USF 4817K

C-36-354

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STAGE 1B CULTURAL RESOURCE SURVEY REPORT OF NINE CONTINUOUS SPILT SPOON BORINGS: THE RED HOOK WATER POLLUTION CONTROL PROJECT (CONTRACT 1B-1 AND 1B-2)

PREPARED BY:
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GREENHOUSE CONSULTANTS INCORPORATED

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August 7, 1984

Mr. Christie W. Nobriga
Resident Engineer
Red Hook Water Pollution Control Project
Mason and Hanger
437 Madison Avenue
New York, N.Y. 10022

Dear Mr. Nobriga:

In compliance with your July 19 authorization to prepare a stage 1B Cultural Resource Survey in conjunction with the construction work at the Red Hook Water Pollution Control Project, Contracts 1B-1 and 1B-2, I am pleased to submit the following nine copies of our report addressing the five tasks defined in our June 21st proposal. As per our conversation, I will deliver all nine copies to Mr. Sudhir Parekh, Project Engineer, N.Y.D.E.P. on Tuesday, August 7, 1984.

Very Truly Yours,

Joel W. Grossman

Joel W. Grossman, Ph.D
Project Manager
Greenhouse Consultants Incorporated

JWG:mw

INTRODUCTION

The following report is submitted in partial completion of the Stage 1B Cultural Resources Survey of the contracts 1B-1 and 1B-2 Red Hook Water Pollution Control Project. The fieldwork of this study was limited to archaeological monitoring and sampling of nine continuous 1.5" split spoon borings taken between Amity Street and Kane Street. The fieldwork was conducted over a nine day period between July 23 and August 2 1984.

The following summary report will discuss first, the field methods used, second, limitations in the archaeological applications of small bore drilling units for the identification and evaluation of buried archaeological resources, and third, will summarize the general stratigraphic patterns, interfaces, and projected subsurface profiles within this circa 800 ft. test transect. In addition to the field records appended at the rear, the general synthesis of results is augmented by a composite profile which generalizes the major stratigraphic breaks or interfaces observed. Based on this graphic profile together with the discussed limitations in the use of archaeological borings, the results will be limited in scope to a definition of the depth of historic fill, and pre-fill interfaces which were consistently observed throughout the majority of the nine borings.

METHODOLOGY

A total of nine borings done were observed for possible archaeological evidence to 30 feet below the surface between July 23 and August 2, 1984. Samples were taken continuously from the surface to -30 feet, using 1.5" internal diameter split spoon, usually 2.0' in length. As soon as the sample spoon was removed from the boring and opened, the exposed side of the sample was very lightly scraped with a trowel to clearly define any interface present. A color slide was then taken of each sample using a steel tape as a scale. The samples were then examined visually, notes taken about their color, texture of soil matrix and any cultural or natural inclusions present. The thickness of each layer was also recorded so that the depth below the surface of all interfaces could be determined. The driller then took a soil sample for engineering purposes from the bottom 0.5' of the sample. If the soil recovered by the sampling spoon was 0.5' or less in thickness, then the engineering sampling required all of the soil recovered, and none was left over for archaeological sampling. In most cases, sufficient soil was recovered to use for archaeological sampling . This was taken from one visually defined layer within the sample, and usually consisted of from 0.4 to 0.75 ft. of soil. Any soil remaining in the spoon was then carefully trowelled through to look for any artifacts that might be present. When the field work was complete, the samples were brought back to the lab. They were checked against the field notes to ascertain that the soil matrix texture description

were accurate. Objective color descriptions were then made by comparing the samples with the color chips in the Munsell Color Charts. In most cases the samples were then passed through a 1/4 inch mesh to recover any artifacts present. This procedure varied according to the texture of each sample. In cases where the sample was predominantly clay, it was inspected by manually subdividing the soil with a trowel. In cases where the soil matrix was predominantly sand or silt, it was screened.

FIELD LOG

23 July 1984 - started Boring #8.

24 July 1984 - completed Boring #8.
- started & completed Boring #9.

25 July 1984 - started & completed Boring #10.
- started Boring #11.

26 July 1984 - completed Boring #11.
- started & completed Boring #12.

27 July 1984 - No work possible due to rain.

30 July 1984 - started & completed Boring #13.

31 July 1984 - started & completed Boring #14.

1 Aug. 1984 - started & completed Boring #15.
- started Boring #16.

2 Aug. 1984 - completed Boring #16.

LIMITATIONS IN ARCHAEOLOGICAL CORING TECHNOLOGY

The probability of identifying, locating and delimiting buried archaeological deposits with boring equipment depends on the density of artifacts, the diameter and volume of coring equipment and the intervals between sample points. The utility of auger borings of various sizes versus shovel probes to identify the presence of archaeological sites has recently been systematically tested and reported on by Chartkoff and Chartkoff as part of a U.S. Forest Service study entitled "Tests of Subsurface Techniques for Archaeological Site Discovery", 1980. In addition to a general survey of published accounts, the Chartkoffs tested three known prehistoric sites in the Stanislaus National Forest in California where previous controlled excavations had established the size range and artifact density yields per cubic foot from each. Based on the background data, each site was then evaluated for three categories of attributes: artifacts, fire-cracked rocks and distinctive soil. Each site was then "surveyed" with a 3" auger, a 6" auger, both eight inches in length, and finally with 12" square shovel cuts six inches into the subsurface.

Furthermore, each of the three sites was tested with all three techniques, the 3" and 6" augers and the 12" shovel probes. The Chartkoffs also varied their testing intervals for each from 10 feet, 20 feet and 50 foot intervals. Their resulting data yielded consistent results with significant implications for the identification and definition of buried sites, both prehistoric and historic, through the use of augering. Although the Red Hook borings were smaller in diameter by 50% than the smallest Chartkoff bore diameter, the results are still pertinent.

1. Artifact Recognition: The 6" auger offered no significant advantage over the 3" auger. The 12" shovel probe afforded much greater reliability in site recognition through artifact recovery in all three cases.

2. FCR Recovery: The 3" auger was too small to recover the majority of FCR's. The 6" auger provided somewhat better results but still missed FCR in 50% of the samples. Only the 12" shovel probe proved to be reliable for consistent FCR recovery and recognition.

3. Soil Horizon Identification: The smallest 3" auger was just as effective as the 12" shovel probe for soil definition. In addition, since the 3" auger takes 20% of the time of the shovel probes, the Chartkoffs concluded that the 3" auger offers a significant advantage over other tools in the process of sampling midden color occurrences based on color change alone.

4. Success Rates: For the two known low density sites, with artifact concentrations of 1.5-3.4/cubic foot, "the 3" diameter auger was successful 59% of the time while the 6" auger was successful only 47% of the time out of a total of 17 test probes. By extension, these results suggest that when artifact densities

reach 8-10 artifacts/ cu. ft., the 3" and 6" augers will be successful 50% of the time....when artifact densities are on the order of 5-6 per cubic foot...the 3" and 6" augers would yield positive results only 25% of the time. In contrast, the 12" shovel probes were positive the great majority of the time, 82-94% at the three known sites of the sample...Site density would have to drop considerably below 2 artifacts per cubic foot before the 12" shovel test would become unreliable."

5. Sampling Intervals: "...For the purpose of site discovery, we would be virtually as well off with a 20' to 30' interval as a smaller 10' interval, while the 50 ft. interval would be less satisfactory because of the corresponding greater role chance could play in site recognition." (p.23)

6. Historic Site Implications: For purposes of comparison we computed the artifact density for 13 historic stratigraphic components from the 17th century Broad Street site in Lower Manhattan, excavated under the direction of Dr. Joel W. Grossman of Greenhouse Consultants Incorporated, between December, 1983 and February, 1984. These showed a consistent extreme density difference between open area deposits versus the densities of artifacts within features. Each of these deposits were buried and sealed beneath 8-10 feet of brick basement floors and modern rubble fill. The horizontally distributed strata ranged from a low of 0.6 to a high of 5.0 artifacts per cubic foot. Of the three features tabulated, the densities varied from 15 to 40 per cubic foot. The results indicate that unless an auger hit the center of a feature, (and based on the Chartkoffs' data), the probability of recovering or identifying 17th century remains with either a 3" or 6" auger would be extremely low. Given that the densities from the Broad Street Dutch site fell below the 5-6 artifacts/cu. ft. density discussed by the Chartkoffs, both the 3" and 6" augers would have less than a 1-in-4 probability of recovering historic artifacts with deep borings. Based on these indications, the use of deep borings with a 3" diameter suggests a realistic 25% probability of success for artifact densities of 5 or less per cubic foot at 30 foot intervals. The probability of positive identification with a 1.5" boring at 100 foot intervals would be at least 100% lower or less than 10% or 1 in ten, even within an historic site deposit of comparable artifact densities.

SUMMARY OF STRATIGRAPHY

Comparisons of the soil descriptions and colors and relative depth measurements yielded the conclusion that four major strata were encountered in the nine borings.

Stratum I: Sandy or silty matrix with inclusions such as Red Brick, mortar, building stone, etc. Much variation in gram size within each layer. Only dateable artifact was one body sherd of Pearlware, (TPQ 1796). Present in all borings.

Interpretations: 1) Fill of basements of demolished buildings.
2) Landfill
3) Combination of 1 & 2.

Stratum II: Lenses of sands or silts with inclusions consisting of broken clam or oyster shell fragments. Little variation in grain size within each layer. Present only in Borings 10-16.

Interpretations: Shoreline.

Stratum III: Peat or clay with organic remains. Usually one layer, but occasionally 2 separated by lenses of sands and silts. Little variation in grain size within each layer. Present in all Borings except Boring 14.

Interpretations: Possible interface with Glacial Till. See Prof. John Sanders (Solecki; 1984:6-8).

Stratum IV: Lenses of sand and/or silt with few inclusions, those present are usually water worn pebbles. Very little variation in grain size within each layer. Present in all Borings.

Interpretations: River Bottom deposits.

DESCRIPTION OF ARTIFACTS FOUND

Only one dateable artifact was found in the nine borings.
Boring #8, Sample #4, Layer'C'
1 body sherd of undecorated Pearlware
date: post 1796

CONCLUSIONS

Finally, it is clear that this general profile is consistent with the documentary evidence mentioned by Solecki that this section of the contract was formerly submerged and then filled in during the early 19th century. Within the project, the streets were laid out during 1836 (Congress and Amity) to 1845 (Warren). The bulkhead line was fixed in 1843 at 596 ft. from Columbia Street. Solecki noted the permission given to build piers, wharves, docks and bulkheads by 1846, and subsequently the presence of facilities of the Delaware and Hudson Coal Company between Warren and Baltic Streets, later sold to J.P. Robinson who erected store houses, the Hartford Coal Company and the Phoenix Warehousing Company between Baltic and Warren Streets. (Solecki, 1984:18).

It is also important to point out that although these small diameter borings permitted the definition of historic fill deposits, they did not accurately locate the depth of any former cement of brick floored basements or discrete architectural features, which could be correlated with any of the 19th century structures.

Taken as a series, and with the exception of Boring #'s 8 and 9 showing different profiles from the rest, the borings together show a basin-like profile of fill deposits between Amity and Kane Streets, ranging in depth from 13.2' to 20.0' below the surface. This basin formation is determined by the interface of the historic fill (Stratum I) and the accompanying lenses of sand and silt with shell fragments (Stratum II).

This profile sequence is consistent with the documentary evidence that this sector of contracts 1B-1 and 1B-2 was prior to the 19th century, an area of open offshore bay waters. The highest point of the interface is from 4 to 6 feet below the current water table. When projected back in time to the 17th century, and assuming a gradual rise in sea level of circa 1 ft. per century, (Kardas and Larrabee 1978; Geismar 1983:684), this buried interface would have still been submerged during the time of initial colonial settlement. This projection is pertinent to any sensitivity study of the contract 1B-1 and 1B-2 alignment because it provides negative evidence that the former spit of high land identified as Locust Island on historic maps and projected by Solecki as being possibly located between Irving and Degraw Streets, was not in evidence between Kane and Amity Streets. Solecki noted the 17th century presence of a tidal dam between this island and the former mainland. (1984:21). As the only area of shoreline high ground in the contract alignment, the possible survival of this island under the 19th and 20th century fill suggest that it may also have contained remains of possible historic and prehistoric sensitivity within the contract 1B-2 sector of this alignment.

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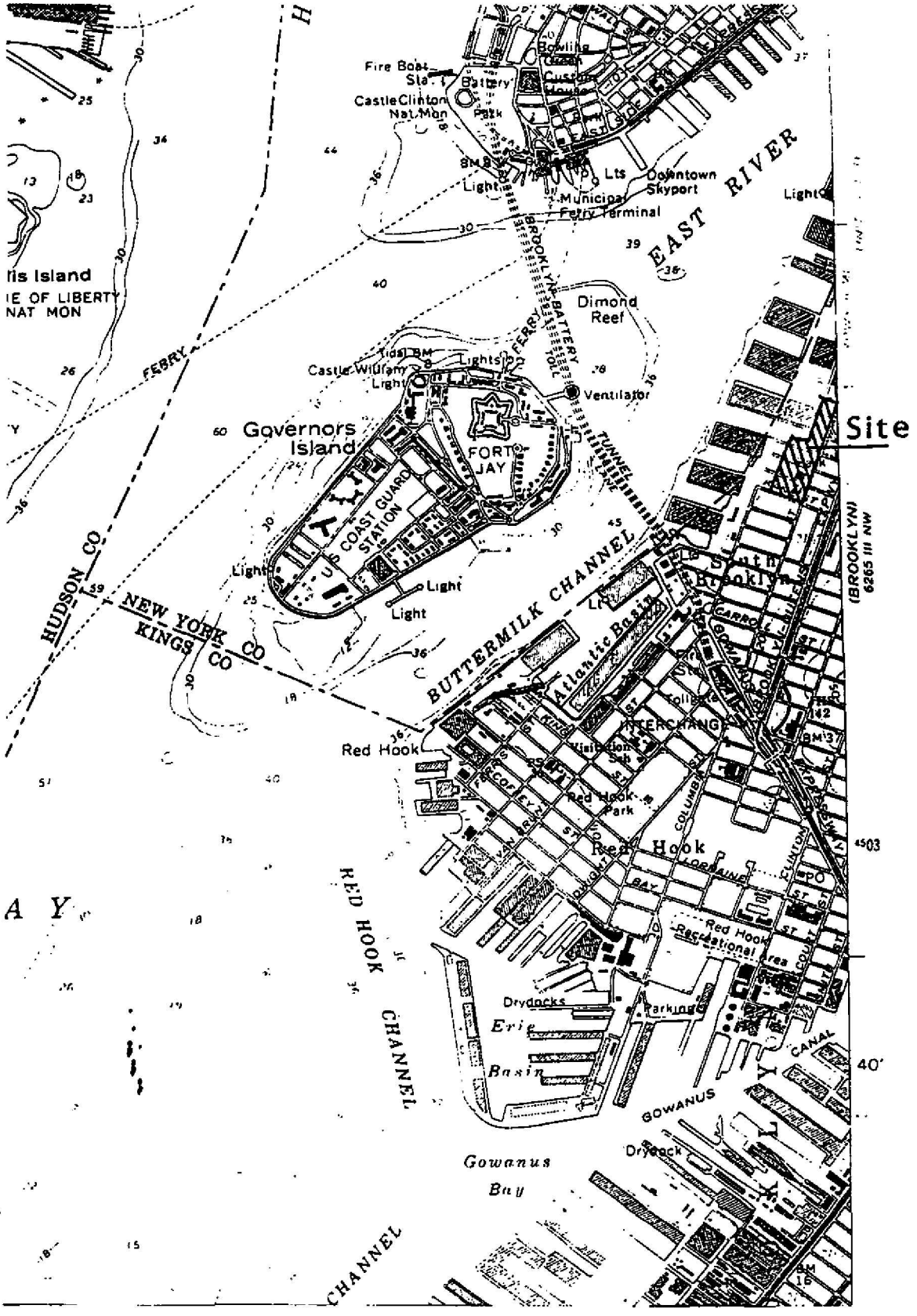


Fig. 1 Site Location

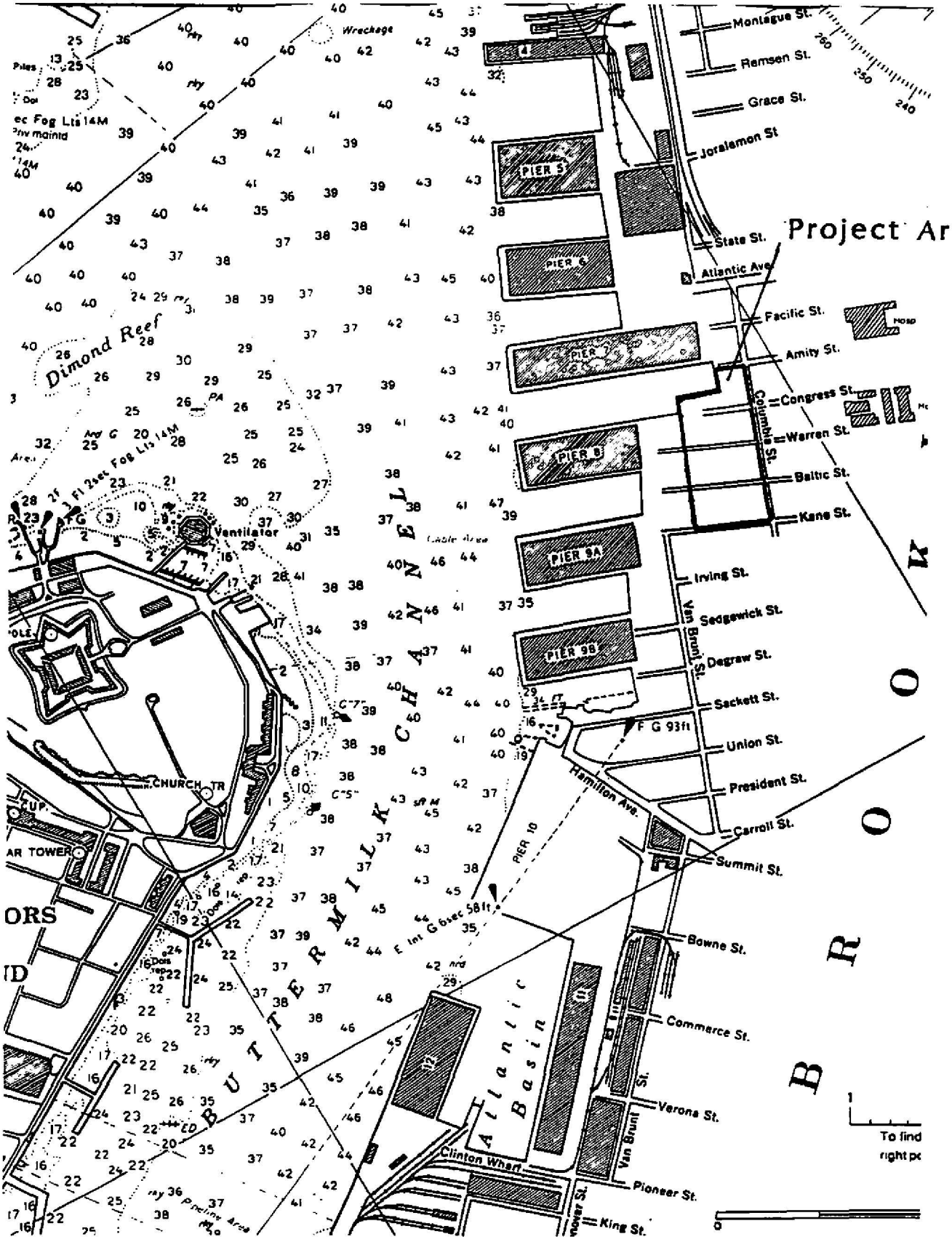
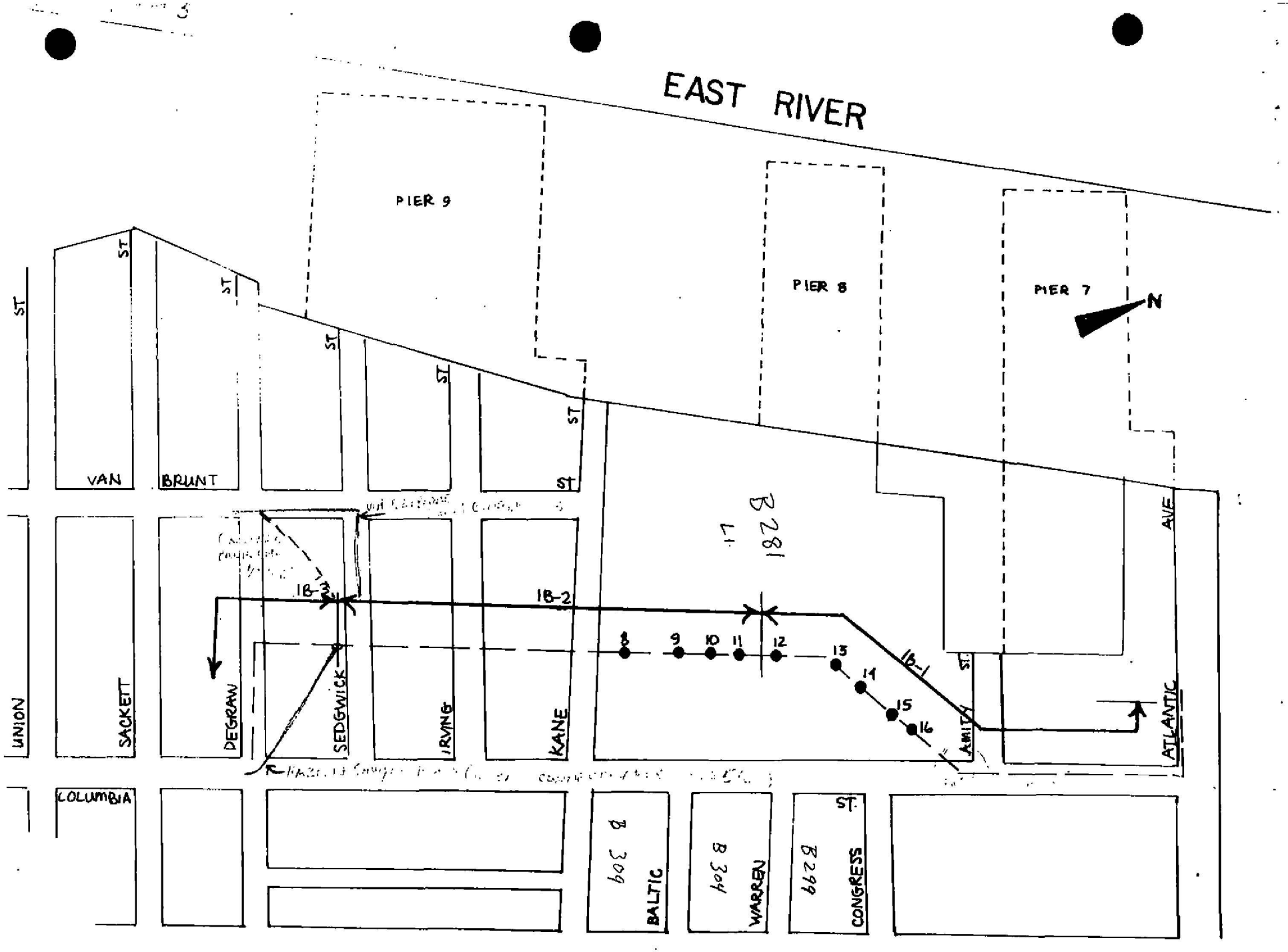


Fig. 2 Detail of Project Area

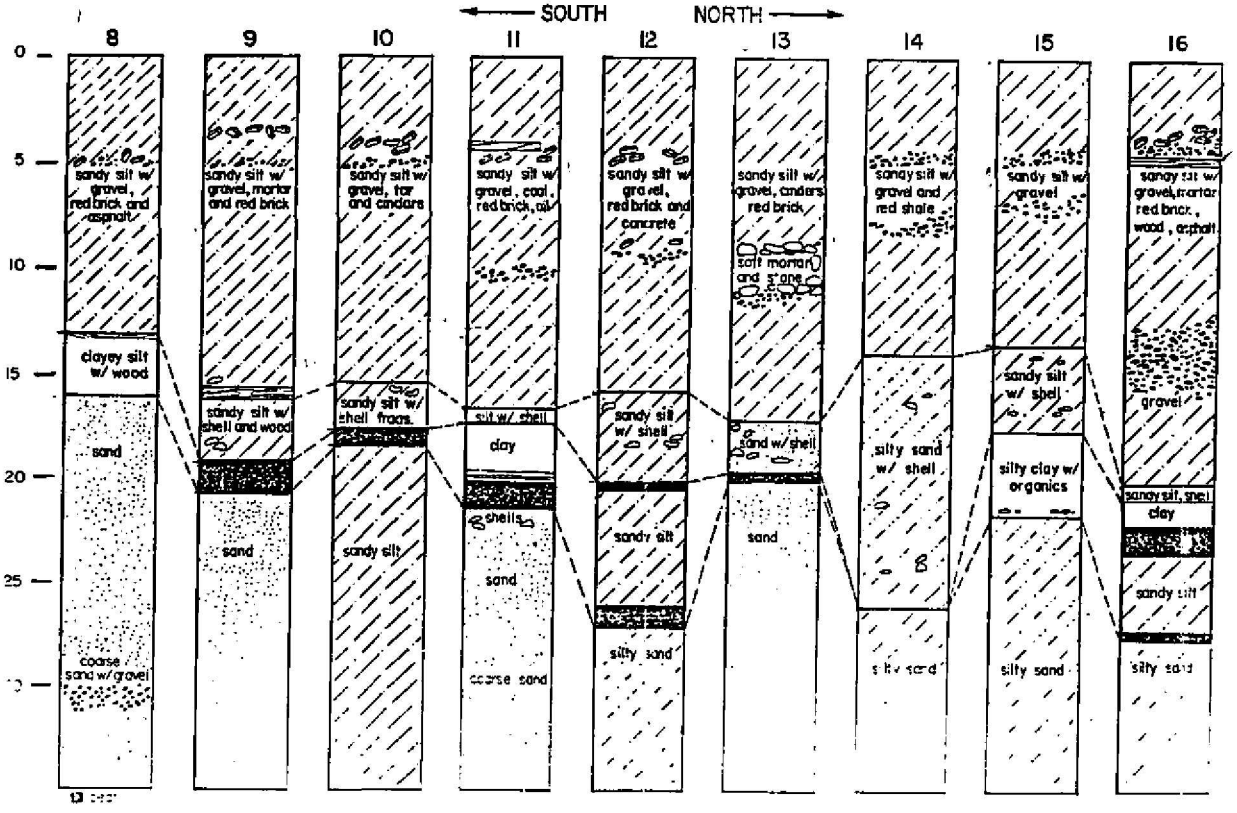


SCALE 1"=348'

Fig. 3 Boring Locations

COMPOSITE PROFILES
RED HOOK
Job no. 1545, Borings 8-16

Fig. 4



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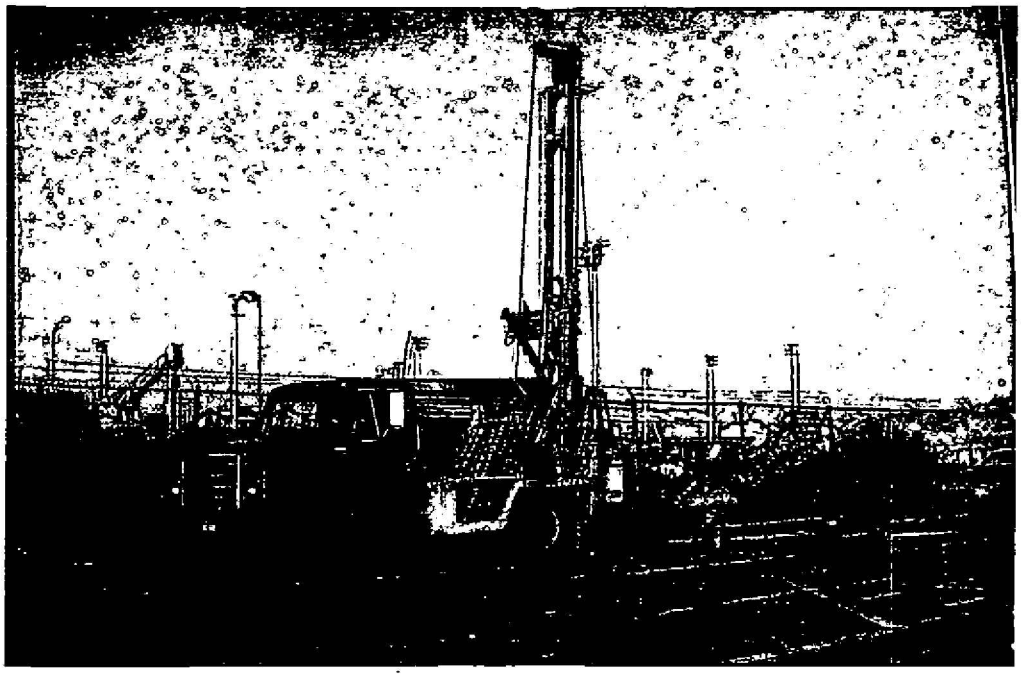

PLATE 1: GENERAL SHOT OF BORING RIG AT BORING #14.

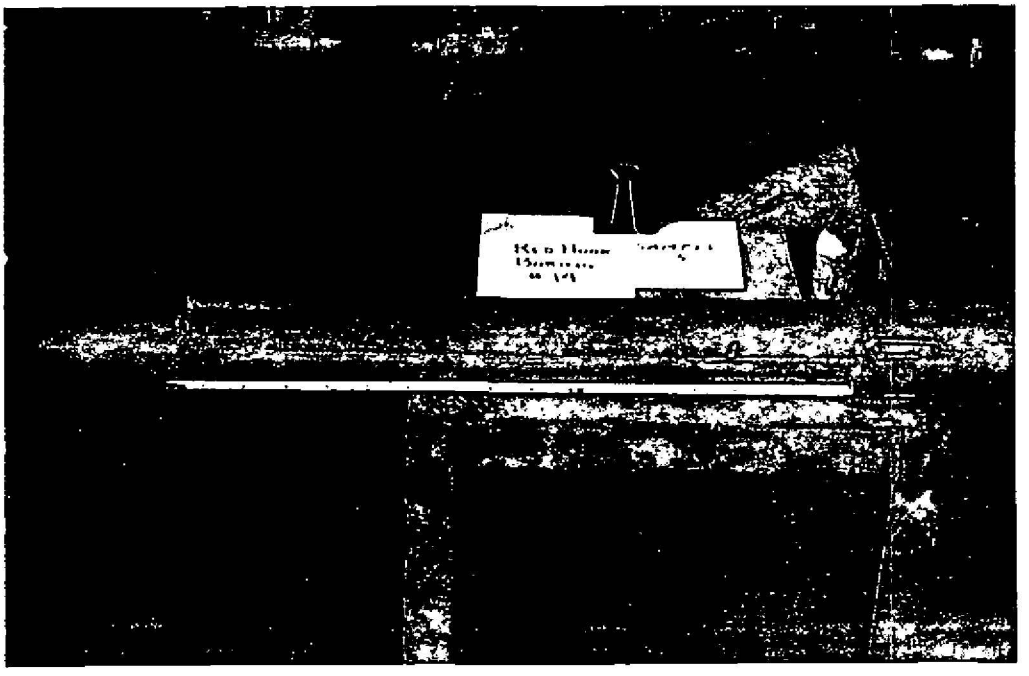

PLATE 2: SAMPLE FROM STRATUM I.

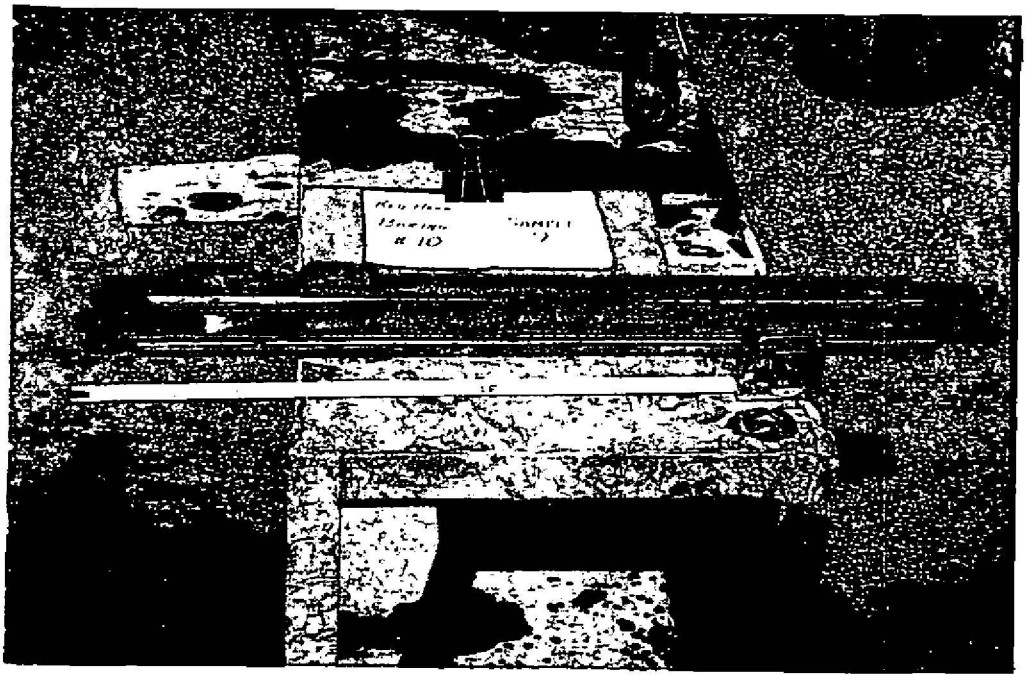

PLATE 3: SAMPLE FROM STRATUM III.

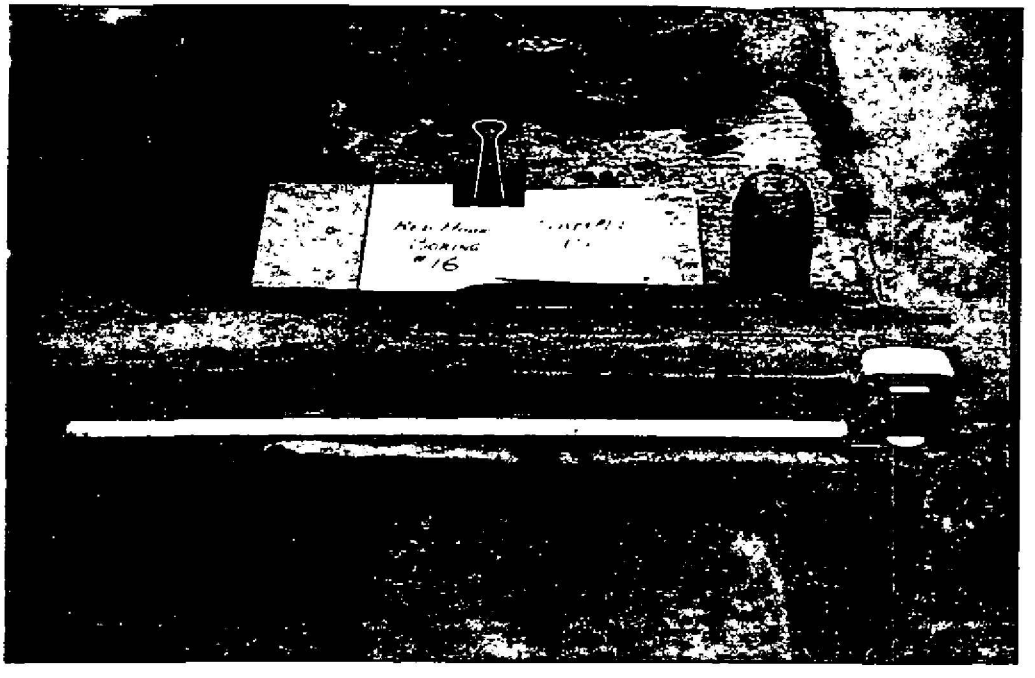

PLATE 4: SAMPLE FROM STRATUM IV.

DATE: 23 Jul 89 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE E SAMPLE # Page 1 of 3

		SOIL DESCRIPTION
C 0 A 0.7 B -2.0	#1	A. Asphalt Paving 0-. B. Concrete C. Sandy Silt (Red Brown to Grey Brown) 5 YR 3/2
C -4.0	#2	C. Sandy Silt w/ Red Bricks frags + gravel 5 YR 3/2
C -6.6	#3	C. Same as above 5 YR 3/2
C -7.6' -8.0 D	#4	C. Same as above, glass fragments DK Red Brown 5 YR 3/2 D. Yellow Brown Sandy Silt w/ few pebbles. Dk. Yellow Brown 10 YR 4/4
?-8.2' -10.0	#5	D Same as above 10 YR 4/4 E. Red Brown Silty Sand w/ gravel. Dk. Brown 7.5 YR 3/2
?10.2' -12.0	#6	F. Gravel in Red Brown Sand Recovery insufficient to get Arch Sample

N.B. Ceramic from Layer C is Pearlware
T.P.Q. 1796.

DATE: 23/24 July 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE E SAMPLE # Page 2 of 3 SOIL DESCRIPTION

-12.0'		
← 13.25' →	#7	G. Grey Brown Clayey Silt w/ some Sand. V. Dk Grey Brown 10YR 3/2
-14.0		H. ~~Black~~ Brown organic Clayey Silt w/ sand, wood, etc. Dk. Brown 10YR 3/3
← ? 14.5' →	#8	I. Coarse Sand, Dk. Grey (? Brick Chips) w/ gravel. Dk Grey 10YR 4/1
-16.0		J. Black Silty Clay Black 7.5 YR 2/0
	#9	K. Dk. Grey Sand (? Brick Chips) V. Dk Grey 10 YR 3/1
-18.0		
? 18.5'	#10	K. Dk Grey Sand w/ Brick Chips 10 YR 3/1
-20.0		L. Grey Silt - poss River Bottom. 10 YR 4/1
	#11	L. Grey Silt Dk Grey 10 YR 4/1
-22.0'		
	#12	L. Grey Silt 10 YR 4/1
-24.0'		

DATE: 24-7-84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 8 SAMPLE # Page 3 of 3

		SOIL DESCRIPTION
-24.0'		
-26.0'	#13	M. Grey Fine Sand. 10 YR 4/1
-28.0'	#14	M. Grey Fine Sand DK. Grey 10YR4/1
-29.4'	#15	M. Grey Fine Sand M. Grey Coarse Sand & Gravel DK. Grey 10YR3/1
-30.0'		

DATE: 24 July 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 9 SAMPLE # Page 1 of 3

		SOIL DESCRIPTION
← 0.2' →	#1	A. Macadam B. Concrete C. Fill broken
← 3.1' → ← 3.6' → -4.0'	#2	C. Silty Sand w/ Gravel, Dk. Gray, w/ a few R. Brick & Mortar frags. V Dk Gray 10YR 3/1 D. Red Brick frags. E. Silty Sand w/ Gravel & Red Brick frags., Dk. Gray w/ Tan Mottling
-6.0'	#3	E. Sandy Silt w/ Gravel & Red Brick frags, Dk. Gray mottly. and one small glass frag. V. Dk. Gr. 10YR 3/1
← 6.1' → -8.0'	#4	F. Grey Coarse Sand w/ Red Brick, Tile, Mortar & Slag frags. + gravel 10 YR 4/1
-10.0'	#5	F. Grey Sand w/ Red Brick, Mortar, etc frags. ground & 1 piece glass Dk. Gray 10 YR 4/1
-12.0'	#6	F Gry Sand w/ Red Brick, Street Coal Frags. 10 YR 4/1

DATE: 24 July 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 9 SAMPLE # Page 2 of 3

		SOIL DESCRIPTION
-14.0'	#7	I. Grey Sand w/ red Brick. Clay thin wisps, etc. 10 YR 4/1
-16.0'	#8	F. as above G. ~~Dk. Grey Silty fine sand w/ wood chips~~ mottled Grey + Black Sandy Silt w/ wood frags. Dk. Grey 10 YR 4/1 Black 7.5 YR 2/0
-16.0'	#9	G. as above H. Sandy Silt, mottled Red-Br. + Grey Red-Brown 5 YR 4/3 Dk. Grey 10 YR 4/1
-20.0'	#10	H. as above, w/ Silty Sand. I. Peat, Dk. Brown. Black 10 YR 2/1
-22.0'	#11	J as above J. Coarse Sand w/ a few ~~Brick~~ wood frags K. Lt. Grey Silty Sand : Poss. River Bottom Grey 10 YR 5/1
-24.0'	#12	K. Lt. Grey Silty Sand 10 YR 5/1

With: red brick [illegible]

DATE: 24 July 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE #9 SAMPLE # Page 3 of 3

		SOIL DESCRIPTION	
-24.0			
-26.0'	#13	L. Lt. Gray Silty Sand.	10 YR 5/1
-28.0	#14	L. Lt. Gray Slightly Silty Sand, Micaceous.	10 YR 5/1
-30.0	#15	L. Lt. Gray Slightly Silty Sand.	10 YR 5/1

DATE: 25-7-84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Brick Sewer

CORE # 10 SAMPLE # Page 1 of 2 SOIL DESCRIPTION

0.2' → 0.4' → -2.0'	#1	A. Asphalt B. Concrete C. Dk. Grey Sandy Silt w/ Red Brick frags. 10 YR 2/1
-4.0'	#2	C. Dk. Grey Sandy Silt w/ Red Brick frags. + occ. cinders + tar. Block 10 YR 2/1
← 1.8' → -6.0'	#3	C. Dk. Grey Sandy Silt w/ Red Brick frags. + cinders. 10 YR 2/1 D. Tan Sandy Silt w/ a little gravel Brown 7.5 YR 4/4
-8.0'	#4	D. Tan Sandy Silt w/ a little gravel & Red Brick frags. 7.5 YR 4/4
← 8.2' → -10.0'	#5	D. as above E. Red Brown Silty Sand w/ a little Red Brick frags + pebbles. 7.5 YR 4/4
-12.0'	#6	E. Red Brown Silty Sand w/ pebbles 7.5 YR 4/4

DATE: 25·7·84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 10 SAMPLE # Page 2 of 3 SOIL DESCRIPTION

12.0	#7	E. Red Brown Silty Sand — Brown 7.5YR 4/4
16.0	#8	E. Red Brown Silty Sand w/ clay & brick frags. — 7.5YR 4/4
18.8	#9	E. as above — 7.5YR 4/4
17.5 – 18.0		F. Grey Sandy Silt w/ occ. shell frags. — Dk. Grey 10YR 4/1
		G. Dk. Brown Peat w/ small roots — 10YR 2/1
19.3	#10	G. Dk. Brown Peat — Black 10YR 2/1
20.0		H. Grey Sandy Silt — Post. River Bottom
	#11	H. Grey Brown Sandy Silt w/ a little roots (?) or wood (?) — V.Dk. Grey Brown 10YR 3/2
24.0	#12	I Grey Slightly Sandy Silt — Dk. Grey 10YR 4/1

DATE: 25 July 64 BLOCK: _____ LOT: _____ PROJECT/SITE Rockaway Sewer

CORE #10 SAMPLE # Page 3 of 5

		SOIL DESCRIPTION
-24.0'		
-25.0'	#13	I. as above. 10 YR 4/1
-25.6'		J. Brown Slightly Sandy Silt Dk. Gr. Brown 10 YR 4/2
-26.0'		K. Grey Brown Silt 10 YR 4/2
-27.5'	#14	K. Grey Brown Sandy Silt Dk. Gr. Br. 10 YR 4/2
-28.0'		L. Tan Slightly Clayey Silt : Base Glacial Till (?) with a trace of sand. 10 YR 3/4
-30.0'	#15	L Tan Slightly Sandy Silt w/ some pebbles. Dk. Yellow Brown (10 YR 3/4

DATE: 25 July 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 11 SAMPLE # Page 1 of 3

		SOIL DESCRIPTION
0.2' – 0.6' – 2.0'	#1	A. Asphalt B. Concrete C. Mottled Black, Grey & Green + Brown Silts w/ Red Brick & Coal frags Very oily. Black 10 YR 2/1 Dk. Gr-Br. 10 YR 4/2
4.0'	#2	C. Mottled Black, Grey & Brown Silts w/ Red Brick frags & Coal frags
4.4' → 6.0'	#3	C. Mottled Black & Brown Silts w/ Red Brick & Coal frags, oil soaked. D. Brown Sandy Silt w/ gravel & Red Brick frags. Dk. Br. 10 YR 3/3
7.2' → 8.0'	#4	D. Brown Sandy Silt w/ gravel & Red Brick frags. + occ. wood & coal frags 10 YR 3/3 E. Brown to Red Brown Silty Sand, oily. Dk. Gr-Brown 10 YR 3/2
9.3' → 10.0'	#5	E Brown Silty Sand w/ some oil soaking. at bottom 10 YR 3/2 F. Black Slightly Sandy Silt, oil soaked.
10.5' → 12.0'	#6	F. Dk. Grey to Black Silty Sand, oil soaked G. Stone frags w/ Soft Matrix – Brown 10 YR 5/4

DATE: 26 Jan, 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 11 SAMPLE # Page 2 of 3 SOIL DESCRIPTION

	#7	M. Mottled Grey, Brown Silty Sand w/ some gravel. V. Dk. Gr. 10 YR 3/1 Dk. Br. 10 YR 3/3
	#	Dk. Grey Fill Sand w/ gravel: V. Dk. Gr. Brown 10 YR 3/2 Brown 7.5 YR 4/4
-16.0 → ← 17.1' → -16.0'	#9	F. Tan Sand 7.5 YR 4/4 S. Dk Grey Silt w/ some shell frags. Dk. Grey 7.5 YR 4/0 L. Dk. Grey Clay w/ organics V. Dk. Grey 7.5 YR 3/0
← 19.9' → - 20.0'	#10	M. Mottled Grey & Brown Silty Sand Dk. Grey Brown 10 YR 4/2 N. Dk. Brown Peat w/ occ. wood frags. Black 7.5 YR 2/0
~~21.0'~~ ← 21.2' → -22.0	#11	O. Dk. Grey Clay, w/ organics incl. wood & shell frags Dk. Grey 7.5 YR 4/0 P. Peat, Dk. Red Brown mixed w/ bottom of clay above. Q. Grey Silty Sand — Poss. River Bottom: Dk. Grey 10 YR 4/1
-24.0	#12	R. Grey to Tan Silty Sand w/ some fine gravel, occ. wood & shell frags. 10 YR 4/1

N.B: Some mixture between 'N' and 'O' possible. Notice peat @ bottom of 'O' — may be probably on layer.

DATE: 26 July 89 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 11 SAMPLE # Page 3 of 3

		SOIL DESCRIPTION	
-24.0'	#13	P. Tan to Gray Silty Sand	10 YR 4/1
← 25.6' →		C. Gray Slightly Sandy Silt	Dk. Gray 10 YR 4/1
-26.0'	#14	C. Gray Slightly Sandy Silt	10 YR 4/1
-28.0'	#15	R. Gray Coarse Sand	Gray 10 YR 5/1
-30.0'			

DATE: 26 July '84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sew...

CORE: #12 SAMPLE #: Page 1 of 3 SOIL DESCRIPTION

0.2' – 0.6' – 2.0'	#1	A. Asphalt B. Concrete C. Dk. Brown Sandy Silt w/ gravel { V. Dk. Gray: 10 YR 3/1 Strong Brown: 10 YR 4/7
– 4.0'	#2	C. Dk. Brown Sandy Silt w/ gravel, Red Brick chips, etc. 10 YR 3/3 4/4
5.0' – 5.5' – 6.0'	#3	C Dk. Brown Sandy Silt w/ gravel, etc. D Mixed Materials or Concrete w/ sand Dk. Gr. Br. 10 YR 4/2 L. Brown Slightly Sandy Silt w/ gravel
– 8.0'	#4	E. Brown to Dk Brown Slightly Sandy Silt w/ gravel. V.Dk.Br. 10 YR 2/2 Brown: 10 YR 4/3
9.1' – 10.0'	#5	E. Brown to Dk. Brown Slightly Sandy Silt w/ gravel. F. Dk. Brown Slightly Silty Sand Dk. Brown: 7.5 YR 4/2
10.2' – 12.0'	#6	F. Dk. Brown Slightly Sand w/ gravel & Red Brick fragments G. Red Brown Silty Sand w/ a little gravel. Red Br. 5 YR 4/3

DATE: 26 July '84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 12 SAMPLE # Page 2 of 3 SOIL DESCRIPTION

-14.0'	#7	G. Red Brown silty Sand 5 YR 4/3
15.5' → -16.0'	#8	G. Red Brown Silty Sand H. Grey Silty Sand / Sandy Silt : Poss. River Bottom Dredgings
-18.0'	#9	H. Grey Sandy Silt / Silty Sand and occ. shell frags (tiny) between { Dk. Gray 7.5 YR 4/0 / V. Dk. Gray 7.5 YR 3/0
-20.0'	#10	H. Grey Silty Sand w/ some small clam shell frags & a little gravel.
20.3' → -22.0'	#11	I. Peat w/ a few shell frags & twp. V. Dk. Brn 10 YR 2/2 J. Grey Sandy Silt - Poss. River Bottom Dk. Gr. Brn 10 YR 4/2
-24.0'	#12	J. Grey Sandy Silt w/ a few shell frags. 10 YR 4/2

DATE: _____ BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 12 SAMPLE # Page 3 of 3

		SOIL DESCRIPTION
-26.0'	#13	L. Grey Sandy Silt — 10 YR 4/2
-27.1' → -28.0'	#14	K. Dk. Brown Peat — Black 10 YR 2/1 L. Grey Silty Sand — 10 YR 3/2
-30.0'	#15	L. Grey Silty Sand — V. DK Gray Brown 10 YR 3/2

DATE: 30·7·04 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 13 SAMPLE # Box 2 of 3 SOIL DESCRIPTION

— 0.2' —	#1	A. Asphalt B. Concrete C. Mottled Red Brown + Grey Green Sandy Silts w/ Gravel, Cinders, etc. → Strong Brown 7.5 YR 3/4 Stone Frags Red Bricks,
-0.5' → -2.0'	#2	C. Mottled Red Brown + Grey Green Sandy Silts w/ Gravel, Red Bricks, Cinders, etc.
-4.0'	#3	C. Mottled Red Brown + Grey Green Sandy Silts w/ gravel Red Bricks, etc D. Mottled Yellow + Lt Brown Silty Sand w/ Gravel: Brown 10 YR 4/3 Yellow 2.5 Y 7/6 Trace Clay Silt
-5.4' → -6.0'	#4	D. Mottled Yellow + Lt. Brown Silty Sand w/ Gravel E. Mortar (soil) w/ Stone Frags
-7.8' → -8.0'	#5	F. Medium Brown Slightly Silty Sand w/ Gravel. Dk. Brown 7.5 YR 3/4
-10.0' → -10.2'	#6	G. Brown Silty Sand w/ Yellow Clayey Silt + some gravel.
-12.0'		

DATE: 30 July 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 13 SAMPLE # Page 2 of 3 SOIL DESCRIPTION

-14.0'	#7	H. Red Brown Sand w/ a little gravel, moist. Strong Brown 7.5 YR 4/6
-16.0'	#8	H. Red Brown Sand w/ a little gravel. 7.5 YR 5/6
← -17.1' → -16.0'	#9	H. Red Brown Sand w/ a little gravel. 7.5 YR 5/6 I. Grey Sand w/ a few shell frags V. Dark Grey 5 YR 3/1
← -19.5' → -20.0'	#10	I. Grey Slightly Silty Sand w/ a few shell frags. & a little gravel. J. Dk. Brown to Black Clay w/ Dk. Br. Peat, v. organic. Black 7.5 YR 2/0
← -21.7' → -22.0'	#11	K. Med Grey Sand : Fair. River Bottom Dk. Grey 5 YR 4/1 L. Med Grey Slightly Sandy Silt. V. Dk. Grey-Brown 10 YR 3/2
-24.0'	#12	L. Med Grey Sandy Silt V. Dk. Grey-Brown 10 YR 3/2

DATE: 30 July '84 BLOCK: _____ LOT: _____ PROJECT/SITE Pollock Sewer

CORE # 13 SAMPLE # Page 3 of 3

		SOIL DESCRIPTION
-26.0'	#13	L. Medium Grey Sandy Silt. L = 10 YR 3/2
-26.8' → ← -27.1' → -28.0'	#14	L. Medium Grey Sandy Silt M. Black Organic Silty Clay N. Grey Brown Sandy Silt M = V. Dk. Grey 10 YR 3/1
-29.6' → -30.0'	#15	M. Grey Brown Sandy Silt C. Grey Silty Sand N = V. Dk. Grey Brown 10 YR 3/2

DATE: 31 July 87 BLOCK: _____ LOT: _____ RED MOK SEWER

CORE #14 SAMPLE # Page 1 of 3 SOIL DESCRIPTION

- 0.2' → - 0.5' → -2.0'	#1	A. Asphalt B. Concrete C. Brown Silt w/ some gravel.
-4.0'	#2	C. Brown Silt w/ some gravel. Dk. Brown 7.5 YR 3/4
- 5.5' → -6.0'	#3	C. Brown Silt w/ some gravel. D. Brown Sandy Silt w/ Red Shale frags. Brown 7.5 YR 4/4
-8.0'	#4	D. Brown Slightly Sandy Silt w/ Red Shale frags.
-10.0'	#5	E. Brown Slightly Silty Sand w/ gravel & Red Shale frags Brown 7.5 YR 4/4
-12.0'	#6	E. Brown Slightly Silty Sand w/ gravel.

DATE: 31 July 84 BLOCK: _____ LOT: _____ RED HOOK SEWER

CORE #14 SAMPLE # Page 2 of 3 SOIL DESCRIPTION

-13.9' → ~14.0'	#7	E. Brown Sand w/ some gravel. F. Grey Salty Sand	
-16.0'	#8	F. Grey Silty Sand w/ occ. shell frags	10 YR 3/1
-18.0'	#9	F. Grey Silty Sand w/ occ. shell frags. getting siltier @ bottom	V. Dk. Gry 10 YR 3/1
-20.0'	#10	F. Grey Slightly Silty Sand w/ occ. shell frags.	10 YR 3/2
-22.0'	#11	F. Grey Silty Sand	10 YR 3/2
-24.0'	#12	F. Grey Silty Sand	10 YR 3/2

DATE: 31 July 84 BLOCK: _____ LOT: _____ RED HOOK SEWER

CORE # 14 SAMPLER Page 3 of 3 SOIL DESCRIPTION

-26.0'	#13	F. Grey slightly Silty Sand	V. Dk. Grey Brown 10YR 3/2
-27.5' → -28.0'	#14	G. Grey Sand w/ a trace of Red Brown Sand	Dk. Grey 10 YR 4/1
		H. Grey Sandy Silt / Silty Sand	Grey 10 YR 5/1
-30.0'	#15	H. Grey Silty Sand	Grey 10 YR 5/1

DATE: 1 Aug '84 BLOCK: _____ LOT: _____

RED HOOK SEWER

CORE # 15 SAMPLE # Page 1 of 3 SOIL DESCRIPTION

-0.2' → -0.4' → -2.0'	#1	A. Asphalt B. Concrete C. Mottled Brown, Red Brown & Black Silt w/ gravel
-4.0'	#2	D Brown Sandy Silt w/ gravel. Brown 7.5 YR 4/4
→ -6.0'	#3	E- Lt. Brown Silty Sand w/ gravel & occ. Red Brick Bags. Strong Brown 7.5 YR 4/6
-8.0'	#4	E. Brown Silty Sand w/ gravel.
-16.0'	#5	F. Mottled Dk. Brown & Grey/Green Sandy Silt w/ pebbles. Dk. Br. 10 YR 3/3
-12.0'	#6	G. Mottled Dk-Brown & Black Silt/Silty Sand w/ gravel. Dk Brown 10 YR 3/3 Black 10 YR 2/1

DATE: 1 Aug. 84 BLOCK: _____ LOT: _____ RED Hook SEWER

CORE # 15 SAMPLE # Page 2 of 3 SOIL DESCRIPTION

-13.3' → -14.0	#7	G. Mottled Dk. Brown + Black Slightly silty sand w/ gravel. H. Grey Brown Slightly Sandy Silt w/ some shell frags. Dk. Grey 10 YR 4/1
-16.0	#8	H. Grey Brown Slightly Sand Silt w/ some shell frags mottled w/ some dk. brown sand 10 YR 4/1
-17.5' → -18.0	#9	H. Grey Brown Slightly Sandy Silt w/ some shell frags. 10 YR 4/1 I. Dk. Grey Silty Clay w/ some small wood frags. Dk Grey 2.5 Y 3/0
-19.4' → -20.0	#10	J. Lt. Grey Sand Dk. Grey 10 YR 4/1 K. Dk. Grey Clayey Silt w/ some small wood frags.
-21.6' → -22.0	#11	K. Dk. Grey Clayey Silt / Silty Clay w/ occ. shell frags. V. Dk. grey 2.5 Y 3/0 L. Light Brown Sandy Silt. Poss. River Bottom 10 YR 3/2
-24.0	#12	L. Lt. Brown to Grey Brown Sandy Silt. 10 YR 3/2

DATE: 1 Aug '84 BLOCK: _____ LOT: _____ RED HOOK SEWER

CORE # 15 SAMPLE # Page 3 of 3 SOIL DESCRIPTION

-26-0	#13	L. Lt. Brown to Grey Brown Sandy Silt	10 YR 3/2
-28-0	#14	L. Lt. Brown to Grey Brown Sandy Silt	V. dk. grey-brn. 10 YR 3/2
-30-0	#15	M. Med. Grey Silty Sand	Dk. Grey 10 YR 4/1

DATE: 1 Aug. 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 16 SAMPLE # Page 1 of 3

		SOIL DESCRIPTION
- 0.2' →	#1	A. Asphalt
		B. Grey Clayey Silt w/ sand + gravel
-1.9' → -2.0'		C. Soft Mortar — very Pale Brown 10 YR 7/3
	#2	D. Mottled Dk. Brown, Black + Grey Sandy Silt w/ Red Brick, Mortar frags and gravel — Very Dk. Grey 10YR 3/1, Dk. Brown, 7.5YR 3/2
- 3.7' → -4.0'		E. Wood
	#3	F. Red Brown Sandy Silt w/ much gravel + Red Brick frags, and some Mortar frags. and asphalt. Dk. Brown 7.5 YR 4/2 (+ 1 petroleum Product)
- 5.8' → - 6.0'		G. Asphalt Black = 10 YR 2/1
	#4	H. Brown Silty Sand w/ profuse gravel. Some Red Brick — Dk. Brown 10 YR 4/2
-8.6'		
	#5	H. Brown Silty Sand w/ gravel. Some Red Brick, 1 small frag wood — 10 YR 4/2
-10.6'		
→	#6	H. Brown Silty Sand w/ gravel. — 10 YR 4/2
-11.7' → -12.0'		I. Brown Sandy Silt w/ profuse gravel. — Dk. Brown 10 YR 4/3

DATE: 1/2 May 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 16 SAMPLE # Page 2 of 3 SOIL DESCRIPTION

-14.0'	#7	I. Brown Sandy Silt w/ much gravel. 10 YR 4/3
-16.0'	#8	I. Brown Sandy Silt w/ much gravel.
-16.9' → -18.0'	#9	I. Brown Sandy Silt w/ gravel J. Dk. Grey Silty Sand w/ a little Black Cl. Si at top since a.05' V. Dk. Grey 2.5 Y 3/0
-19.0' → -20.0'	#10	J. Dk Grey Silty Sand w/ occ. shell frags. 2.5 Y 3/0 K. Dk. Grey Clayey Silt V. Dk. Grey 2.5 Y 3/0
-20.9' → -21.8' → -22.0'	#11	K. Dk. Grey Sandy Silt w/ occ. shell frags. M. Dk. Grey Clayey Silty Clay V. Dk. Grey 10 YR 3/1 N. Dk. Brown Peat
-22.4' → -24.0'	#12	N. Dk. Brown Peat Black 10 YR 2/1 O. Mottled Grey & Brown Silty Sand - Prob. River Bottom.

DATE: 2 Aug. 84 BLOCK: _____ LOT: _____ PROJECT/SITE Red Hook Sewer

CORE # 16 SAMPLE # Page 3 of 3

		SOIL DESCRIPTION		
- 25.5' → 26.0'	#13	P. Grey Sandy Silt Q. Lt. Brown Sandy Silt	Dk Grey	10 YR 4/1
-27.3' → 27.5' → -28.0'	#14	R. Dk. Grey Clayey Silt S. Dk. Brown Peat T. Lt. Brown Silty Sand	Black	2.5 Y 2/0
-29.4' → -29.6' → -30.0'	#15	T. Lt. Brown Silty Sand U. Grey Slightly Clayey Silt V. Tan Clayey Silt	V. Dk. Grey	10 YR 3/1