

# *New Bedford High School & Adjacent Properties*

**Status of Off-Site Environmental  
Investigations - Public Meeting**

**July 12, 2006**

# Purpose & Overview

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- **Special Project Designation Site – MCP**

- **Complete delineation of release site required**
- **Linked to RTN at Keith Junior High School**

- **Risk Based Cleanup**

- **Assessment of soil at NBHS, Walsh and KJHS**
- **Indoor air assessment at NBHS**

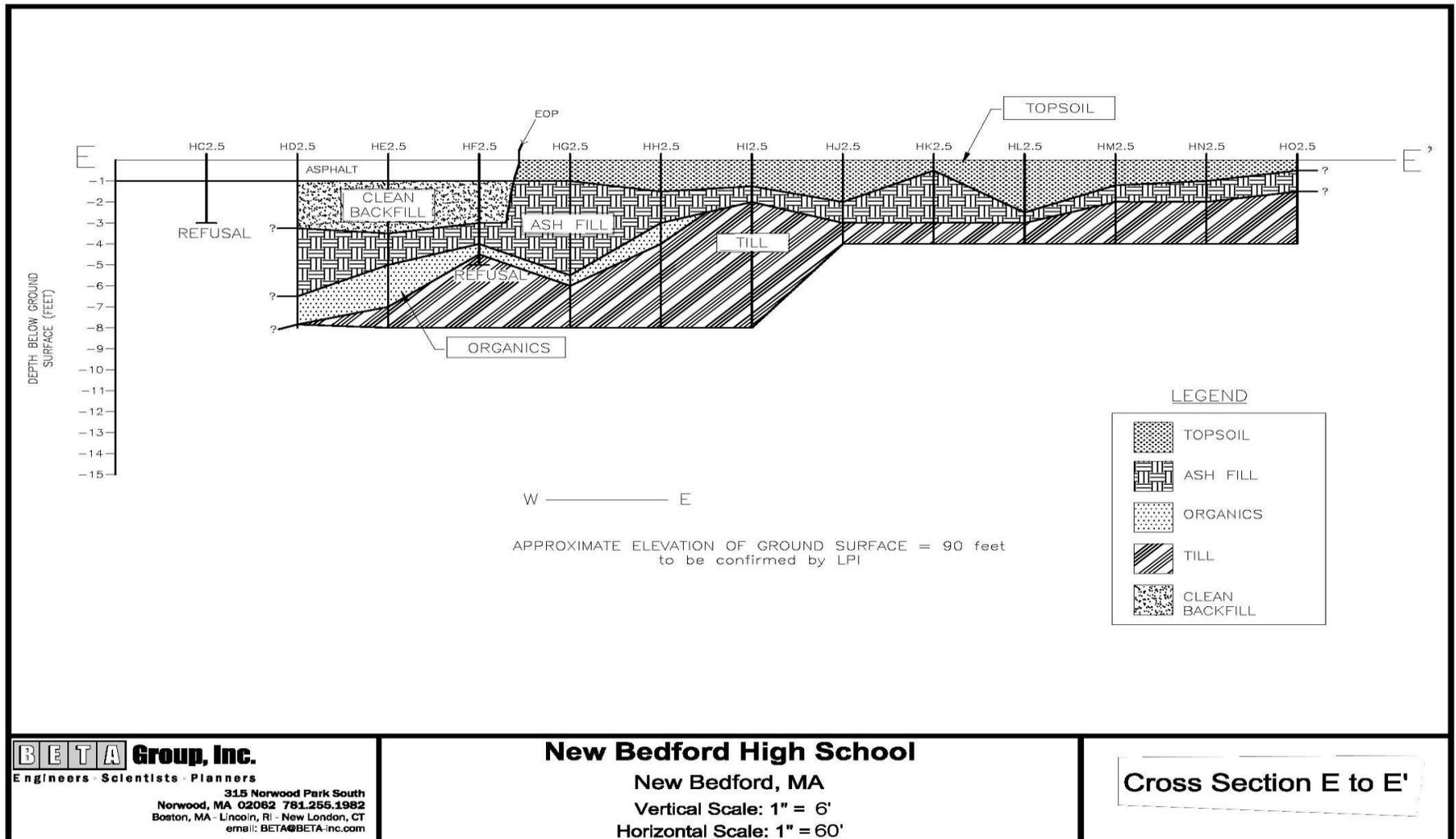
# Overview of Release Site





# New Bedford High School

## Cross Section E to E'

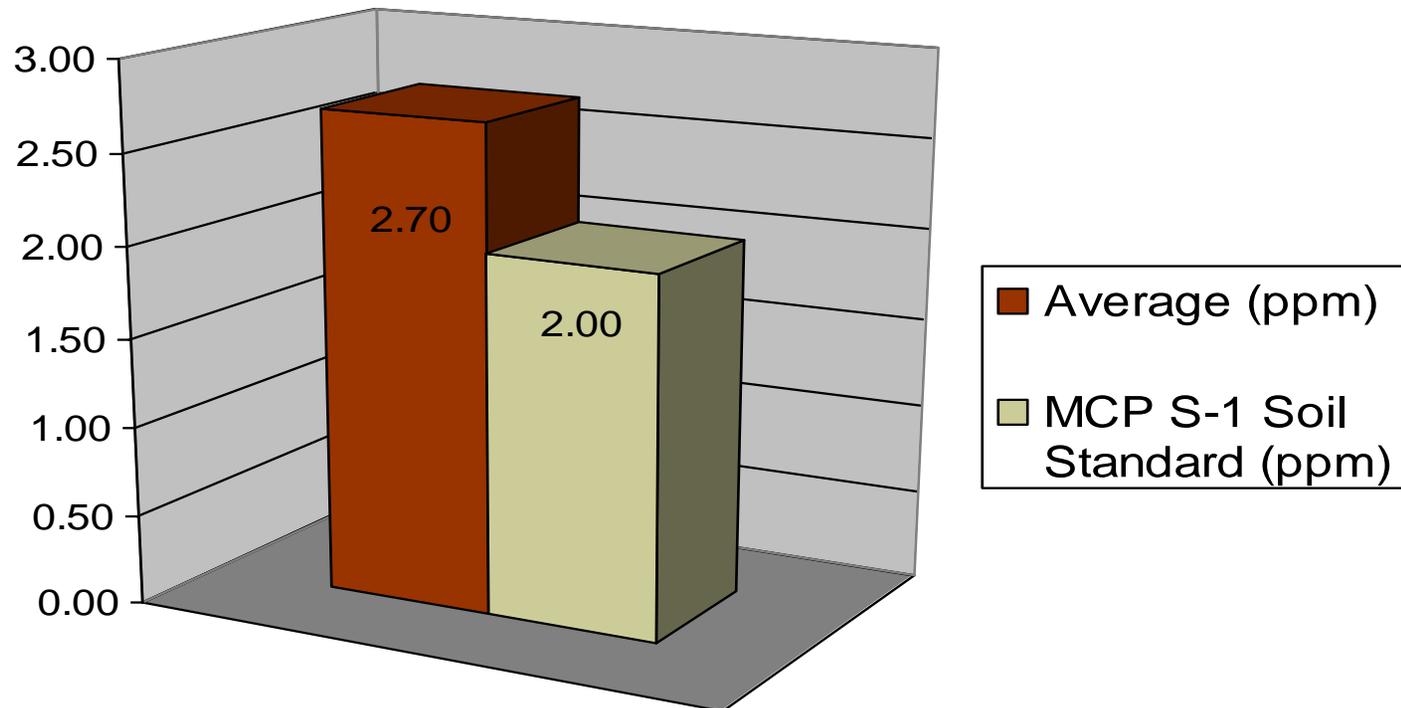


# New Bedford High School

## Soil Sampling Results: PCBs

- 259 Samples Analyzed\*
- Range of Concentrations: Non-Detect to 40.0 parts per million
- Average Concentration: 2.7 parts per million
- MCP S-1 Soil Standard: 2.0 parts per million

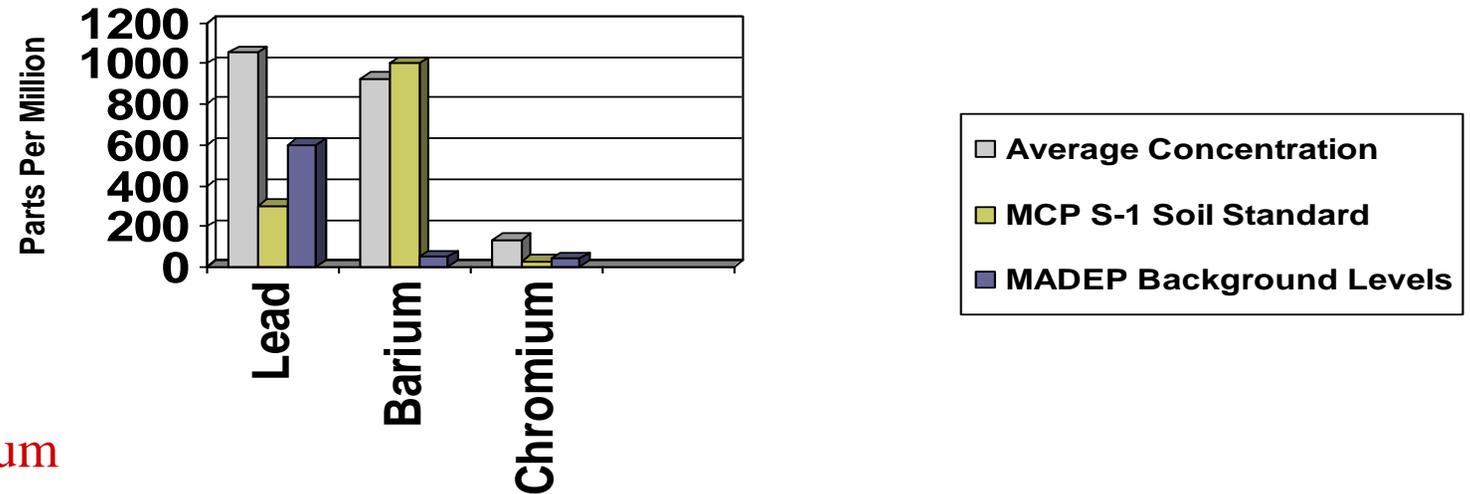
\*A total of 69 samples exceeded the MCP S-1 Soil Standard of 2.0 parts per million



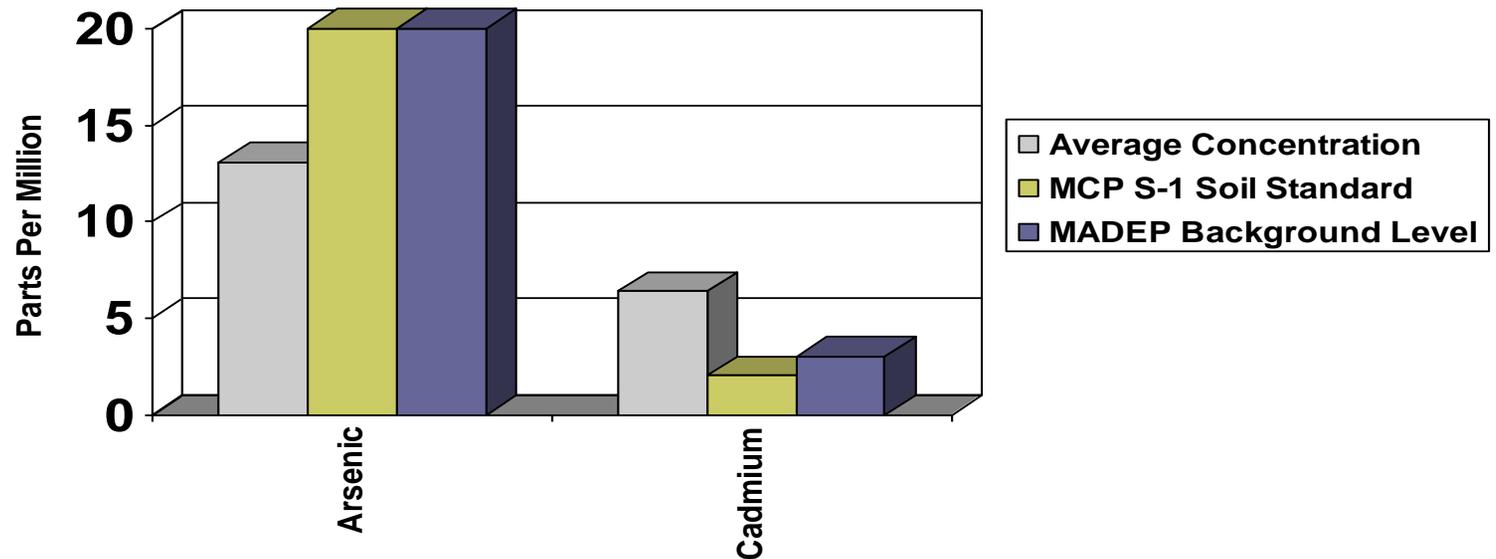
# New Bedford High School

## RCRA Metals of Concern

### Lead, Barium, and Chromium



### Arsenic and Cadmium

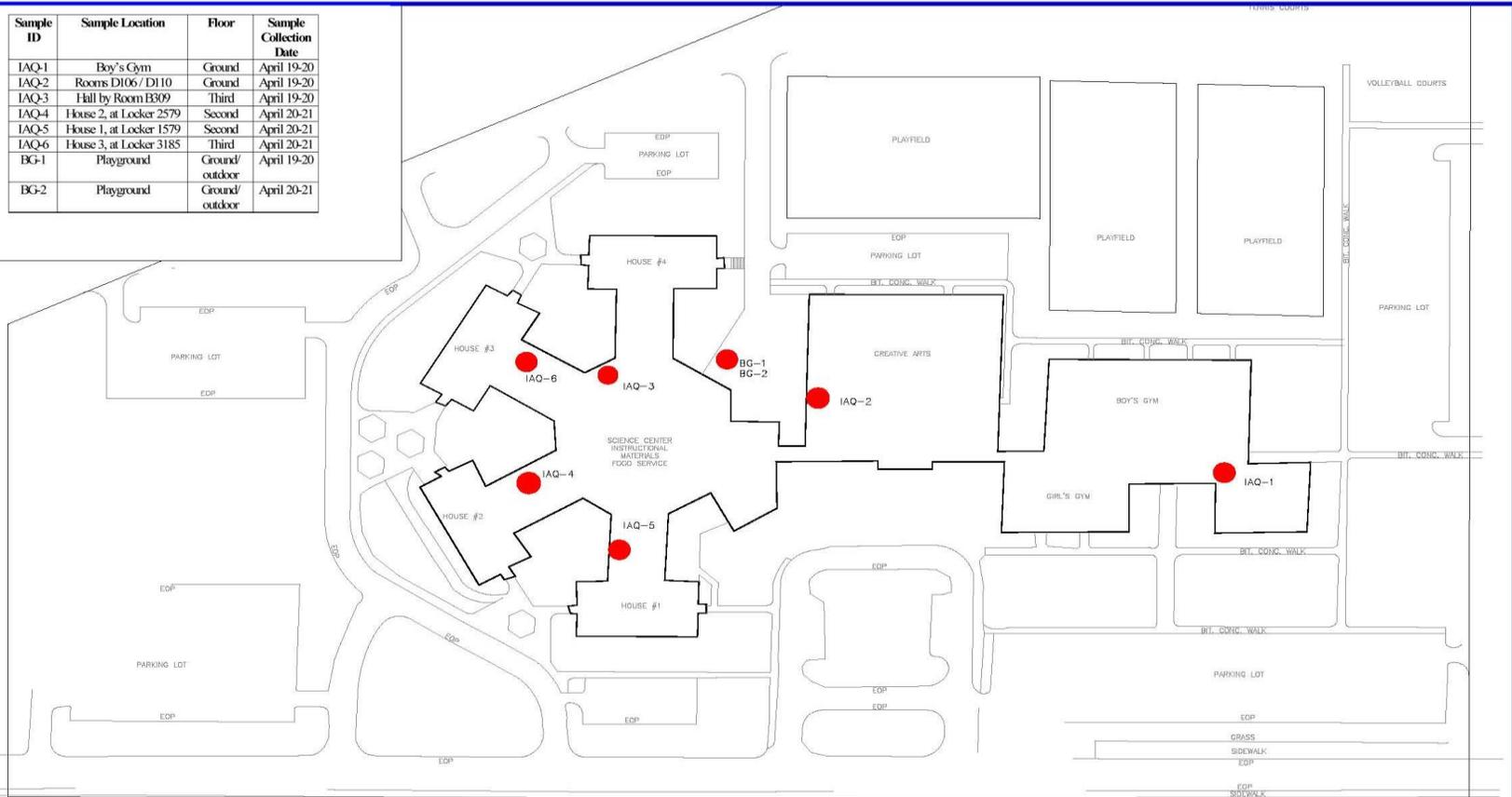


# New Bedford High School

## Indoor Air Sample Location Plan

c:\Projects\2006\2006 - New Bedford Sampling Plan\New Bedford High School\IAQ\IAQ - New Bedford HS, 04\_06\PCB-In-Air Sample Locations.dwg May 09, 2006 11:54am

Sample ID	Sample Location	Floor	Sample Collection Date
IAQ-1	Boy's Gym	Ground	April 19-20
IAQ-2	Rooms D106 / D110	Ground	April 19-20
IAQ-3	Hall by Room B309	Third	April 19-20
IAQ-4	House 2, at Locker 2579	Second	April 20-21
IAQ-5	House 1, at Locker 1579	Second	April 20-21
IAQ-6	House 3, at Locker 3185	Third	April 20-21
BG-1	Playground	Ground/ outdoor	April 19-20
BG-2	Playground	Ground/ outdoor	April 20-21



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**New Bedford High School**  
**Indoor Air Sampling Locations**  
New Bedford, Massachusetts

**April 19-21, 2006**  
**Scale: 1" = 120'**

# New Bedford High School

## Indoor Air Quality Results: PCBs

<u>RBAC for PCBs in air</u>	<u>RBAC (<math>\mu\text{g}/\text{m}^3</math>)</u>
Action Level ( $1 \times 10^{-6}$ )	0.06
Maximum Acceptable Level ( $1 \times 10^{-5}$ )	0.3

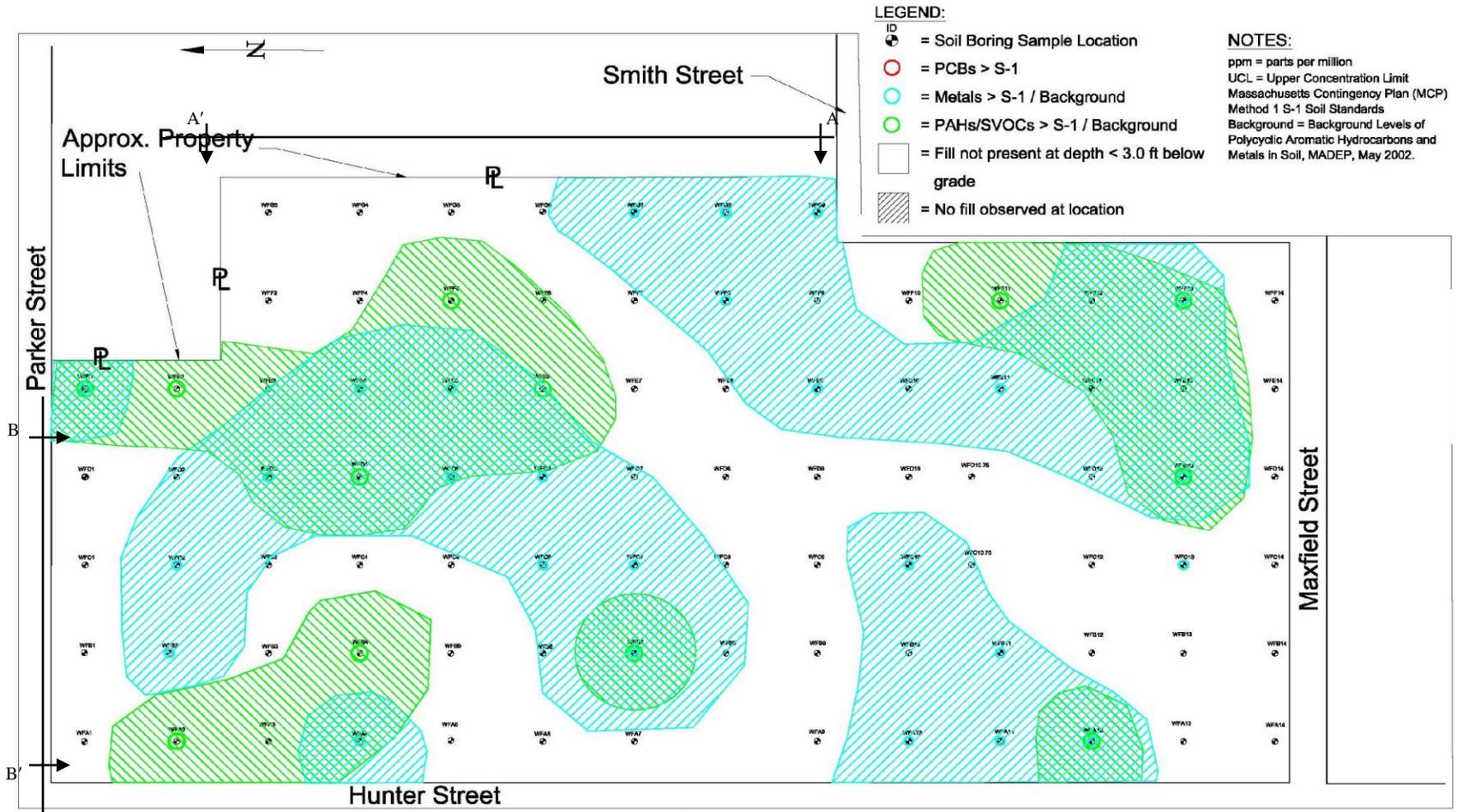
Results from April 2006 Indoor Air Sampling:

0.0043 to 0.0519  $\mu\text{g}/\text{m}^3$

Follow-up investigations scheduled later this month...

# Walsh Field

## Soil Sampling Plan



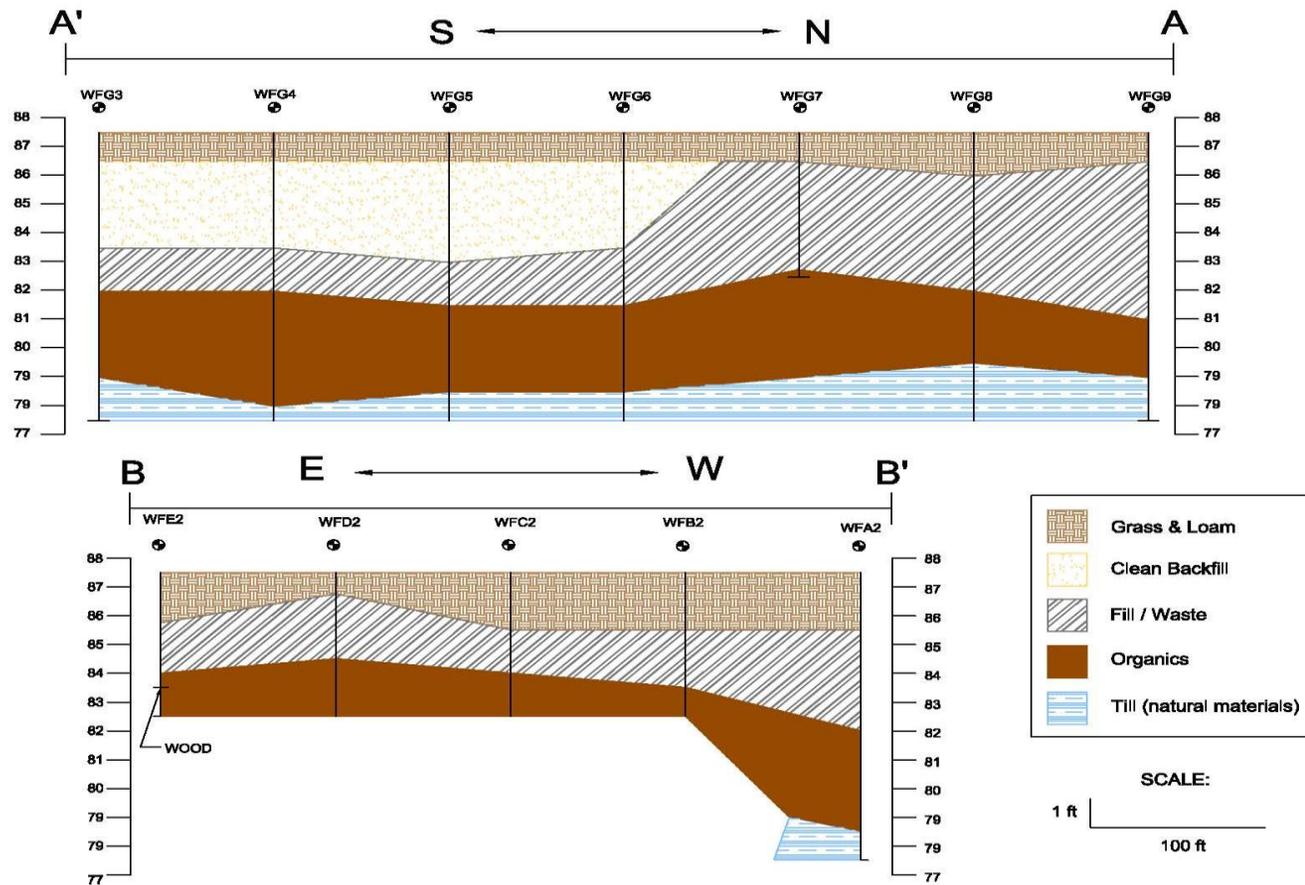
Walsh Field  
S-1 / Background Exceedances  
New Bedford, Massachusetts

Scale: 1" = 100'

# Walsh Field

## Cross Sections A & B

j:\Projects\26000s\2685 - New Bedford Sampling Plan\AutoCAD Files\Walsh Field\Cross-Sections A & B.dwg May 03,2006 3:00pm



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**Walsh Field**  
New Bedford, Massachusetts

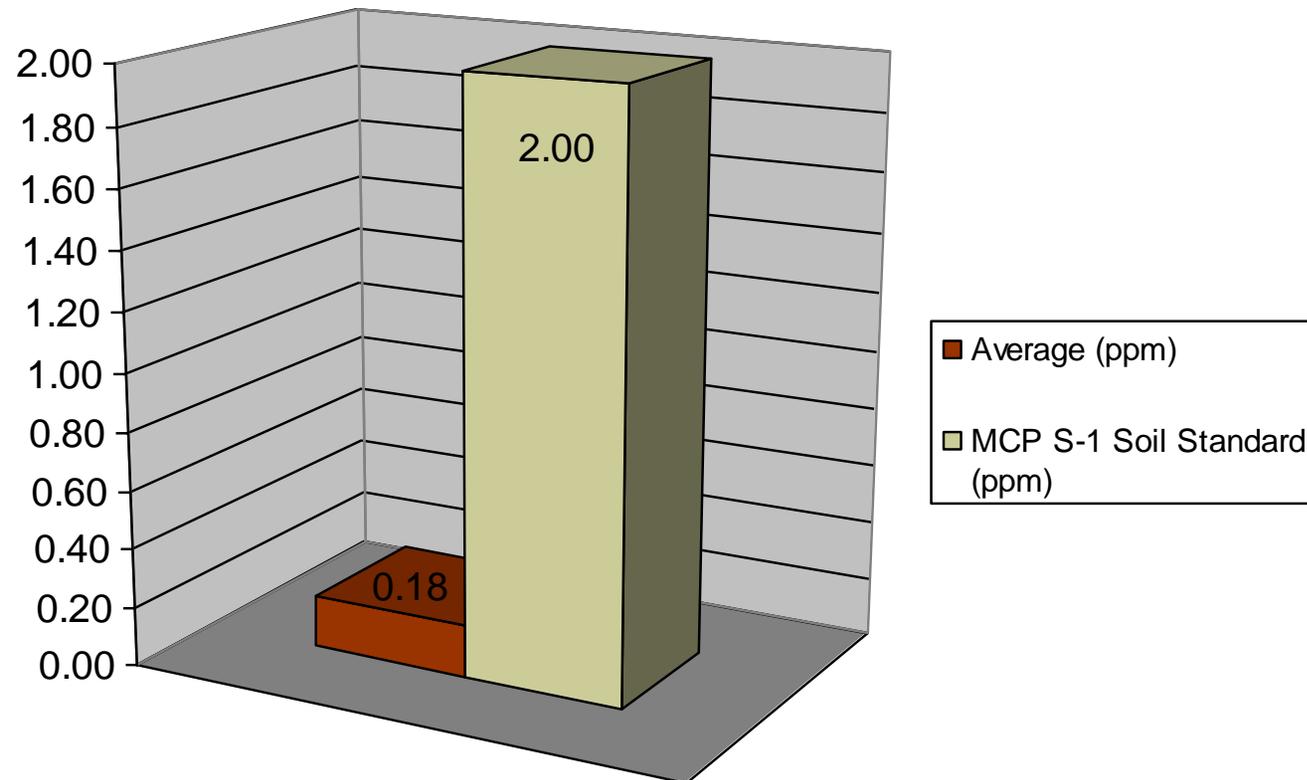
**Cross-Sections A & B**

# Walsh Field

## Soil Sampling Results: PCBs

- 69 Samples Analyzed
- Range of Concentrations: Non-Detect to 0.66 parts per million
- Average Concentration: 0.18 parts per million
- MCP S-1 Soil Standard: 2.0 parts per million

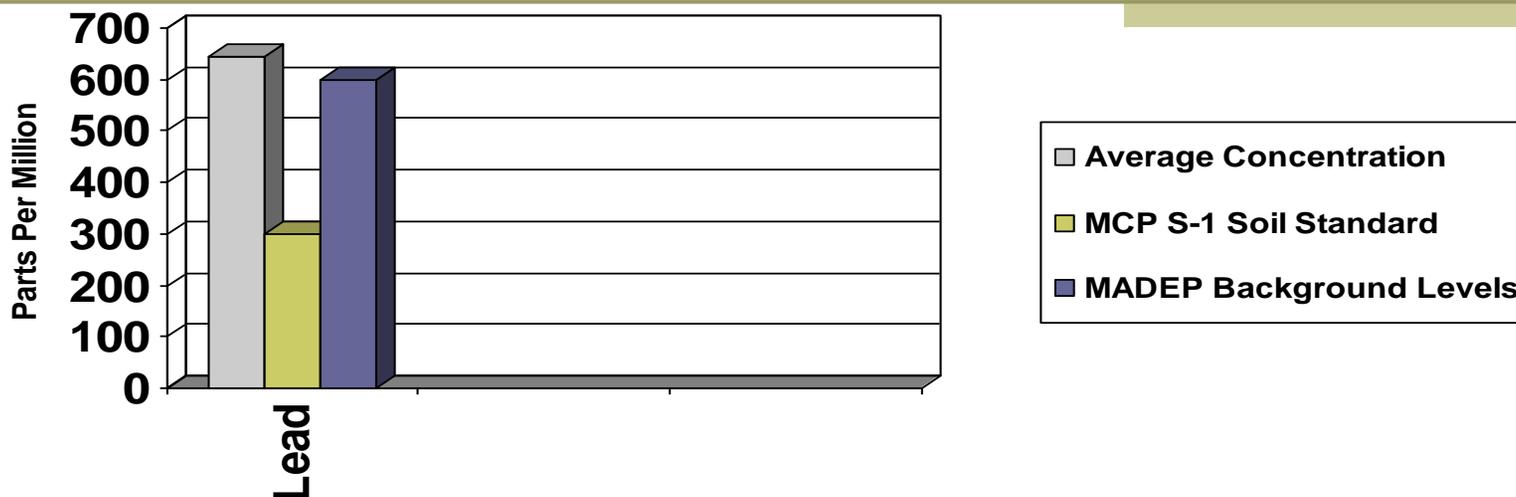
\*No samples exceeded the MCP S-1 Soil Standard of 2.0 parts per million



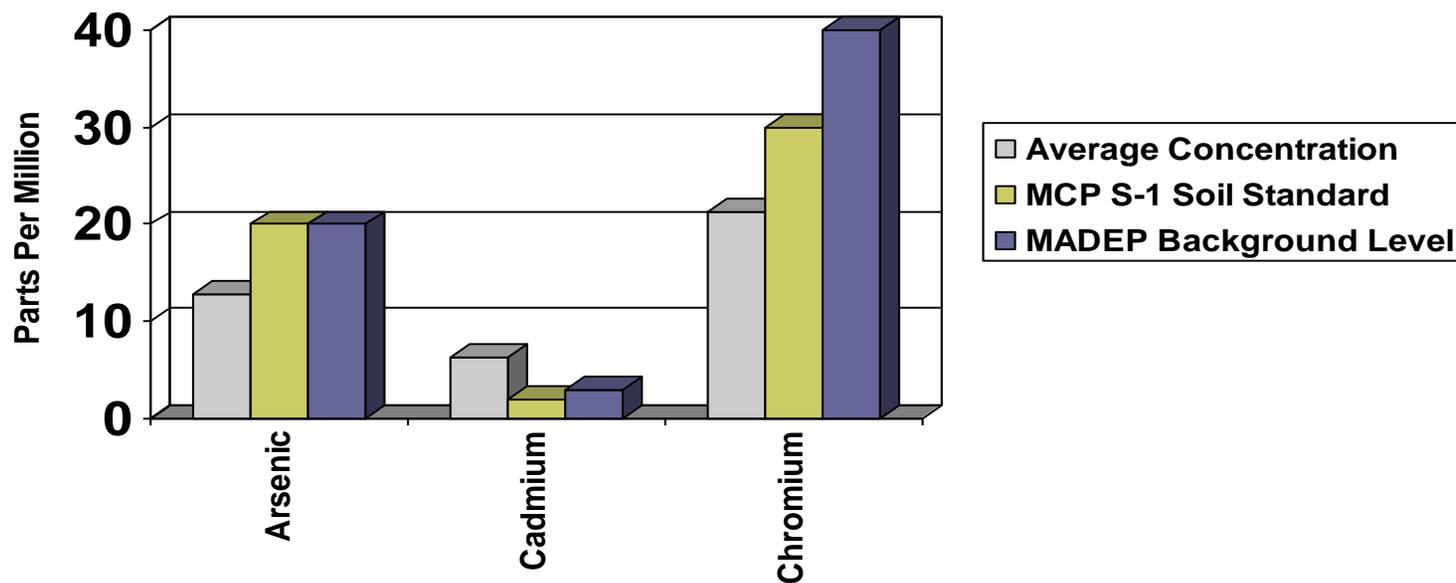
# Walsh Field

## RCRA Metals of Concern

Lead

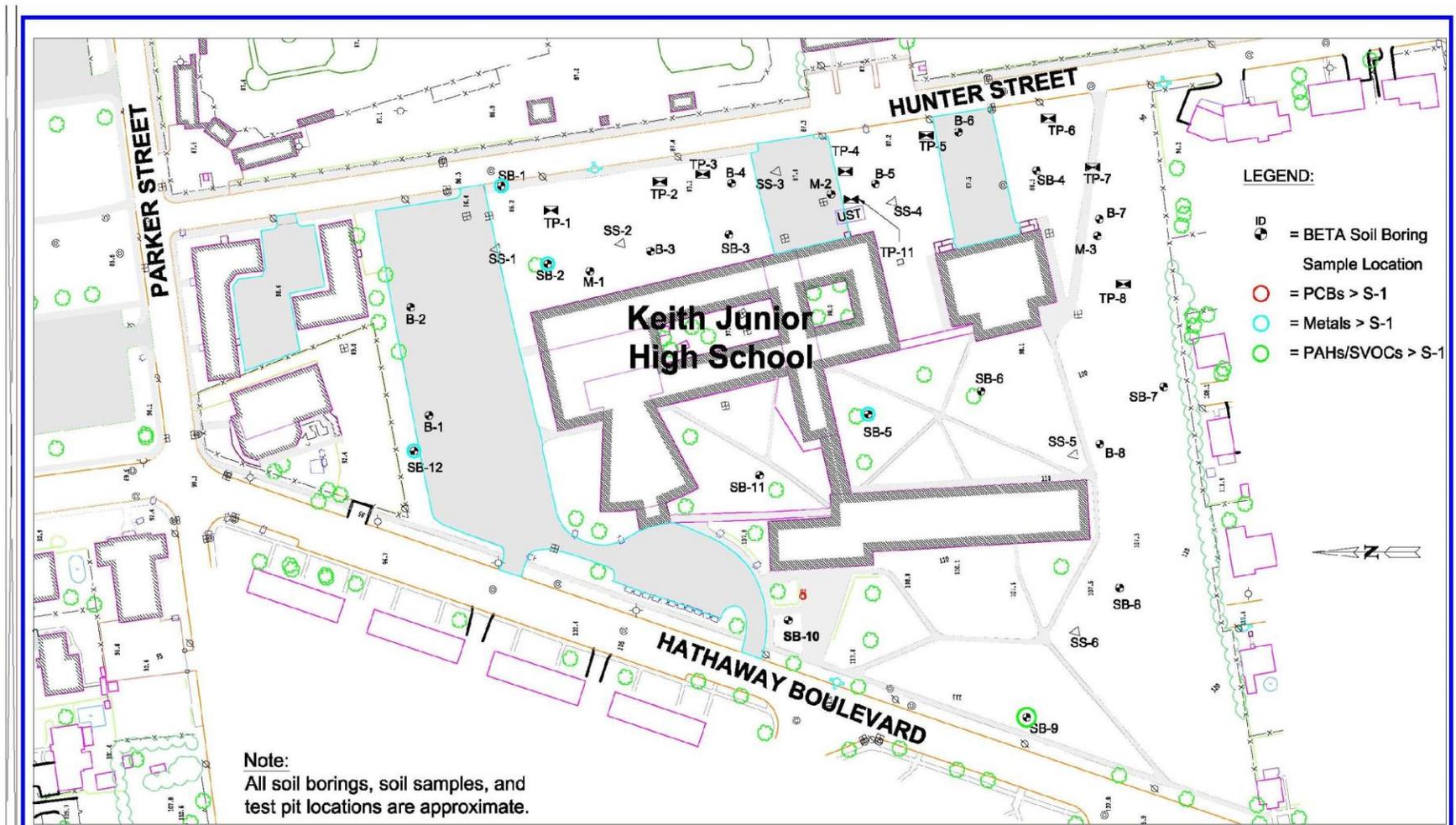


Arsenic, Cadmium, and Chromium



# Keith Junior High School

## Soil Sampling Plan



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Keith Junior High School  
70 Hathaway Boulevard  
New Bedford, Massachusetts

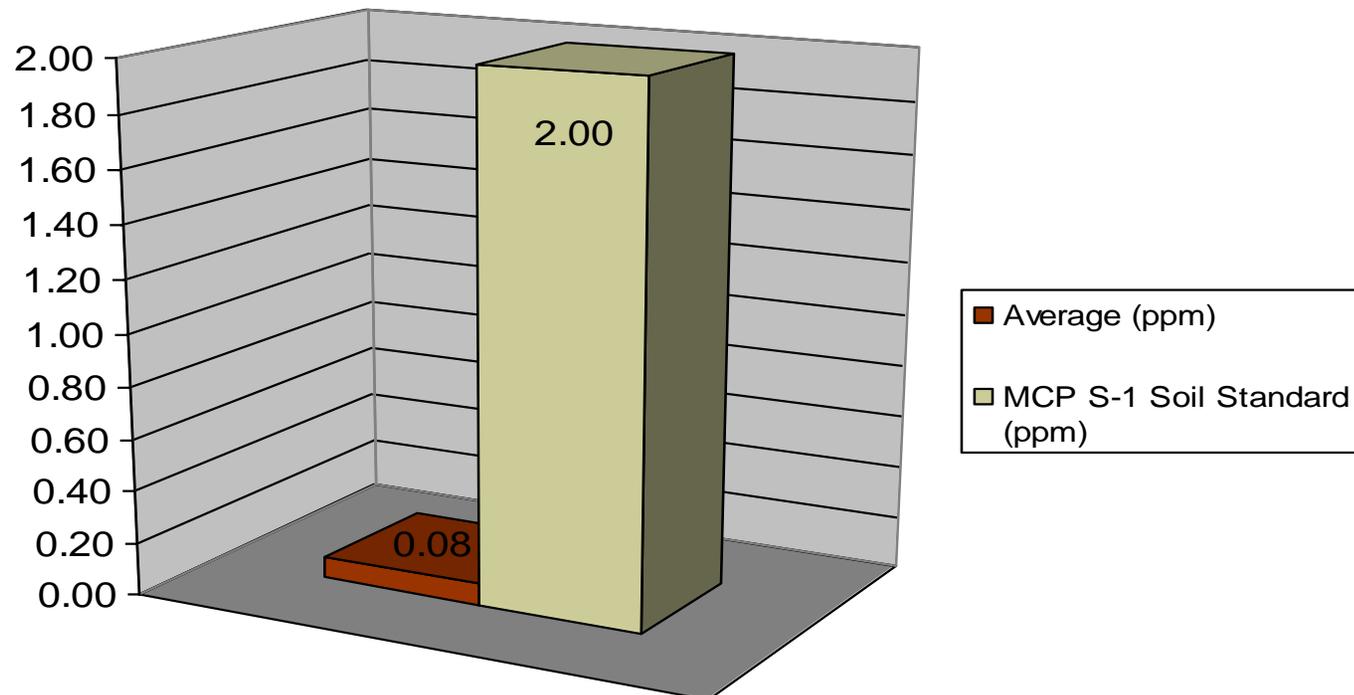
Soil Sample Locations  
S-1 Soil Exceedances  
Scale: 1" = 100'

# Keith Junior High School

## Soil Sampling Results: PCBs

- 11 Samples Analyzed\*
- Range of Concentrations: Non-Detect to 0.9 parts per million
- Average Concentration: 0.08 parts per million
- MCP S-1 Soil Standard: 2.0 parts per million

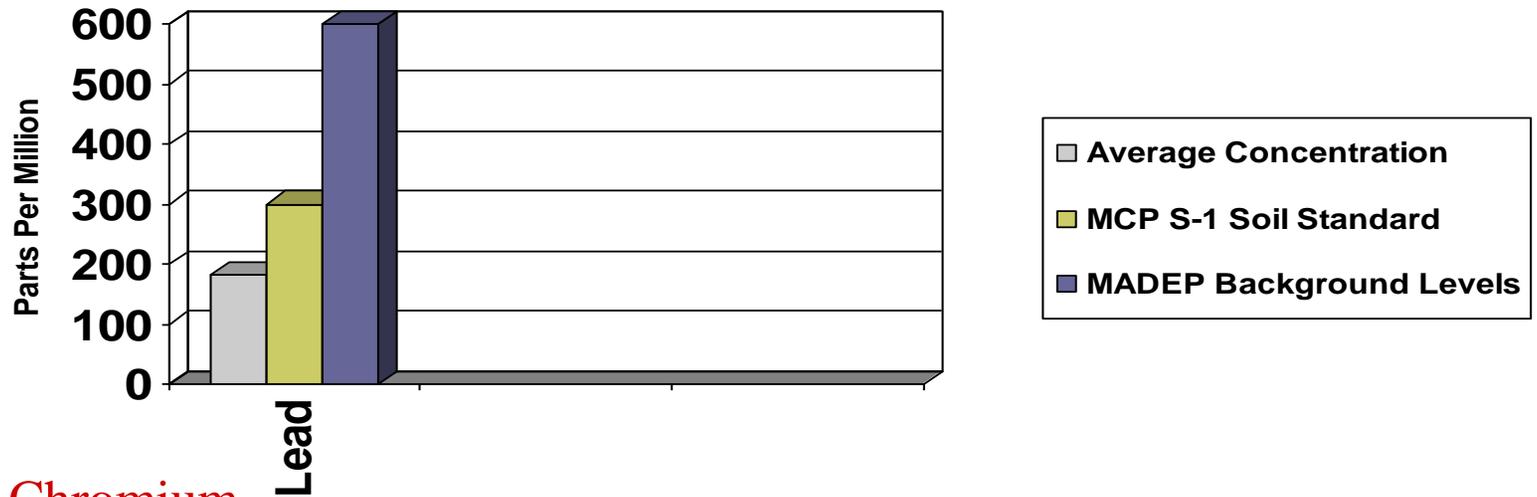
\*No samples exceeded the MCP S-1 Soil Standard of 2.0 parts per million



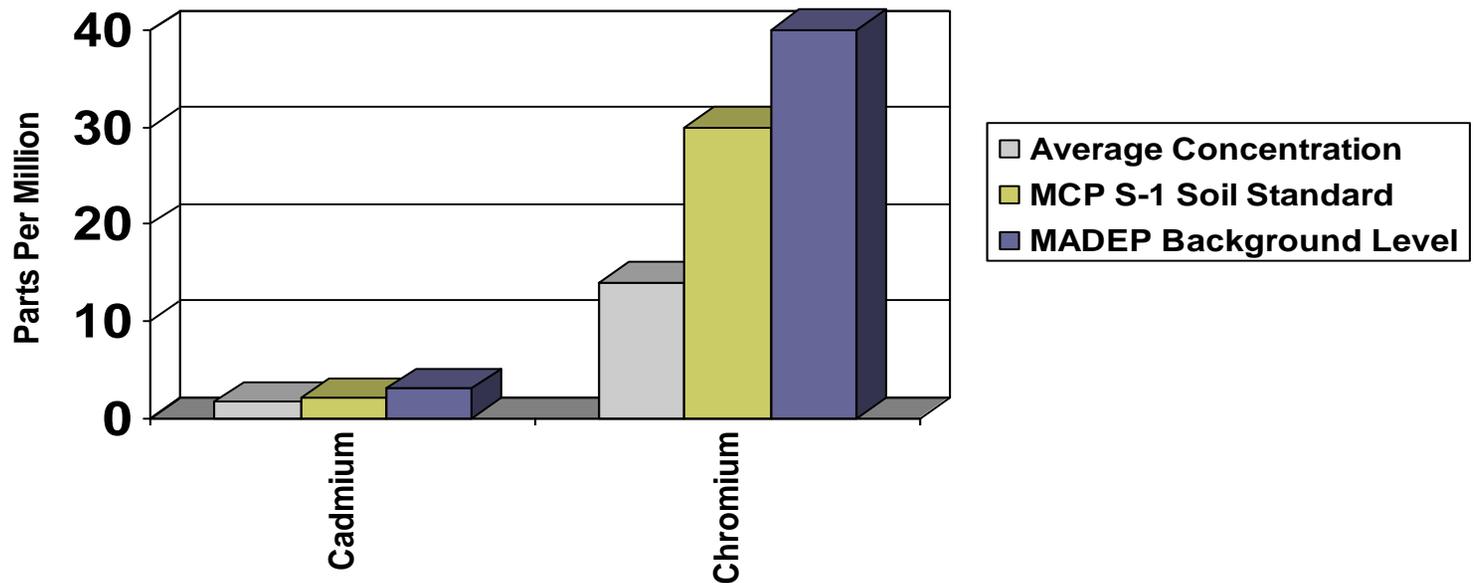
# Keith Junior High School

## RCRA Metals of Concern

### Lead



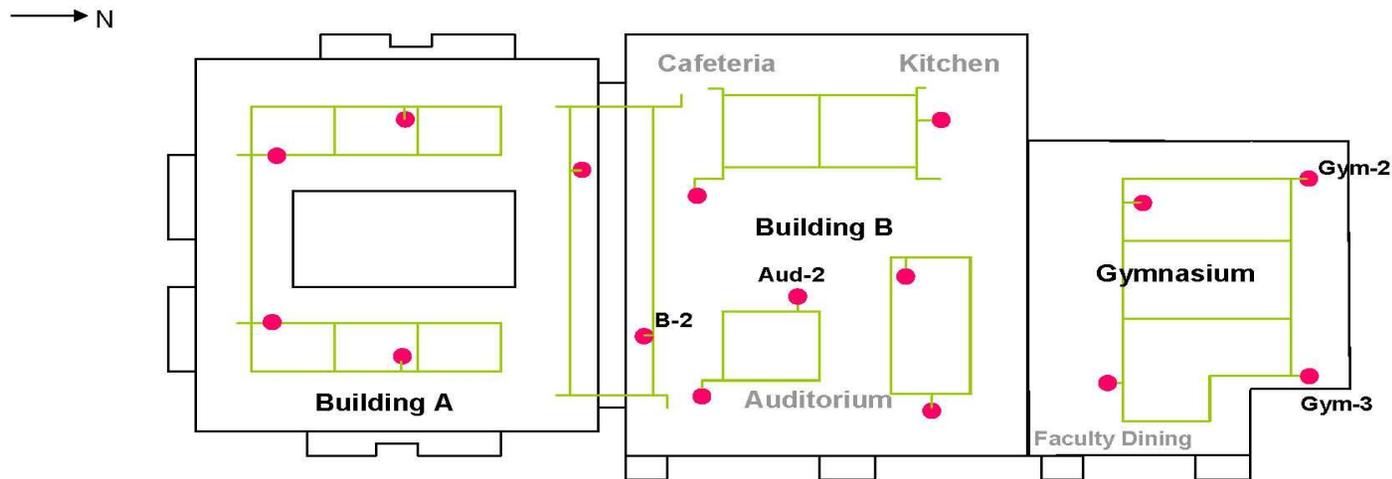
### Cadmium and Chromium



# New Keith Middle School

## Indoor Air Quality – Vent Air Sampling Locations Plan

New Keith Middle School  
Foundation Vent  
Air Sampling Locations  
April 2006



Hathaway Boulevard

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● = Vent Riser

— = Pressure Venting  
and Collection System

# New Keith Middle School

## Vent Air Sampling Results

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- No PCBs or PAHs above Method Detection Levels
- Detected VOCs are largely attributed to:
  - PVC joint cements and cleaners
  - Construction vehicle exhaust
  - Measured concentrations will decrease with time
- No threat to human health, based upon current readings



***New Bedford High School  
& Adjacent Properties***



**Questions & Answers**

# New Keith Middle School

## Backfilling in Exterior Areas

Backfilling in exterior areas (outside the building footprint) was completed to provide a minimum cap thickness of two feet of clean material in all paved and sidewalk areas and a minimum of three feet of clean material in all other areas (landscaping and grass areas). To accomplish this goal, contaminated soil was stripped to the appropriate pre-grading elevation and removed from the site by WES Construction. After removal of soil to the appropriate elevation, a separation layer of geotextile fabric was placed over the soil to remain. Approximately four hundred (400) spot elevations were obtained by a licensed land surveyor and submitted as an as-built drawing.

A layer of clean backfill (approximately one foot) was installed above the geotextile fabric in all locations. An orange warning barrier was then placed over the initial clean backfill to provide a visual indicator for any unauthorized excavation in the landscaped areas. Following installation of the warning barrier, clean fill was placed to an intermediate elevation by WES Construction. In areas to be paved, Agostini (Building Contractor) placed additional clean backfill and a pavement binder coarse (approximately two inches) to achieve a minimum 2-foot cap. The pre- and post-paving elevations were surveyed to make sure the final cap thickness was achieved, in accordance with EPA's conditional approval of the Risk Based Cleanup Plan.

The same procedure will be followed to verify that final grades in landscaped areas achieve a minimum cap thickness of three feet, also in accordance with the EPA conditional approval.



Photo showing layered backfill. Clean backfill placed above contaminated fill and geotextile fabric, followed by warning barrier, then additional clean backfill.



Placement and compaction of clean backfill was performed in lifts. First lift was prior to placement of warning barrier. Second lift was after placement of warning barrier.

# New Keith Middle School

## Backfilling within Building Footprint

Backfilling around pile caps and grade beams within the building footprint was performed as follows. After installation of the foundation piles was complete, contaminated soil was excavated around the piles to a depth of one foot below the base of the proposed pile caps. A separation layer of permeable geotextile fabric was placed over the soil to remain. A one-foot thick bed of gravel fill was then placed to the elevation of the base of the pile cap excavation. The concrete pile caps were then formed by concrete foundation work crews. Following curing of the pile caps, the forms were stripped and the area around the individual pile caps was backfilled with contaminated material, to an elevation six inches below the top of the pile cap (approximately 2.5-foot thick layer). A layer of separation fabric was then placed over the contaminated backfill, followed by a six-inch layer of clean granular fill.

Once backfilling was complete to the top of the pile caps, concrete grade beams were formed over the pile caps. Upon completion of the grade beams, a second layer of contaminated fill was used as backfill to an elevation of two feet below the top of the grade beams (approximately one foot). A layer of separation fabric was then placed over the contaminated backfill. An approximate one-foot layer of clean granular backfill was placed over the separation fabric, to match grade with the tops of the grade beams.



View of several "lower" pile cap excavations backfilled with contaminated fill. (April 2005)



View of clean fill along interior wall. (April 2005)

# New Keith Middle School

## Installation of the Vapor Barrier Membrane

### Installation

A vapor barrier membrane was installed beneath the concrete slab on the first floor to prevent the potential migration of any toxic vapors that may accumulate under the building. The construction of the vapor barrier included placing rigid insulation board on top of clean backfill material. A 1-foot wide space was left, as appropriate, to allow for installation of the Geovent furnished by Liquid Boot. Geotextile fabric was installed over the insulation board and secured to the foam board with plastic screws spaced at approximately 12 inches. The Geovents were installed and covered with a 1-inch thick rigid insulation board to provide a smooth and level surface. The Liquid Boot vapor membrane barrier was then spray-applied to the geotextile fabric.

### Smoke Testing

Following a 24+/-hour curing period, smoke tests were conducted at isolated areas of the vapor barrier to inspect for any leaks. This was accomplished by pushing a fogging agent under the membrane in all directions. If smoke was observed, additional liquid vapor barrier was applied. Once no smoke was observed, the testing was complete.

Thickness tests were also conducted periodically to determine if the Liquid Boot was installed to the manufacturer's correct specified thickness (60-mil minimum). Digital calipers were used to test the thickness of the barrier. If the thickness was insufficient, the area was re-sprayed.

### Vent Piping

Four-inch diameter PVC piping was installed from each of the individual vent systems through the building roofs. A total of sixteen vent pipes were installed. The vent stacks were placed away from air handling units and up to approximately three feet above the roofs.



Rigid insulation board installed above clean, compacted backfill.  
The foam board was cut to allow for geovent installation.



Geovents were installed between sections of insulation board to allow the ground beneath the vapor barrier to "breathe". Venting is channeled to vertical PVC pipe risers and discharged outside through the roof.