, 3'				
Tin No.	33	34	5				
Wt. Tin + Moist Soil (g)	60.70	63.55	60.28				
Wt. Tin + Dry Soil (g)	59.98	62.48	58.86				
Wt. of Tin (g)	15.53	15.60	15.43				
Wt. of Water (g)	0.72	1.07	1.42				
Wt. of Dry Soil (g)	44.45	46.88	43.43				
Moisture Content, θ_m (wt., %)	1.62	2.28	3.27				
Moisture Content, θ_v (vol., %)	2.46	3.46	4.97				
Soil Texture (SCS)	ms	cos	m-cos				

Moisture content, θ_m (wt., %) = [(wt. of water, g) / (wt. of oven dry soil, g)] x 100

Moisture content, θ_v (vol., %) = θ_m x (bulk density, D_b); av. D_b = 1.52 g/cm^3

* = duplicate sample

Analyzed and prepared by: JET, 090598

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