

Summary of Analytical Data

Keith Junior High School

New Bedford, Massachusetts



June 9, 2006

For more information, contact:

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June 9, 2006

Mr. Scott Alfonse
Director, Environmental Stewardship
City of New Bedford
133 William Street, Room 311
New Bedford, MA 02740

**Re: *Keith Junior High School – Summary of Analytical Results
70 Hathaway Boulevard***

Dear Mr. Alfonse:

The purpose of this letter is to present a summary of analytical results from soil sampling event that occurred on April 18, 2006. Also included with this letter is a soil boring log of all soil boring subsurface information and a Site Plan showing soil boring locations. The April 2006 subsurface investigations were performed as a supplemental sampling event to provide supplemental subsurface information to the historical data set compiled during the school site screening process in February 2002. The original sampling conducted in 2002 concluded that the detected contaminant levels were within background levels typical in urban areas.

Soil/fill samples were collected and submitted for laboratory analysis of:

- Polychlorinated biphenyls (PCBs);
- RCRA 8 Metals; and
- Polynuclear aromatic hydrocarbons (PAHs).

Soil Boring/Sampling Summary

During the April 18, 2006 sampling event, a total of 12 soil borings were advanced via Geoprobe. An additional seven (7) surface samples (0-6 inches) were collected by BETA personnel. Fill was encountered at four (4) locations. Soil samples were collected at soil boring locations where fill was observed. Refer to the attached soil boring log for a summary of subsurface materials encountered.

Summary of Analytical Results

PCB Analytical Results

A total of 11 grab samples were submitted for PCB analysis. Of the 11 samples analyzed, 10 were non-detect (below method detection limits) and the single detection was well below 2 parts per million (ppm), the applicable (Massachusetts Contingency Plan (MCP) Method 1 S-1 Soil Standard).

RCRA 8 Metals Results

A total of 11 grab samples were submitted for RCRA 8 Metals analysis.

Arsenic

The minimum, maximum, and average arsenic concentrations are non-detect, 21 ppm, and 4.52 ppm, respectively. One (1) sample exceeded the S-1 Soil Standard (20 ppm).

Barium

The minimum, maximum, and average barium concentrations are 20 ppm, 358 ppm, and 111.36 ppm, respectively. No samples exceeded the S-1 Soil Standard.

Cadmium

The minimum, maximum, and average cadmium concentrations are 0.48 ppm, 9.13 ppm, and 1.61 ppm, respectively. One (1) sample exceeded the S-1 Soil Standard (2 ppm) and the “background level” of 3 ppm.

Chromium

The minimum, maximum, and average chromium concentrations are 8.57 ppm, 30 ppm, and 13.97, respectively. One (1) sample exceeded the S-1 Soil Standard (30 ppm), but the average concentration is well below the Method 1 Standard.

Lead

The minimum, maximum, and average lead concentrations are 32 ppm, 437 ppm, and 181 ppm, respectively. Two (2) samples exceeded the S-1 Soil Standard (300 ppm), but the average exposure point concentration is well below the Method 1 Standard.

Mercury

The minimum, maximum, and average mercury concentrations are non-detect, 0.278 ppm, and 0.12 ppm, respectively. No samples exceeded the S-1 Soil Standard.

Selenium

The minimum, maximum, and average selenium concentrations are non-detect, 2.92 ppm, and 1.11 ppm, respectively. No samples exceeded the S-1 Soil Standard.

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Silver

The minimum, maximum, and average silver concentrations are non-detect, 0.38 ppm, and 0.034 ppm, respectively. No samples exceeded the S-1 Soil Standard.

PAHs

A total of 11 samples were submitted for PAH analysis. One (1) sample exceeded S-1 Soil Standards for various compounds.

MCP Response Actions

It is apparent that the level of contamination detected at the existing Keith Junior High School is consistent with background levels of the contaminants of concern identified above. At this time, it is not anticipated that significant response actions will be required; however, we are aware that future construction activities will require response actions to address residual soil contamination in the vicinity of the existing underground oil storage tank. In addition, "suspect soil and/or fill areas" may be encountered during excavation of subsurface soils to construct new athletic fields. No further actions are recommended until such time that areas to be excavated have been delineated on the contract drawings.

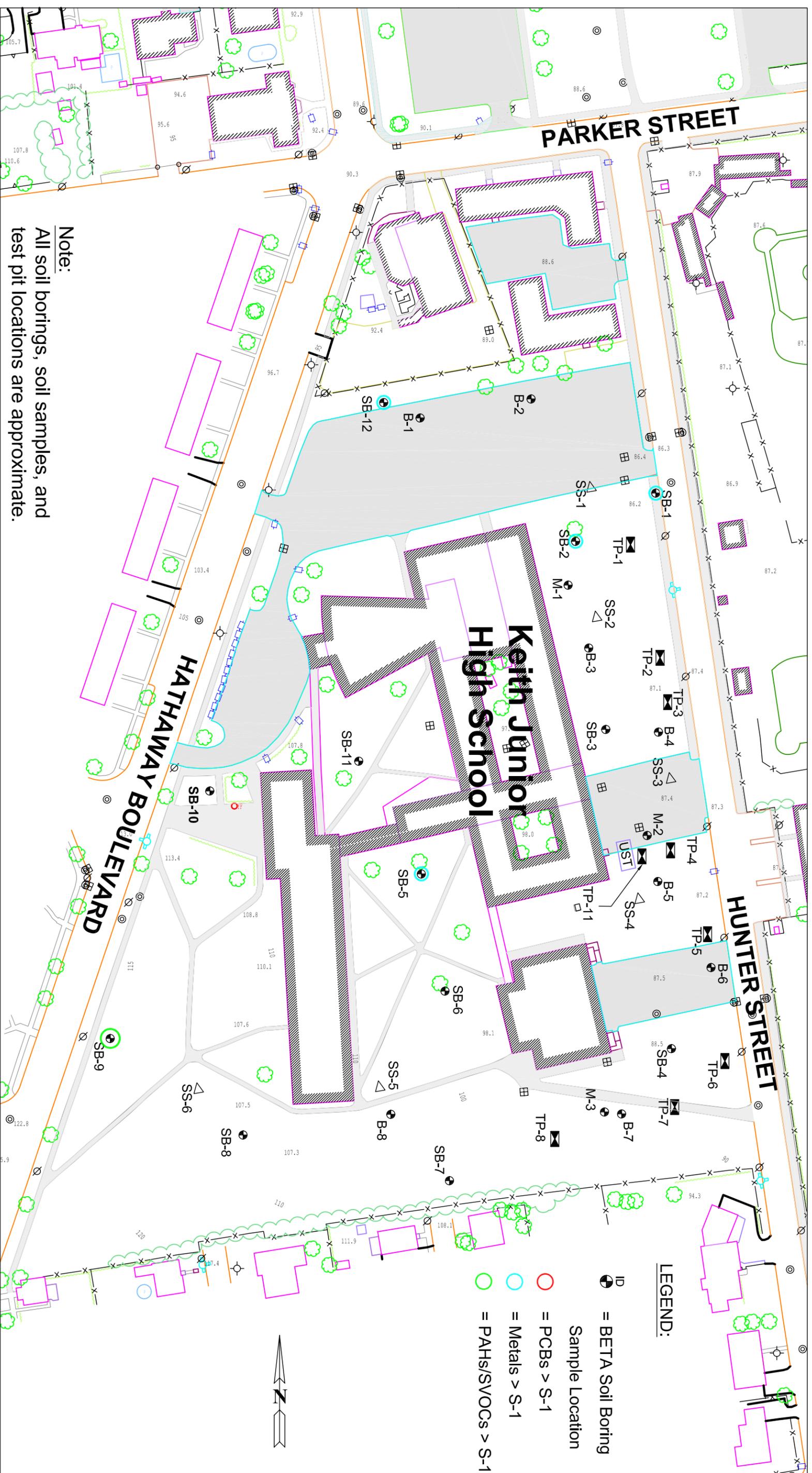
Please call me at (781) 255-1982 with any questions.

Very truly yours,

BETA GROUP, INC.

Alan D. Hanscom, P.E., LSP
Associate

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Keith Junior High School
70 Hathaway Boulevard
New Bedford, Massachusetts

Soil Sample Locations
S-1 Soil Exceedances
Scale: 1" = 100'

**Keith Junior High School
70 Hathaway Boulevard
Polychlorinated Biphenyls (PCBs)**

	Total PCBs (mg/kg)	PCB-1221 (mg/kg)	PCB-1232 (mg/kg)	PCB-1016/1242 (mg/kg)	PCB-1248 (mg/kg)	PCB-1254 (mg/kg)	PCB-1260 (mg/kg)	PCB-1262 (mg/kg)	PCB-1268 (mg/kg)
S-1	2.0	~	~	~	~	~	~	~	~
UCL	100	~	~	~	~	~	~	~	~

Sample Identification	Depth	Date Sampled	Date Extracted	Date Analyzed	Total PCBs (mg/kg)	PCB-1221 (mg/kg)	PCB-1232 (mg/kg)	PCB-1016/1242 (mg/kg)	PCB-1248 (mg/kg)	PCB-1254 (mg/kg)	PCB-1260 (mg/kg)	PCB-1262 (mg/kg)	PCB-1268 (mg/kg)
Keith S-1 (1.5-4.75')	1.5-4.75	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-2 (0.5-1.25')	0.5-1.25	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-5 (1.5-2')	1.5-2	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-6 (0-6")	0-6"	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-7 (0-6")	0-6"	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-8 (0-6")	0-6"	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-9 (0-6")	0-6"	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-9 (1.5-1.75')	1.5-1.75	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-10 (0-6")	0-6"	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-11 (0-6")	0-6"	4/18/06	4/21/06	4/27/06	0.900	ND	ND	ND	ND	0.900	ND	ND	ND
Keith S-12 (0-6")	0-6"	4/18/06	4/21/06	4/26/06	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

- S-1 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil.
- (mg/kg) = milligrams per kilogram (parts per million (ppm))
- ND = Not detected above method detection limit

**Keith Junior High School
70 Hathaway Boulevard
RCRA 8 Metals**

		RCRA 8 Metals							
		Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
S-1 MADEP Background¹ Regulatory Limit UCL	S-1	20	1,000	2	30	300	20	400	100
	MADEP Background¹	20	50²	3	40	600	1	1	5
	Regulatory Limit	~	~	~	~	~	~	~	~
	UCL	200	10,000	300	2,000	3,000	300	8,000	2,000

Sample Identification	Date Sampled								
Keith S-1 (1.5-4.75')	4/18/06	8.45	358	9.13	17	384	0.109	2.92	ND
Keith S-2 (0.5-1.25')	4/18/06	4.3	262	1.56	18	437	0.278	ND	ND
Keith S-5 (1.5-2')	4/18/06	21	112	1.84	15	109	ND	1.23	0.38
Keith S-6 (0-6")	4/18/06	1.82	70	0.99	12	117	0.124	1.36	ND
Keith S-7 (0-6")	4/18/06	3.59	20	0.55	9.37	81	0.084	1.25	ND
Keith S-8 (0-6")	4/18/06	2.24	31	0.48	9.13	72	0.105	0.8	ND
Keith S-9 (0-6")	4/18/06	1.68	38	0.53	8.7	283	0.134	1.37	ND
Keith S-9 (1.5-1.75')	4/18/06	2.38	90	0.71	8.57	231	0.149	0.87	ND
Keith S-10 (0-6")	4/18/06	1.17	33	0.55	10	65	0.099	ND	ND
Keith S-11 (0-6")	4/18/06	3.06	156	0.92	16	180	0.195	1.38	ND
Keith S-12 (0-6")	4/18/06	ND	55	0.48	30	32	ND	1.03	ND

NOTES:

S-1 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil (with GW-2 Groundwater Standard).

S-2 = MCP Method 1 Soil Standard for Category S-2 soil (with GW-2 Groundwater Standard).

¹ = Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil, MADEP, May 2002

² = In the absence of fill-specific data the "natural" soil value has been adopted (refer to ¹)

(mg/kg) = milligrams per kilogram (parts per million (ppm))

ND = Not detected above method detection limit

value Bold font indicates concentration exceeding MCP S-1 Soil Standard

**Keith Junior High School
70 Hathaway Boulevard
Polynuclear Aromatic Hydrocarbons (PAHs)**

	Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Dibenzofuran (RCS-1 Soil Standard)	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(e)pyrene	Indeno(1,2,3-cd)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene
	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
S-1	40,000	500,000	100,000	1,000,000	100,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	7,000	7,000	7,000	70,000	2,000	7,000	700	1,000,000
MADEP Background	-	-	-	-	-	-	-	-	-	-	9,000	7,000	8,000	-	7,000	3,000	-	-
UCL	10,000,000	10,000,000	10,000,000	10,000,000	-	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	3,000,000	400,000	3,000,000	10,000,000	300,000	3,000,000	300,000	10,000,000

Sample Identification	Date Sampled	Date Analyzed	Naphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Dibenzofuran	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(e)pyrene	Indeno(1,2,3-cd)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene
Keith S-1 (1.5-4.75')	4/18/06	4/25/06	ND	ND	ND	ND	ND	ND	160	ND	200	180	91	94	140	ND	81	ND	ND	ND
Keith S-2 (0.5-1.25')	4/18/06	4/25/06	ND	ND	300	ND	ND	ND	720	400	1,800	1,900	1,200	1,100	1,700	530	1,300	480	170	390
Keith S-5 (1.5-2')	4/18/06	4/25/06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Keith S-6 (0-6")	4/18/06	4/25/06	ND	ND	90	140	72	190	1,700	370	2,000	1,800	940	850	1,200	460	850	370	120	310
Keith S-7 (0-6")	4/18/06	4/25/06	ND	ND	ND	ND	ND	ND	89	ND	170	160	80	83	120	ND	83	ND	ND	ND
Keith S-8 (0-6")	4/18/06	4/25/06	ND	ND	ND	ND	ND	ND	240	61	340	280	150	130	180	63	140	82	ND	75
Keith S-9 (0-6")	4/18/06	4/25/06	ND	ND	ND	ND	ND	ND	140	ND	260	270	120	130	180	ND	120	67	ND	58
Keith S-9 (1.5-1.75')	4/18/06	4/26/06	360	390	1,100	970	510	2,000	16,000	4,200	10,000	10,000	5,600	5,000	4,200	1,400	3,600	1,600	650	1,300
Keith S-10 (0-6")	4/18/06	4/25/06	ND	ND	ND	ND	ND	ND	190	ND	350	290	140	140	230	68	160	87	ND	80
Keith S-11 (0-6")	4/18/06	4/25/06	ND	ND	93	86	ND	88	1,000	230	1,600	1,600	760	680	1,300	370	780	300	100	250
Keith S-12 (0-6") ²	4/18/06	4/25/06	ND	ND	ND	ND	ND	ND	1,300	ND	2,400	3,800	1,500	1,300	2,500	ND	1,800	ND (980)	ND (980)	ND

NOTES:

- (ug/kg) = micrograms per kilogram (parts per billion (ppb))
- ND = not detected above method detection limit
- S-1 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil (with GW-2 Groundwater Standard).
- RCS-1 = Massachusetts Contingency Plan (MCP) Reportable Concentration Soil Standard for category S-1 soil. There is no S-1 Soil Standard listed in Section 40.0976(6) Tables 1 & 2.
- ¹ = Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil, MADEP, May 2002
- ² = Non-detect concentration (above the applicable S-1 Standard) elevated due to 20x dilution.

value Bold font indicates concentration exceeding MCP S-1 Soil Standard

**Keith Junior High School
70 Hathaway Boulevard
Subsurface Sampling Information**

BETA ID	Total Depth	Sample Depth(s)	Grass / Soil	Fill Begin	Fill End	Fill Thickness	Organics	Native / Clean Backfill	Comments
SB-1	5	1.5-4.75	0-1.5	1.50	4.75	3.25	4.75-5	-	
SB-2	5	0.5-1.25	0-1.5	0.50	1.25	0.75	-	1.25-5	
SB-3	10	-	0-0.5	-	-	-	-	0.5-8, 8-10 (till)	No Fill
SB-4	10	-	0-1.25	-	-	-	-	1.25-7, 7-10 (till)	No Fill
SB-5	10	1.5-2	0-1.5	1.5	2.0	0.50	-	2-10	Fill mixed with clean backfill
SB-6	10	0-6"	0-0.5	-	-	-	-	0.5-10	No Fill
SB-7	10	0-6"	0-1	-	-	-	-	1-8, 8-10 (till)	No Fill
SB-8	5	0-6"	0-1	-	-	-	1-2.5	2.5-5	No Fill; Mix loam and organics (1-2.5 ft)
SB-9	5	0-6", 1.5-1.75	0-1.5	1.5	1.75	0.3	-	1.75-5	
SB-10	10	0-6"	0-1	-	-	-	-	1-8, 8-10 (till)	No Fill
SB-11	10	0-6"	0-0.5	-	-	-	-	0.5-10	No Fill
SB-12	10	0-6"	0-0.5	-	-	-	8-8.25	0.5-8, 8.25-10 (till)	Organic silt