~~Report. 2011~~

Report. 356045. 2011.
03-31.
Nov 2010 Wetland Smm.

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MAR 3 1 2011

Division of Environmental Remediation

March 21, 2011

Mr. Chris DeRoberts
Central Hudson Gas & Electric
284 South Avenue
Poughkeepsie, NY 12233-7258

Re: **November 2010 Wetland Investigation Summary Report**
Eltings Corners RCRA Facility Investigation
Central Hudson Gas & Electric
South Street, Town of Lloyd, Ulster County, New York
Project # 99768

Dear Mr. DeRoberts:

On behalf of Central Hudson Gas & Electric (CHGE), Kleinfelder East, Inc. (Kleinfelder) has conducted a continuing investigation of the wetland located to the west of CHGE's Eltings Corners facility (**Figure 1**) in accordance with the Supplemental RCRA Facility Investigation (RFI) Workplan Addendum (April 2010) and the Decision Matrix for Laboratory Analysis of Sediment Samples (April 2010) for additional wetland sediment sampling. The Workplan Addendum and the Decision Matrix were approved by the New York State Department of Environmental Conservation (NYSDEC) on May 11, 2010.

BACKGROUND AND PROJECT UNDERSTANDING

As described in Kleinfelder's April 2009 RFI Report, sediment samples were collected from the streambed at the stormwater outfall location and several distances downstream from the outfall. At each sampling location, samples were collected from discrete depth intervals. Analytical results indicated that concentrations of PCBs exceeded the Site Specific Sediment Screening Criteria (SSSSC) for the Wildlife Bioaccumulation (most protective) Protection Level. The SSSSC for PCBs were calculated following the NYSDEC Technical Guidance for Screening Contaminated Sediments using total organic carbon (TOC) concentrations. Additionally, total polyaromatic hydrocarbon (PAH) compound concentrations were also found to be in exceedance of the NYSDEC's proposed cleanup criterion level of 10,000 ug/kg of Total PAH.

1279 Route 300, 2nd Floor, Newburgh, NY 12550 **p** | 845.567.6530 f | 845.567.6542

Kleinfelder conducted an Interim Supplemental RFI Investigation in December 2009 where additional wetland samples were collected to delineate the horizontal and vertical extent of PCB and PAH exceedances. Results indicated that the horizontal and vertical limits of PCB and PAH exceedances had not yet been determined, and additional sampling was recommended. Further horizontal delineation required collecting samples from offsite locations, where CHGE needed to obtain permission for site access.

METHODOLOGY

Once permission for access to adjacent parcels was obtained by CHGE, wetland sediment sampling was conducted on October 29 through November 3, 2010. As before, sampling locations were established on a grid system in the wetland by manually measuring the distance along the center channel from the outfall at South Street and staking channel points using a 100-foot tape measure. Sample locations to the north and south of the channel point on each transect were manually measured from the channel point using the tape measure. All sample locations are marked with an 8-foot PVC pipe labeled with the sampling location number (e.g., SP-33). The sampling locations were also located with a Global Positioning System (GPS) device for the creation of sampling location maps. The gridded sampling locations are shown in **Figure 2**. Please note that locations sampled during the November 2010 sampling event are shown as proposed locations on Figure 2. Additionally, except for the fire pond location, other upgradient locations were not sampled due to lack of permission for access. Recommend no further upgradient

During this supplemental wetland investigation, new transects were established at 800 feet from the outfall location, as well as along the south side and north side of the Route 299 culvert. At each new transect, three sampling locations were established along the transect: center channel, 25 feet north/east of center channel, and 25 feet south/west of center channel. At each sampling location, samples were collected at discrete intervals to a depth of 3 feet. Depth intervals sampled included: 0-0.5 foot; 1.0-1.5 feet, 1.5-2.0 feet, 2.0-2.5 feet, and 2.5-3.0 feet.

New sampling locations were also established along existing transects to further the horizontal delineation of PCB and/or PAH exceedances. New sampling locations included SP-30 through SP-33 along the southern ends of the 200-foot, 300-foot, 400-foot, and 500-foot transects, respectively. These sampling locations are shown on **Figure 3**.

Additionally, deeper sediment samples were collected from center channel locations along the 25-foot, 100-foot, 300-foot, and 500-foot transects. Deeper sediment samples were collected from 2.0-2.5-foot and 2.5-3.0-foot depth intervals to enhance vertical delineation of PCB and/or PAH exceedances.

An upgradient location (SP-43) was also established in the onsite fire pond **(Figure 3a)**. SP-43 was located as close as possible to the center channel of the inlet into the pond. Due to pond depth, SP-43 was located approximately 5 feet south of the center channel

of the inlet into the pond. As with other sampling locations, upgradient sediment samples were collected at discrete intervals to a depth of 3 feet.

Although previous wetland investigations had used a hand auger to collect sediment samples from various sampling locations/intervals, the November 2010 wetland investigation used a hand-driven Geoprobe® soil sampler with disposable liner. This sampling device allowed greater precision over sampling intervals. The sampler collects discrete 2-foot sections of sediment. Upon sample retrieval, the liner was opened and samples were collected from each discrete 6-inch sampling interval. Due to the small diameter of the liner (1.25 inches), in some instances, several samples needed to be collected from the sampling location for sufficient soil sample quantity. In these cases, soil samples were retrieved from adjacent soil boreholes and combined.

Sediment samples were collected in accordance with the April 2010 Decision Matrix. Each sample was placed in a laboratory-supplied 8-oz. glass bottle and shipped on ice to TestAmerica in Shelton, Connecticut, a New York State certified laboratory (NYSDOH ELAP Certification #0602). The sampling device was decontaminated between every advancement into the ground with an initial distilled water rinse, followed by an alconox wash and a final distilled water rinse. The sampling device was decontaminated with a methanol rinse followed by a distilled water rinse at the end of each day.

Sample analysis was also conducted in accordance with the April 2010 Decision Matrix. In general, the Decision Matrix required the analysis of samples from the three shallowest intervals first. Deeper samples were extracted and archived for potential analysis once the initial results were received and evaluated. All samples to be archived were extracted upon arrival at the laboratory for later potential PCB and PAH analysis. Initially, 45 samples were analyzed upon receipt at the laboratory. Based on the results of this initial run, Kleinfelder analyzed 5 archived samples for PCBs. The NYSDEC requested analysis of an additional 4 archived samples for PAHs. Please note that TOC analysis for the 5 additional PCB samples occurred past laboratory hold time. However, the net effect of exceeded hold times on TOC would result in false positives as TOC concentrations decrease over time, which would decrease the SSSSC. Kleinfelder also performed a sensitivity analysis on TOC concentrations versus the effect of SSSSC and determined that TOC concentrations needed to triple (at a minimum) in concentration to raise the SSSSC to a level where the corresponding PCB concentration was no longer an exceedance. Therefore, it was deemed that the determination of exceedances from these 5 samples was representative of actual conditions.

RESULTS AND FINDINGS

Individual PCB concentrations were totaled for each sample. Using the NYSDEC Technical Guidance for Screening Contaminated Sediments, TOC concentrations from each sample were used to calculate the sample-specific PCB SSSSC for Wildlife Bioaccumulation. Total PCB concentrations from the sample were compared to the sample-specific SSSSC for PCBs to determine impacts.

Individual PAH concentrations were also totaled for each sample. Total PAH concentrations were then compared to the proposed NYSDEC cleanup criterion of 10,000 ug/kg.

Table 1 summarizes Total PCB and Total PAH data in a manner which mimics the aerial layout of the sampling locations within the wetland. **Figures 3 and 3a** show the aerial extent of PCB concentrations with respect to the SSSSC. **Figures 4 and 4a** show the aerial extent of Total PAH concentrations with respect to the proposed 10,000 ug/kg cleanup criterion. Laboratory data packages are included on an electronic disk in **Appendix A**.

Analytical results for PCBs indicate that the horizontal extent along the center channel has been grossly defined (**Figure 3**). No PCBs were detected in any of the nine samples from the North Side of Route 299 transect indicating that PCB impacts have not crossed Route 299. PCB impacts were also limited on the South Side of Route 299 transect to the two shallowest sampling intervals at SP-39 (easternmost location on this transect); and at the 800-foot transect, PCBs were only found in the shallowest sampling interval (0-0.5 feet) at the three sampling locations (SP-34 through SP-36).

PCB analytical results from new sampling locations along the south side of existing transects have helped to further the delineation of the horizontal extent of PCB contamination. On the 200-foot transect, SP-30 reported no detections of PCBs in both shallowest intervals (0-0.5 feet and 1-1.5 feet). Therefore, the horizontal extent has been defined at this transect. PCB impacts above the SSSSC are limited to the shallowest sampling interval at SP-32 and SP-33 on the 400-foot and 500-foot transect, respectively. However, the 300-foot transect had PCB impacts to a depth of 2.5 feet at SP-31.

Center channel samples from the 2.0-2.5 foot and 2.5-3.0-foot intervals indicate that vertical delineation has been established at the 25-foot transect (SP-2) and the 500-foot transect (SP-28). PCB impacts above the SSSSC were noted to depths of 3 feet at the center channel location of the 300-foot transect and the 100-foot transect. Therefore, additional vertical delineation will be needed at these two transects.

Analytical results for Total PAH concentrations in sediment samples collected during the November 2010 sampling event showed that all Total PAH concentrations were below 4,000 ug/kg with many samples reporting no detections of PAHs (**Figure** 4). Therefore, the horizontal and vertical extent of PAH impacts have been grossly defined. The horizontal limit of PAH impacts lies between the 500-foot and 800-foot transect; the vertical limit appears to be at a depth of approximately 2 feet.

In comparing **F**igures 3 and 4, it should be noted that PCB exceedances are more widespread horizontally and vertically than Total PAH impacts. Additionally, all locations with Total PAH impacts also have PCB exceedances.

Based on the analytical results, no PCBs or PAHs were detected in the upgradient fire pond location (SP-43) (**Figures 3a and 4a**). No other upgradient/background locations were sampled during the November 2010 event due to lack of permission for access.

RECOMMENDATIONS

Although the November 2010 sediment sampling investigation has furthered the delineation of PCB and PAH contamination in the wetland, vertical and horizontal delineation has not yet been completed for PCBs. Based on the current data, additional sampling to the west and southwest to delineate the western and southwestern edge of contaminant migration will be required. Additionally, further vertical delineation needs to be conducted along the center channel at the 100-foot and 300-foot intervals to determine the vertical limit of exceedances of PCBs and PAHs. However, since PCB exceedances duplicate and extend beyond PAH exceedances both vertically and horizontally, Kleinfelder recommends that PAHs be eliminated from the laboratory analysis. PCBs have a wider distribution in the wetland and will likely be the contaminant of concern for any proposed remedial activity.

To further advance the delineation of contamination, Kleinfelder recommends establishing two new transects at the 600-foot and 700-foot distance from the outfall. **Figure 5** illustrates proposed sampling locations. These transects will be established with five sampling locations each (center channel, 25 and 50 feet north of center channel, and 25 and 50 feet south of center channel). At each sampling location on these transects, sediment from five depth intervals will be collected (to a depth of 3 feet). Additionally, new sampling locations will be established further south along the 300-foot, 400-foot, and 500-foot transects to enable vertical and horizontal delineation in this area. New sampling locations will also be established further from the center channel in both directions along the 800-foot transect and further north/east from the center channel at the South of Route 299 transect. Deeper sediment samples will also be collected from center channel locations at the 100-foot, 300-foot, and 500-foot transects where vertical delineation is still needed. Kleinfelder recommends collecting four additional 6-inch intervals to a depth of 5 feet at center channel locations. No further upgradient sampling is being proposed since both PCB and PAH samples at the fire pond were non-detect. Sediment samples will be collected and archived/analyzed in accordance with the April 2010 Decision Matrix.

Please feel free to contact us at (845) 567-6530 with any questions.

Sincerely,
Kleinfelder East, Inc.

Julia G. Craner
Hydrogeologist/Environmental Scientist

David B. Tompkins, PWS, CWB
Vice President
Environmental Permitting & Planning

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Tables

Table 1
Summary of Total PCB and Total PAH Concentrations by Sampling Location Depth
November 2010 Wetland Investigation
CHGE Eltings Corners Facility
Town of Lloyd, NY

Distance from Outfall	70' South of stream channel		50' South of stream channel			25' South of stream channel			Centerline of Stream Channel			25' North of stream channel		
	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)
N. of 299							SP40 0-0.5	ND	na	SP41 0-0.5	ND	ND	SP42 0-0.5	ND	na
							SP40 1-1.5	ND	na	SP41 1-1.5	ND	ND	SP42 1-1.5	ND	na
							SP40 1.5-2	ND	na	SP41 1.5-2	ND	na	SP42 1.5-2	ND	na
							SP40 2-2.5	na	na	SP41 2-2.5	na	na	SP42 2-2.5	na	na
							SP40 2.5-3	na	na	SP41 2.5-3	na	na	SP42 2.5-3	na	na
S. of 299							SP37 0-0.5	ND	na	SP38 0-0.5	ND	ND	SP39 0-0.5	2900	2164
							SP37 1-1.5	ND	na	SP38 1-1.5	ND	ND	SP39 1-1.5	27J	ND
							SP37 1.5-2	ND	na	SP38 1.5-2	ND	na	SP39 1.5-2	ND	na
							SP37 2-2.5	na	na	SP38 2-2.5	na	na	SP39 2-2.5	na	na
							SP37 2.5-3	na	na	SP38 2.5-3	na	na	SP39 2.5-3	na	na
800'							SP34 0-0.5	400	941	SP35 0-0.5	110	93	SP36 0-0.5	69J	ND
							SP34 1-1.5	ND	na	SP35 1-1.5	ND	na	SP36 1-1.5	ND	na
							SP34 1.5-2	ND	ND	SP35 1.5-2	ND	ND	SP36 1.5-2	ND	ND
							SP34 2-2.5	na	na	SP35 2-2.5	na	na	SP36 2-2.5	na	na
							SP34 2.5-3	na	na	SP35 2.5-3	na	na	SP36 2.5-3	na	na
500'				SP33 0-0.5	130	92	27A 0-6"	1,600	9,574	28A 0-6"	570	17,298	29A 0-6"	15J	145
				SP33 1-1.5	ND	ND	27B 12-18"	110	12,135	28B 12-18"	3,000	25,916	29B 12-18"	ND	ND
				SP33 1.5-2	ND	ND	27C 18-24"	19J	780	28C 18-24"	5,300	21,865	29C 18-24"	ND	ND
				SP33 2-2.5	na	na				SP28 2-2.5	ND	ND			
				SP33 2.5-3	na	na				SP28 2.5-3	na	na			
400'				SP32 0-0.5	290	980	24A 0-6"	1,100	9,939	25A 0-6"	3,900	22,700	26A 0-6"	15J	ND
				SP32 1-1.5	ND	na	24B 12-18"	66	266	25B 12-18"	2,600	27,317	26B 12-18"	ND	ND
				SP32 1.5-2	ND	ND	24C 18-24"	42	401	25C 18-24"	360	8,584	26C 18-24"	ND	ND
				SP32 2-2.5	na	na									
				SP32 2.5-3	na	na									
300'				SP31 0-0.5	550	511	21A 0-6"	590	1,438	22A 0-6"	1,500	10,361	23A 0-6"	17J	1,062
				SP31 1-1.5	430	na	21B 12-18"	33	ND	22B 12-18"	1,600	22,450	23B 12-18"	4.4J	ND
				SP31 1.5-2	21J	ND	21C 18-24"	25	ND	22C 18-24"	4,000	19,991	23C 18-24"	ND	ND
				SP31 2-2.5	26J	na				SP22 2-2.5	610	110			
				SP31 2.5-3	29J	na				SP22 2.5-3	16J	na			

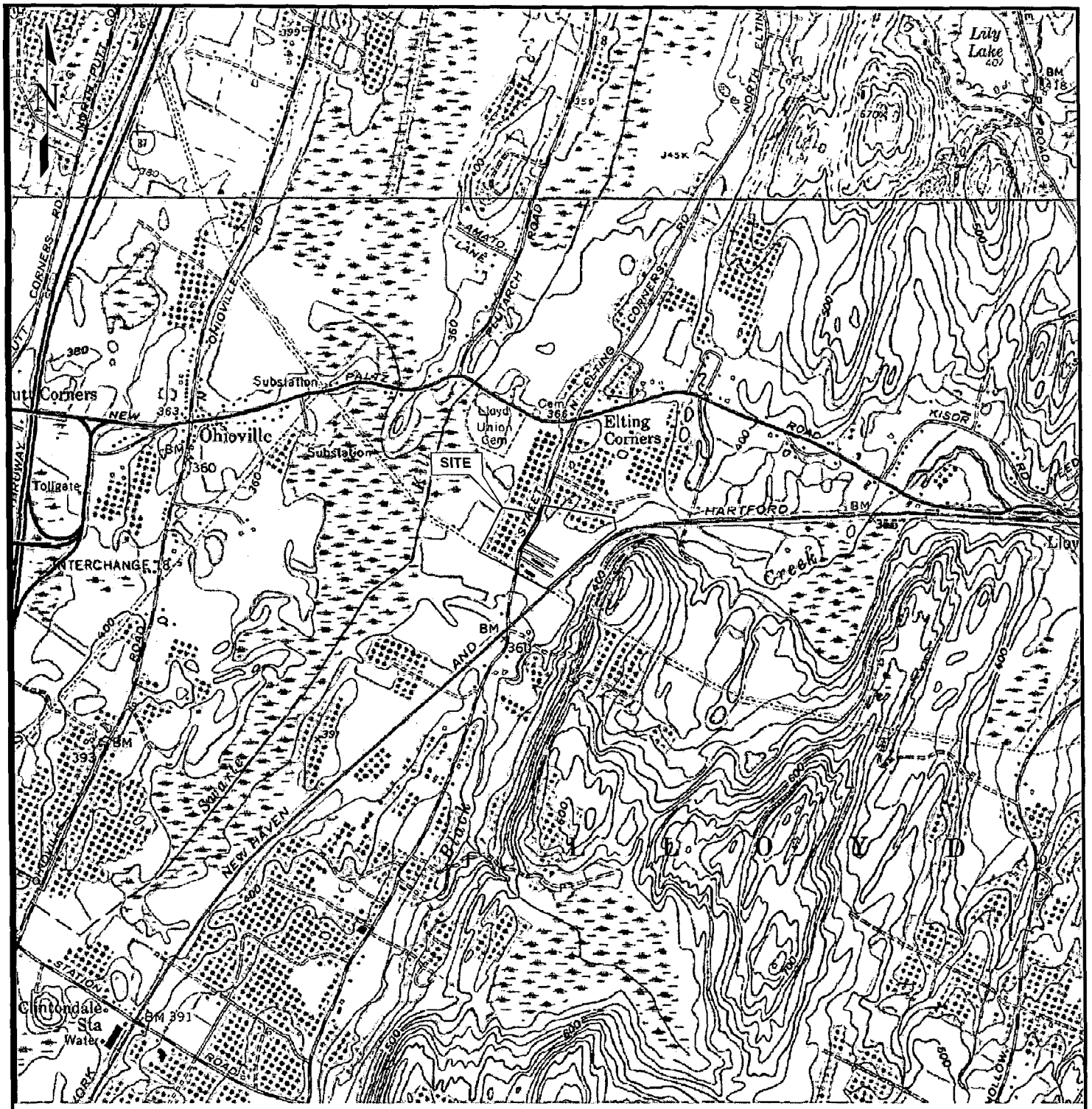
Distance from Outfall	70' South of stream channel			50' South of stream channel			10' South of stream channel			Centerline of Stream Channel			10' North of stream channel			50' North of stream channel		
	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)	Sample Location	Total PCBs (ppb)	Total PAH's (ug/kg)
200'	SP30 0-0.5	ND	na	20A 0-6"	58	235	10A 0-6"	182	30,864	11A 0-6"	298	21,568	12A 0-6"	600	3,631	16A 0-6"	5.1J	90
	SP30 1-1.5	ND	na	20B 12-18"	8.6J	ND	10B 12-18"	890	3,901	11B 12-18"	197	25,099	12B 12-18"	21J	105	16B 12-18"	ND	12
				20C 18-24"	4J	ND	10C 18-24"	210	na	11C 18-24"	1,490	84,950	12C 18-24"	29	na	16C 18-24"	ND	ND
100'				19A 0-6"	9J	153	7A 0-6"	900	7,780	8A 0-6"	3,200	49,040	9A 0-6"	310	10,136	15A 0-6"	27J	844
				19B 12-18"	4.8J	ND	7B 12-18"	74	ND	8B 12-18"	1,900	47,793	9B 12-18"	28	72	15B 12-18"	3.1J	ND
				19C 18-24"	ND	ND	7C 18-24"	4.7J	na	8C 18-24"	1,900	24,149	9C 18-24"	9J	na	15C 18-24"	ND	ND
										SP8 2-2.5	87	ND						
										SP8 2.5-3	96	na						
50'				18A 0-6"	17J	114	4A 0-6"	8,600	54,302	5A 0-6"	530	202,190	6A 0-6"	890	50,099	14A 0-6"	33	485
				18B 12-18"	ND	ND	4B 12-18"	300	76	5B 12-18"	4,700	50,236	6B 12-18"	23	ND	14B 12-18"	4.5J	80
				18C 18-24"	ND	ND	4C 18-24"	240	na	5C 18-24"	3,600	66,410	6C 18-24"	4.3J	na	14C 18-24"	ND	ND
25'				17A 0-6"	7.3J	ND	1A 0-6"	2,100	24,756	2A 0-6"	940	26,470	3A 0-6"	6,200	20,474	13A 0-6"	26J	236
				17B 12-18"	2.7J	ND	1B 12-18"	2,800	1,770	2B 12-18"	2,000	3,334	3B 12-18"	270	854	13B 12-18"	ND	ND
				17C 18-24"	ND	ND	1C 18-24"	1,100	280	2C 18-24"	2,610	13,434	3C 18-24"	87	na	13C 18-24"	ND	ND
										SP2 2-2.5	430	24						
										SP2 2.5-3	ND	ND						
										Upgradient Fire pond SP43 0-0.5	ND	ND						
										SP43 1-1.5	ND	ND						
										SP43 1.5-2	ND	ND						
										SP43 2-2.5	na	na						
										SP43 2.5-3	na	na						

J - Estimated Value
ND - non-detect
na - not analyzed

: Total **PAH** concentration is between 4,000 and 10,000 ug/kg. Location may require remediation.
: For **PCBs** the concentration exceeded the Sediment Screening Criteria which is a function of the location specific Total Organic Carbon concentration.
: For **PAHs**, concentration exceeded 10,000 ug/kg.

P:\Jobfiles\Projects\Central Hudson\Elting Corners\Wetland Inv\Data\Nov 2010 Ph III Sediment\Tbl 1 Nov 2010 Summry Tbl

Figures



SOURCE:

1. USGS 7.5' TOPOGRAPHIC MAP, CLINTONDALE QUANDRAGLE (1957)

2000 1000 0 2000

APPROXIMATE SCALE (feet)

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PROJECT NO.	99768
DRAWN:	03/12/2010
DRAWN BY:	CTH
CHECKED BY:	
FILE NAME:	99768LLOYD.dwg

SITE LOCATION MAP

CHG&E
ELTINGS CORNERS PROPERTY
24 SOUTH STREET
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

FIGURE
1

62-1-L

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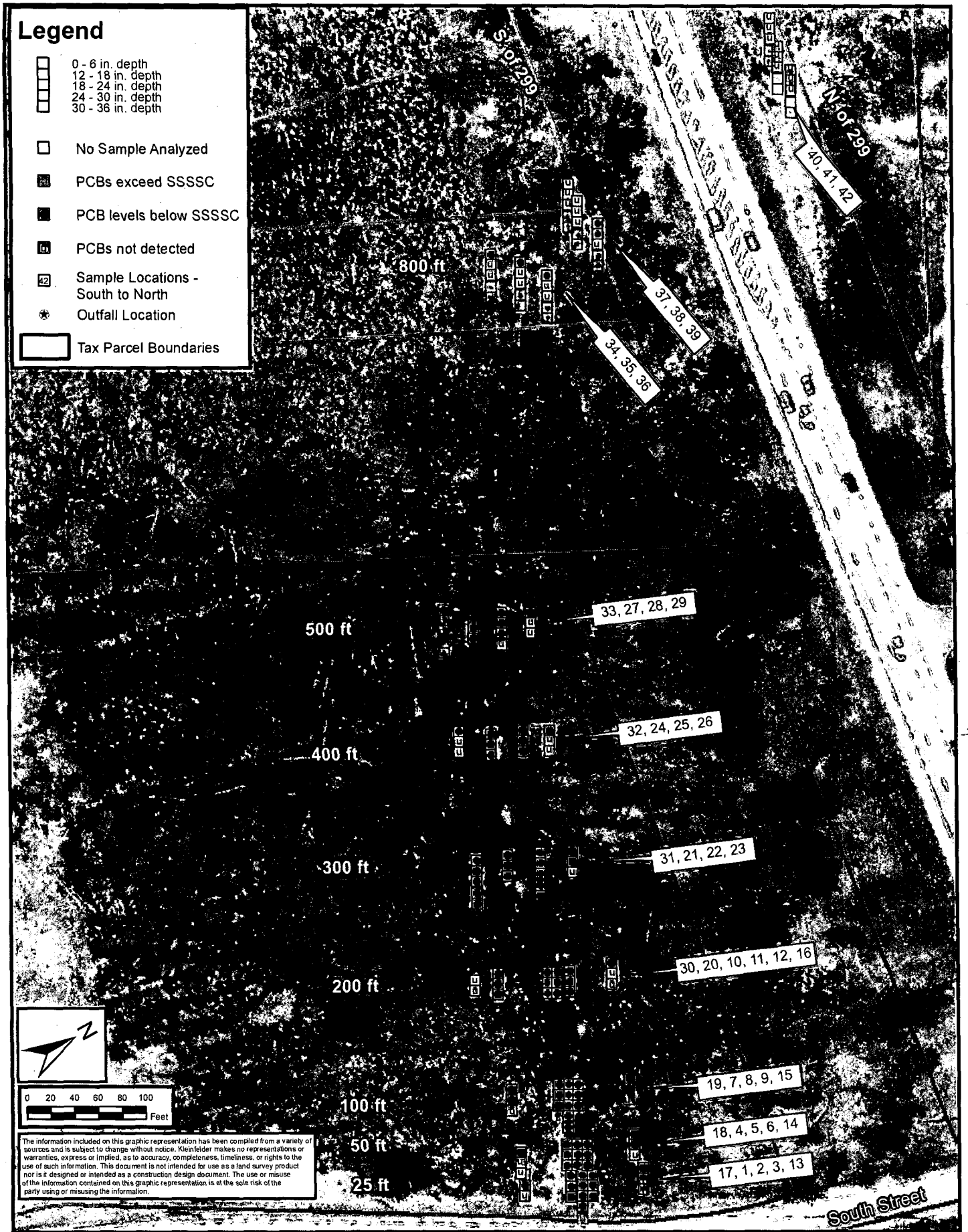
PROJECT NO.	99768
DRAWN:	4/27/10
DRAWN BY:	JMM
CHECKED BY:	JC
FILE NAME:	ECProposedLocations.mxd

RFI Supplemental Workplan Addendum
Property boundaries and proposed sample locations
Source: NYS GIS Clearinghouse 2004 ORTHOPHOTO

C.H.G.E. CORP
ELTINGS CORNERS PROPERTY
SOUTH STREET
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

FIGURE
2



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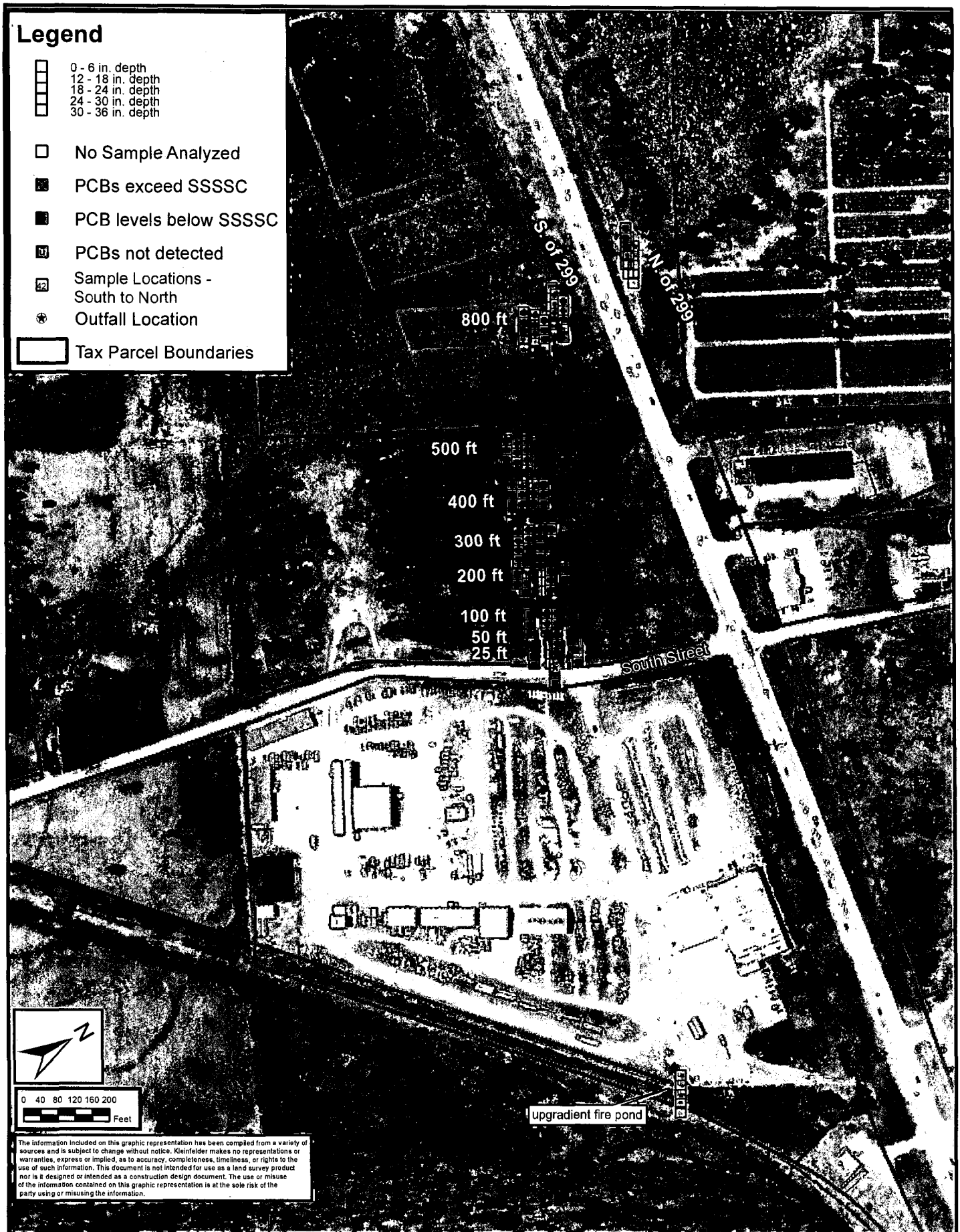
PROJECT NO.	99768
DRAWN:	01/19/11
DRAWN BY:	JMM/RMA
CHECKED BY:	JC
FILE NAME:	ECSamplePCB.mxd

PCB Results Based on SSSSC for Wildlife Bioaccumulation
Source: NYS GIS Clearinghouse 2004 ORTHOPHOTO

C.H.G.E. CORP
ELTINGS CORNERS PROPERTY
SOUTH STREET
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

FIGURE
3

Surface water from catch basin — VOC SVOC PCB TAL Metals



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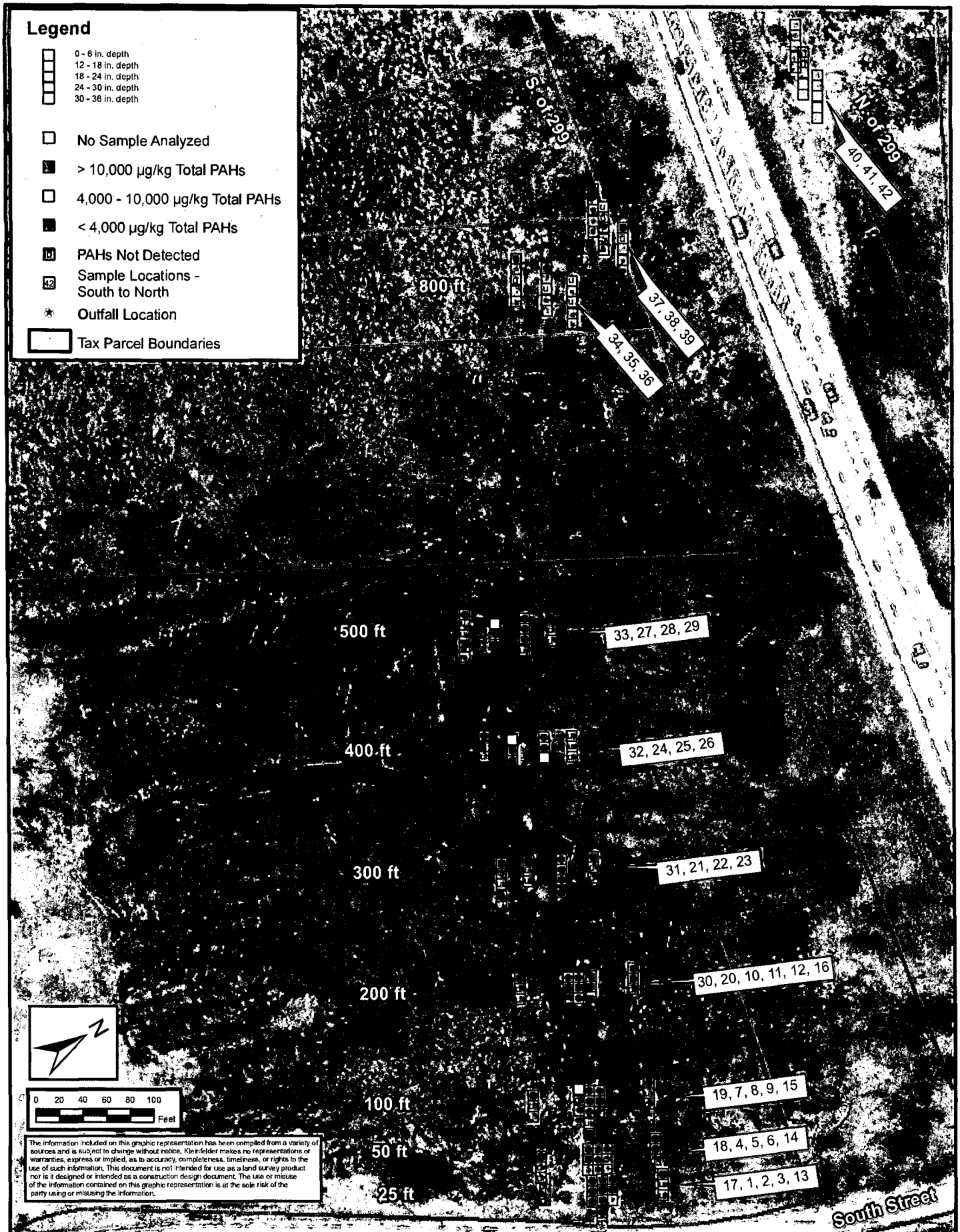
PROJECT NO.	99768
DRAWN:	01/19/11
DRAWN BY:	JMM/RMA
CHECKED BY:	JC
FILE NAME:	ECSamplePCB.mxd

PCB Results Based on SSSSC for Wildlife Bioaccumulation
Source: NYS GIS Clearinghouse 2004 ORTHOPHOTO

C.H.G.E. CORP
ELTINGS CORNERS PROPERTY
SOUTH STREET
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

FIGURE
3a



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PROJECT NO.	99768
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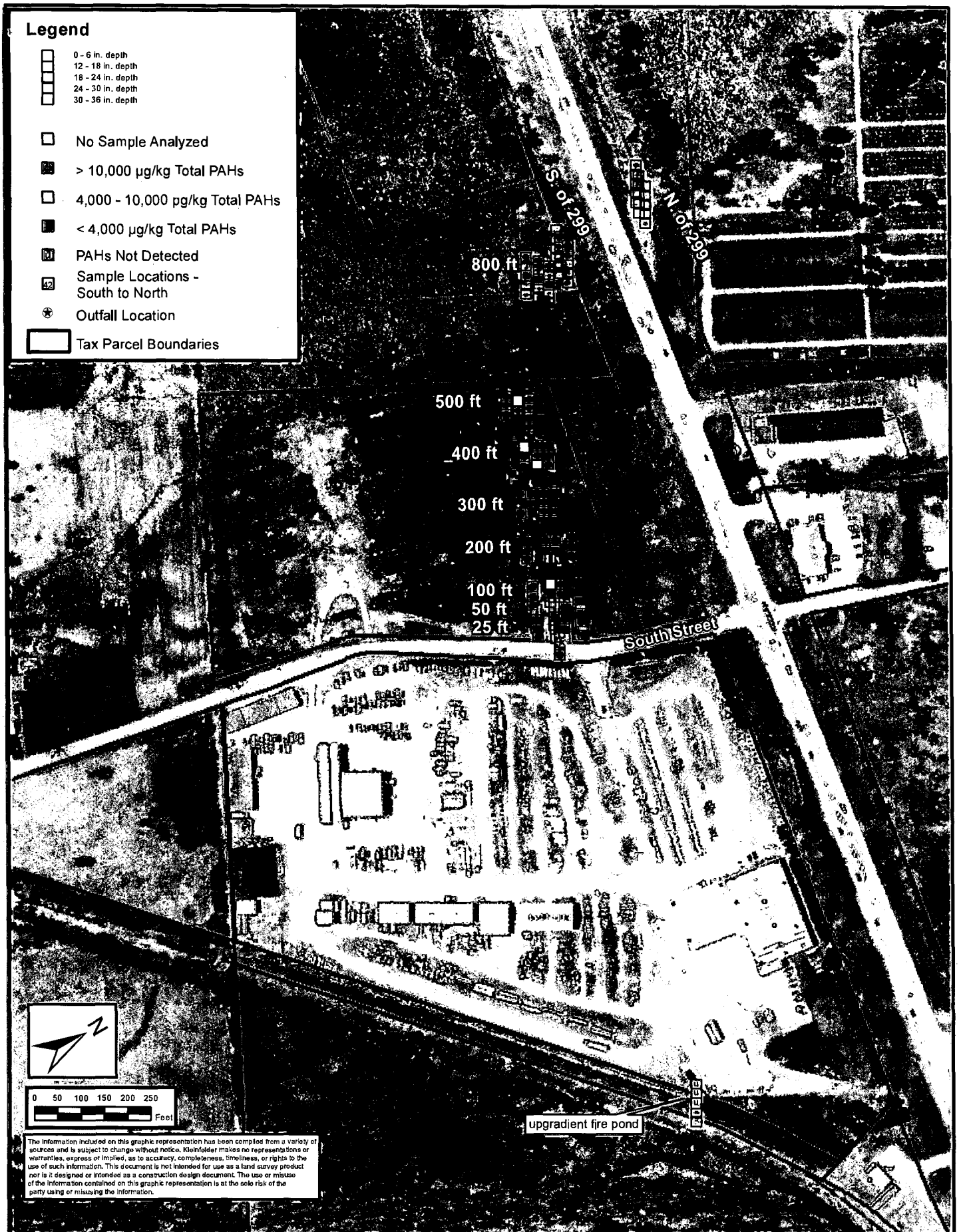
FILE NAME:	ECSamplePAH.mxd

Total PAH Results

Source: NYS GIS Clearinghouse 2004 ORTHOPHOTO

C.H.G.E. CORP
ELTINGS CORNERS PROPERTY
SOUTH STREET
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

FIGURE
4



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PROJECT NO.	99768
DRAWN:	01/19/11
DRAWN BY:	JMM/RMA
CHECKED BY:	JC
FILE NAME:	ECSamplePAH.mxd

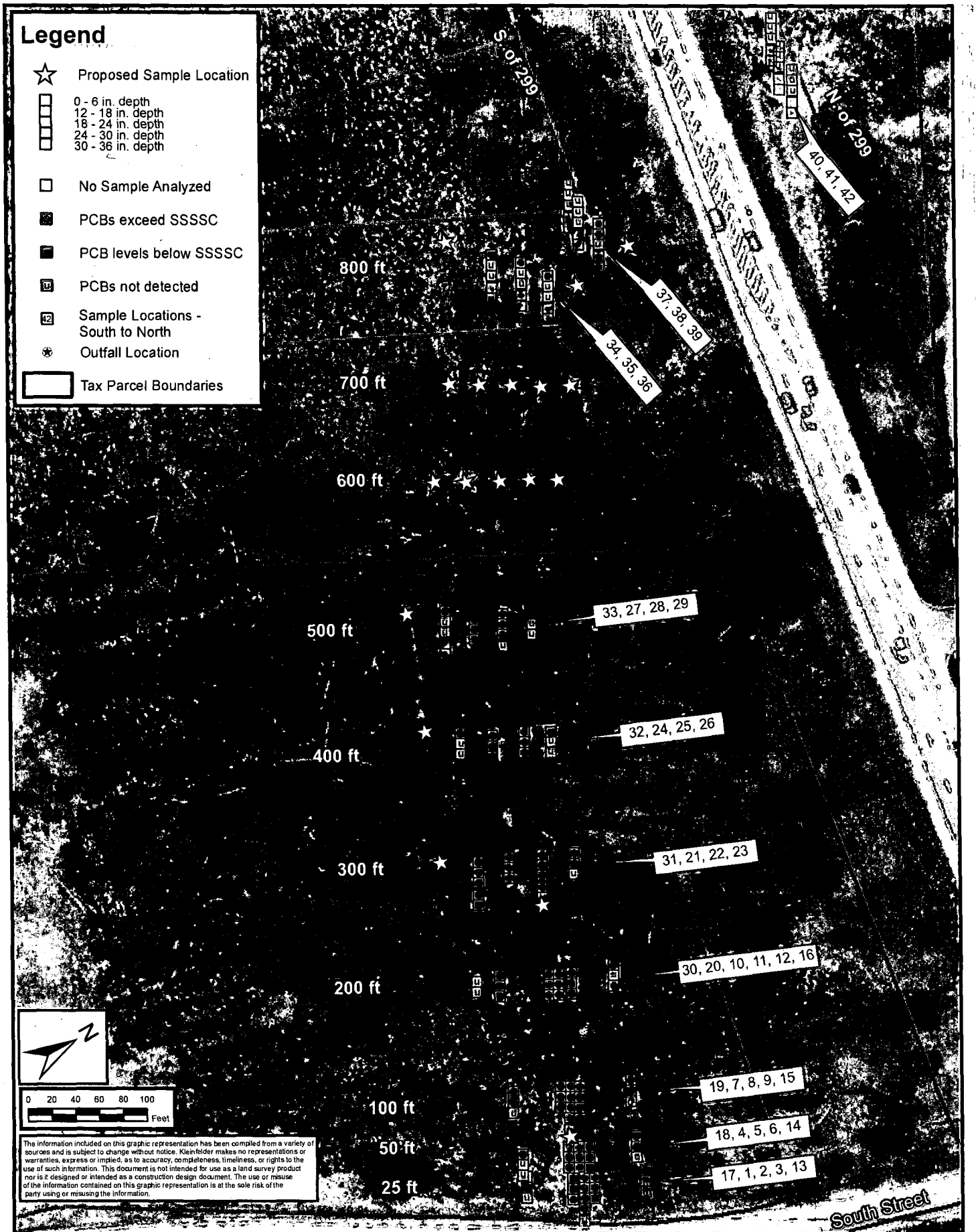
Total PAH Results

Source: NYS GIS Clearinghouse 2004 ORTHOPHOTO

C.H.G.E. CORP
ELTINGS CORNERS PROPERTY
SOUTH STREET
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

FIGURE
4a

1260 - 1295
Alachor



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PROJECT NO.	99768
DRAWN:	03/03/11
DRAWN BY:	JMM/RMA
CHECKED BY:	JC
FILE NAME:	Fig5_PropSamples.mxd

Proposed Sampling Locations

Source: NYS GIS Clearinghouse 2004 ORTHOPHOTO

C.H.G.E. CORP
ELTINGS CORNERS PROPERTY
SOUTH STREET
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

FIGURE
5

Appendix A

Laboratory Analytical Packages (disk)