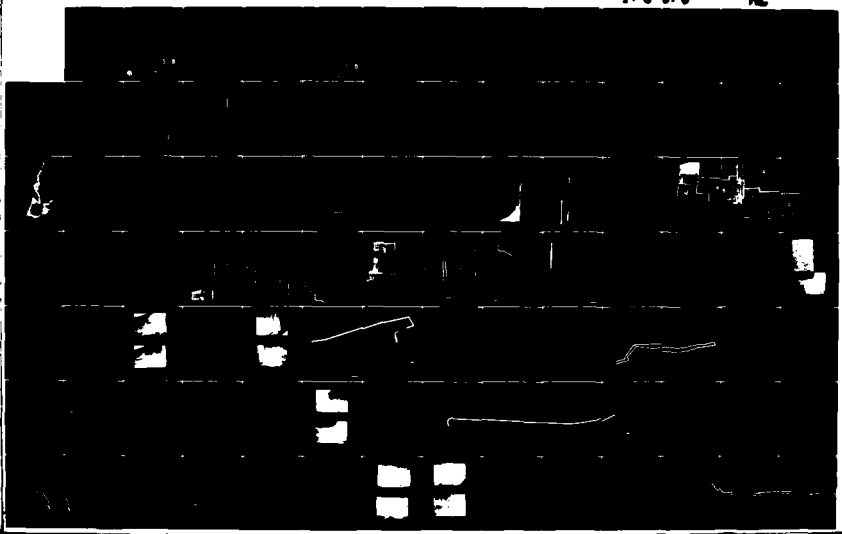
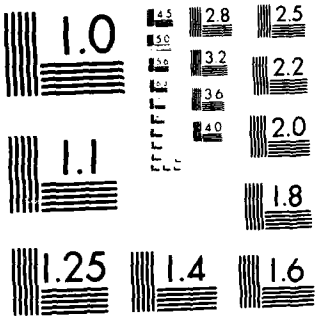
AD-A195 415 PROPOSED ADVANCE MEASURES FLOOD CONTROL PROJECT HAMPTON TOWNSHIP BAY COUN..(U) ZYMETECH INC LANSING MI E J PRAHL AUG 87 1/2

UNCLASSIFIED F/G 5/6 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

AD-A195 415

U.S. ARMY CORPS OF ENGINEERS - DETROIT DISTRICT

PROPOSED ADVANCE MEASURES FLOOD CONTROL PROJECT
HAMPTON TOWNSHIP, BAY COUNTY, MICHIGAN
INTENSIVE ARCHAEOLOGICAL SURVEY

CONTRACT DACW-35-87-0-0009

DELIVERY ORDER #0001

VOLUME 1

BY

CAMINOS ASSOCIATES

BAY CITY, MICHIGAN

DR. EARL J. PRAHL, PRINCIPAL INVESTIGATOR

FOR

ZYMEtech, LTD.

LANSING, MICHIGAN

DTIC ELECTE MAY 03 1988 S D E

This document has been approved for public release and sale; its distribution is unlimited.

ZYMEtech, Ltd.

A Shell Environmental Group Company

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER

2. GOVT ACCESSION NO.

3. RECIPIENT'S CATALOG NUMBER

4. TITLE (and Subtitle)
Proposed Advance Measures Flood Control Project, Hampton Township, Bay County, Michigan, Intensive Archaeological Survey Vol. 1

5. TYPE OF REPORT & PERIOD COVERED
Archeological

6. PERFORMING ORG. REPORT NUMBER

7. AUTHOR(s)
Earl J. Prahl, Ph.D.

8. CONTRACT OR GRANT NUMBER(s)
DACW-35-87-0-0009
Delivery Order #0001

9. PERFORMING ORGANIZATION NAME AND ADDRESS
Zymetech, Ltd.
1120 May Street
Lansing, Michigan

Camions Associates
P.O. Box 1264
Bay City, Michigan

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS

11. CONTROLLING OFFICE NAME AND ADDRESS
U.S. Army Corps of Engineers, Detroit District
P.O. Box 1027
Detroit, Michigan 48231

12. REPORT DATE
August 1987

13. NUMBER OF PAGES
97

14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)
U.S. Army Corps of Engineers, Detroit District
P.O. Box 1027
Detroit, Michigan 48231

15. SECURITY CLASS. (of this report)
Unclassified

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)
Approved for public release; unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)
Available From:
NTIS, 5285 Port Royal Road, Springfield, VA 22151

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)
Archeology
Flood Control

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
This report presents the results of a partial intensive archaeological investigation in connection with the construction of the proposed Advance Measures Flood Control Project in Bay County, Michigan. The survey was conducted by Caminos Associates of Bay City under contract with ZYMEtech, Ltd. for the U.S. Army Corps of Engineers (COE), Detroit District. Dr. Earl J. Prahl served as principal investigator.

(Continued on Reverse Side)

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

88 5 02 373

The survey included several portions of the approximately 7.7 mile long and 45 feet wide dike alignment proposed at the time of the survey. The proposed dike will be located along the Saginaw Bay shoreline in Hampton Township (T14N,RGE), Bay County, Michigan. Much of the proposed project corridor traverses a sandy ridge composed of Pipestone fine sand, probably a relict Huron basin shoreline feature. The survey was conducted in compliance with the National Historic Preservation Act of 1966 (P.L. 89-665), as amended, the Archaeological Resources Protection Act of 1979 (P.L. 96-95), 36 CFR 300, 36 CFR Part 60, ER 1105-2-50 and ER 1130-2-433. Purpose of the investigation was to identify known and potential archaeological sites or historic properties potentially affected by the proposed project and which may be eligible for inclusion in the National Register of Historic Places. The investigation required the surface exposure of two 2-meter wide transects separated by a distance of 5 meters in alignment segments determined by the COE to be archaeologically sensitive. Exposure of the ground surface was accomplished by disking agricultural and beach areas in the segments and by using root rakes in vegetated areas. The transects were then inspected by means of a pedestrian survey for the presence of historic material. After the ground surface was allowed to weather for five days, the inspection was repeated. The method of shovel testing was used in transects or part of transects inaccessible to equipment.

ARchaeological sites in the project area were visited while the survey was in progress. Also, an important collection of archaeological material from the Jahrman Ranch site (20BY161), west of the project area, was examined.

No evidence was found of archaeological material of significance, and no sites were discovered of National Register eligibility. As a result, it was recommended that archaeological clearance be given those areas where no further investigations will be required.

The field work was conducted between May 18 and June 2, 1987. A total of 45 person days were spent in completing the survey which covered approximately 28,245 square meters surface area.

1

U.S. ARMY CORPS OF ENGINEERS - DETROIT DISTRICT

PROPOSED ADVANCE MEASURES FLOOD CONTROL PROJECT

HAMPTON TOWNSHIP, BAY COUNTY, MICHIGAN

INTENSIVE ARCHAEOLOGICAL SURVEY

CONTRACT DACW-35-87-0-0009

DELIVERY ORDER #0001

VOLUME 1

BY

CAMINOS ASSOCIATES

P.O. BOX 1264

BAY CITY, MICHIGAN 48706

DR. EARL J. PRAHL, PRINCIPAL INVESTIGATOR

FOR

ZYMEtech, INC.

1120 MAY STREET

LANSING, MICHIGAN 48906

DTIC
ELECTE
MAY 03 1988
S D
E

AUGUST 1987

This document has been approved for public release and sale; its distribution is unlimited.

TABLE OF CONTENTS

Caminos Associates Personnel	iii
List of Figures	iv
List of Plates	v
List of Tables	vi
List of Appendices	vii
Introduction	1
Project Location and Setting	3
Geology and Soils of Project Area	3
Prehistoric Consideration	12
Historic Considerations	18
Field Methodology and Scope of Services	24
Local Collections	30
Field Investigations and Results	32
Corridor Segment 1	32
Corridor Segment 2	40
Corridor Segment 3	45
Corridor Segment 4	45
Corridor Segment 5	51
Survey Results Summary	56
Conclusions and Recommendations	59
References Cited	61
Glossary of Terms	63
Appendix A	65
Appendix B	71
Appendix C	87

Accession For
NTIS GRA&I ☒
DTIC TAB ☐
Unannounced ☐
Justification
By
Distribution/
Availability Codes
Dist | Avail and/or Special
A-1

CAMINOS ASSOCIATES PERSONNEL

Advance Measures Flood Control Project
Hampton Township, Bay City, Michigan

Principal Investigator . . . . . Earl J. Prahl

Assistants:

Background Research
Field Director . . . . . Raymond Michaels

Field Assistants . . . . . William Hydorn
Judy Prahl
William Topping

Report Writing

Text . . . . . Earl J. Prahl

Historical Background . . . . . Raymond Michaels

Report Production
Graphics . . . . . Raymond Michaels

Editing
Report Preparation . . . . . Judy Prahl
William Topping

LIST OF FIGURES

Advance Measures Flood Control Project
Hampton Township, Bay County, Michigan

Figure #		Page #
1 -	Map of Michigan Lower Peninsula Showing Location of Project Area	4
2 -	Map of Bay County Showing Project Area	5
3 -	Map of Hampton Township Showing Corridor Segments With Property Number or Names of Property Owners	6
4 -	USGS 7-1/2" Quadrangle Composite of the Project Area Showing Physical and Natural Features Referred to in Text	7
5 -	Regional Map of Saginaw Valley Showing Physiographic Zones	10
6 -	Idealized Landforms Map of the Project Area Showing Resource Potential	11
7 -	1931 USDA Soils Map Showing Local Soil Type Distribution	13
8 -	1980 USDA Soils Map Showing Local Soil Type Distribution	15
9 -	Prehistoric Sites of the Bay City and Saginaw Bay Regions	19
10 -	The 1896 Bullock Map of Bay County	21
11 -	The 1916 Monroe and Learman Map of Hampton Township	25
12 -	Undated Plat Map of Hampton Township (1946?)	27
13 -	Machine and Shovel Test Transects, Corridor Segment 1	37
14 -	Typical Profile of Stratigrapy at Corridor Segment 1	39
15 -	Machine and Shovel Test Transects, Corridor Segment 2	41
16 -	Typical Profile of Stratigraphy at Corridor Segment 2	44
17 -	Machine Transect, Corridor Segment 3	47
18 -	Machine and Shovel Test Transects, Corridor Segment 4	49
19 -	Typical Profile of Stratigraphy at Corridor Segment 4	52
20 -	Machine and Shovel Test Transects, Corridor Segment 5	57

LIST OF PLATES

Plate #		Page #
1A	- Grubbing Operation Showing Root Rake. Machine Operator Ralph Howe.	31
1B	- Disking Operation. Tractor Operator Jim Johnson.	31
2A	- Disking at Corridor Segment #1.	34
2B	- Disking at Corridor Segment #1, Completed Transect.	34
3A	- Profile of Shovel Test Unit #1, Corridor Segment 1. Hand Test Transect.	36
3B	- Profile of Shovel Test Unit #2, Corridor Segment #2. Hand Test Transect.	36
4A	- Disking at Corridor Segment #3.	46
4B	- Disking at Corridor Segment #3.	46
5A	- Grubbing at Corridor Segment #5 With Blade Uplifted.	53
5B	- Setting Transect Line and Guiding Bulldozer at Corridor Segment #5.	53
6A	- Grubbing at Corridor Segment #5 with CA Crew Examining Surface Behind Bulldozer.	54
6B	- CA Crew Members Judy Prahl and Ray Michaels Following Bulldozer. Jim Moore of Wolverine Oil Company, at Left, Monitoring Pipeline Positions.	54

LIST OF TABLES

Table #		Page #
1.	Prehistory Chronology of the Great Lakes	17
2.	Corridor Segments	33
3.	Cultural and Putative Cultural Material, Segment 5	56

LIST OF APPENDICES

Appendix		Page #
A.	Report on April 23, 1987 Advance Measures Field Trip	65
B.	List of Cultural Material, Photographs and Comments Concerning the Neering Collection	71
C.	Soil Profiles	87

ACKNOWLEDGEMENTS

Several property owners facilitated the Caminos Associates (CA) crew's efforts during the term of the project. Both Father Robert Reckinger and Sidney Hughes allowed easy access to their land and accompanied crews along the corridor route. They both shared the intimate knowledge of the project area that comes from life residency in the local area.

Gordon Hauglie of Consumers Power Company (CPC), Jackson, Michigan, was quick to respond concerning access to CPC land; and Ken Foret, who farms on CPC land, accompanied CA field crews to point out the limits of his plantings.

Jim Moore of Wolverine Oil also accompanied the field crew on several occasions to determine underground pipeline locations and avoidance areas for heavy machinery.

Gordon MacPhail and Mike Neering both shared with the principal investigator their knowledge of the prehistoric sites in the vicinity of the project area. Neering's collection at Site 20BY161 (Jahrman Ranch) is considered in this report. Their collaboration and field observations will certainly contribute toward clarification of prehistoric occupation of the land from the mouth of the Saginaw River eastward to Quanicassee.

We must also thank the machine operators, Ralph Howe and Jim Johnson, for their care in preparing the corridor transects for the survey as directed by the CA crew.

INTRODUCTION

This report represents the findings of a partial intensive archaeological survey of the Advance Measures Flood Control Project proposed by the U.S. Army Corps of Engineers (COE), Detroit District. The investigation was conducted by Caminos Associates of Bay City for ZYMEtech, Ltd. of Lansing, Michigan, the official contractor. Dr. Earl J. Prahl served as the principal investigator.

The project is located in Hampton Township (T14N, R6E), Bay County, Michigan. The purpose of the investigation was to identify known and potential archaeological sites or historic properties and evaluate their eligibility for inclusion in the National Register of Historic Places. The survey was conducted pursuant to the provisions of the National Historic Preservation Act of 1966 (P.L. 89665), as amended, the Archaeological Resources Protection Act of 1979 (P.L. 96-95), 36 CFR 800, 36 CFR Part 60, ER 1105-2-50 and ER 1130-2-433.

In early May of 1987, portions of the COE flood control project alignment were examined to plan the archaeological survey. Definition of the areas determined by the COE to be archaeologically sensitive were finalized. A total of five corridor segments were selected for the survey. During the initial reconnaissance, a field appraisal of the physical nature and environment of the project area was completed and basic ideas of archaeological potential or sensitivity were formed. Three major biotic communities were identified in the project corridor viz. beach, dune and wet prairie or wetland. Considering the land-water relationship of the present shoreline, the elevated areas of the dune ridge and climax oak forest, traversed by the alignment, were judged to be the logical zone of prehistoric and early historic occupancy.

The COE Scope of Work provided an outline for the survey strategy. In each of the corridor segments, two 2-meter wide transects separated by five meters distance, the ground surface was exposed by disking in farmland and beach area portions of the transects and by the use of a root rake in the vegetated areas. The transects were immediately inspected by the pedestrian survey method for the presence of archaeological or historic objects. This inspection was repeated after five days during which period the surface had been allowed to weather. Instead of disking or grubbing, shovel testing was done in corridor segments or parts of the segments where equipment was difficult or impossible to use. In addition to the field work, a private collection of archaeological material was examined. The artifacts of the collection came from the Jahrman ranch site (20BY161) located west of the survey area. A description of the collection with comments is attached to this report as Appendix B.

No archaeological or historic material of significance was found in the course of the investigation and no sites eligible for inclusion in the National Register of Historic Places were discovered. The recommendation was made that archaeological clearance be given for the areas in the alignment which need no further investigations. The survey has made no attempt to determine archaeological sensitivity of areas outside the corridor segments investigated. It is also recognized that an archaeological study may be needed in other corridor segments considered archaeologically sensitive by the COE or where the alignment of the present corridor segments have to be changed.

The study was conducted during the period of May 18 to June 2, 1987, and covered an estimated area of 28,245 square meters. The field work took a total of 42 person days to complete.

PROJECT LOCATION AND SETTING

The present COE survey alignment consists of a narrow strip of land bordering the shore of Saginaw Bay in Hampton Township (T14N, R6E), Bay County, Michigan. The general location of the project area is shown in Figure 1. The portions of the alignment subject to the archaeological survey extend through sections 7, 8, 9, 14 and 15 of Hampton Township (Figures 2 and 3).

Approaching the project area from Highway 25, one is immediately aware of the coastal characteristics of the land. Farmland punctuated by residential structures extends almost to the shoreline. There, a sandy ridge barrier guards the beach resulting in a change in the cultural landscape. Residential units and summer cottages extend along this ridge. Where development is absent, a mature oak forest rises which seems to be the most salient feature of the shoreline. The large residential lots are landscaped and used by the owners for recreational purposes. Traces of former commercial fisheries are absent. Commercial activity is limited to oil exploration and production, mostly to the south of the dune ridge. The beach itself displays the results of heavy wave action and deposition during the recent high water stage.

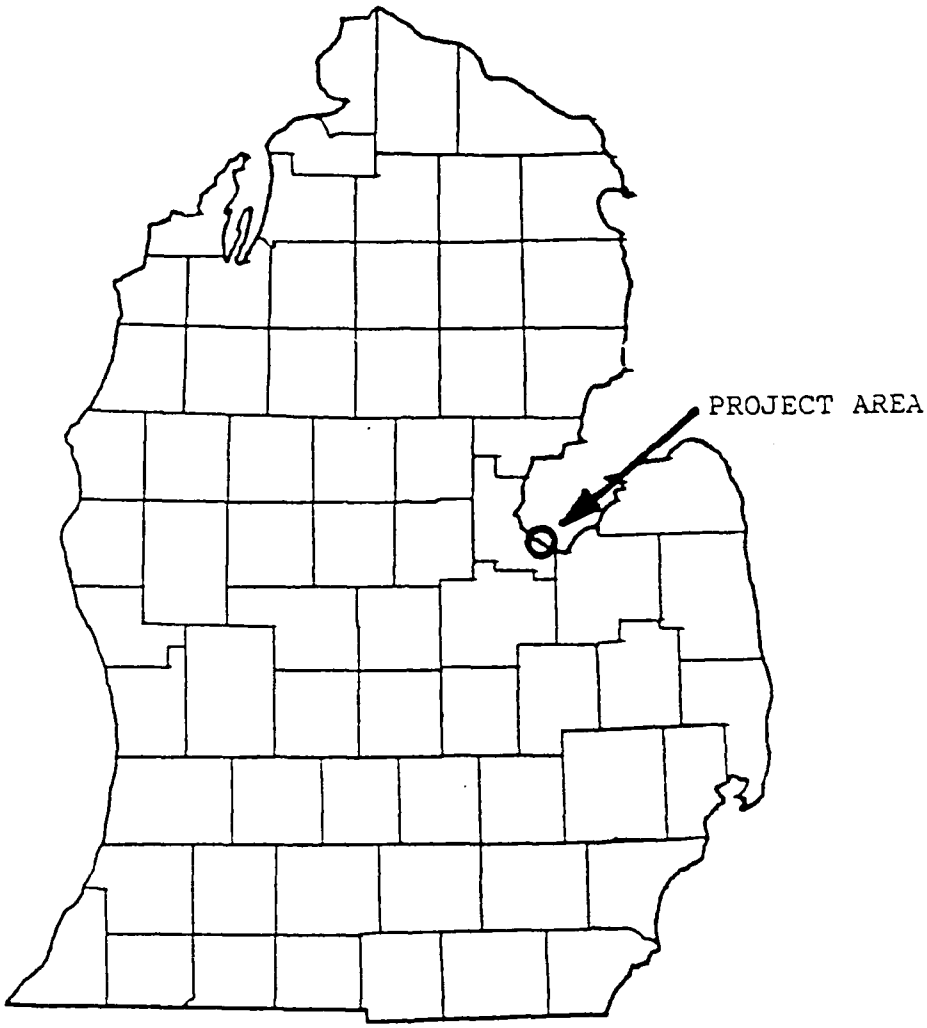
Ditches often border the leeward edge of the shoreline dune ridge and associated forest. They also extend southward along the roads leading to Highway 25. These ditches promote drainage of the agricultural land, in an area previously consisting of wetland with high ground water table.

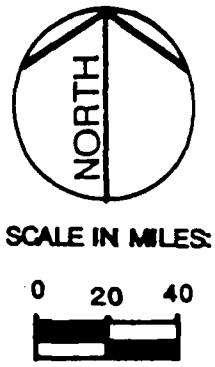
The survey alignment shown on Figure 4, traverses beach, dunes and wetlands, three typical ecosystems of the coast of Saginaw Bay. These landforms have their origin in the post-glacial history of the region.

GEOLOGY AND SOILS OF PROJECT AREA

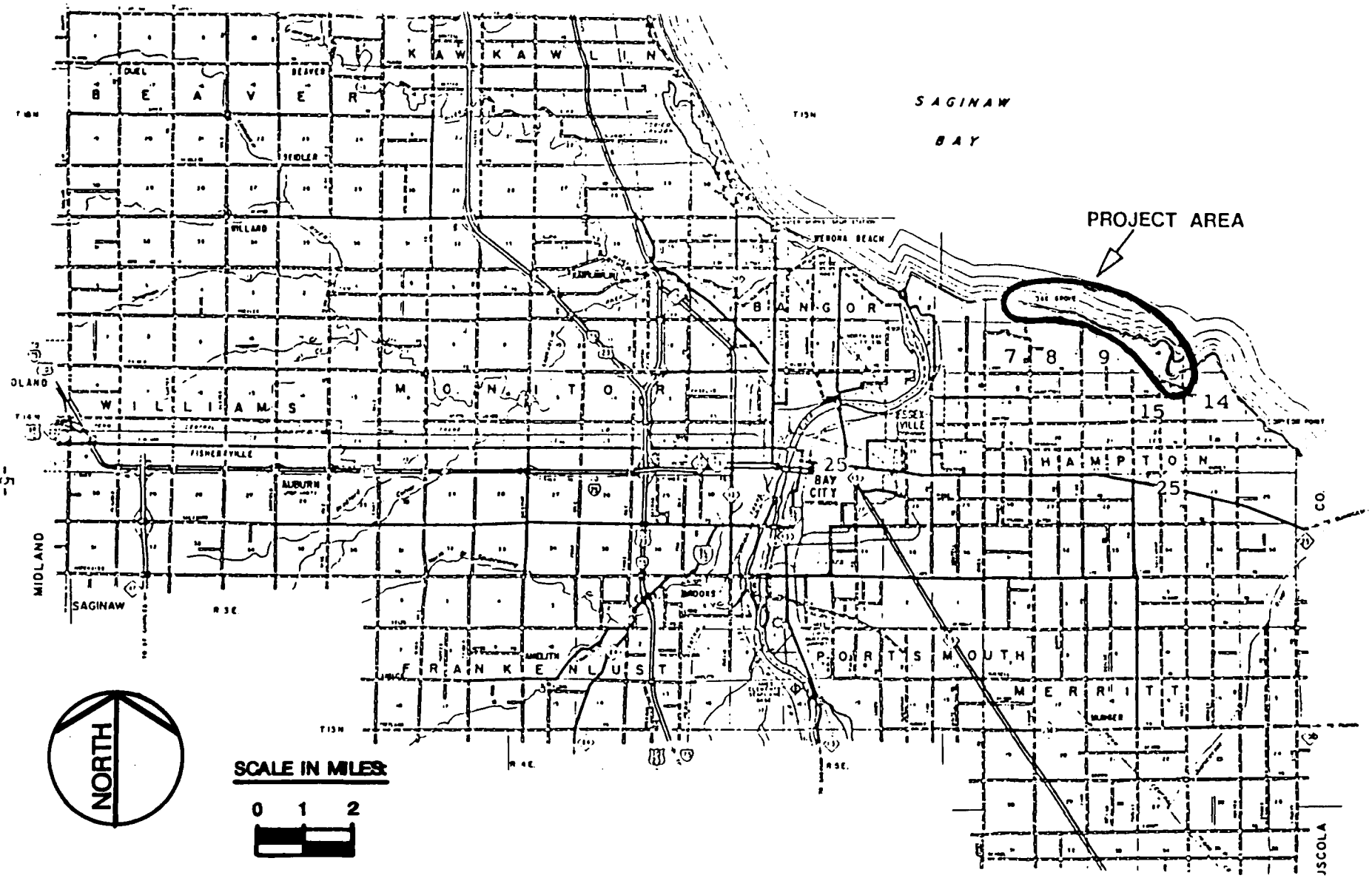
The coastal landforms that constitute the physical environment of the survey alignment resulted from a dynamic process which shaped the shoreline of Saginaw Bay and affected the land surface and drainage of the Saginaw Valley.

Following glaciation of the Saginaw Bay area, glacial waters inundated the Saginaw flatlands and formed a border at 800 ft. above mean sea level (AMSL) against the edge of the Lake Border moraine, a glacial highlands encircling the Saginaw Valley. Retreat of the ice northward exposed lower outlets for water ponded in front of the ice front (Leverett and Tayler 1915; Hough 1958; Farroud and Eschman 1974). These lower lake levels are represented on the Saginaw Valley Lake Plain by a series of remnant beaches (Figure 5). One of these, the Algonquin, marks the 605 ft. elevation and is a prominent inland feature in the





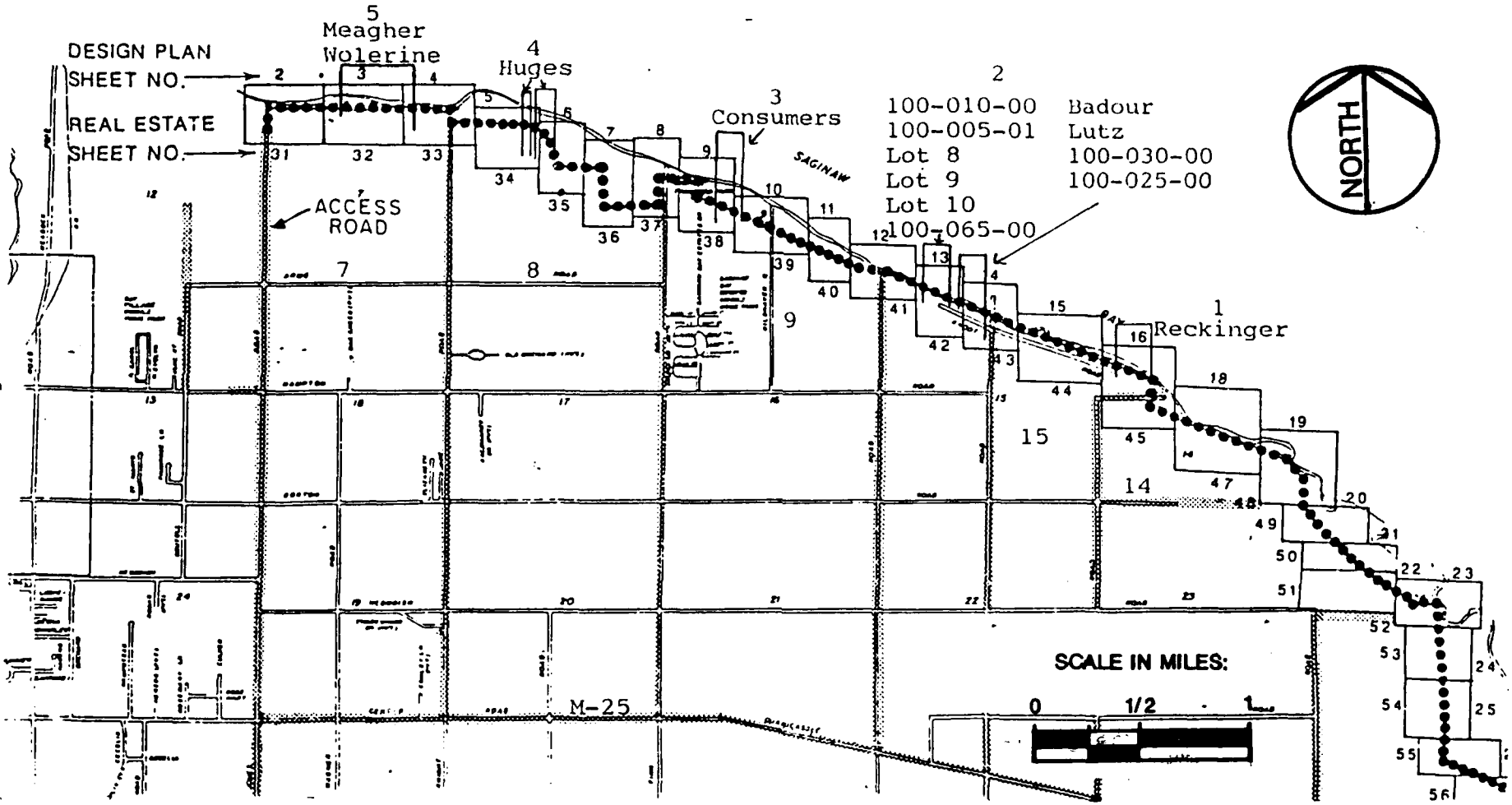
Caminos Associates CULTURAL RESOURCE MANAGEMENT Bay City, Michigan	Advance Measures Flood Control Project, Hampton Township, Bay City Michigan.
Figure 1: Map fo Michigan Lower Peninsuls showing location of project area.	



Caminos Associates CULTURAL RESOURCE MANAGEMENT Bay City, Michigan	Advance Measures Flood Control Project, Hampton Township, Bay City, Michigan.

Figure: 2 Map of Bay County showing project area.

VICINITY MAP

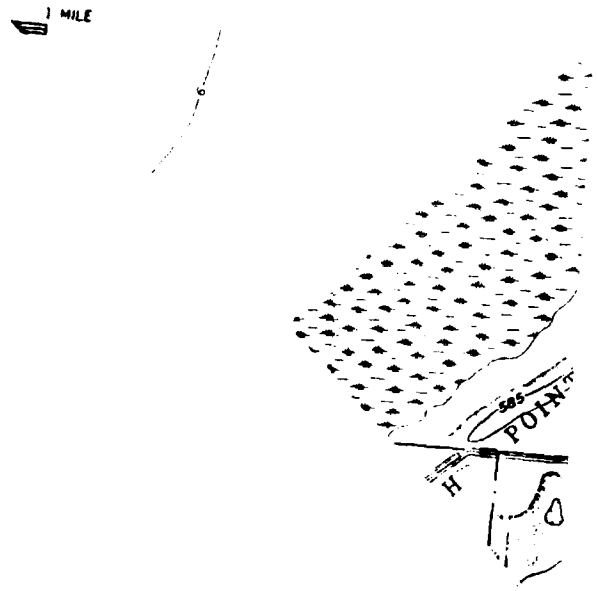


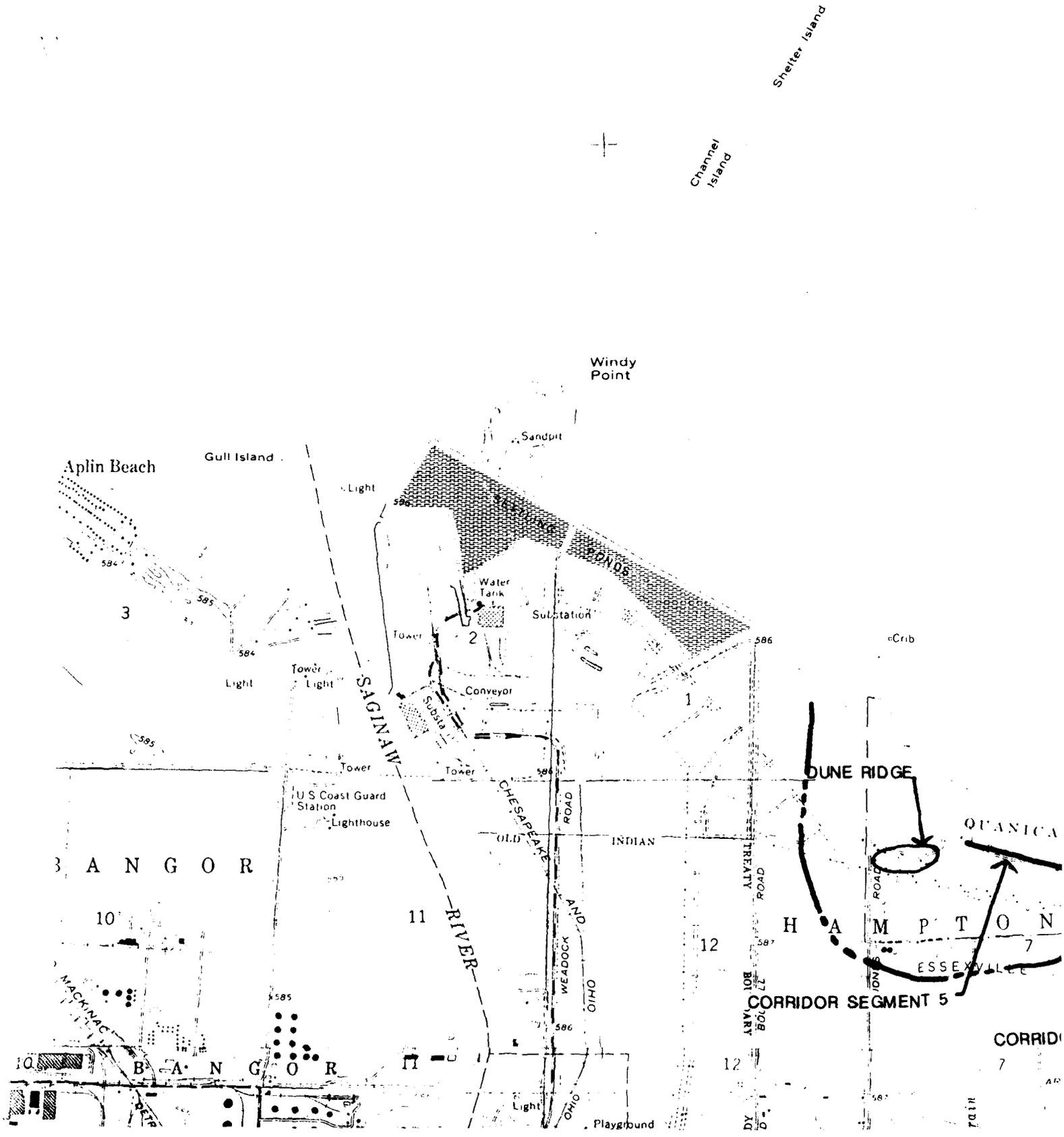
Caminos Associates
CULTURAL RESOURCE MANAGEMENT
Bay City, Michigan

Advance Measures Flood Control Project, Hampton Township, Bay City, Michigan.

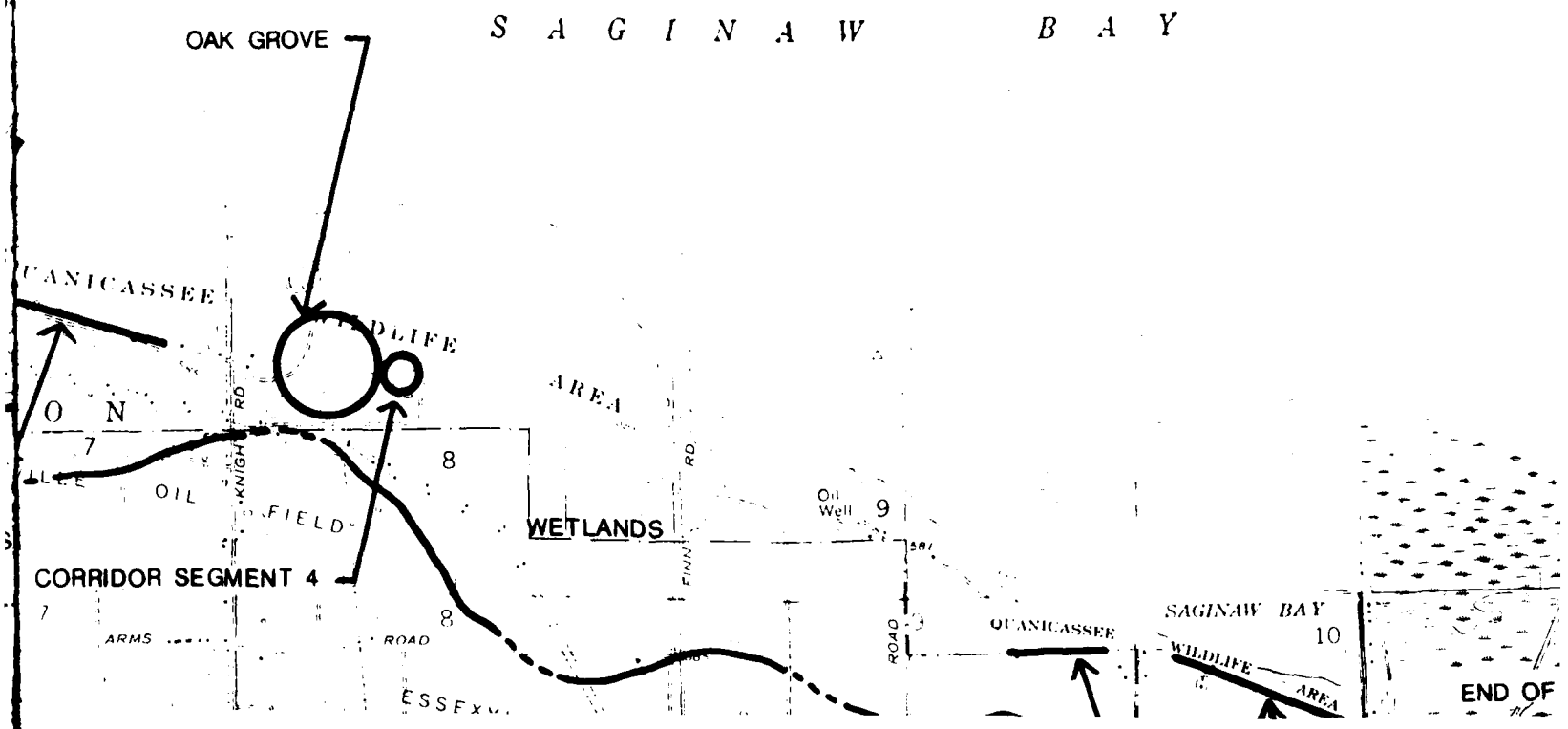
Figure: 3: Map of Hampton Township showing corridor segments with property numbers or names of property owners.

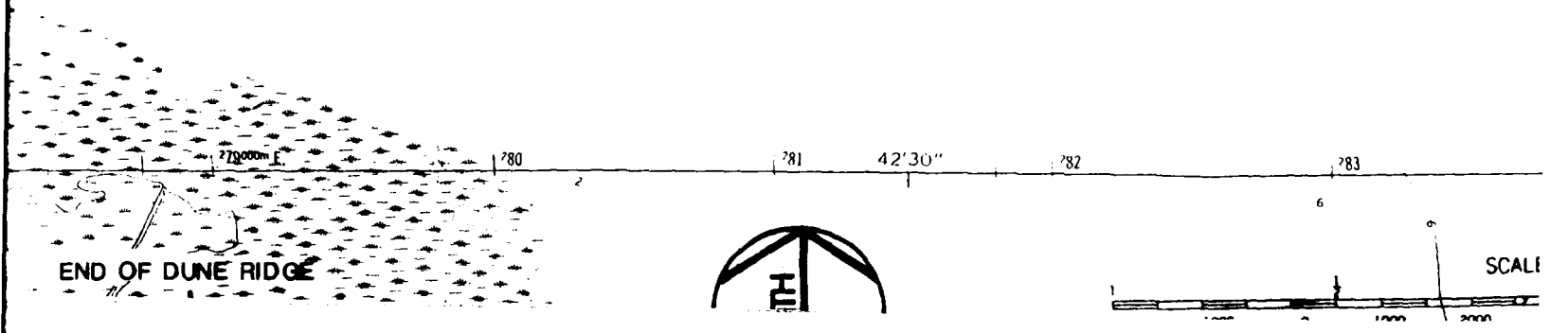
Figure 4: USGS 7-1/2' Quadrangle Map of Project Area Showing Physical and Natural Features Referred to in Text. Essexville, Bay City, N.E. and Quanicasse Quads.

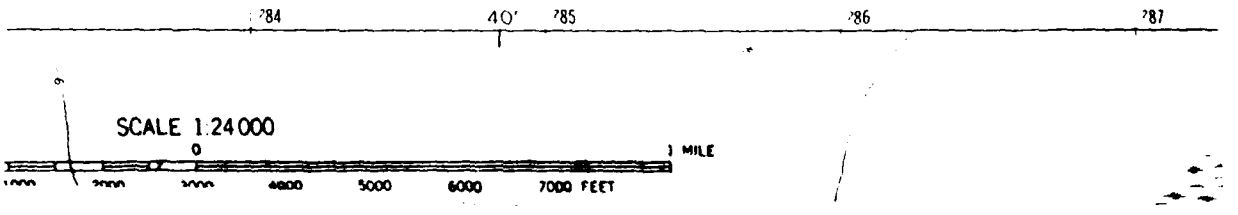


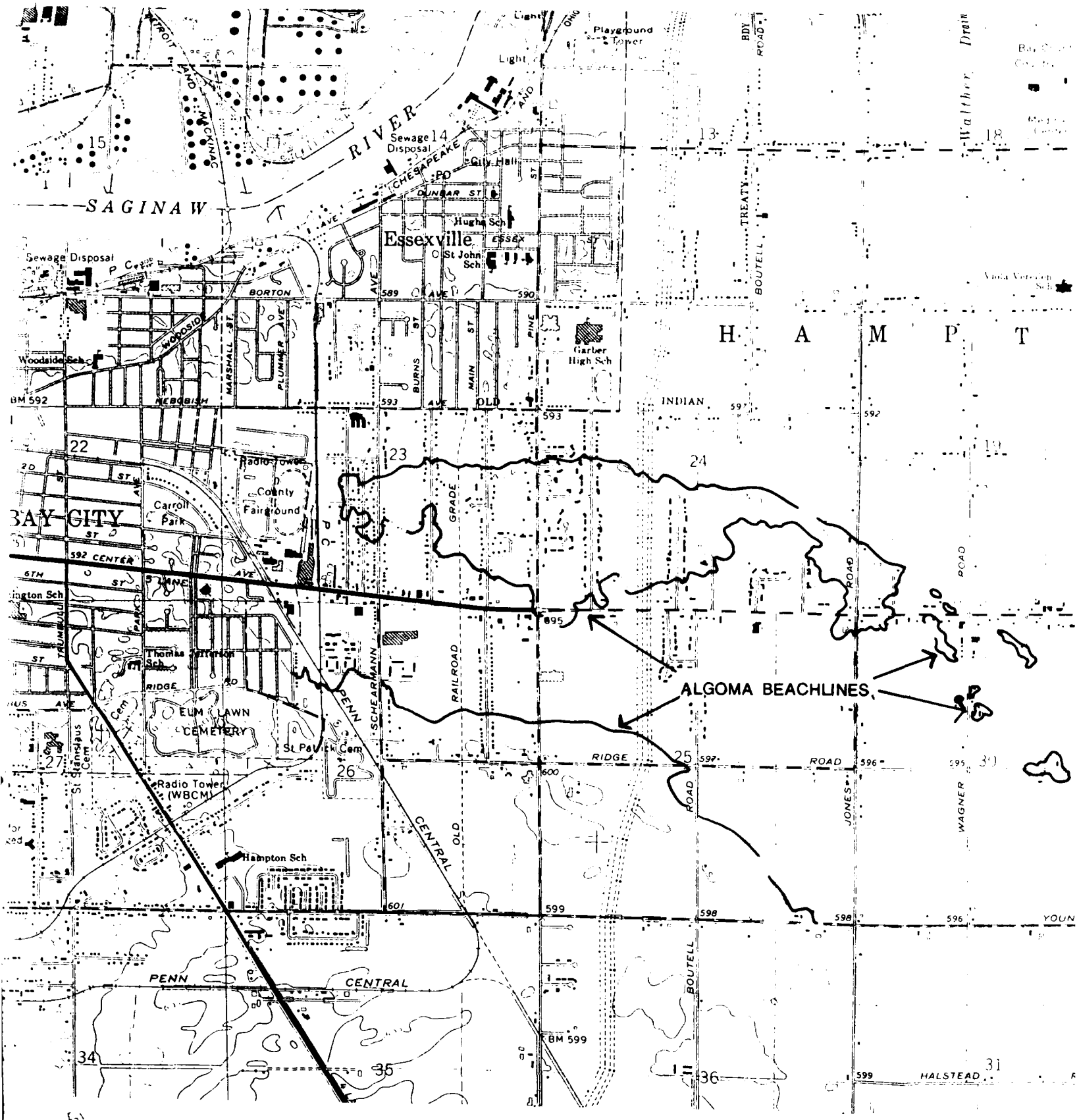


Shelter Island
Channel Island
Windy Point
Sandpit
Aplin Beach
Gull Island
Light
SETTLING PONDS
Water Tank
Substation
Tower
Crib
Light
Tower
Light
Conveyor
Substa
SAGINAW RIVER
Tower
Tower
U S Coast Guard Station
Lighthouse
CHESAPEAKE AND OHIO
ROAD
OLD INDIAN
TREATY ROAD
DUNE RIDGE
QUANICA
B A N G O R
H A M P T O N
ESSEXVILLE
CORRIDOR SEGMENT 5
CORRID
MACKINAC
WEADOCK
OHIO
B A N G O R
Light
Playground

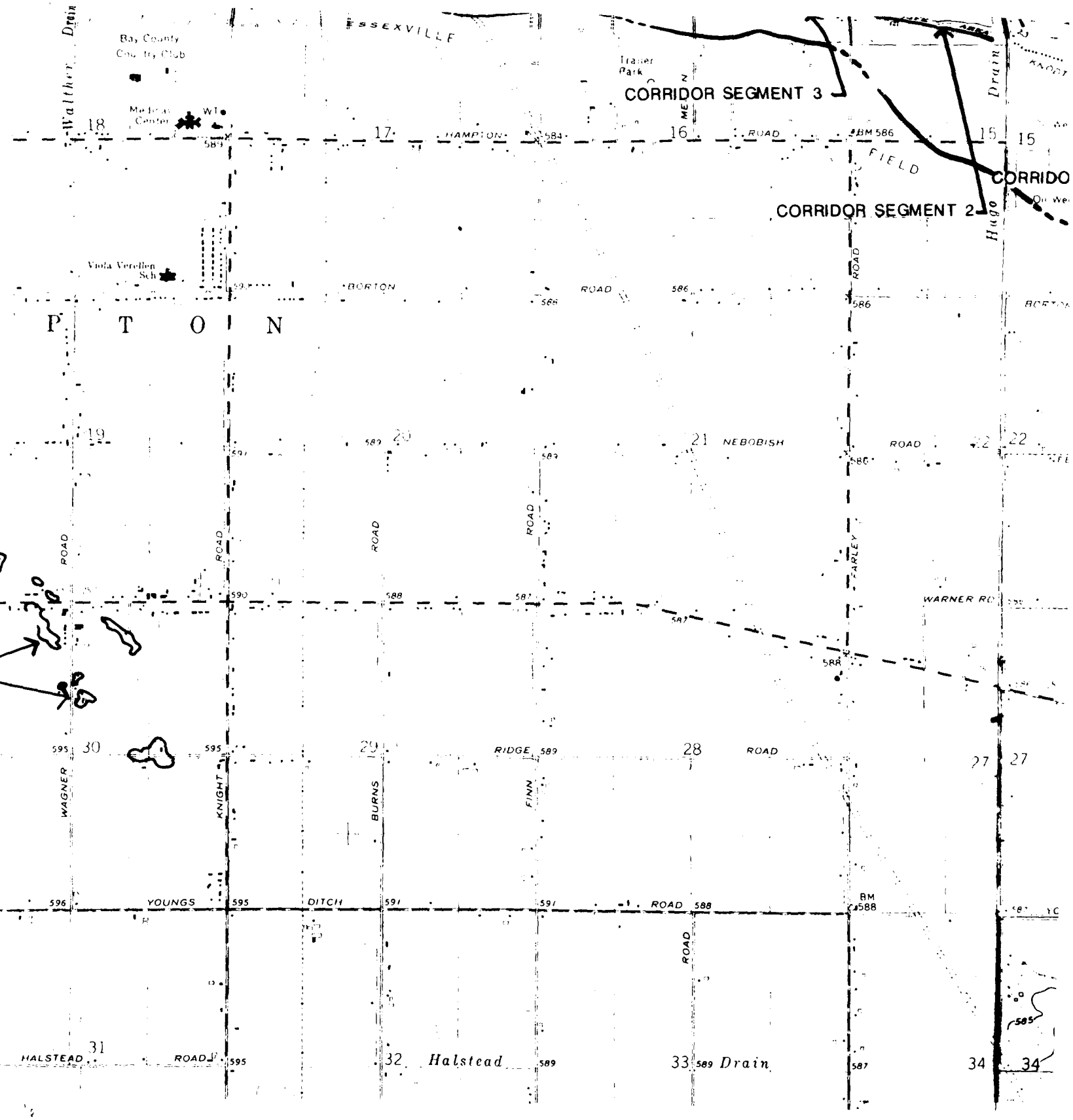

OAK GROVE
S A G I N A W B A Y
QUANICASSEE
WILDLIFE
AREA
OIL
FIELD
WETLANDS
CORRIDOR SEGMENT 4
Oil Well
SAGINAW BAY
WILDLIFE
AREA
END OF


270000m E
280
281
42'30"
282
283
END OF DUNE RIDGE
SCALE

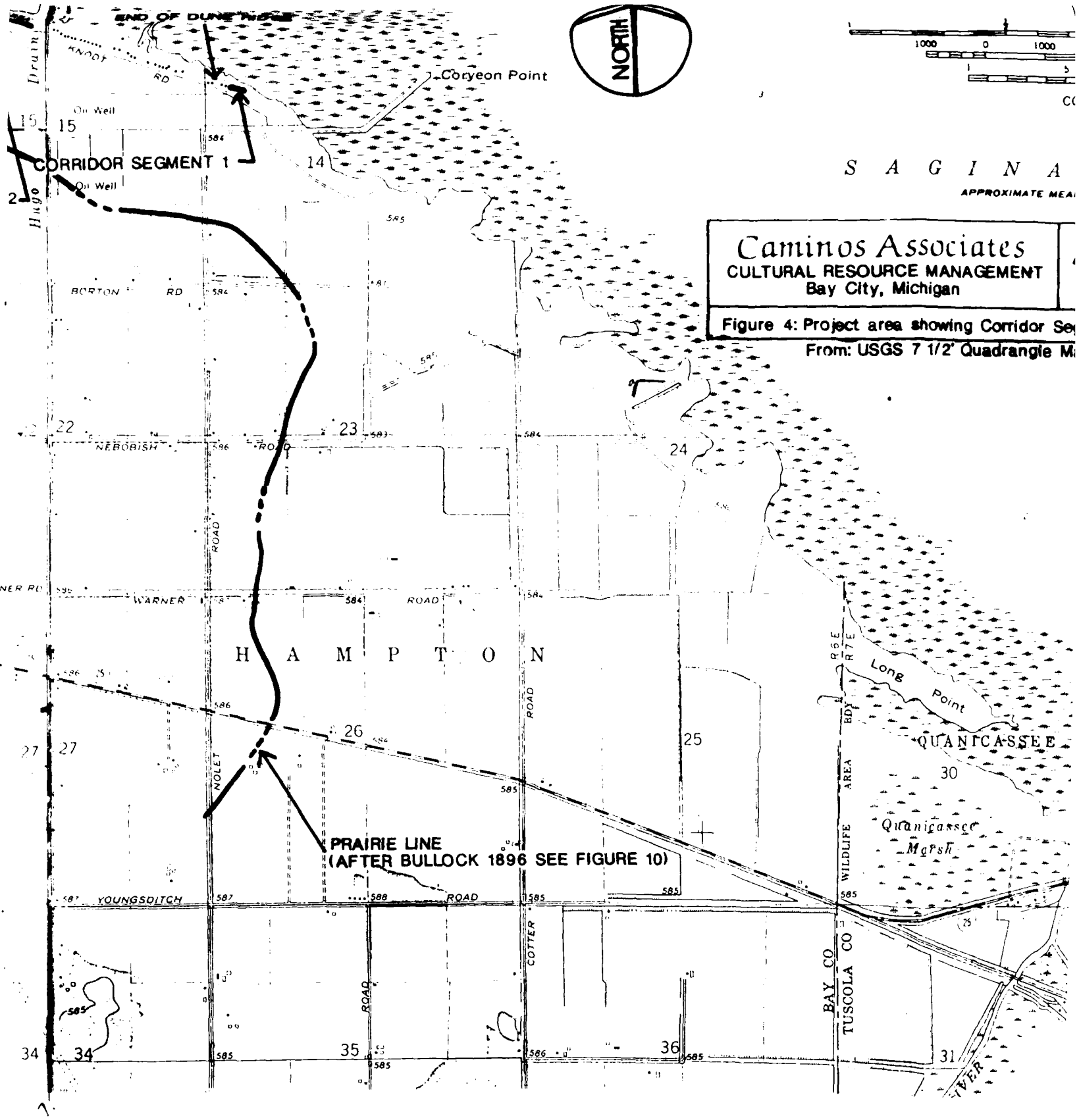

284
40'
285
286
287
SCALE 1:24000
0
1 MILE
4000
5000
6000
7000 FEET

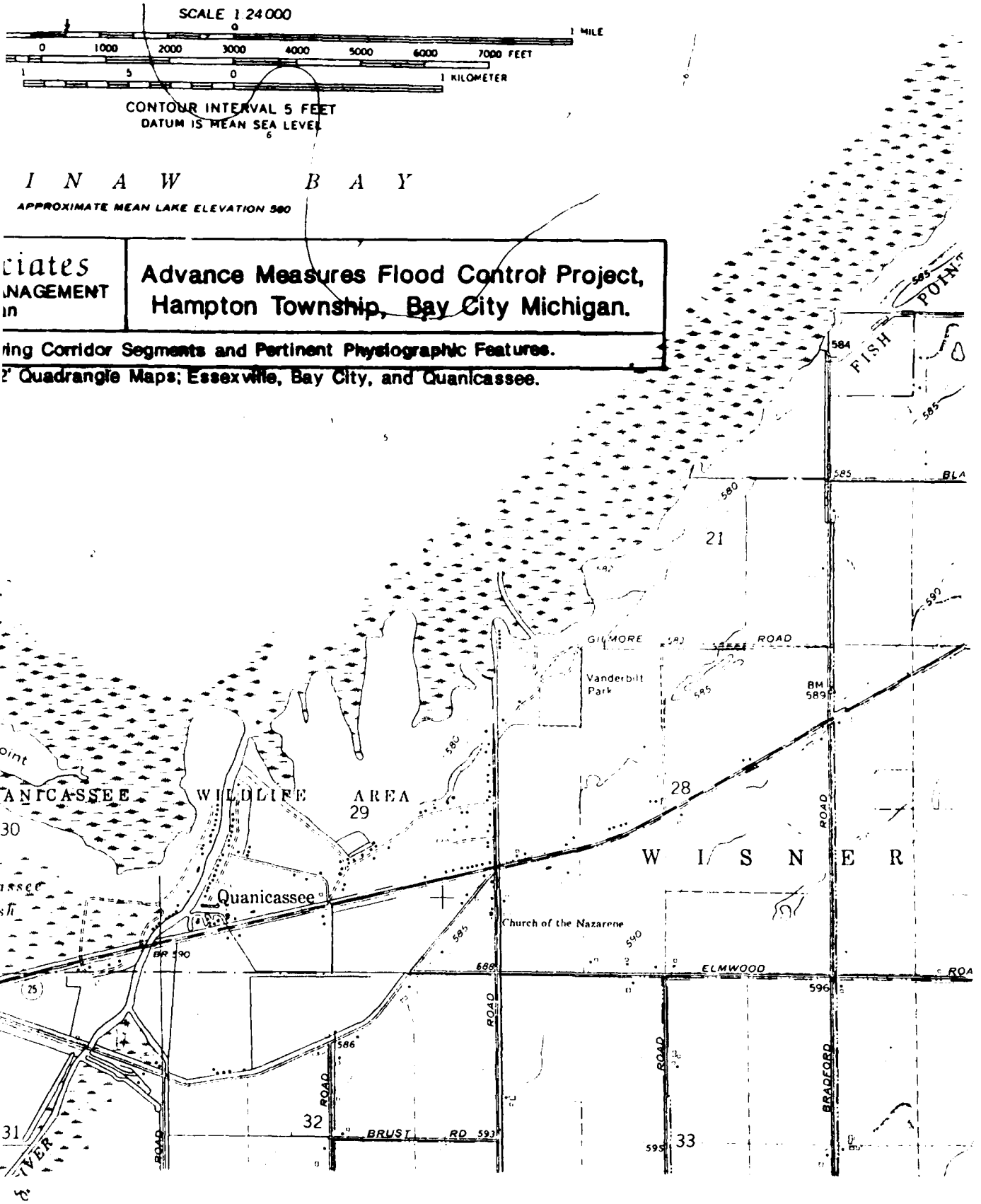


SAGINAW
RIVER
Sewage Disposal
City Hall
Essexville
Hugha Sch
St John Sch
Garber High Sch
Woodside Sch
BAY CITY
Carroll Park
Radio Tower
County Fairground
Thomas Jefferson Sch
ELM LAWN CEMETERY
St Patrick Cem
Radio Tower (WBCM)
Hampton Sch
PENN CENTRAL
ALGOMA BEACHLINES
H A M P T
INDIAN
RIDGE ROAD
HALSTEAD



CORRIDOR SEGMENT 3
CORRIDOR SEGMENT 2
CORRIDO
Walther Drain
Hugo Drain
Bay County Country Club
Medical Center
Viola Verellen Sch
ESSEXVILLE
Trailer Park
HAMPTON ROAD
FIELD
BORTON ROAD
P T O N
NEBOBISH ROAD
WARNER RD
RIDGE ROAD
YOUNGS DITCH ROAD
HALSTEAD ROAD
Halstead Drain
WAGNER ROAD
KNIGHT ROAD
BURNS ROAD
FINN ROAD
FARLEY ROAD
18
17
16
15
19
20
21
22
30
29
28
27
31
32
33
34


END OF DUNE RIDGE
NORTH
Coryeon Point
CORRIDOR SEGMENT 1
Oil Well
Oil Well
KNOOT RD
BORTON RD
NEBOBISH ROAD
WARNER ROAD
H A M P T O N
NOLET ROAD
COTTER ROAD
YOUNGSDITCH ROAD
PRAIRIE LINE
(AFTER BULLOCK 1896 SEE FIGURE 10)
Long Point
QUANICASSEE
Quanicassee Marsh
WILDLIFE AREA
BAY CO
TUSCOLA CO
S A G I N A
APPROXIMATE MEA
Caminos Associates
CULTURAL RESOURCE MANAGEMENT
Bay City, Michigan
Figure 4: Project area showing Corridor Se
From: USGS 7 1/2' Quadrangle M


SCALE 1:24 000
1 MILE
0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER
CONTOUR INTERVAL 5 FEET
DATUM IS MEAN SEA LEVEL
I N A W B A Y
APPROXIMATE MEAN LAKE ELEVATION 580
ciates
NAGEMENT
n
Advance Measures Flood Control Project,
Hampton Township, Bay City Michigan.
ing Corridor Segments and Pertinent Physiographic Features.
2' Quadrangle Maps; Essexville, Bay City, and Quanicassee.
FISH POINT
584
585
580
21
GILMORE ROAD
Vanderbilt Park
BM 589
28
ANICASSEE WILDLIFE AREA
29
30
W I S N E R
Quanicassee
Church of the Nazarene
BR 590
ELMWOOD ROA
596
ROAD
586
32
BRUST RD 593
31
33
595
BRADFORD
25

Saginaw Bay area. This occurred around 12-14,000 B.P. (Before Present), a period in which the first human communities entered the southern peninsula of Michigan.

From the Lake Algonquin position a continual series of lower lake levels occurred culminating in the low Lake Stanley stage when the shoreline of Saginaw Bay was several miles lakeward of its modern position. This water stage reached its lowest point at 58 ft. AMSL between 5500-6000 B.P.

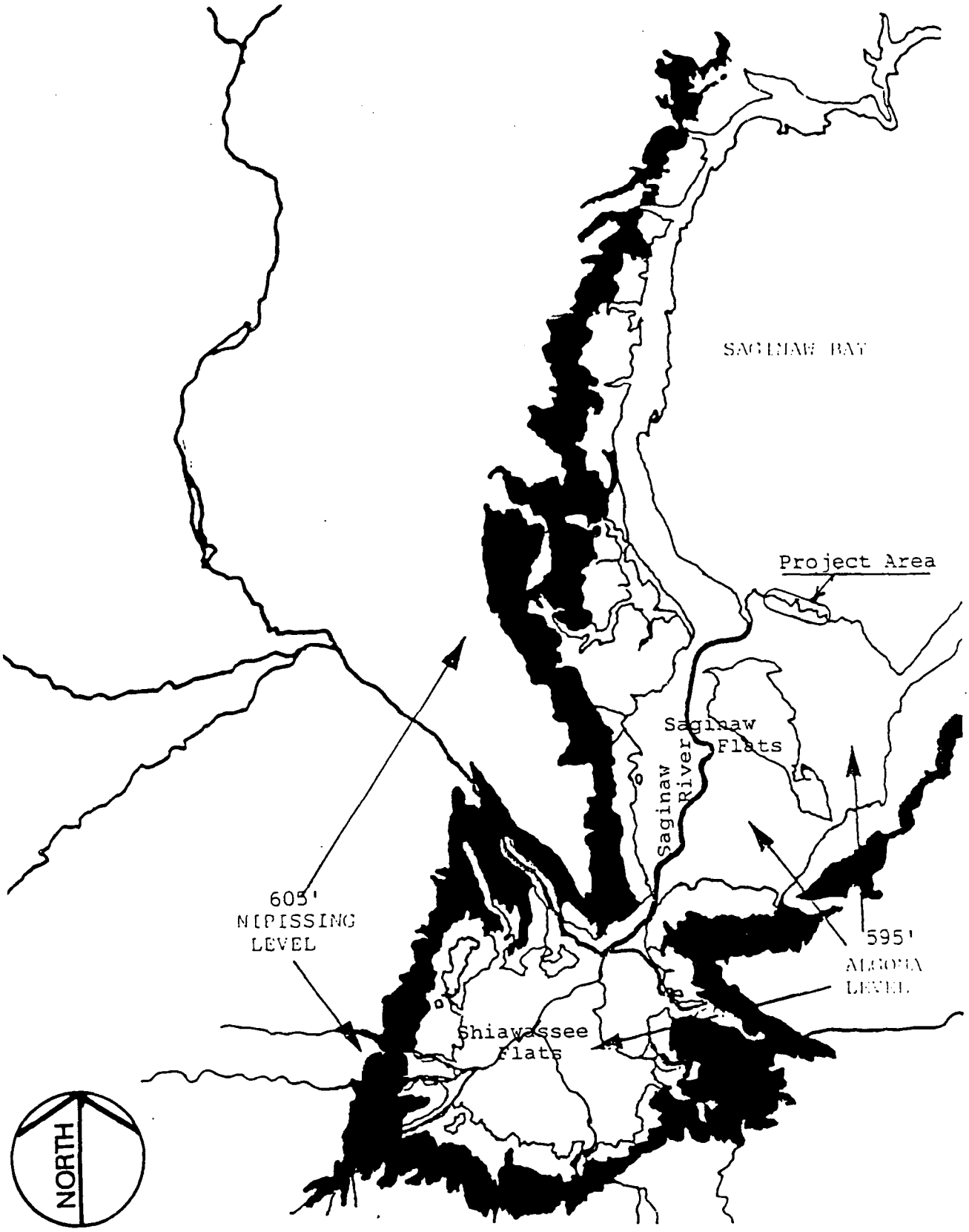
Following the extreme low water stage which occurred about 8500 B.P., the waters of the Huron Basin rose again due to the uplifting of the land to the north and the resulting obstruction of drainage. Waters once again inundated the Saginaw flatlands and flooded the land in the project area that might have been occupied at the time. The stabilization of these waters at 605 ft. AMSL is termed the Nipissing level, which occurred some time around 4600 B.P.

Approximately 3000 B.P., a further lowering of the waters of Lake Huron resulted in a shoreline elevation at 595 ft. AMSL (Figure 6), referred to as the Algoma level (Monaghan et al. 1986; Lovis 1983; Lovis 1986). At this time the Shiawassee and Saginaw Flats were created. The Lower Basin, a narrow strip along Saginaw Bay, appeared at the same time. The Shiawassee Flats was an extensive wetland south of Saginaw and the moraine segment in that area. The Saginaw Flats is a similar wetland existing between the City of Saginaw and the narrows of the Saginaw River at Bay City. The Algoma beachline is in evidence south of the project area along highway M-25. The location of the Algoma beach is shown in Figure 4.

The soil characteristics of the project area reflect its glacial history. Soils along the littoral or beach sector are, of course, highly sandy. The water deposited sands will often show bedding of recent deposition. The dune line directly bordering the present beach to the south is also composed of sands. These are aeolian or wind deposited and lack bedding. When stabilized, these dunes produced a vegetation cover such as seen in the modern brush and forest cover. When active or moving they will bury former surfaces and produce a buried, humus colored, or organic soil zone.

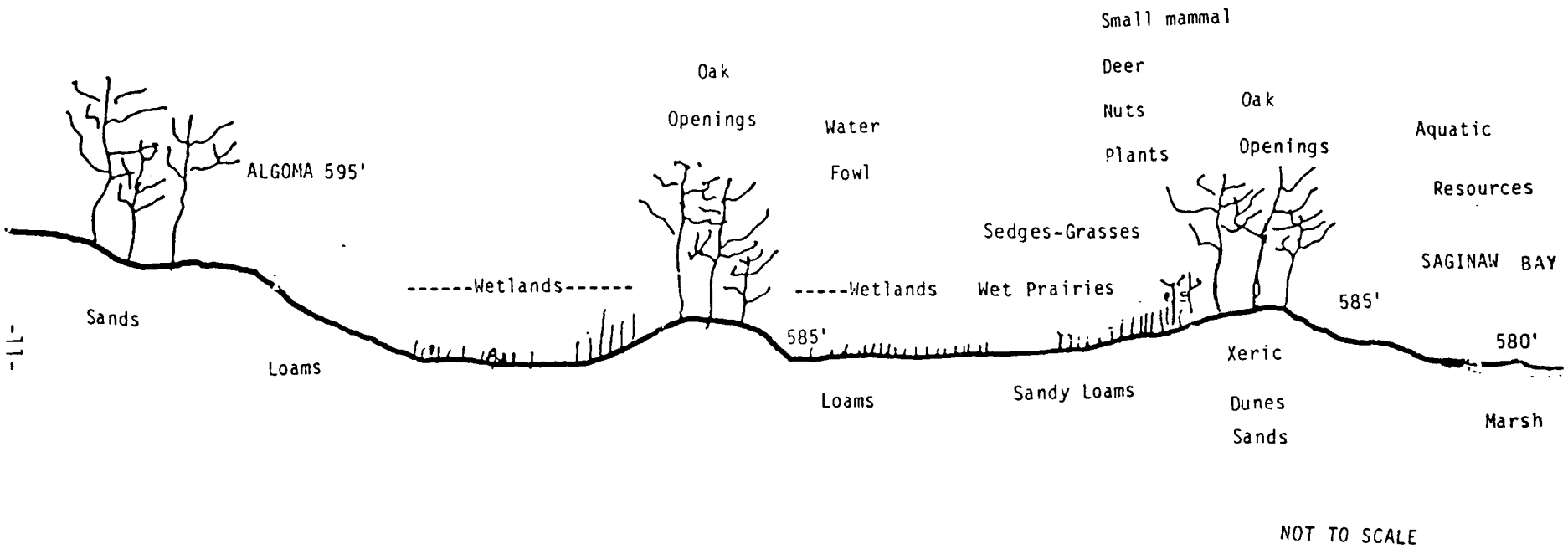
To the south of the coastal dune line a wetland prairie and finally traditional wetland associated with standing water, occupied the lakeplain extending to the topographic break produced by the Algoma beachline (Figure 4). These landscape characteristics are reflected in soil surveys of Bay County conducted in 1931 (Wonser) and in 1980 (Weesies).

The Wonser soils map shows marshes bordering the coastal beach (Figure 7). The dune strip is composed of Eastport sand while the wet prairies directly south of this line are composed of Essexville sandy loams. In Section 8, and covering part of the



Caminos Associates CULTURAL RESOURCE MANAGEMENT Bay City, Michigan	Advance Measures Flood Control Project, Hampton Township, Bay City, Michigan.

Figure 5: Regional map of Saginaw Valley showing physiographic zones.



Caminos Associates CULTURAL RESOURCE MANAGEMENT Bay City, Michigan	Advance Measures Flood Control Project, Hampton Township, Bay City, Michigan.

Figure 6: Idealized landform map of the project area showing resource potential.

Hughes property, a large marsh extends southward into the wet prairies. This can be considered similar to the topographic and environmental situation at the Tobico Marsh north of Kawkawlin along the modern shoreline. South of the wetland directly bordering the dunes loamy soils predominate and the percentage of sand in the topsoil is lessened.

The 1980 Bay County soil survey map delineates these same soil characteristics (Figure 8). Loamy sands predominate directly south of the coastal dune line while loams are the prevalent soil still further south as one approaches Hampton Road.

Although the wetland to the south of the coastal dune line maintained standing water due to the nature of the water table, the higher degree of sand in the soils (sandy loam) attest to coastal flooding and inundation by lake water transporting material from the beach through breeches in the dune line. Hence we can observe the differences in soil and vegetation in the nearby wetland and the area closer to Hampton Road (Figure 4). This dynamic phenomenon can be seen today on the Reckinger property at the eastern terminus of the entire corridor segment, where evidence of wave transport of sands southward to the wetland is evident on the surface (field notes, Hampton Township Army Corps dike survey, 1987).

PREHISTORIC CONSIDERATIONS

Evidence for some 12,000 years of human history is present in the "Thumb" area. We are here concerned with the latest or most recent phase of the prehistoric continuum. It is only after 3000 B.P. that waters began to recede from the Algoma level at 595 ft. AMSL. At approximately 2500 B.P. the water of the Great Lakes is thought to have lowered to its modern level. Location of Algoma beach line in relationship to project area is shown in Figure 4. Sometime between these dates the land encompassing the project area was exposed and open for human habitation. An earlier exposure around 8500 B.P. is known to have occurred but cultural deposits from this period would have been severely reworked and disturbed with lake bed deposits. A brief discussion of the lower Saginaw Bay area and reference to Table I will serve as context for considering the project area.

Excavations conducted by Michigan State University at Bay City (Sites 20BY77 and 20BY79) have furthered knowledge of the Late Archaic subsistence and settlement patterns in the lower Saginaw Bay region (Lovis et al. 1986). Reconsideration of critical data by Lovis has clarified Lake Archaic chronology in terms of traditional diagnostic artifacts (Lovis and Robertson nd). The Jahrman Ranch site (20BY161), 1 mile east of the project area above the 585 ft. elevation points to the possibility of Late Archaic deposits in the project vicinity. This collection was studied prior to the beginning of the present survey.

TABLE I

Prehistoric Chronology
of the
Great Lakes

PREHISTORIC PERIODS	DATES	GLACIAL LAKES	ABOVE SEA LEVEL	PROJECT AREA	CLIMATIC CAUSATION
Paleo-Indian	11,000 B.C.	Algonquin	605 ft.	Under Water	Spruce-Fir
	9,850 B.C.	Kirkfield	565 ft.	Exposed	Cool, Cold, Moist
	9,500 B.C.	Main Algonquin	605 ft.	Under Water	
Archaic					
Early	8,000 B.C.	Algonquin Upper Group	various levels below	Exposed	Pine
		Algonquin Lower Group	605 ft. to -		
	7,500 B.C.	Chippewa-Stanley	190 ft.		Jack Pine
Middle					Warming Trend
Late	3,000 B.C.	Nipissing	605 ft.	Under Water	Oak-Pine Warm-Dry Hardwoods
	1,250 B.C.	Algoma	595 ft.	Exposed	
Woodland					
Early	1,000 B.C.	Modern Level	580 ft.		Cooler-Moister
Middle	500 B.C.				
Late (Early)	A.D. 500 (?)				
Late	A.D. 700				Oak-Pine
Proto-Historic	A.D. 1500				
Historic	A.D. 1610				
Treaty of Saginaw	A.D. 1819				

Figure 9 shows the distribution of prehistoric sites in the Bay City area. Most of these have Late Woodland components such as the Fletcher site 20BY28 and the Trombley House site 20BY70. Two sites probably of late Woodland origin, from the near vicinity of the project area are noted on Michigan Bureau of History (BOH) site files. They are also indicated on Figure 9 as sites 20BY56 and 20BY89. The former, located on the Hughes property in the vicinity of Oak Grove, is listed as a cemetery and is also the location of a cache. Site 20BY89 is listed as a prehistoric site of undetermined occupation.

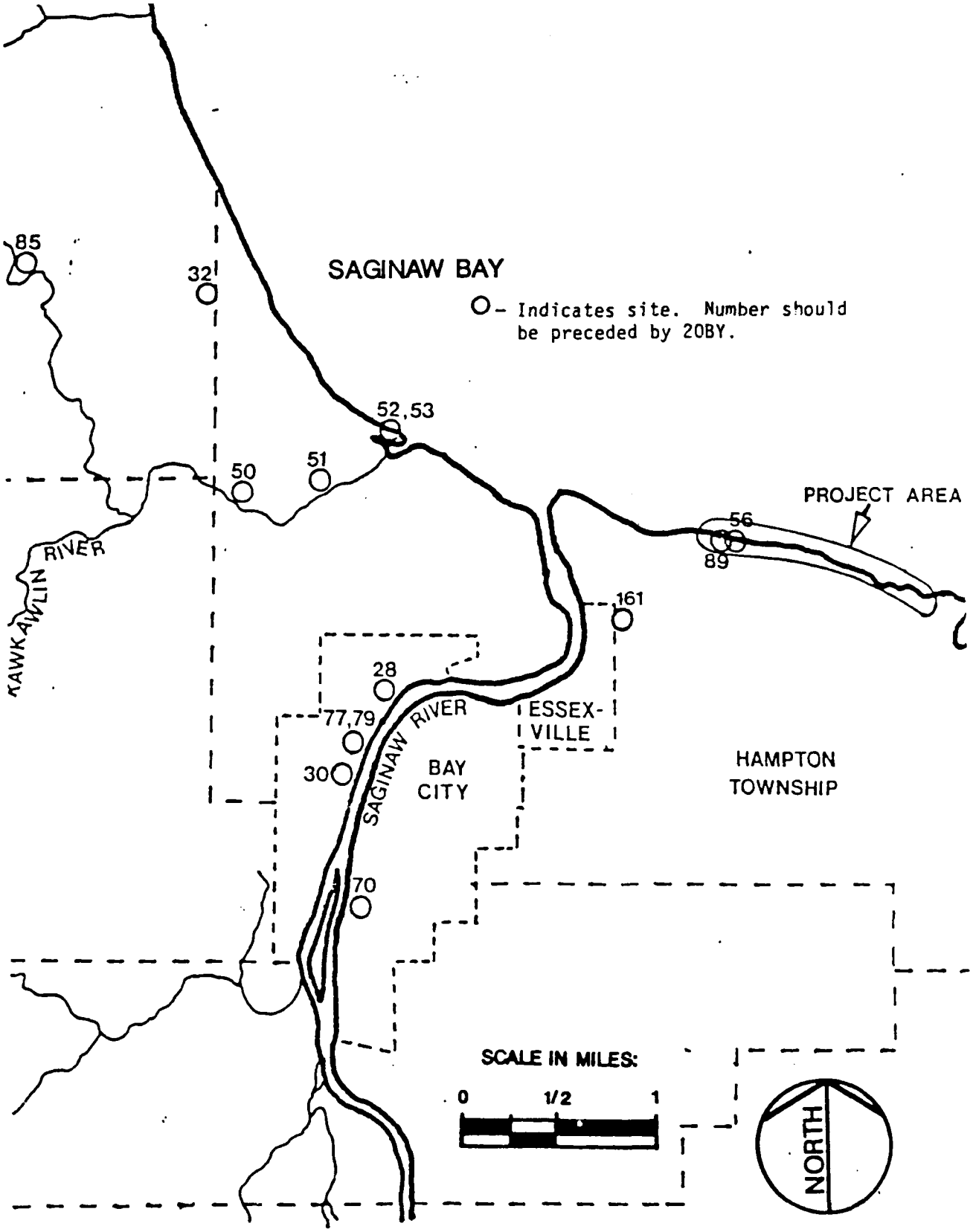
HISTORIC CONSIDERATIONS

Hampton Township was organized in the winter of 1843 and included within its boundaries the villages of Lower Saginaw, (now downtown Bay City), laid out in 1837 and mapped in 1849 by the Saginaw Bay Company; and Portsmouth which was first platted by Judge Albert Miller in 1836 (DeLisle 1868). James G. Birney, a leading citizen, a charter member of the reorganized Saginaw Bay Company of 1843, and a future presidential candidate, chose the name Hampton to commemorate the county seat of his wife's home county in the state of New York (Page 1883). Judge Sidney S. Campbell won the first election for Township Supervisor, beating Birney by one vote (Thomas & Galatian 1866).

Prior to 1843 the entire Saginaw Bay region had been a part of Saginaw Township, but after 1843 everything north of the modern Saginaw County line including present Bay and Arenac Counties became a part of Hampton Township. This township included land gained by the Indian treaties of 1819 and 1836 and extended to the Straits of Mackinac (Butterfield 1918). Over the years, however, this extensive township would be shrunk dramatically by the creation of new townships.

The first reduction of Hampton Township occurred when Williams Township was organized in 1855. It became part of new Bay county in 1857 and included all the western tier of townships in Bay and Arenac Counties as they appear today. This left Hampton Township with the eastern tier of the present townships on the west side of the Saginaw River as well as the area east of the river (Butterfield 1918).

Bangor Township was the next portion separated from Hampton Township. Organized in April of 1859 it absorbed the present townships of Bangor, Monitor, Kawkawlin and Fraser, and also the entire west side of Bay City. In April of 1859 Portsmouth Township was organized, cutting off the southern half of what was left of Hampton Township on the east side of the Saginaw River (Butterfield 1918).



Caminos Associates CULTURAL RESOURCE MANAGEMENT Bay City, Michigan	Advance Measures Flood Control Project, Hampton Township, Bay City, Michigan.

FIGURE 9: Prehistoric sites of the Bay City and Saginaw Bay regions

The Village of Essexville was the last legislated encroachment upon Hampton Township land. It was originally platted as Essex in 1867 by Ransom P. Essex and organized as Essexville in 1883 (Page 1883). This final subtraction left Hampton Township as it stands today. A spatial entity that had for its first twelve years contained all the land from Saginaw County to Mackinaw City (Butterfield 1918: 156,, 157) had been reduced to a comparatively minute area comprising but twenty-three full sections and eleven fractional sections, of which five have been inundated by the waters of the Saginaw Bay since 1973.

The present project area hugs the shifting southern shoreline of Saginaw Bay or the northern boundary of Hampton Township. Early settlers here were faced with a wetland environment that extended unbroken and at least a mile and a half wide along the entire project area. The 1896 Bullock Bay County Map (Figure 10) indicates the approximate northern edge of this wetland with a dotted line entitled "Prairie Line". This line closely corresponds to the present day Woodside Ave./Hampton Road alignment, which was known as Prairie Road during the nineteenth century and was surveyed by E. Jewett in 1840 (DeLisle 1868). Soils in this wetland, except for the intermittent narrow sand ridges encompassed within the project area, were literally under water for a good part of the year (Page 1838). By necessity the first residents therefore were fishermen rather than farmers, following closely the tradition established in nearby Essexville by its founding fathers Ransom P. Essex and his brother-in-law Joseph Hudson, a Great Lakes sailor. Nathan Knight, a native of Maine, settled in Hampton in 1856. J.T. Essex, from Connecticut, followed in 1857. Gerardus Vennix and Henry Rooiskers, Hollanders, came in 1858 along with Louis Gullette of Mt. Clemens, Michigan, Patrick Bergen from Ireland, and Joseph Eddy from Providence, R.I. Three Germans (William Roecker, Carl Wagner and Michael Engelhardt) also settled in Hampton Township during this period (Fuller, nd.)

By 1874 the wetland surrounding the project area had been drained and commercial agriculture had begun in earnest spearheaded by "the luxuriant and never-failing crops" of Nathan Knight's farm. In 1875 the Bay City water works pipeline was completed entering the Saginaw Bay off the point of land that is now immediately north of the project corridor (Dow 1875) on the western terminus of the Hughes property (Corridor Segment 4, Figure 3). The pipeline was made of banded wood 6 feet in diameter. A sturdy brick house, now occupied by the present landowner, was built for the workskeeper in 1873 (personal communication, Sidney Hughes,, 5/19/1987). After 1875 a resort community sprang up on this point with several buildings clustered along the water works pipeline (Figure 4). This resort, Oak Grove, appears on all later maps but today is a "ghost town" where some unoccupied wooden cottage structures still remain (Sharp 1974).

The functional character of modern day Hampton Township has changed little since the last quarter of the nineteenth century.

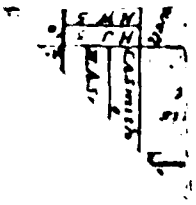
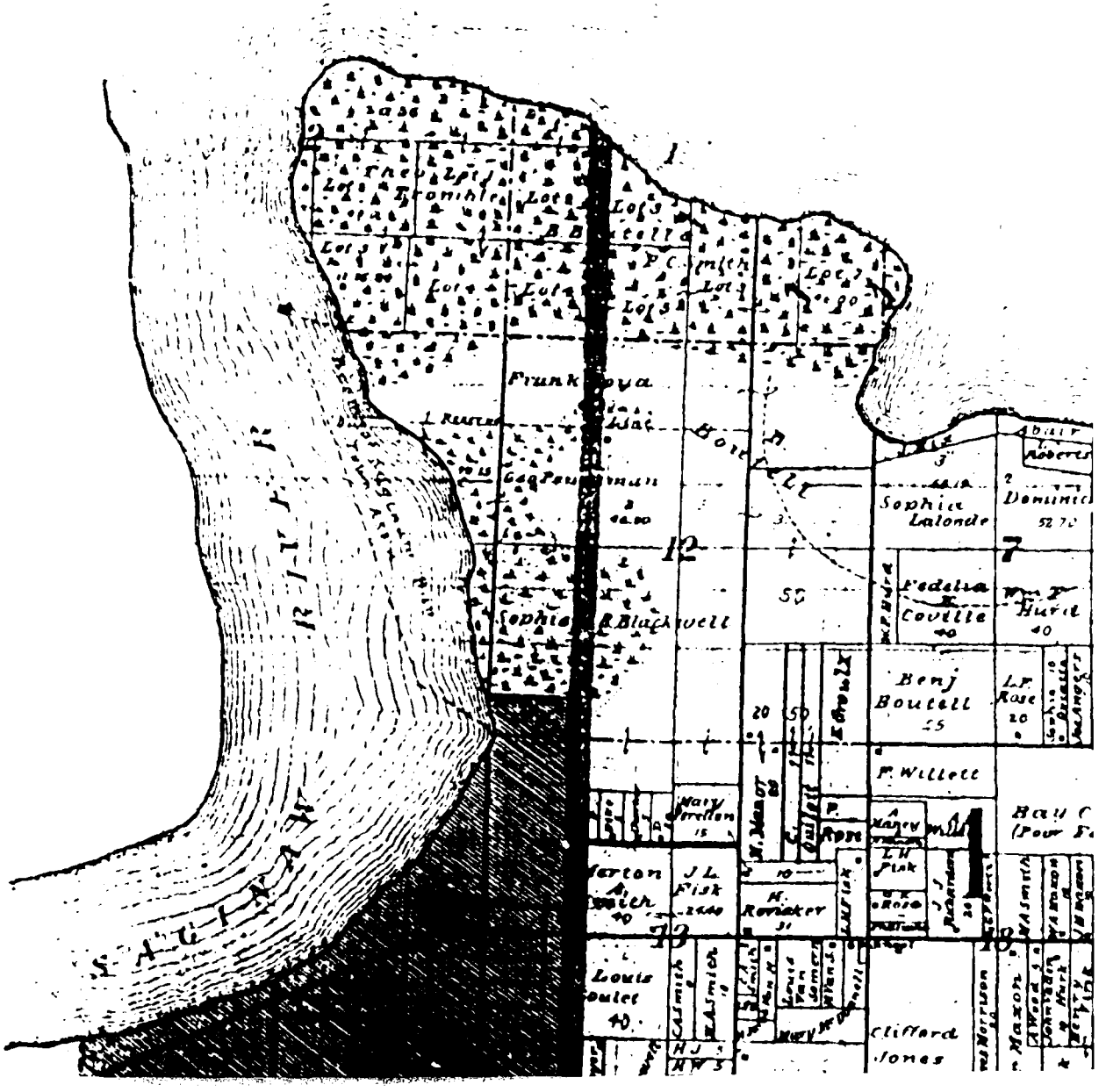


Figure 10: The 1986 Bulloch Map of Bay County.

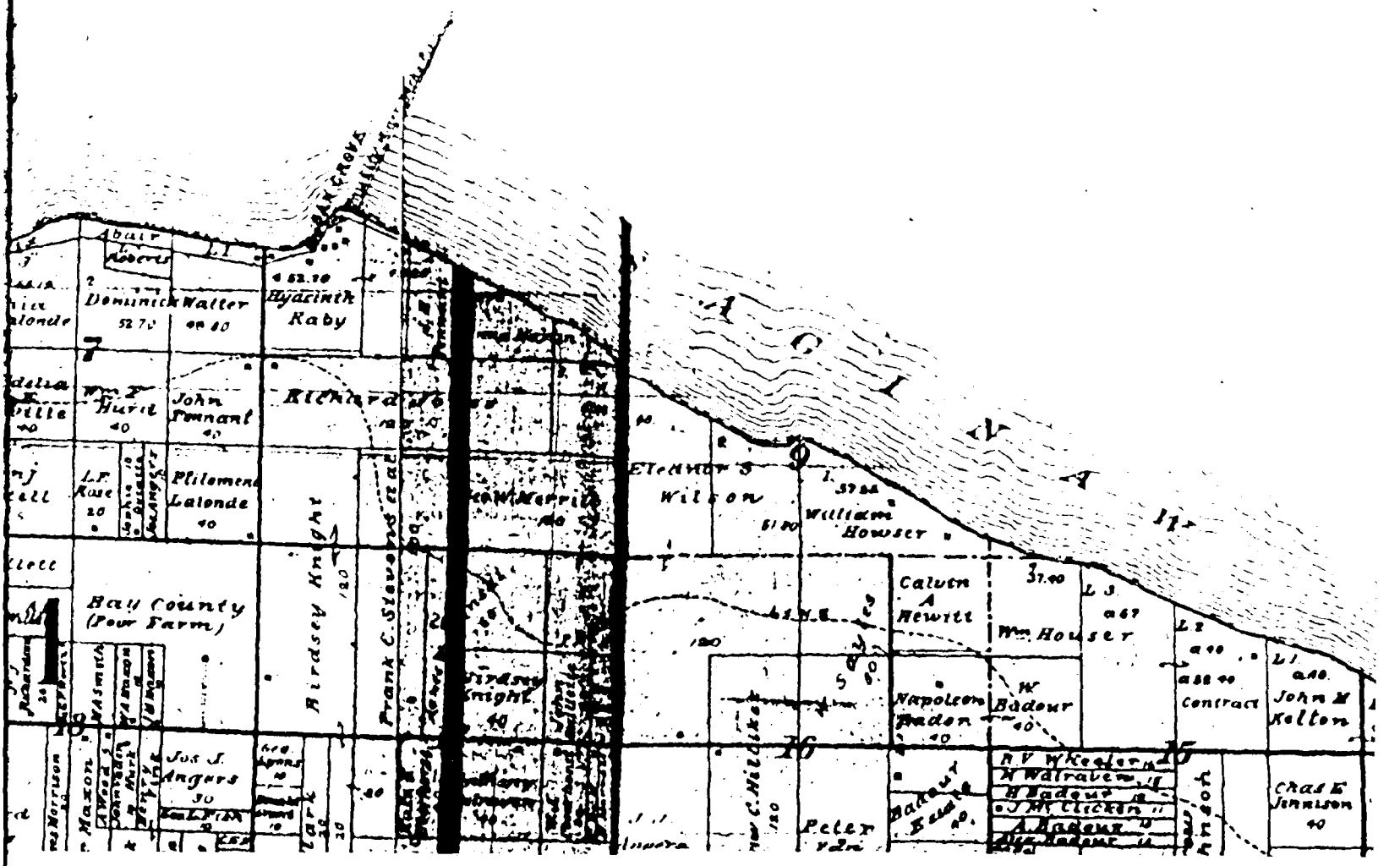


Frank Boya
Sophia Lalonde
Fedelia Coville
Benj Boutell
F. Willett
J.L. Fisk
H. Reviaker
Louis Goulet
Clifford Jones
Sophia R. Blackwell

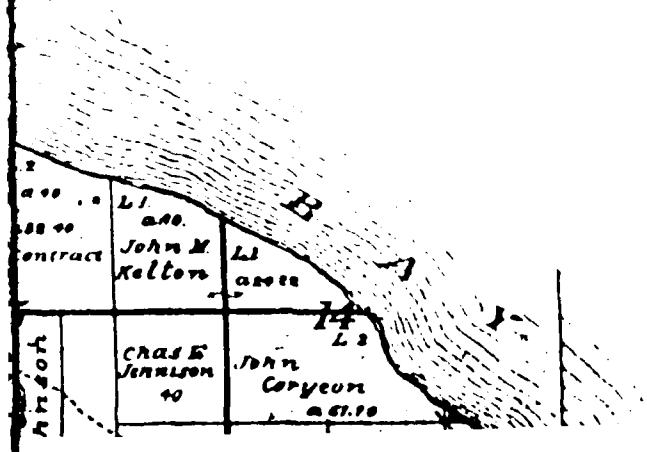
Bullock, D.A. et al
The County of Ba

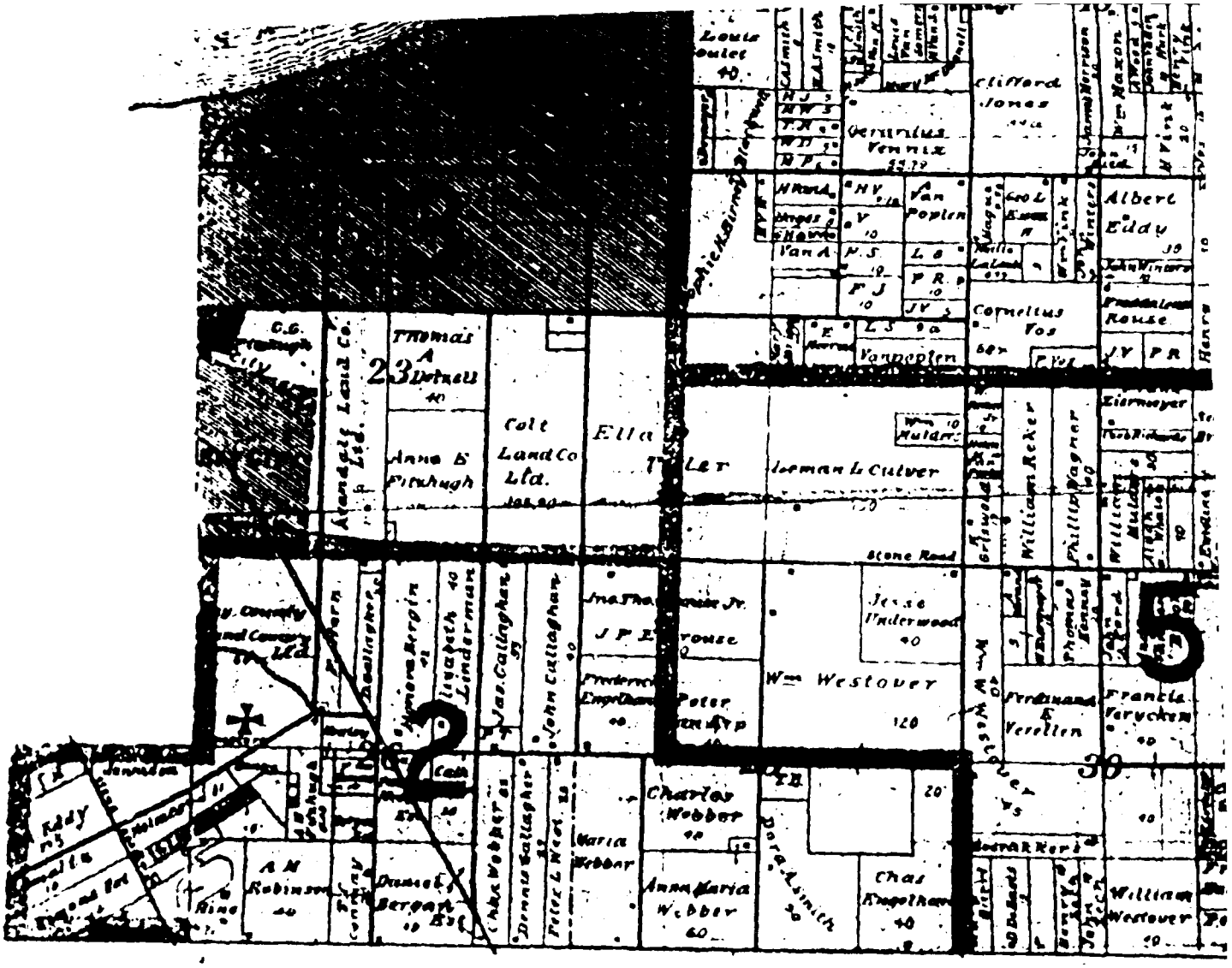
HAMPTON

Township 14 North Range 5 – 6 East



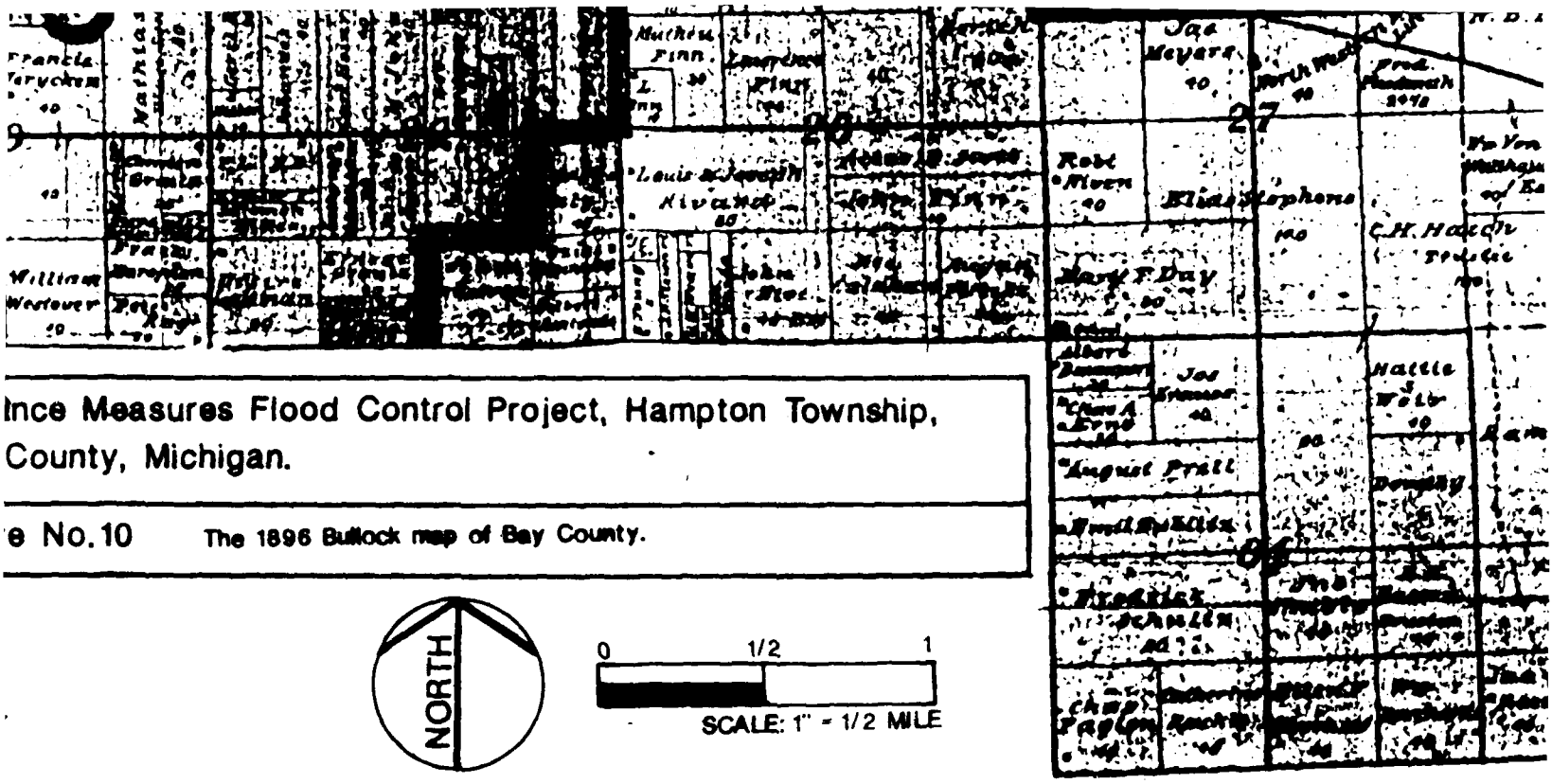
Hock, D.A. and Company
County of Bay Michigan. 1896





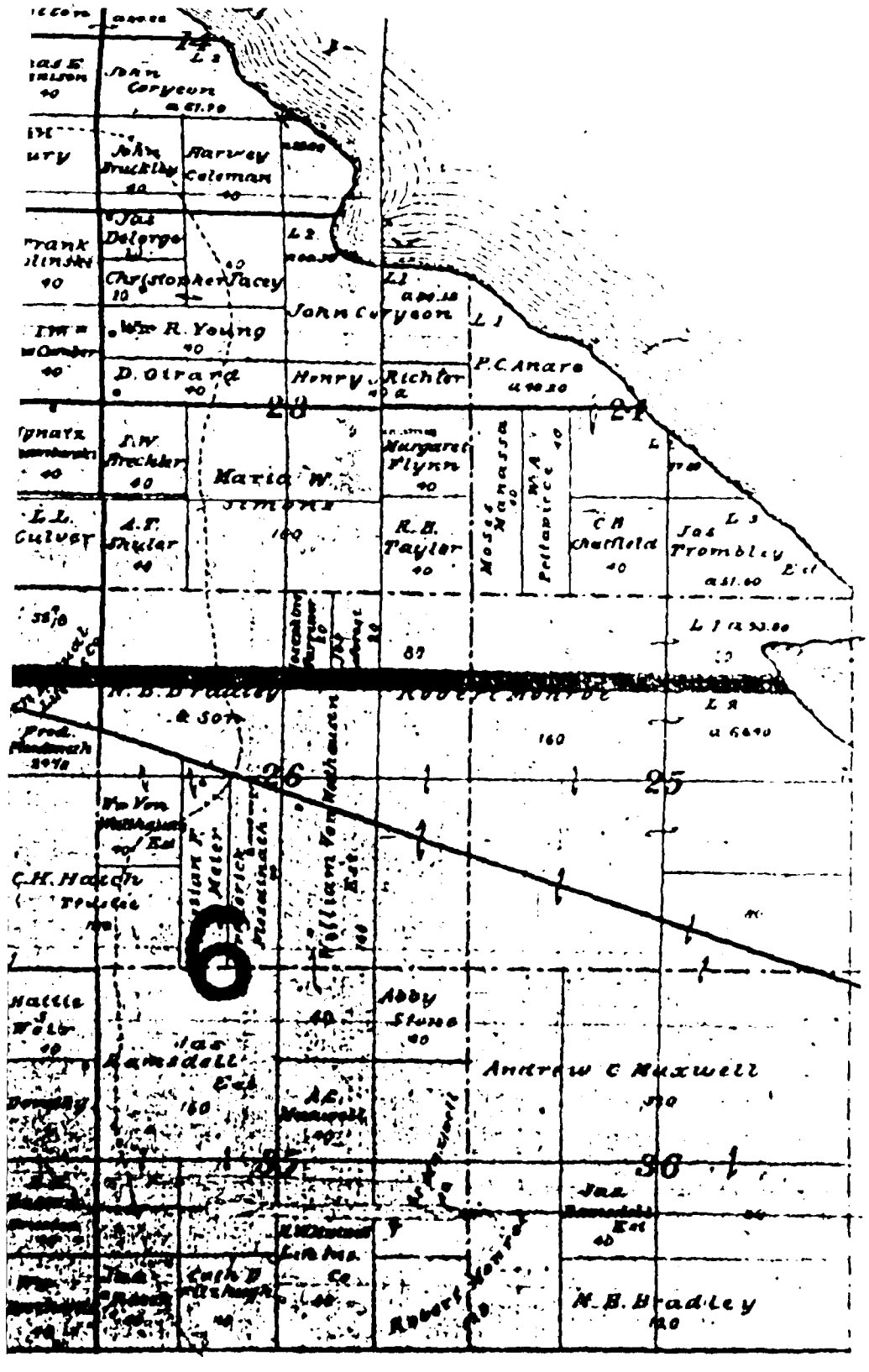
Advance Mea
Bay County,

Figure No. 10



Ince Measures Flood Control Project, Hampton Township,
County, Michigan.

e No. 10 The 1896 Bullock map of Bay County.


John Coryeon
Harvey Coleman
Jas Delorge
Christopher Tacey
John Coryeon
R. Young
D. Girard
Henry Richter
P.C. Anare
28
21
Margaret Flynn
Maria W. Simons
R.B. Taylor
Moses Manassa
Pettapiece
C.H. Chatfield
Jas Trombley
L.L. Culver
A.T. Shuler
N.B. Bradley & Son
Robert Monroe
26
25
William Von Wathausen Est
C.H. Hatch
Abby Stone
Jas Ramsdell Est
Andrew C Maxwell
36
Jas Ramsdell Est
N.B. Bradley
Robert Monroe

Evidence for this is shown in Figures 11 and 12. Except for the recent emergence of a trailer park in the W 1/2 of the N1/4 of section 16 and two small apartment complexes, one in the NW 1/4 of Section 18 and the other in the W 1/2 of the NW 1/4 of section 17, all sections lying outside the immediate project area are occupied by small, predominantly single-family farms. The county poor farm, which predated the land modifications of the farming boom and occupied the NE 1/4 of Section 18, was purchased by the Bay County Board of Supervisors in 1868 (Butterfield 1918). It has been replaced by the Bay County Juvenile Home, the Bay Medical Care Facility and the Bay County Country Club.

The project area itself has seen less human modification than the rest of Hampton Township. Aside from the previously mentioned "ghost town" at Oak-Grove, where all the cottage structures are being reclaimed by the land, the only other concentration of building activity was along the northern edge of Knodt Road and then mainly in the last sixty years. At that time, 1926, the land was bought by two partners, Knodt and Buckingberger. Father Robert Reckinger, Buckingberger's grandson, still owns the sand pit at the eastern terminus of corridor segment 1 with his four sisters and brother. Father Reckinger relates that his grandfather and Mr. Knodt first parceled out the land for sale but the Great Depression dampened their enterprise to a point where even squatters were tolerated. Then about 40 years ago a small fishing enterprise appeared in the form of two separate slips with docks just off the Knodt Road beach. Ed Landry's and brother-in-law Ed Trombly's dock was approximately east of Callahan Road, while the Bovier dock was a few hundred feet east of that. These docks were still standing high and dry in 1966 when a low water phase exposed land northward for over 1/2 mile (personal communication, Max Barber, 5/17/87). Father Reckinger corroborates this observation with stories of his pheasant hunts in the tall sedges and grasses that grew in the exposed bay bed. He continued this activity until 1973 when the waters returned to their present level. This 1965-1973 low-water period was also corroborated by Sidney Hughes, a retired engineer, who related that in 1965 he could walk north of the end of Knight Road in tall grasses for 3500 feet.

He further mentioned an earlier and similar or even more drastic retreat of the waters of the Saginaw Bay that coincided with the Great Depression. This earlier low water period was also attested to by James Middleton, Mr. Hughes' neighbor approximately 1/2 mile to the west on Tacey Road. He related to a CA field crew member that between 1927 and 1929 the waters receded northward over 1/2 mile (personal communication, James Middleton, 5/26/87).

These two low water periods seem to represent the general physical nature and essence of the wetland/bayfront environment making up the project area. These assaults on the land by the waters of the Saginaw Bay, both long and short term, are the major consideration of all landowners interviewed, and probably represent the major land modification factor in the project area.

In summary it can be said that Hampton Township's present northern border, which coincides precisely with both the present southern border of Saginaw Bay and the present project area, has been affected in the recent past to varying, sometimes drastic, degrees by periodic retreats and surges of the waters of the bay. The occasional severe inundations were met with equally drastic human defense activity by either residents or governmental agencies, as witnessed by several differentiated dike remnants on and off the present shoreline and within the project alignment.

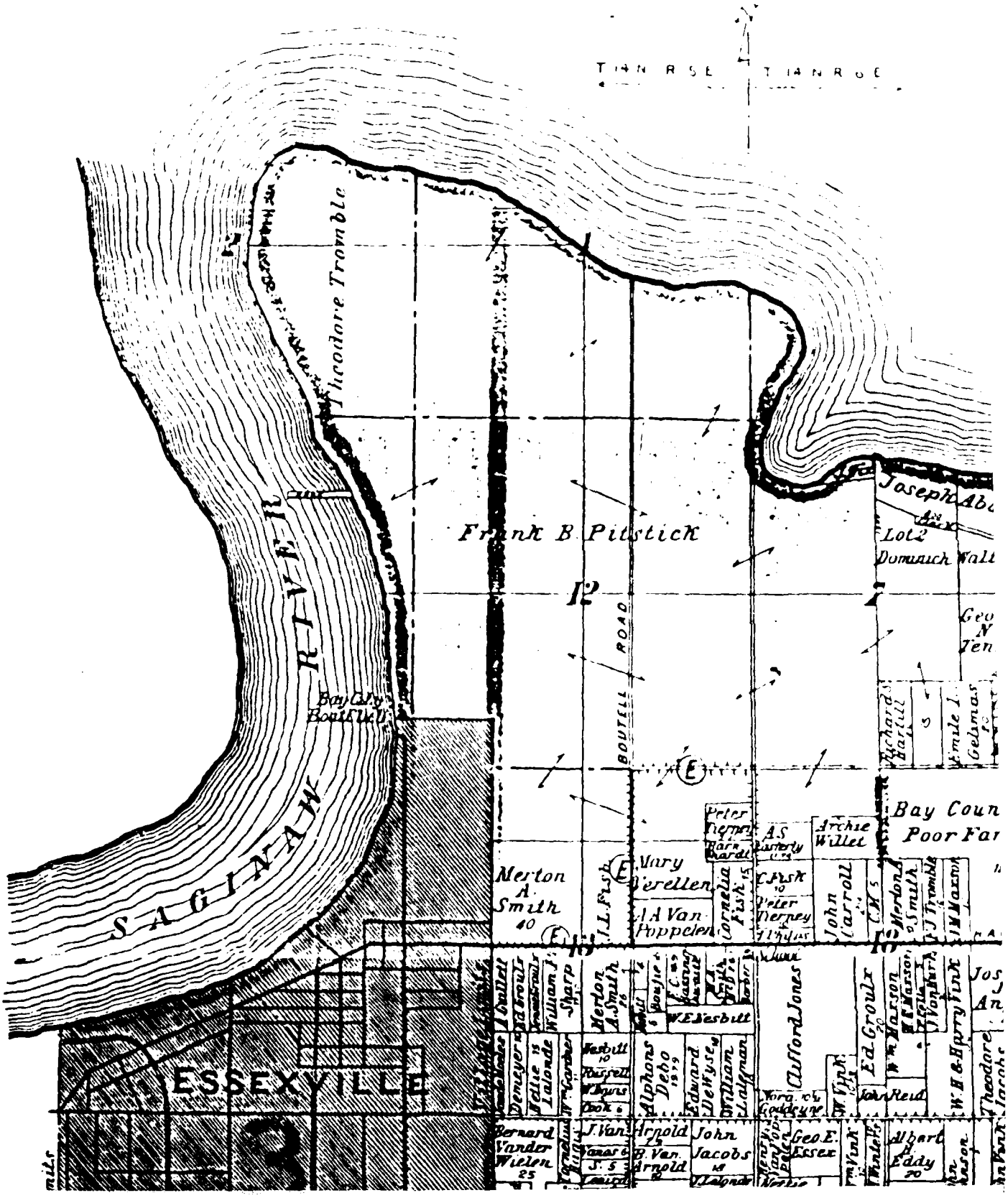
FIELD METHODOLOGY AND SCOPE OF SERVICES

Methods of survey were largely prescribed by the scope of work (SOW) issued by the COE. Shovel testing methods were rejected as jeopardizing the Detroit District's compliance with federal guidelines except under specific circumstances. Instead, methods of power grubbing and disking were used as recommended to expose the ground surface for survey purposes except where the operation of equipment was difficult or not possible. Disking was reserved for agricultural fields and in some cases beach areas through which the dike alignment ran. The purpose was then, to remove vegetation and provide extensive surface exposure but at the same time "minimize" disturbance or agitation of the subsurface matrix. Disturbance of the topsoil extended up to one foot in depth and in most cases not more than 6 to 8 inches.

According to the Army Corps SOW, two transects were to be machined worked within all corridor segments included in the survey, if terrain allowed. These had to be not less than 2 meters in width and at least 5 meters apart and parallel to each other within the corridor segments, which were generally 13.72 meters (45 feet) in width. Following this, the machine transects were inspected by pedestrian survey as described in the SOW. "The exposed surface of each transect will be inspected immediately for the presence of historic properties. A second inspection will take place after the exposed surface has been allowed to weather, but no less than 3 days after exposure. Each survey transect shall be traversed by at least one pedestrian survey transect, although more of the latter may be inspected at the contractor's discretion." Separate instructions were provided in the SOW for portions of the survey area traversing open fields or beach property. An initial inspection for the presence of artifacts was made of the existing surface of cultivated fields at the commencement of the work. Since virtually all cultivated portions of the survey area were plowed as recently as last season, a relatively freshly exposed surface was available.

After completing the first inspection, the cultivated field portions of the survey transects were disked. Following the

Figure 11: The 1916 Monroe and Learman Map of Bay County.

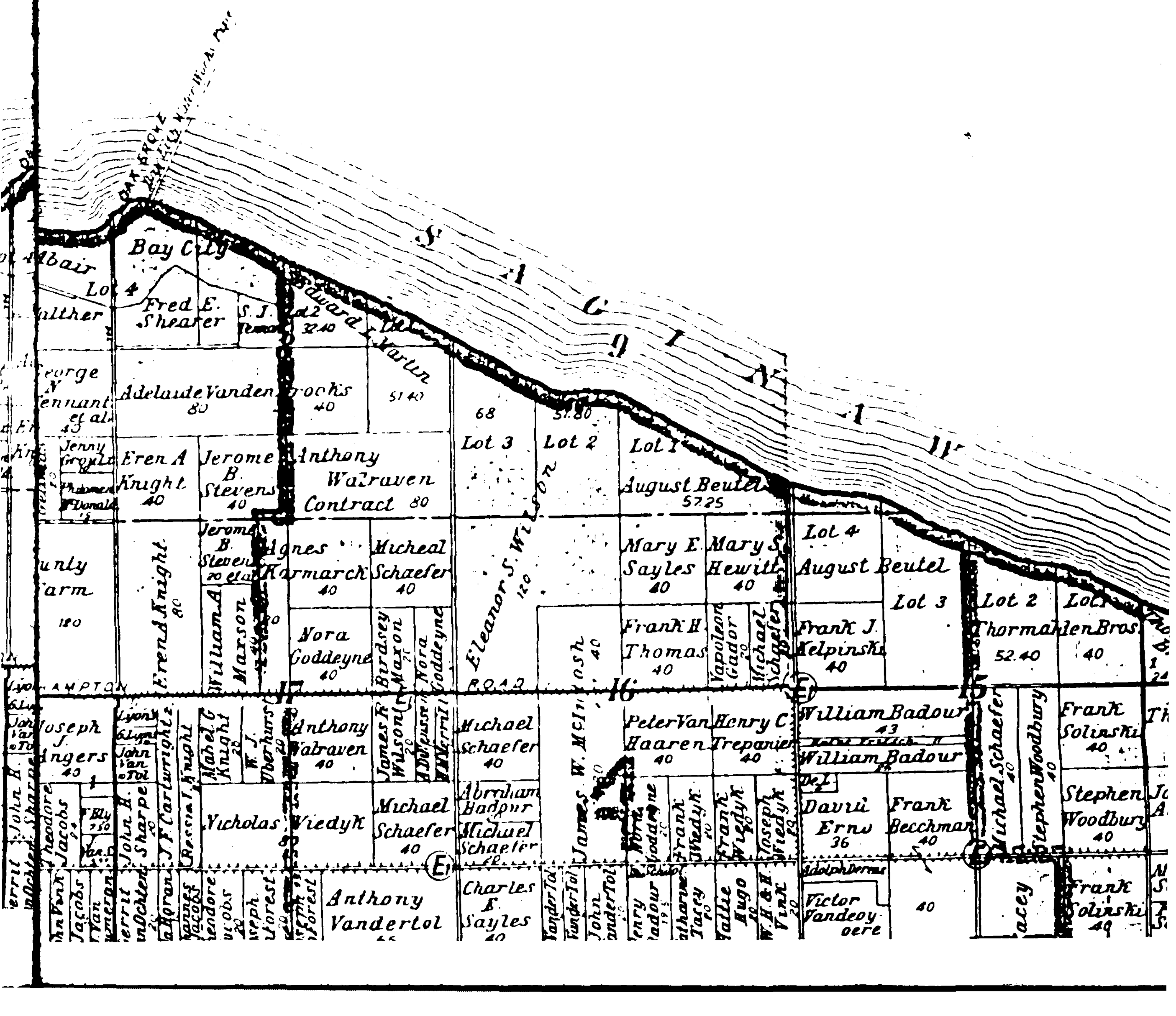


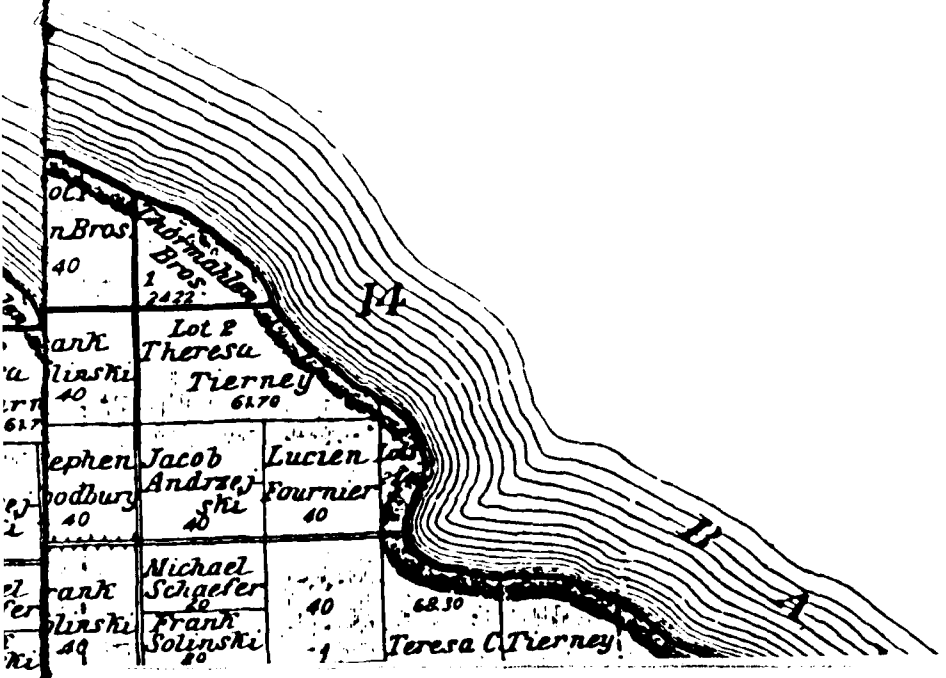
T 14 N R 5 E
T 14 N R 6 E
Theodore Tromble
Frank B. Pitstick
12
BOUTELL ROAD
SAGINAW RIVER
Bay City Boat Club
Joseph Ab
Lot 2
Dominick
Bay Coun
Poor Far
Archie Willet
Merton A. Smith 40
Mary Verellen
A.A. Van Poppelen
John Carroll
Clifford Jones
Ed. Groulx
Alphons Debo
Edward DeWyse
William Lalleman
John Jacobs
Geo. E. Essex
Albert H. Eddy
Bernard Vander Wielen 25
ESSEXVILLE

MAP OF HAMPTON TOWNSHIP

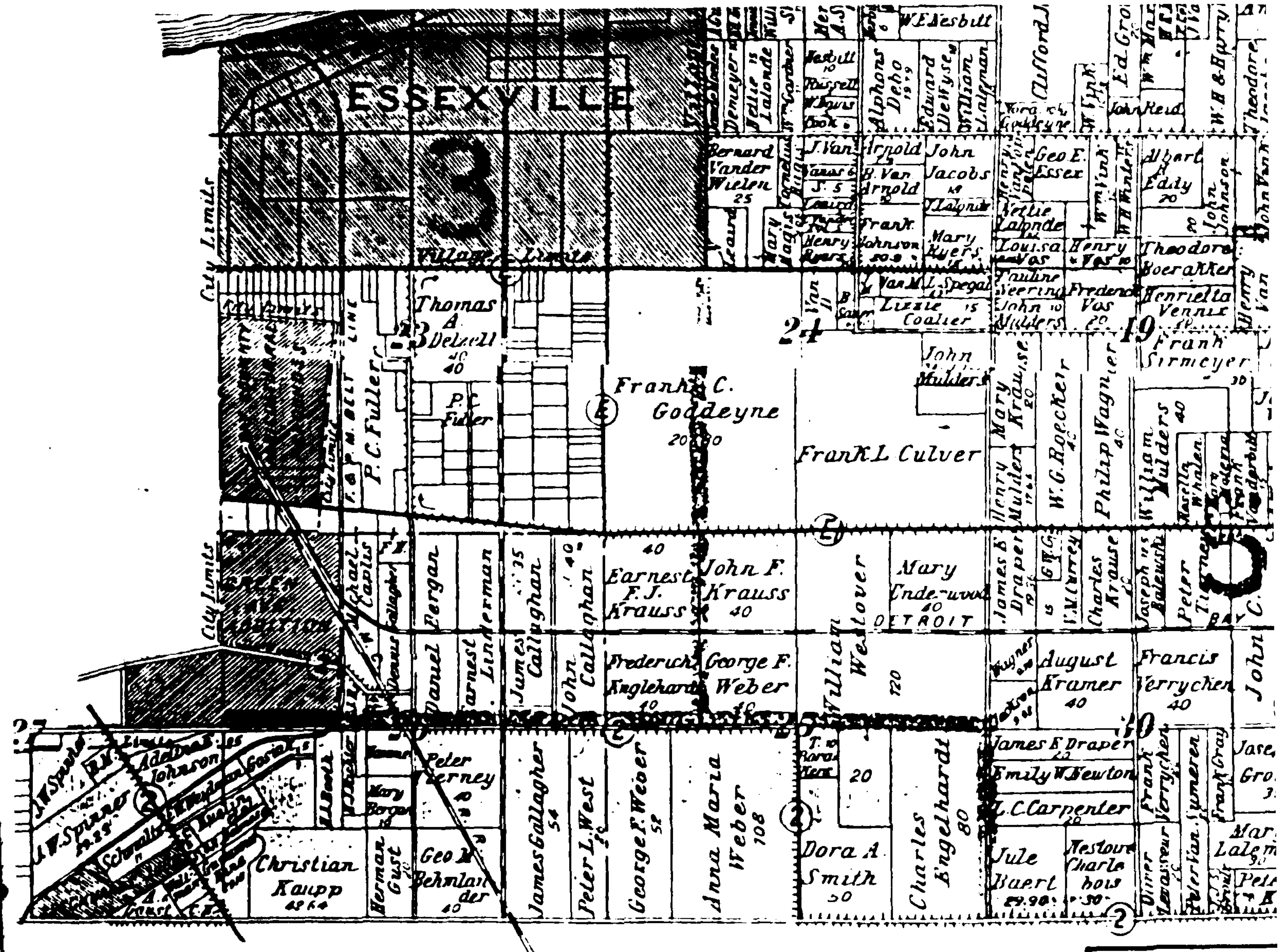
Township 14 North

Range 5 & 6 East



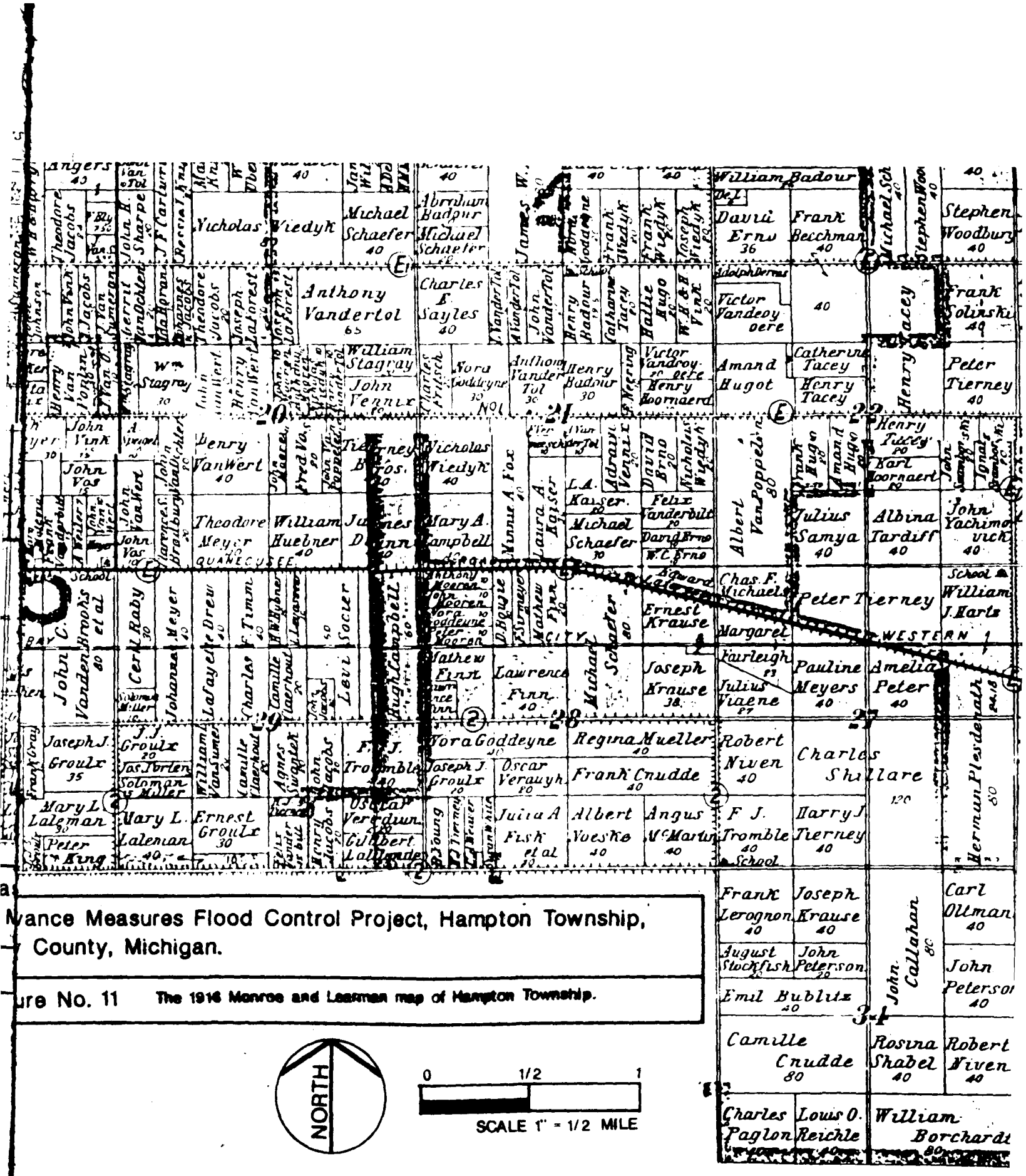


nBros
40
Thörmahlen Bros
1
24.22
14
ank
linski
40
Lot 2
Theresa
Tierney
61.70
ephen
odbury
40
Jacob
Andrzej
ski
40
Lucien
Fournier
40
B
A
rank
linski
40
Michael
Schaefer
20
Frank
Solinski
20
40
1
68.30
Teresa C
Tierney



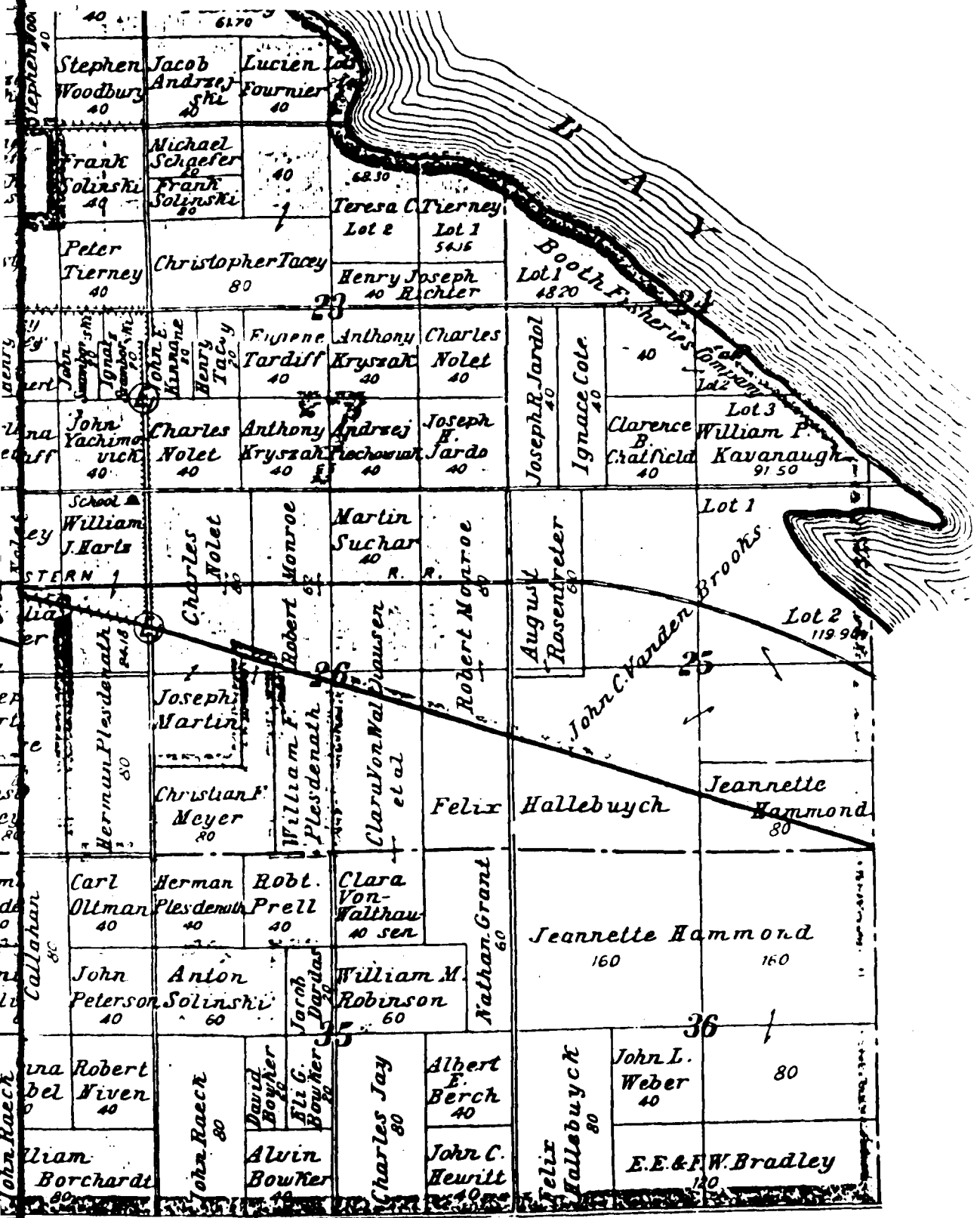
Advance
Bay Cou

Figure N

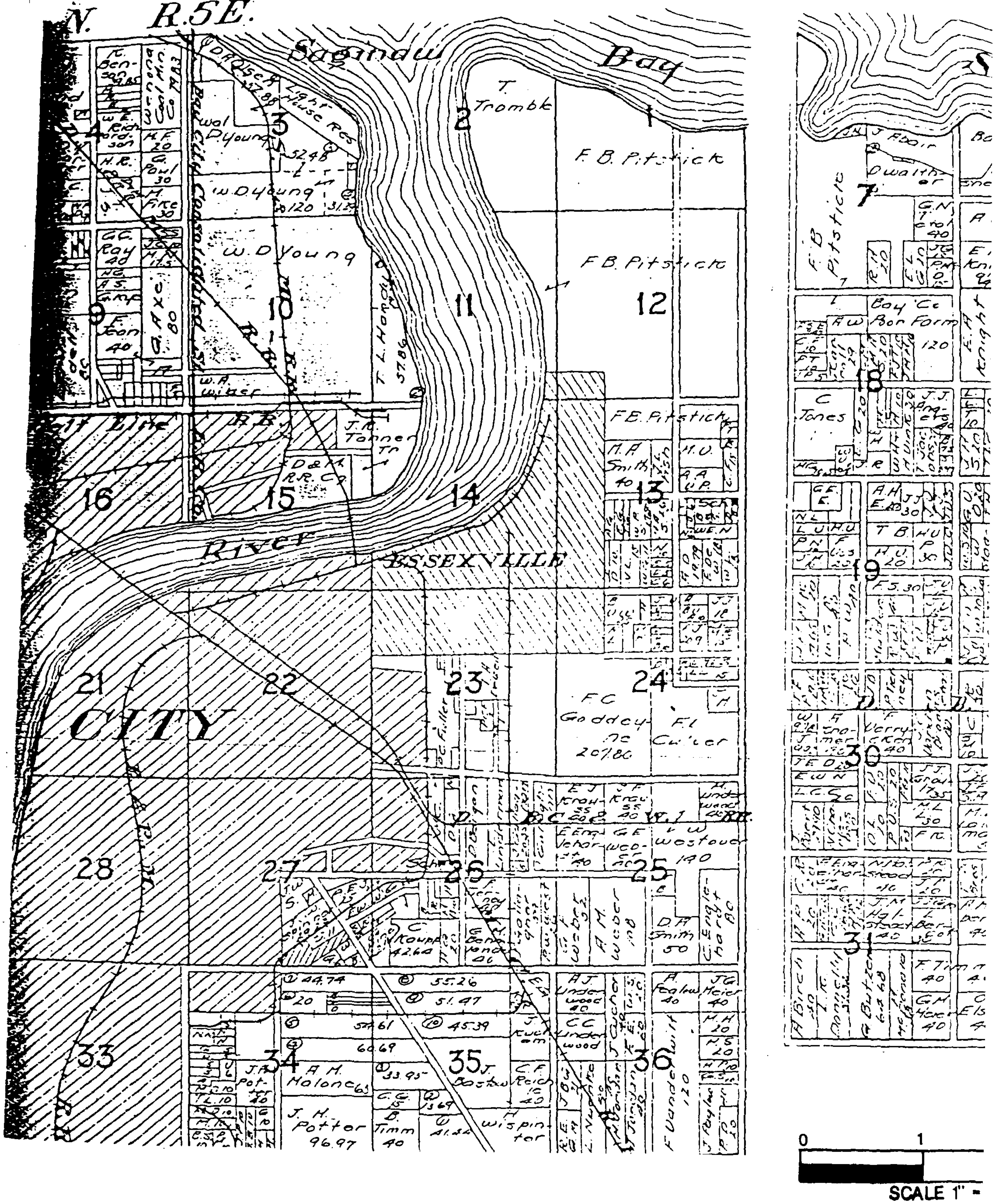


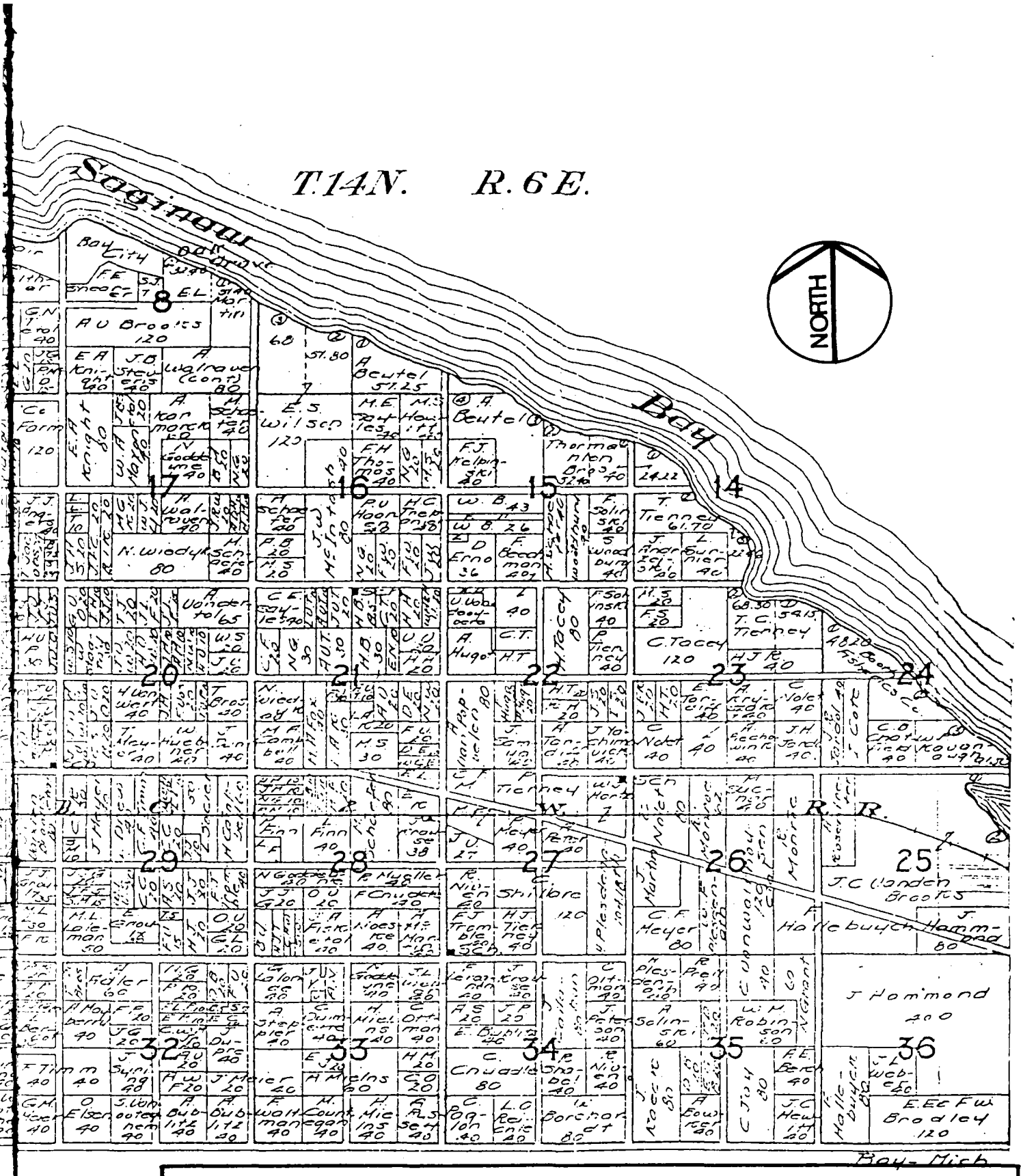
vance Measures Flood Control Project, Hampton Township,
County, Michigan.

ure No. 11 The 1916 Monroe and Learman map of Hampton Township.



Stephen Woodbury 40
Jacob Andrzejski 40
Lucien Fournier 40
Frank Solinski 40
Michael Schaefer 20
Frank Solinski 80
40
Teresa C. Tierney Lot 2
Lot 1 54.16
Peter Tierney 40
Christopher Tacey 80
Henry Joseph Richter 40
Lot 1 48.20
Booth Fisheries Company
Lot 2
Lot 3
William P. Kavanaugh 91.50
Eugene Tardiff 40
Anthony Kryszak 40
Charles Nolet 40
Joseph R. Jardol 40
Ignace Cote 40
Clarence B. Chatfield 40
John Yachimovich 40
Charles Nolet 40
Anthony Kryszak 40
Andrzej Piechowiak 40
Joseph H. Jardo 40
School
William J. Harts
Charles Nolet 80
Robert Monroe 62
Martin Suchar 40
Robert Monroe 80
August Rosentreter 60
Lot 1
Lot 2 119.90
John C. Vanden Brooks
Herman Plesdenath 80
Joseph Martin
Christian F. Meyer 80
William F. Plesdenath
Clara Von Walthausen et al
Felix Hallebuych
Jeannette Hammond 80
Carl Oltman 40
Herman Plesdenath 40
Robt. Prell 40
Clara Von-Walthausen 40
Nathan Grant 60
Jeannette Hammond 160
160
Callahan 80
John Peterson 40
Anton Solinski 60
Jacob Dardas 20
William M. Robinson 60
Robert Niven 40
John Raech 80
David Bowker 20
Eli G. Bowker 20
Charles Jay 80
Albert E. Berch 40
Felix Hallebuych 80
John L. Weber 40
80
Borchardt 80
Alvin Bowker 40
John C. Hewitt 40
E.E.&F.W. Bradley 120
23
24
25
26
35
36


N.
R.5E.
Saginaw
Bay
River
ESSEXVILLE
CITY
Light House Res
F.B. Pitstick
W.D. Young
F.C Goddey
J.H. Potter
96.97
2
1
4
3
7
9
10
11
12
18
16
15
14
13
19
21
22
23
24
30
28
27
26
25
31
33
34
35
36
0
1
SCALE 1" =



Advance Measures Flood Control Project, Hampton Township, Bay County, Michigan.

Figure No.12 . Undated Plat Map (1946) of Hampton Township.

1 2

SCALE 1" = 1 MILE

required minimum 3-day waiting period to permit surface weathering, the freshly plowed areas were surveyed a second time.

Limited shovel testing was done when justified, as permitted under the SOW. Shovel test units were 30 cm sq. and established on a 15 meter grid. These shovel test units were excavated to sterile B zone levels whenever possible. Soils from these shovel test units were troweled or screened through 1/8 inch mesh. Profiles were drawn and photographs taken.

On April 17, 1987 after an inspection of the project area, CA prepared a list of questions concerning the performance of proper survey within the corridor segments and the stipulations set forth in the SOW. These questions dealt with underground pipelines, sections obviously disturbed by ditching, fill placement and sand mining in the corridor which had reduced the survey area, as well as with environmental and cultural matters. These questions were the basis of a discussion at a meeting on April 23, 1987 with Dr. Michael Shott of the COE and a representative of ZYMEtech, Ltd. of Lansing, Michigan. This meeting took place in the project area to determine the extent of changes needed in the survey. The outcome of this meeting was a change in the treatment of areas originally scheduled for disking or grubbing. With the concurrence of Dr. Shott, it was decided that the corridor segment on the Wolverine property (Figure 3, corridor Segment 5) would not include the existing service road, meaning only one machine transect would be done here (Corridor Segment 5). In the area of underground live gas lines, also corridor segment 5, shovel testing rather than grubbing would be the preferred survey method. Where trees larger than 2 feet in diameter occurred in any corridor transect, an adjustment in orientation would be permitted. One area, Government Lot 3 (Figure 3), which was completely disturbed by ditching and diking, was eliminated from the survey. It was also pointed out that the area at the eastern end of corridor segment 1, slated by the COE for archaeological survey, was 3 feet under water (Figure 3).

Two machines for completing the exposure of the corridor transects were selected. For the agricultural and beach transects, a tractor and weighted disk were chosen. For the grubbing operation in vegetated areas an International TD-8 series bulldozer with a root rake was selected. This machine has a rake consisting of 16-inch tines attached to the lower side of its 8 feet wide blade. By properly lowering the blade, the desired depth of soil agitation could be achieved.

The "setting" of line was an additional task to be completed before survey began. A traditional centerline stake was not available to establish the limits of machine transects. Survey control points on maps provided by COE were designated by P or S numbers. These points were usually marked in the field by wooden stakes, however, they were irregularly placed and often separated by distances too far to make sightings between stations im-

possible. These control points were used by CA for control and reference. A centerline was first re-established between the survey control points and then flagged or staked. From this line the border of the corridor segments were established according to widths derived from project maps and flagged at given intervals. This enabled the field crew to guide the machinery utilized in clearing transects. Range poles were used in this activity by two crew members moving from control point to control point. In this manner the transect to be cleared was visible to the machine operator (Plates 1A and 1B).

Another aspect of pre-survey activity was the examination of sites in the vicinity of the survey area and especially those in a similar coastal environment. Two of these sites, 20BY56 and 20BY89, were included in the BOH site files. Site 20BY56 was listed as a cache and cemetery site investigated by Walter Schmit. Site 20BY89 is designated a prehistoric site of undetermined occupation. Both these locations, as near as could be determined by BOH site map designations, were visited by a CA crew. Site 20BY56, as it is designated on the map, is now a shoreline wetland. It is probable that the sandy plateau to the east of this location is the true locus of this site. Site 20BY89 is in a severely disturbed area being the location of the Meagher marina. A surface survey of the service road and parking lot perimeters in this area produced no evidence of cultural material.

A total of 42 person days were spent in completing the survey. This figure include 13 person days for machine work, 12 person days for shovel testing and 17 person days were pedestrian survey related. The entire survey covered an estimated 28,245 square meter surface area. In addition, 19 person days were required in aligning the corridor right-of-way due to displacement of COE survey stakes.

LOCAL COLLECTIONS

Prior to survey, Michael Shott, COE archaeologist, traveled in the company of Gordon MacPhail and Michael Neering (both amateur archaeologists and members of the Michigan Archaeological Society) to visit a site area east of the present archaeological survey project. A report of this was forwarded to CA by the BOH. Subsequently the principal investigator discussed these sites with both MacPhail and Neering (Appendix A).

Mr. Neering provided CA with an extensive lithic collection from an archaeological site 1 mile west of the western terminus of the survey area, MacPhail had no material from this site. This site is named the Harman Ranch site and has been designated as site 20BY161 in BOh site files. Photos and quantification of this material are found in Appendix B. This site was visited by the principal investigator and MacPhail and Neering on June 1, 1987.

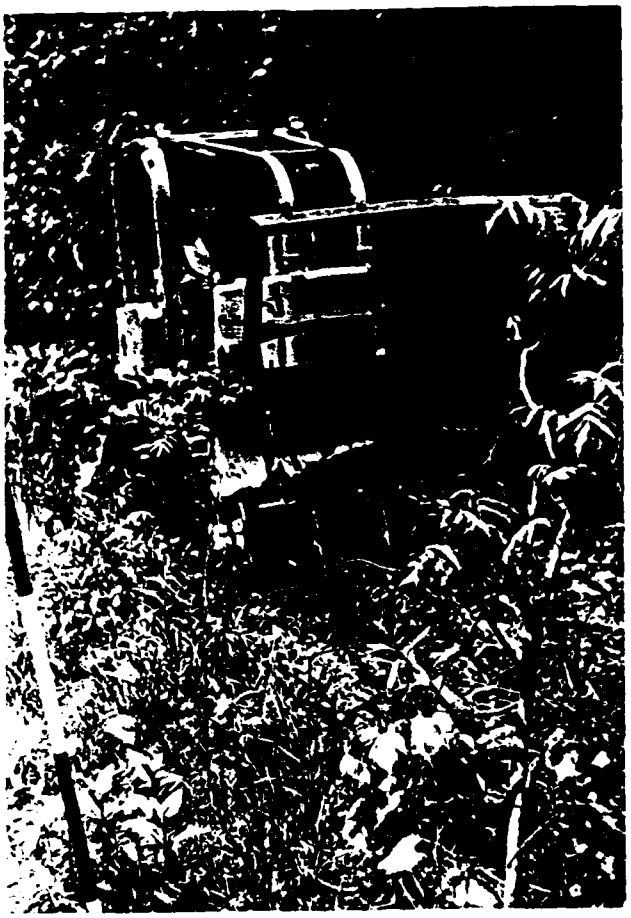


Plate 1A: Grubbing operation showing root rake. Machine operator: Ralph Howe.

Plate 1B: Disking operation. Tractor operator: Jim Johnson

Large areas of this site still exist in spite of extensive sand excavation. To date the Neering collection constitutes the most important cultural resource data of the project vicinity.

A third person, Ronald Heinzman, was contacted concerning collections from the area. All of his material came from east of the Quanicassee River almost 6 miles away from the eastern terminus of the Survey Alignment and therefore its significance to the study was thought to be minor. Following these activities, survey of the corridor segments according to the Army Corps SOW and pre-survey agreements were undertaken.

FIELD INVESTIGATION AND RESULTS

Field investigation proceeded on the basis of the agreed-upon SOW and subsequent changes already mentioned. Field activities began on May 18, 1987 with a check of right-of-way and identifying and flagging machine transect routes. On May 26 grubbing activities were accomplished on corridor segments 2, 4 and 5. On May 27, 1987 disking occurred and was completed at corridor segments 1 and 3. All of these corridor segments had by this time been examined methodically for archaeological surface material. On June 1 and 2 after an interval that included heavy rainfall, reexamination of the corridor segments was conducted. The various portions of the dike alignment slated for archaeological survey are here called corridor segments and treated individually in the discussion below. Paths done by dozer or tractor and disk are referred to as machine transects either north or south depending on their position within the corridor. Table II lists from east to west the various corridor segments and associated COE maps and property descriptions as well as relationship to COE control points shown as P or S numbers.

CORRIDOR SEGMENT 1 (Figure 13)

This corridor segment is the eastern end of the survey area on the Reckinger property (Figure 13). The area is composed of a beach sector along a long narrow offshore spit formation. This spit extending eastward lacks the dune or backbeach deposits found immediately to the west and its formation would necessarily postdate the lowering of water to the modern level approximately 2500 B.P. (500 B.C.).

Much of the ground surface of the spit is covered with coarse and medium sands, recently deposited in the high water stage of the fall of 1986 (field observations and personal communications, Father Robert Reckinger). The spit now encloses a pond to the south. The eastern end of this pond is separated from Lake Huron by a clay fill dike. The ponded area was at one time reclaimed

TABLE II — CORRIDOR SEGMENTS

corridor segment number	common name	realestate sheet number	design sheet number	parcel number	control point location
1	Reckinger	45	16	100-010-00	100' west of P-2 to 175' south of E-68
2	dog kennels and owners name unknown	42,43	13,14	100-035-00	6' east of P-15 to 100' west of P-15
				100-035-01	100' to 187' west of P-15
				100-030-01	187' to 375' west of P-15
				100-025-00	12' east of P-16 to 15' west of P-16
				100-010-00	10' east of P-17 to 245' west of P-17
				100-005-01	245' west of P-17 to 350' west of P-17
				lot 8	12' east of P-18 to 100' west of P-18
				lot 9	100' west of P-18 to 200' west of P-18
				lot 10	200' west of P-18 to 350' west of P-18
				100-065-02	350' west of P-18 to 200' west of P-19 then south 150'
3	Consummers-Foret	38,39	9,10	300-015-00	85' west of P-31 to 25' east of S3-5
4	Hughes	34,35	5,6	100-005 100-015	100' north of S2-1, north to S2-2 then west to S2-3
				and	187' west of S2-3 west to 387' west of S2-3
5	Wolverine	32,33	3,4	no #	P-57 to 25' west of P-65

Plate 2A: Disking at corridor segment # 1.

Plate 2B: Disking at corridor segment # 1. Completed Transect

from wetland and served as a portion of the landing field formerly used by Father Reckinger.

One machine transect was disked here between the corridor centerline and the waterline (Plates 2A and 2B). The line of this transect was somewhat confined since the water encroached upon the shoreline during the period of field work. This north transect ran from a point 150 feet (45 meters) beyond survey control point P-1 to the east, turning 75 feet (22 meters) south and then 50 feet (15 meters) west in a turn about at the end of the spit.

A second transect of shovel test units was conducted on the south portion of the corridor (Plates 3A and 3B). This shovel testing was done to avoid underground electrical wires as well as avoiding the destruction of fruit and ornamental trees on the Reckinger property. This last shovel test was conducted due to the fact that the property owner claimed that he had not, as yet, agreed to the final alignment of the dike which on COE maps passes close to his residence (personal communication, Father Reckinger).

Pedestrian survey, as well as disking and shovel testing operations were accomplished on May 27, 1987 by crew members walking and examining the corridor segment and machine transect. The transect was again surveyed on June 1, by similar pedestrian survey. Disking produced no evidence of cultural material. Occasional pieces of road or fill gravel were noted mixed in the sand matrix. At the western portion of the transect patches of humus colored or silt laden sands were noted. The easternmost of these was determined to derive from buried soil zone 2 while 3 similar areas to the west were thought to be remnants of a basal humic zone exposed at the water's edge and in shovel test units (Figure 14).

Shovel testing on May 27, 1987, revealed fairly homogeneous stratigraphic relationships the length of the shovel test transect. A standard profile reveals below the recently deposited top sands and humus colored zones separated by tan sands (Figure 14, Plates 2A and 2B). The basal zone at the beginning of the water table is a compact humic zone representing the original vegetation of a wetland or offshore marsh. It is this strata that is exposed in discontinuous fashion at the water's edge. The two upper dark zones could represent periods of stabilization and vegetation cover. This is unlikely since little organic material appears in these strata. They are more likely deposits of silt derived from the basal zone as it was eroded by high water wave action and deposited landward. This interpretation would account for the historical material found in shovel test unit 1. A harness buckle was recovered from below the first humus colored layer and a fragment of leather strap recovered just above the basal humic zone in this unit.

Plate 3A: Profile of shovel test unit # 1, corridor segment # 1. Shovel test transect.

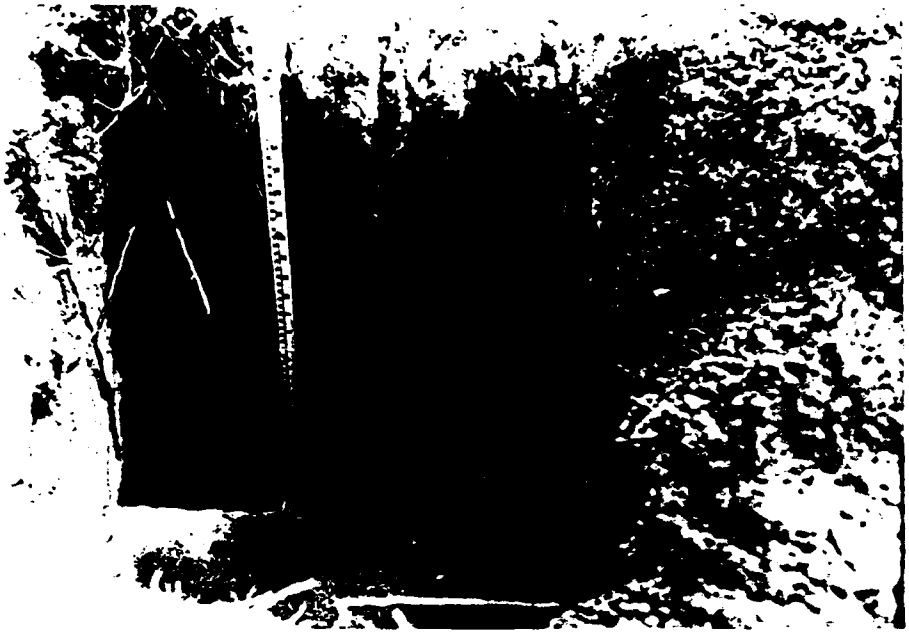
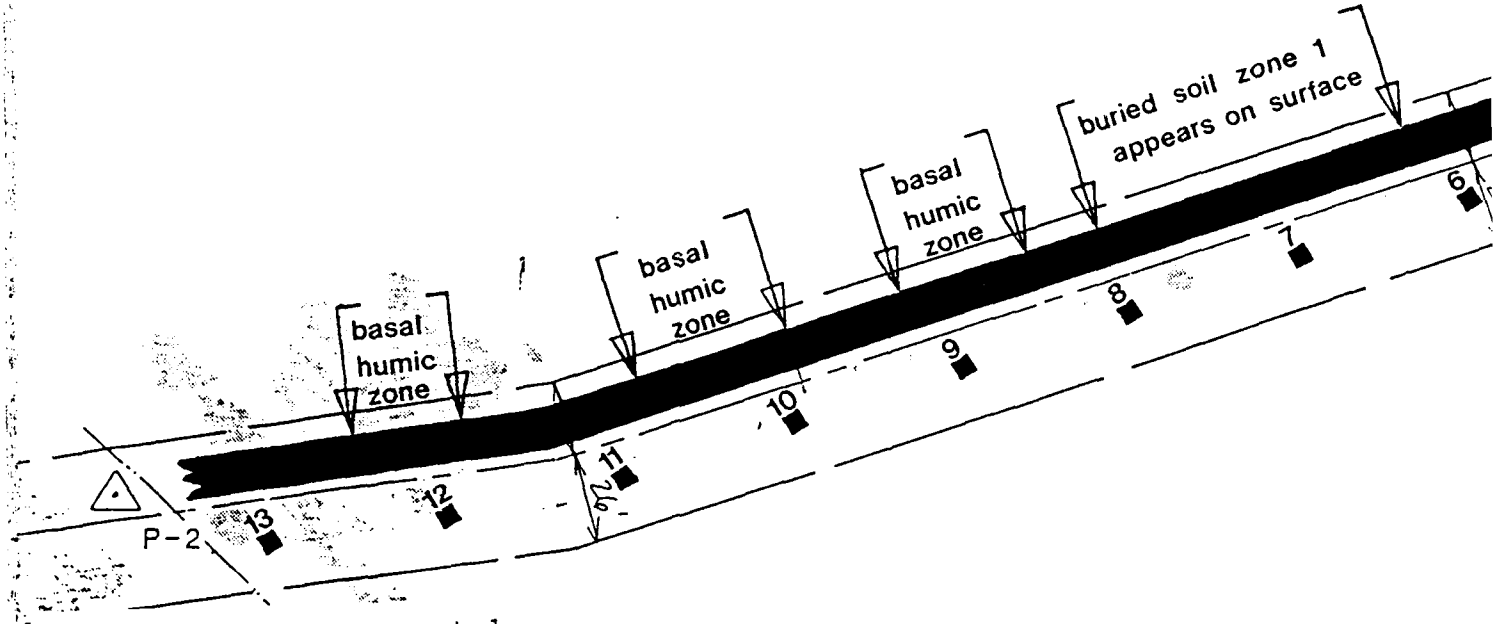
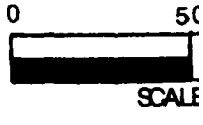
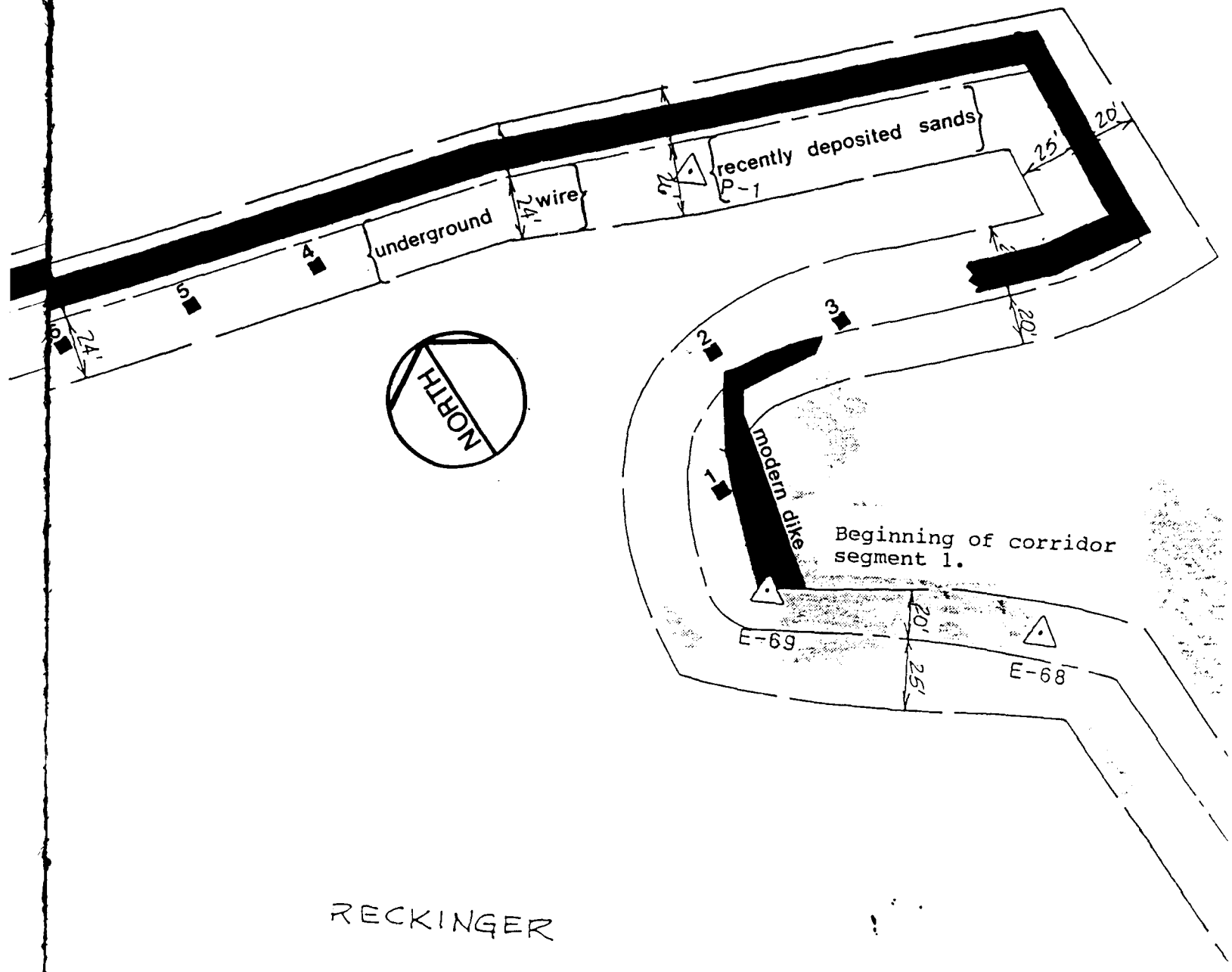


Plate 3B: Profile of shovel test unit # 2, corridor segment # 2. Shovel test transect.



End of corridor segment 1.





RECKINGER

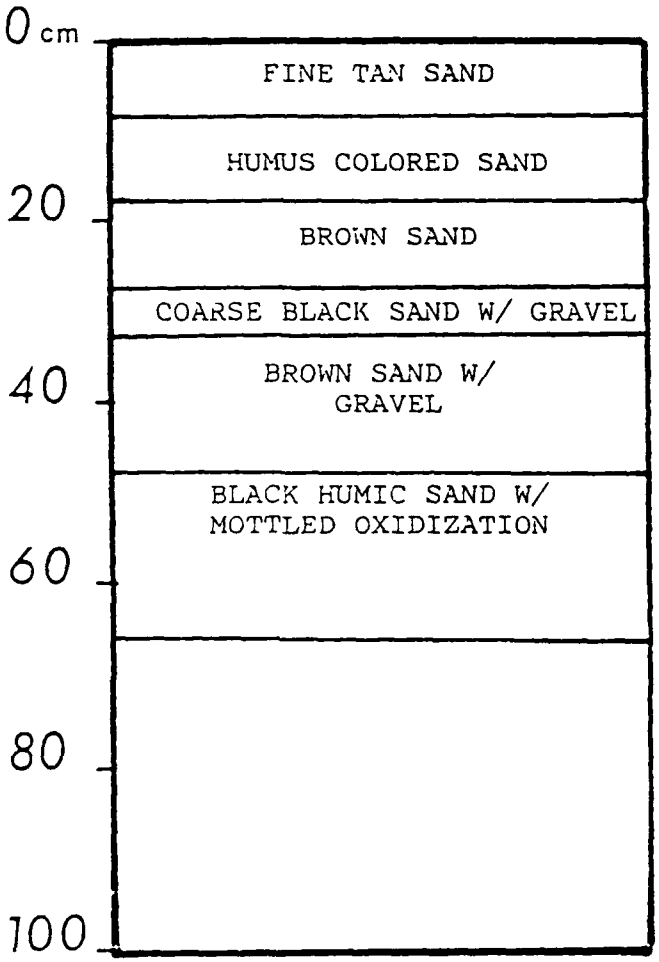
100-015-

MACHINE TRANSECTS
SHOVEL TEST UNITS
AUGER TESTS
SINGLE FINDS

50 100
SCALE: FEET

Advance Measures Flood Control Project, Hampton Township, Bay County, Michigan.

Figure No.13 Machine and shovel test transects, corridor segment 1.



TYPICAL SOIL PROFILE

Caminos Associates CULTURAL RESOURCE MANAGEMENT Bay City, Michigan	Advance Measures Flood Control Project, Hampton Township, Bay City Michigan.
Figure 14: Typical profile of stratigraphy at corridor segment 1.	

All of the above attest to the recent depositional character of the land on the Reckinger property. Sifting of soils from shovel test units reveals no presence of cultural material except the material mentioned above.

CORRIDOR SEGMENT 2 (Figure 15)

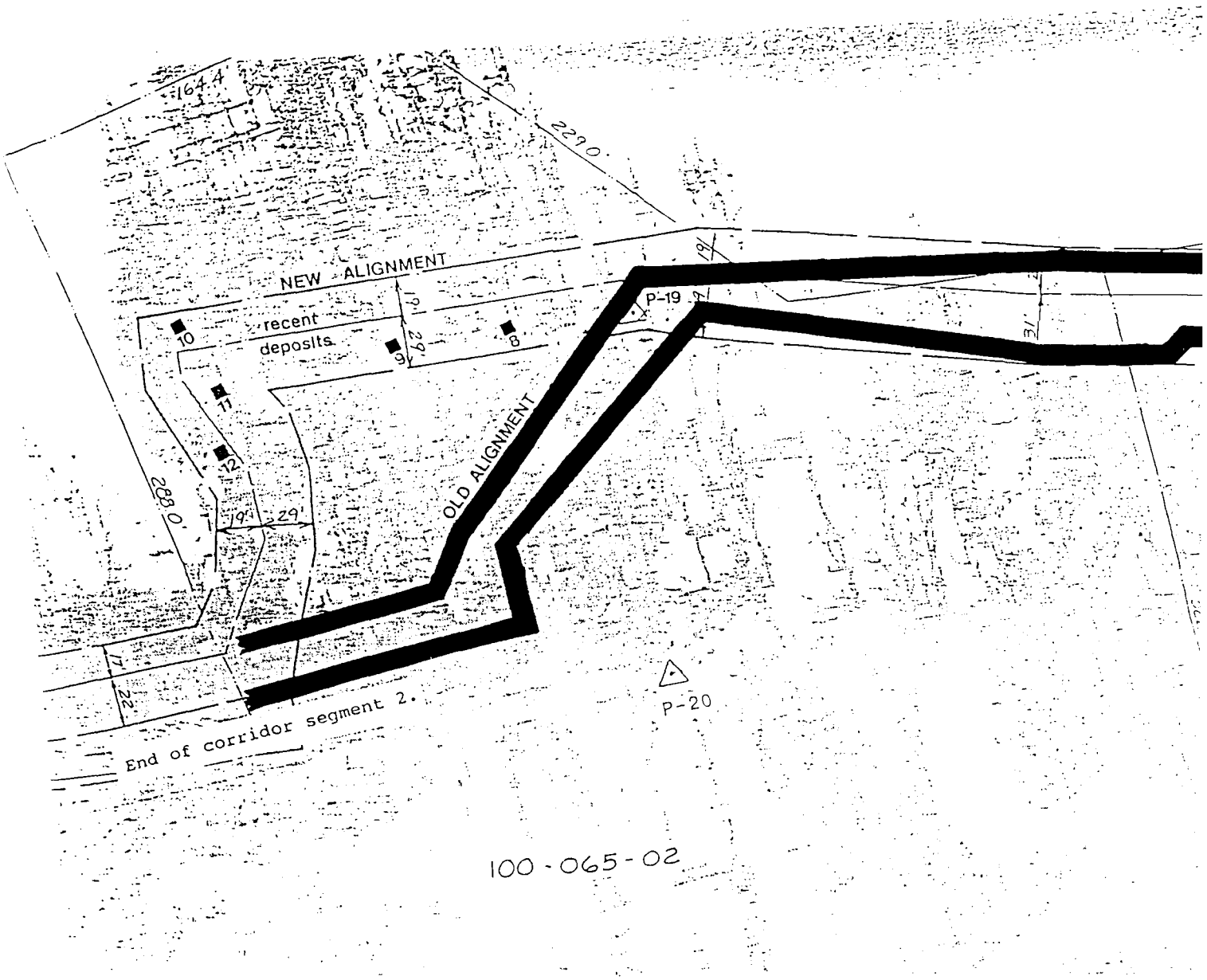
This transect runs eastward from P-15 to some 200 feet (60 meters) west of survey control point P-20 (Figure 15). The eastern sector from survey control point P-16 is presently a marshland covered with 1 - 2 feet of decomposed organic matter compressed to a peat like state. Standing water is present in a large part of this portion of the corridor segment as indicated on Figure 15. Soil conditions and this standing water made this portion of Corridor Segment 2 impossible for machine operation. Topsoil in this area is of recent origin and would not contain archaeological sites. One auger test was done 175 feet (24 meters) west of survey control point P-15 to test for water table.

From survey control points P-16 to P-17 (Figure 15) a stone dike exists, erected by residents there. This area was not part of the archaeological survey. Archaeological shovel testing was begun at 75 feet (23 meters) west of survey control point P-17 because of rubble from the stone dike and residential gardening, while machine testing began at 200 feet (60 meters) west of the same point (Figure 15). Shovel testing was conducted from survey control point P-17, 200 feet (60 meters) west due to the fact that the corridor segment here crosses a residential beach area close to a residential structure and no trees or small brush is present.

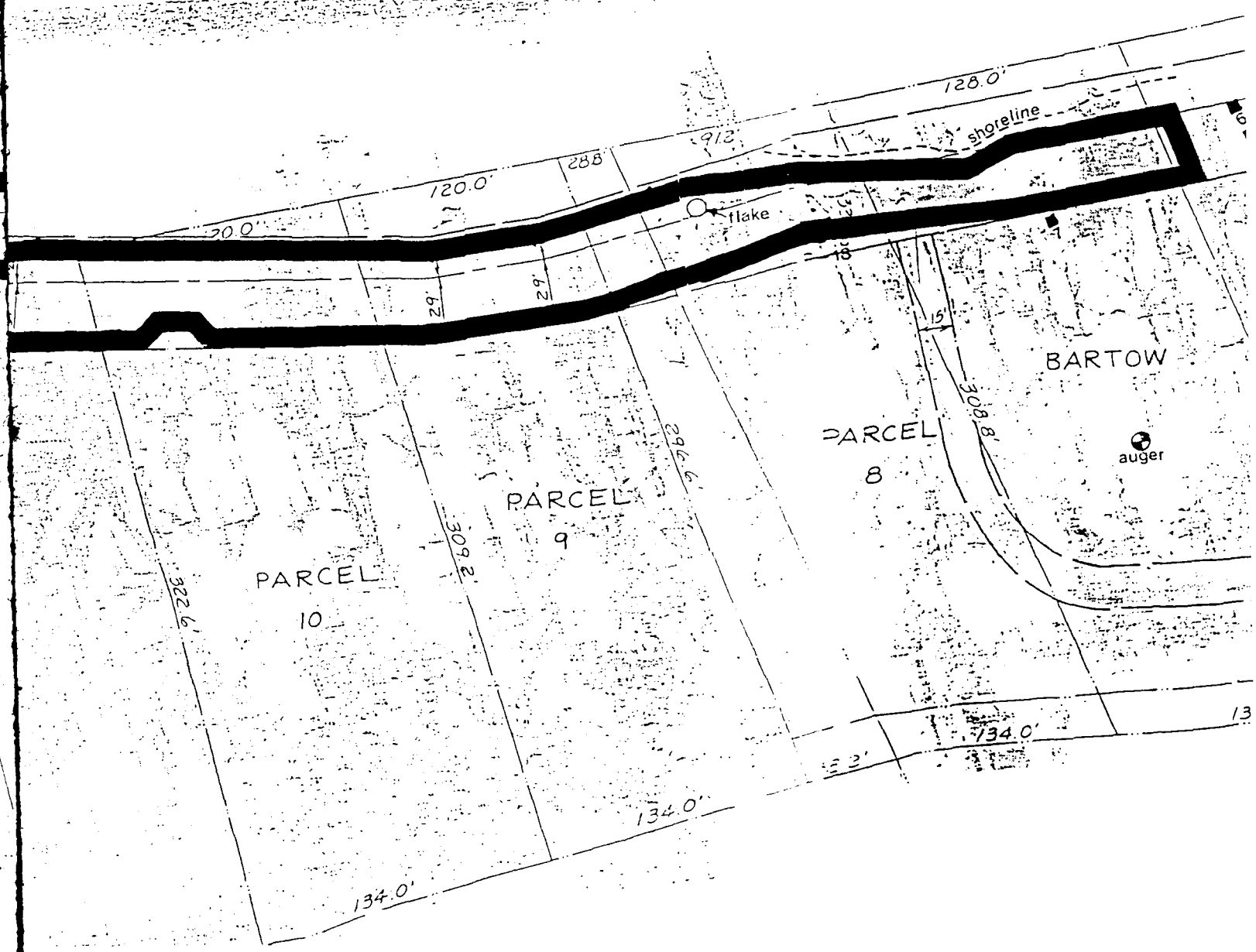
From survey control points P-17 to P-19 this corridor segment runs directly on the beach that is covered with fallen trees and patches of scrub brush (Figure 15). This area is being actively reworked by wave action and no in-situ deposits would be found there. At survey control P-19 (Figure 15) the original corridor leaves the beach and continues to the southwest 150 feet (45 meters) and then westward paralleling the entrance road some 125 feet (38 meters). This portion of the survey corridor traversed the beach crest sector. The dune ridge and back beach are an area occupied by oak forest and small bush. A wide area of disturbance or fill was noted 98 feet (30 meters) southwest of survey control point P-19.

After completing the grubbing operation on May 27, 1987, a new alignment map from COE was forwarded by ZYMEtech, Ltd. to the CA office on May 28, 1987. This new alignment continued westward along an area of recently created beach deposit and imponded waters. Two hundred feet west of survey control point P-19 this new alignment turned directly south skirting a small pond (Figure 15). Since soil deposits here were of recent origin and deposit-

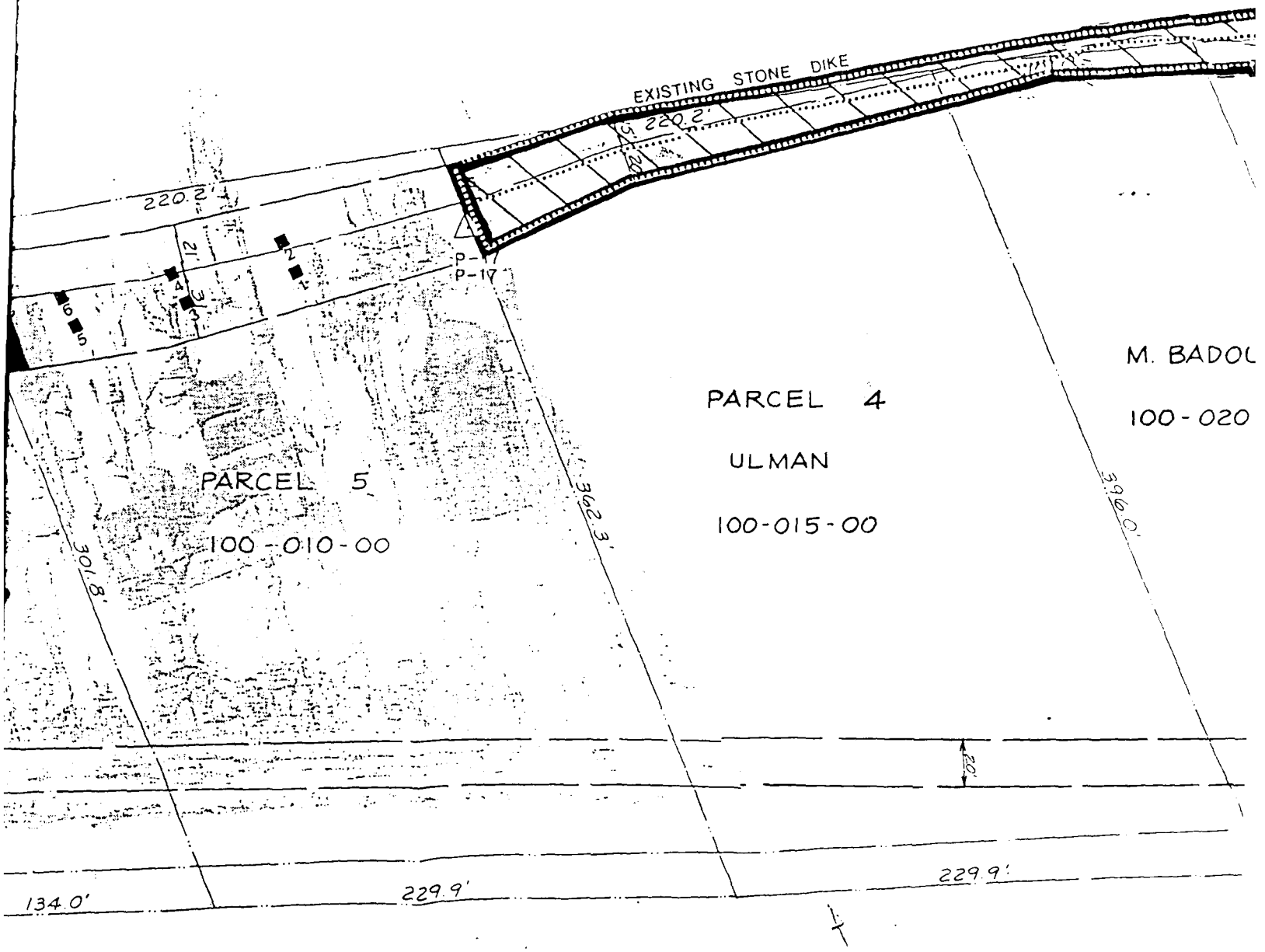
Figure 15: Machine and Shovel Transects, Corridor Segment 2.

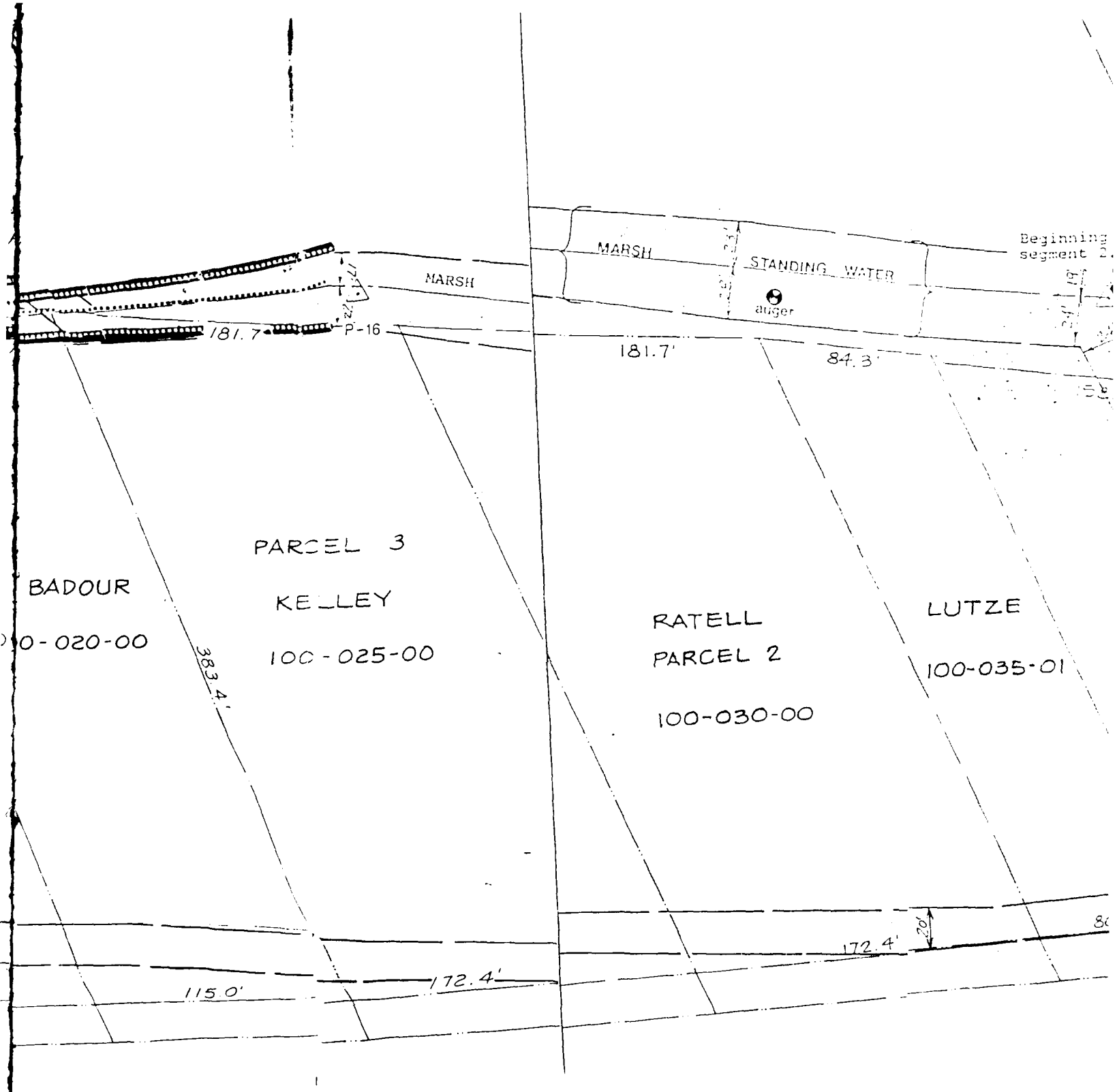

164.4
229.0
NEW ALIGNMENT
recent
deposits
10
9
8
11
12
19'
29'
288.0
OLD ALIGNMENT
P-19
P-20
17'
22'
End of corridor segment 2.

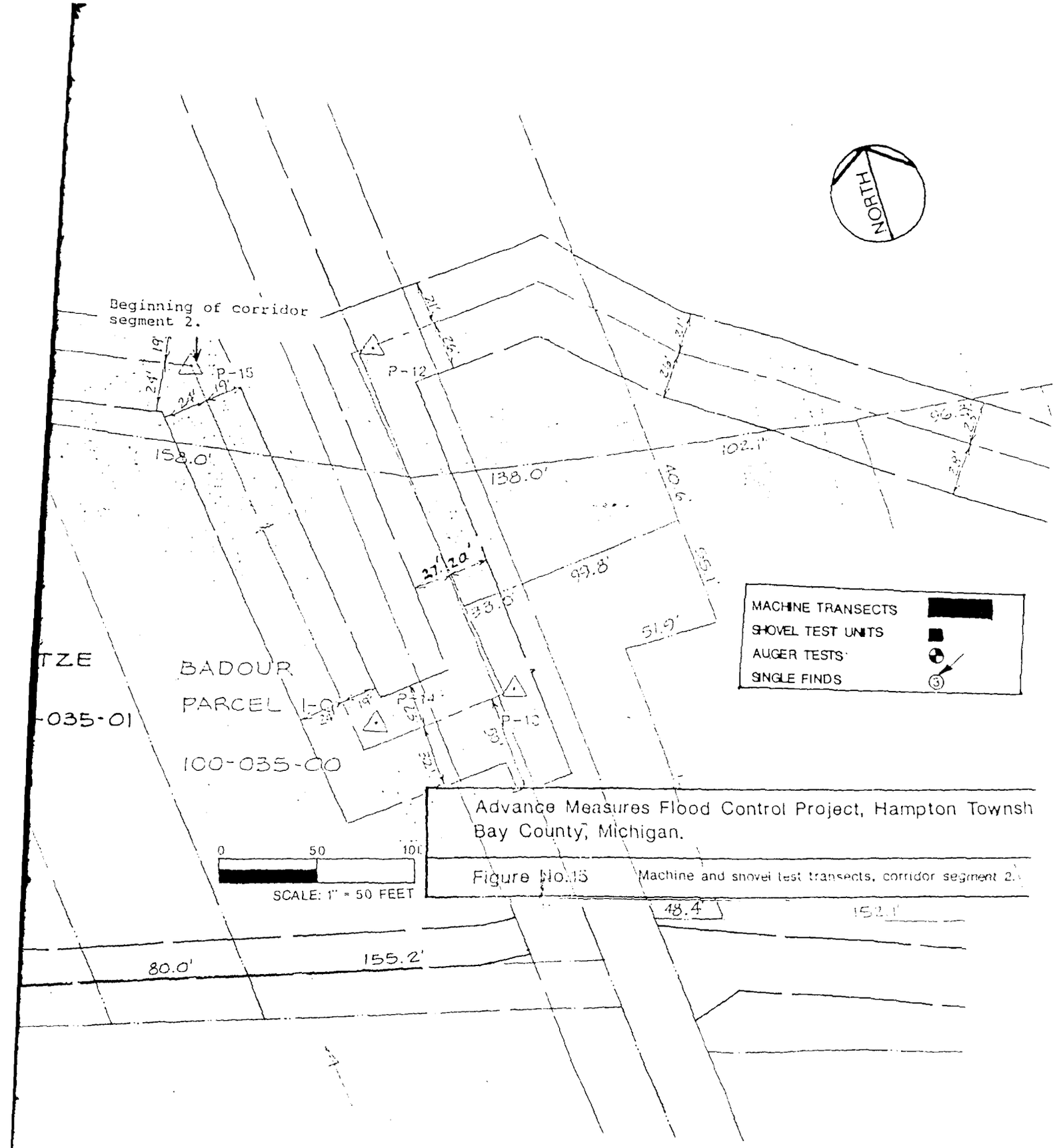
100-065-02



128.0'
shoreline
91.2'
28.8'
120.0'
flake
29'
29'
15'
BARTOW
308.8'
PARCEL
8
auger
296.6'
PARCEL
9
309.2'
PARCEL
10
322.6'
134.0'
134.0'
134.0'

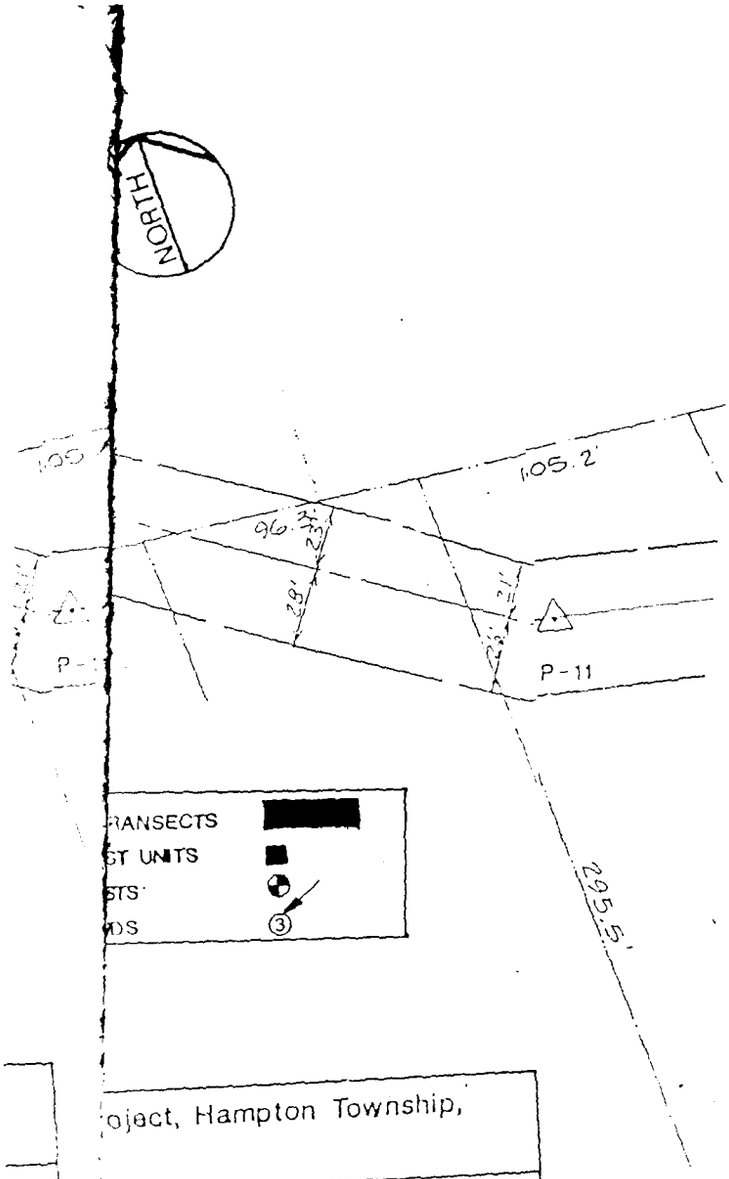

EXISTING STONE DIKE
220.2'
220.2'
21'
P-17
P-17
PARCEL 5
100-010-00
301.8'
362.3'
PARCEL 4
ULMAN
100-015-00
396.0'
M. BADOL
100-020
20'
134.0'
229.9'
229.9'


MARSH
MARSH
STANDING WATER
auger
Beginning
segment 2.
181.7
P-16
181.7'
84.3'
PARCEL 3
KELLEY
100-025-00
BADOUR
0-020-00
383.4'
RATELL
PARCEL 2
100-030-00
LUTZE
100-035-01
172.4'
115.0'
172.4'



Advance Measures Flood Control Project, Hampton Townsh
Bay County, Michigan.

Figure No. 15 Machine and shovel test transects, corridor segment 2.



oject, Hampton Township,

ransects, corridor segment 2.

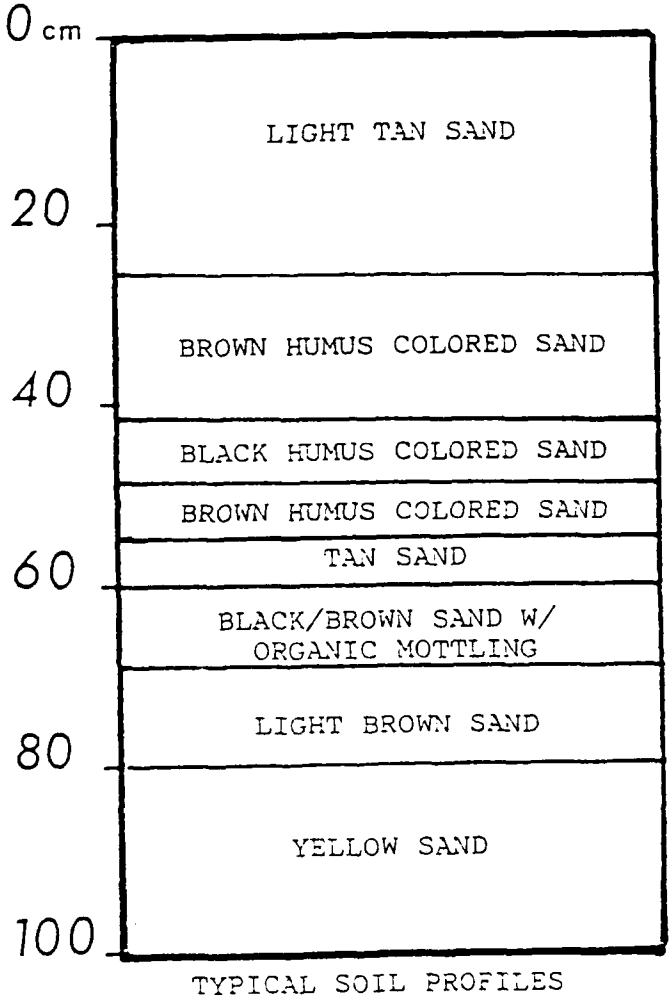
152.1'

ed during high water stages, original ground surfaces were below the prescribed depth of machine testing, shovel test units were used. Shovel test units beginning west of survey control point P-17 (Figure 15) showed bedding by recent wave action with black sands and tan colored generally alternating (Appendix C). No cultural material was obtained from these 6 shovel test units.

Shovel test unit 7 was excavated just to the south of the corridor segment to determine stratigraphy at the beginning of the dune feature. A concentration of fire cracked rock was located during initial walk over of the dune area 100 feet (30 meters) southeast of this shovel test unit and outside the survey alignment. No cultural material was found associated with this material. The fire cracked rock was found in a concentration some 15 feet across. It consisted of fragments varying 2 - 4 inches in size. Shovel test unit 7, excavated to the depth of 80 cm, again showed alluvial bedding below wind deposited sands (Figure 16).

A further auger probe was done 5 feet due west of the fire cracked rock concentration to further establish the relationship between the stratigraphy there and that within the corridor segment. This auger test established that the fire cracked rock deposit lay within 20 cm of the surface (Appendix A). This might relate to the humus-colored sands found at 50 cm in depth at shovel test unit 7. Since the fire cracked rock deposit was found outside the project corridor further testing was felt unjustified. The beach deposits within the project corridor are judged to contain only redeposited cultural material, if such exists (Figure 16).

The fact that such material does exist is attested to by the single find recovered during the methodical collection of the machine transect within corridor segment 2 on June 2, 1987. A flake was located by 50 feet (15 meters) west of survey control point P-18. This flake was noted between the two machine cuts or 9 feet (3 meters) south of the southern edge (Figure 15) of the north transect. This single flake is made of Bay Port chert and displays cortex of white surface weathering typical of the Bay Port "Cannon Ball" nodule. Thus, the occlusions, the grey colors and a portion of the circular light colored band are all diagnostic of Bay Port chert. This flake is 1-3/4 inches wide where it was struck off the nodule and 1-1/2 inches long. The tip of this triangular shaped flake is discolored or reddish due to weathering. Its longest edge is highly water worn, as one might expect from the particular physical environment in which it was found. A second careful scrutiny of the ground surface both within the machine transects and between for several feet in each direction revealed no further cultural material. It is assumed this flake derived originally from another locus of higher relief to the south. Completion of surface survey of the machine transect also revealed no additional cultural material.



Caminos Associates CULTURAL RESOURCE MANAGEMENT Bay City, Michigan	Advance Measures Flood Control Project, Hampton Township, Bay City, Michigan.

Figure 16: Typical profile of stratigraphy at corridor segment 2.

CORRIDOR SEGMENT 3 (Figure 17)

This corridor segment begins 125 feet (38 meters) west of survey control point P-31 and continues westward to 50 feet east of S3-5 (Figure 17). It borders the northern edge of an agricultural field planted with corn. It is bordered in turn by fill from a large ditch 25 feet (7-1/2 meters) across, to which it runs parallel the length of the corridor segment, and which separates it from the dune ridge. The machine transect is actually the 2-track service road for farm machinery and offered the only area within the total width of the corridor segment that was not disturbed due to the aforementioned ditching. The position of this transect was agreed upon by Dr. Shott at the April 22 field meeting mentioned earlier. Disking was the preferred method of surface exposure along this machine transect and was done on May 27, 1987 (Plates 4A and 4B). The locus of this corridor segment is at the edge of the former wetland or wet prairies south of the dune ridge with black sandy loams as the predominant soil type. This zone could be considered to be of low to moderate archaeological sensitivity.

No cultural material was recovered from the final surface survey of this area. Occasional broken pieces of glacial chert were encountered which were carefully examined before being rejected as not being culturally derived. Sparse scatter of late 19th century and early 20th century ceramic shards were noted in the cornfield at the edge of the transect. These were not found in any significant concentration or pattern and probably derive from random dumping.

CORRIDOR SEGMENT 4 (Figure 18)

This corridor segment is divided into two sub-segments, one at the extreme eastern end of the corridor segment designated as a machine segment and a smaller one that was surveyed in conjunction with shovel testing. The first of these as originally designated on COE real estate sheets was to begin 100 feet (30 meters) north of survey control point S2-1 and continuing northward to survey control point S2-2 and from there continuing westward 650 feet (198 meters). The second smaller segment begins 25 feet (8 meters) east of S2-4 and extends 200 feet (60 meters) eastward (Figure 18).

Machine grubbing of the first of these two corridor segments was greatly reduced when it was found that an extensive natural and semi-permanent wetland with standing water occupied the land through which the southern end of the corridor segment ran. The machine operator rightly refused to enter this area with the bulldozer after walking the transect with the CA field crew. The crew explained to the operator that archaeological surveys are usually not conducted across such wetlands because of the unlikely existence of any archaeological sites in this type of

Plate 4A: Disking at corridor segment # 3.

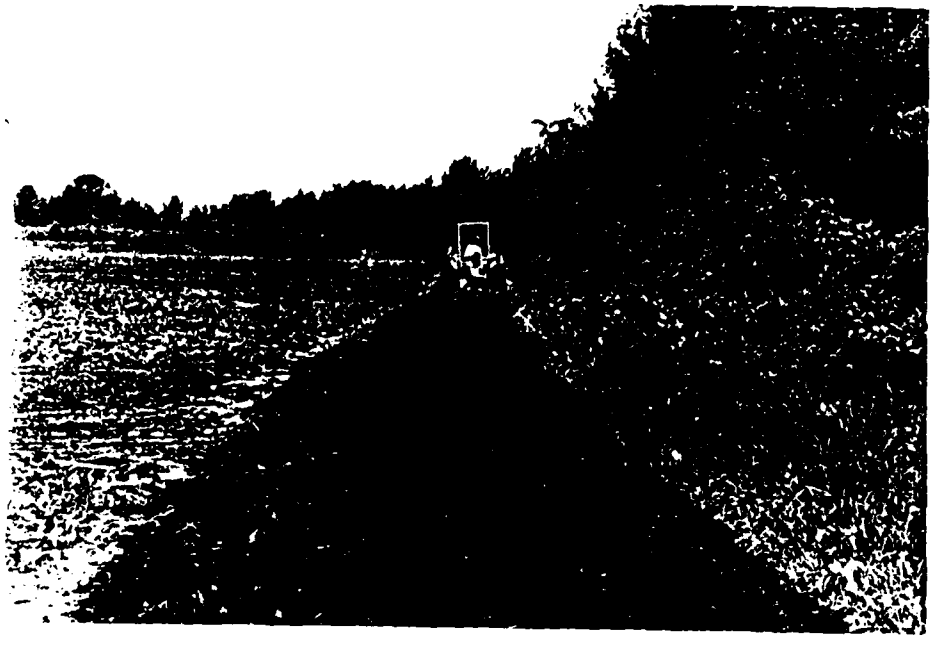


Plate 4B: Disking at corridor segment # 3

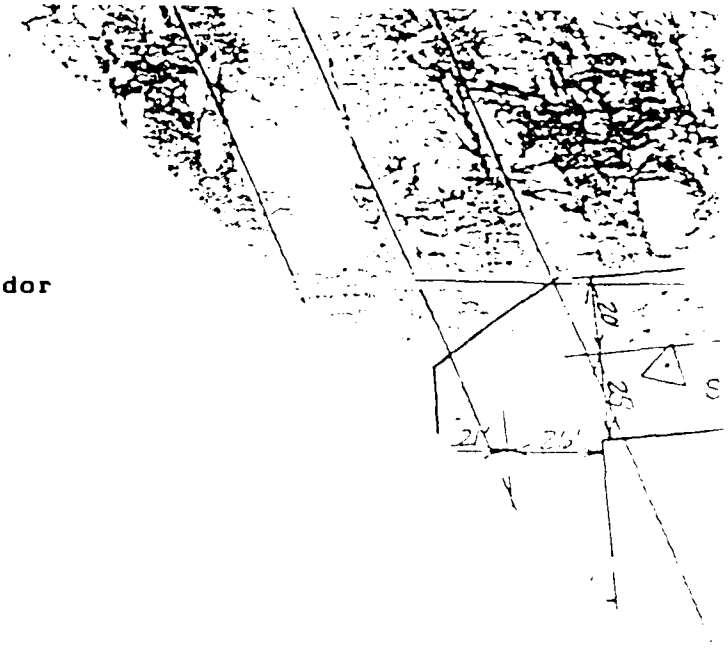
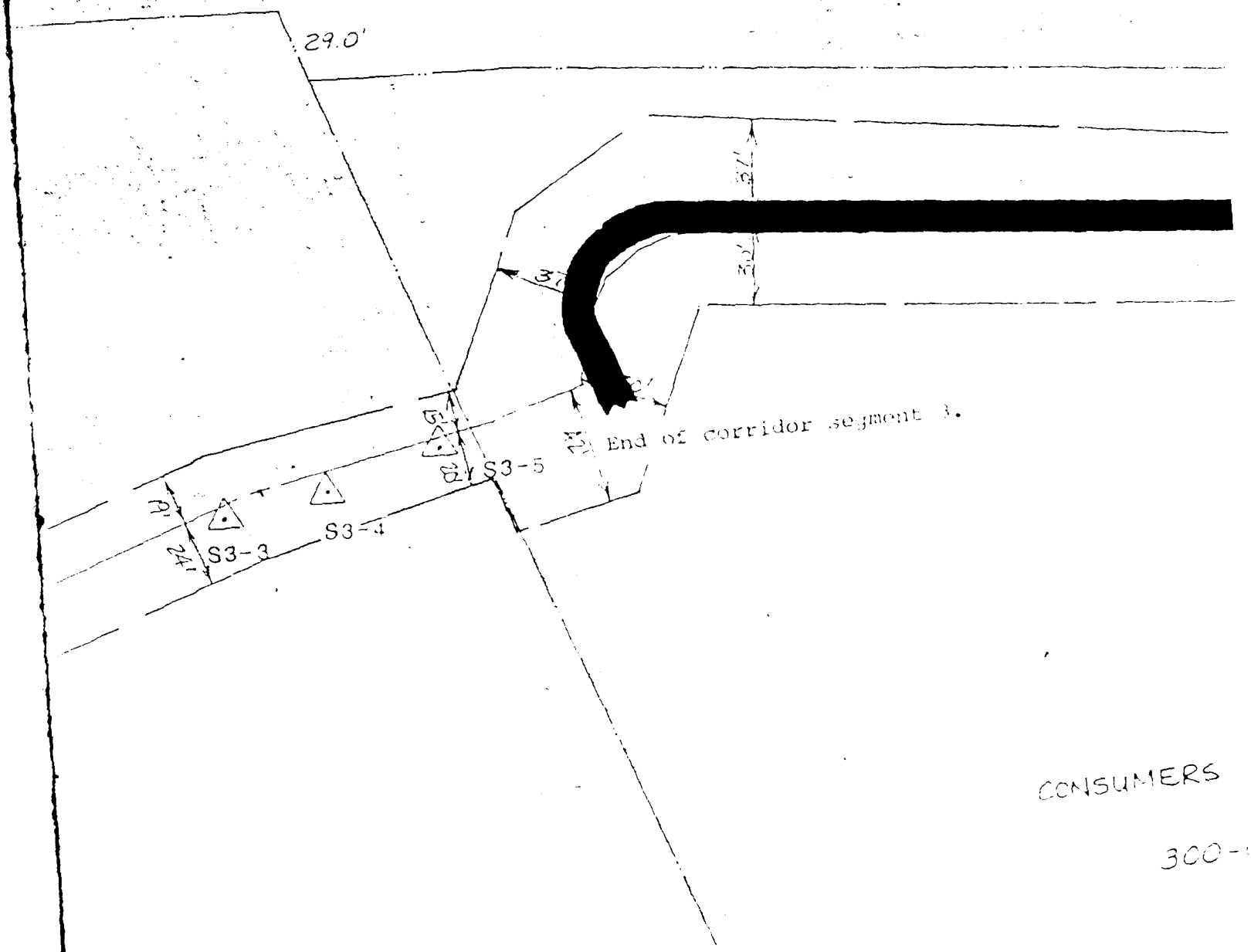


Figure 17: Machine Transect, Corridor Segment 3.

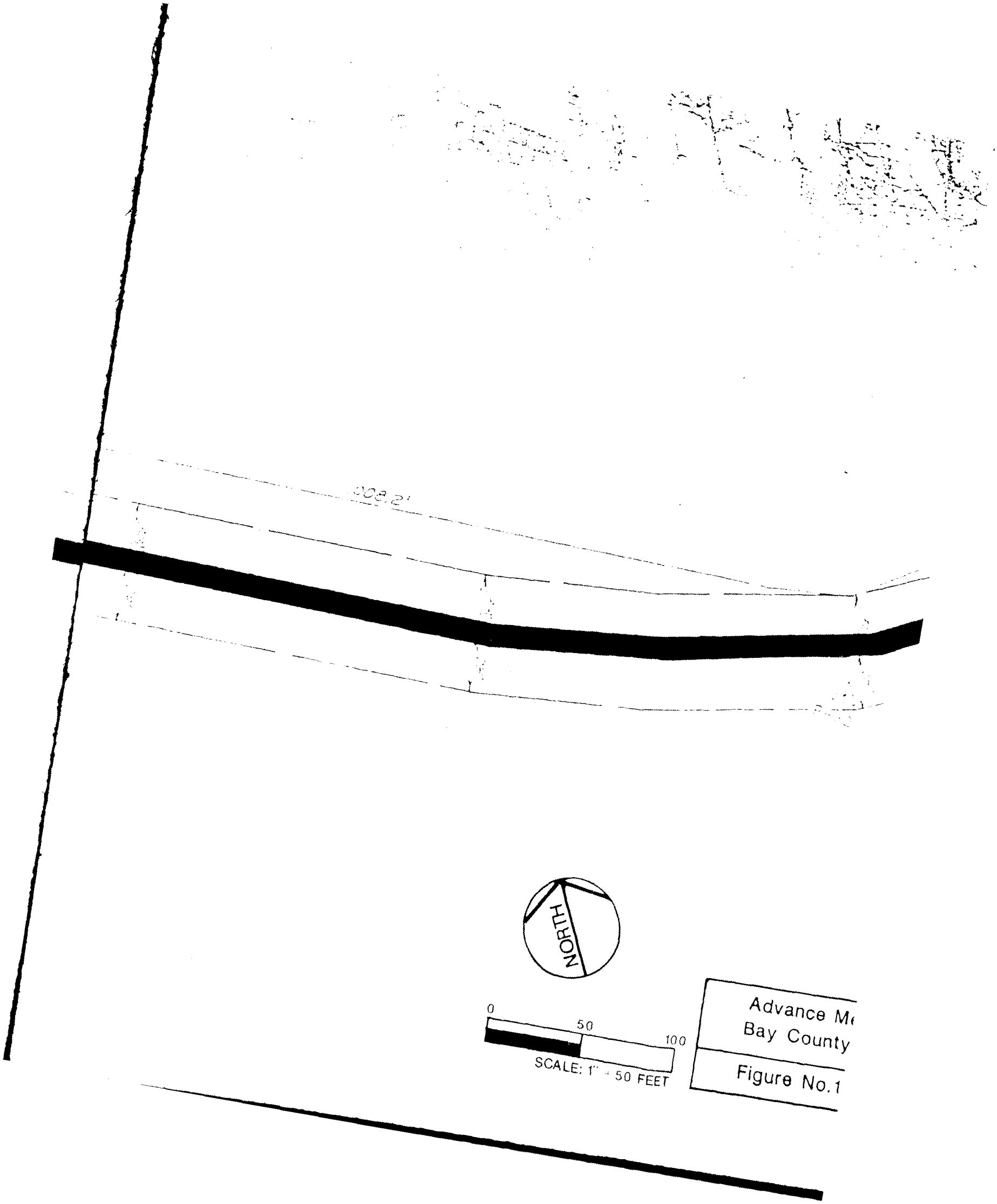


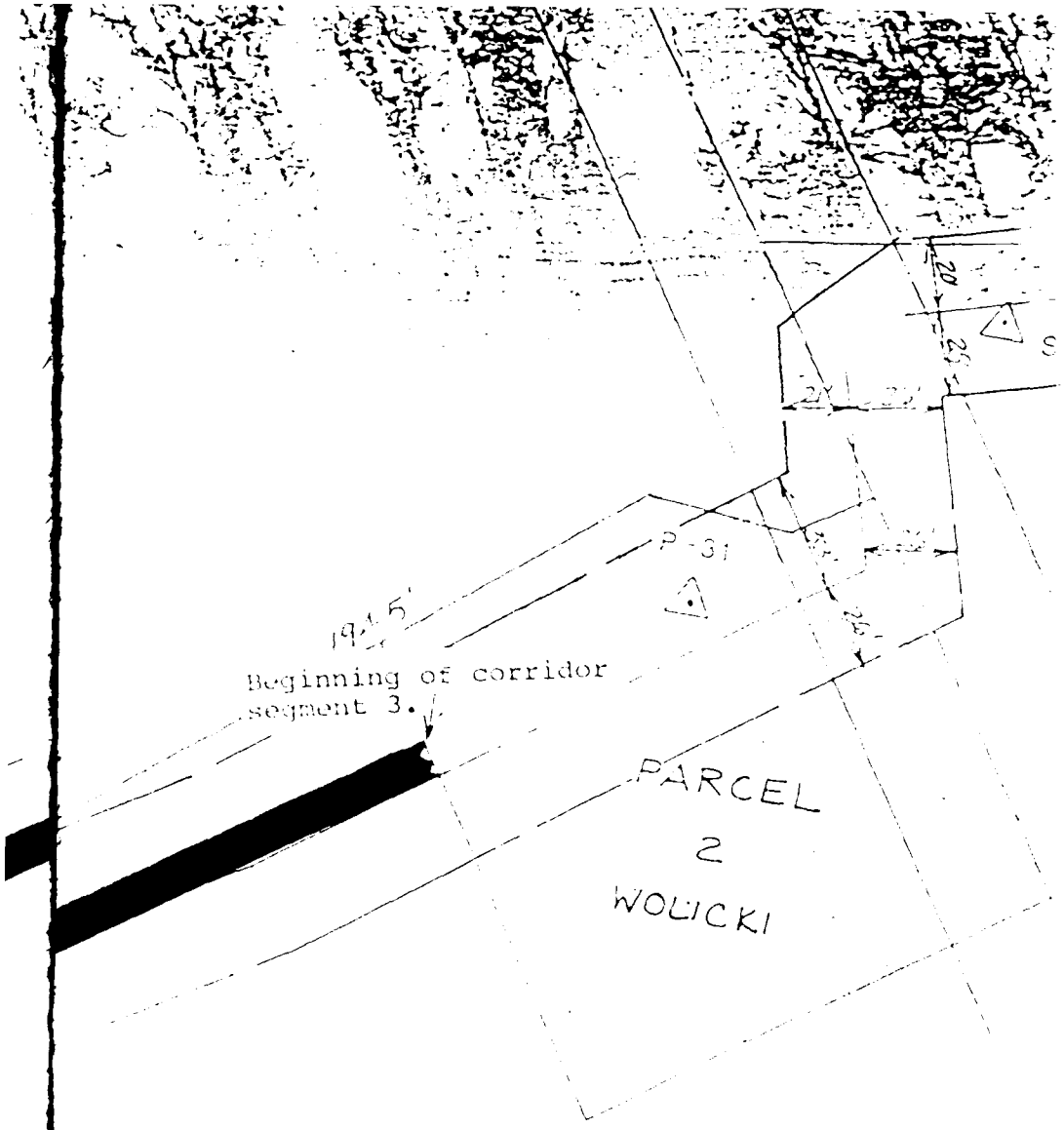
CONSUMERS

300-

IER S POWER COMPANY

0-015-00


NORTH
0
50
100
SCALE: 1" = 50 FEET
Advance M
Bay County
Figure No.1



MACHINE TRANSECTS	
SHOVEL TEST UNITS	
AUGER TESTS	
SINGLE FINDS	③

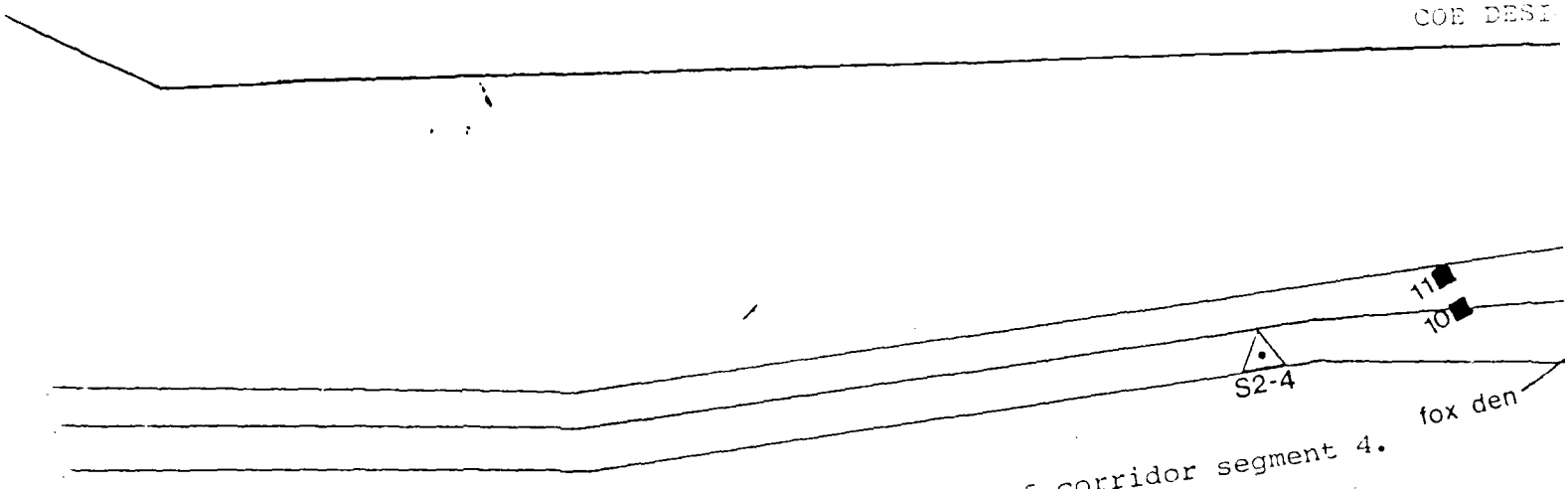
Measures Flood Control Project, Hampton Township,
nty, Michigan.

0.17 Machine transect, corridor segment 3.

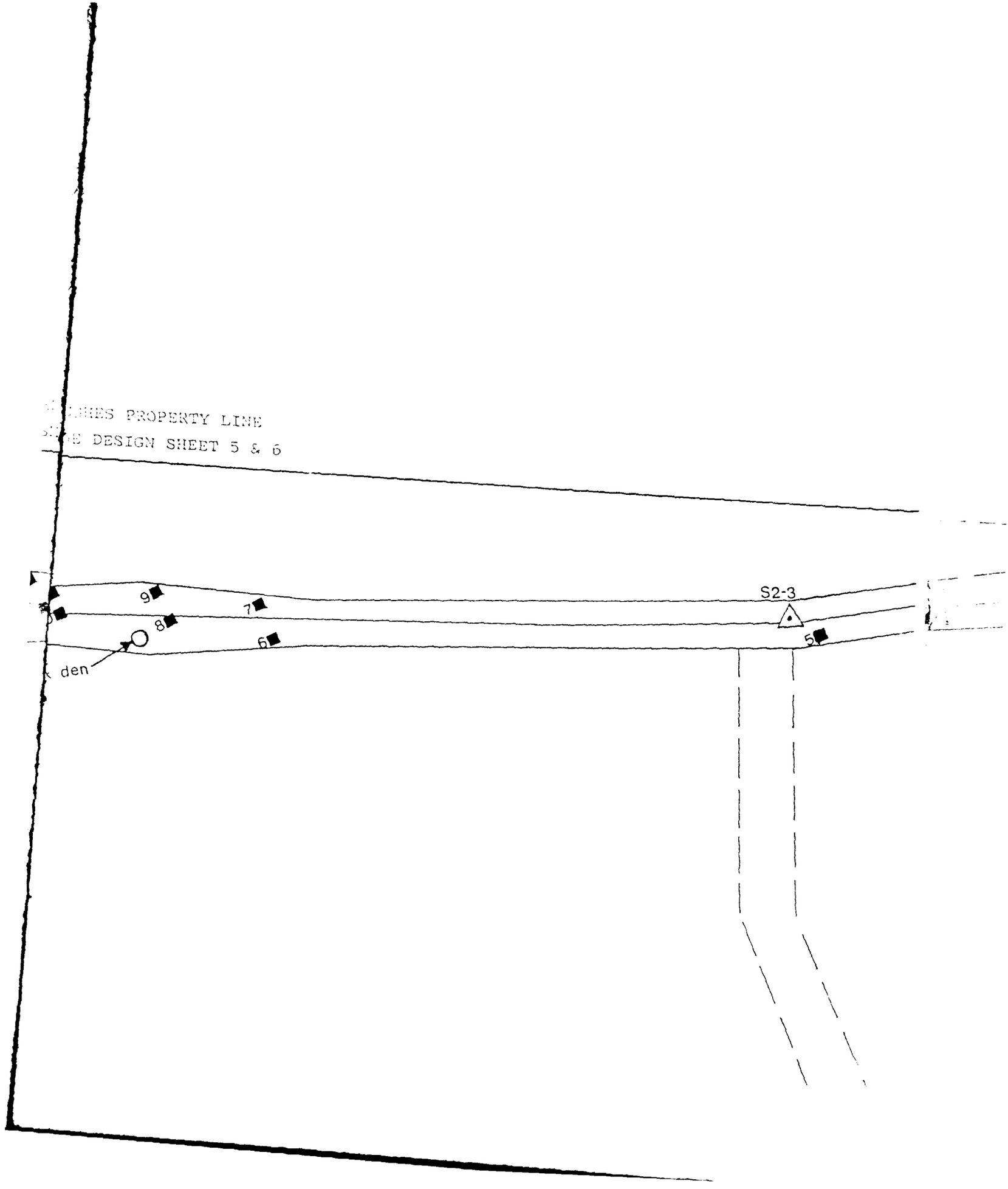
Figure 18: Machine and Shovel Test Transects, Corridor Segment 4.

HUGHES F

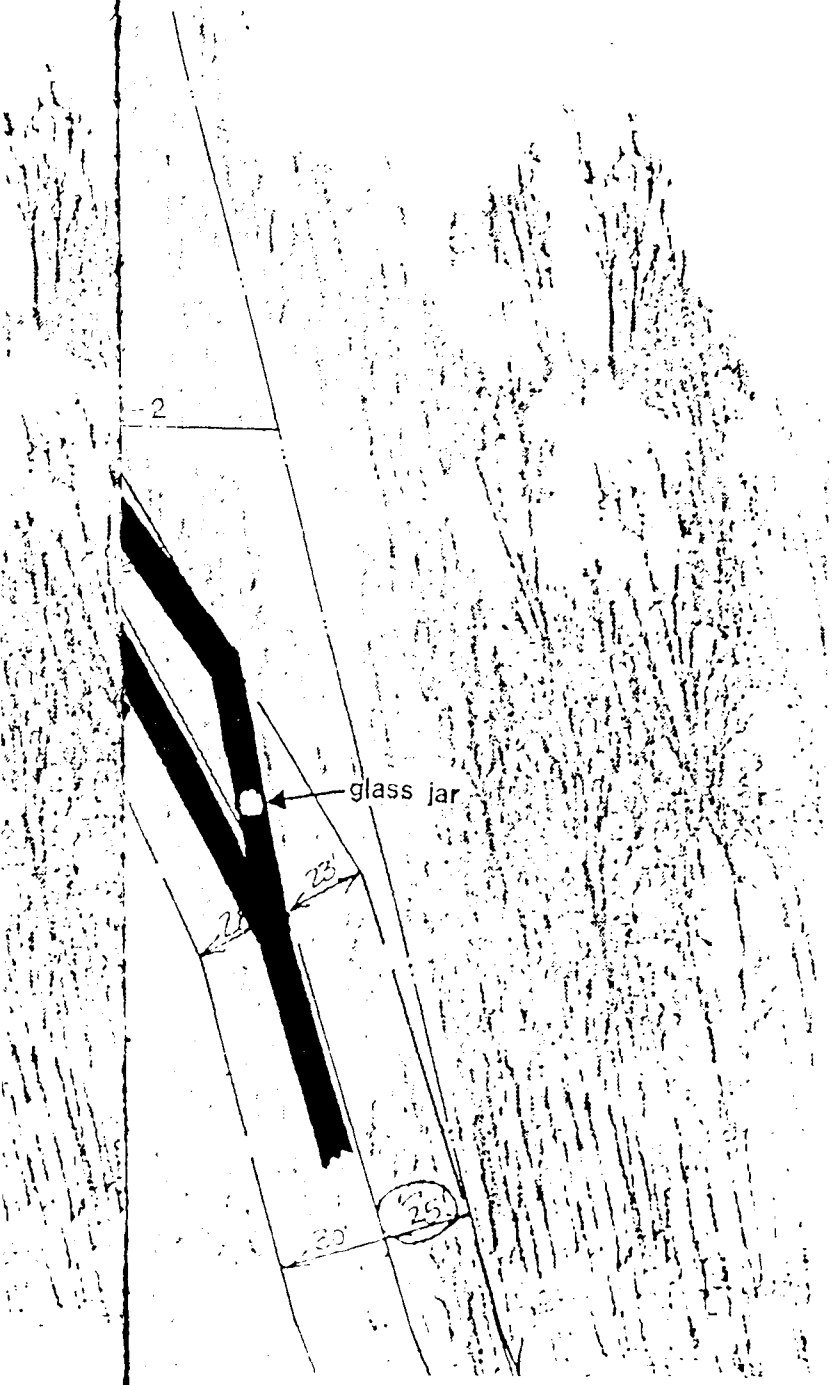
COE DESI

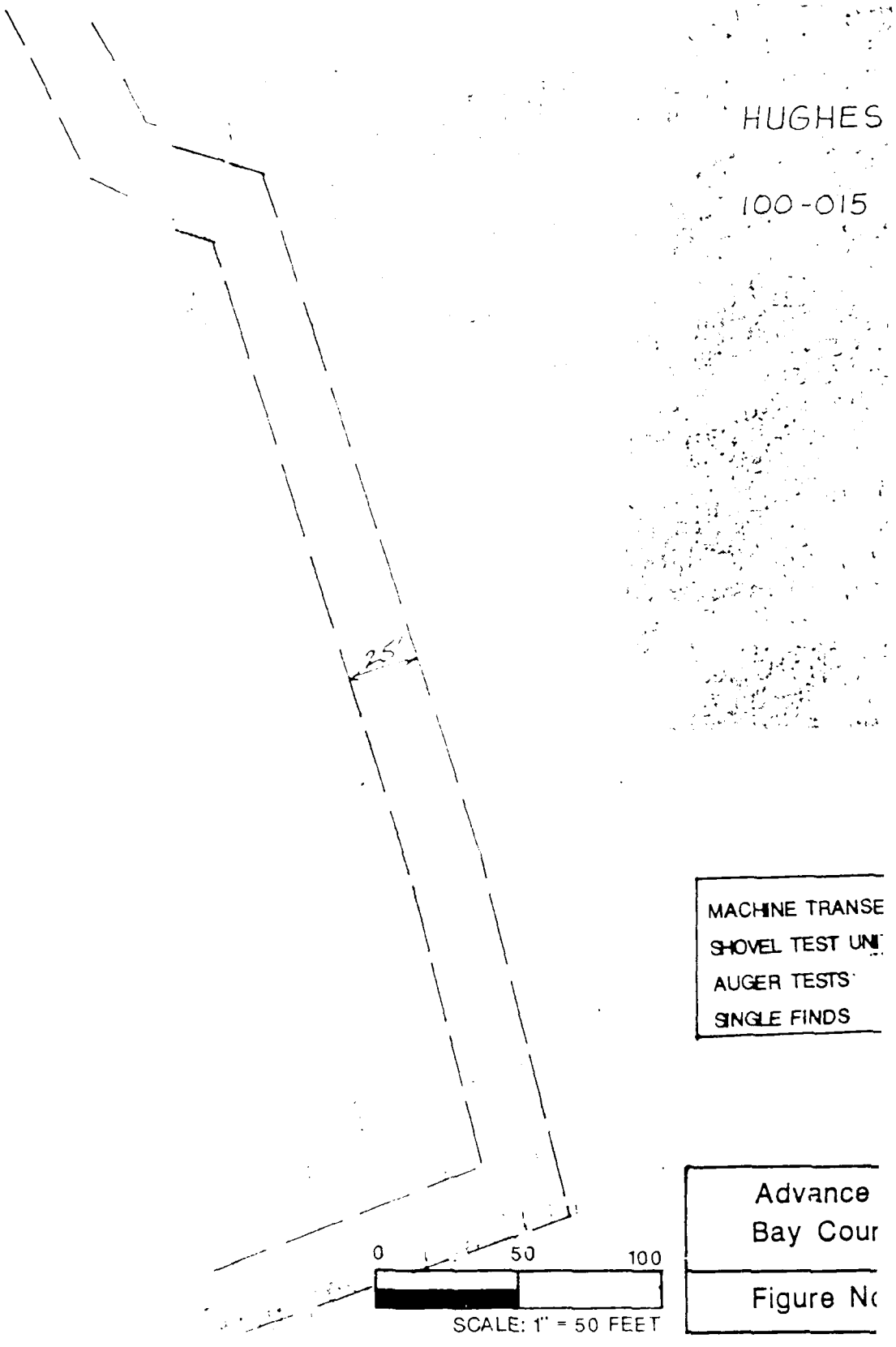


End of corridor segment 4.


LINES PROPERTY LINE
E DESIGN SHEET 5 & 6
9
7
8
6
S2-3
5
den

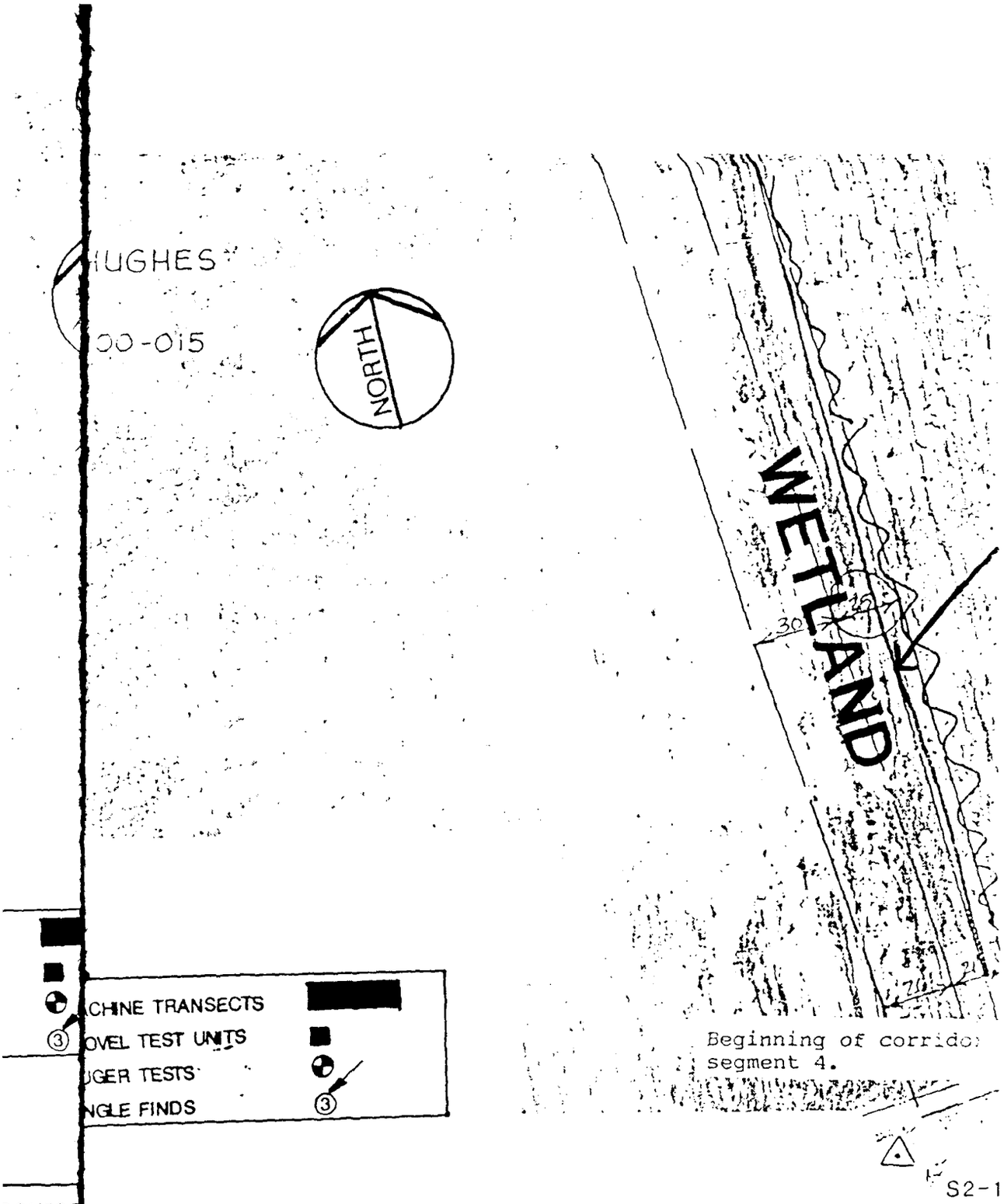
HUGHES
100-010
impassable to machine
S2-2
1
2
3
glass jar


2
glass jar
23'
30'
26'



Advance
Bay Cour

Figure No



asures
Michi

Advance Measures Flood Control Project, Hampton Township, Bay County, Michigan.

Figure No. 18 Machine and shovel test transects, corridor segment 4.

environment. Secondly, clearing of the land to gain ground surface observance would require extensive and expensive pumping and this was not required by the SOW. Lastly, irreversible environmental damage would have been done to the wetlands by the action. The reduced length of machine transect can be seen in Figure 18 where a glass jar was noted and mapped. This jar dated from the twentieth century . Shovel testing was conducted at the western end of this corridor segment due to the terrain. This portion of the corridor passes the dune's edge and a precipitous drop at this point makes a machine pass impossible.

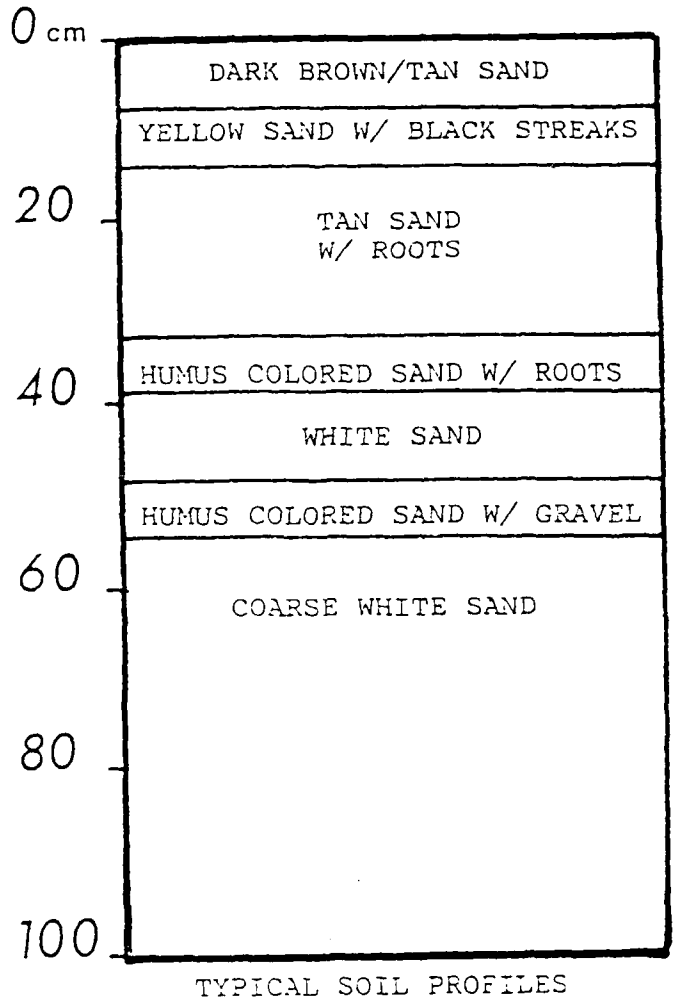
Shovel testing from survey control point S2-3, 200 feet (60 meters) east to the beginning of the machine transect exposes a fairly homogeneous stratigraphy for this portion of the corridor segment (shovel test units 1-5, figure 18). Below the silty sand top soil, or A zone, a B zone of humus colored soils was found representing a weathered profile. This location was underlain by basal yellow sands. Below this, other humus colored zones interbedded between lighter sands probably represent vegetational surfaces during stabilization of the dune process (Figure 19 and Appendix C). Material from these buried dark zones was carefully examined during screening.

Shovel testing was also done east of survey control point S2-4. Shovel testing became the preferred method here because of environmental reasons. It was judged that bulldozing would possibly injure the undisturbed dune portions at either end of the "dip" in the dune line. Shovel testing here showed basically the same profiles as found in shovel test units 1-5, and the same care was taken in examining any buried humus colored zones. No cultural material or features were noted from these shovel test units (1-11, Figure 18), nor was any material noted where surface could be examined in adjacent portions of the corridor.

Final pedestrian survey of the machined transect south and east of survey control point S2-2 similarly produced no cultural material or evidence of archaeological features.

CORRIDOR SEGMENT 5 (Figure 20)

This corridor segment begins at survey control point P-57 and extends westward to 100 feet (30 meters) northwest of control point P-61. This corridor segment runs for the most part through mature oak forest at the back or southern side of the dune ridge. Machine grubbing was the obviously appropriate method of clearing (Plates 5A and 5B). It is here that the SOW requirement of two transects could be met. It was possible to plot two machine transects, 3 meters apart from survey control point P-57 to P-61. A single transect was continued 100 feet beyond this due to the fact that the service road lay within the corridor segment (Plates 6A and 6B). In the remaining portion of the corridor, severe disturbance due to oil well construction and live buried



Caminos Associates CULTURAL RESOURCE MANAGEMENT Bay City, Michigan	Advance Measures Flood Control Project, Hampton Township, Bay City, Michigan.

Figure 19: Typical profile of stratigraphy at corridor segment 4.

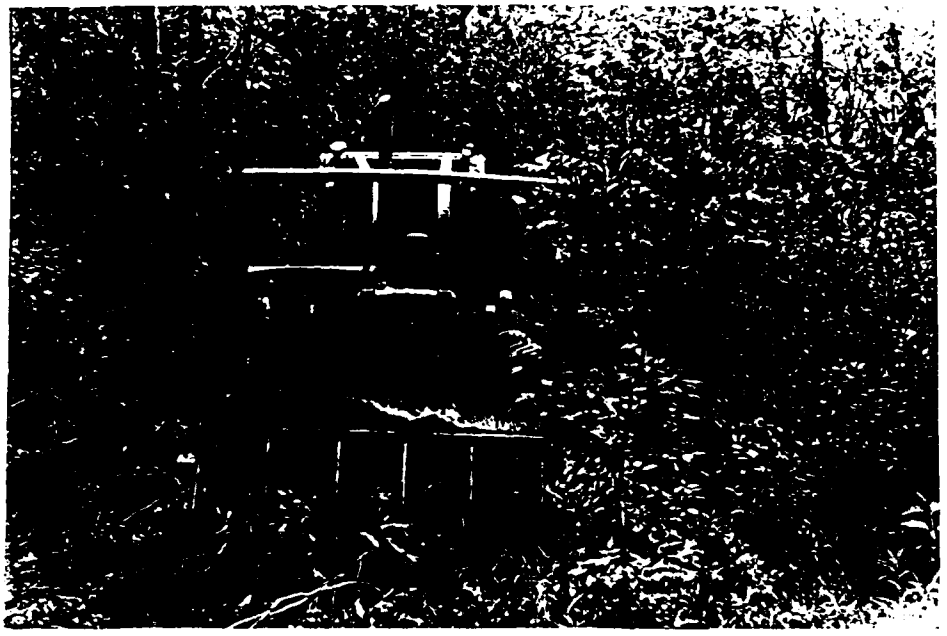


Plate 5A: Grubbing at corridor segment # 5 with blade uplifted.

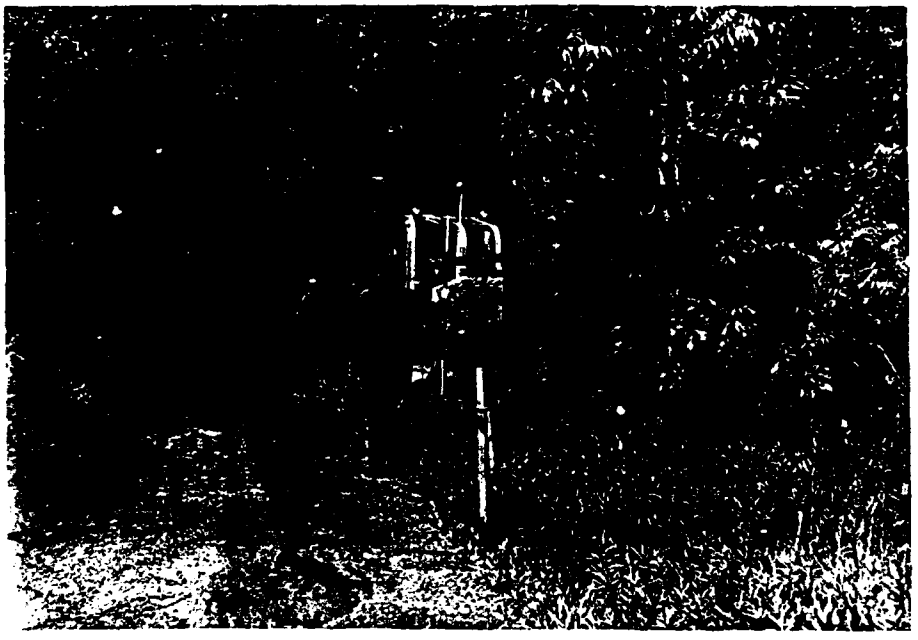


Plate 5B: Setting transect line and guiding bulldozer at corridor segment # 5.

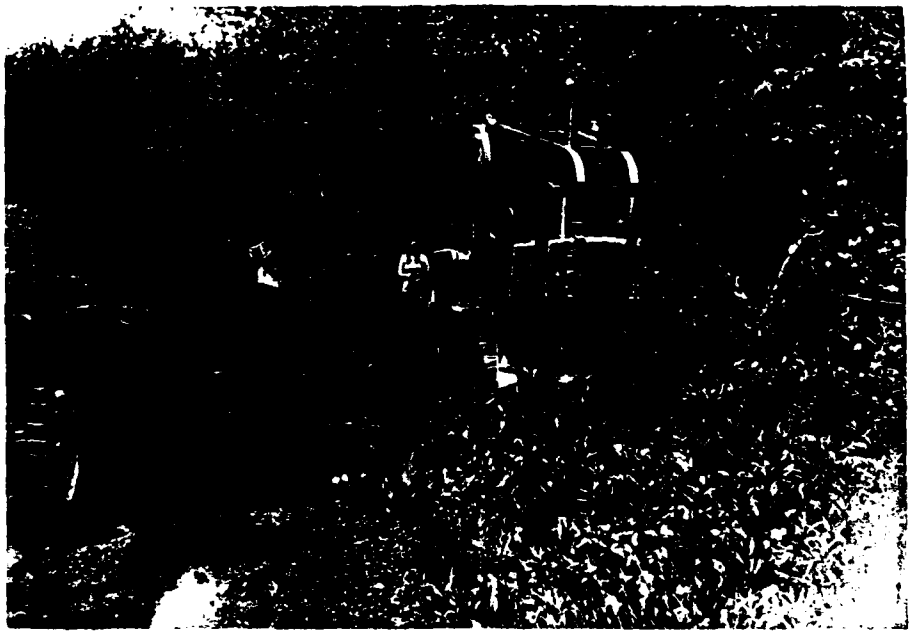


Plate 6A: Grubbing at corridor segment # 5 with members of CA crew examining surface behind bulldozer.

Plate 6B: CA crew members Judy Prahl and Ray Michaels following bulldozer. Jim Moore of Wolverine Oil Company, at left, monitoring pipeline positions.

a large area within the corridor segment itself was disturbed by pits due to sand borrowing in the vicinity of survey control point P-58.

Several surface finds were noted during final survey and collection of the two machine transects in corridor segment 5, but none were of great enough significance or concentration to indicate important cultural deposits. They include a whiteware shard (late 19th century), concentrations of water-worn cobbles, historic fire pit and bottom dump, and a putative bipolar core; a flake of Bay Port chert with cortex was also found 400 feet (122 meters) east of survey control point P-57 on the service road. Table III provides a listing of cultural material found. Each item in this table is located by item number on Figure 20.

Land to the west of survey control point P-61 was found to be severely disturbed due to oil well construction and pipelines, as well as a mixture of clay dredging material with the beach and dune sand. This dredging occurred in 1940 according to one local resident. The land surface in the vicinity of the oil tank between survey control points P-62 and P-63 has been severely modified or removed. Shovel test units west of survey control point P-62 all showed disturbance, possibly due to search for artifacts by private collectors. No significant cultural material, therefore, was recovered from the surface of the two machine transects of this corridor segment or from the shovel test units.

SURVEY RESULTS SUMMARY

Corridor Segment 1 - No significant cultural material was recovered from surface survey of the machine transect in this segment. Historical material in shovel test unit 13, just above marsh and lake sediment, verify that the land of this off-shore spit comprising this corridor segment is of recent and reworked origin.

Corridor Segment 2 - One culturally produced artifact was found in surface collection of the machine transect done here. This was a flake derived from Bay Port chert found on the beach sector and was obviously redeposited from another location. This machine transect also crossed the sensitive area of the dune ridge at the eastern end of this corridor segment, but no cultural material was found. Shovel test units west of the stone dike in this corridor segment produced no cultural material, but indicated the recent nature of beach deposits. Shovel test units at the eastern end of this corridor segment, due to change in the survey alignment of the project corridor, similarly produced no evidence of cultural material.

Corridor Segment 3 - Final survey of this disked area of the alignment revealed no significant cultural material. This was considered an area of low archaeological sensitivity.

TABLE III

CULTURAL AND PUTATIVE CULTURAL MATERIAL

SURVEY OF SEGMENT #5

1. Large Bay Port flake (shatter) displaying part of cortex.

2. Early twentieth century impressed whiteware rimshard.

3. Historic bottle dump ca 1940's to present, included a 1/2-pint cobalt blue "Phillips Milk of Magnesia" bottle.

4. Historic midden of coal and ash.

5. Medium sized, Bay Port cortical flake.

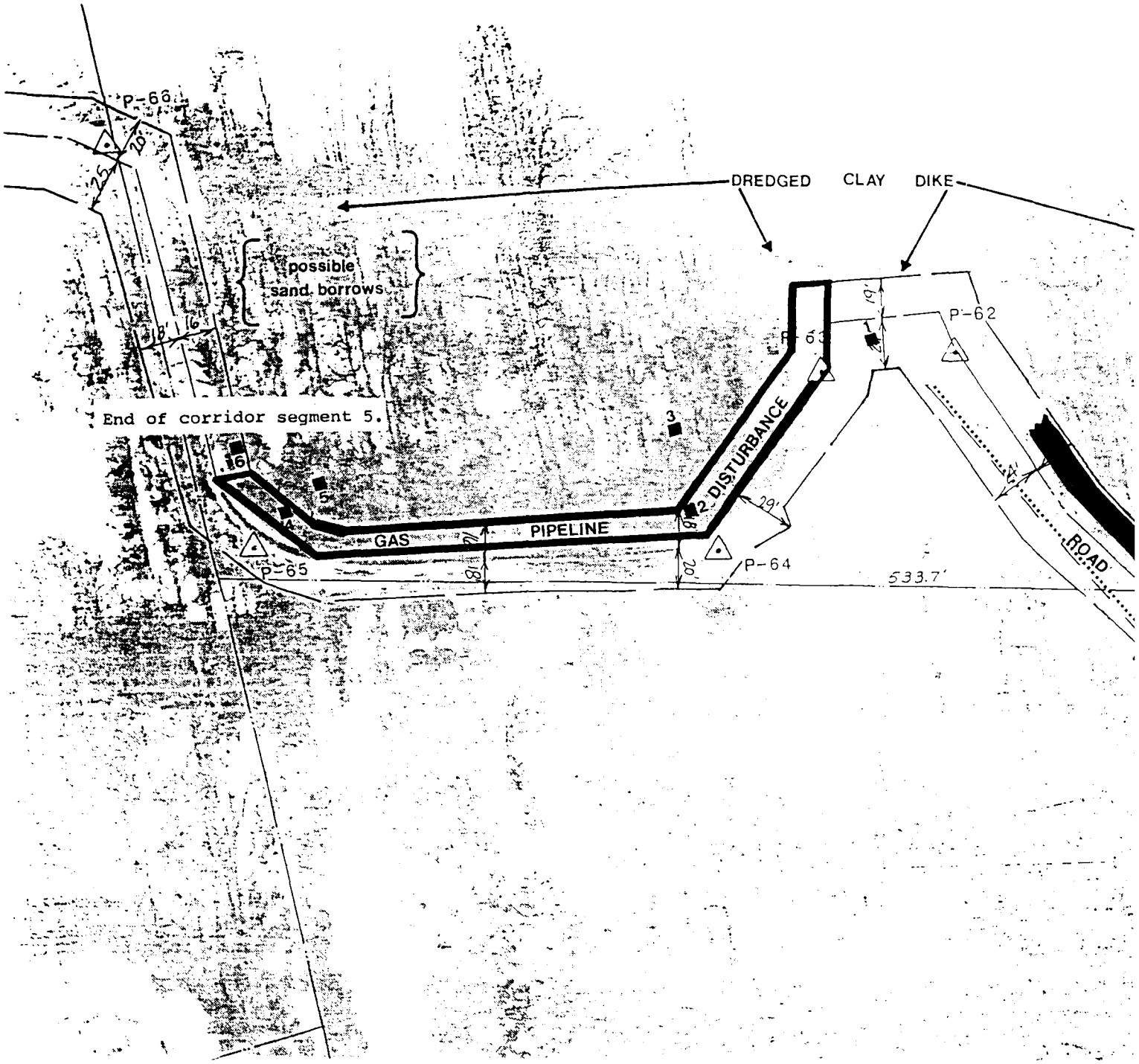
6. A grouping of water-worn cobbles up to 4 inches in diameter in association with a medium piece of broken Bay Port chert with cortex and a putative bipolar core of exotic chert.

7. Twentieth century leather shoe.

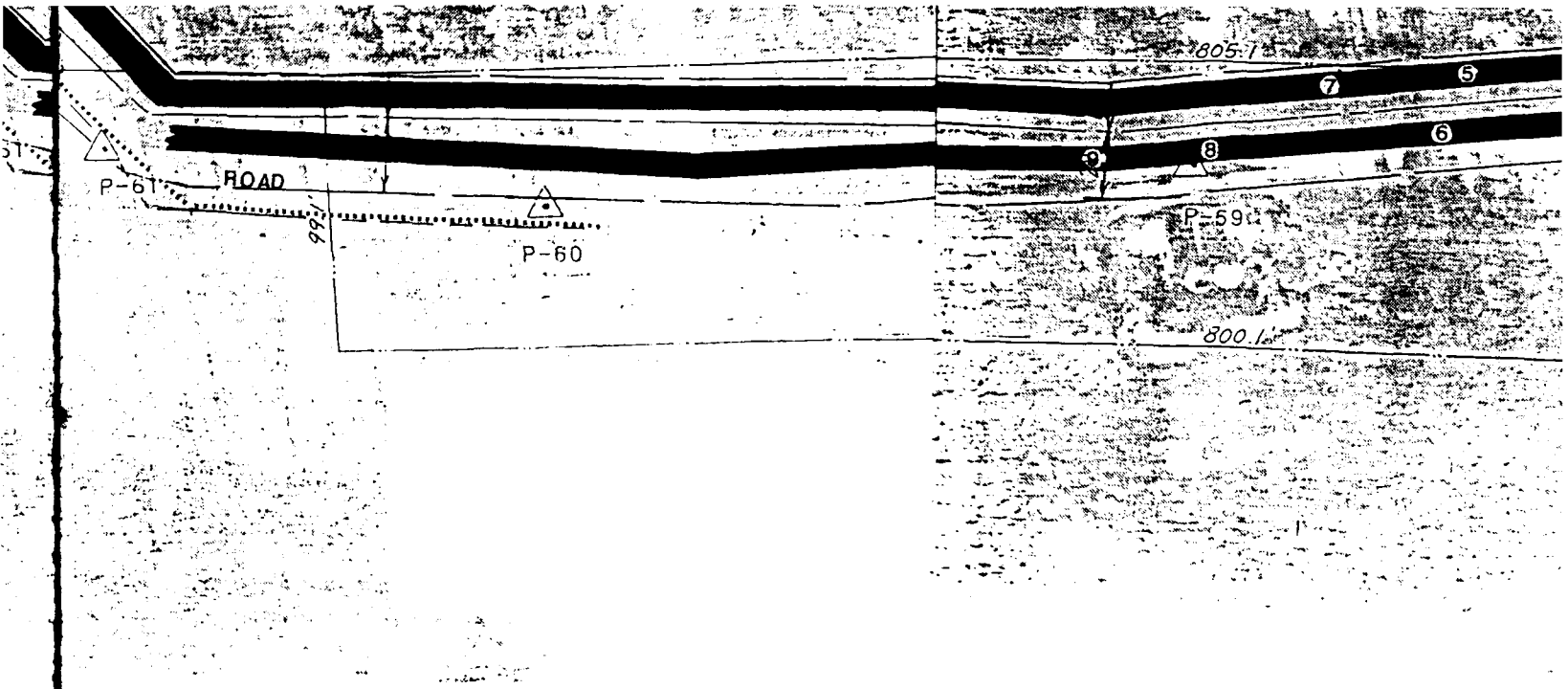
8. A large grouping of water worn cobbles up to 5 inches in diameter with several pieces of broken glacial chert.

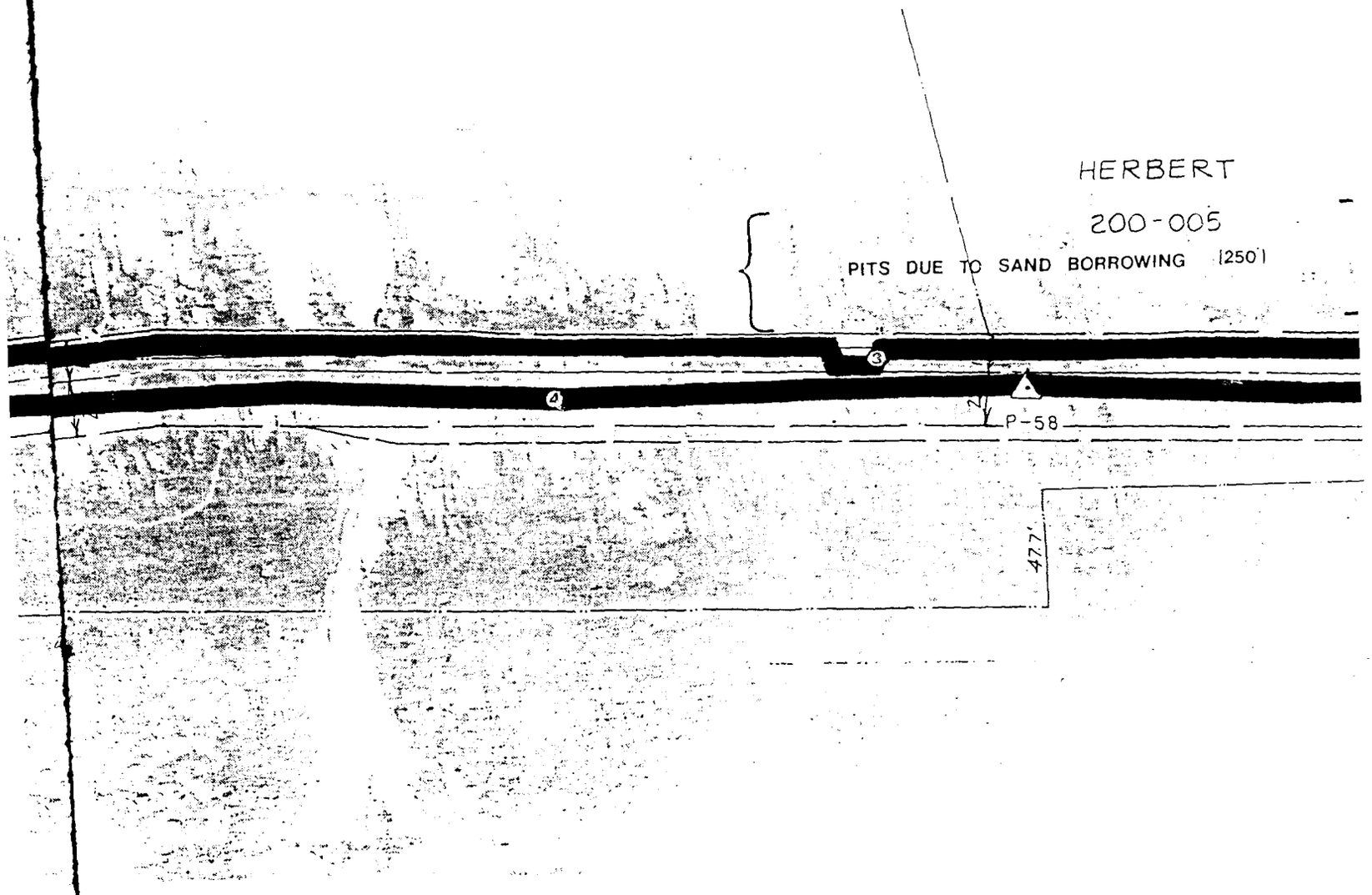
9. A large grouping of water worn cobbles 4 inches to 6 inches in diameter.

Figure 20: Machine and Shovel Test Transects, Corridor Segment 5.



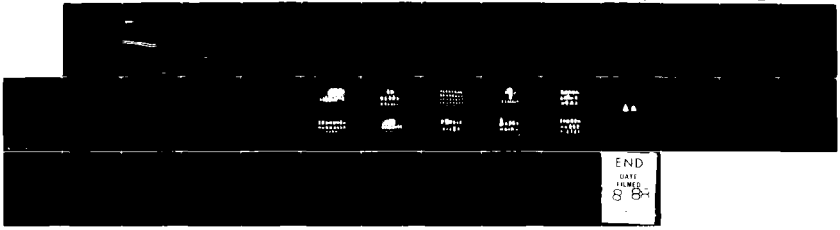
P-66
20'
25'
DREDGED CLAY DIKE
possible sand borrows
18'
16'
End of corridor segment 5.
P-63
P-62
19'
DISTURBANCE
GAS PIPELINE
P-65
P-64
29'
20'
18'
533.7'
ROAD

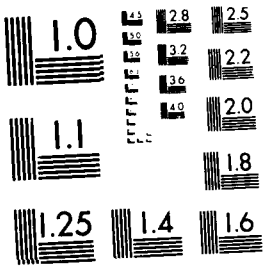

805.1
7
5
6
8
9
P-61
ROAD
P-60
P-59
800.1


HERBERT
200-005
PITS DUE TO SAND BORROWING (250')
3
4
P-58
477'

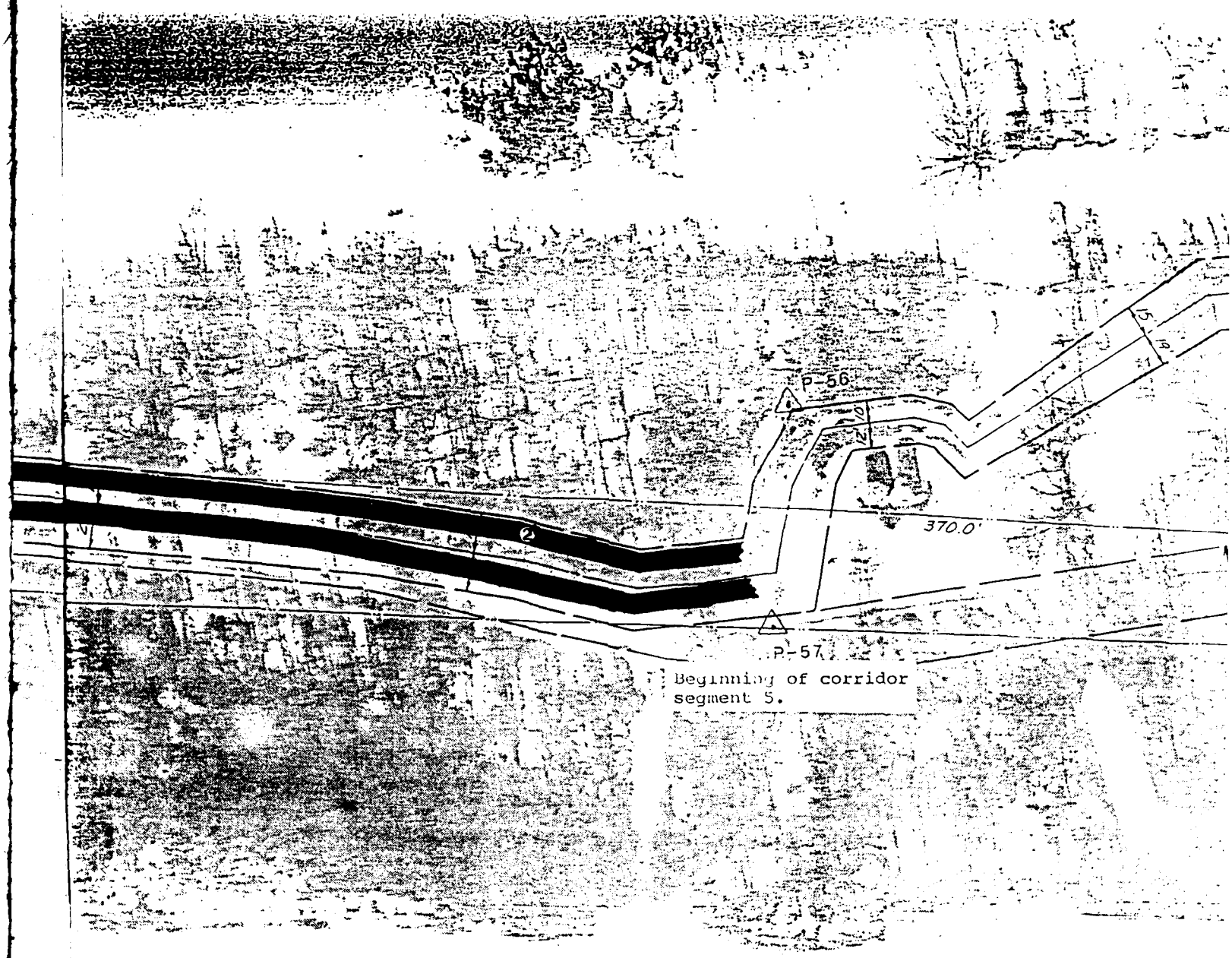
AD-A195 415 PROPOSED ADVANCE MEASURES FLOOD CONTROL PROJECT HAMPTON TOWNSHIP BAY COUN..(U) ZYMETECH INC LANSING MI E J PRAHL AUG 87 2/2

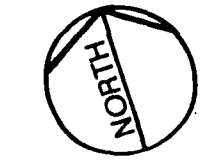
UNCLASSIFIED F/G 5/6 NL

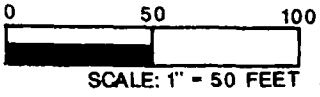




MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

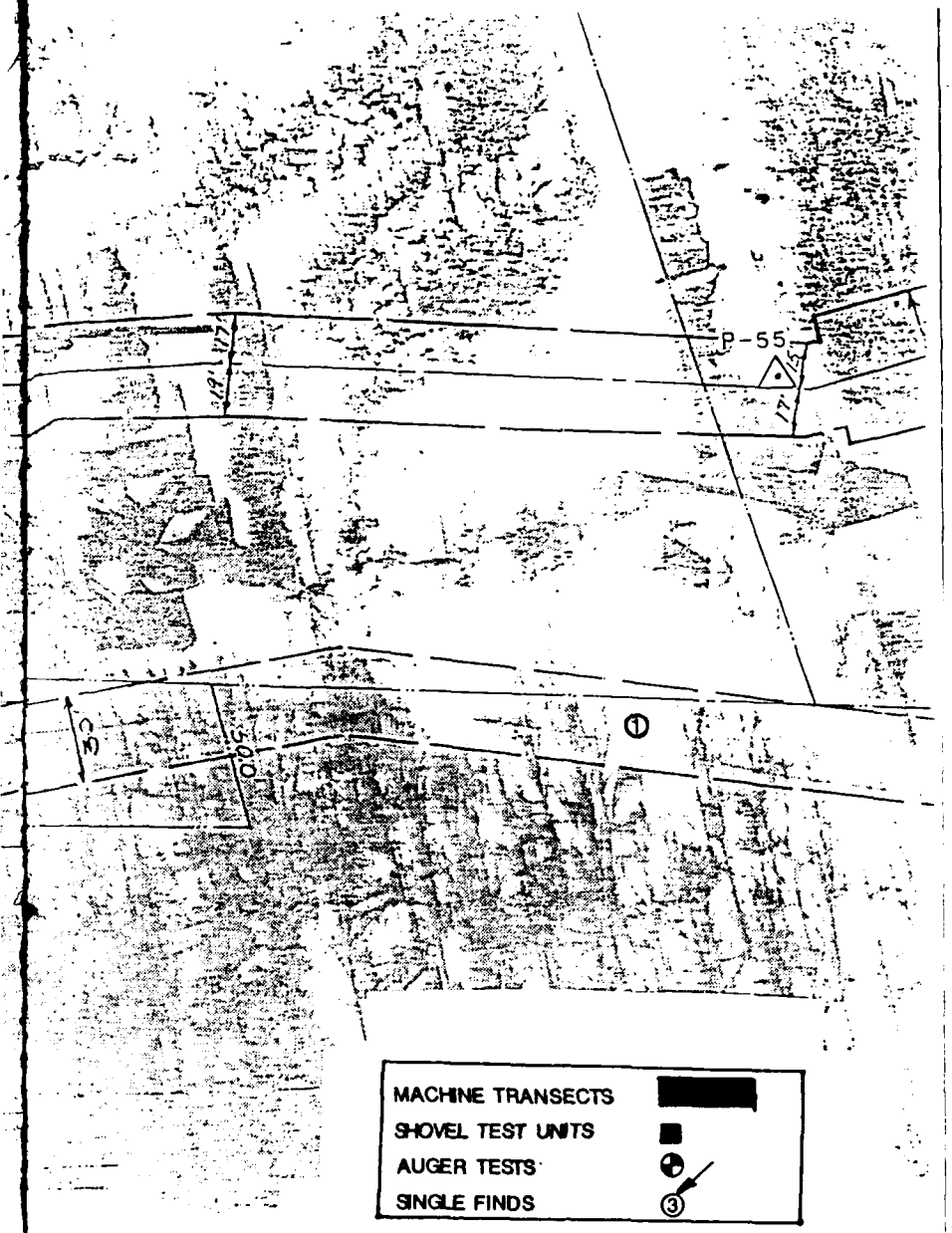






Advanc
Bay Co

Figure N



ance Measures Flood Control Project, Hampton Township,
County, Michigan.

re No. 20 Machine and shovel test transects, corridor segment 5.

Corridor Segment 4 - This corridor segment of the project area is the least modified of the corridor segments, and the land supports a mature oak forest. Machine transects beginning at the wetland to the south of the dune line revealed no surface cultural material or archaeological features. Shovel test units to the east of machine transects provided further evidence devoid of cultural material.

Corridor Segment 5 - This machine transect largely runs to the southern edge of the dune complex in the mature oak forest. Several single pieces of unrelated cultural material were found here. Simply, they displayed no pattern of association or of significance.

CONCLUSIONS AND RECOMMENDATIONS

It is evident that cultural material recovered within the survey alignment was not found in any significant concentrations or patterns which would indicate the existence of archaeological sites. Relating a water-worn Bay Port flake to a fire cracked rock concentration (possibly historic) 115 feet away, as is the case in corridor segment 2, would not be realistic. Certainly, it can definitely be stated that no sites of National Register significance were encountered by the archaeological method prescribed in this survey. No significant impact on cultural resources in the corridor segments surveyed are anticipated and construction clearance is recommended in these areas. Should needed minor realignment of the project corridor impinge upon the dune line or beach sectors to the north of it (figure 4), it is recommended that an additional archaeological investigation be conducted prior to construction. Any secondary activities in these areas such as excavation of borrow pits should likewise be evaluated for their possible effects on archaeological resources.

REFERENCES CITED

Bullock, D.A. & Co.
1896 County of Bay, Michigan: Maps, History, Illustrations & Statistics. Bay City, Michigan.

Butterfield, George Ernest
1918 Bay County Past and Present. Board of Education in Bay City, Michigan Publishers.

Dow, Henry S.
1875 The History and Commercial Prospects of Bay City, Michigan. Henry S. Dow, Bay City, Michigan

DeLisle, W.H.
1868 Directory of Bay City, Portsmouth, Wenona and Bangor for 1868-69, DeLisle Publishing Co., Bay City, Michigan

Farrand, W.R. and D.F. Eschman
1974 Glaciation on the Southern Peninsula of Michigan: A Review. Michigan Academician 7:31-56

Fitting, James E., Jerry DeVisscher and Edmond J. Wahla
1966 The Paleo-Indian Occupation of Holcombe Beach. Anthropological Papers, Museum of Anthropology, University of Michigan, (27).

Fuller, George N., ed.
1873 Historic Michigan, Land of the Great Lakes. National Historic Association Inc., Dayton, Ohio.

(nd) Vol. 3: A Third Volume Devoted to Bay County, Edited by George E. Butterfield.

Hough
1958 Geology and the Great Lakes. University of Illinois Press. Urbana, Illinois.

1946 Plat Book of Southern Michigan, Rockford, Illinois, 1946.

Leverett, Frank and F.B. Taylor
1915 Pleistocene of Indiana and Michigan. USGS Monographs, Vol. 53, U.S. Govmt. Printing Office. Washington, D.C., 529 pp.

Lovis, William A.
1985 Seasonal Settlement Dynamics and the Role of the Fletcher Site in the Woodland Adaptations of the Saginaw Drainage Basin. Arctic Anthropology, 22:(2) 153-170.

Monaghan, G.W. and W.A. Lovis and L. Fay
1986 The Lake Nipissing Transgression in the Saginaw Bay Region, Michigan. Canadian Journal of Earth Sciences, 23; 1986.

Monroe & Learman
1916 The County of Bay: State, County, Township & City Maps, Chicago, Illinois, 1916.

Service, Elman R.
1966 The Hunters. Prentice-Hall, Englewood Cliffs, New Jersey.

Sharp, Odial
1974 Ghost Towns and Place Names. Bay City Museum, Bay City, Michigan.

Stoutsmyer, W.P. and W.S. Benninghoff
1964 Biotic Assemblage Associated with a Mastodon Skull from Oakland County, Michigan. Michigan Academy of Science, Arts and Letters, Paper 49:47-60.

Thomas, James M. and A.B. Galatian
1866 Indian and Pioneer History of the Saginaw Valley. Thomas and Gallatian publishers.

Veatch, J.O.
1959 Presettlement Forest in Michigan Dept. of Resource Development, Michigan State University, East Lansing, Michigan.

Weesies, Glenn A.
1980 Soil Survey of Bay County, Michigan, USDA, Soil Conservation Service.

Wittoff, John
1952 A Paleo-Indian Site in Eastern Pennsylvania: An Early Hunting Culture. Proceedings of the American Philosophical Society, 96(4):464-95.

Wonser, C.H.
1931 Soil Survey of Bay County, Michigan. USDA, Bureau of Chemistry and Soils.

Wright, Henry and William B. Roosa
1966 The Barnes Site: A Fluted Point Assemblage from the Great Lakes Region. American Antiquity, 31:850-860.

Yarnell, Richard, ASA
1964 Aboriginal Relationship between Culture and Plantlife in the Upper Great Lakes Region. Anthropology Papers, Museum of Anthropology, University of Michigan, Ann Arbor, Michigan. Paper No. 23.

GLOSSARY OF TERMS USED

Project area - The entire area of Hampton Township along the Saginaw Bay and surrounding the COE survey alignment

Survey alignment - The proposed right-of-way for dike alignment within the project area which is involved in the COE Advance Measures Flood Control Project

Corridor segment - A specific area slated for COE for archaeological survey

Machine transect - A line of survey within the corridor segment in which surface was lowered by either a dish or bulldozer

Shovel test transect - Inspection made on foot of transect ground surface for the presence of any cultural material

APPENDIX A

REPORT ON APRIL 23, 1987 ADVANCE MEASURES FIELD TRIP

DISPOSITION FORM

For use of this form, see AR 340-15, the proponent agency is TAGCEN.

REFERENCE OR OFFICE SYMBOL	SUBJECT
NCEPD-EA	Hampton Twp. Advance Measures Field trip, 5 Feb 87

TO	FROM	DATE	CMT 1
file	M. Shott EAB MS	13 Feb 87	

1. This field trip was the result of archaeological planning for the subject project. There are many active members of the Michigan Archaeological Society (MAS) in the Saginaw Bay area, and they often possess valuable data on local sites not yet registered with the state. Knowledge of these can be important in formulating expectations and reasonable budget estimates for the survey. Accordingly, when project planning began, I contacted Ira Butterfield, a long-active Bay City member of the MAS. He sent useful information but had little specific information on the project area. He suggested that I contact Gordon MacPhail of Essexville, who proved extremely cooperative. Mr. MacPhail arranged this visit, in which both he and Michael Neering of Saginaw took part. Both have lived in the area most of their lives and have long-standing interests in local archaeology. This includes firsthand knowledge of sites in the environs of the project area. The purpose of this field trip was to visit archaeological sites situated on or near the project area of which Messrs. MacPhail and Neering have knowledge.

2. I arrived in Hampton Twp. at 9:30 a.m. After a brief review of project maps, we proceeded to the field, visiting a total of 7 archaeological sites. Site locations are plotted on the attached map. Results were as follows:

1. Mr. Neering reports that a farmer found a grooved axe somewhere in the east half of this field. He does not know the exact location and does not possess the tool. Location shown on the map is approximate. Such tools usually are found on habitation sites with other archaeological remains, so a site may exist here. The existing dike is separated from the field by a ditch, so construction equipment should not be able to traverse the site. It should not be affected by construction, but the contractor should be specifically instructed to avoid the site.

2. Mr. Neering identifies a substantial archaeological site here, and has a collection from it. We observed lithic debris and fire-cracked rock, but could not determine the site limits owing to snow cover. Apparently, it occupies a small ridge visible on Sheet 054 of the project airphoto series. That ridge does not extend to the proposed dike alignment. Like Site 1, a ditch separates the site from the alignment, so similar treatment is warranted.

3. In Mr. Neering's judgment, this is a major site. He has found a large triangular biface and a denticulate uniface here, and both he and Mr. MacPhail have additional material as well. Location, risk of damage and recommendations vis-a-vis the construction project are the same as for the previous two sites.

4. Actually a section of Site 3, this is the location of a chert tool

DA FORM 1 FEB 62 2496 REPLACES DD FORM 96, WHICH IS OBSOLETE. U.S.GPO:1979-0-310-981/d129

cache which includes a large stemmed biface composed of high quality chert or agate. Type identity is unknown to Mr. Neering. The cache was found by Paul Schmidt, another local MAS member. Mr. Neering advises me that he has recovered ceramics from the area as well. Snow cover precluded surface inspection.

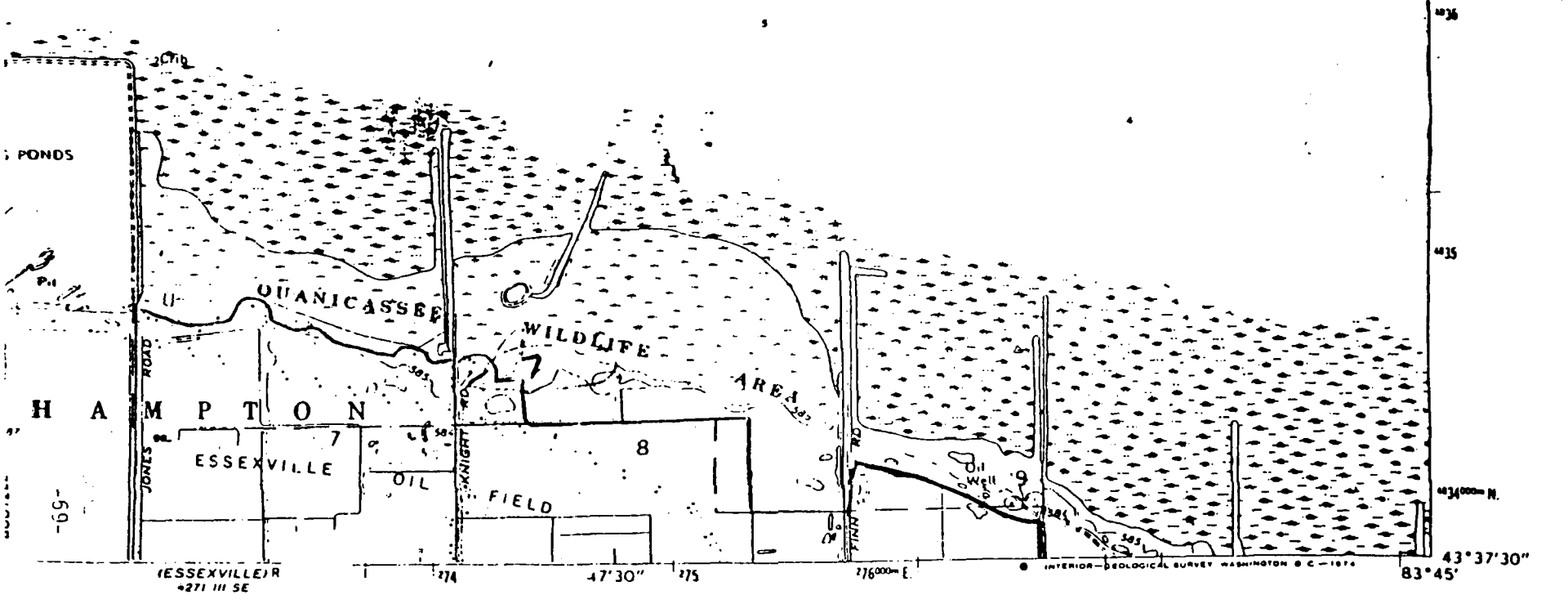
5. This is known to Mr. Neering as Plum Island. Apparently, it yielded archaeological remains over a long period to many collectors. Snow cover was extensive here and no remains were visible. The proposed alignment here follows an existing dike, which probably has destroyed or buried original sediments. In addition, apparently recent expedient diking north of the alignment has further damaged the area. Therefore, intact deposits probably are rare. However, the site's apparent size and the fact that the alignment definitely intersects it justify survey. Subsurface testing will determine if intact sediments exist in the impact area; if they do, the survey methods described in the scope-of-work will be employed.

6. Mr. Neering reports lithic debris from a section of natural ridge exposed at the foot of the existing dike here. The exact location and context could not be determined. This section of the alignment should be monitored during initial stages of work i.e. clearing and grubbing.

7. The Hughes property east of Knight Road contains a relatively broad section of the 585' a.s.l. remnant beach and dune complex. Mr. Neering reports extensive prehistoric remains as well as a 19th Century hotel and cottage complex on the property. The dike alignment almost certainly traverses the prehistoric deposit, but it is unknown if the historic site also falls within it. This area definitely will be surveyed if construction takes place here, which depends on existing and required elevations.

3. No major change in archaeological plans for the project occurred as a result of the field trip. Nevertheless, valuable information was gained and several additional areas which require survey or monitoring were identified. It bears emphasizing that 6 of the 7 sites reported here are situated in the segment of the alignment initially considered not worthy of survey both by the SHPO and me. Clearly, potential impacts to these sites must be considered. In my judgment, the treatment suggested in this report is appropriate, given the sites' location, context and exposure to risk.

4. Messrs. MacPhail and Neering have extensive collections from a site approximately 1 mile west of the western terminus of the dike alignment. Located west of Arms at Bautell, its significance lies in the fact that it is situated on the same remnant shoreline feature as much of the project area. Thus, it provides an example of the kinds of properties which may be encountered there. Inspection of their collections will form an important part of the preparation for the work.



SCALE 1 24000

1 MILE

1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 5 FEET
DATUM IS MEAN SEA LEVEL
ELEVATIONS AND SOUNDINGS IN FEET—DATUM IS LOW WATER 576.8 FEET

ROAD CLASSIFICATION

Medium duty — — — Light duty

Unimproved dirt

QUADRANGLE LOCATION

MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FILE BY U.S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

BAY CITY NE, MICH.

N4337.5—W8345/7.5

1967
PHOTOREVISED 1973
AMS 4271 III NE—SERIES V862

DISPOSITION FORM

For use of this form, see AR 340-15, the proponent agency is TAGCEN.

REFERENCE OR OFFICE SYMBOL	SUBJECT
NCEPD-EA	Hampton Twp. Advance Measures Field trip, 5 Feb 87

TO	FROM	DATE	CMT 1
file	M. Shott EAB MS	13 Feb 87	

1. This field trip was the result of archaeological planning for the subject project. There are many active members of the Michigan Archaeological Society (MAS) in the Saginaw Bay area, and they often possess valuable data on local sites not yet registered with the state. Knowledge of these can be important in formulating expectations and reasonable budget estimates for the survey. Accordingly, when project planning began, I contacted Ira Butterfield, a long-active Bay City member of the MAS. He sent useful information but had little specific information on the project area. He suggested that I contact Gordon MacPhail of Essexville, who proved extremely cooperative. Mr. MacPhail arranged this visit, in which both he and Michael Neering of Saginaw took part. Both have lived in the area most of their lives and have long-standing interests in local archaeology. This includes firsthand knowledge of sites in the environs of the project area. The purpose of this field trip was to visit archaeological sites situated on or near the project area of which Messrs. MacPhail and Neering have knowledge.

2. I arrived in Hampton Twp. at 9:30 a.m. After a brief review of project maps, we proceeded to the field, visiting a total of 7 archaeological sites. Site locations are plotted on the attached map. Results were as follows:

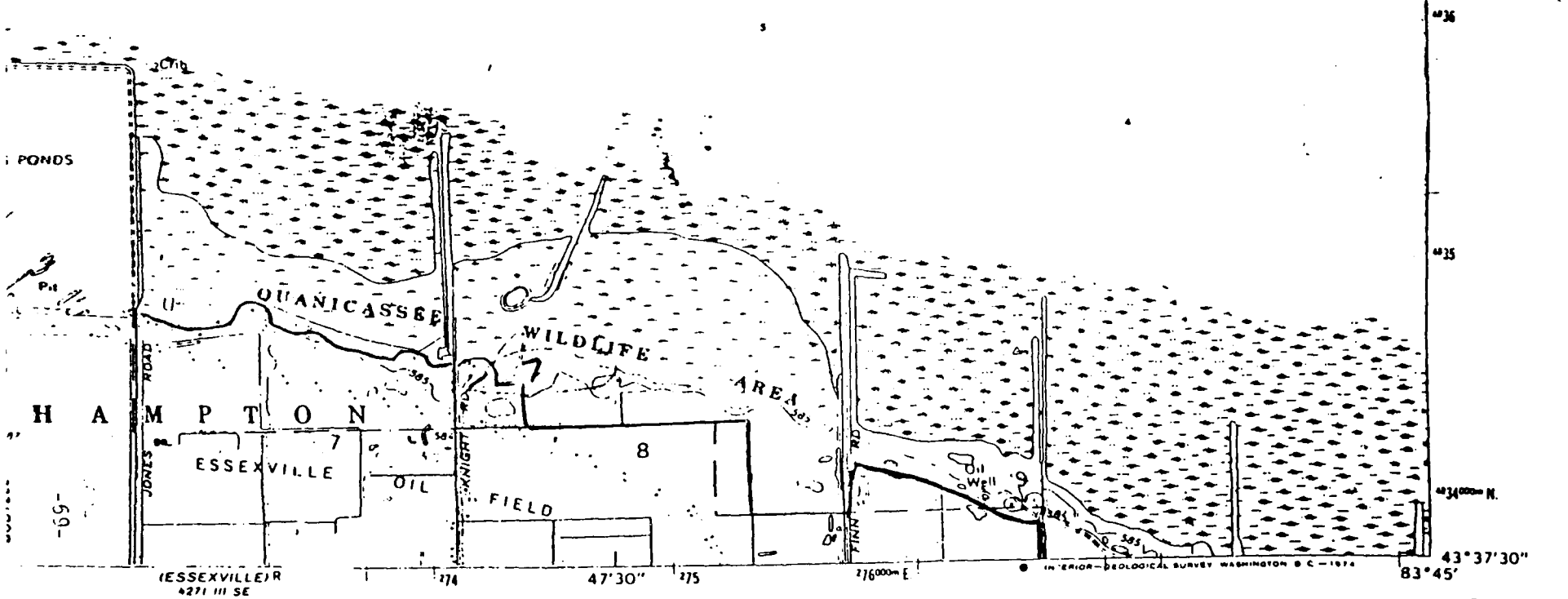
1. Mr. Neering reports that a farmer found a grooved axe somewhere in the east half of this field. He does not know the exact location and does not possess the tool. Location shown on the map is approximate. Such tools usually are found on habitation sites with other archaeological remains, so a site may exist here. The existing dike is separated from the field by a ditch, so construction equipment should not be able to traverse the site. It should not be affected by construction, but the contractor should be specifically instructed to avoid the site.

2. Mr. Neering identifies a substantial archaeological site here, and has a collection from it. We observed lithic debris and fire-cracked rock, but could not determine the site limits owing to snow cover. Apparently, it occupies a small ridge visible on Sheet 054 of the project airphoto series. That ridge does not extend to the proposed dike alignment. Like Site 1, a ditch separates the site from the alignment, so similar treatment is warranted.

3. In Mr. Neering's judgment, this is a major site. He has found a large triangular biface and a denticulate uniface here, and both he and Mr. MacPhail have additional material as well. Location, risk of damage and recommendations vis-a-vis the construction project are the same as for the previous two sites.

4. Actually a section of Site 3, this is the location of a chert tool

DA FORM 2496 REPLACES DD FORM 96, WHICH IS OBSOLETE. U.S.GPO:1979-0-310-981/6129



SCALE 1 24000

1 MILE

1000 2000 3000 4000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 5 FEI

DATUM IS MEAN SEA LEVEL

ES AND SOUNDINGS IN FEET—DATUM IS JW WATER 576 8 FEET

ROAD CLASSIFICATION

Medium duty — — — Light duty

Unimproved dirt

QUADRANGLE LOCATION

AP COMPLIES WITH NATIONAL MAP ACCUI ACY STANDARDS

LE BY U S GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092

RIBING TOPOGRAPHIC MAPS AND SYMBOLS II, AVAILABLE ON REQUEST

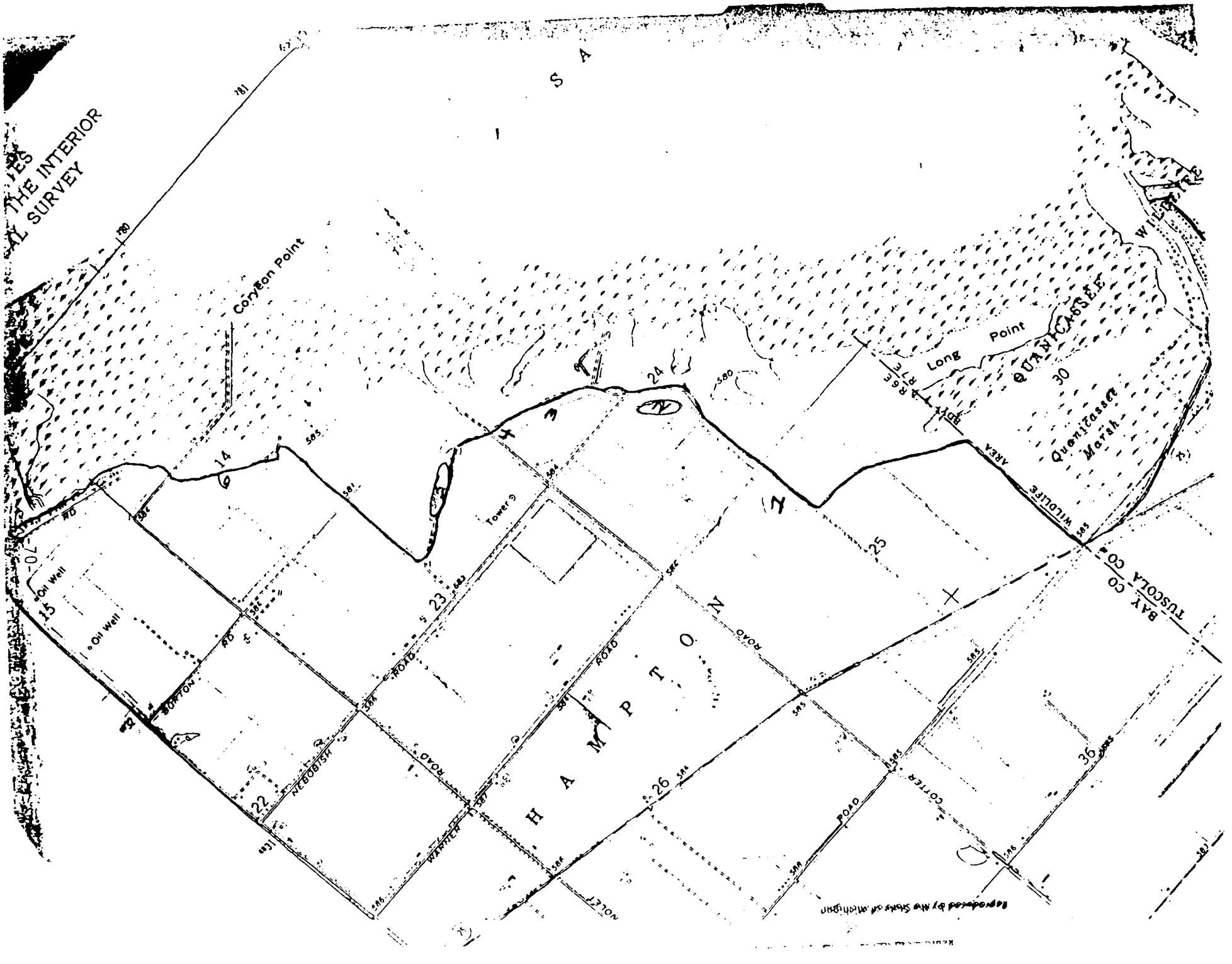
BAY CITY NE, MICH.

N4337.5—W8345/7.5

1967

PHOTOREVISED 1973

AMS 4271 III NE-SERIES V862



THE INTERIOR
SURVEY
Coryeon Point
Long Point
QUANICASSEE
Quanicassee Marsh
WILDLIFE AREA
BAY CO
TUSCOLA CO
HAMPTON
Tower
Oil Well
Oil Well
BURTON RD
NEBOBISH ROAD
WARNER ROAD
NOLET ROAD
COTTER ROAD
14
15
22
23
24
25
26
30
36

APPENDIX B

LIST OF CULTURAL MATERIAL, PHOTOGRAPHS AND COMMENTS

CONCERNING THE NEERING COLLECTION

JAHRMAN RANCH SITE
20BY161

ARTIFACT INVENTORY

ITEM	AMOUNT	TOTAL
Dustin points	4	
bases	2	
tips	3	9
Pomranky blades	1	
bases	25	
tips	1	27
Davis points	4	
bases	8	
tips	1	13
Snyder/Feeheley points	3	3
Tanged Early Woodland points	1	1
Levanna/Madison points	7	
Madison bases	2	9
Broken blade tips	50	50
Bifacially flaked tools	11	11
Unifacially retouched tools	20	20
Expanding stem, corner notched	8	8
Various broken bifaces	21	21
Large scrapers	17	17
Scraper blanks	6	6
Bifacially retouched scrapers	12	12
Tanged scrapers	1	1
Drill shanks	2	2

Blade scrapers	1	1
Keeled scrapers	2	2
Spoke shave graver	1	1
Flakes	11	11
Broken preform base	1	1
Broken triangular, then bi-facial point	1	1
Unifacial preforms	2	2
Unknown(abrader?)	1	1
	Total all	230

List of Plates
Neering Collection
Jahrman Ranch
20BY161

Plate #:

1---Dustin-like points

2---Pomranky blades

3---Davis and other small side-notched varieties (Meadowood?)

4---Expanding stem, corner-notched

5---Broken blade tips

6---Aberrant varieties, bifacially flaked tools

7---Snyder/Feeholey varieties, tanged Early Woodland projectile point, Late Woodland Levanna and Madison points

8---Various broken bifaces

9---Large scrapers

10---Scraper blanks, various bifacially retouched scrapers, tanged scrapers/2 drill shanks/ 1 blade scraper/2 keeled scrapers

Plum Island Site

11---Plum Island blanks

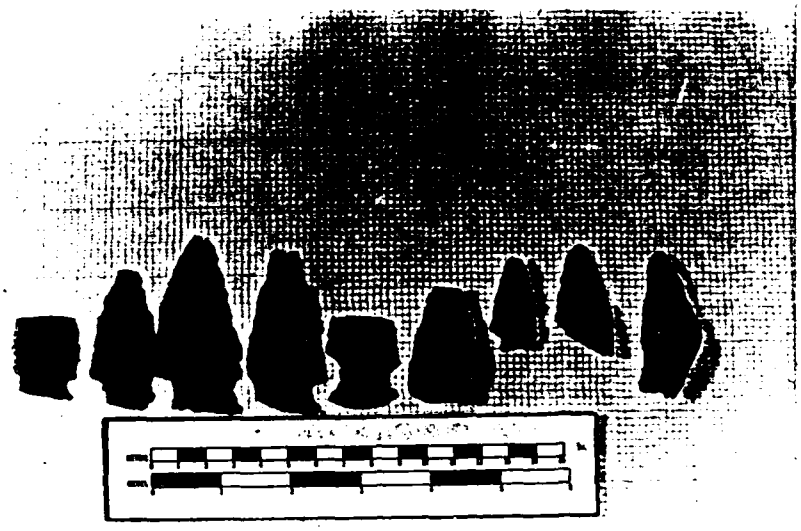


PLATE 1

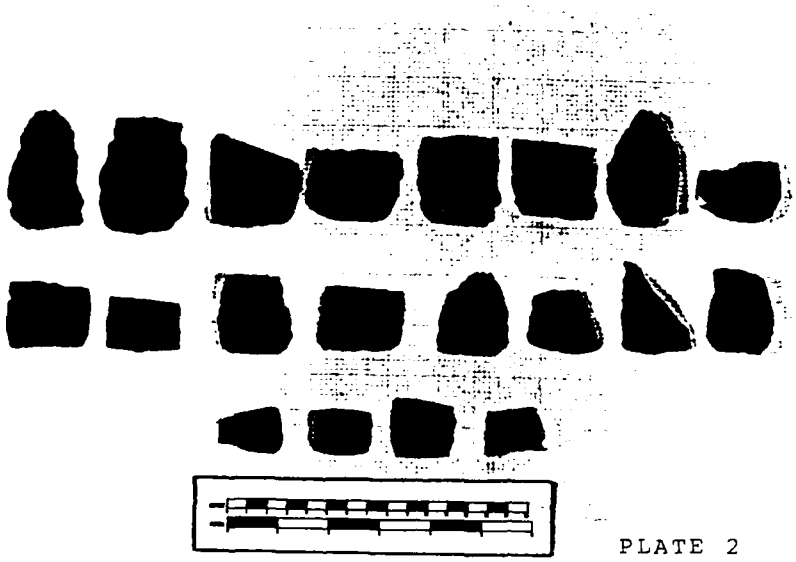


PLATE 2

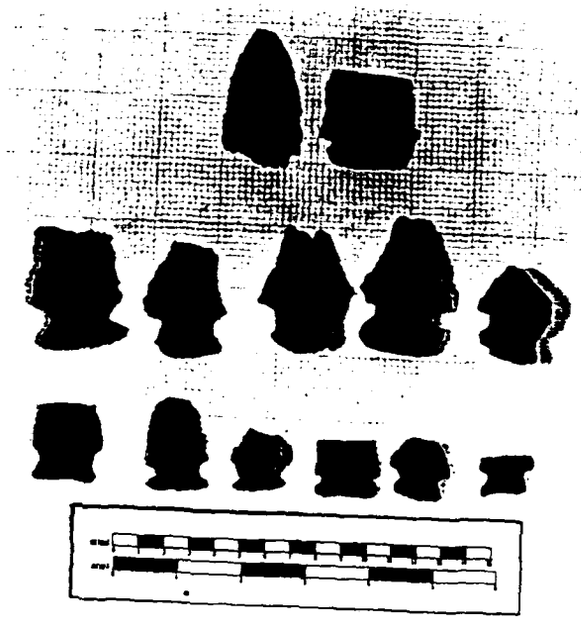


PLATE 3

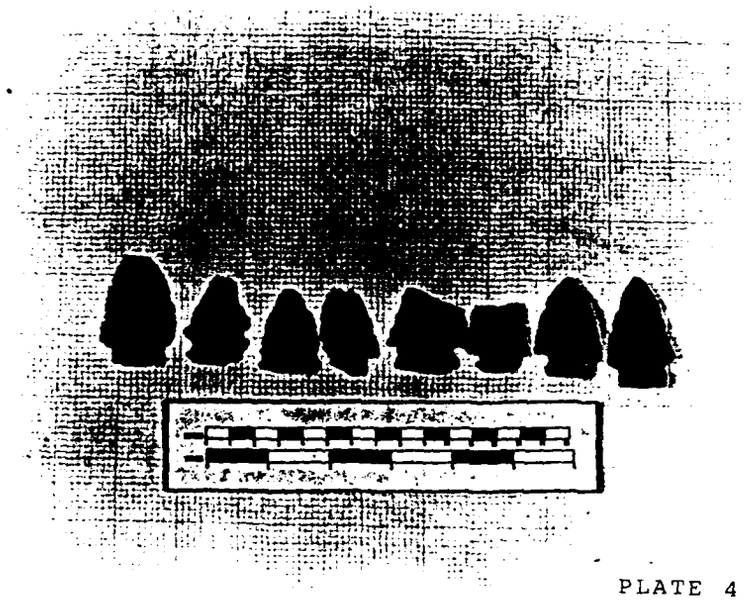


PLATE 4

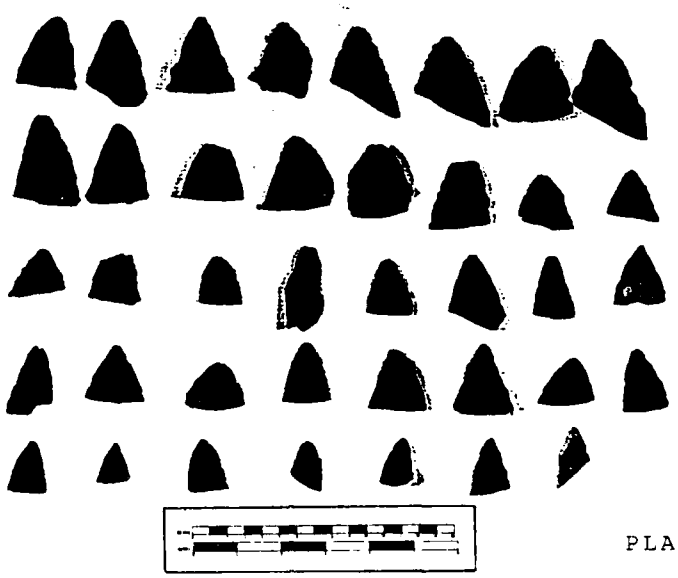


PLATE 5

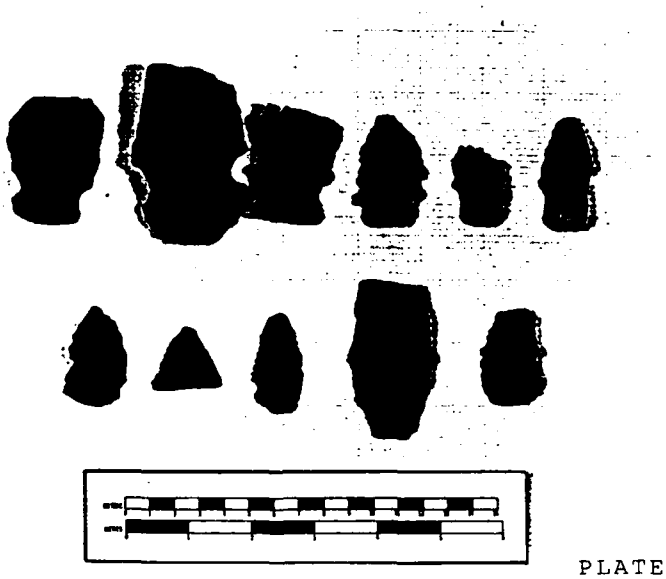


PLATE 6

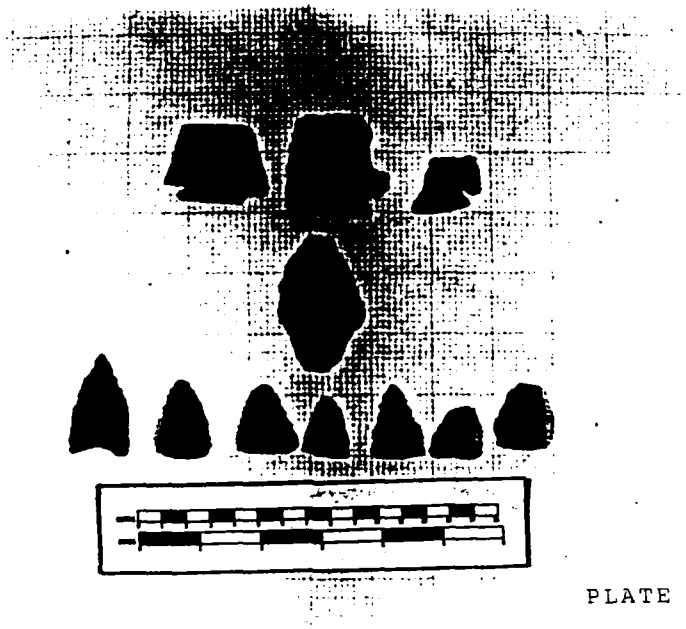


PLATE 7

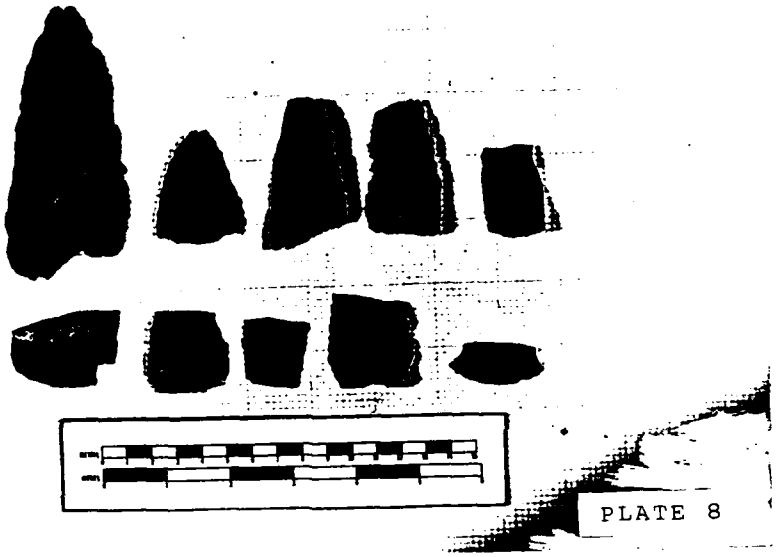


PLATE 8

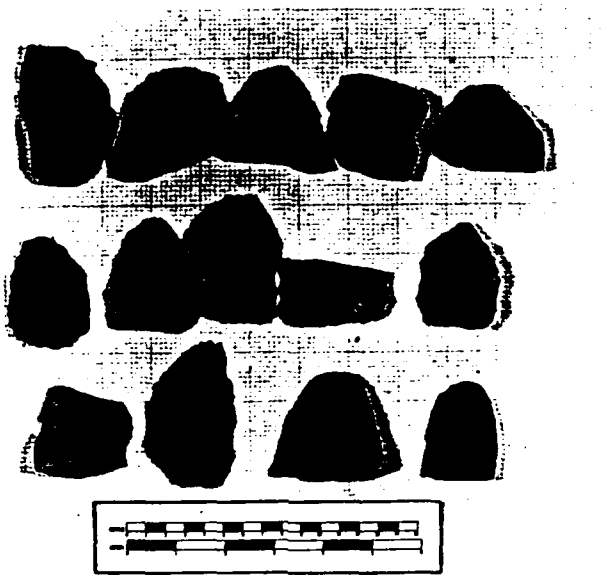


PLATE 9

PLATE 10

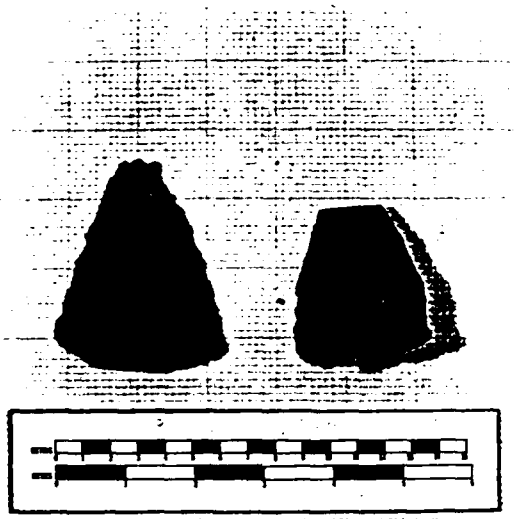


PLATE 11

NEERING COLLECTION

THE JAHRMAN RANCH SITE 20BY161

The outstanding character of this collection is the preponderance of Late Archaic (5000-2600 BP) diagnostic artifacts. Hafted bifaces or projectile points were sorted according to traditional types established for the Saginaw Valley. These, as well as others, are artifact types quantified in Appendix C. Photos of artifacts are also included.

Dustin points well known from the Saginaw Valley are a salient component of this collection (Plate 1). This type has formerly been associated with Lamoka points in New York (Ritchie 1961) and dated to the early part of the Late Archaic (4500 BP) by Binford and Papworth (1963) and associated with the Feeheley Phase by Taggart (1967). Lovis (nd) upon review of the data, has placed these points much later in the time (3000-3500 BP).

Pomranky points, a large ovate blade form, are highly represented in the Jahrman Ranch Sample (Plate 2). These point forms have also been placed in the late period of the Late Archaic (Binford 1963).

Side notched Davis Points (Plate 3) constitute a third major category in this collection. These were first designated by Binford (1963) as Late Archaic from the Eastport Site.

Other diagnostic bifacial points include small Feeheley like points, also judged to come from the terminal Archaic period (Lovis nd, Plate 7 this Appendix).

A single tongued or stemmed variety projectile point (Plate 7) derived from the Early Woodland period beginning ca 2500 BC. These are similar to Early Woodland points from the Shultz Site (Fitting (ed) et al), and points from Croton Dam Site dating from the same time period (Prahl, 1970).

A small number of Levanna and Madison points are also present in the Neering Collection (Plate 7) deriving from a still later Late Woodland period. Levanna points will date from the earlier part of this period (AD 700-900) while Madison points date from post AD 900.

Scrapers of several types constitute a large part of the Jahrman Ranch inventory (Plates 9 & 10). These show both bifacial and unifacial retouch.

In summary, the majority of diagnostic tools from this collection at the Jahrman Ranch Site point to a definite Late Terminal Archaic occupation or transition into the Early Woodland (see Lovis nd: 16, 17 & 18 for discussion). An assemblage such as this is usually associated with past Nipissing Algoma Lake level at above 595 feet mean sea level. Since the collection was generally found just above the 585 feet level, some consideration of low water fluctuation during the Algoma stage is in order.

REFERENCES CITED

Binford, Lewis R.
1963 The Hodges Site: A Late Archaic Burial Station. Anthropology Papers, Museum of Anthropology, University of Michigan, Ann Arbor, Michigan.

Lovis, William A.
(nd) Rethinking the Archaic Chronology of the Saginaw Valley, Michigan. MS on file, Michigan State University, East Lansing, Michigan.

Papworth, Mark L.
1967 Cultural Tradition in the Great Lake Forest Region During the Late High-Water Stages of the Post Glacial Great Lakes. Ph.D. Dissertation, The University of Michigan, Ann Arbor, Michigan.

Prahl, Earl J.
1970 The Middle Woodland Period of the Lower Muskegon Valley on the Northern Hopewell Frontier. Ph.D. Dissertation, University of Michigan, Ann Arbor, Michigan.

Ritchie, William A.
1961 A Typology and Nomenclature for New York Projectile Points. New York State Museum and Science Service, Bulletin 384.

Fitting, James E. (editor)
1972 The Schultz Site at Green Point: A Stratified Occupation Area in the Saginaw Valley of Michigan. Memoirs of the Museum of Anthropology, University of Michigan, No. 4.

APPENDIX C

SOIL PROFILES

Project 87-6 Transect# 1 Pond South

Datum E-69 To P-2

Crew Member/Line# R.M., B.T., E.P., J.P.

Date 5/27/87

Description

Texture (proportions of sand, silt and clay)

Structure (granular, blocky or lumpy, columnar or platy)

Color Code: red - R
yellow - y
brown - br
black - bl
grey - g

General condition (active erosion, fallow,etc.)

General terrain (slope, flatlands, etc.)

Description

Depth: 10 cm, 50 cm, 80cm

Tp# 1-1 * Linear Ft.: BROWN CLAY W/GRAVEL (FILL)

Tp# 1-2 * Linear Ft.: HUMIC SAND; DK. BRN. SAND; BLK. Humic SAND (DISTURBED); DK. Humic MOTTLED SAND (DISTURBED); BLK. Humic SAND

Crew Line#

Crew Line#

Depth: 50cm

Tp# 1-3 * Linear Ft.: DK. Humic SAND; Humic SAND; BRN. SAND w/ Roots; DK. HUMIC SAND; BRN. SAND w/ GRAVEL

Tp# 1-4 * Linear Ft.: LT. TAN SAND; HUMIC SAND; LT. BRN. SAND; LT. BRN. SAND w/GRAVEL; DK. Humic SAND

Tp# 1-5 * Linear Ft.: LT. TAN SAND; HUMIC SAND; LT. BRN. SAND; LT. BRN. SAND w/ GRAVEL; DK. Humic SAND

Tp# 1-6 * Linear Ft.: TAN SAND; HUMIC SAND; LT. BRN. SAND; DK. BRN. SAND w/ Humic MOTTLING; DK. BRN. SAND; BLK. Humic SAND W/ FINE GRAVEL

Crew Line#

Crew Line#

Crew Line#

Crew Line#

* From Datum

Project 87-6 Transect# 1 Pass South

Datum E6976 P-2

Crew Member/Line# RM., B.T.

Date 6/27/87

Description

Texture (proportions of sand, silt and clay)

Structure (granular, blocky or lumpy, columnar or platy)

Color Code: red - R
yellow - y
brown - br
black - bl
grey - g

General condition (active erosion, fallow,etc.)

General terrain (slope, flatlands, etc.)

Description

Tp# 1-13 * Linear Ft. Tp# * Linear Ft.

Depth

10 cm

50 cm

80cm

FINE THIN SAND

Humic SAND

LT. BRN. SAND w/ HARDEST FRAG.

COARSE HUMIC SAND w/GRAVEL

BRN. SAND w/GRAVEL

BLK HUMIC SAND w/ SOME MOTTLED OXIDIZATION

Crew Line# Crew Line#

Tp# * Linear Ft. Tp# * Linear Ft. Tp# * Linear Ft. Tp# * Linear Ft.

Depth

50cm

Crew Line# Crew Line# Crew Line# Crew Line#

* From Datum

Project 87-6 Transect# 1 Pass South

Datum E-69 To P-2

Crew Member/Line# RM, B.T.

Date 6/27/87

Description

Texture (proportions of sand, silt and clay)

Structure (granular, blocky or lumpy, columnar or platy)

Color Code: red - R
yellow - y
brown - br
black - bl
grey - g

General condition (active erosion, fallow, etc.)

General terrain (slope, flatlands, etc.)

Description

Depth

10 cm

50 cm

80cm

Tp# 1-7 * Linear Ft.

LT. TAN SAND
LT. BRN. SAND
BRN. SAND
BLK. HUMIC SAND
DK. BROWN SAND W/GRAVEL
WATER

Crew Line#

Tp# 1-8* Linear Ft.

LT. TAN SAND
BLK. HUMIC SAND
COARSE TAN SAND W/DK. mottling
BLK. HUMIC SAND
COARSE TAN SAND W/ GRAVEL

Crew Line#

Depth

50cm

Tp# 1-9 * Linear Ft.

LT. TAN SAND
BLK. HUMIC SAND
LT. BRN. SAND W/ ORANGE, OXIDIZED MOTTLING
HUMIC
LT. BRN. SAND
SAND
COARSE BRN. SAND W/GRAVEL

Crew Line#

Tp# 1-10 * Linear Ft.

FINE TAN SAND
BLK. HUMIC SAND
LT. BRN. SAND
BLK. HUMIC SAND
BLK. HUMIC SAND W/ CLAY LUMPS
LT. BRN. SAND

Crew Line#

Tp# 1-11 * Linear Ft.

COARSE HUMIC SAND
BLK. HUMIC SAND
TAN SAND
BLK. HUMIC SAND
COARSE TAN SAND W/ GRAVEL

Crew Line#

Tp# 1-12* Linear Ft.

FINE TAN SAND
FINE HUMIC SAND W/ ROOTS
LT. BRN. SAND W/GRAVEL
HUMIC SAND
BRN. SAND W/ HUMIC MOTTLING
BRN. SAND/GRAVEL
BRN. SAND W/ HUMIC + ORANGE OXIDATION MOTTLING
BLK. HUMIC SAND
LT. BRN. SAND
BLK. HUMIC SAND

Crew Line#

* From Datum

Project 87-6 Transect# 2 Pass south

Datum P-15 to 110' w. of P-20

Crew Member/Line# RM, BT.

Date 5/29/87

Description

Texture (proportions of sand, silt and clay)

Structure (granular, blocky or lumpy, columnar or platy)

Color Code: red - R
yellow - y
brown - br
black - bl
grey - g

General condition (active erosion, fallow, etc.)

General terrain (slope, flatlands, etc.)

Depth	Tp# 2-1 AUGER* Linear Ft.	Tp# 2-1 * Linear Ft. (SP-1)
	BRN. ORG. ROTTING MUCK	
10 cm	BLK. ORGANIC MUCK w/ SANDY SILT	LT. TAN SAND
	BLUE CLAY (NO SAND)	BRN. HUMUS COLORED SAND
	BLUE CLAY BECOMING BRN. SILTY, CLAYEY MUD	BLK., HUMUS COLORED SAND
50 cm		BRN. HUMUS COLORED SAND
	BROWN, SILTY, CLAYEY MUD	TAN SAND
		BLK/BRN. SAND w/ ORG. MOTTLING
		LT. BRN. SAND
80cm	WHITE, COARSE SAND	YELLOW SAND
	Crew Line#	Crew Line#

Depth	Tp# 2-2 * Linear Ft. (SP-2)	Tp# 2-3 * Linear Ft.	Tp# 2-4 * Linear Ft.	Tp# 2-5 * Linear Ft.
	LT. TAN SAND			
	HUMUS COL. SAND w/ ROOTS			
	BRN. HUMUS COL. SAND			
	BLK. HUMUS COL. SAND			
	BRN. HUMUS COL. SAND	SP-1	SP-2	SP-1
	TAN SAND			
	BLK/BRN. SAND w/ ORG. MOTTLING			
50cm	BRN. HUMUS COLORED SAND			
	YELLOW SAND			
	Crew Line#	Crew Line#	Crew Line#	Crew Line#

* From Datum

Project 87-6 Transect# 2 Pass South

Datum P-15 to 110' W. of P-20

Crew Member/Line# R.M., B.T.

Date 5/29/87

Description

Texture (proportions of sand, silt and clay)

Structure (granular, blocky or lumpy, columnar or platy)

Color Code: red - R
yellow - y
brown - br
black - bl
grey - g

General condition (active erosion, fallow, etc.)

General terrain (slope, flatlands, etc.)

Description

Depth	Tp# 2-6 * Linear Ft.		Tp# 2-7 * Linear Ft. 115' d.N. of FCR oak
10 cm		SP-2	WHITE SAND W/ WATER SNAILS
			ROTTING HUMIC MATERIAL
			BLK. HUMUS COL. SAND
			WHITE SAND W/ ORG. INTRUSIONS (roots)
			WHITE SAND
50 cm			IRREG. LAYER HUMUS COL. SAND
			WHITE SAND
			BLK. HUMUS COLORED
80cm			SILTY SAND
	Crew Line#		Crew Line#

Depth	Tp# AUGER * Linear Ft. 5' d.W. of FCR oak	Tp# 2-8 * Linear Ft.	Tp# 2-9 * Linear Ft.	Tp# 2-10 * Linear Ft.
	ORGANIC COMPOST	WHITE SAND W/ ORG. DEBRIS	WHITE SAND W/ SOME ORG. DEBRIS	PEAT
	BLK. HUMUS COLORED SAND (FCR)			
	HUMUS COLORED SAND (FCR)	ROTTING ORG. LAYER W/ STYROFOAM FRAGS.	ROTTING ORG. LAYER	DK. HUMUS COLORED SAND
	TAN SAND	DK. HUMUS COLORED SAND	LAYER OF CHARCOAL W/ BROKEN GLASS + S.O. SHELLS	
	YELLOW SAND		IRREG. PATCHES OF BLK. PERCOLATION IN WHITE SAND	
	YELLOW SAND W/ ORG. MAT.			
	WHITE SAND	WHITE SAND	WHITE SAND	
50cm	WH. SAND W/ GRAVEL			
	WHITE SAND			
	HUMUS COLORED SAND			
	GRAVEL			
	HUMUS COLORE SAND			
	WHITE SAND			
	Crew Line#	Crew Line#	Crew Line#	Crew Line#

* From Datum

Project 81-6 Transect# 2 Pass South

Datum P-15 To 110'w. of P-20

Crew Member/Line# _____

Date _____

Description

Texture (proportions of sand, silt and clay)

Structure (granular, blocky or lumpy, columnar or platy)

Color Code: red - R
yellow - y
brown - br
black - bl
grey - g

General condition (active erosion, fallow, etc.)

General terrain (slope, flatlands, etc.)

Description

Depth	Tp# 2-11 * Linear Ft.	Tp# 2-12 Linear Ft.
10 cm	BRN. SAND W/ ORG. MAT.	SANDY HUMUS
	DK HUMUS COLORED SAND	DK. HUMIC COL. SAND W/ EXTENSIVE ROOTS
	HUMUS COL. SAND	WHITE SAND (IRON DISMARDED)
	WHITE SAND	YELLOW SAND W/ BLK. ORG. MOTTLING
	DK. HUMUS COL. SAND W/ ORG. PATCHES	DK. HUMUS COLORED SAND
50 cm		
80cm		
	Crew Line#	Crew Line#

Depth	Tp# * Linear Ft.	Tp# * Linear Ft.	Tp# * Linear Ft.	Tp# * Linear Ft.
50cm				
	Crew Line#	Crew Line#	Crew Line#	Crew Line#

* From Datum

Project 87-6 Transect# 4 Pass South

Datum S2-2 to S2-4

Crew Member/Line# R.M., B.T.

Date 5/28/87

Description

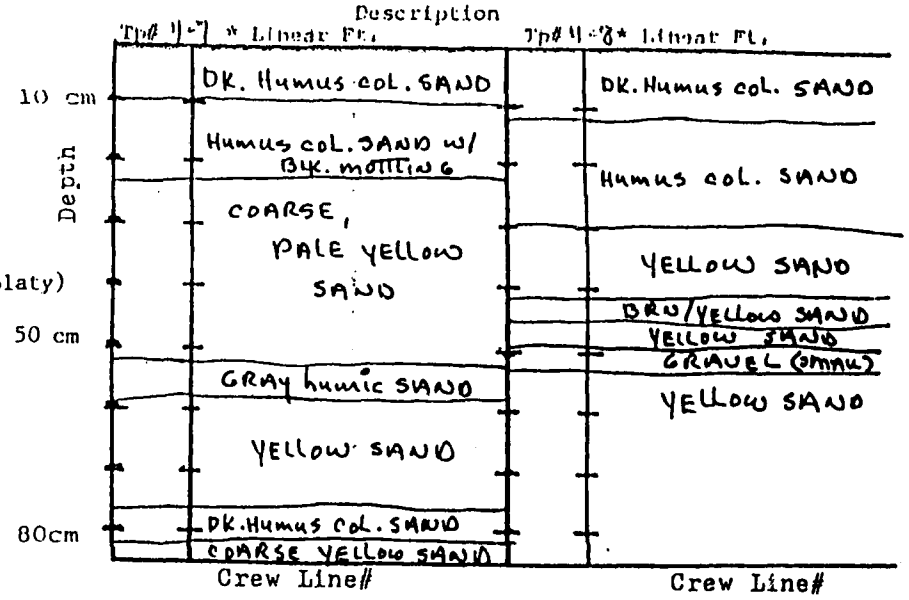
Texture (proportions of sand, silt and clay).

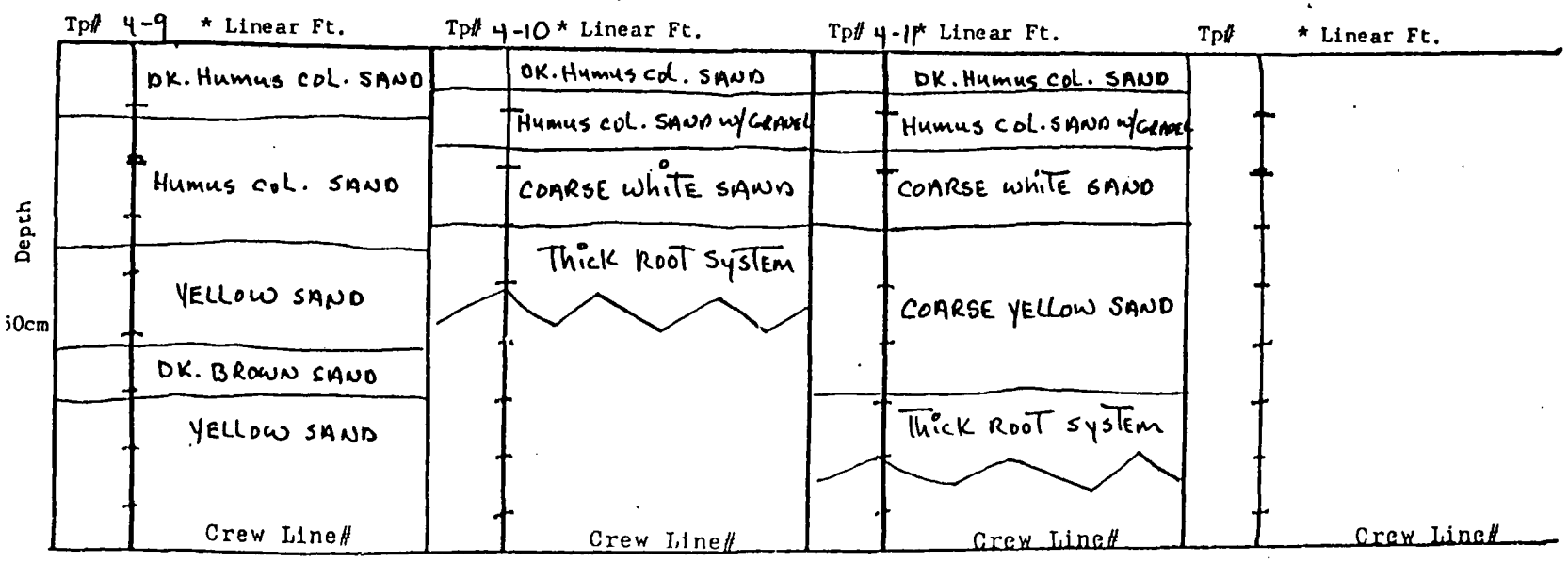
Structure (granular, blocky or lumpy, columnar or platy)

Color Code: red - R
yellow - y
brown - br
black - bl
grey - g

General condition (active erosion, fallow, etc.)

General terrain (slope, flatlands, etc.)





* From Datum

Project 87-6 Transec t# 4 Pass south

Datum S2-2 to S2-4

Crew Member/Line# RM, BT

Date 5/28/87

Description

Texture (proportions of sand, silt and clay).

Structure (granular, blocky or lumpy, columnar or platy)

Color Code: red - R
yellow - y
brown - br
black - bl
grey - g

General condition (active erosion, fallow, etc.)

General terrain (slope, flatlands, etc.)

Description

Depth: 10 cm, 50 cm, 80cm

Tp# 4-1 * Linear Ft.

DK. ORG. MATERIAL
DK. Humus col. SAND
IRREG. LAYER Humus col. SAND w/ ORG. STRINGS
WHITE SAND w/ Humic mottling

Crew Line#

Tp# 4-2 * Linear Ft.

DK. Humus COLORED SAND w/ ROOTS
WHITE SAND w/ Humic mottling
COARSE, WHITE SAND

Crew Line#

Tp# 4-3 * Linear Ft.

DK. Humus col. SAND
Humus col. SAND
DK. H. col. SAND w/ ORG. MAT
WHITE SAND
Humus col. SAND
YELLOW SAND

Crew Line#

Tp# 4-4 * Linear Ft.

SAME AS TP#s 3-4

Crew Line#

Tp# 4-5 * Linear Ft.

VY. DK. Hum. col. SAND w/ ROOTS
Humus col. SAND w/ ORG. MATERIAL
YELLOW SAND
Humus col. SAND

Crew Line#

Tp# 4-6 * Linear Ft.

DK. BRN/TAN SAND
YELLOW SAND w/ HUMIC STREAKS
TAN SAND w/ ROOTS
DK. Humus col. SAND w/ ROOTS
WHITE SAND
Humus col. SAND w/ GRAVEL
COARSE, WHITE SAND

Crew Line#

* From Datum

Project 87-6 Ttahheel# 5 Pass Depth

Datum

Crew Member/Line# RM, B.T.

Date 5/29/87

Description

Texture (proportions of sand, silt and clay).

Structure (granular, blocky or lumpy, columnar or platy)

Color Code: red - R
yellow - y
brown - br
black - bl
grey - g

General condition (active erosion, fallow, etc.)

General terrain (slope, flatlands, etc.)

Description

Tp# 5-1 * Linear Ft.

Humus col. silty sand

DARK BROWN SAND (FILL)

Crew Line#

Tp# 5-2 * Linear Ft.

FILL (DISTURBED)

Crew Line#

Depth: 10 cm, 50 cm, 80cm

Tp# 5-3 * Linear Ft.

BLK. Humus col. silty SAND

DK. Humus col. SAND

IRREG. LINE YELLOW SAND

DK. Humus colored mottled SAND (DISTURBED)

Crew Line#

Tp# 5-4 * Linear Ft.

Humus col. silty SAND

DK. Humus col. SAND w/ GRAVEL (DISTURBED)

Vy. DK. Humus col. SAND w/ GRAVEL DISTURBED

YELLOW SAND

Crew Line#

Tp# 5-5 * Linear Ft.

DK. Humus colored silty SAND

white SAND ← BOTTLE

DK. Humus colored SAND

Crew Line#

Tp# 5-6 * Linear Ft.

DK. Humus col. SANDY SILT

Humus col. SAND

YELLOW SAND

GRAVEL

WHITE SAND

Crew Line#

Depth: 50cm

* From Datum

8