# REMOVAL PROGRAM
# PRELIMINARY ASSESSMENT/
# SITE INVESTIGATION REPORT
# FOR THE
# MERINO PARK SITE
# PROVIDENCE, PROVIDENCE COUNTY, RHODE ISLAND
# 18 AUGUST 2010

Prepared For:

U.S. Environmental Protection Agency
Region I
Emergency Planning and Response Branch
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912

CONTRACT NO. EP-W-05-042

TDD NO. 01-10-07-0004

TASK NO. 0649

DC NO. R-6497

Submitted By:

Weston Solutions, Inc.
Region I
Superfund Technical Assessment and Response Team (START)
3 Riverside Drive
Andover, MA 01810

January 2011

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I. Preliminary Assessment/Site Investigation Forms

**EPA REGION I**
**REMOVAL PRELIMINARY ASSESSMENT**

## Site Name and Location

**Name:** Merino Park **Location:** Hartford Avenue and Heath Street
**Town:** Providence **County:** Providence **State:** Rhode Island

**Site Status:** ( ) NPL (X) NON-NPL ( ) RCRA ( ) TSCA
( ) ACTIVE ( ) ABANDONED ( ) OTHER

**(X) Attached USGS Map of Location** **(X) Site I.D. No.:** 01GL

**Latitude:** 41° 49′ 12.1″ North **Longitude:** 71° 27′ 14.4″ West

## Referral

**( ) Citizen (X) City/Town (X) State ( ) Preremedial ( ) RCRA**
**( ) Other:**

**Name of referring party:** Rhode Island Department of Environmental Management (RI DEM) **Telephone:** (401) 222-2797
**Address:** 235 Promenade Street, Providence, RI

**Contacts Identified**

1) Lou Maccarone (RI DEM) **Telephone:** (401) 222-2797
2) Matt DeStefano (RI DEM) **Telephone:** (401) 222-2797
3) Robert McMahon (Providence Parks Dept.) **Telephone:** (401) 785-9450

## Source of Information

**( ) Verbal:**
**(X) Report:** Letter from Frank B. Postma, Senior Project Manager, EA Engineering, Science, and Technology, Inc., to RI Department of Environmental Management, Division of Site Remediation, regarding Notification of a Release of Hazardous Material, Merino Park – Providence, Rhode Island, EA Project No. 61891.05, dated and signed 21 June 2010.
**( ) Other:**

## REMOVAL PRELIMINARY ASSESSMENT

### Potential Responsible Parties

**Owner:** City of Providence **Telephone:** (401) 785-9450
**Address:** 1000 Elmwood Ave, Providence, RI
**Operator:** **Telephone:**( )
**Address:**

### Site Access

**Authorizing Person:** City of Providence
**Date:** 20 July 2010 **(X)Obtained** **( )Verbal**
**Telephone:** (401) 785-9450 **( )Not Obtained** **( )Written**

### Historical Preservation

**( ) Site is Historically Significant or Eligible for Historic Preservation**

**Contacts Identified**

**1) State Historical Preservation Officer (SHPO)**
**Name:** Mr. Edward F. Sanderson (Deputy) **Telephone:** (401) 222-4130

**2) Tribal Historical Preservation Officer (THPO)**
**Name:** **Telephone:**( )

**Comments:**

### Physical Site Characterization

**Background Information:** The Merino Park Site (the site) is located between Hartford Avenue, Route 6, and the Woonasquatucket River in Providence, Providence County, Rhode Island. The approximate center of the site is 41° 49' 12.1" north latitude and 71° 27' 14.4" west longitude. The site is a 13.6-acre public park located on the banks of the Woonasquatucket River between Hartford Avenue and Route 6. The site is bordered to the north by the Woonasquatucket River and Route 6, to the south and east by residential properties, and to the west by fields, wooded areas, and residences.

Following the flooding of the Woonasquatucket River during spring 2010, EA Engineering, Science, and Technology, Inc. (EA), on behalf of the City of Providence, collected three composite samples at Merino Park from sediment deposits remaining after the flooding. Two of the samples indicated dioxins were not detected (ND), while one sample contained dioxins at 1.2 parts per billion (ppb).

**Description of Substances Possibly Present, Known or Alleged:** Dioxins were detected in samples collected by EA Engineering. No other contaminants are suspected.

## Existing Analytical Data

**( ) Real-Time Monitoring Data:**

(x) **Sampling Data:** EA Engineering collected three composite samples from sediment deposited during spring 2010 flooding. Samples were collected on 24 May 2010. Specific details of sample collection are not available at this time.

## Potential Threat

Description of potential hazards to environment and/or population-identify any of the criteria for a Removal Action (from NCP) that may be met by the site under 40 CFR 300.415 [b] [2].

i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants.

ii. Actual or potential contamination of drinking water supplies or sensitive ecosystems.

iii. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.

iv. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

v. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

vi. Threat of fire or explosion.

vii. The availability of other appropriate federal or state response mechanisms to respond to the release.

viii. Other situations or factors that may pose threats to public health or welfare or the environment.

## Prior Response Activities

**( ) PRP** **( ) STATE** **( ) FEDERAL** **( ) OTHER**
**Brief Description:** There have been no prior response activities at this site.

## REMOVAL PRELIMINARY ASSESSMENT

### Priority for Site Investigation

**(X) High** **( ) Medium** **Low ( )** **None ( )**
**Comments:**

### Report Generation

| | | | |
|---|---|---|---|
| **Originator:** | Chris Dupree | **Date:** | 11 October 2010 |
| **Affiliation:** | Weston Solutions, Inc. (START) | **Telephone:** | (978) 552-2104 |
| **TDD No.:** | 01-10-07-0004 | **Task No.:** | 0649 |

**EPA REGION I**
**REMOVAL SITE INVESTIGATION**

## Inspection Information

**Site Name:** Merino Park **Address:** Hartford Avenue and Heath Street
**Town:** Providence **County:** Providence **State:** Rhode Island

**Date of Inspection:** 21 July 2010 **Time of Inspection:** 1100 hours
**Weather Conditions:** 80 °Fahrenheit, Sunny

**Date of Inspection:** 18 August 2010 **Time of Inspection:** 0900 hours
**Weather Conditions:** 75 °Fahrenheit, Sunny

**Site Status at Time of Inspection:** **(X) ACTIVE** **( ) INACTIVE**

**Comments:** The site consists of an active public park.

## Agencies/Personnel Performing Inspection

| | Names | Program |
|---|---|---|
| **(X) EPA:** | Ted Bazenas | U.S. Environmental Protection Agency (EPA) Region I, Emergency Planning and Response Branch (EPRB), On-Scene Coordinator (OSC) |
| **(X) EPA Contractor:** | Chris Dupree | Weston Solutions, Inc. (WESTON), Superfund Technical Assessment and Response Team III (START) |
| **(X) State:** | Lou Maccarone<br>Matt DeStefano | Rhode Island (RI) Department of Environmental Management (DEM) |

**Current Owner Based on Field Interview:** The property is currently owned and operated by the City of Providence.

## Physical Site Characteristics

| Parameter | Quantities/Extent |
|---|---|
| **( ) Cylinders:** | |
| **( ) Drums:** | |
| **( ) Lagoons:** | |
| **( ) Tanks:** **( ) Above:** | |
| **( ) Below:** | |

## REMOVAL SITE INVESTIGATION

| Parameter | Quantities/Extent |
|---|---|
| ( ) Asbestos: | |
| ( ) Piles: | |
| ( ) Stained Soil: | |
| ( ) Sheens: | |
| ( ) Stressed Vegetation: | |
| ( ) Landfill: | |
| (X) Population in Vicinity: | The site consists of an active public park. A housing community is located adjacent to the site. |
| ( ) Wells: ( ) Drinking: ( ) Monitoring: | |
| (X) Other: | Children were observed playing in the stream. |

### Physical Site Observations

The site is a public park with a playground, basketball court, soccer field, parking lot, and walking path around the perimeter of the site. The Woonasquatucket River is located on the western edge of the property. Vegetation (trees, brush) is located on the northern and western edges of the property. The site is a 13.6-acre public park located on the banks of the Woonasquatucket River between Hartford Avenue and Route 6. The site is bordered to the north by the Woonasquatucket River and Route 6, to the south and east by residential properties, and to the west by fields, wooded areas, and residences.

### Field Sampling and Analysis

| Matrix/Analytical Parameter | Field Instrumentation $CGI/O_2$ | RAD | PID | FID | Other |
|---|---|---|---|---|---|
| Background Readings: | 0.0%/20.9% | 8-10 µR/hr* | 0.0 ppm** | | |
| Air: | 0.0%/20.9% | 8-10 µR/hr | 0.0 ppm | | |
| Soil: | 0.0%/20.9% | 8-10 µR/hr | 0.0 ppm | | |
| Other: | | | | | |

* µR/hr = microRoentgens per hour
** ppm = parts per million

## Field Quality Control Procedures

**( ) SOP Followed** **(X) Deviation From SOP**

**Comments:** At the request of the OSC, air monitoring was not conducted during the site walk due to time constraints. Air monitoring was conducted during sampling events on 18 August 2010.

## Description of Sampling Conducted

On 18 August 2010, START personnel collected 18 six-point composite samples from 17 locations throughout the site. All of the samples were sent to AGAT Laboratories, located in Calgary, Alberta, Canada, for dioxin congeners analysis.

## Analyses

| Analytical Parameter | Media | Laboratory |
|---|---|---|
| ( ) VOC | ( ) AIR | ( ) NERL |
| ( ) PCB | ( ) WATER | ( ) CLP |
| ( ) PESTICIDE | (X) SOIL | (X) PRIVATE |
| ( ) METALS | ( ) SOURCE | ( ) DAS |
| ( ) CYANIDE | ( ) SEDIMENT | ( ) SOW |
| ( ) SVOC | ( ) SOIL GAS | ( ) FIELD |
| ( ) TOXICITY | | |
| (X) DIOXIN | | |
| ( ) ASBESTOS | | |
| ( ) OTHER | | |

Analytical results: (see attached)

## Receptors

**Comments**

**( ) Drinking Water:** **( ) Private:**
**( ) Municipal:**
**( ) Groundwater:**
**(X) Unrestricted Access:** The site consists of an active public park with unrestricted access.
**(X) Population in Proximity:** The site is located adjacent to a housing community.
**(X) Sensitive Ecosystem:** The site is located along the banks of the Woonasquatucket River.
**( ) Other:**

## Additional Procedures for Site Determination

**( ) Biological Evaluation** **( ) ATSDR**

## Site Determination

Depending on further information, criteria that may be met by the site include 40 CFR 300.415 [b] [2], parts:

i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants.

ii. Actual or potential contamination of drinking water supplies or sensitive ecosystems.

iv. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.

v. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

vii. The availability of other appropriate federal or state response mechanisms to respond to the release.

## Report Generation

| | | | |
|---|---|---|---|
| **Originator:** | Chris Dupree | **Date:** | 11 October 2010 |
| **Affiliation:** | Weston Solutions, Inc. (START) | **Telephone:** | (978) 552-2104 |
| **TDD No.:** | 01-10-07-0004 | **Task No.:** | 0649 |

II. Narrative Chronology

## Narrative Chronology

### Site Description

The Merino Park Site (the site) is located between Hartford Avenue, Route 6, and the Woonasquatucket River in Providence, Providence County, Rhode Island (RI) [see Appendix A, Figure 1] [1]. The approximate center of the site is 41° 49' 12.1" north latitude and 71° 27' 14.4" west longitude. The site is a 13.6-acre public park located on the banks of the Woonasquatucket River between Hartford Avenue and Route 6. The site is bordered to the north by the Woonasquatucket River and Route 6, to the south and east by residential properties, and to the west by fields, wooded areas, and residences (see Appendix A, Figure 2) [2].

### Site History

On 24 May 2010, following the flooding of the Woonasquatucket River during spring 2010, EA Engineering, Science, and Technology, Inc. (EA), on behalf of the City of Providence, collected three composite samples at Merino Park. Two of the samples indicated dioxins were not detected (ND), while one sample contained dioxins at 1.2 parts per billion (ppb) [3].

### Site Activities

On 21 July 2010, Weston Solutions, Inc. (Weston) Superfund Technical Assessment and Response Team III (START) member Chris Dupree mobilized to the site to meet with U.S. Environmental Protection Agency (EPA) On-Scene Coordinator (OSC) Ted Bazenas and conduct a site walk of the property. City of Providence Parks Department representative Robert McMahon, River Council representative Alicia Lehrer, RI Department of Environmental Management (DEM) representatives Lou Maccarone and Matt DeStefano, and EA representative Frank Postma were on site to discuss sampling locations and results with EPA personnel.

EA was contracted by the City of Providence to collect samples from sediment deposits at two parks, Merino Park and Donigian Park, both located in Providence. Based on financial constraints, and locations of sediment deposits, three composite samples had previously been collected from each park on 24 May 2010. The seven-point composite samples were approximately 4 meters in diameter, with six aliquots collected around a central aliquot point. All the samples were delivered to a laboratory for analyses.

Analytical results for five of the samples were non-detect (no results above the lower instrument limitations) for dioxin congeners. One sample, M1 (located at the north end of Merino Park), indicated elevated levels of dioxin congeners at 1.2 ppb.

EPA, START, EA, Providence Parks, and River Council personnel conducted a site walk of the property and observed site features as follows. The eastern portion of the site contained a playground, basketball court, and parking area (accessible from Heath Street). At the northern end of the park, there was a pedestrian overpass over Route 6. The western portion of the property consisted of a field, used mainly as a soccer field. In addition, there was a walking path around the majority of the park.

The flooding of the Woonasquatucket River during spring 2010 left sediment deposits along the riverbank, the eastern portion of the soccer field, and the northern edge of the property abutting Route 6. Site personnel observed a fenced, vegetated area north of the soccer field, where sample M3 was collected. Flagging tape was noted on the trees. Town personnel informed OSC Bazenas that one piece marked the sample location, and the second piece was a US Geological Survey (USGS) marker for the high flood level.

Site personnel observed sediment deposits on the western edge of the soccer field, and to the west of the walking path, adjacent to the river. Children were observed collecting tadpoles at the bend in the stream, where the majority of floodwaters flowed over the bank.

Site personnel discussed the collection of the samples and analytical results, including grain texture of the sediments. EA representative Postma indicated that the soil characteristics of the sample collected from M3 were noticeably different from the other sample collected.

All personnel agreed that the fence currently surrounding the M3 location would be sufficient to limit access to the contaminated sediments.

River Council, Providence Parks Department, and EA personnel departed the site. EPA, START, and RI DEM personnel discussed potential sampling and further actions before departing the site.

On 18 August 2010, START members Dupree and Greg Parrish mobilized to the site to collect surface soil samples. OSC Bazenas and community lawyer Steve Fischbach discussed sample locations prior to START arrival.

START member Dupree conducted a safety and operations meeting, and on-site personnel reviewed and signed the site health and safety plan (HASP). The HASP was prepared as a separate document, entitled *Weston Solutions, Inc., Region I START Site Health and Safety Plan (HASP) for the Merino Park Site, Providence, Rhode Island* [4].

START personnel established a support zone and calibrated the air monitoring instruments, a combustible gas indicator/oxygen meter (CGI/$O_2$), and a radiation meter (MicroR) [4]. Background levels were recorded in the HASP as follows: photoionization detector (PID) = 0.0 parts per million (ppm); lower explosive limit (LEL) = 0%; oxygen ($O_2$) = 20.9%; carbon monoxide (CO) = 0 ppm; hydrogen sulfide ($H_2S$) = 0 ppm; and MicroR = 10-12 microRoentgens per hour (µR/hr) [5, 6]. Sampling activities were conducted in accordance with the *Sampling and Analysis Plan for the Merino Park Site, Providence, Providence County, Rhode Island,* prepared by Weston Solutions, Inc., Region I Superfund Technical Assessment and Response Team III (START), August 2010 [7].

START personnel and OSC Bazenas marked sample locations on the riverbank; in the vegetated area near M1; on the soccer field; and between the basketball court and playground (see Appendix A, Figure 3). Air monitoring was conducted during sample location selection. No readings about background levels were observed.

START personnel collected 18 (SS-01 through SS-18) six-point composite samples (including one duplicate) from 17 locations (see Appendix B, Table 1) [8]. The samples consisted of a

center point and five collection points approximately 1 meter from the center point. One location (SS-17) was a linear composite, consisting of six points in a straight line between the playground area and the basketball court. Sample equipment (disposable scoops and plastic bags for homogenization) were rinsed with water prior to disposal. Rinse water was disposed of at each sample location. The one duplicate sample was collected for Quality Control/ Quality Assurance (QA/QC).

Sample locations were documented using a Global Positioning System (GPS) unit [9]. In addition, the sample locations and site conditions were photodocumented. (Photographs of site conditions are available in the *Memorandum to the Merino Park Site File, regarding the Site Walk at Merino Park, Providence, RI,* dated 19 August 2010, prepared by START for OSC Ted Bazenas, EPA Region I.) START prepared a Chain-of-Custody (COC) record for the samples (Appendix C, Chain-of Custody Record). OSC Bazenas and START personnel then departed the site.

On 23 August 2010, START member Dupree prepared the samples for shipment to AGAT Laboratories (AGAT) in Calgary, Alberta, Canada. Two Performance Evaluation (PE) samples were also included with the shipment. START member Eric Ackerman inspected the shipment preparation and the COC form. Subsequently, the samples were delivered to a Federal Express (FedEx) facility for shipment. Laboratory analytical results were received from AGAT in October 2010 [10].

**Analytical Data Summary**

Total tetrachlorodibenzo-p-dioxin (TCDD) was measured at a maximum concentration of 279.2 ppb. The compound 2,3,7,8-TCDD was measured at a maximum concentration of 257 ppb. In addition, the toxicity equivalency quotient (TEQ) was calculated for each sample. The highest total TEQ value was 327.5 ppb. [The laboratory reported the results in nanograms per Kilogram (ng/Kg), which is equivalent to ppb.]

EPA Region 1 will develop a site-specific risk screening document for Merino Park. The risk screening document will include a preliminary remediation goal (PRG) for evaluation of the analytical data.

**REFERENCES**

[1] USGS (U.S. Geological Survey). 1975. Providence, RI (7.5-minute series topographic map).

[2] Google Earth. 2010. Digital Orthophoto Imagery. Available from Google Earth and accessed 21 July 2010.

[3] Letter from Frank B. Postma, Senior Project Manager, EA Engineering, Science, and Technology, Inc., to RI Department of Environmental Management, Division of Site Remediation, regarding Notification of a Release of Hazardous Material, Merino Park – Providence, Rhode Island, EA Project No. 61891.05, dated and signed 21 June 2010.

[4] Weston Solutions, Inc., *Region I START Site Health and Safety Plan (HASP) for the Merino Park Site, Providence, Rhode Island.*

[5] Weston Solutions, Inc. August 2005. *Standard Operating Procedure for Flame Ionization Detector (FID)/Photoionization Detector (PID)*, SOP No. WSI/S3-023, Superfund Technical Assessment and Response Team III (START), Wilmington, MA.

[6] Weston Solutions, Inc. March 2006. *Standard Operating Procedure for Ludlum Model 19 Micro R Meter*, SOP No. WSI/S3-027, Superfund Technical Assessment and Response Team III (START), Wilmington, MA.

[7] *Sampling and Analysis Plan for the Merino Park Site, Providence, Providence County, Rhode Island,* prepared by Weston Solutions, Inc., Region I Superfund Technical Assessment and Response Team III (START), August 2010.

[8] Weston Solutions, Inc. March 2006. *Standard Operating Procedure for Surface and Subsurface Soil Sampling*, SOP No. WSI/S3-001, Superfund Technical Assessment and Response Team III (START), Wilmington, MA.

[9] Weston Solutions, Inc. July 2005. *Standard Operating Procedure for Trimble™ Pathfinder Pro XRS Global Positioning System (GPS) with TSCI Data Logger*, SOP No. WSI/S3-020, Superfund Technical Assessment and Response Team III (START), Wilmington, MA.

[10] AGAT Laboratories, Ltd. October 2010. Case No. 40414. SDG 24240. Laboratory data package report regarding Dioxin/Furan Analysis.

III. Appendices

# Appendix A

## Figures

Figure 1 - Site Location Map
Figure 2 - Site Map
Figure 3 - Sample Location Map

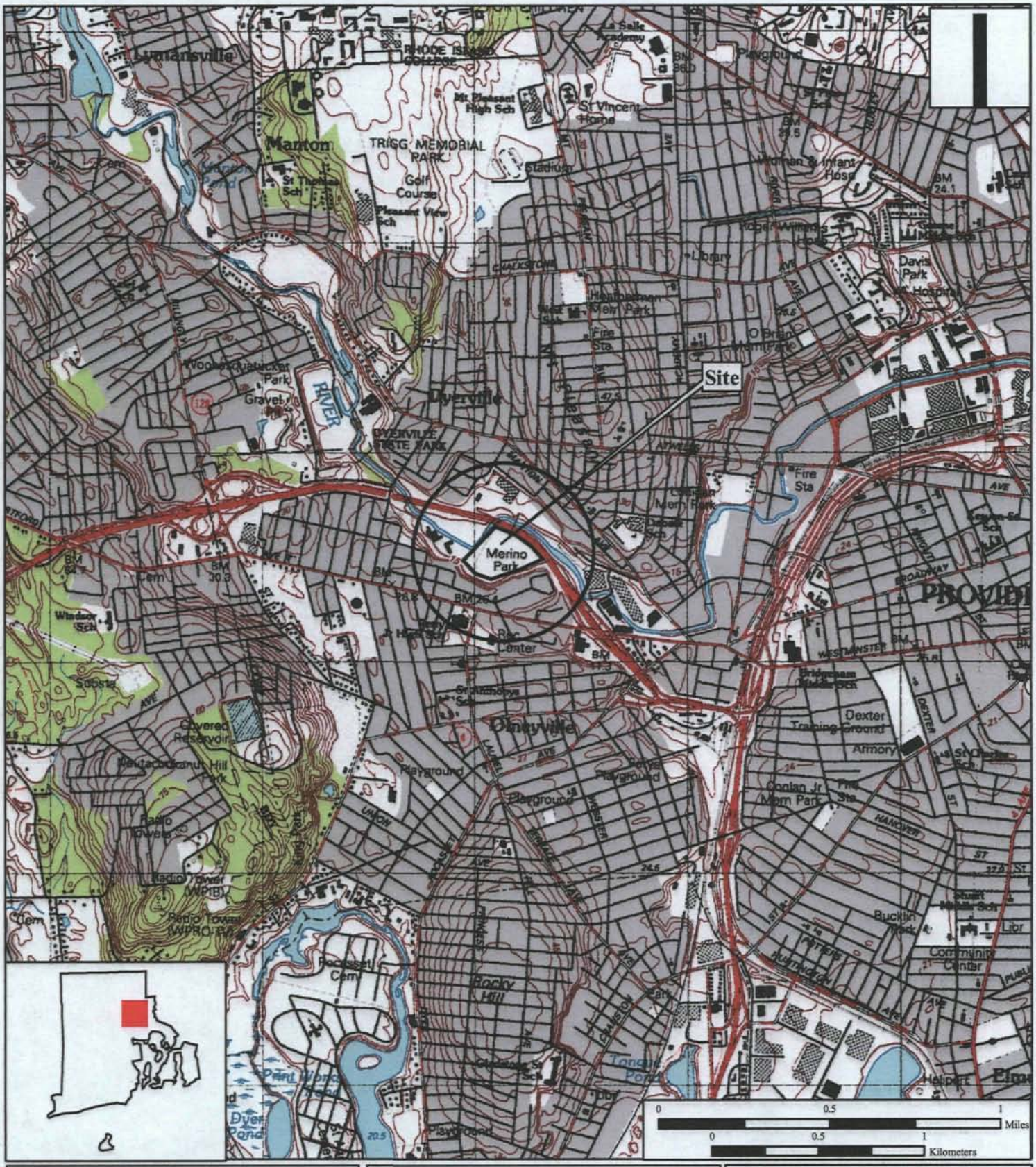



**Figure 1**

**Site Location Map**

**Merino Park**
**Hartford Avenue**
**Providence, Rhode Island**

**EPA Region I**
**Superfund Technical Assessment and Response Team (START) III**
**Contract No. EP-W-05-042**

| | |
|---|---|
| **TDD Number:** | 10-07-0004 |
| **Created by:** | C. Dupree |
| **Created on:** | 4 August 2010 |
| **Modified by:** | C. Dupree |
| **Modified on:** | 5 August 2010 |

**Data Sources:**
Topos: MicroPath/USGS
Quadrangle Name(s): North Scituate, RI and Providence, RI-MA. All other data: START

WESTON SOLUTIONS
Restoring Resource Efficiency

E:\RI_gis\Merino Park\MXDs\Figure 1.mxd


**Figure 2**

**Site Map**

**Merino Park**
**Hartford Avenue**
**Providence, Rhode Island**

**EPA Region I**
**Superfund Technical Assessment and Response Team (START) III**
**Contract No. EP-W-05-042**

| | |
|---|---|
| **TDD Number:** | 10-07-0004 |
| **Created by:** | C. Dupree |
| **Created on:** | 5 August 2010 |
| **Modified by:** | C. Dupree |
| **Modified on:** | 13 August 2010 |

**LEGEND**

Site Boundary

Previous Sample Locations

0 50 100 200

Feet

**Data Sources:**

Imagery: Rhode Island Geographic Information System (RIGIS)
http://www.edc.uri.edu/RIGIS/default.html
Topos: MicroPath
All other data: START

WESTON SOLUTIONS
Restoring Resource Efficiency

E:\RI_gis\Merino Park\MXDs\Figure 2.mxd

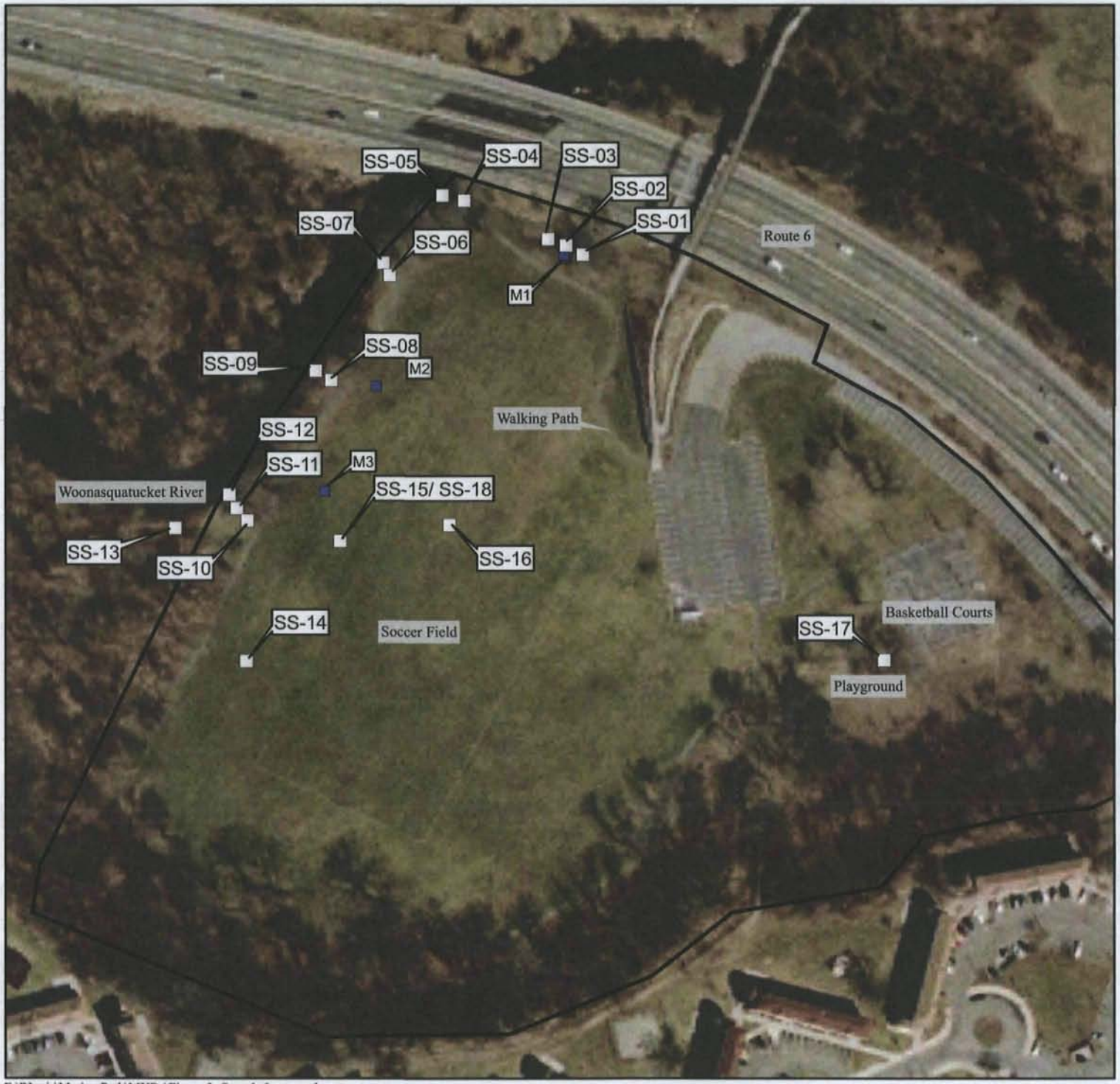



**Figure 3**

**Sample Location Map**

**Merino Park**
**Hartford Avenue**
**Providence, Rhode Island**

**EPA Region I**
**Superfund Technical Assessment and Response Team (START) III**
**Contract No. EP-W-05-042**

| | |
|---|---|
| **TDD Number:** | 10-07-0004 |
| **Created by:** | C. Dupree |
| **Created on:** | 5 August 2010 |
| **Modified by:** | C. Dupree |
| **Modified on:** | 13 August 2010 |

**LEGEND**

- Site Boundary
- Previous Sample Locations
- Sample Locations

N

0 50 100
Feet

**Data Sources:**
Imagery: Rhode Island Geographic Information System (RIGIS) http://www.edc.uri.edu/RIGIS/default.html
Topos: MicroPath
All other data: START

WESTON SOLUTIONS
Restoring Resource Efficiency

E:\RI_gis\Merino Park\MXDs\Figure 3- Sample Locs.mxd

Appendix B

Tables and Spreadsheets

Table 1 - Sample Descriptions
Table 2 - Summary of Dioxin/Furan Congener Results

# TABLE 1
# SAMPLE DESCRIPTIONS
# MERINO PARK SITE
# PROVIDENCE, RHODE ISLAND
# 18 AUGUST 2010

| Sample Location | Sample Number | Sample Depth (in.) | Collection Date | Sample Type | Sample Description | Comments |
|---|---|---|---|---|---|---|
| SS-01 | D24240 | 3 | 8/18/2010 | Composite | Brown f.-m. sand, some organics. | |
| SS-02 | D24241 | 3 | 8/18/2010 | Composite | Gray f.-m. sand, some silt, little organics. | |
| SS-03 | D24242 | 3 | 8/18/2010 | Composite | Dark brown f.-m. sand, some organics, little silt. | |
| SS-04 | D24243 | 3 | 8/18/2010 | Composite | Light brown-brown f. sand and silt, trace organics. | |
| SS-05 | D24244 | 3 | 8/18/2010 | Composite | Brown f.-c. sand, trace silt and organics. | |
| SS-06 | D24245 | 3 | 8/18/2010 | Composite | Brown f.-c. sand, some silt, trace organics. | |
| SS-07 | D24246 | 3 | 8/18/2010 | Composite | Gray to brown f.-c. sand, trace organics. | |
| SS-08 | D24247 | 3 | 8/18/2010 | Composite | Light brown f.-c. sand, trace organics. | |
| SS-09 | D24248 | 3 | 8/18/2010 | Composite | Dark brown f.-c. sand, trace organics. | |
| SS-10 | D24249 | 3 | 8/18/2010 | Composite | Light brown f.-c. sand, trace f. gravel and organics. | |
| SS-11 | D24250 | 3 | 8/18/2010 | Composite | Brown f.-m. sand, trace silt and organics. | |
| SS-12 | D24251 | 3 | 8/18/2010 | Composite | Light brown f.-c. sand. | |
| SS-13 | D24252 | 3 | 8/18/2010 | Composite | Dark brown silt and f. sand, some organics, moist. | |
| SS-14 | D24253 | 3 | 8/18/2010 | Composite | Brown f. sand, some organics, trace f. gravel. | |
| SS-15 | D24254 | 3 | 8/18/2010 | Composite | Dark brown f. sand, little silt, trace organics. | |
| SS-16 | D24255 | 3 | 8/18/2010 | Composite | Brown f.-m. sand, little f. gravel. | |
| SS-17 | D24256 | 3 | 8/18/2010 | Composite | Brown f.-m. sand, trace f. gravel and organics. | |
| SS-18 | D24257 | 3 | 8/18/2010 | Composite | Brown f. sand, some silt, trace organics. | Duplicate of sample SS-15. |

**NOTES:**
in. = Inches.
f. = fine
m. = medium
c. = coarse

# TABLE 2
## SUMMARY OF DIOXIN/FURAN CONGENERS RESULTS
## MERINO PARK SITE
## PROVIDENCE, RHODE ISLAND
## 18 AUGUST 2010

| SAMPLE LOCATION | SS-01 | SS-02 | SS-03 | SS-04 | SS-05 | SS-06 | SS-07 |
|---|---|---|---|---|---|---|---|
| SAMPLE NUMBER | D24240 | D24241 | D24242 | D24243 | D24244 | D24245 | D24246 |
| DEPTH | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. |
| COMPOUND | | | | | | | |
| Total TCDD | 38.8 | 137.7 | 70.9 | 245.8 | 279.2 | 205.8 | 191.4 |
| 2378-TCDD | 31.9 | 123.0 | 50.2 | 214.0 | 257.0 | 170.0 | 157.0 |
| Total TEQ | 43.3 | 141.0 | 82.0 | 236.3 | 327.5 | 188.3 | 171.0 |

| SAMPLE LOCATION | SS-08 | SS-09 | SS-10 | SS-11 | SS-12 | SS-13 | SS-14 |
|---|---|---|---|---|---|---|---|
| SAMPLE NUMBER | D24247 | D24248 | D24249 | D24250 | D24251 | D24252 | D24253 |
| DEPTH | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. |
| COMPOUND | | | | | | | |
| Total TCDD | 38.8 | 107.2 | 69.0 | 45.6 | 12.5 | 175.6 | 17.7 |
| 2378-TCDD | 34.6 | 98.1 | 53.2 | 37.0 | 1.3 | 161.0 | 12.9 |
| Total TEQ | 38.6 | 119.9 | 59.5 | 43.6 | 4.0 | 273.5 | 15.8 |

| SAMPLE LOCATION | SS-15 | SS-16 | SS-17 |
|---|---|---|---|
| SAMPLE NUMBER | D24254 | D24255 | D24256 |
| DEPTH | 0 - 0.5 ft. | 0 - 0.5 ft. | 0 - 0.5 ft. |
| COMPOUND | | | |
| Total TCDD | 45.7 | 37.6 | 28.6 |
| 2378-TCDD | 36.3 | 30.8 | 11.7 |
| Total TEQ | 51.0 | 37.2 | 76.1 |

**NOTES:**

1) Samples analyzed by AGAT Laboratories using Method DLM02.2 Dioxin and Furan Congeners in Soil.

2) The Total Toxic Equivalent (Total TEQ) concentration is the sum of the Toxic Equivalent (TEQ) concentrations for all dioxin/furan compounds. The TEQ values were calculated with the Toxicity Equivalency Factors (TEFs) found in "The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds", Society of Toxicology, July 7, 2006.

3) All Results in nanograms per Kilogram (ng/Kg) [equivalent to parts per billion (ppb)].

4) ft. = feet

Appendix C

Chain-of-Custody Record

**CHAIN OF CUSTODY RECORD**

Site #: R01-100721TB
Merino Park
Case No. 40414

**No: R01-100721TB-08-19-10-0001**

Lab: AGAT Laboratories
Lab Contact: Paul Houle
Lab Phone: 403-735-2552

Cooler EPA AKRS
Airbill No. 8638 1877 5258

| Lab # | Sample # | Location | Analyses | Matrix | Collected | Sample Time | Numb Cont | Container |
|---|---|---|---|---|---|---|---|---|
| | D24240 | SS-01 | DLM02.2 | Soil | 2010-08-18 | 10:10 | 1 | 8oz jar |
| | D24241 | SS-02 | DLM02.2 | Soil | 2010-08-18 | 10:10 | 1 | 8oz jar |
| | D24242 | SS-03 | DLM02.2 | Soil | 2010-08-18 | 09:55 | 1 | 8oz jar |
| | D24243 | SS-04 | DLM02.2 | Soil | 2010-08-18 | 10:40 | 1 | 8oz jar |
| | D24244 | SS-05 | DLM02.2 | Soil | 2010-08-18 | 10:30 | 1 | 8oz jar |
| | D24245 | SS-06 | DLM02.2 | Soil | 2010-08-18 | 10:50 | 1 | 8oz jar |
| | D24246 | SS-07 | DLM02.2 | Soil | 2010-08-18 | 10:45 | 1 | 8oz jar |
| | D24247 | SS-08 | DLM02.2 | Soil | 2010-08-18 | 11:00 | 1 | 8oz jar |
| | D24248 | SS-09 | DLM02.2 | Soil | 2010-08-18 | 10:55 | 1 | 8oz jar |
| | D24249 | SS-10 | DLM02.2 | Soil | 2010-08-18 | 11:15 | 1 | 8oz jar |
| | D24250 | SS-11 | DLM02.2 | Soil | 2010-08-18 | 11:20 | 1 | 8oz jar |
| | D24251 | SS-12 | DLM02.2 | Soil | 2010-08-18 | 11:10 | 1 | 8oz jar |
| | D24252 | SS-13 | DLM02.2 | Soil | 2010-08-18 | 11:30 | 1 | 8oz jar |
| | D24253 | SS-14 | DLM02.2 | Soil | 2010-08-18 | 11:40 | 1 | 8oz jar |
| | D24254 | SS-15 | DLM02.2 | Soil | 2010-08-18 | 11:35 | 1 | 8oz jar |
| | D24255 | SS-16 | DLM02.2 | Soil | 2010-08-18 | 12:08 | 1 | 8oz jar |
| | D24256 | SS-17 | DLM02.2 | Soil | 2010-08-18 | 12:00 | 1 | 8oz jar |
| | D24257 | SS-18 | DLM02.2 | Soil | 2010-08-18 | 11:35 | 1 | 8oz jar |
| | D24258 | PC01411 | DLM02.2 | PE | 2010-08-18 | 12:00 | 1 | 8oz jar |
| | D24259 | PC02263 | DLM02.2 | PE | 2010-08-18 | 12:00 | 1 | 8oz jar |

Special Instructions: Modified analysis request- Reference Method 1981.0

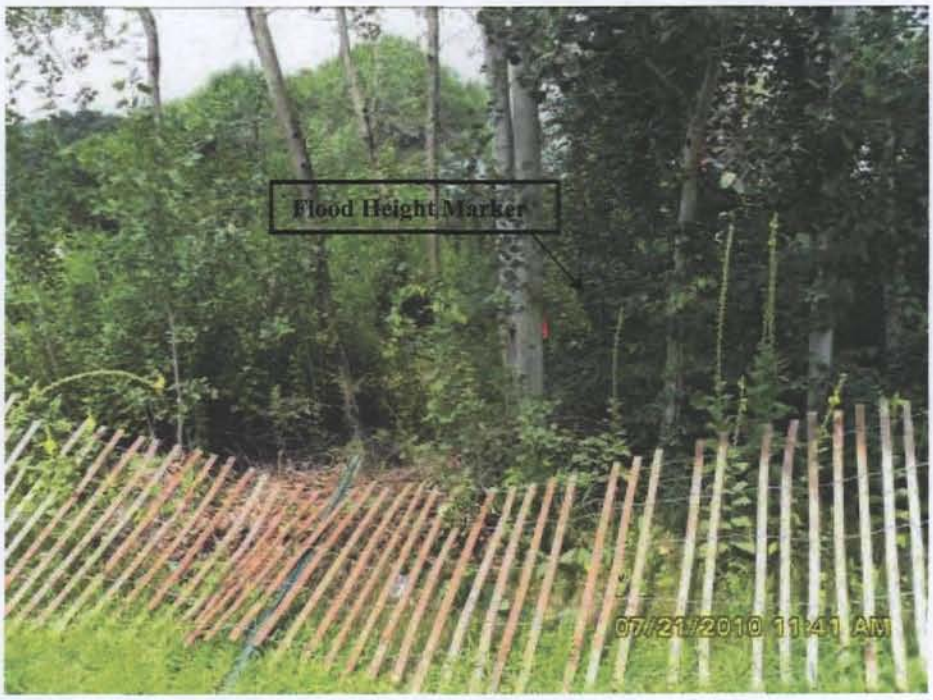
**SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #**

| Items/Reason | Relinquished by | Date | Received by | Date | Time | Items/Reason | Relinquished By | Date | Received by | Date | Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Appendix D

Photodocumentation Log

**PHOTODOCUMENTATION LOG**
**Merino Park • Providence, Rhode Island**




**SCENE:** View of sample location M1, collected by the City of Providence, and high water level (flagging tape) from spring 2010 floods. Photograph taken facing west.
**DATE:** 21 July 2010 **TIME:** 1141 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of debris observed in the Woonasquatucket River, south of the Route 6 overpass. Photograph taken facing west.
**DATE:** 21 July 2010 **TIME:** 1144 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of the riverbank where flood water reportedly flowed into the soccer field. Photograph taken facing north-northwest.
**DATE:** 21 July 2010 **TIME:** 1148 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of the fence surrounding sample location M1 and Route 6 in the background. Photograph taken facing north.
**DATE:** 21 July 2010 **TIME:** 1214 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of the fence surrounding sample location M1, with one portion collapsed. Photograph taken facing northwest.
**DATE:** 21 July 2010 **TIME:** 1217 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of the north end of the field and the walking path. Photograph taken facing north-northwest

**DATE:** 21 July 2010 **TIME:** 1218 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of the soccer field from the overpass walkway. Photograph taken facing west.

**DATE:** 21 July 2010
**PHOTOGRAPHER:** C. Dupree

**TIME:** 1218 hours
**CAMERA:** Samsung SL605


**SCENE:** View of the northern fenced area and the walkway wall (left). Photograph taken facing north.

**DATE:** 18 August 2010
**PHOTOGRAPHER:** C. Dupree

**TIME:** 1220 hours
**CAMERA:** Samsung SL605


**SCENE:** View of sample locations SS-04 and SS-05, located in the northwest corner near the Route 6 overpass. Photograph taken facing northwest.
**DATE:** 18 August 2010 **TIME:** 1222 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-03, located in the fenced area at the north end of the site. Photograph taken facing northwest.
**DATE:** 18 August 2010 **TIME:** 1223 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-01, on the eastern side of the fenced area. Photograph taken facing east.

**DATE:** 18 August 2010
**TIME:** 1226 hours
**PHOTOGRAPHER:** C. Dupree
**CAMERA:** Samsung SL605


**SCENE:** View of the west side of the fenced area. Photograph taken facing east.

**DATE:** 18 August 2010
**TIME:** 1231 hours
**PHOTOGRAPHER:** C. Dupree
**CAMERA:** Samsung SL605


**SCENE:** View of sample locations SS-06 and SS-07. Photograph taken facing southwest.

**DATE:** 18 August 2010
**PHOTOGRAPHER:** C. Dupree

**TIME:** 1232 hours
**CAMERA:** Samsung SL605


**SCENE:** View of sample locations SS-08 and SS-09. Photograph taken facing west.

**DATE:** 18 August 2010
**PHOTOGRAPHER:** C. Dupree

**TIME:** 1234 hours
**CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-12, on the riverbank. Photograph taken facing west.

**DATE:** 18 August 2010 **TIME:** 1236 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-11, in the seating area on the western edge of the property. Photograph taken facing south.
**DATE:** 18 August 2010 **TIME:** 1236 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-10, located in the seating area next to the river. Photograph taken facing west.

**DATE:** 18 August 2010
**TIME:** 1237 hours
**PHOTOGRAPHER:** C. Dupree
**CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-13, located on the walking path along the river. Photograph taken facing northwest.

**DATE:** 18 August 2010
**TIME:** 1237 hours
**PHOTOGRAPHER:** C. Dupree
**CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-14, located in the soccer field. Photograph taken facing southeast.

**DATE:** 18 August 2010
**TIME:** 1239 hours
**PHOTOGRAPHER:** C. Dupree
**CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-15/SS-18, located on the the soccer field. Photograph taken facing south.

**DATE:** 18 August 2010
**TIME:** 1241 hours
**PHOTOGRAPHER:** C. Dupree
**CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-16, located on the soccer field. Photograph taken facing northeast.

**DATE:** 18 August 2010 **TIME:** 1242 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605


**SCENE:** View of sample location SS-17, a linear composite along the edge of the playground. Photograph taken facing west-southwest.
**DATE:** 18 August 2010 **TIME:** 1246 hours
**PHOTOGRAPHER:** C. Dupree **CAMERA:** Samsung SL605

**PHOTODOCUMENTATION LOG**
**Merino Park • Providence, Rhode Island**


**SCENE:** View of sample location SS-17, a linear composite along the edge of the playground. Photograph taken facing northeast.
**DATE:** 18 August 2010
**TIME:** 1247 hours
**PHOTOGRAPHER:** C. Dupree
**CAMERA:** Samsung SL605