

# **COLDEN**

## **CORPORATION**

Occupational Health, Safety &  
Environmental Consultants

Mr. Vincent McGowan  
Assistant Director  
Battery Park City Parks Conservancy  
2 South End Avenue  
New York, New York 10280

January 9, 2002

Re: Bulk Soil and Surface Wipe Sampling Results – ~~West Thames Park – Battery Park City~~  
Colden Project No.: 02100

Dear Mr. McGowan:

Colden Corporation (Colden) is pleased to present this report of our findings from recent bulk soil and surface wipe sampling performed at the West Thames Park located in Battery Park City, New York, New York. Our findings are presented below.

### **Background**

Colden was retained by the Battery Park City Parks Conservancy (BPCPC) to perform bulk soil and surface wipe sampling at the West Thames Park located on the eastern side of the Battery Park City neighborhood. This park, as was the majority of the Battery Park City neighborhood, was covered in large quantities of dust and debris after the collapse of the World Trade Center Towers on September 11, 2001.

The sampling was performed subsequent to the removal of over one foot of sand from the play structure area, surface cleaning of dust and debris from the general park grounds and planters, and numerous power washings of the park. Colden's site visit was performed on January 4, 2002. Samples were collected by Hobart R. Van Deusen of Colden Corporation. Mr. Van Deusen is certified by the United States Environmental Protection Agency (USEPA) as a Certified Inspector for Lead-Based Paint (Cert. #NY-06-092004-477, Exp. 9/7/04) as well as by the New York State Department of Labor (NYSDOL) as an Asbestos Inspector (Cert. #AH-90-17608, Exp. 7/02) and the New York City Department of Environmental Protection (NYCDEP) as an Asbestos Investigator (Cert. #85718, Exp. 7/30/03).

### **Purpose**

The purpose of the sampling was to characterize the conditions of the soil and hard surfaces at the park that the residents and in particular, the children may come in contact with in using the park. BPCPC is planning on reopening the park to the public upon the receipt of satisfactory sample results indicating the lack of hazardous conditions for those who maintain and use the park on a daily basis. BPCPC intends to replace the sand removed from underneath the play structure with clean sand prior to the opening of the park.

Colden collected four composite bulk soil samples from the planters and the areas underneath the play structure in the park as well as a total eight surface wipe samples from various contact areas in the park.

The composite bulk soil samples were collected from five sub locations at each sample location, combined in one sample container and mixed thoroughly to create each composite sample.

The bulk composite soil sample locations are as follows:

1. Raised Planter – North End of Park
2. Raised Planter – South End of Park
3. Play Structure – East Side
4. Play Structure – West Side

The wipe samples were collected at four locations with two side-by-side samples collected at each location. This side-by-side sampling was necessary due to the two distinct analytical methods required for the wipe samples. The surface wipe sample locations are as follows:

1. Stainless Steel Water fountain – North End of Park
2. Yellow Plastic Slide on Play Structure (at base of slide)
3. Metal Slide on Play Structure (at base of slide)
4. Concrete Footing Pad for Play Structure – North End of Play Structure

### **Sample Analysis**

The soil samples were analyzed for the presence of asbestos fibers utilizing Polarized Light Microscopy (PLM) analysis. In addition, these soil samples were analyzed for the presence eight elemental metals known as the RCRA metals. (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver). This was performed using Inductively Coupled Plasma (ICP) analytical methods.

The surface wipe samples were analyzed for Arsenic, Cadmium, Chromium and Lead in one sample set and Mercury in a separate sample set.

The asbestos samples were analyzed by Scientific Laboratories, Inc. (Sci Lab) of New York, New York. Sci Lab's New York laboratory is certified under the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP #11480) for the analysis of asbestos bulk samples.

The metals sample analysis was performed by Sci Lab's Boston, Massachusetts laboratory. Sci Lab's Boston laboratory is certified under the NYSDOH ELAP program (ELAP #10982) for environmental sample analysis.

## **Findings**

### ***Bulk Soil Samples (ASBESTOS)***

(USEPA) considers a material to be asbestos-containing if it contains one percent or greater (1%) asbestos by weight.

No asbestos fibers were detected in all four composite bulk soil samples. See Attachment A for Asbestos Analytical Results.

### ***Bulk Soil Samples (METALS)***

Of the eight elemental metals analyzed in the four composite bulk samples, only lead and arsenic have a regulatory limit for soil contamination. The limit for lead is set by the USEPA at 400 parts per million (ppm) in areas where children will likely have contact with contaminated soil. A play area is considered a lead hazard by the USEPA if the samples meet or exceed 400 ppm. Other soil areas not likely to be contacted by children have a USEPA regulatory limit of 1,200 ppm.

The average of the four composite bulk soil samples for lead was 23.45 ug/Kg (or ppm). No lead hazard was found to be present in these samples.

Arsenic in soil is regulated by the USEPA at a limit of 20 ppm.

The average concentration of Arsenic in the four samples was 2.8 ppm. No arsenic hazard was found to be present in the samples.

The other six elemental metals analyzed do not have specific regulatory limits for soil contamination by any federal, state or city agency. However guidelines have been set by federal and state agencies as recommended soil cleanup objectives. In particular, the New York State Department of Environmental Conservation (NYSDEC) has recommended soil cleanup objectives for heavy metals as outlined in Technical and Administrative Guideline Memorandum #4046 (TAGM #4046), dated January 24, 1994. See Table 4 attached to this report for a list of heavy metals, background levels of these heavy metals found in the Eastern United States and the recommended soil cleanup objective.

Although the West Thames Park was not a state mandated cleanup site, for the purpose of this report, Colden has chosen to use these recommended objectives for the West Thames Park as

they are the most current and state specific guidelines available. As listed in Table 1 below, all results for soils are less than the state mandated cleanup objectives as listed in Table 4 attached to this report.

In addition, Colden has compared all sample results to the background levels of these heavy metals found in the Eastern United States for additional comparison.

Below is a table summarizing our findings by each contaminant (metal):

**Table 1: Results of Metals in Soils Samples and Guideline Standards**

| <b>Contaminant (Metal):</b> | <b>Range of Analytical Results of (4) Bulk Soil Samples (ppm<sup>1</sup>):</b> | <b>Eastern USA Background Levels (ppm):</b> | <b>Recommended Soil Cleanup Objective (ppm):</b> | <b>US EPA (ppm)</b> |
|-----------------------------|--------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------------|---------------------|
| Arsenic                     | 2.67 - 3.01                                                                    | 3 - 12                                      | 7.5 or SB <sup>2</sup>                           | 20                  |
| Barium                      | 21.60 - 30.13                                                                  | 15 - 600                                    | 300 or SB                                        | N/A                 |
| Cadmium                     | ND - 0.45                                                                      | 0.1 - 1.0                                   | 1.0 or SB                                        | N/A                 |
| Chromium                    | 7.19 - 17.04                                                                   | 1.5 - 40                                    | 10 or SB                                         | N/A                 |
| Lead                        | 15.92 - 35.44                                                                  | See Footnote <sup>3</sup>                   | SB                                               | 400 for play areas  |
| Mercury                     | ND                                                                             | 0.001 - 0.2                                 | 0.1                                              | N/A                 |
| Selenium                    | ND                                                                             | 0.1 - 3.9                                   | 2.0 or SB                                        | N/A                 |
| Silver                      | 0.33 - 0.79                                                                    | N/A <sup>4</sup>                            | SB                                               | N/A                 |

1 - For the purpose of clarity, all results are presented in parts per million (ppm). Laboratory results were reported in mg/Kg, which is equal to ppm on a one-to-one ratio.

2 - New York State Background Level (SB)

3 - Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4 - 61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

4 - Even though silver is not associated with adverse health effects, the EPA establishes exposure limits for many materials based on various endpoints of concern. To our knowledge, silver is the only chemical or substance which has an RfD that is not based on an adverse health effect, but rather on a cosmetic effect (argyria). While an RfD for silver still exists, in 1991 the EPA deleted the maximum contaminant level, or MCL for silver in drinking water (an enforceable value) and replaced it with a secondary maximum contaminant level (SMCL) goal (non-enforceable) of 0.1 ppm that is twice the previous level, an action that was driven by the recognized low toxicity associated with silver. (The Silver Council)

ND = None Detected

N/A = Not Available

Colden has determined that the concentrations of the eight elemental metals analyzed in the composite bulk soil samples collected from the West Thames Park are within general background levels for the Eastern United States as well as below the NYSDEC's recommended soil cleanup objectives and USEPA limits for Arsenic and Lead soil contamination.

### ***Surface Wipe Samples (METALS)***

Of the five elemental metals analyzed in the eight surface wipe samples, only Lead has a regulatory limit for surface contamination. The limit for Lead is set by the New York City Department of Health (NYCDOH) and the USEPA at 40 micrograms per square foot (ug/sq.ft.) on floor surfaces, 250 ug/sq.ft. on widow sills and 400 ug/sq.ft. on window wells as a clearance criterion for lead-based paint abatement activities. The clearance criteria is compared to the average of all surface wipe samples collected from each separate surface type.

Colden has chosen the floor surfaces clearance criteria for Lead (40 ug/sq.ft.) as a criterion for determining the extent of Lead contamination at the West Thames Park, as it is the most stringent regulatory limit currently available.

The average of the four surface wipes for Lead was 26.925 ug/sq.ft. This average is well below the NYCDOH and USEPA limit.

Arsenic was found to be ND or "None Detected" in three of four surface wipe samples. Arsenic was detected in the fourth wipe sample collected on the concrete footing pad under the play structure (36.0 ug/sq.ft.). Arsenic is commonly used as a preservative for pressure treated wood used in play structures, which may be the source of the arsenic that was detected. The wooden structure is coated with a sealant, which according to a study presented by the Connecticut Agricultural Experiment Station reduces arsenic availability from play structures by 90 to 95%. Colden does not believe the presence of Arsenic on the concrete footing pad is of concern, as it will be covered with over a foot of new sand prior to the reopening of the park.

Results of all four surface wipe samples for Cadmium were ND or "None Detected".

Chromium was detected in all four surface wipes. The results ranged from 6.89 to 35.5 ug/sq.ft. While there are no current federal, state or local standards for Chromium surface contamination, the presence of Chromium would be expected in the samples based on the metal and plastic substrates they were collected from. Chromium is a common element used in metal manufacturing and pigments. It is also a component of wood preservatives along with arsenic. The Chromium concentrations found can be attributed to the playground products themselves as opposed to external the World Trade Center collapse.

Results of all four surface wipe samples for Mercury were ND or "None Detected".

Below is a table summarizing our findings by each contaminant (metal):

**Table 2: Results of Metals in Wipe Samples and Guideline Standards**

| Contaminant (Metal): | Range of Analytical Results of (4) Wipe Samples (ug/sq.ft.): | Regulatory Limit (ug/sq.ft.): |
|----------------------|--------------------------------------------------------------|-------------------------------|
| Arsenic              | ND – 36.0                                                    | N/A                           |
| Cadmium              | ND                                                           | N/A                           |
| Chromium             | 6.89 – 35.5                                                  | N/A                           |
| Lead <sup>1</sup>    | 19.8 – 42.3 (Avg. 26.925)                                    | 40 <sup>1</sup>               |
| Mercury <sup>2</sup> | ND                                                           | N/A                           |

1 – The limit for Lead is set by the New York City Department of Health (NYCDOH) and the USEPA at 40 micrograms per square foot (ug/sq.ft.) on floor surfaces as a clearance criterion for lead-based paint abatement activities. The clearance criteria is compared to the average of all surface wipe samples collected from each separate surface type.

2 – Four separate surface wipe samples were collected for Mercury. Samples were collected side-by-side at the same locations of the other surface wipe samples.

ND = None Detected

N/A = Not Available

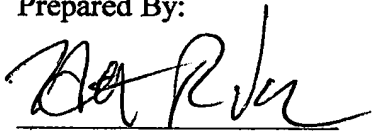
### **Recommendations**

Colden recommends that BPCPC continue its regularly scheduled cleaning/power washing of all surfaces in the West Thames Park that children and adults may come in contact with as has been done in the past. This will help prevent the accumulation of dust on play surfaces and etc. that people using the park may come in contact with.

We trust the information in this report helps alleviate any concerns you may have had over the conditions at the West Thames Park at the time of sampling. Thank you for the opportunity to provide our services to your firm. Please call us at (215) 496-9237 should you have any questions or concerns regarding this report.

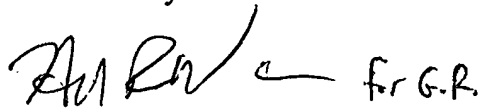
Sincerely,  
**Colden Corporation**

Prepared By:



Hobart R. Van Deusen  
Industrial Hygienist

Reviewed By:

 fr G.R.

Greg W. Richey, CIH, CSP  
Senior Project Manager

HRVD:hrvd  
Attachments

**Attachment A**  
**Asbestos Analytical Results**

**SCIENTIFIC LABORATORIES, INC.**117 EAST 30TH STREET  
NEW YORK, NY 10016

TEL: (212) 679-8600 • FAX: (212) 679-9392

**PLM Bulk Asbestos Report**Colden Corporation  
Attn: David DeLalla  
Robert Morris Building  
100 North 17th St. 9th Fl.  
Philadelphia, PA 19103

Date Received 01/04/2002 SciLab Job No. 202011202  
 Date Examined 01/04/2002 P.O. # 02100  
 Page 1 of 2  
 RE: 02100; Battery Park City Parks Conservancy; West Thomas  
 Park

| Client No. / HGA | Lab No.      | Asbestos Present | Total % Asbestos |
|------------------|--------------|------------------|------------------|
| 010202-S-1       | 202011202-01 | No               | NAD              |

Location: North End-Raised Planter

Description: Brown, Homogeneous, Soil (Composite)

Asbestos Types:

Other Material: Cellulose 5. %, Fibrous glass Trace, Synthetic fibers Trace,  
Non-fibrous 95. %

|            |              |    |     |
|------------|--------------|----|-----|
| 010202-S-2 | 202011202-02 | No | NAD |
|------------|--------------|----|-----|

Location: South End-Raised Planter

Description: Brown, Homogeneous, Soil (Composite)

Asbestos Types:

Other Material: Cellulose 3. %, Fibrous glass Trace, Synthetic fibers Trace,  
Non-fibrous 97. %

|            |              |    |     |
|------------|--------------|----|-----|
| 010202-S-3 | 202011202-03 | No | NAD |
|------------|--------------|----|-----|

Location: Play Structure-East Side

Description: Tan, Homogeneous, Soil (Composite)

Asbestos Types:

Other Material: Cellulose 2. %, Fibrous glass Trace, Non-fibrous 98. %

|            |              |    |     |
|------------|--------------|----|-----|
| 010202-S-4 | 202011202-04 | No | NAD |
|------------|--------------|----|-----|

Location: Play Structure-West Side

Description: Tan, Homogeneous, Soil (Composite)

Asbestos Types:

Other Material: Cellulose 2. %, Fibrous glass Trace, Non-fibrous 98. %



**SCIENTIFIC LABORATORIES, INC.**

117 EAST 30TH STREET  
NEW YORK, NY 10016

TEL: (212) 679-8600 • FAX: (212) 679-9392

## PLM Bulk Asbestos Report

Colden Corporation  
Attn: David DeLalla  
Robert Morris Building  
100 North 17th St. 9th Fl.  
Philadelphia, PA 19103

Date Received 01/04/2002 SciLab Job No. 202011202  
Date Examined 01/04/2002 P.O. # 02100  
Page 2 of 2  
RE: 02100; Battery Park City Parks Conservancy; West Thomas  
Park

### Reporting Notes:

Analyzed by: John Koubiadis

\*NAD/NSD = no asbestos detected; NA = not analyzed; NA/PS = not analyzed / positive stop; PLM Bulk Asbestos Analysis by EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab #200546-0) and ELAP PLM Analysis Protocol 198.1 for New York samples (NYSDOH ELAP Lab # 11480); Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the laboratory. This PLM report relates ONLY to the items tested. AIHA# 102843; VT Cert# XL016055

Reviewed By:



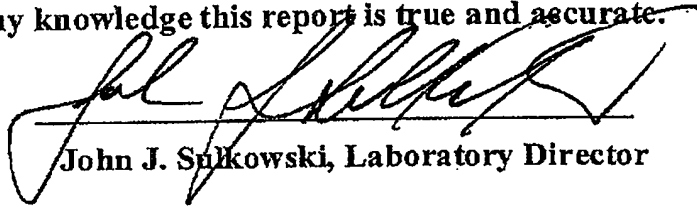
Customer: Colden Corporation

Workorder No. 0201-00011

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To the best of my knowledge this report is true and accurate.

Authorized By:



John J. Sulkowski, Laboratory Director

**COLDEN CORPORATION**Occupational Health, Safety &  
Environmental Consultants170 Longdean Road  
Fairfield, CT 06430-6551  
(203) 319-0089

✓ 02011202

0201-012  
Due 1/4/02

## Lead Bulk Sample Data Sheet / C.O.C. (SOIL)

Colden Corporation Project No: #02100  
Project Name: West Thames Park  
Date of Sample Collection: Jan. 2, 2002

Client: Battery Park City Parks Conservancy

Samples Collected By: Hobart R. Van Deusen

| Sample I.D.: | Sample Location:               | Material:             | Laboratory Analysis Requested:                                |
|--------------|--------------------------------|-----------------------|---------------------------------------------------------------|
|              |                                |                       | RCCRA Metals / PCB's / Asbestos<br>Paint Chip - Flame AA by 1 |
| #010202-S-1  | North End -<br>Raised Planter  | Bulk Soil (Composite) | " "                                                           |
| #010202-S-2  | South End -<br>Raised Planter. | " "                   | " "                                                           |
| #010202-S-3  | Play structure -<br>East Side  | " "                   | " "                                                           |
| #010202-S-4  | Play structure -<br>West Side  | " "                   | " "                                                           |
|              |                                |                       |                                                               |
|              |                                |                       |                                                               |
|              |                                |                       |                                                               |
|              |                                |                       |                                                               |
|              |                                |                       |                                                               |

## Comments:

\* All Samples are Composite Samples w/ 5 collection points  
for each sample.Send Invoice to: Colden 100 N. 17<sup>th</sup> St., 9<sup>th</sup> FL., Philadelphia, PA 19103Fax Results to: Rye Van Deusen at (208) 692-6051

AND

Fax Results to: Greg Richey at (215) 432-9011

416-9280

Laboratory Name: SCI-LAB - Boston SAMPLE TAT: 24 HoursQuestions? CALL: 215-416-9211Samples Relinquished to Lab by: Hobart R. Van DeusenDate: 1-2-02

(Print Name)

(Signature)

Samples Received at Lab by: MARK PORTADate: 1/3/02

(Print Name)

(Signature)

A. Ramos

1/4/02 1015

**Attachment B**

**Bulk Soil Sample Analytical Results (Metals)**



Eight School Street  
Weymouth, MA 02189  
781-337-9334

## Laboratory Report

Customer: Colden Corporation  
100 N. 17TH ST.  
9TH FL.  
Philadelphia, PA 19103

Report Date 1/4/02  
Workorder No. 0201-00012

Attention: Mr. Rye Van Deusen

Subject: WEST THAMES PARK: SOILS

Sample: 001 #010202-S-1: NORTH END-RAISED PLANTER  
Date: 1/2/02  
Matrix: SOIL

| Parameter            | Method        | Results | Units | PQL    | Analyst | Analysis Date | Qual |
|----------------------|---------------|---------|-------|--------|---------|---------------|------|
| <b>RCRA 8 Metals</b> |               |         |       |        |         |               |      |
| Arsenic              | 6010B, SW-846 | 2.68    | mg/Kg | 0.495  | TDJ     | 01/04/02      |      |
| Barium               | 6010B, SW-846 | 21.60   | mg/Kg | 2.97   | TDJ     | 01/04/02      |      |
| Cadmium              | 6010B, SW-846 | 0.45    | mg/Kg | 0.297  | TDJ     | 01/04/02      |      |
| Chromium             | 6010B, SW-846 | 17.04   | mg/Kg | 0.495  | TDJ     | 01/04/02      |      |
| Lead                 | 6010B, SW-846 | 15.92   | mg/Kg | 0.495  | TDJ     | 01/04/02      |      |
| Mercury              | SW-846; 7471  | ND      | mg/Kg | 0.1000 | CMC     | 01/04/02      |      |
| Selenium             | 6010B, SW-846 | ND      | mg/Kg | 1.98   | TDJ     | 01/04/02      |      |
| Silver               | 6010B, SW-846 | 0.79    | mg/Kg | 0.297  | TDJ     | 01/04/02      |      |
| <b>PCBs EPA 8082</b> |               |         |       |        |         |               |      |
| PCB-1016             | EPA 8082      | ND      | ug/Kg | 102    | MB      | 01/03/02      |      |
| PCB-1221             | EPA 8082      | ND      | ug/Kg | 102    | MB      | 01/03/02      |      |
| PCB-1232             | EPA 8082      | ND      | ug/Kg | 102    | MB      | 01/03/02      |      |
| PCB-1242             | EPA 8082      | ND      | ug/Kg | 203    | MB      | 01/03/02      |      |
| PCB-1248             | EPA 8082      | ND      | ug/Kg | 102    | MB      | 01/03/02      |      |
| PCB-1254             | EPA 8082      | ND      | ug/Kg | 102    | MB      | 01/03/02      |      |
| PCB-1260             | EPA 8082      | ND      | ug/Kg | 102    | MB      | 01/03/02      |      |
| PCB-1262             | EPA 8082      | ND      | ug/Kg | 102    | MB      | 01/03/02      |      |
| PCB-1268             | EPA 8082      | ND      | ug/Kg | 102    | MB      | 01/03/02      |      |
| TCMX (SURROGATE)     |               | 67.7    | %     |        | MB      | 01/03/02      |      |
| DCB (SURROGATE)      |               | 67.3    | %     |        | MB      | 01/03/02      |      |
| Percent Solids       |               | 92.7    | %     |        | DMR     | 01/04/02      |      |

Sample: 002 #010202-S-2: SOUTH END-RAISED PLANTER  
Date: 1/2/02  
Matrix: SOIL

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 ME:MA069 NJ: 59744

Page: 1 of 4



Customer: Colden Corporation

Workorder No. 0201-00012

Sample: 002 #010202-S-2: SOUTH END-RAISED PLANTER  
(Continued)

| Parameter        | Method        | Results | Units | PQL    | Analyst | Analysis Date | Qua |
|------------------|---------------|---------|-------|--------|---------|---------------|-----|
| RCRA 8 Metals    |               |         |       |        |         |               |     |
| Arsenic          | 6010B, SW-846 | 2.84    | mg/Kg | 0.526  | TDJ     | 01/04/02      |     |
| Barium           | 6010B, SW-846 | 30.13   | mg/Kg | 3.15   | TDJ     | 01/04/02      |     |
| Cadmium          | 6010B, SW-846 | 0.45    | mg/Kg | 0.315  | TDJ     | 01/04/02      |     |
| Chromium         | 6010B, SW-846 | 13.10   | mg/Kg | 0.526  | TDJ     | 01/04/02      |     |
| Lead             | 6010B, SW-846 | 18.41   | mg/Kg | 0.526  | TDJ     | 01/04/02      |     |
| Mercury          | SW-846; 7471  | ND      | mg/Kg | 0.1000 | CMC     | 01/04/02      |     |
| Selenium         | 6010B, SW-846 | ND      | mg/Kg | 2.10   | TDJ     | 01/04/02      |     |
| Silver           | 6010B, SW-846 | 0.43    | mg/Kg | 0.315  | TDJ     | 01/04/02      |     |
| PCBs EPA 8082    |               |         |       |        |         |               |     |
| PCB-1016         | EPA 8082      | ND      | ug/Kg | 110    | MB      | 01/03/02      |     |
| PCB-1221         | EPA 8082      | ND      | ug/Kg | 110    | MB      | 01/03/02      |     |
| PCB-1232         | EPA 8082      | ND      | ug/Kg | 110    | MB      | 01/03/02      |     |
| PCB-1242         | EPA 8082      | ND      | ug/Kg | 219    | MB      | 01/03/02      |     |
| PCB-1248         | EPA 8082      | ND      | ug/Kg | 110    | MB      | 01/03/02      |     |
| PCB-1254         | EPA 8082      | ND      | ug/Kg | 110    | MB      | 01/03/02      |     |
| PCB-1260         | EPA 8082      | ND      | ug/Kg | 110    | MB      | 01/03/02      |     |
| PCB-1262         | EPA 8082      | ND      | ug/Kg | 110    | MB      | 01/03/02      |     |
| PCB-1268         | EPA 8082      | ND      | ug/Kg | 110    | MB      | 01/03/02      |     |
| TCMX (SURROGATE) |               | 108     | %     |        | MB      | 01/03/02      |     |
| DCB (SURROGATE)  |               | 90.4    | %     |        | MB      | 01/03/02      |     |
| Percent Solids   |               | 88.9    | %     |        | DMR     | 01/04/02      |     |

Sample: 003 #010202-S-3: PLAY STRUCTURE-EAST SIDE  
Date: 1/2/02  
Matrix: SOIL

| Parameter     | Method        | Results | Units | PQL    | Analyst | Analysis Date | Qua |
|---------------|---------------|---------|-------|--------|---------|---------------|-----|
| RCRA 8 Metals |               |         |       |        |         |               |     |
| Arsenic       | 6010B, SW-846 | 2.67    | mg/Kg | 0.531  | TDJ     | 01/04/02      |     |
| Barium        | 6010B, SW-846 | 24.29   | mg/Kg | 3.19   | TDJ     | 01/04/02      |     |
| Cadmium       | 6010B, SW-846 | ND      | mg/Kg | 0.319  | TDJ     | 01/04/02      |     |
| Chromium      | 6010B, SW-846 | 7.19    | mg/Kg | 0.531  | TDJ     | 01/04/02      |     |
| Lead          | 6010B, SW-846 | 24.03   | mg/Kg | 0.531  | TDJ     | 01/04/02      |     |
| Mercury       | SW-846; 7471  | ND      | mg/Kg | 0.1000 | CMC     | 01/04/02      |     |

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 ME:MA069 NJ: 59744

Page: 2 of



Customer: Colden Corporation

Workorder No. 0201-00012

Sample: 003 #010202-S-3: PLAY STRUCTURE-EAST SIDE  
(Continued)

| Parameter        | Method        | Results | Units | PQL   | Analyst | Analysis Date | Qual |
|------------------|---------------|---------|-------|-------|---------|---------------|------|
| Selenium         | 6010B, SW-846 | ND      | mg/Kg | 2.13  | TDJ     | 01/04/02      |      |
| Silver           | 6010B, SW-846 | 0.33    | mg/Kg | 0.319 | TDJ     | 01/04/02      |      |
| PCBs EPA 8082    |               |         |       |       | MB      | 01/03/02      |      |
| PCB-1016         | EPA 8082      | ND      | ug/Kg | 106   | MB      | 01/03/02      |      |
| PCB-1221         | EPA 8082      | ND      | ug/Kg | 106   | MB      | 01/03/02      |      |
| PCB-1232         | EPA 8082      | ND      | ug/Kg | 106   | MB      | 01/03/02      |      |
| PCB-1242         | EPA 8082      | ND      | ug/Kg | 212   | MB      | 01/03/02      |      |
| PCB-1248         | EPA 8082      | ND      | ug/Kg | 106   | MB      | 01/03/02      |      |
| PCB-1254         | EPA 8082      | ND      | ug/Kg | 106   | MB      | 01/03/02      |      |
| PCB-1260         | EPA 8082      | ND      | ug/Kg | 106   | MB      | 01/03/02      |      |
| PCB-1262         | EPA 8082      | ND      | ug/Kg | 106   | MB      | 01/03/02      |      |
| PCB-1268         | EPA 8082      | ND      | ug/Kg | 106   | MB      | 01/03/02      |      |
| TCMX (SURROGATE) |               | 90.4    | %     |       | MB      | 01/03/02      |      |
| DCB (SURROGATE)  |               | 88.2    | %     |       | MB      | 01/03/02      |      |
| Percent Solids   |               | 94.1    | %     |       | DMR     | 01/04/02      |      |

Sample: 004 #010202-S-4: PLAY STRUCTURE-WEST SIDE  
Date: 1/2/02  
Matrix: SOIL

| Parameter     | Method        | Results | Units | PQL    | Analyst | Analysis Date | Qual |
|---------------|---------------|---------|-------|--------|---------|---------------|------|
| RCRA 8 Metals |               |         |       |        |         |               |      |
| Arsenic       | 6010B, SW-846 | 3.01    | mg/Kg | 0.525  | TDJ     | 01/04/02      |      |
| Barium        | 6010B, SW-846 | 28.21   | mg/Kg | 3.15   | TDJ     | 01/04/02      |      |
| Cadmium       | 6010B, SW-846 | 0.40    | mg/Kg | 0.315  | TDJ     | 01/04/02      |      |
| Chromium      | 6010B, SW-846 | 7.94    | mg/Kg | 0.525  | TDJ     | 01/04/02      |      |
| Lead          | 6010B, SW-846 | 35.44   | mg/Kg | 0.525  | TDJ     | 01/04/02      |      |
| Mercury       | SW-846; 7471  | ND      | mg/Kg | 0.1000 | CMC     | 01/04/02      |      |
| Selenium      | 6010B, SW-846 | ND      | mg/Kg | 2.10   | TDJ     | 01/04/02      |      |
| Silver        | 6010B, SW-846 | 0.35    | mg/Kg | 0.315  | TDJ     | 01/04/02      |      |
| PCBs EPA 8082 |               |         |       |        | MB      | 01/03/02      |      |
| PCB-1016      | EPA 8082      | ND      | ug/Kg | 105    | MB      | 01/03/02      |      |
| PCB-1221      | EPA 8082      | ND      | ug/Kg | 105    | MB      | 01/03/02      |      |
| PCB-1232      | EPA 8082      | ND      | ug/Kg | 105    | MB      | 01/03/02      |      |
| PCB-1242      | EPA 8082      | ND      | ug/Kg | 210    | MB      | 01/03/02      |      |

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 ME:MA069 NJ: 59744

Page: 3 of 4



Customer: Colden Corporation

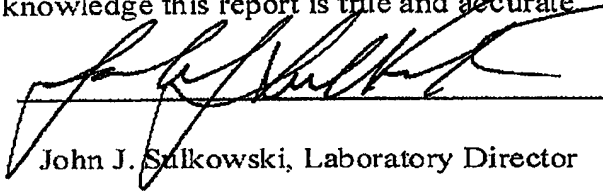
Workorder No. 0201-00012

Sample: 004 #010202-S-4: PLAY STRUCTURE-WEST SIDE  
(Continued)

| <u>Parameter</u> | <u>Method</u> | <u>Results</u> | <u>Units</u> | <u>PQL</u> | <u>Analyst</u> | <u>Analysis Date</u> | <u>Qua</u> |
|------------------|---------------|----------------|--------------|------------|----------------|----------------------|------------|
| PCB-1248         | EPA 8082      | ND             | ug/Kg        | 105        | MB             | 01/03/02             |            |
| PCB-1254         | EPA 8082      | ND             | ug/Kg        | 105        | MB             | 01/03/02             |            |
| PCB-1260         | EPA 8082      | ND             | ug/Kg        | 105        | MB             | 01/03/02             |            |
| PCB-1262         | EPA 8082      | ND             | ug/Kg        | 105        | MB             | 01/03/02             |            |
| PCB-1268         | EPA 8082      | ND             | ug/Kg        | 105        | MB             | 01/03/02             |            |
| TCMX (SURROGATE) |               | 91.3           | %            |            | MB             | 01/03/02             |            |
| DCB (SURROGATE)  |               | 85.8           | %            |            | MB             | 01/03/02             |            |
| Percent Solids   |               | 94.3           | %            |            | DMR            | 01/04/02             |            |

To the best of my knowledge this report is true and accurate

Authorized By:

  
John J. Sulkowski, Laboratory Director

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 ME:MA069 NJ: 59744

Page: 4 of



Occupational Health, Safety &  
Environmental Consultants

170 Longdean Road  
Fairfield, CT 06430-6551  
(203) 319-0089

0201-012  
Due 1/4/02

# Lead Bulk Sample Data Sheet / C.O.C. (SOIL)

Colden Corporation Project No: #02100

Client: Battery Park City Parks Conservancy

Project Name: West Thames Park

Date of Sample Collection: Jan. 2, 2002

Samples Collected By: Hobart R. Van Deusen

| Sample I.D.:  | Sample Location:              | Material:             | Laboratory Analysis Requested:                            |
|---------------|-------------------------------|-----------------------|-----------------------------------------------------------|
|               |                               |                       | RCRA Metals / PCBs / Asbestos<br>Paint Chip - Flame AA by |
| 1 #010202-S-1 | North End -<br>Raised Planter | Bulk Soil (Composite) | " "                                                       |
| 2 #010202-S-2 | South End -<br>Raised Planter | " "                   | " "                                                       |
| 3 #010202-S-3 | Play structure -<br>East Side | " "                   | " "                                                       |
| 4 #010202-S-4 | Play structure -<br>West Side | " "                   | " "                                                       |
|               |                               |                       |                                                           |
|               |                               |                       |                                                           |
|               |                               |                       |                                                           |
|               |                               |                       |                                                           |
|               |                               |                       |                                                           |

## Comments:

\* ALL Samples are Composite Samples w/ 5 collection points for each sample.

Send Invoice to: Colden 100 N. 17<sup>th</sup> St., 9<sup>th</sup> FL., Philadelphia, PA 19103

Fax Results to: Rye Van Deusen at (208) 692-6051

AND

Fax Results to: Greg Richey at (215) 438-9011

Laboratory Name: SCI-LAB - Boston SAMPLE TAT: 24 HOURS

Questions? CALL: 215-496-9280  
(203) 545-7526

Samples Relinquished to Lab by: Hobart R. Van Deusen

Date: 1-2-02

(Print Name)

(Signature)

Samples Received at Lab by: MARK PORTA

Date: 1/3/02

(Print Name)

(Signature)

**Attachment C**

**Surface Wipe Sample Analytical Results (Metals)**



**Eight School Street  
Weymouth, MA 02189  
781-337-9334**

## Laboratory Report

Customer Colden Corporation  
100 N. 17TH ST.  
9TH FL.  
Philadelphia, PA 19103

Report Date 1/4/02  
Workorder No 0201-00011

Attention: Mr. Rye Van Deusen

Subject: WEST THAMES PARK: METALS WIPES

Sample: 001 010202-W-1: STAINLESS STEEL WATER FOUNTAIN-NORTH END OF PARK  
Date: 1/2/02  
Matrix: WIPE

| <u>Parameter</u> | <u>Method</u> | <u>Results</u> | <u>Units</u> | <u>PQL</u> | <u>Analyst</u> | <u>Analysis Dat</u> | <u>Qual</u> |
|------------------|---------------|----------------|--------------|------------|----------------|---------------------|-------------|
| Lead, Wipe       | 6010B, SW-846 | 23.5           | ug/sq. ft    | 4.50       | TDJ            | 01/04/02            |             |
| Chromium, Wipe   | 6010B, SW-846 | 16.5           | ug/sq. ft    | 4.50       | TDJ            | 01/04/02            |             |
| Cadmium, Wipe    | 6010B, SW-846 | ND             | ug/sq. ft    | 2.25       | TDJ            | 01/04/02            |             |
| Arsenic, Wipe    | 6010B, SW-846 | ND             | ug/sq. ft    | 4.50       | TDJ            | 01/04/02            |             |

Sample: 002 010202-W-2: YELLOW PLASTIC SLIDE ON PLAY STRUCTURE-AT BASE  
Date: 1/2/02  
Matrix: WIPE

| <u>Parameter</u> | <u>Method</u> | <u>Results</u> | <u>Units</u> | <u>PQL</u> | <u>Analyst</u> | <u>Analysis Dat</u> | <u>Qual</u> |
|------------------|---------------|----------------|--------------|------------|----------------|---------------------|-------------|
| Lead, Wipe       | 6010B, SW-846 | 22.1           | ug/sq. ft    | 4.50       | TDJ            | 01/04/02            |             |
| Chromium, Wipe   | 6010B, SW-846 | 6.89           | ug/sq. ft    | 4.50       | TDJ            | 01/04/02            |             |
| Cadmium, Wipe    | 6010B, SW-846 | ND             | ug/sq. ft    | 2.25       | TDJ            | 01/04/02            |             |
| Arsenic, Wipe    | 6010B, SW-846 | ND             | ug/sq. ft    | 4.50       | TDJ            | 01/04/02            |             |

Sample: 003 010202-W-3: METAL SLIDE ON PLAY STRUCTURE-AT BASE  
Date: 1/2/02  
Matrix: WIPE

| <u>Parameter</u> | <u>Method</u> | <u>Results</u> | <u>Units</u> | <u>PQL</u> | <u>Analyst</u> | <u>Analysis Dat</u> | <u>Qual</u> |
|------------------|---------------|----------------|--------------|------------|----------------|---------------------|-------------|
| Lead, Wipe       | 6010B, SW-846 | 19.8           | ug/sq. ft    | 4.50       | TDJ            | 01/04/02            |             |
| Chromium, Wipe   | 6010B, SW-846 | 14.1           | ug/sq. ft    | 4.50       | TDJ            | 01/04/02            |             |
| Cadmium, Wipe    | 6010B, SW-846 | ND             | ug/sq. ft    | 2.25       | TDJ            | 01/04/02            |             |
| Arsenic, Wipe    | 6010B, SW-846 | ND             | ug/sq. ft    | 4.50       | TDJ            | 01/04/02            |             |

Certifications: MA: MA069 NY:1098 CT: PH0119 RI:A45 CA:205 ME:MA06 NJ: 59744

Page: 1 of 1



Customer: Colden Corporation

Workorder No. 0201-00011

Sample: 004 010202-W-4: CONCRETE FOOTING PAD FOR PLAY STRUCTURE-NORTH END OF STRUCTU  
 Date: 1/2/02  
 Matrix: WIPE

| Parameter      | Method        | Results | Units     | PQL  | Analyst | Analysis Dat | Qu |
|----------------|---------------|---------|-----------|------|---------|--------------|----|
| Lead, Wipe     | 6010B, SW-846 | 42.3    | ug/sq. ft | 4.11 | TDJ     | 01/04/02     |    |
| Chromium, Wipe | 6010B, SW-846 | 35.5    | ug/sq. ft | 4.11 | TDJ     | 01/04/02     |    |
| Cadmium, Wipe  | 6010B, SW-846 | ND      | ug/sq. ft | 2.06 | TDJ     | 01/04/02     |    |
| Arsenic, Wipe  | 6010B, SW-846 | 36.0    | ug/sq. ft | 4.11 | TDJ     | 01/04/02     |    |

Sample: 005 010202-W-1-Hg: STAINLESS STEEL WATER FOUNAIN-NORTH END OF PARK  
 Date: 1/2/02  
 Matrix: WIPE

| Parameter | Method       | Results | Units     | PQL   | Analyst | Analysis Dat | Qu |
|-----------|--------------|---------|-----------|-------|---------|--------------|----|
| Mercury   | 7471, SW-846 | ND      | ug/sq. ft | 0.180 | CMC     | 01/04/02     |    |

Sample: 006 010202-W-2-Hg: YELLOW PLASTIC SLIDE ON PLAY STRUCTURE-AT BASE  
 Date: 1/2/02  
 Matrix: WIPE

| Parameter | Method       | Results | Units     | PQL   | Analyst | Analysis Dat | Qu |
|-----------|--------------|---------|-----------|-------|---------|--------------|----|
| Mercury   | 7471, SW-846 | ND      | ug/sq. ft | 0.180 | CMC     | 01/04/02     |    |

Sample: 007 010202-W-3-Hg: METAL SLIDE ON PLAY STRUCTURE-AT BASE  
 Date: 1/2/02  
 Matrix: WIPE

| Parameter | Method       | Results | Units     | PQL   | Analyst | Analysis Dat | Qu |
|-----------|--------------|---------|-----------|-------|---------|--------------|----|
| Mercury   | 7471, SW-846 | ND      | ug/sq. ft | 0.180 | CMC     | 01/04/02     |    |

Sample: 008 010202-W-4-Hg: CONCRETE FOOTING PAD FOR PLAY STRUCTURE-NORTHEEND OF STRUCI  
 Date: 1/2/02  
 Matrix: WIPE

| Parameter | Method       | Results | Units     | PQL   | Analyst | Analysis Dat | Qu |
|-----------|--------------|---------|-----------|-------|---------|--------------|----|
| Mercury   | 7471, SW-846 | ND      | ug/sq. ft | 0.165 | CMC     | 01/04/02     |    |

Certifications: MA: MA069 NY:1098 CT: PH0119 RI:A45 CA:205 ME:MA06 NJ: 59744

Page: 2 of

Occupational Health, Safety &  
Environmental Consultants170 Longdean Road  
Fairfield, CT 06430-6551  
(203) 319-00890201-011  
me 1/4/02

## Lead Wipe Sample Data Sheet / C.O.C.

#  
Colden Corporation Project No: 02100  
Project Name: West Thames Park  
Date of Sample Collection: Jan. 2, 2002

Client: Battery Park City Parks Conservancy

Samples Collected By: Hobart R. Van Deusen

| Sample I.D.:     | Sample Location:                                                    | Area Sampled (inch <sup>2</sup> ): | Laboratory Analysis Requested:     |
|------------------|---------------------------------------------------------------------|------------------------------------|------------------------------------|
|                  |                                                                     |                                    | Lead Wipe - Flame AA<br>SW846-7420 |
| #010202-W-1      | Stainless Steel Water fountain -<br>North End of Park               | 16                                 | - See Note -                       |
| #010202-W-2      | Yellow Plastic slide on Play<br>Structure - at Base                 | 16                                 | " "                                |
| #010202-W-3      | <del>Stair</del> Metal slide on<br>Play Structure - at Base         | 16                                 | " "                                |
| #010202-W-4      | Concrete footing pad for play<br>Structure - North End of Structure | 17.5                               | " "                                |
| #010202-W-1 - HG | Stainless Steel Water fountain -<br>North End of Park               | 16                                 | Mercury (Hg)                       |
| #010202-W-2 - HG | Yellow Plastic slide on<br>Play Structure - at Base                 | 16                                 | " "                                |
| #010202-W-3 - HG | Metal slide on Play<br>Structure - at Base                          | 16                                 | " "                                |
| #010202-W-4 - HG | Concrete footing pad for play<br>Structure - North End of Structure | 17.5                               | " "                                |

## Comments:

\* Note - Analyze for the following Metals: Lead / Chromium / Cadmium / ArsenicSend Invoice to: Colden 100 N. 17<sup>th</sup> St., 9<sup>th</sup> FL., Philadelphia, PA 19103

Fax Results to: Rye Van Deusen at: (208) 692-6051

(AND)

Fax Results to: Greg Richey at: (208) 445-0151

Laboratory Name: SCI-LAB - Boston SAMPLE TAT: 24 Hours

Questions? CALL: 215-496-9237  
203-645-1525Samples Relinquished to Lab by: Hobart R. Van Deusen  
Date: 1-2-02 (Print Name)

(Signature)

Samples Received at Lab by: MARK PORTA  
Date: 1/3/02 (Print Name)

(Signature)

**TABLE 4**

***NYS Department of Environmental Conservation - Home - Site Map - Search***

**APPENDIX A of TAGM #4046**

**TABLE 4**  
**Recommended soil cleanup objectives (mg/kg or ppm)**  
**Heavy Metals**

Shortcut to TAGM 4046 Tables for VOCs | SVOCs | Pesticides / PCBs

| Contaminants | Protect Water Quality (ppm) | Eastern USA Background (ppm) | * CRDL (mg/kg or ppm) | ***** Rec. Soil Cleanup Objective (ppm) |
|--------------|-----------------------------|------------------------------|-----------------------|-----------------------------------------|
| Aluminum     | N/A                         | 33,000                       | 2.0                   | SB                                      |
| Antimony     | N/A                         | N/A                          | 0.6                   | SB                                      |
| Arsenic      | N/A                         | 3-12 **                      | 0.1                   | 7.5 or SB                               |
| Barium       | N/A                         | 15-600                       | 2.0                   | 300 or SB                               |
| Beryllium    | N/A                         | 0-1.75                       | 0.05                  | 0.16 (HEAST) or SB                      |
| Cadmium      | N/A                         | 0.1-1                        | 0.05                  | 1 or SB                                 |
| Calcium      | N/A                         | 130 - 35,000 ***             | 50.0                  | SB                                      |
| Chromium     | N/A                         | 1.5 - 40 **                  | 0.1                   | 10 or SB                                |
| Cobalt       | N/A                         | 2.5 - 60 **                  | 0.5                   | 30 or SB                                |
| Copper       | N/A                         | 1 - 50                       | 0.25                  | 25 or SB                                |
| Cyanide      | N/A                         | N/A                          | 0.1                   | ***                                     |
| Iron         | N/A                         | 2,000 - 550,000              | 1.0                   | 2,000 or SB                             |
| Lead         | N/A                         | ****                         | 0.03                  | SB ****                                 |
| Magnesium    | N/A                         | 100 - 5,000                  | 50.0                  | SB                                      |
| Manganese    | N/A                         | 50 - 5,000                   | 0.15                  | SB                                      |
| Mercury      | N/A                         | 0.001 - 0.2                  | 0.002                 | 0.1                                     |
| Nickel       | N/A                         | 0.5 -25                      | 0.4                   | 13 or SB                                |

<http://www.dec.state.ny.us/website/der/tagms/prtg4046e.html>

1/14/02

|           |     |                      |      |           |
|-----------|-----|----------------------|------|-----------|
| Potassium | N/A | 8,500 - 43,000<br>** | 50.0 | SB        |
| Selenium  | N/A | 0.1 - 3.9            | 0.05 | 2 or SB   |
| Silver    | N/A | N/A                  | 0.1  | SB        |
| Sodium    | N/A | 6,000 - 8,000        | 50.0 | SB        |
| Thallium  | N/A | N/A                  | 0.1  | SB        |
| Vanadium  | N/A | 1-300                | 0.5  | 150 or SB |
| Zinc      | N/A | 9-50                 | 0.2  | 20 or SB  |

Note: Some forms of metal salts such as Aluminum Phosphide, Calcium Cyanide, Potassium Cyanide, Copper cyanide, Silver cyanide, Sodium cyanide, Zinc phosphide, Thallium salts, Vanadium pentoxide and Chromium (VI) compounds are more toxic in nature. Please refer to the USEPA HEASTs database to find cleanup objectives if such metals are present in soil.

SB is site background

N/A is not available

\* CRDL is contract required detection limit which is approx. 10 times the CRDL for water.

\*\* New York State background

\*\*\* Some forms of Cyanide are complex and very stable while other forms are pH dependent and hence are very unstable. Site-specific form(s) of Cyanide should be taken into consideration when establishing soil cleanup objective.

\*\*\*\* Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

\*\*\*\*\* Recommended soil cleanup objectives are average background concentrations as reported in a 1984 survey of reference material by E. Carol McGovern, NYSDEC.



1-25-02

Dear Jessica

As promised, attached is the cover letter and data for our testing of the "marginal street playground" - it is so good to have it open again!

Tessa