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DEPARTMENT OF ENVIRONMENTAL
NATURAL RESOURCES

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ENVIRONMENTAL REVIEW

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LANDMARKS PRESERVATION
COMMISSION

ASSESSMENT OF ARCHAEOLOGICAL SENSITIVITY

PHELPS DODGE SITE

LONG RANGE SLUDGE MANAGEMENT PLAN

GEIS III

July 1991

Prepared By:

Allee King Rosen & Fleming, Inc.
117 East 29th Street
New York, NY 10016

529

ASSESSMENT OF ARCHAEOLOGICAL SENSITIVITY PHELPS DODGE SITE

A. INTRODUCTION

The Phelps Dodge site is located in the Maspeth section of Queens. The site is bounded by 56th Road and the LIRR tracks to the north, 48th Street to the east, vacant land to the west, and Maspeth and Newtown Creeks to the south (see Figure 1). The Phelps Dodge site occupies Block 2527, Lot 5 and Block 2529, Lot 1, an area of approximately 28 acres. The site contains the facilities of the former Laurel Hill Works of the Phelps Dodge Refining Corporation which terminated its operations in 1983.

B. ENVIRONMENTAL CONDITIONS

The surface elevation in the immediate vicinity of the site is between 20 and 23 feet above mean sea level (MSL) and has a uniform and gradual slope from 56th Road to Newtown Creek. Borings completed in 1985, at the southeast corner of the site, confirm that the site is composed of fill ranging in depth from 10 to 20 feet below grade (the depth is greater closer to the water). A set of boring logs are included in Appendix A. Groundwater at the site is located at an elevation of 8 to 12 feet above MSL and is affected by tidal activity within Newtown Creek.

C. BACKGROUND HISTORY

As evidenced on historic maps and indicated by soil borings reports, most of the project site was originally under water or marshland prior to landfilling activities in the late 19th century (see Figures 2 and 3, Appendix A). According to a report on the site's soil and groundwater conditions, the high water line was originally 300 to 500 feet inland from the current shoreline of Newtown and Maspeth Creeks (see Figure 3). These wetland areas, as well as the elevated area to the north of the site, may have been attractive to Native Americans, and in particular, there is evidence of prehistoric activity and Native American presence in the Maspeth Creek/Newtown Creek area. One site has been identified to the east of the project site on the Maspeth Creek (Solecki). Because of the proximity to this known site, and the general sensitivity of the area, the project site could be sensitive for prehistoric period remains.

The project site was expanded to its current configuration in the late 19th century when the surrounding Newtown Creek area was being transformed into a major industrial water way with dredging and the construction of bulkheads (historic maps are provided in Figures 4, 5, and 6). Since 1891, the project site has been occupied by an electrolytic copper refinery known originally as the Nichols Refinery and then as the Phelps Dodge Refinery. The entire site was used by the facility and was intensely developed over the long period of occupancy. The facility was closed in 1983. There were no other known uses on the site prior to the development of the refinery and, therefore, it is not considered sensitive for historic period resources. The issue of the possible importance of industrial artifacts

remaining from the Phelps Dodge facility has been addressed in a report prepared by Thomas Flagg that will be submitted to the Landmarks Preservation Commission as part of a related analysis for this project.

D. POTENTIAL PROJECT IMPACTS

The proposed generic building design for the sludge management plan is expected to have a spread-footing foundation to a depth of 5 to 6 feet below grade and there is also the possibility that pilings would be placed along the perimeter of the building - extending down to bedrock. The installation of spread footings is not expected to extend below the extensive layer of landfill covering the site and would therefore, not disturb potentially sensitive prehistoric archaeological resources below this level. The installation of piles would not be expected to significantly disturb any potential resources below the layer of fill.

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Historical Perspectives, Inc., *Phase 1A Archaeological Assessment for the New York City Long Range Sludge Management Plan, Maspeth, Queens*, June 1991. Ms. on file at the NYC Landmarks Preservation Commission and NYC DEP.

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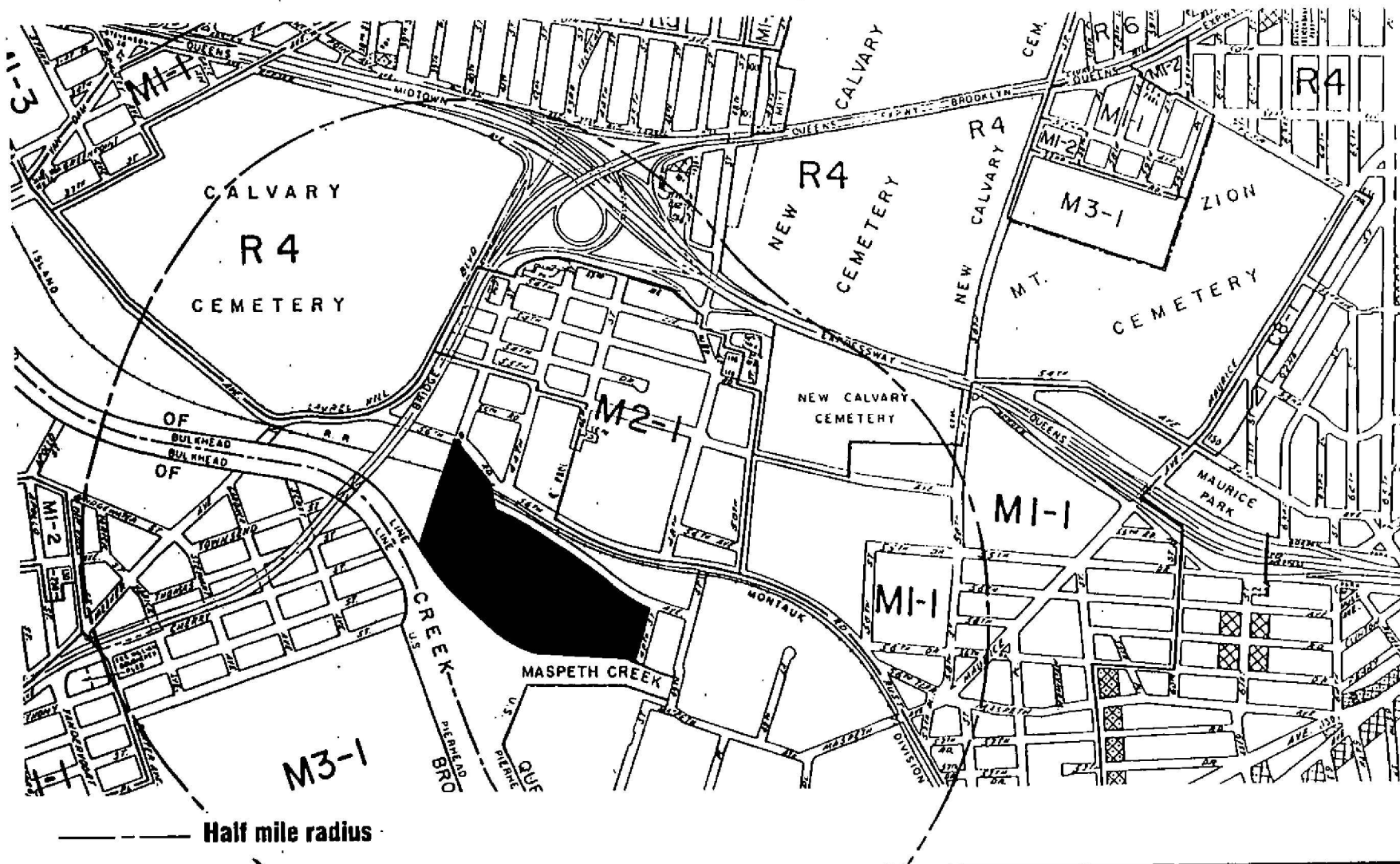
Maps

Dripps, Matthew, *Map of Kings and part of Queens Counties*, 1852.

Hyde, *Atlas of the Borough of Queens*, 1903, 1915, 1929, and 1954.

Sidney's Map of Twelve Miles around New York, 1849

Wolverton, *Map of Queens*, 1891.



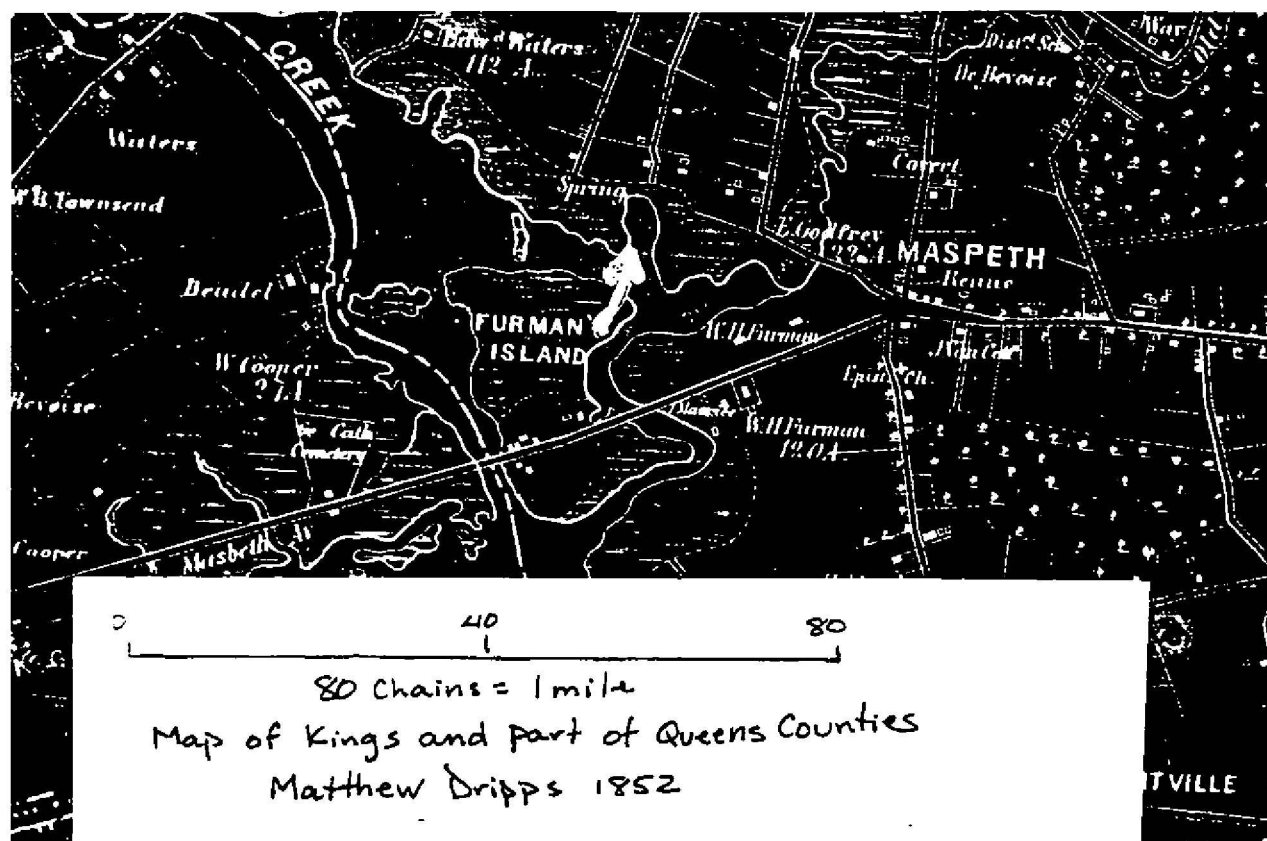
Scale 1" = 1200'

New York City
Department of
Environmental Protection
SLUDGE MANAGEMENT PLAN

**Zoning Map
Queens Site 7
Phelps Dodge**

Figure 1
Project Site

Figure 2



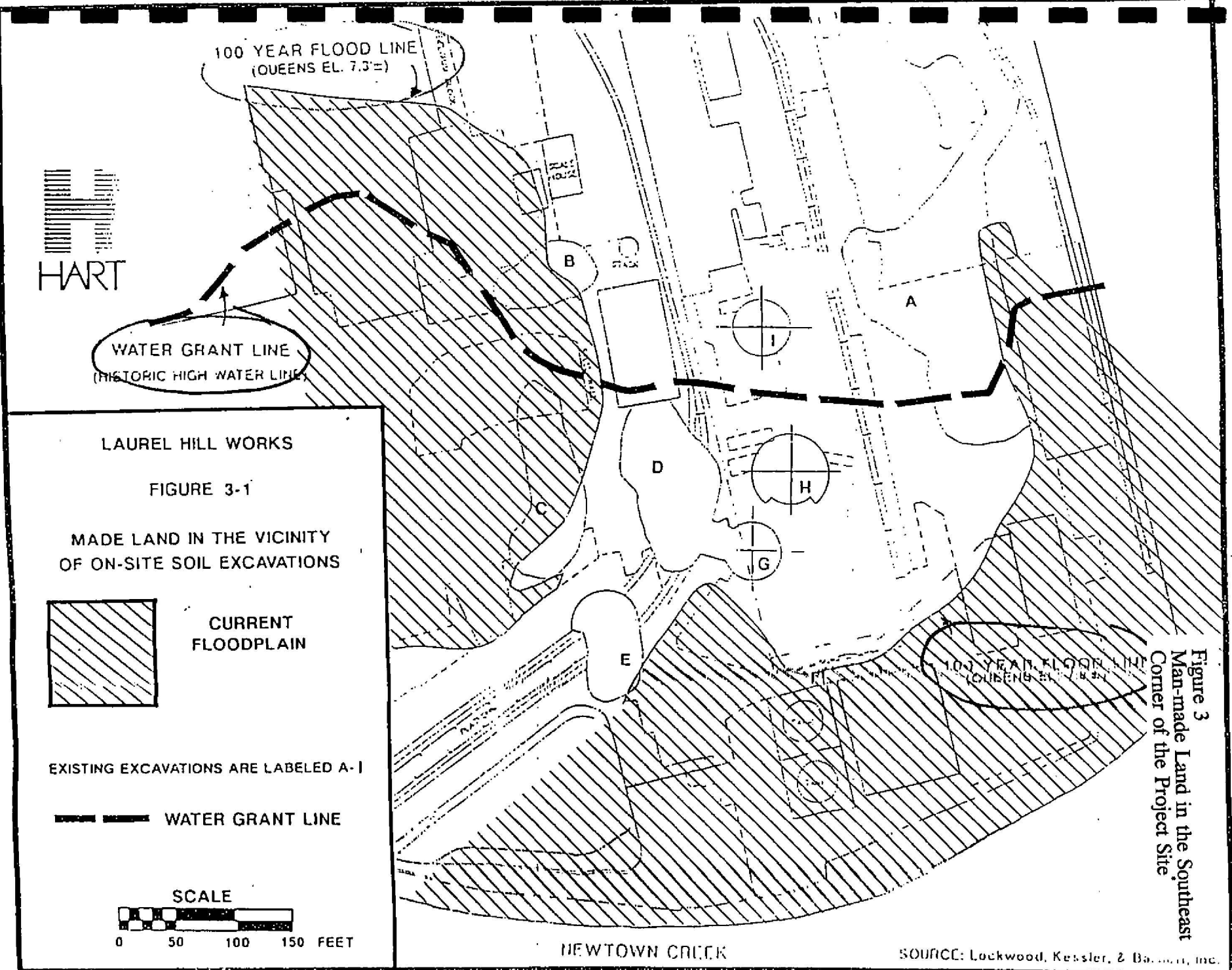
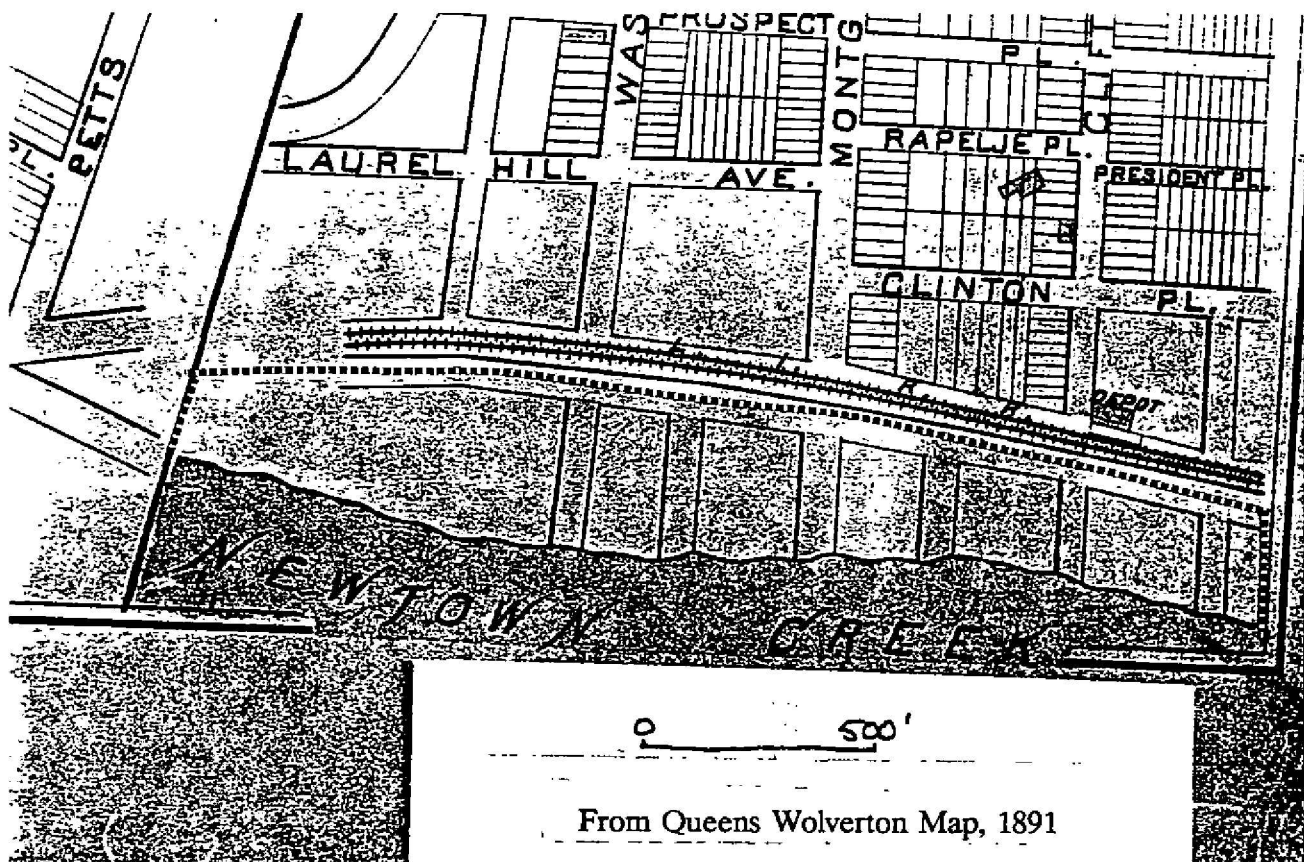
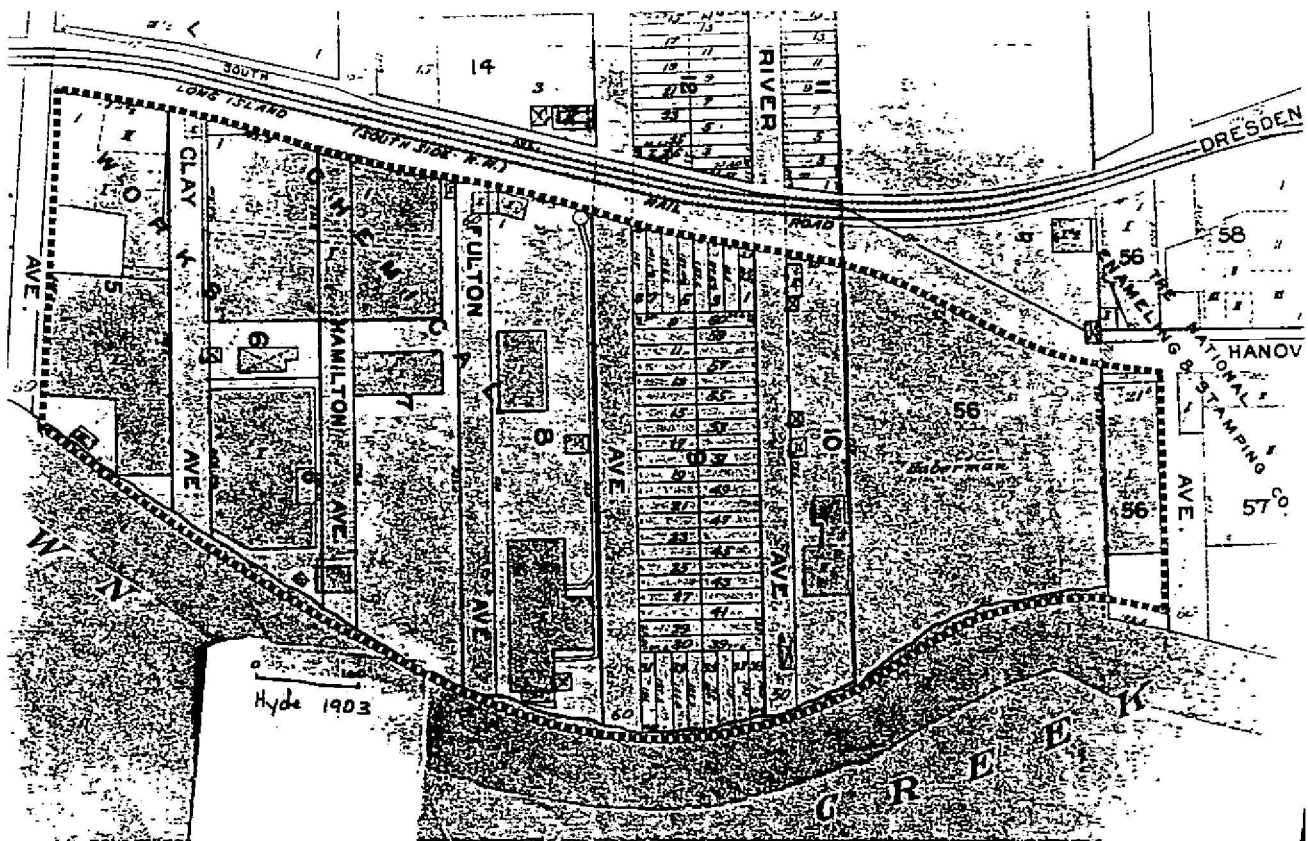


Figure 4



..... Approximate project site boundary

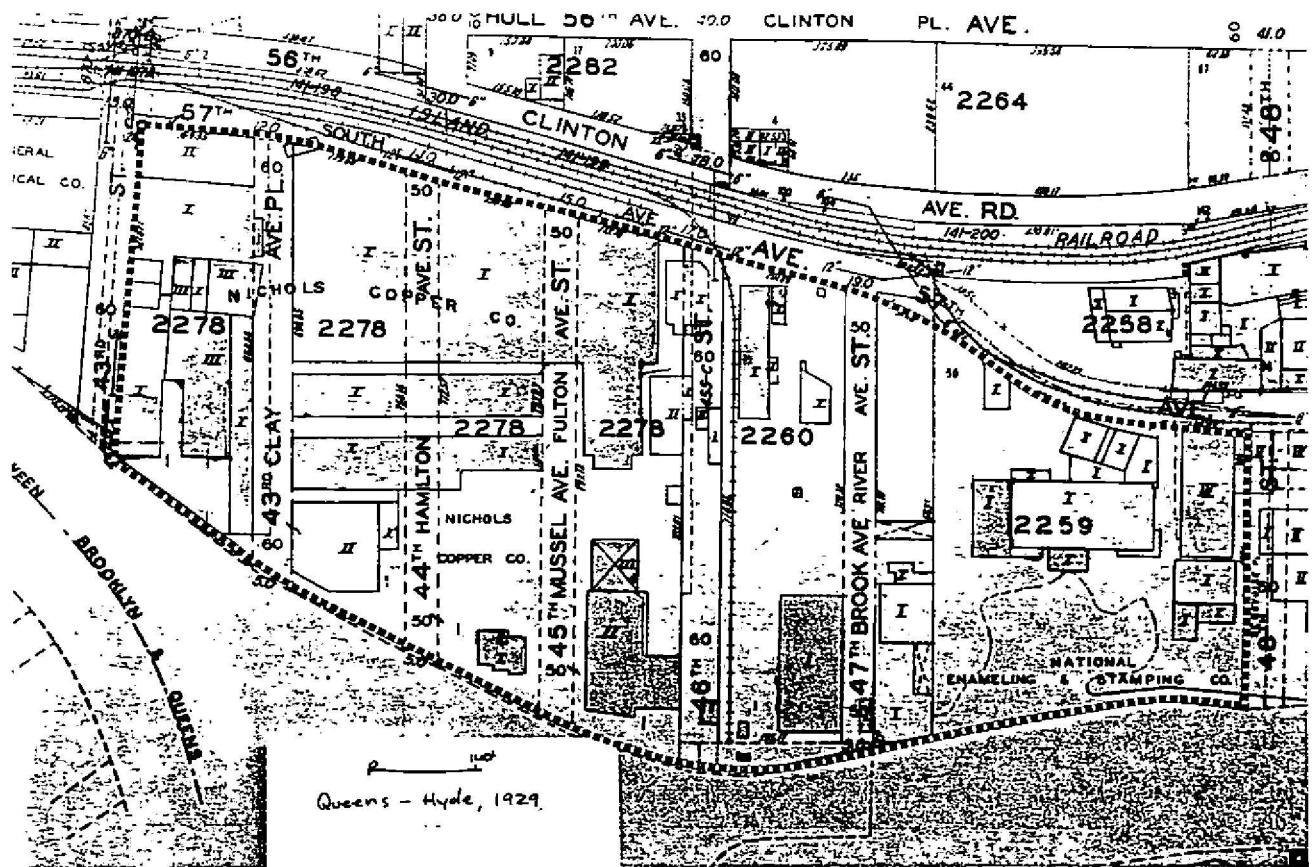
Figure 5



From Queens Belcher Hyde Map, 1903

----- Project Site

Figure 6



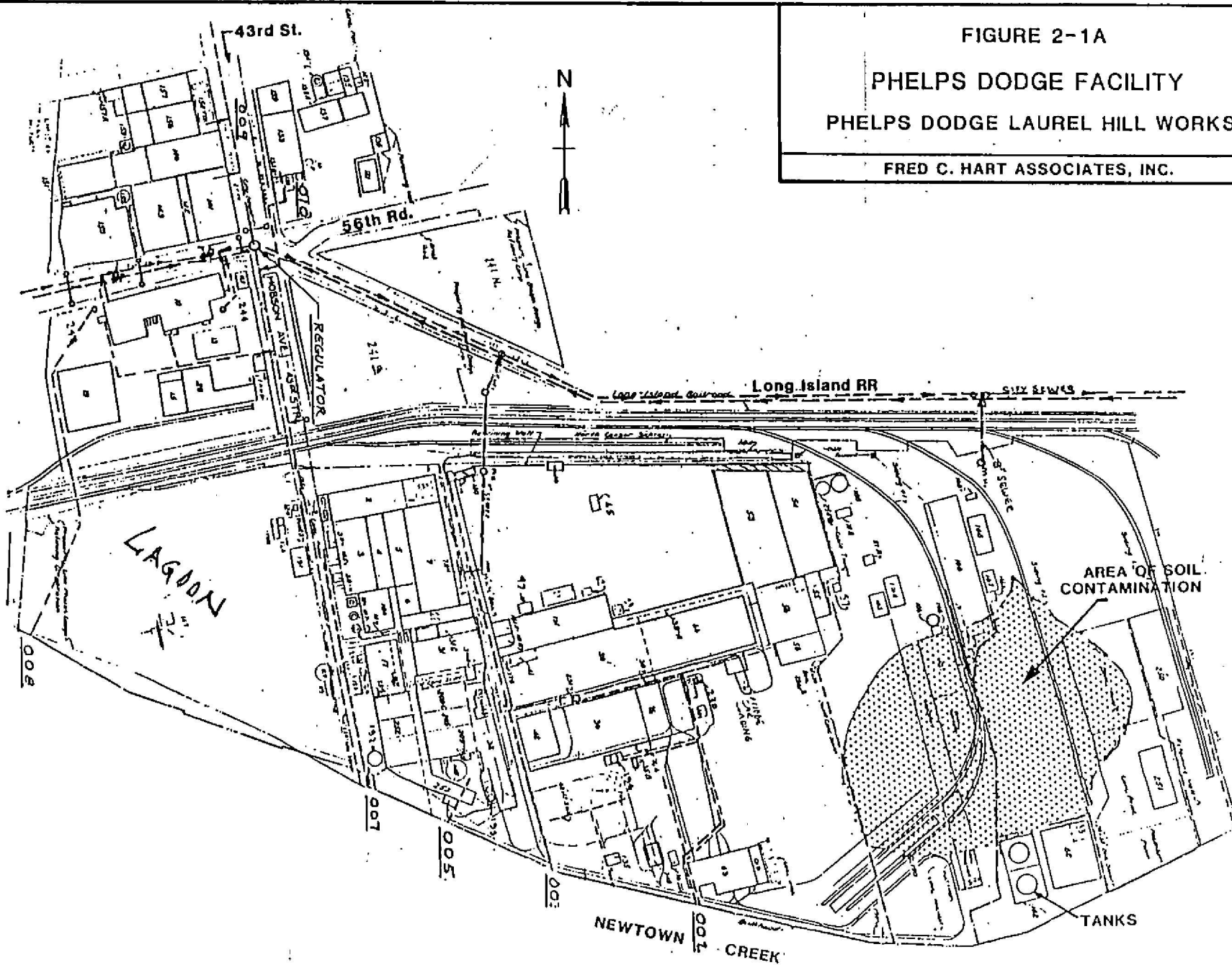
From Queens Belcher Hyde Map, 1929

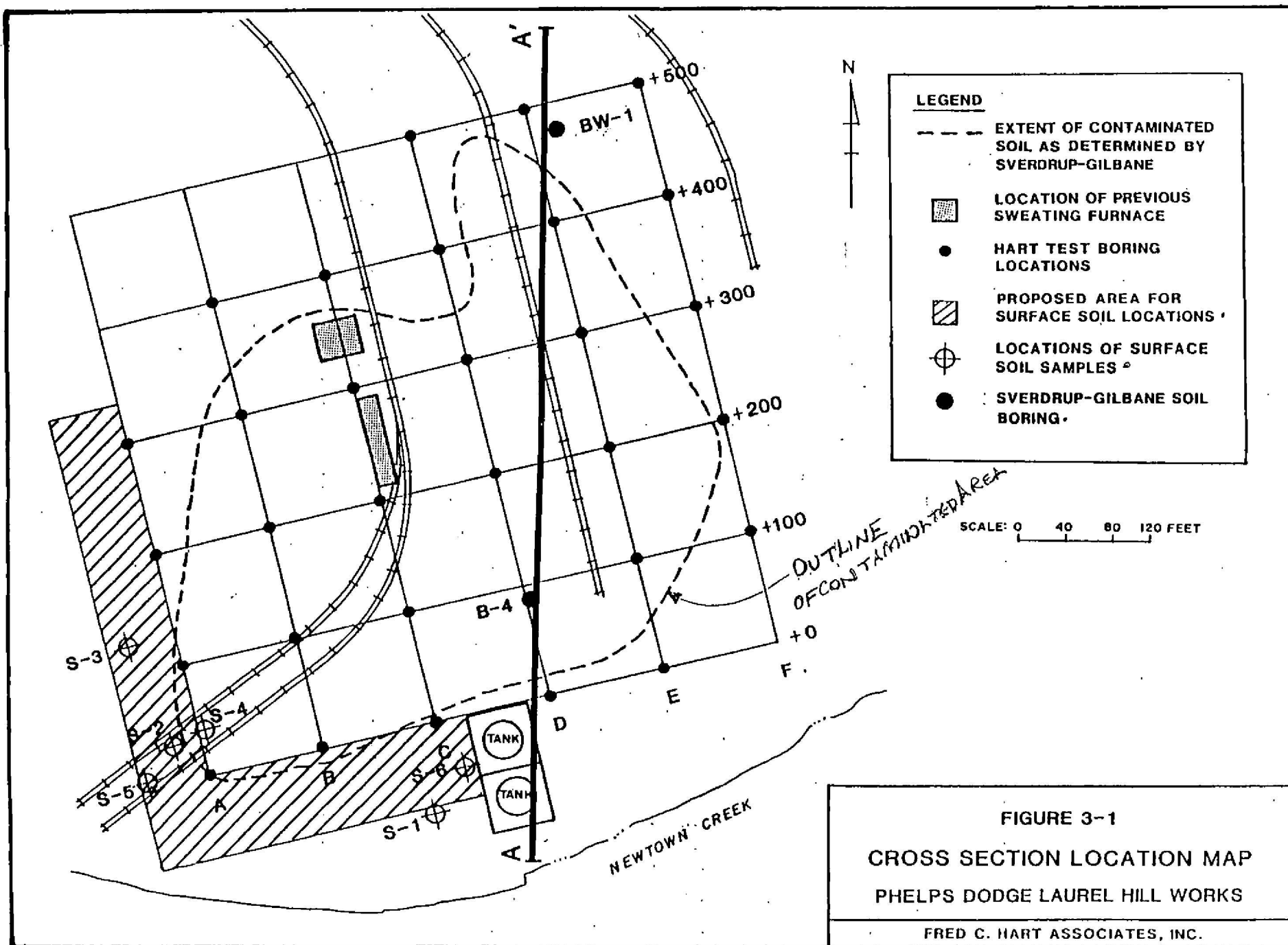
APPENDIX A

Fred C. Hart Associates
Soil Investigation Results, Laurel Hill Works, Maspeth, New York,
March 26, 1986

FIGURE 2-1A
PHELPS DODGE FACILITY
PHELPS DODGE LAUREL HILL WORKS

FRED C. HART ASSOCIATES, INC.





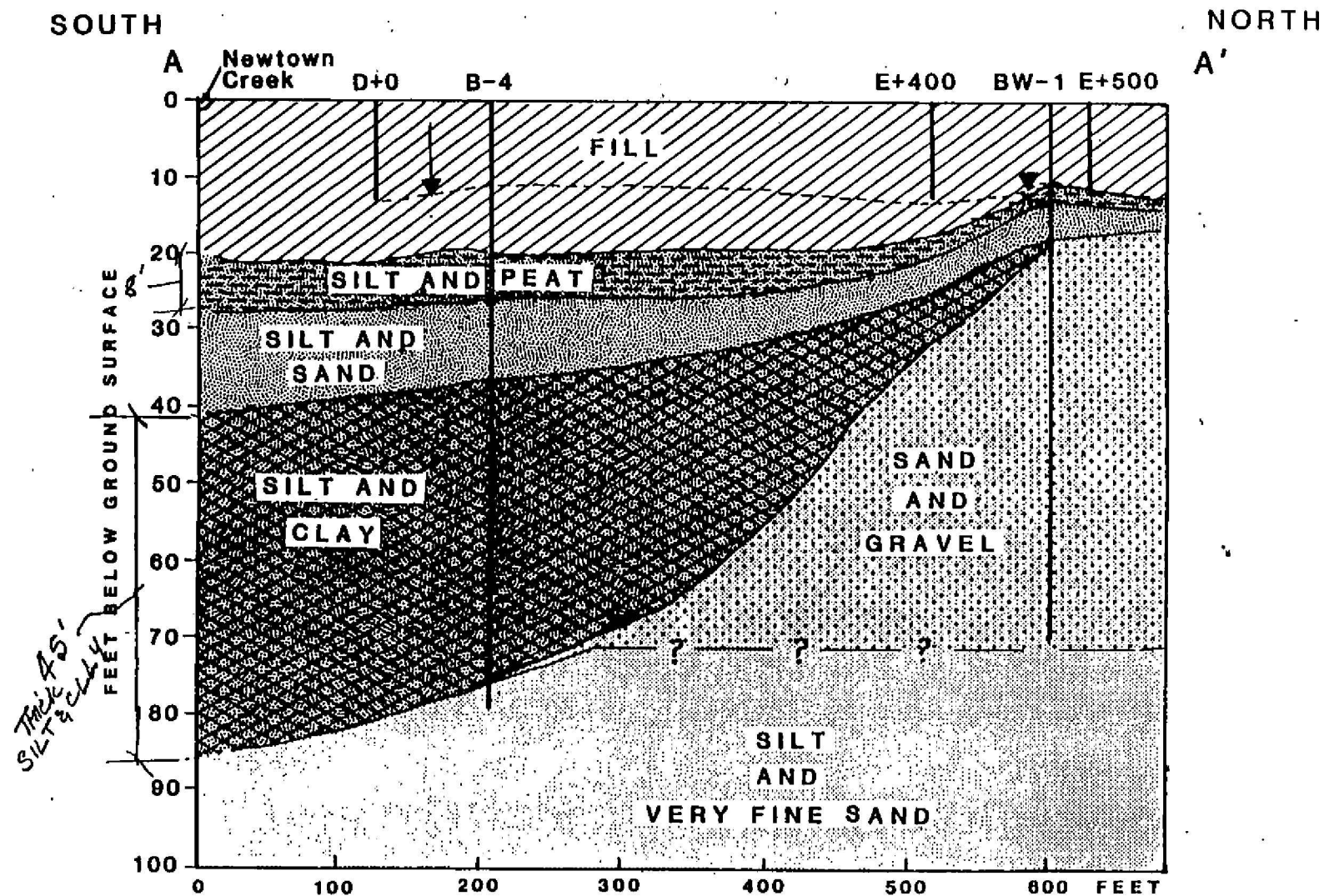


FIGURE 3-2

CROSS SECTION A-A'

PHELPS DODGE LAUREL HILL WORKS

FRED C. HART ASSOCIATES, INC.



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Rob Goldman
Date Started: 11/21/85
Date Finished: 11/21/85

Project Number: A057
Boring Number: 1
Boring Location: A+6
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

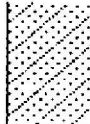
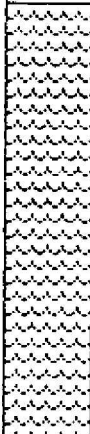
Sample Depth Begin : Ft.	Sample Depth End : Ft.	Blows per 6" of Drive	Recov. Inches	Total Lead mg/kg	Total Cadmium mg/kg	EP Tox Lead mg/l	Water Leach. mg/l	EP Tox Cadmium mg/l	Water Leach. mg/l	F e e t	Visual Classification
0.0:	2.0:		10:	19.3:	0.25:						[C] Concrete (10.5')
		3:								1	Fill
		8:								2	
2.0:	4.0:	10:	3:							3	[PT] Fill with wood
		7:								4	
		3:								5	
		3:									
4.0:	6.0:	100:	0:								[E] Bit lost in hole, Boring terminated



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Rob Goldman
Date Started: 11/20/85
Date Finished: 11/20/85

Project Number: A057
Boring Number: 2
Boring Location: A+100
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Sample	Blows	Recov.	Total	Total	E P Tox	Water	E P Tox	Water	F	Visual Classification	
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	e		
Begin	End	6" of		mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	e		
Ft.	Ft.	Drive					mg/l		mg/l	t		
0.0	2.0		14	2,730	13.6	1.0	0.3	0.11	(0.025)			(SC) Concrete
		35								1		Concrete
		100								2		Fill with copper bits and silver colored metal
2.0	4.0		0									() Concrete
		31								3		
		27								4		(PT) Fill with wood
4.0	6.0	7	0									Fill with wood
		10								5		
		10								6		
6.0	8.0	6	0									Fill with wood
		8								7		
		7								8		
8.0	10.0	2	3									Fill with wood
		2								9		
		1								10		
10.0	12.0	1	8									() Fill
		1								11		
		1								12		

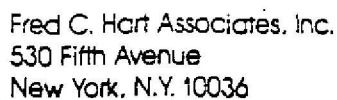


Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Rob Goldman
Date Started: 11/19/85
Date Finished: 11/20/85

Project Number: A057
Boring Number: 3
Boring Location: A+200
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample Depth	Sample Depth	Blows per 6" of Drive	Recovery Inches	Total Lead mg/kg	Total Cadmium mg/kg	E P Tox Lead mg/l	Water Leach Lead mg/l	E P Tox Cadmium mg/l	Water Leach Cadmium mg/l	Visual Classification
0.0	2.0		6	253	2.8					Concrete (11")
		5								Fill
		46								
2.0	4.0	13	7							Fill
		24								
		5								
4.0	6.0	4	22							Fill; petroleum odor
6.0	8.0	1	22							Fill; petroleum odor
		1								
		1								
8.0	10.0	4	22							Fill; petroleum odor
10.0	12.0	2	22							Fill; petroleum odor
		3								
		2								
		3								



Project Number: A057
Boring Number: 4
Boring Location: A+300
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Sample	Blows	Recov.	Total	Total	E P Tox	Water	E P Tox	Water	F
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	e
Begin	End	ft. of		mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	e
Ft.	Ft.	Drive					mg/l		mg/l	t
0.0	2.0	1	14	240	15.8					
		6								1
		60								2
2.0	4.0		5							3
		23								4
		24								5
4.0	6.0	3	10							6
		2								7
		1								8
		1								9
6.0	8.0	2	22							10
		1								11
		1								12
		<1								
8.0	10.0	1	18							
		1								
		1								
		2								
10.0	12.0	1	22							
		2								
		2								
		3								

Visual Classification

[PT] Fill with wood

[CH] Fill with cinders

C 1 Fill

Fill

Fill

Fill

Fill; petroleum odor



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Naspeth, New York
Site Geologist: Rob Goldman
Date Started: 11/21/85
Date Finished: 11/21/85

Project Number: A057
Boring Number: 5
Boring Location: B+0
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

[illegible]



Fred C. Hart Associates, Inc.
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New York, N.Y. 10036

Project Number: A057
Boring Number: 6
Boring Location: B+100
Drilling Contractor: Soil Mechanics
Drillers: Andy Sieders

Sample	Blows	Recovery	Total	P Tox	Water	E P Tox	Water	F
Depth	per	Inches	Lead	Cadmium	Lead	Leach	Cadmium	e
Begin	End	6" of	ng/kg	ng/kg	ng/l	Lead	ng/l	e
Ft.	Ft.	Drive				ng/l	ng/l	t
0.0	2.0	11	20	6,104	17.7			
		7						1
		19						2
		15						3
2.0	4.0	13	12					
		10						
		60						
4.0	6.0	4	14					
		13						
		6						
		6						
6.0	8.0	6	22	1,813	84	<0.5	<0.2	0.95
		5						<0.02
		9						
		13						
8.0	10.0	10	20					
		7						
		2						
		2						
10.0	12.0	7	22					
		8						
		7						
		12						

Visual Classification

[OH] Fill with cinders

Fill with brick fragments,
cinders, and green staining

[] Concrete
Fill

[SC] Fill with green flakes

[] Fill with brick fragments

Fill with a few brick
fragments



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Rob Goldman
Date Started: 11/19/85
Date Finished: 11/19/85

Project Number: A057
Boring Number: 7
Boring Location: B+200
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Sample	Blows	Recov.	Total	Total	E P Tox	Water	E P Tox	Water	F
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach	Cadmium	Leach	e
Begin	End	6" of		ag/kg	ag/kg	ag/l	Lead	ag/l	Cadmium	e
Ft.	Ft.	Drive					ag/l		ag/l	t
0.0	2.0		10	3,880	15.4					
		18								1
		29								2
2.0	4.0	28	22	13.4	26.0	7.5	<0.2	0.4	<0.02	
		18								3
		18								4
		70								5
4.0	6.0	4	12							
		15								6
		7								7
		7								8
6.0	8.0	6	0							
		8								9
		10								10
		5								
8.0	10.0	1	21							
		2								
		1								
10.0	12.0		0							

Visual Classification

[] Concrete (13")

Fill

[SC] Fill with green staining, wood and copper bits

Fill with copper bits, trace of cinders

No recovery

[] Fill

No recovery



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530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Rob Goldman
Date Started: 11/19/85
Date Finished: 11/19/85

Project Number: A057
Boring Number: 8
Boring Location: B+300
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Sample	Blows	Recoy.	Total	Total	IE P Tox	Water	IE P Tox	Water	F	Visual Classification	
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	e		
Begin	End	6" of		mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	e		
Ft.	Ft.	Drive					mg/l		mg/l	t		
0.0	2.0		11	7,210	23.1	20.0	0.30	1.3	0.03	1	[] Concrete	
							pH 8.46					
		12								2	[SC] Fill with brick fragments and green staining Fill with green staining	
		12										
2.0	4.0	10	6	71.0	7.4	2.2	<0.2	0.17	<0.02	3		
		100								4	[] Fill with brick fragments	
										5		
4.0	6.0	1	22							6	Fill	
		1										
		1								7		
		1								8	Fill	
6.0	8.0	21	22									
		40								9		
		100/3"								10	Fill	
8.0	10.0	7	6							11		
		10										
		100/3"								12		
10.0	12.0	9	8									
		9										
		100/3"										



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Rob Goldman
Date Started: 11/19/85
Date Finished: 11/19/85

Project Number: A057
Boring Number: 9
Boring Location: B+400
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample Depth	Sample Depth	Blows per 6" of Drive	Recovery Inches	Total Lead mg/kg	Total Cadmium mg/kg	Lead mg/l	Water Leach. mg/l	Lead mg/l	Water Leach. mg/l	Visual Classification
0.0	2.0	8	22	17,800	64.1					(SC) Fill with green staining, trace of cinders
		10								
		6								
		7								
2.0	4.0	10	11							Fill with green staining
		17								
		100/4"								
4.0	6.0	12	5							
		25								
		100								
6.0	8.0	23	8							
		40								
		100								
8.0	10.0	15								
		47								
		100								
		13								
10.0	12.0	34								
		62								
		57								
		85								



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Rob Goldman
Date Started: 11/18/85
Date Finished: 11/19/85

Project Number: A057
Boring Number: 10
Boring Location: C+0
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Sample	Blows	Recov.	Total	Total	EP Tox	Water	EP Tox	Water	
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	
Begin	End	6" of		mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	
Ft.	Ft.	Drive					mg/l		mg/l	
0.0	2.0		18	1,350	7.6	2.0	0.25	0.17	<0.025	
		10					pH 5.17			
		2								
		50								
2.0	4.0	35	20							
		55								
		100/4"								
4.0	6.0	46	8							
		35								
		100/3"								
6.0	8.0	100/5"	10							
8.0	10.0	2	10							
		3								
		1								
		2								
10.0	12.0	1	2							
		2								
		1								
		1								

Visual Classification

1	Concrete (6")
2	Fill containing slag
3	Fill containing slag
4	Fill
5	Fill
6	Fill
7	Fill
8	Fill
9	Fill
10	Fill
11	Fill
12	Fill



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Rob Goldman
Date Started: 11/19/85
Date Finished: 11/19/85

Project Number: A057
Boring Number: 11
Boring Location: C+100
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample Depth Begin Ft.	Sample Depth End Ft.	Blows 6" of Drive	Recovery Inches	Total Lead mg/kg	Total Cadmium mg/kg	Lead : mg/l	Water : mg/l	Lead : mg/l	Water : mg/l	Visual Classification
0.0	2.0	8	22	966	3.6	<0.2	<0.2	0.3	<0.025	() Fill with concrete pieces
		10				pH 8.06				
		8								
		10								
2.0	4.0	10	22							Fill
		8								
		6								
		5								
4.0	6.0	2	16							Fill
		10								
		35								
		50								
6.0	8.0	18	7							Fill
		33								
		50								
		44								
8.0	10.0	1	17							(SC) Fill with copper pieces
		7								
		7								
		6								
10.0	12.0	3	18							Fill with copper pieces
		3								
		2								
		2								



Project Number: A057
Boring Number: 12
Boring Location: C+200
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Blows	Recov.	Total	Total	E P Tox	Water	E P Tox	Water	F
Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	e
Begin	End	6" of	sq/kg	sq/kg	sq/l	Lead	sq/l	Cadmium	e
Ft.	Ft.	Drive				sq/l		sq/l	t
0.0	2.0		12	7,050	8.1				Visual Classification
		11							() Concrete (6.75")
		12							(SM) Fill with slag and green staining
0.0	4.0	15	22	1,144	26.0	185	<0.2	1.65	(SC) Fill with copper bits and green staining
		8							
		16							
		9							
4.0	6.0	5	0						No recovery
		5							
		6							
		10							
6.0	8.0	10	9						(SM) Gravel fill with ore pieces
		10							
		7							
		10							
8.0	10.0	60	6						() Fill
		20							
		21							
		19							
0.0	12.0	12	10						Fill
		10							
		15							
		16							



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Number: A057
Boring Number: 13
Boring Location: C+300
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

[illegible]

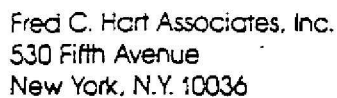


Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Wendy Leonard
Date Started: 11/12/85
Date Finished: 11/12/85

Project Number: A057
Boring Number: 15
Boring Location: D+100
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample:	Sample:	Blows	Recov.	Total	Total	LE P Tox	Water	LE P Tox	Water	
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach	Cadmium	Leach	
Begin	End	6" of		mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	
Ft.	Ft.	Drive					mg/l		mg/l	Visual Classification
0.0:	2.0:	7:	8:							
		14:								1
		14:								2
2.0:	4.0:	9:	18:							Fill with concrete pieces
		18:								3
		31:								[OH] Thin ash layer
		32:								4
4.0:	6.0:	22:	10:							Fill with copper pieces
		22:								5
		92:								6
		43:								7
6.0:	8.0:	38:	10:							Fill with copper pieces
		100:								8
8.0:	10.0:	100:	7:							[] Fill
										9
										10
10.0:	12.0:	20:								Fill
		100:								11



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Project Number: A057
Boring Number: 16
Boring Location: D-200
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample:	Sample:	Recov.:	Total :	Total :	E P Tox:	Water :	E P Tox:	Water :	F	
Depth :	Depth :	per :	Inches:	Lead :	Cadmium:	Lead :	Leach.:	Cadmium:	Leach.:	e
Begin :	End :	6" of :	:	mg/kg :	mg/kg :	mg/l :	Lead :	mg/l :	Cadmium:	e
Ft. :	Ft. :	Drive :	:	:	:	:	mg/l :	:	mg/l :	t
0.0:	2.0:	6:	16:	975:	44.2:	0.50:	<0.2:	0.44:	<0.025:	
:	:	8:	:	:	:	pH 9.01:	:	:	:	1
:	:	12:	:	:	:	:	:	:	:	
:	:	15:	:	:	:	:	:	:	:	2
2.0:	4.0:	:	11:	1,897:	11.0:	5.0:	<0.2:	0.26:	<0.02:	
:	:	:	:	:	:	:	:	:	:	3
:	:	8:	:	:	:	:	:	:	:	
:	:	12:	:	:	:	:	:	:	:	4
4.0:	6.0:	14:	13:	:	:	:	:	:	:	
:	:	14:	:	:	:	:	:	:	:	5
:	:	15:	:	:	:	:	:	:	:	
:	:	12:	:	:	:	:	:	:	:	6
6.0:	8.0:	5:	0:	:	:	:	:	:	:	
:	:	11:	:	:	:	:	:	:	:	7
:	:	10:	:	:	:	:	:	:	:	
:	:	7:	:	:	:	:	:	:	:	8
8.0:	10.0:	5:	5:	:	:	:	:	:	:	
:	:	5:	:	:	:	:	:	:	:	9
:	:	5:	:	:	:	:	:	:	:	
:	:	4:	:	:	:	:	:	:	:	10
10.0:	12.0:	3:	15:	:	:	:	:	:	:	
:	:	3:	:	:	:	:	:	:	:	11
:	:	3:	:	:	:	:	:	:	:	
:	:	6:	:	:	:	:	:	:	:	12

Visual Classification

[] Fill

Fill

(PT) Fill with wood

No recovery

[] Fill; water appears to have
an oily sheen

Fill; water appears to have
an oily sheen



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Ecologist: Rob Goldman
Date Started: 11/21/85
Date Finished: 11/21/85

Project Number: A057
Boring Number: 17
Boring Location: B-300
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample Depth Begin : End : Ft. : Ft. :	Blows per : 8' of : Drive :	Recovery Inches : :	Total Lead : mg/kg :	Total Cadmium : mg/kg :	IE P Tox Lead : mg/l :	Water Leach : mg/l :	IE P Tox Cadmium : mg/l :	Water Leach : mg/l :	Visual Classification
0.0 : 2.0 :	7 :	5,260 :	2.40 :	5.0 :	<0.2 :	0.07 :	<0.025 :	1	[] Concrete
	6 :							2	[SM] Fill containing slag
	12 :							3	[] Concrete
2.0 : 4.0 :	14 :							4	[SM] Fill containing ore fragments
	40 :							5	Fill containing slag and ore fragments
	21 :							6	Fill containing slag
4.0 : 6.0 :	13 :	11 :						7	
	3 :							8	
	2 :							9	[] Fill
6.0 : 8.0 :	3 :	22 :	783 :	2.0 :	<0.5 :	<0.2 :	<0.02 :	10	
	2 :							11	[SM] Fill containing slag
	3 :							12	
	4 :								
8.0 : 10.0 :	7 :	5 :							
	7 :								
	13 :								
	20 :								
10.0 : 12.0 :	3 :								
	6 :								
	10 :								
	12 :								



Project Number: AG57
Boring Number: 18
Boring Location: D+400
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Depth	Blows per ft.	Recovery, inches	Total Lead mg/kg	Total Cadmium mg/kg	E.P. Toxic Lead mg/l	Water Leach. mg/l	E.P. Toxic Cadmium mg/l	Water Leach. mg/l
0.0:	2.0:	3:	20:	4,700:	3.1:	:	:	:	:
:	:	4:	:	:	:	:	:	:	:
:	:	2:	:	:	:	:	:	:	:
:	:	2:	:	:	:	:	:	:	:
2.0:	4.0:	2:	8:	:	:	:	:	:	:
:	:	3:	:	:	:	:	:	:	:
:	:	2:	:	:	:	:	:	:	:
:	:	2:	:	:	:	:	:	:	:
4.0:	6.0:	:	0:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:	:
6.0:	8.0:	2:	8:	557:	1.7:	0.8:	<0.2:	0.04:	<0.02:
:	:	3:	:	:	:	:	:	:	:
:	:	4:	:	:	:	:	:	:	:
:	:	4:	:	:	:	:	:	:	:
8.0:	10.0:	2:	16:	:	:	:	:	:	:
:	:	13:	:	:	:	:	:	:	:
:	:	23:	:	:	:	:	:	:	:
:	:	89:	:	:	:	:	:	:	:
10.0:	12.0:	7:	14:	:	:	:	:	:	:
:	:	6:	:	:	:	:	:	:	:
:	:	100/5:	:	:	:	:	:	:	:

Visual Classification

(SM) Fill containing crushed slag

Fill containing crushed slag

() Concrete

(SM) Fill containing metal ore

() Fill

Fill

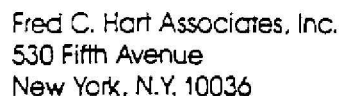


Fred C. Hart Associates, Inc.
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Project Name: Phelps Dodge
Project Location: Maspeth, New York
Site Geologist: Wendy Leonard
Date Started: 11/15/85
Date Finished: 11/15/85

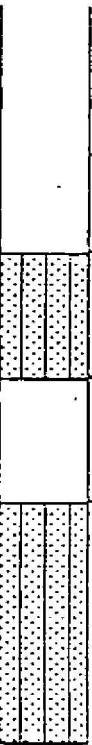
Project Number: A057
Boring Number: 19
Boring Location: D-500
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

[illegible]



Project Number: A057
Boring Number: 20
Boring Location: E+0
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Blows	Recov.	Total	Total	P Tox	Water	P Tox	Water	F	
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach	Cadmium	Leach	e
Begin	End	6" of		mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	e
Ft.	Ft.	Drive					mg/l		mg/l	t
0.0	2.0		12	790	24.6					
										1
		16								
		28								2
2.0	4.0	19	16							
		16								3
		13								
		10								4
4.0	6.0	3	13							
		13								5
		54								
		100								6
6.0	8.0	4	18							
		8								7
		5								
		5								8
8.0	10.0	2	6							
		1								9
		1								
		1								10
10.0	12.0	1	9							
		1								11
		1								
		1								12



Visual Classification

() Concrete (10.4')

Fill

Fill

(SM) Fill containing slag

() Fill

(SM) Fill containing slag fragments

Fill containing slag fragments



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Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Wendy Leonard
Date Started: 11/13/85
Date Finished: 11/13/85

Project Number: A057
Boring Number: 21
Boring Location: E-100
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample Depth	Sample Depth	Blows per 5' of Drive	Recovery Inches	Total Lead mg/kg	Total Cadmium mg/kg	E P Tox Lead mg/l	Water Leach Lead mg/l	E P Tox Cadmium mg/l	Water Leach Cadmium mg/l	Visual Classification
0.0	2.0		12	4,130	6.6					[] Concrete (10")
		9								
		23								[SC] Fill containing green crystals
2.0	4.0	20	8	1,893	9.2	0.5	<0.2	0.08	<0.02	[] Fill
		25								
		23								
		19								
4.0	6.0	10	6							Fill
		7								
		10								
		28								
6.0	8.0	10	19							[OH] Fill containing ashen material
		33								
		100								
8.0	10.0	3	22							[] Fill
		3								
		3								
		10								
10.0	12.0	10	15							Fill
		6								
		3								
		3								



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Project Name: Phelps Dodge

Project Location: Maspeth, New York

Site Geologist: Wendy Leonard

Date Started: 11/12/85

Date Finished: 11/13/85

Project Number: A057

Boring Number: 22

Boring Location: E-200

Drilling Contractor: Soil Mechanics

Driller: Andy Sieders

Sample	Sample	Blows	Recov.	Total	Total	IE P Tox	Water	IE P Tox	Water	F
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	e
in	End	6" of		ag/kg	ag/kg	ag/l	Lead	ag/l	Cadmium	e
	Ft.	Drive					ag/l		ag/l	t
0.0	2.0		13	3,990	12.6					
2.0	4.0	100	10							
		35								
		43								
4.0	6.0	4	16							
		6								
		100								
6.0	8.0	100	6	650	1.5	1.9	<0.2	0.02	<0.02	
8.0	10.0	93	18							
		31								
		13								
		15								
10.0	12.0	10								
		13								
		12								
		14								

Visual Classification

1	[] Concrete (9")
2	[SC] Fill containing green crystals
3	[PT] Fill containing wood
4	Fill containing wood
5	
6	[QH] Fill with black ash material
7	Fill with black ash material
8	
9	[] Fill
10	Fill
11	
12	



Project Number: A057
Boring Number: 23
Boring Location: E+300
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample:	Sample:	Blows:	Recov.:	Total:	Total:	E P Tox:	Water:	E P Tox:	Water:	F
Depth:	Depth:	per	Inches:	Lead:	Cadmium:	Lead:	Leach.:	Cadmium:	Leach.:	e
Begin:	End:	6" of		mg/kg:	mg/kg:	mg/l:	Lead:	mg/l:	Cadmium:	e
Ft.:	Ft.:	Drive:					mg/l:		mg/l:	t
0.0:	2.0:	11:	12:	3,440:	39.4:					
		100:								
2.0:	4.0:	20:	4:	767:	45.0:	1.3:	<0.2:	2.57:	<0.02:	
		100:								
4.0:	6.0:	95:	8:							
		100:								
6.0:	8.0:	25:	20:							
		52:								
		45:								
		24:								
8.0:	10.0:	12:	21:							
		15:								
		19:								
		23:								
10.0:	12.0:	12:	13:							
		22:								
		17:								
		19:								

Visual Classification

() Concrete (9")

Fill

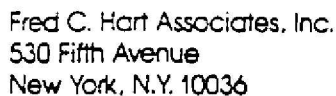
Fill

(OH) Fill with black ashen material

() Fill

(SM) Fill with ore pieces

Fill with ore pieces



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Project Name: Pheips Dodge
Project Location: Maspeth, New York
On Site Geologist: Wendy Leonard
Date Started: 11/15/85
Date Finished: 11/15/85

Project Number: A057
Boring Number: 24
Boring Location: E+400
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Sample	Blows	Recbv.	Total	E P Tox	Water	E P Tox	Water	F
Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	e
Begin	End	6" of	mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	e
Ft.	Ft.	Drive				mg/l		mg/l	t
0.0	2.0		20	3,890	10.9				
		6							1
		20							2
		49							3
2.0	4.0	46	20						4
		49							5
		53							6
		100							7
4.0	6.0	8	15						8
		6							9
		4							10
		7							11
6.0	8.0	41	19	61.0	0.7	<0.5	<0.2	<0.02	<0.02
		31							12
		4							
		5							
8.0	10.0	19	20						
		13							
		7							
		9							
10.0	12.0	5	14						
		6							
		6							
		5							

Visual Classification

[] Asphalt (6")
Fill

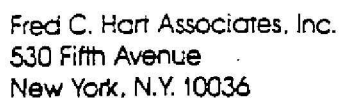
[] Fill

[OH] Fill with ashen material

[] Fill

[OH] Fill with ashen material

[SN] Fill with ore



Project Number: A057
Boring Number: 25
Boring Location: E+500
Drilling Contractor: Soil Mechanics
Driller: Andy Sieder

Sample	Blows	Recvy.	Total	Total	E P Tox	Water	E P Tox	Water	F
Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	e
Begin	End	6" of	mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	e
Ft.	Ft.	Drive				mg/l		mg/l	t
0.0	2.0		10	1,310	4.2	0.30	<0.2	0.11	<0.25
						pH 7.0			
		46							1
		100							2
2.0	4.0	3	21						3
		4							4
		6							5
		5							6
4.0	6.0	4	20						7
		4							8
		4							9
		5							10
6.0	8.0	3	21						11
		4							12
		5							
		4							
8.0	10.0	2	3						
		2							
		2							
		2							
10.0	12.0	2	6						
		3							
		3							
		6							

Visual Classification

1

2

3

4

5

6

7

8

9

10

11

12

[] Concrete (10')

[SM] Fill with ore

[OH] Fill with ashen material

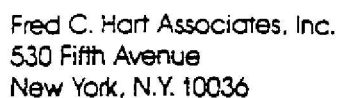
Fill with ashen material

Fill with ashen material

Fill with ashen material

Fill with ashen material

[] Fill



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Project Number: A057
Boring Number: 26
Boring Location: F+100
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Blows	Recovery	Total	Total	Lead	Water	Lead	Water	Visual Classification
Depth	per	Inches	Lead	Cadmium	Lead	Leach	Cadmium	Leach	
Begin	End	6" of	mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	
ft.	ft.	Drive				mg/l		mg/l	
0.0	2.0	12	922	7.6					[] Concrete (11')
		7							
		23							[SC] Fill with green crystals
2.0	4.0	21	8						
		21							[] Fill with concrete pieces
		35							
		38							
4.0	6.0	100	12						Fill
		10							[PT] Fill with wood
		12							[] Fill
6.0	8.0	20	12						Fill
		50							
		91							
		93							
8.0	10.0	16	9						Fill; oily sheen on materials
		6							
		11							
9.0	12.0	3	5						Fill
		6							
		3							
		2							



Fred C. Hart Associates, Inc.
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New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Wendy Leonard
Date Started: 11/13/85
Date Finished: 11/13/85

Project Number: A057
Boring Number: 27
Boring Location: F+200
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Sample	Blows	Recoy.	Total	Total	E P Tox	Water	E P Tox	Water	F
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	e
Begin	End	6" of		mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	e
Ft.	Ft.	Drive					mg/l		mg/l	t
0.0	2.0		4	12,960	25.5					
		8								1
		16								2
2.0	4.0	8	10	2,413	41.0	2.7	<0.2	0.7	<0.02	
		10								3
		12								4
		8								5
4.0	6.0	7	8							6
		10								7
		100								8
6.0	8.0	58	8							9
		100								10
										11
8.0	10.0	35	16							12
		93								
		78								
		26								
10.0	12.0	35	20							
		35								
		43								
		35								

Visual Classification

[] Concrete (9")

[PT] Fill containing wood

[OH] Fill containing black ash material

[PT] Fill containing wood

[] Fill

Fill

Fill; sheen on rock surfaces



Project Number: A057
Boring Number: 28
Boring Location: F+300
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Sample	Blows	Recov.	Total	Total	E P Tox	Water	E P Tox	Water	F
Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.		e
Begin	End	6" of		mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	e
Ft.	Ft.	Drive					mg/l		mg/l	t
0.0	2.0		8	72.4	54.3	<0.2	<0.2	2.45	0.40	
						pH 5.47				
		1								1
		6								2
2.0	4.0	33	10							
		100								3
										4
4.0	6.0	100	10							
		85								5
		56								6
6.0	8.0	31	22	54	3.9	<0.5	<0.2	0.04	<0.02	
		31								7
		36								8
		34								9
8.0	10.0	3	19							
		2								10
		1								11
		1								12
10.0	12.0	1	8							
		3								
		1								
		2								

Visual Classification

[] Concrete (8.5')

[GH] Fill containing ashen material

[] Fill with concrete pieces

[SM] Fill containing slag

Fill containing slag

Fill containing slag

Fill containing slag and a few pieces of copper



Fred C. Hart Associates, Inc.
530 Fifth Avenue
New York, N.Y. 10036

Project Name: Phelps Dodge
Project Location: Maspeth, New York
On Site Geologist: Wendy Leonard
Date Started: 11/15/85
Date Finished: 11/15/85

Project Number: A057
Boring Number: 29
Boring Location: F+400
Drilling Contractor: Soil Mechanics
Driller: Andy Sieders

Sample	Sample	Blows	Recov.	Total	Total	E P Tox	Water	E P Tox	Water	F	Visual Classification	
Depth	Depth	per	Inches	Lead	Cadmium	Lead	Leach.	Cadmium	Leach.	e		
Begin	End	6" of		mg/kg	mg/kg	mg/l	Lead	mg/l	Cadmium	e		
Ft.	Ft.	Drive					mg/l		mg/l	t		
0.0	2.0	2	8	6,160	223.0						[] Fill	
		2								1		
		3								2		
		11								3	Fill	
2.0	4.0	3	7							4		
		4								5	Fill	
		5								6		
		3								7		
4.0	6.0	10	7							8	Fill	
		100								9		
										10		
6.0	8.0	4	7	142	4.2	<0.5	<0.2	0.16	<0.02	11	Fill	
		3								12		
		5										
		14										
8.0	10.0	2	3								Fill	
		9										
		3										
		4										
10.0	12.0	3	5								Fill	
		5										
		4										
		3										

