

File 90 Hopkins

MLD
JSD

December 2, 1997

RECEIVED

DEC 4 1997

NYSDEC-REG. 9
FOIL
 REL UNREL

Mr. David Sengbusch
Director of Development
Department of Community Development
920 City Hall
Buffalo, New York 14202

Re: Characterization of "LIME" Piles

Dear Mr. Sengbusch:

The City of Buffalo owns property in South Buffalo that is located northeast of the Marilla Street landfill and west of Hopkins Street. The property is part of the South Buffalo Redevelopment Plan being implemented by the City. This letter work plan was prepared to address two large "lime" piles that exist on the property. The NYSDEC has requested that the piles be characterized. The piles have not been measured; however it is estimated that they contain a total of approximately 50,000 cubic yards of material. The origin and the chemical and physical characteristics of the material are unknown. LTV Steel has agreed to characterize the lime piles for the City of Buffalo.

The piles are about 15 feet high and appear to have been constructed in layers. Five test pits will be dug from the top of each pile and excavated to the base of the pile. As the test pits are excavated, the material will be logged and described and distinct layers will be noted.

Each pile will be segmented into units of three feet per unit to represent distinct layers. Grab samples from each test pit will be collected from each layer and composited into five separate samples for each pile for a total of ten samples. Each sample will be submitted to an analytical laboratory and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), Target Analyte List (TAL) metals, cyanide, and pH. In addition, a total of two samples will be collected and analyzed for Toxicity Characteristic Leaching Potential (TCLP).

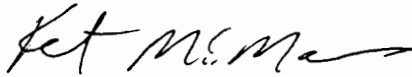
Mr. David Sengbusch
LTV Steel Company

December 2, 1997
Page 2

Samples will be collected during backhoe excavation with pre-cleaned stainless steel spoons and spatulas. The samples will be placed into pre-cleaned laboratory glass jars and submitted via chain-of-custody to the analytical laboratory. Analytical turn-around of data can be expected to be approximately three weeks. A letter report consisting of a schematic of the piles and description of the material will be completed and submitted to the City and NYSDEC after the analytical data is received.

Very truly yours,

MALCOLM PIRNIE, INC.



Kent R. McManus, P. E.
Senior Associate

c: Jim Smith, C-Buffalo
Kevin Greiner, C-Buffalo
Dennis Sutton, C-Buffalo
Bonnie Lockwood, Councilmember
Martin Doster, NYSDEC
Wayne Gould, NYSDEC
Dale Papajcik, LTV
Keith Nagel, LTV
File: 0848-263; CC

plb/KRM12027.L1



CITY OF BUFFALO

DEPARTMENT OF LAW

1100 CITY HALL - 65 NIAGARA SQUARE
BUFFALO, NEW YORK 14202-3379
TELEPHONE No. (716) 851-4343
FAX 851-4105



February 5, 1998

Joseph P. Ryan, Esq.
N.Y.S. Dept. of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203

Martin J. Doster
N.Y.S. Dept. of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203

Re: "Lime" Piles; 90 Hopkins St.

Gentlemen:

Enclosed please find the results of Malcolm Pirnie's analysis of the lime piles at 90 Hopkins St. performed pursuant to your request. This property, currently owned by the City of Buffalo, was obtained through tax foreclosure in approximately 1987. This property has never been utilized by the City for any purpose during the term of its ownership. We have title information dating back to 1950 as well as aerial photographs of this site. Our information leads us to believe that this material was placed on site several decades before the City obtained title.

Upon review of the enclosed information, please contact myself to arrange for a meeting to discuss the results, options available to the City, as well as available recourse against the parties responsible for placing these substances on site. The City will assist the State in any way to pursue those entities responsible for the disposal of this lime. I look forward to hearing from you.

Very truly yours,

MICHAEL B. RISMAN
Acting Corporation Counsel

Sandra A. Nasca
Assistant Corporation Counsel

SAN:mam

Encl.

cc: Joseph Ryan, Commissioner, Community Development
Mark Tytka, Deputy Director of Planning
Dennis Sutton, Office of the Environment
Kevin Greiner, BEDC

RECEIVED

FEB 6 1998

NYSDEC - REG. 9
FOIL
REL UNREL

ATTACHMENT A

Characterization of City of Buffalo Hopkins Street Lime Piles

A sampling and analysis program was implemented to characterize the two "lime" piles located on property off Hopkins St. in South Buffalo owned by the City of Buffalo. The property is located northeast of the Marilla Street Landfill and west of Hopkins Street. The sampling was performed by Malcolm Pirnie, Inc. on December 8 and 10, 1997 in accordance with the letter work plan to Mr. David Sengbusch dated December 2, 1997 (copy attached).

A total of nine test pits were excavated to depths of approximately 20 feet below the top grade on the lime piles to physically characterize the fill conditions and collect samples for laboratory analysis. The test pit locations are shown on the attached Site Inspection Logs. The test pits were excavated to the fill/native soil interface with an excavator provided by BDR Inc. The fill/native soil interface generally occurred at a depth of 20 feet below the top of the lime piles. Lime pile samples were collected and described by a Malcolm Pirnie geologist including color, visible or olfactory evidence of subsurface contamination, and moisture conditions.

At each test pit location, lime material was present over native clayey-silt soil. Groundwater generally entered the excavations at a depth of approximately 19 feet below surface. The lime material present at each location was heterogeneous and consisted of loose fine-grained, horizontally stratified material. Each layer was defined by a color change from gray/white to dark brown. A texture difference corresponded to the color change. The thicker gray/white layer was generally loose when disturbed, fine-grained and moist to wet. The thin dark brown layer crumbled when disturbed and appeared to be an oxidized version of the lighter gray/white layer. The native soil consisted of lacustrine-derived oxidized orange-brown sandy-silt with vegetation grading to a medium to dark gray color with depth. The soil descriptions are included in the attached test pit inspection logs.

Samples were collected at each test pit location and submitted to Columbia Analytical Laboratories for analysis. Each test pit was segmented into 4-foot intervals to

ATTACHMENT A (Continued)**Characterization of City of Buffalo Hopkins Street Lime Piles**

facilitate the collection of composite samples for a certain depth interval (each interval was assumed to be a distinct layer) in each lime pile. The composite samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile compounds (SVOCs), Target Analyte List (TAL) metals, total cyanide, and pH. In addition, two grab samples (LP-A and LP-B) were collected and analyzed for Toxicity Characteristic Leaching Procedure (TCLP). In addition, one sample (LP-B) was submitted to Schwarzkopf Microanalytical Laboratory, Inc. for analysis of the constituents typical of carbide lime (iron and alumina oxides, magnesium oxides, and free carbon).

A comparison of the lime pile analytical results to the typical compositions of carbide lime and commercial hydrate lime is presented in Table 1. The results of the iron and alumina oxide analyses of the lime pile do not conclusively indicate whether the lime pile is carbide lime or commercial hydrate lime. However, the presence of free carbon and the very low concentration of magnesium oxide in the lime pile sample indicate that the piles could be of carbide lime origin. Detailed characterization data for carbide lime and commercial hydrate lime are included in Appendix 1. Calculations converting percent iron, aluminum, and magnesium to percent iron and alumina oxides and magnesium oxide are also included.

The analytical results of the composite samples are summarized in Tables 2 and 3. The results indicate that the constituents of the lime piles are very consistent throughout the depth of each pile. The only VOC detected was acetone. Although acetone was not detected in the associated method blank, acetone is a common laboratory contaminant, and was detected in the samples at low concentrations, below the NYSDEC Soil Cleanup Guideline in NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046. No SVOCs were detected.

Of the TAL metals, only beryllium, chromium, iron, and zinc were detected in concentrations slightly exceeding the NYSDEC Soil Cleanup Guidelines. Additionally,

ATTACHMENT A (Continued)

Characterization of City of Buffalo Hopkins Street Lime Piles

calcium concentrations exceeded the Eastern United States background concentration range included in NYSDEC TAGM 4046 (130 to 35,000 mg/kg). The calcium concentrations were very consistent throughout the samples, and ranged from 421,000 to 476,000 mg/kg. These analytical results are consistent with the preliminary determination that the piles were composed of lime material.

The high pH (12.6 and 12.7) measured in every sample is also indicative of lime. pH measurements above 12.0 are characteristic of a RCRA corrosive waste, and therefore the material may be classified as a hazardous waste.

Discrete samples were collected from the intervals 12 to 16 feet below the top of the two lime piles at test pit locations TP-2 and TP-8 for analysis of TCLP parameters and RCRA Hazardous Waste Characteristics. These analyses indicate that, excepting pH (corrosivity), the waste would not be considered a RCRA Characteristic Hazardous Waste.

Table 1
Lime Pile Sampling

Comparison of Analyses

Parameter	Lime Pile Sample Analysis (Percent)	Typical Carbide Lime Analysis (Percent)	Typical Commercial Hydrate Lime Analysis (Percent)
Free Carbon	0.31	0.54	0.00
Iron and Alumina Oxides	0.89	1.73	0.64
Magnesium Oxide	0.046	0.07	0.91

Table 2
Lime Pile Sampling
Summary of Analytical Results

Sample Location	NYSDEC TAGM	Eastern USA Background Concentrations	A-1		A-2		A-3		A-4		A-5		B-1		B-2		B-3		B-4		B-5					
			0-4	12/8/97	4-8	12/8/97	8-12	12/8/97	12-16	12/8/97	16-20	12/8/97	0-4	12/10/97	4-8	12/10/97	8-12	12/10/97	12-16	12/10/97	16-20	12/10/97				
Volatiles Organic Compounds (mg/kg)																										
Acetone	0.2		0.059	0.097	0.061	0.018	0.011	None detected															0.049	0.046	0.067	0.1
Semivolatile Organic Compounds (mg/kg)																										
Metals (mg/kg)																										
Aluminum	SB	33000	5240	5480	4610	4870	6120	5380	4460	4920	4940	5300														
Arsenic	7.5 or SB	3 - 12	1.89		2.01	3.18	7.34	2.91	3.07	3.58	2.32	2.23														
Barium	300 or SB	15 - 600	4.78	4.71	6.27	7.23	22.6	11.2	5.15	7.08	6.15	11														
Beryllium	.016 or SB	0 - 1.75	1.16	1.06	1.34	1.57	1.14	1.46	1.09	1.7	1.51	1.17														
Calcium	SB	130-35000	476000	450000	459000	445000	436000	439000	461000	437000	421000	444000														
Chromium	10 or SB	1.5 - 40	3.06		2.03	3.22	12.4	2.76	5.92	3.85	4.33	15.3														
Copper	25 or SB	1 - 50	6.13	5.46	5.12	5.95	9.2	5.69	5.92	4.9	9.66	7.77														
Iron	2000 or SB	2000 - 550000	1230	578	792	2430	10000	3520	1270	3130	4100	1430														
Lead	30 or SB	4 - 500					15.5																			
Magnesium	SB	100 - 5000	557	316	374	464	612	502	416	431	678	594														
Manganese	SB	50 - 5000	37.6	11.8	9.49	48.6	210	67.2	27.2	50.8	64.2	21														
Silver	SB	NA	3.07	3	3.04	3.2	3.35	3.14	3.05	3.02	3.03	2.88														
Sodium	SB	6000 - 8000	155	189	165	123	209	136	191	125	211	158														
Vanadium	150 or SB	1 - 300			18																					
Zinc	20 or SB	9 - 50	40	12.7	11.7	19.8	74.8	38.9	17.5	17.4	33.7	16.3														
Cyanide	NA	NA	2.57					2.03																		
pH																										
	NA	NA	12.6	12.6	12.7	12.7	12.7	12.6	12.6	12.7	12.6	12.6	12.6	12.7	12.7	12.6	12.6	12.7	12.6	12.6	12.6	12.6				

Notes:

1. Background concentrations from NYSDEC TAGM 4046.
2. Only analytes detected in at least one sample are contained in this table.
3. Blank space denotes analyte was not detected.
4. Shading indicates sample results exceeded NYSDEC TAGM 4046 Soil Cleanup Guidelines or Background Concentration Range.
5. NA - Soil Cleanup Guideline or Background Concentration Range not included in NYSDEC TAGM 4046.

Table 3
Lime Pile Sampling
Summary of Analytical Results - TCLP

<i>Sample Location</i>	LP-A	LP-B
<i>Sampling Depth (ft.)</i>	12-16	12-16
<i>Collection Date</i>	12/8/97	12/10/97
Volatile Organic Compounds (in ug/L)		
Benzene	ND	ND
Carbon tetrachloride	ND	ND
Chlorobenzene	ND	ND
Chloroform	ND	ND
1,2-Dichloroethane	ND	ND
1,1-Dichloroethene	ND	ND
Methyl ethyl ketone	ND	ND
Tetrachloroethene	ND	ND
Trichloroethene	ND	ND
Vinyl chloride	ND	ND
Semivolatile Organic Compounds (in ug/L)		
1,4-Dichlorobenzene	ND	ND
2,4-Dinitrotoluene	ND	ND
Hexachlorobenzene	ND	ND
Hexachloro-1,3-butadiene	ND	ND
Hexachloroethane	ND	ND
2-Methylphenol	ND	ND
3+4-Methylphenol	ND	ND
Nitrobenzene	ND	ND
Pentachlorophenol	ND	ND
Pyridine	ND	ND
2,4,5-Trichlorophenol	ND	ND
2,4,6-Trichlorophenol	ND	ND
Metals (in ug/L)		
Arsenic	ND	ND
Barium	ND	ND
Cadmium	ND	ND
Chromium	ND	ND
Lead	ND	ND
Mercury	ND	ND
Selenium	ND	ND
Silver	ND	ND
RCRA Characteristics		
Reactivity - Cyanide	ND	ND
Reactivity - Sulfide	ND	ND
pH	12.7	12.6
Flash Point (Degress Celsius)	> 100	>100
Notes: ND - Analyte not detected.		

APPENDIX 1
LIME CALCULATIONS

BASIS: 100 lbs LIME

ASSUME: ① IRON AND ALUMINUM ARE PRESENT IN THE LIME AS IRON AND ALUMINA OXIDES.

② MAGNESIUM IS PRESENT IN THE LIME AS MAGNESIUM OXIDE.

① CALCULATE PERCENTAGE OF IRON AND ALUMINA OXIDES

$$\text{ALUMINUM: } 0.012 \text{ lb Al} \times \frac{16 \text{ mol Al}}{27 \text{ lb Al}} \times \frac{16 \text{ mol Al}_2\text{O}_3}{2 \text{ lb mol Al}} \times \frac{102 \text{ lb Al}_2\text{O}_3}{16 \text{ mol Al}_2\text{O}_3} = 0.02 \text{ lb Al}_2\text{O}_3$$

$$\text{IRON: } 0.61 \text{ lb Fe} \times \frac{16 \text{ mol Fe}}{55.8 \text{ lb Fe}} \times \frac{16 \text{ mol Fe}_2\text{O}_3}{2 \text{ lb mol Fe}} \times \frac{159.6 \text{ lb Fe}_2\text{O}_3}{16 \text{ mol Fe}_2\text{O}_3} = 0.87 \text{ lb Fe}_2\text{O}_3$$

$$\text{TOTAL WEIGHT OF Al}_2\text{O}_3 + \text{Fe}_2\text{O}_3 = 0.89 \text{ lb}$$

$$\text{PERCENTAGE Al}_2\text{O}_3 + \text{Fe}_2\text{O}_3 = \frac{0.89 \text{ lb}}{100 \text{ lb}} = \underline{\underline{0.89\%}}$$

② CALCULATE PERCENTAGE OF MAGNESIUM OXIDE

$$0.028 \text{ lb Mg} \times \frac{16 \text{ mol Mg}}{24.3 \text{ lb Mg}} \times \frac{16 \text{ mol MgO}}{16 \text{ mol Mg}} \times \frac{40.3 \text{ lb MgO}}{16 \text{ mol MgO}} = 0.046 \text{ lb}$$

$$\text{PERCENTAGE MgO} = \frac{0.046 \text{ lb MgO}}{100 \text{ lb LIME}} = \underline{\underline{0.046\% \text{ MgO}}}$$

SCHWARZKOPF MICROANALYTICAL LABORATORY, INC.

56-19 37th Ave.

Woodside, N.Y. 11377

Tel. 718-429-6248

Fax. 718-397-7144

Frank E Maple, Pres.
Florence Wohl, Exec V.P.

Jeanne Asquith
MALCOLM PIRNIE

Date
12/18/97
Report
9524114

RESULTS OF ANALYSIS

SAMPLE NUMBER

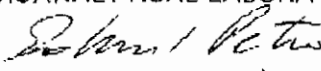
LP-B

SML #

D86994

% Aluminum	0.012
% Carbon (free)	0.31
% Iron	0.61
% Magnesium	0.028

SCHWARZKOPF MICROANALYTICAL LABORATORY, INC.



Edmund Petro
Technical Director

Finger Lakes Lime Inc.

P.O. Box 1098 Weedsport N.Y. 13166

Tel. (315) 463-8417

TYPICAL CARBIDE LIME COMPOSITION

THE FOLLOWING IS A TYPICAL ANALYSIS OF CARBIDE LIME AS COMPARED TO TWO COMMERCIAL HYDRATE SAMPLES.

	CARBIDE LIME		COMMERCIAL HYDRATES	
	<u>SLURRY</u>	<u>DRY</u>	<u>SAMPLE #1</u>	<u>SAMPLE #2</u>
CALCIUM HYDROXIDE Ca (OH) ₂	92.50	90.60	94.30	91.60
AVAILABLE CALCIUM OXIDE CaO	70.01	68.60	71.40	69.40
CALCIUM CARBONATE CaCO ₃	1.85	2.20	2.13	4.01
SILICA SiO ₂	1.50	1.76	0.81	1.30
* IRON AND ALUMINA OXIDES R ₂ O ₃	1.60	1.73	0.38	0.90
* MAGNESIUM OXIDES MgO	0.07	0.07	0.57	1.25
SULFUR	0.15	0.15	0.03	0.10
PHOSPHORUS	0.01	0.01	0.01	0.01
* FREE CARBON	0.50	0.54	0.00	0.00
FREE WATER	-----	0.94	0.42	0.31
RESIDUAL	1.82	2.00	1.35	0.52

**MALCOLM
PIRNIE**

**APPENDIX 2
INSPECTOR'S FIELD LOGS**

DATE: 12/10/97

DAY:

S	M	T	W	TH	F	S
			X			

Project Lime Pile Investigation
Project No. 0848-262-113
Client City of Buffalo / LTV Steel
Location Hopkins Street, South Buffalo
Subject Subsurface Investigation
MPI Staff BCH

WEATHER:

Bright Sun	Clear	Overcast	Rain	Snow
		X		

TEMP.:

To 32	32 - 50	50 - 70	70 - 85	85 up
X				

WIND:

Still	Moderate	High	Report No.	
	X			

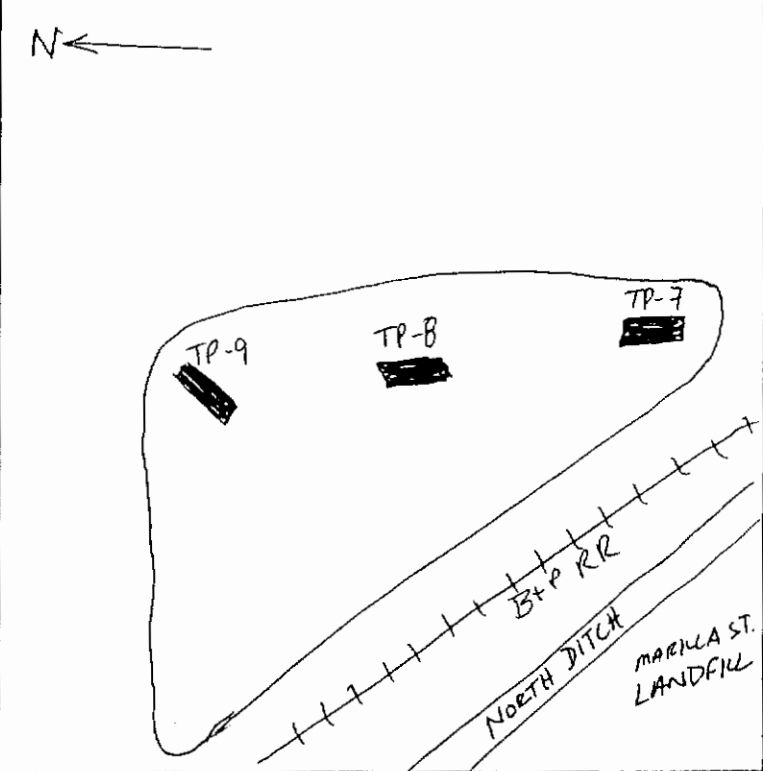
HUMIDITY:

Dry	Moderate	Humid		
X				

Observations:

On site @ 7:45
Liebherr 912 excavator w/ 36" bucket used
Lime Pile B - larger of 2 piles
TP-7
TP-8
TP-9
approximate total depth of Lime Pile B is 19.5'
+ composite samples of five layers collected
+ grab samples for VOCs collected at TP-8
+ TCLP samples collected @ TP-8 @ 12.0' - 16.0' deep
Samples collected directly from bucket w/ stainless steel trowel and spoon

Site Sketch:



DISTRIBUTION:

- 1. Proj. Mgr.
- 2. Field Office
- 3. File
- 4. Owner

Signature _____ Title _____

DATE: 12/8/197

DAY:

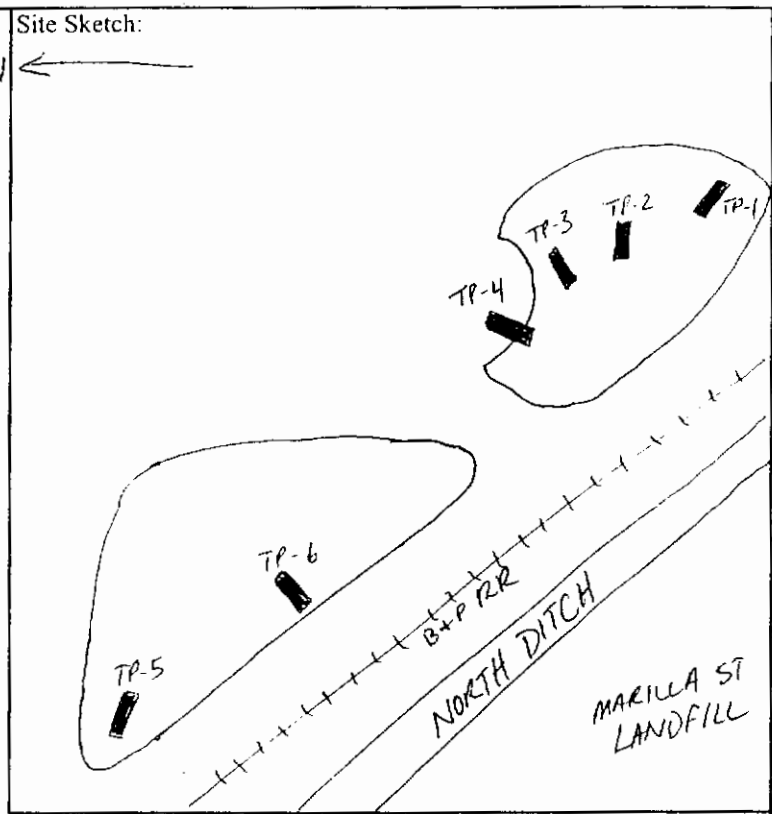
S	M	T	W	TH	F	S
	X					

Project Lime Pile Investigation
Project No. 0848-262-113
Client City of Buffalo / LTV Steel
Location Hopkins Street, South Buffalo
Subject Subsurface Investigation
MPI Staff BCH

WEATHER:

Bright Sun	Clear	Overcast	Rain	Snow
To 32	32 - 50	50 - 70	70 - 85	85 up
Still	Moderate	High	Report No.	
Dry	Moderate	Humid		

Observations:
started test pits: 10:08
ended test pits: 15:30
used Liebherr 912 excavator w/ 36" wide bucket
Dennis Sutton (C. of Buffalo) on site @ 9:50, off site @ 11:10
Others on site @ 11:30
Wayne Gould - LTV Steel
Jaspal Walia - NYS DEC
Jim Tuk - NYS DEC
Terry Ried - MPI
- smaller of 2 Lime piles designated as Lime Pile A
test pits labeled chronologically
TP-1 } Lime Pile A
TP-2 }
TP-3 }
TP-4 }
- larger of 2 Lime piles designated as Lime Pile B
test pits labeled as:
TP-5
TP-6
- approximate depth of Lime Pile A: 22'
" " " " B: 19.5'
- will continue with three more test pits in Lime Pile B
- samples collected directly from bucket w/ stainless steel trowel + spoon



Samples collected for each pile:
+ composite sample of five layers
+ grab sample for each layer
at one test pit analyzed for VOCs (TP-2)
+ TCLP samples collected @ TP-2 from 12'-16'

- DISTRIBUTION:
1. Proj. Mgr.
 2. Field Office
 3. File
 4. Owner

Signature [Signature] Title GEOLOGIST

Project: Lime Pile Characterization
 Project No.: 0848-262-113
 Client: LTV Steel - City of Buffalo
 Location: South Buffalo

Excavation Dates: 12/8/97
 Excavation Method: Backhoe
 Logged / Checked By: BOH
 Test Pit Location #: TP-1

Test Pit Location:

Test Pit Cross Section:

Grade

3.5

5.5

6.5

8.0

10.0

↓

20.0

start: 10:40
 end: 11:15

(see map)

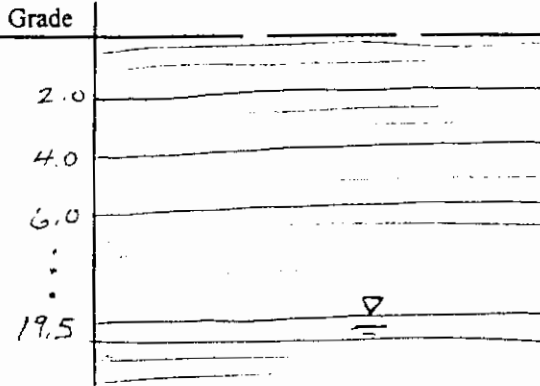
Depth BGS	Soil Description	Graphic Log	Photos Y/N	Samples Y/N	Comments (Include seepage horizons)
0.0 - 3.0	Light gray white, chalky lime-w/ roots dense, loose when dist. moist, stratified layers layer defined by dark brown (thin) to soil material (oxidized lime)				Composite sample collected 10:14
3.0 - 7.0	same A/A, darker green				sub layers within each major layer ~ 6" thick - change in shades of green comp. sample 10:20
7.0 - 10.0	same A/A longer stratified ~ every foot				- breaks off in blocks then crumbles comp. sample 10:30
10.0 - 15.0	same A/A, dry - not moist				comp sample 10:41
15.0 - 20.0	same A/A, wet 19.0 groundwater encountered in test pit, increase in dark brown/black crust, POSS. f. SAND or oxidized material				comp. sample 10:50
	15' long 20' deep				
	DK brown crusty, f. SAND layers between ~ 3-6" lifts between each crusty layer				

Project: Lime Pile Characterization
 Project No.: 0848-262-113
 Client: LTV Steel-City of Buffalo
 Location: South Buffalo

Excavation Dates: _____
 Excavation Method: Backhoe
 Logged / Checked By: BLH
 Test Pit Location #: TP-2

Test Pit Location:

Test Pit Cross Section:



start: 11:18
end: 12:15

see map

Depth BGS	Soil Description	Graphic Log	Photos Y/N	Samples Y/N	Comments (Include seepage horizons)
0.0 - 4.0	lt. grey/white fine grained material (lime), moist loose when disturbed, dense	- ~6" stratified layers - 3 layers per main layer			comp. sample 11:22 VOC 1 taken 11:27
4.0 - 8.5	same A/A	- main layer ~ 1'-2' thick			comp. sample 11:32 VOC 2 taken 11:37
8.5 - 12.0	same A/A				comp. sample 11:44 VOC 3 taken 11:44
12.0 - 16.0	same A/A, moist-wet				comp. sample 11:50 VOC 4 taken 11:50 TCLP 1st taken 11:50
16.0 - 19.5	same A/A, moist-wet wet near 20' groundwater @ 19.0'				comp. sample 12:00 VOC 5 taken 12:00
	19.5' deep 15' long				
	Stratified horizontal layers - thin layers of DK brown oxidized f. grained material (lime) - occur about every 2'				

Project: Lime Pile Characterization
 Project No.: 0848-262-113
 Client: LTU Steel - City of Buffalo
 Location: South Buffalo

Excavation Dates: 12/8/97
 Excavation Method: Backhoe
 Logged / Checked By: BCH
 Test Pit Location #: TP-3

Test Pit Location:

Test Pit Cross Section:

Grade

2.0

4.0

6.0

...

19.5

start: 13:10
 end: 13:40

See map

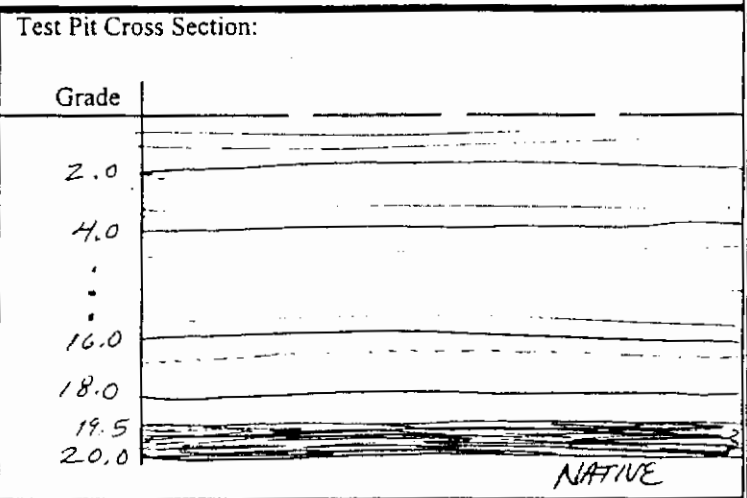
Depth BGS	Soil Description	Graphic Log	Photos Y/N	Samples Y/N	Comments (Include seepage horizons)
0.0 - 4.0	lt grey/white fine grained lime loose when disturbed, moist, ~6" stratified layers ^{make up} a large 1-2' layer, is designated by thin crust like layers (as seen at sur fall), dense, chunky → DK brown, fine grained material				comp sample 13:14
4.0 - 8.0	same A/A, moist				comp sample 13:18
8.0 - 12.0	same A/A, dry - moist				comp sample 13:22
12.0 - 16.0	same A/A,				comp sample 13:25
16.0 - 20.0	same A/A, ^{moist} wet				comp sample 13:30
	20' deep 15' long				

Project: Lime Pile Characterization
 Project No.: 0848-262-113
 Client: LTV Steel - City of Buffalo
 Location: South Buffalo

Excavation Dates: 12/8/97
 Excavation Method: Backhoe
 Logged / Checked By: BCH
 Test Pit Location #: TP-5

Test Pit Location:

 Start: 14:16
 end: 14:54
 See map



Depth BGS	Soil Description	Graphic Log	Photos Y/N	Samples Y/N	Comments (Include seepage horizons)
0.0 - 4.0	lt. grey/white f. grained material (lim) dense, loose when disturbed ~2' layers, horizontal layers distinct, DK brown/black crust layer signifies change in layer - oxidized for a time then filled in on top, moist				Comp sample 14:22
4.0 - 8.0	same A/A				Comp sample 14:26
8.0 - 12.0	same A/A				Comp sample 14:29
12.0 - 16.0	same A/A, moist-wet				Comp sample 14:32
16.0 - 18.0 19.5	same A/A, wet water in @ 16.5				Comp sample 14:37
19.5 - ??	stratified DK brown/black SILT and f SAND, dense, wet roots + organic material, odor is organic, orange/brown desiccation cracks				
	19.5' deep 15' long				

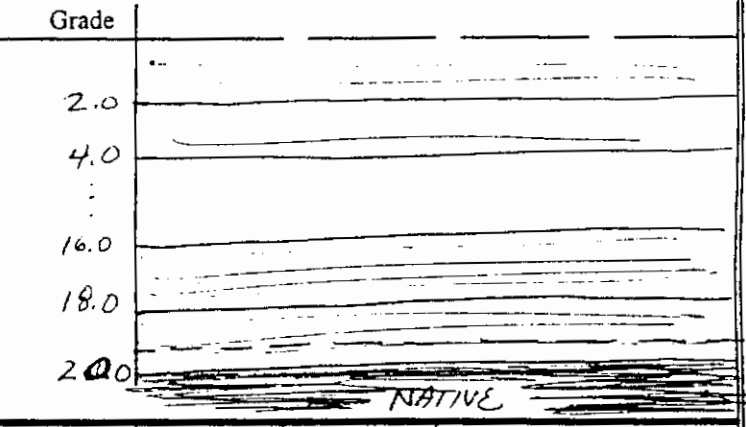
Project: Lime Pile Characterization
 Project No.: 0848-262-113
 Client: LTV Steel - City of Buffalo
 Location: South Buffalo

Excavation Dates: 12/10/97
 Excavation Method: Backhoe
 Logged / Checked By: BCH
 Test Pit Location #: TP-7

Test Pit Location:

Test Pit Cross Section:

start: 8:04
 end: 8:36
 soil map



Depth BGS	Soil Description	Graphic Log	Photos Y/N	Samples Y/N	Comments (Include seepage horizons)
0.0 - 4.0	lt grey/white, f. grained material (Lime), loose when disturbed, dense, moist, stratified (horizontal) layers of ~ 6" make up one larger layer defined by a dark brown crust, loose when disturbed, dry (~ every 2')				comp taken 8:07
4.0 - 8.0	same A/A, oscillating dark grey and light grey layers, moist				comp taken 8:11
8.0 - 12.0	same A/A				comp taken 8:15
12.0 - 16.0	same A/A moist-wet				comp taken 8:18
16.0 - 20.0	same A/A, moist wet water in @ P.5				comp taken 8:27
20 -	DK. Brown SILT and f. SAND horizontal layers, some oxidized desiccation, roots, vegetative decay, organic odor				
	20.5' deep 15' long				

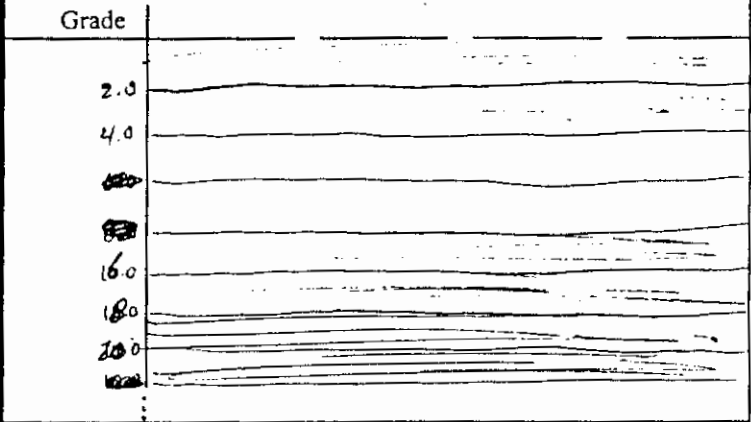
Project: Lime Pile Characterization
 Project No.: 0848-262-113
 Client: LTV Steel - City of Buffalo
 Location: South Buffalo

Excavation Dates: 12/10/97
 Excavation Method: Backhoe
 Logged / Checked By: ECB
 Test Pit Location #: TP-8

Test Pit Location:

Test Pit Cross Section:

start: 8:37
 end: 9:23 (see map)



Depth BGS	Soil Description	Graphic Log	Photos Y/N	Samples Y/N	Comments (Include seepage horizons)
0.0 - 4.0	lt gray white f. grained material, (Lime), loose when disturbed, dense, ~6" horizontal layers make up large layer defined by dark brown crusty material (oxidized lime?) approx every 2' or so, moist			B-1	comp sample 8:40 VOC sample 8:40 Rock sample
4.0 - 8.0	same A/A, moist			B-2	comp sample 8:45 VOC sample 8:45
8.0 - 12.0	same A/A, moist			B-3	comp sample 8:50 VOC sample 8:50
12.0 - 16.0	same A/A			B-4	comp sample 8:56 VOC sample 8:56 LE-B TCLP sample 8:56 w/ oxides and free carbon
16.0 - 20.0	same A/A			B-5	comp sample 9:09 VOC sample 9:09
	15' long 20' deep				

