CLOUGH HARBOUR & ASSOCIATES LLP

July 31, 2006

Mr. Tim Metcalf
Remediation Manager
Honeywell
101 Columbia Road
Morristown, NJ 07962

E915181
Scan

RE: Lime Pile Investigation Summary
90 Hopkins Street, City of Buffalo, New York
CHA Project No. 13258

Dear Tim:

Clough Harbour & Associates LLP (CHA) recently completed a limited investigation of the lime piles located at the 90 Hopkins Street property in the City of Buffalo, Erie County, New York. Honeywell retained CHA to perform these services to aid the City of Buffalo in the preparation of a more detailed bid package relative to the removal of the lime piles under their State Assistance Contract with the New York State Department of Environmental Conservation (NYSDEC). The information provided in this letter summarizes the results of our investigation will provide additional information regarding the lime piles to the City of Buffalo and prospective bidders.

I. Analysis of Lime Material

Mr. Dennis Sutton of the City of Buffalo collected a sample of the lime material and placed it into a sealed plastic bucket on July 13, 2006. CHA retained Severn Trent Laboratories, Inc. (STL) to pickup the lime sample from our Buffalo, New York office on July 18, 2006 and take it to their lab in Amherst, New York for analysis of the following parameters:

- Target Compound List (TCL) of Volatile Organic Compounds (VOCs) via EPA Method 8260
- TCL Semivolatile Organic Compounds (SVOCs) via EPA Method 8270
- Pesticides via EPA Method 8081
- Polychlorinated Biphenyls (PCBs) via EPA Method 8082
- Target Analyte List (TAL) of Metals via EPA Methods of 6010/7471 (will include 23 standard metals plus molybdenum)
- Total Cyanide via EPA Method 9012
- Wet Chemistry Parameters including pH, total alkalinity, hardness (calculation), percent solids, percent moisture, ammonia-nitrogen, total Kjeldahl nitrogen (TKN), nitrate-nitrogen, nitrite-nitrogen, total phosphorous, and the effective neutralizing value (ENV)

The analysis of the sample is being completed on a ten-day business day turnaround basis from the time the sample is received at the laboratory. Therefore, CHA does not anticipate receiving the results until

the end of the day on Tuesday, August 1, 2006. While the results were not available at the time of this letter, CHA will review the results, prepare a tabular summary of the results, and submit our summary to Honeywell with two days of receipt.

II. Horizontal and Vertical Limits of the Lime Piles

Test Pit Excavations

CHA retained Nature's Way to install a number of test pits along the perimeter of each of the lime piles to determine the horizontal limits of the piles. A variety of site restrictions (e.g. piles of debris, significant vegetation, property boundaries, etc.) limited CHA's investigation to the north and east sides of the lime pile and areas between the northern and southern lime piles. All test pits were excavated using a Komatsu PC 40R tracked excavator and the location of each is identified on Figure 1. A CHA scientist prepared a test pit log (Attachment A) for each excavation to document the length, width, and depth of the test pit, the materials encountered, depth to groundwater, etc. for each test pit. Digital photographs were taken of representative test pits to document the materials encountered at the site and have been included in Attachment B.

Initially, the approximate horizontal limits of the limes piles had been assumed to be where the steep slopes along the perimeter of each pile met the surrounding ground surface. However, as shown on Figure 1, the approximate limits of the lime material was found to extend several feet beyond these limits on the north and east sides of the northern lime pile. It also appears that the northern and southern piles are actually connected below the ground surface. While the United States Environmental Protection Agency (USEPA) had previously begun to remove the north end of the southern lime pile, it appears that the removal operation did not extend downward to the vertical limit of the lime material.

Borings

To determine the vertical extent of the lime piles, an ATV drilling rig was positioned at the top of the northern lime pile to advance a boring. CHA notes that access was not gained to the top of the southern lime pile due to the steep grades on the northern side of the pile and the presence of trees, debris, soil piles, etc. blocking access to the other sides of the pile. Nature's Way did attempt to advance the rig up one side of the pile, but the embankment was too steep and unstable to allow the rig to climb up the embankment. The location of each boring is shown on Figure 1.

Two borings were advance through the top of the northern lime pile (borings B-1 and B-4 as shown on Figure 1). No samples were collected during the first ten feet of boring B-1 or the first fifteen feet of boring B-4 because the primary purpose of the borings was to find the vertical extent of the lime piles. Upon reaching a depth of ten feet, the borings were sampled continuously using a two-inch outside diameter (O.D.) split-spoon sampler. The split spoon sampler was advanced by dropping a 140-pound hammer on the sampler from a height of thirty inches. During the sampling, the number of blows required to drive the split spoon sampler in six-inch increments was recorded on boring logs (included in Attachment C). The borings were terminated after native soils were encountered. The lime material extended to a depth of 21 feet below the ground surface in boring B-1 and to a depth of 20 feet below the ground surface in boring B-4.

In addition to the boring on top of the northern lime pile, CHA advanced two borings (borings B-2 and B-3) between the northern and southern lime piles in an attempt to determine the vertical extent of the lime material in this area. In effort to conserve time, no samples were collected in boring B-2 until a depth of six feet below the ground surface. While not initially anticipated, the vertical extent of the lime had already been reached. Therefore, CHA directed Nature's Way to install an offset boring (boring B-3)

approximately 15 feet south boring B-2. The lime was found to extend to a depth of 8 feet below the ground surface in this boring.

Each boring was backfilled with soil cuttings upon completion.

III. Limited Groundwater Quality Evaluation

CHA retained Nature's Way Environmental Consultants and Contractors, Inc. (Nature's Way) to install three piezometers between the northern-most lime pile and the northern property line of the 90 Hopkins Street parcel. The locations of three piezometers have been identified at piezometers PZ-1, PZ-2, and PZ-3 on the attached Figure 1. Nature's Way used a Central Mine Equipment (CME) Model 45 hollow-stem auger drill rig mounted on tracked all-terrain vehicle (ATV) to install the test borings and facilitate the installation of the piezometers. Auger refusal was encountered in each boring at an approximate depth of 9.5 feet below the ground surface and was attributed to encountering bedrock.

One-inch PVC piezometers were installed in each of the boreholes. After completing the installation of the piezometers, polyethylene tubing was inserted into the piezometers and connected to a peristaltic pump to collect groundwater from the piezometers. As groundwater was purged from the piezometers, CHA used a Horiba U-22 water quality meter to measure the following groundwater quality parameters:

- pH
- Oxidation-Reduction Potential (ORP)
- Conductivity
- Temperature
- Turbidity
- Dissolved Oxygen
- Salinity

All instrument readings were recorded on the Piezometer Sampling Logs included in Attachment D. As indicated on the sampling logs, the pH of the groundwater was found to be an average of approximately 12.8. However, based upon the test pit investigation (see Section III), the piezometers were installed, at least partially, in the lime material. Installing the piezometers further down-gradient of the lime piles was not possible without entering an off-site property.

Static water levels were not measured in the piezometers, but the depot to water was approximately 4 to 5 feet below the ground surface. All of the piezometers were removed at the end of the day. The piezometer locations were marked with wire flags and all piezometer materials were disposed of off-site.

IV. Closing

While a more detailed investigation of the 90 Hopkins Street property would be necessary to fully delineate the vertical and horizontal extents of the lime pile, the results of this investigation indicate that both the vertical and horizontal extents of the piles are greater than initially anticipated.

If you have any questions or comments, please do not hesitate to call me at (315) 3471-3920. We will be submitting the analytical results for the lime material prior to the end of the day on August 3, 2006.

Very truly yours,

CLOUGH HARBOUR & ASSOCIATES LLP

Christopher Burns, Ph.D., P.G.
Principal

SS/mw
Enclosures
cc: Dennis Sutton, City of Buffalo
David Flynn, Phillips Lytle
Dan Cantor, Arnold & Porter

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CHA

Figure

ABBY STREET (66.0' R/W)

HOPKINS STREET

ACCESS ROAD

N

TP-1 TP-2 TP-3 TP-4 TP-5 TP-6 TP-7 TP-8 TP-9 TP-10

PZ-1 PZ-2 PZ-3

B-1 B-2 B-3 B-4

NORTH LIME PILE

SOUTH LIME PILE

CONCRETE

BRL/DEBRIS PILE

EDGE OF JUNK/DEBRIS

APPROX. PROPERTY LINE

APPROX. R.O.W. LINE

REBAR & CAP

STONE

BRUSH

FENCE

PIN

6' CHAINLINK FENCE DILAPIDATED

LEGEND:

- INITIAL LIMITS OF LIME PILES
- POTENTIAL EXTENT OF LIME MATERIAL
- B-X BORING LOCATION
- PZ-X PIEZOMETER LOCATION
- TP-X TEST PIT LOCATION

100' 0 100'

SCALE IN FEET

CLOUGH HARBOUR & ASSOCIATES LLP
441 South Salina Street · Syracuse, NY 13202-4712
Main: (315) 471-3920 · www.cloughharbour.com

PIEZOMETER, BORING & TEST PIT LOCATION PLAN

LIME PILE INVESTIGATION
90 HOPKINS STREET
BUFFALO, NEW YORK

PROJECT NO. 13258

DATE: 07/28/06

FIGURE 1

Attachment A

Test Pit Logs

CLOUGH HARBOUR & ASSOCIATES LLP

Test Pit Log

Test Pit No.: TP-1

Project Name: 90 Hopkins Street - Lime Piles	Test Pit Location: NE Corner of North lime Pile
Project Location: 90 Hopkins Street, Buffalo, NY 14220	Logged By: Katie Flood
Project Number: 13258.8000.8001.1102	Date: 07/25/06 Start: 945 Finish: 955
Excavation Contractor: Nature's Way Environmental C&C, Inc.	Equipment: Komatsu PC40R

General Information:

Length: 12' Width: 3' Max. Depth: 6.5'

Groundwater in Pit: ☒ Yes ☐ No If yes, what depth: 4.5'

Location Marked: ☒ Yes ☐ No With: Wire Flag

Pictures Taken: ☒ Yes ☐ No

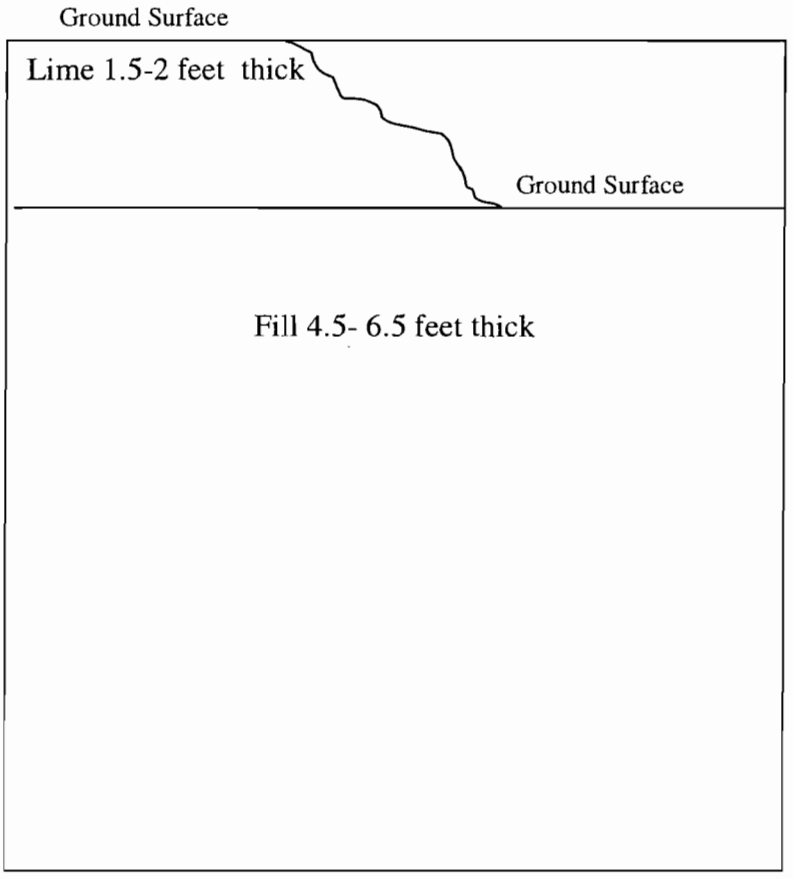
Sampling Information:

Sample Collected: ☐ Yes ☒ No

Sampling Method: N/A Sampling Time: N/A

Sample Analyses: N/A No. of Bottles: N/A

Test Pit Profile



Test Pit Notes:

-Lime only in west end of pit, at surface

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Test Pit Log

Test Pit No.: TP-2

Project Name: 90 Hopkins Street - Lime Piles	Test Pit Location: East side of North Pile
Project Location: 90 Hopkins Street, Buffalo, NY 14220	Logged By: Katie Flood
Project Number: 13258.8000.8001.1102	Date: 07/25/06 Start: 1005 Finish: 1107
Excavation Contractor: Nature's Way Environmental C&C, Inc.	Equipment: Komatsu PC40R

General Information:

Length: 40' Width: 3' Max. Depth: 7.5'

Groundwater in Pit: ☒ Yes ☐ No If yes, what depth: 6'

Location Marked: ☒ Yes ☐ No With: Wire Flag

Pictures Taken: ☒ Yes ☐ No

Sampling Information:

Sample Collected: ☐ Yes ☒ No

Sampling Method: N/A Sampling Time: N/A

Sample Analyses: N/A No. of Bottles: N/A

Test Pit Profile

Ground Surface

Fill/Debris 3-3.5 feet thick

Lime 3-3.5 feet thick

f.m.c Sand, Some Silt, brown, wet 0.5- 1.0 feet thick

Bottom of Test Pit

Test Pit Notes:

- lime layer was well packed, and moist

- Lime extends out 36 feet from west end of pit, after which the layer ends with little/no mixing with native soil.

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Test Pit Log

Test Pit No.: TP-4

Project Name: 90 Hopkins Street - Lime Piles	Test Pit Location: SE corner of North Lime Pile
Project Location: 90 Hopkins Street, Buffalo, NY 14220	Logged By: Katie Flood
Project Number: 13258.8000.8001.1102	Date: 07/25/06 Start: 1110 Finish: 1330
Excavation Contractor: Nature's Way Environmental C&C, Inc.	Equipment: Komatsu PC40R

General Information:

Length: 64' Width: 3' Max. Depth: 7'

Groundwater in Pit: ☒ Yes ☐ No If yes, what depth: 6'

Location Marked: ☒ Yes ☐ No With: Wire Flag

Pictures Taken: ☒ Yes ☐ No

Sampling Information:

Sample Collected: ☐ Yes ☒ No

Sampling Method: N/A Sampling Time: N/A

Sample Analyses: N/A No. of Bottles: N/A

Test Pit Profile

Ground Surface

Fill: 1-3.5 feet thick

Lime/Fill mix: 0-1 foot thick

Lime: 1.5 – 5 feet thick

fmc Sand, Some Silt: 0-1 foot thick

Bottom of Test Pit

Test Pit Notes:

-Top fill layer was very hard packed (concrete like)

- Pit deepens as it extends to the Southeast, from ~5 ft to ~7ft

- Thickness of lime varies from 1.5 feet to ~5 feet

- pH reading taken of water in pit = 12.8

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Test Pit Log

Test Pit No.: TP-5

Project Name: 90 Hopkins Street - Lime Piles	Test Pit Location: 10-12 ft N of South Lime Pile and ~15 feet SE of limits of TP-4
Project Location: 90 Hopkins Street, Buffalo, NY 14220	Logged By: Katie Flood
Project Number: 13258.8000.8001.1102	Date: 07/25/06 Start: 1335 Finish: 1350
Excavation Contractor: Nature's Way Environmental C&C, Inc.	Equipment: Komatsu PC40R

General Information:

Length: 9.5' Width: 3' Max. Depth: 8'

Groundwater in Pit: ☒ Yes ☐ No If yes, what depth: 6.5'

Location Marked: ☒ Yes ☐ No With: Wire Flag

Pictures Taken: ☒ Yes ☐ No

Sampling Information:

Sample Collected: ☐ Yes ☒ No

Sampling Method: N/A Sampling Time: N/A

Sample Analyses: N/A No. of Bottles: N/A

Test Pit Profile

Ground Surface

Fill: 0 – 6 inches thick

Lime: 7- 7.5 feet thick

fmc Sand, Some Silt, brown, wet: 0-0.5 feet thick

Bottom of Test Pit

Test Pit Notes:

Pit contains lime 7- 7.5 feet thick

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Test Pit Log

Test Pit No.: TP-6

Project Name: 90 Hopkins Street - Lime Piles	Test Pit Location: Eastern side of NW face of South Lime Pile
Project Location: 90 Hopkins Street, Buffalo, NY 14220	Logged By: Katie Flood
Project Number: 13258.8000.8001.1102	Date: 07/25/06 Start: 1355 Finish: 1430
Excavation Contractor: Nature's Way Environmental C&C, Inc.	Equipment: Komatsu PC40R

General Information:

Length: 44' Width: 3' Max. Depth: 10.5'

Groundwater in Pit: ☒ Yes ☐ No If yes, what depth: 6-10'

Location Marked: ☒ Yes ☐ No With: Wire Flag

Pictures Taken: ☒ Yes ☐ No

Sampling Information:

Sample Collected: ☐ Yes ☒ No

Sampling Method: N/A Sampling Time: N/A

Sample Analyses: N/A No. of Bottles: N/A

Test Pit Profile

Ground Surface

Fill: 0.25 – 2.5 feet thick

Lime: 5-10 feet thick

Bottom of Test Pit

Test Pit Notes:

Pit shallows from 10 feet at pile base, extending to the NW ending at a depth of 6 feet

Solid lime 6-9.5 feet thick starting 0.25 - 2.5 feet below grade below grade

No native soil visible at depth of 6 feet below grade

After 44 feet, a layer of construction debris (brick and concrete) was encountered that was impenetrable by the machinery. This extended back at least 20 feet. Lime appears to extend underneat the concrete/brick surface.

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Test Pit Log

Test Pit No.: TP- 7

Project Name: 90 Hopkins Street - Lime Piles	Test Pit Location: North side of N Pile, along tree line
Project Location: 90 Hopkins Street, Buffalo, NY 14220	Logged By: Katie Flood
Project Number: 13258.8000.8001.1102	Date: 07/25/06 Start: 1555 Finish: 1605
Excavation Contractor: Nature's Way Environmental C&C, Inc.	Equipment: Komatsu PC40R

General Information:

Length: 12' Width: 3' Max. Depth: 5.5'

Groundwater in Pit: ☒ Yes ☐ No If yes, what depth: 4'

Location Marked: ☒ Yes ☐ No With: Wire Flag

Pictures Taken: ☒ Yes ☐ No

Sampling Information:

Sample Collected: ☐ Yes ☒ No

Sampling Method: N/A Sampling Time: N/A

Sample Analyses: N/A No. of Bottles: N/A

Test Pit Profile

Ground Surface

Fill: 2-3 feet thick

Lime: 2 – 3 feet thick

Bottom of Test Pit

Test Pit Notes:

- Lime 2-3 feet below grade

-No native soil encountered but access to area prevented digging deeper

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Test Pit Log

Test Pit No.: TP- 8

Project Name: 90 Hopkins Street - Lime Piles	Test Pit Location: North of N Lime Pile, between along tree line
Project Location: 90 Hopkins Street, Buffalo, NY 14220	Logged By: Katie Flood
Project Number: 13258.8000.8001.1102	Date: 07/25/06 Start: 1605 Finish: 1610
Excavation Contractor: Nature's Way Environmental C&C, Inc.	Equipment: Komatsu PC40R

General Information:

Length: 4' Width: 3' Max. Depth: 4'

Groundwater in Pit: ☒ Yes ☐ No If yes, what depth: 2'

Location Marked: ☒ Yes ☐ No With: Wire Flag

Pictures Taken: ☒ Yes ☐ No

Sampling Information:

Sample Collected: ☐ Yes ☒ No

Sampling Method: N/A Sampling Time: N/A

Sample Analyses: N/A No. of Bottles: N/A

Test Pit Profile

Ground Surface

Fill/Organics: 1 foot thick

Lime: 3 feet thick

Bottom of Test Pit

Test Pit Notes:

-Lime begins ~1 foot below grade

- Did not observe native soil below the lime

- Pit filled with water very quickly

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Test Pit Log

Test Pit No.: TP-9

Project Name: 90 Hopkins Street - Lime Piles	Test Pit Location: Approx 270 feet West along the North Side of the North Pile
Project Location: 90 Hopkins Street, Buffalo, NY 14220	Logged By: Katie Flood
Project Number: 13258.8000.8001.1102	Date: 07/25/06 Start: 1612 Finish: 1615
Excavation Contractor: Nature's Way Environmental C&C, Inc.	Equipment: Komatsu PC40R

General Information:

Length: 6' Width: 3' Max. Depth: 3'

Groundwater in Pit: ☒ Yes ☐ No If yes, what depth: 2.5'

Location Marked: ☒ Yes ☐ No With: Wire Flag

Pictures Taken: ☒ Yes ☐ No

Sampling Information:

Sample Collected: ☐ Yes ☒ No

Sampling Method: N/A Sampling Time: N/A

Sample Analyses: N/A No. of Bottles: N/A

Test Pit Profile

Ground Surface

Fill/Organics: 1 foot thick

Lime: 2 feet thick

Bottom of Test Pit

Test Pit Notes:

- Lime began at 1 foot below grade
- Lime extended downward below depth of test pit
- Test pit filled with water very quickly

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Test Pit Log

Test Pit No.: TP-10

Project Name: 90 Hopkins Street - Lime Piles	Test Pit Location: Along tree line between North and South Piles
Project Location: 90 Hopkins Street, Buffalo, NY 14220	Logged By: Katie Flood
Project Number: 13258.8000.8001.1102	Date: 07/25/06 Start: 340 Finish: 345
Excavation Contractor: Nature's Way Environmental C&C, Inc.	Equipment: Komatsu PC40R

General Information:

Length: 2' Width: 3' Max. Depth: 3'

Groundwater in Pit: ☐ Yes ☒ No If yes, what depth: _____

Location Marked: ☒ Yes ☐ No With: Wire Flag

Pictures Taken: ☒ Yes ☐ No

Sampling Information:

Sample Collected: ☐ Yes ☒ No

Sampling Method: N/A Sampling Time: N/A

Sample Analyses: N/A No. of Bottles: N/A

Test Pit Profile

Ground Surface

Fill: 0.5-1 foot thick

Lime or Lime/Fill mix: 2.5-3 feet thick

Bottom of Test Pit

Test Pit Notes:

Lime does continue on downhill slope on the SW property line

Attachment B

Photographic Log

CHA

Photograph 1. Test Pit 1 (TP-1)

Photograph 2. Test Pit 2 (TP-2)

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SITE PHOTOGRAPHS

Lime Pile
90 Hopkins Street
CITY OF Buffalo
COUNTY OF Erie, STATE OF NEW YORK

DATE: July 2006

Photograph 3. Test Pit 2 (TP-2)

Photograph 4. Test Pit 4 (TP-4)

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SITE PHOTOGRAPHS

Lime Pile
90 Hopkins Street
CITY OF Buffalo
COUNTY OF Erie, STATE OF NEW YORK

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DATE: July 2006

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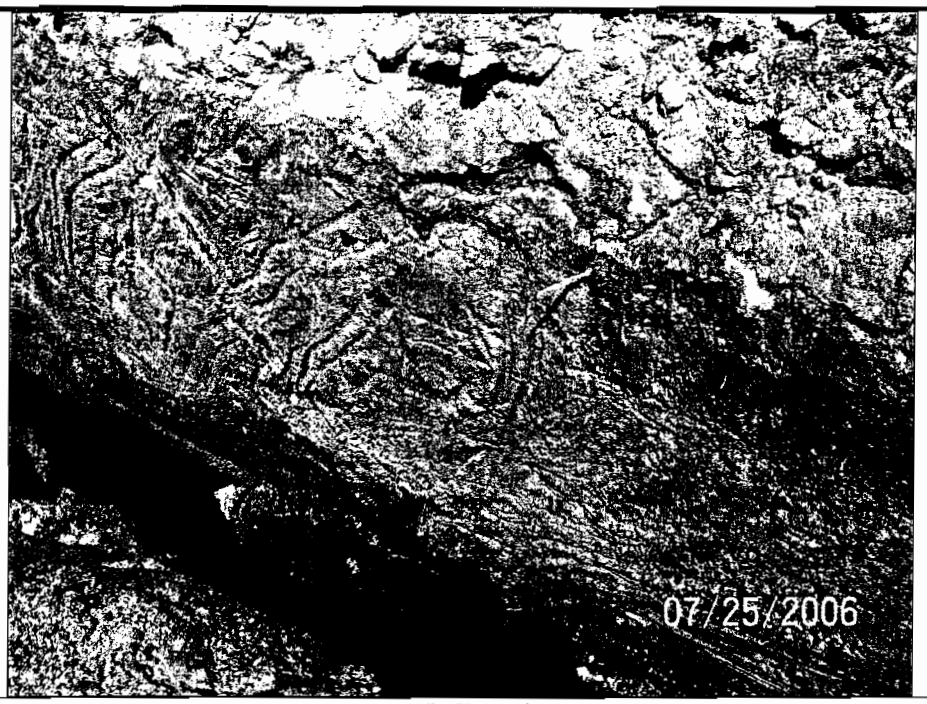
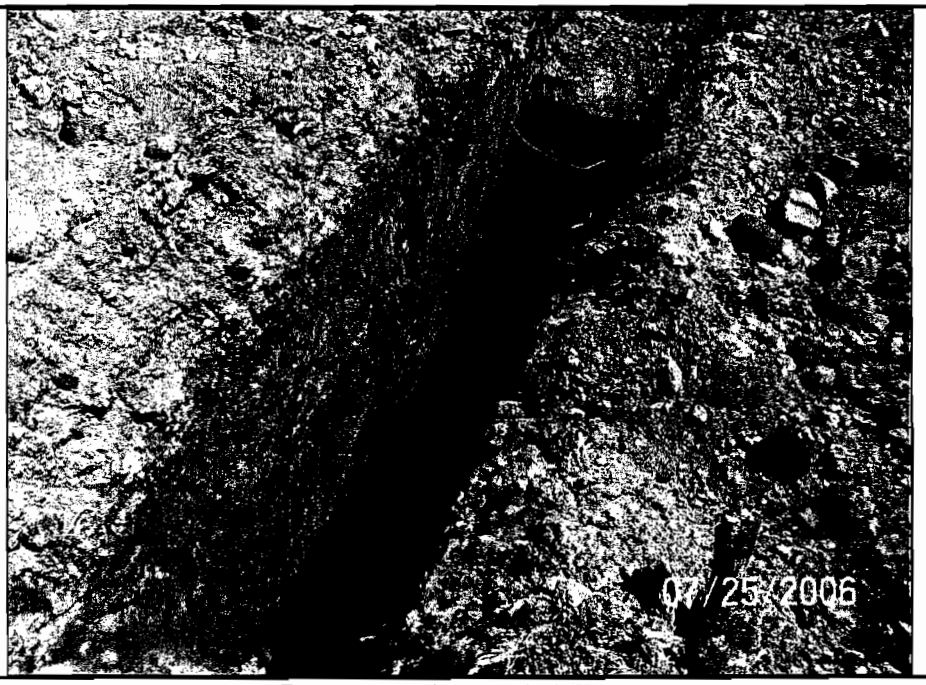


Photograph 5. Test Pit 4 (TP-4)



Photograph 6. Test Pit 5 (TP-5)

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SITE PHOTOGRAPHS

Lime Pile
90 Hopkins Street
CITY OF Buffalo
COUNTY OF Erie, STATE OF NEW YORK

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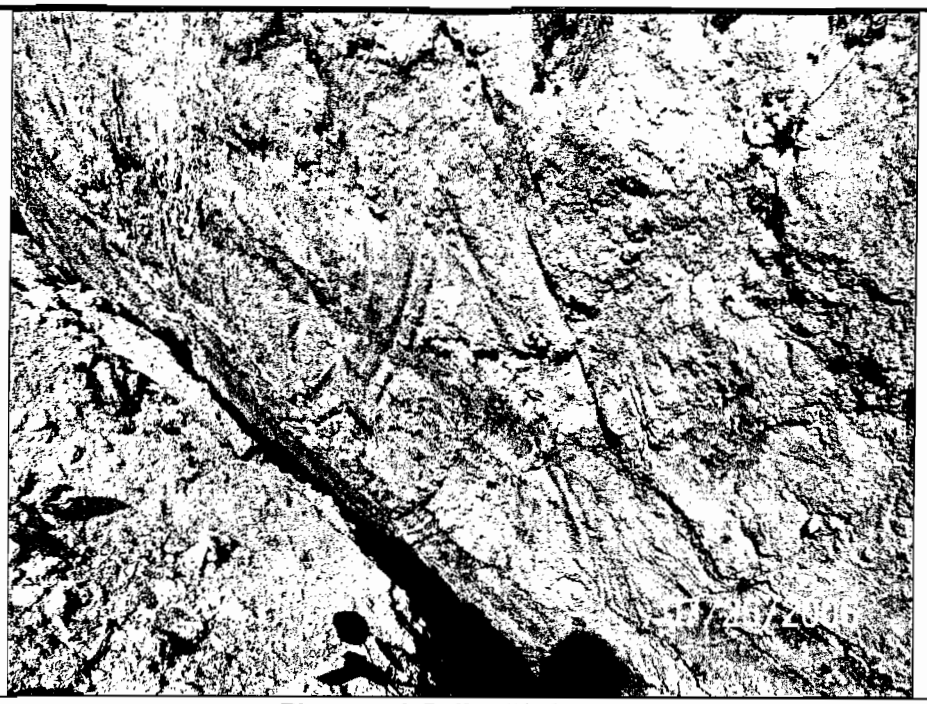

Photograph 7. Test Pit 6 (TP-6)

Photograph 8. Test Pit 6 (TP-6)

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SITE PHOTOGRAPHS

Lime Pile
90 Hopkins Street
CITY OF Buffalo
COUNTY OF Erie, STATE OF NEW YORK

PAGE: 4 OF 6

DATE: July 2006

Photograph 9. Test Pit 7 (TP-7)

Photograph 10. Test Pit 8 (TP-8)

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SITE PHOTOGRAPHS

Lime Pile
90 Hopkins Street
CITY OF Buffalo
COUNTY OF Erie, STATE OF NEW YORK

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Photograph 11. Test Pit 9 (TP-9)

Photograph 12. Test Pit 10 (TP-10)

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SITE PHOTOGRAPHS

Lime Pile
90 Hopkins Street
CITY OF Buffalo
COUNTY OF Erie, STATE OF NEW YORK

PAGE: 6 OF 6

DATE: July 2006

Attachment C

Subsurface Boring Logs

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 13258.8000.1102 07/28/2006

90 Hopkins Street
SUBSURFACE LOG
HOLE NUMBER B-1

LOCATION: Buffalo, New York

CLIENT: Honeywell

CONTRACTOR: Nature's Way Environmental C & C

DRILLER: Bruce Bartz INSPECTOR: Katie Flood

START DATE and TIME:

FINISH DATE and TIME:

SURFACE ELEV: CHECKED BY: Scott Smith

DRILL FLUID: DRILLING METHOD:

	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
WATER LEVEL OBSERVATIONS DURING DRILLING						

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
						5		Lime **(FILL)**		No sampling until depth of 10 ft bgs reached. Material was classified as lime based upon observation of auger cuttings.	
S-1	2	2	1-1-1-1	2		10		Lime **(FILL)**			
S-2	2	2	1-1-1-1	2				Lime **(FILL)**			
S-3	2	2	1-1-1-1	2		15		Lime **(FILL)**			
S-4	2	2	1-1-1-1	2				Lime **(FILL)**			
S-5	2	2	1-1-1-1	2		20		Lime **(FILL)**			
S-6	2	2	1-4-7-8	11				**f.m.c. SAND** fmc SAND, Some Silt, trace organics, brown, wet **(SM)**		Depth to bottom of lime pile estimated to be approximately 21 feet bgs	
								End of Boring at 22 ft			
						25					

SUBSURFACE LOG BORING LOG B1.GPJ UPDATEDCHA.GDT 7/28/06

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 13258.8000.1102 07/28/2006

90 Hopkins Street
SUBSURFACE LOG
HOLE NUMBER B-2

LOCATION: Buffalo, New York

CLIENT: Honeywell

CONTRACTOR: Nature's Way Environmental C & C

DRILLER: Bruce Bartz INSPECTOR: Katie Flood

START DATE and TIME:

FINISH DATE and TIME:

SURFACE ELEV: CHECKED BY: Scott Smith

DRILL FLUID: DRILLING METHOD:

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
						5		f.m.c. SAND(FILL) Lime (FILL)			
S-1	2	0.5	5-5-6-9	11				f.m.c. SAND fmc SAND, Some Silt, brown, wet (SM)		Driller notes that there was a change in hardness of the material at depth of 6 ft. bgs No sampling until depth of 6 ft bgs reached. Material was classified as lime based upon observation of auger cuttings.	
						10		End of Boring at 8 ft			
						15					
						20					
						25					

SUBSURFACE LOG BORING LOG B2.GPJ UPDATEDCHA.GDT 7/28/06

CLOUGH HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 13258.8000.1102 07/28/2006

90 Hopkins Street
SUBSURFACE LOG
HOLE NUMBER B-3

LOCATION: Buffalo, New York

CLIENT: Honeywell

CONTRACTOR: Nature's Way Environmental C & C

DRILLER: Bruce Bartz INSPECTOR: Katie Flood

START DATE and TIME:

FINISH DATE and TIME:

SURFACE ELEV: CHECKED BY: Scott Smith

DRILL FLUID: DRILLING METHOD:

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								Mixed Fill Materials **(FILL)**		No sampling until depth of 4 ft bgs reached. Material was classified as lime based upon observation of auger cuttings.	
S-1	2	2	1-1-2-2	3		5		Lime **(FILL)**			
S-2	2	0.1	7-5-5-5	10				Lime **(FILL)**			
S-3	2	0.6	6-7-10-10	17				**f.m.c. SAND** f.m.c SAND, Some Silt, wet, brown **(SM)**			
						10		End of Boring at 10 ft			
						15					
						20					
						25					

SUBSURFACE LOG BORING LOG B3.GPJ UPDATEDCHA.GDT 7/28/06

CLOUGH HARBOUR & ASSOCIATES LLP

90 Hopkins Street
SUBSURFACE LOG
HOLE NUMBER B-4

PROJECT NUMBER: 13258.8000.1102 07/28/2006

LOCATION: Buffalo, New York

CLIENT: Honeywell

CONTRACTOR: Nature's Way Environmental C & C

DRILLER: Bruce Bartz INSPECTOR: Katie Flood

START DATE and TIME:

FINISH DATE and TIME:

SURFACE ELEV: CHECKED BY: Scott Smith

DRILL FLUID: DRILLING METHOD:

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
						5		Lime **(FILL)**		No sampling until depth of 15 ft bgs reached. Material was classified as lime based upon observation of auger cuttings.	
						10					
S-1	2	2	1-1-1-1	2		15		Lime **(FILL)**			
S-2	2	2	1-1-1-1	2				Lime **(FILL)**			
S-3	2	2	1-1-7-50/4	8		20		Lime **(FILL)**		Depth to bottom of lime pile estimated to be approximately 20 feet bgs	
S-4	2	0.6	4-6-14-14	20				**f.m.c. SAND** f.m.c SAND, Some Silt, trace organics, brown, wet **(SM)**			
S-5	2	0.6	5-6-6-9	12		25					
								End of Boring at 27 ft		No samples collected from 25 to 27 feet bgs. Auger refusal (bedrock) at 27 feet bgs	

SUBSURFACE LOG BORING LOG B4.GPJ UPDATEDCHA.GDT 7/28/06

Attachment D

Piezometer Sampling Log

CHA CLOUGH HARBOUR & ASSOCIATES LLP	**Piezometer Sampling Log**	**Sample/Well Designation:** PZ-1
Project Name: 90 Hopkins Street - Lime Piles		Logged By: Katie Flood
Project Location: 90 Hopkins Street, Buffalo, NY 14220		Date: 07/26/06
Project Number: 13258.8000.8001.1102		Screened Interval: 5'

Field Analysis:

Volume Purged (gal.)	1 beaker	1 beaker	1 beaker	1 beaker	1 beaker					
Time	935	937	939	941	943					
ORP/EH (mV)	-430	-410	-326	-265	-287					
pH	12.78	12.87	12.89	12.87	12.87					
Cond. (MS/CM)	6.52	6.09	6.27	5.84	5.66					
Turbidity (NTU)	-5.0	-5.0	-5.0	-5.0	609.0					
D.O. (mg/L)	8.35	9.71	9.77	9.93	10.44					
Temperature (°C)	20.1	17.4	16.6	16.6	15.9					

Total Volume Purged: 5 beakers. Total Purge Time: 8 minutes

Comments:

Cream colored sludge/mud extends the length of the RR spur between the tree line and the tracks

Animal tracks visible in sludge/mud: bird, canine, deer

Driller comments: at 5 – 5.5 feet hard clay encountered, soft again at 8.5 feet, auger refusal at 9.5 feet

CHA CLOUGH HARBOUR & ASSOCIATES LLP	**Piezometer Sampling Log**	**Sample/Well Designation:** PZ-2
Project Name: 90 Hopkins Street - Lime Piles		Logged By: Katie Flood
Project Location: 90 Hopkins Street, Buffalo, NY 14220		Date: 07/26/06
Project Number: 13258.8000.8001.1102		Screened Interval: 5'

Field Analysis:

Volume Purged (gal.)	1 beaker	1 beaker	1 beaker	1 beaker	1 beaker					
Time	1008	1010	1012	1014	1016					
ORP/EH (mV)	-251	-247	-235	-245	-251					
pH	12.8	12.91	12.96	12.9	12.9					
Cond. (MS/CM)	7.15	7.27	7.29	7.35	7.37					
Turbidity (NTU)	-5.0	-5.0	-5.0	-5.0	-5.0					
D.O. (mg/L)	7.61	9.02	9.19	8.79	8.68					
Temperature (°C)	20.5	17.8	17.3	17.4	17.4					

Total Volume Purged: 5 beakers. Total Purge Time: 8 minutes

Comments:

Cream colored sludge/mud extends the length of the RR spur between the treeline and the tracks

Animal tracks visible in sludge/mud: bird, canine, deer

Driller comments: at 5 auger refusal at 9.5 feet

CHA CLOUGH HARBOUR & ASSOCIATES LLP	**Piezometer Sampling Log**	**Sample/Well Designation:** PZ-3
Project Name: 90 Hopkins Street - Lime Piles		Logged By: Katie Flood
Project Location: 90 Hopkins Street, Buffalo, NY 14220		Date: 07/26/06
Project Number: 13258.8000.8001.1102		Screened Interval: 5'

Field Analysis:

Volume Purged (gal.)	1 beaker	1 beaker	1 beaker	1 beaker						
Time	1058	1100	1102	1104						
ORP/EH (mV)	-269	-269	-234	-225						
pH	12.88	12.92	12.86	12.78						
Cond. (MS/CM)	7.35	7.72	7.38	0.05						
Turbidity (NTU)	-5.0	-5.0	-5.0	-5.0						
D.O. (mg/L)	7.43	8.56	7.42	7.63						
Temperature (°C)	21.7	20.1	21.5	21.6						

Total Volume Purged: 4 beakers. Total Purge Time: 6 minutes

Comments:

The 1104 reading only yielded ½ beaker of water, went dry

Cream colored sludge/mud extends the length of the RR spur between the tree line and the tracks

Animal tracks visible in sludge/mud: bird, canine, deer