

---

# Baltimore Inner Harbor Environmental Media Monitoring Plan Quarterly Report No. 94 First Quarter 2013

Prepared for  
**Honeywell International Inc.**

April 2013

**CH2MHILL®**

15010 Conference Center Drive Suite 200  
Chantilly, VA 20151

# Contents

---

| Section  | Page       |
|--|------------|
| <b>Acronyms and Abbreviations</b> .....  | <b>iii</b> |
| <b>1 Introduction</b> .....  | <b>1-1</b> |
| 1.1 Purpose .....  | 1-1        |
| 1.2 Scope of Work .....  | 1-1        |
| 1.3 Sampling Conducted this Quarter .....                                      | 1-1        |
| 1.4 Progress Report Organization .....   | 1-1        |
| <b>2 Surface Water Monitoring</b> .....  | <b>2-1</b> |
| 2.1 Methodology .....  | 2-1        |
| 2.2 Current Quarter Results .....  | 2-1        |
| 2.3 Data Review.....   | 2-1        |
| <b>3 Air Monitoring</b> .....  | <b>3-1</b> |
| 3.1 Methodology .....  | 3-1        |
| 3.2 Current Quarter Results .....  | 3-1        |
| 3.3 Data Review.....   | 3-1        |
| <b>Appendixes</b>  |            |
| A Surface Water Sampling Program Data  |            |
| A-1 Raw Laboratory Data—October 2012   |            |
| A-2 Chain-of-Custody Records—October 2012                                      |            |
| A-3 Field Report—October 2012  |            |
| B Air Monitoring Program Data  |            |
| B-1 Raw Laboratory Data—January 2013   |            |
| B-2 Chain-of-Custody Records—January 2013                                      |            |
| B-3 Field Report—January 2013  |            |
| C Current Quarter Validation Report  |            |
| C-1 Quality Control Summary—First Quarter 2013                                 |            |
| <b>Tables</b>  |            |
| 2-1 Percent of Average or Actual Surface Water Results Below Specific Criteria |            |
| 2-2 Surface Water Sampling Data per Location                                   |            |
| 2-3 Surface Water Sampling Data per Sampling Station                           |            |
| 3-1 Air Monitoring Sample Results  |            |
| 3-2 Weather Data Collected During Air Monitoring                               |            |
| <b>Figures</b>   |            |
| 2-1 Surface Water Sample Locations   |            |
| 3-1 Air Monitoring Sample Locations  |            |
| 3-2 Perimeter Air Monitoring Wind Rose (MPH)                                   |            |

# Acronyms and Abbreviations

---

|      |  |
|------|--|
| EMMP | Environmental Media Monitoring Plan    |
| EPA  | U.S. Environmental Protection Agency   |
| MDE  | Maryland Department of the Environment |
| MES  | Maryland Environmental Services        |
| ppb  | parts per billion                      |
| Site | Honeywell Baltimore Inner Harbor Site  |
| SSMP | Surface Soil Monitoring Plan           |

# Introduction

---

## 1.1 Purpose

This document represents the partial fulfillment of the Consent Decree entered into by Honeywell (formerly AlliedSignal, Inc.), the U.S. Environmental Protection Agency (EPA), and the Maryland Department of the Environment (MDE) on September 29, 1989. Specifically, this document satisfies Section V.3 of the Consent Decree, Exhibit 4 (RCRA Correction Action Plan Task XV.A.9). This section requires that a progress report be submitted every calendar quarter during the life of the Consent Decree. This report provides the data required by the Environmental Media Monitoring Program, as set forth in the Environmental Media Monitoring Plan (EMMP) and the Surface Soil Monitoring Plan (SSMP), as submitted to MDE and EPA.

This report summarizes the data collected during the first quarter of 2013.

## 1.2 Scope of Work

The scope of work outlined in the EMMP covers sampling and analysis of environmental media before, during, and after dismantlement of the former plant, and the completion of the corrective measures implementation activities at the Honeywell Baltimore Inner Harbor Site (Site). The environmental media sampled as part of the EMMP are air, surface water, groundwater, and sediment.

The scope of work outlined in the SSMP covers sampling and analysis of environmental media after completion of Corrective Measures Implementation activities at the Site. The only environmental medium sampled as part of the SSMP is the drainage layer effluent.

Media are sampled on varying frequencies as required by the EMMP and the SSMP (quarterly, twice annually, annually, and every 3 years). Only data for the media sampled during each quarter are reported in the associated quarterly report.

## 1.3 Sampling Conducted this Quarter

Surface water samples were collected during the first quarter 2013, as well as during the fourth quarter of 2012. Appendix A provides data associated with sampling during the fourth quarter; results for the first quarter will be provided in the second quarter 2013 report. The surface water sample results for the fourth quarter 2012 were validated by Critigen, and the validation report for this event is provided in Appendix C. All data quality objectives were met for surface water samples collected during the first quarter of 2013.

Perimeter air monitoring samples were collected during the servicing of a selection of wells and piezometers in January 2013.

## 1.4 Progress Report Organization

Progress reports prepared in accordance with the Consent Decree are organized by medium. The media section included in this document provides a summary of methodology, the current quarter's sampling plan, and a summary of results. Also provided in the medium section are a discussion of the sampling event; explanations for any deviations from the EMMP or SSMP procedures; data summaries; and discussion of the data, quality control results, and pertinent data trends. Raw data and chain-of-custody records are provided in Appendix A.

This progress report describes the surface water and perimeter air monitoring performed during first quarter of 2013. Drainage layer effluent, sediment and groundwater sampling events were not performed during the quarter.

# Surface Water Monitoring

---

## 2.1 Methodology

The surface water monitoring program provides information about surface water quality around the perimeter of the Site, at 18 predetermined stations, and at 2 stations upstream from the Site. Samples are collected at each station during each quarter and analyzed for total dissolved chromium.

Sampling is conducted within 1 hour of low tide and close to the predetermined sampling locations. The pH, temperature, specific conductance, and depth to the river bottom are measured before each sample is collected. A decontaminated Kemmerer sampler is used to collect the samples, which are placed in 500-milliliter plastic bottles. Two samples are collected—the first 1 foot below the water surface and the second 1 foot above the river bottom—at all locations except Station 20, where the water depth may be at or below 1 foot. When this is the case, only one sample is collected at Station 20. A mid-depth sample is required from sampling locations where the depth is more than 10 feet. The lateral placement of each sample location is about 5 feet from the bulkhead/shoreline. Laboratory sampling personnel record measurements and observations on sampling sheets, which are presented in Appendix A.

Surface water sample containers are placed on ice as soon as samples are collected. Field duplicate samples, field blanks, and rinsate blanks are also collected. At the end of the sample round, the samples are filtered and preserved. The samples are then transferred to the laboratory using documented chain-of-custody procedures and a dedicated courier. The samples are analyzed for total dissolved chromium using EPA SW-846 Method 6010B.

The results received from the laboratory are entered into a database in which data for each month are tabulated. When duplicate samples for a given station are taken, the average of the concentrations is used for that station. The analytical results, chain-of-custody documentation, and field sampling reports are presented in Appendix A.

## 2.2 Current Quarter Results

Surface water sampling for the fourth quarter of 2012 and first quarter of 2013 was performed by Maryland Environmental Services (MES) at all 20 sampling locations on October 9, 2012, and during the surface water sampling event on March 8, 2013, respectively. The surface water sampling locations are shown in Figure 2-1 (at the end of this section). Results for the surface water samples collected on October 9, 2012, are included in this report. Results of the analysis of the surface water samples collected on March 8, 2013, will be reported in the second quarter 2013 report (July 10, 2013). All of the collected samples were transported to Lancaster Laboratories in Lancaster, Pennsylvania, for total dissolved chromium analysis. Summaries of the surface water data and average concentrations for October 2012, including individual sample detection limits and validated data qualifiers, are presented in Tables 2-1 and 2-2.

## 2.3 Data Review

The surface water monitoring program is intended to provide information on surface water quality in the immediate vicinity of the waterside perimeter of the Site. This information is used to assess the performance of the corrective measures.

The Consent Decree, Section V, Part 12, establishes the Surface Water Performance Standard: “The surface water performance standard [...] for total chromium shall be 50 parts per billion (ppb), calculated for each sample location by arithmetically averaging the samples taken at all depths over 4 consecutive days.” In October 2002, the sample frequency was amended to be 1 day of sampling at each sampling location per quarter.

In addition, the EMMP states that Honeywell will review analytical data for results greater than 11-ppb of dissolved hexavalent chromium. The 11-ppb reporting level is based on the following:

- Code of Maryland Regulation 26.08.02.03-1B, which states that the numerical toxic substance criteria for freshwater shall be applied to the surface water near the Site
- National Recommended Water Quality Criteria Correction EPA 822-Z-99-001 (April 1999), which states that the chronic exposure level for dissolved hexavalent chromium in freshwater is 11 ppb

Total dissolved chromium concentrations in surface water reported for first quarter 2013 (fourth quarter 2012 results) are similar to the analytical values reported in fourth quarter 2012 (third quarter 2012 results). The percentages of actual or average surface water results meeting specific criteria (performance standard, chronic freshwater exposure, and detection limit) are listed in Table 2-1. Results of analyses for total dissolved chromium from each sampling location and each depth are presented in Table 2-2. The average analytical result from each sampling location is presented in Table 2-3.

**Table 2-1****Percent of Average or Actual Surface Water Results Below Specific Criteria**

| <b>Sample Event</b> | <b><u>Performance Standard</u><br/>Actual Concentration<br/>&lt; 50 ppb</b> | <b><u>Fresh Water Chronic Exposure Level</u><br/>Actual Concentration<br/>&lt;11 ppb</b> | <b>Analytical Detection Limit†<br/>Actual Concentration<br/>&lt;10 ppb</b> | <b>Method Detection Limit†<br/>Actual Concentration<br/>&lt;1.1 ppb</b> |
|---------------------|---|--|--|---|
| October             | 100%  | 100%   | 100%   | 58%   |

† The Analytical Detection Limit as determined by the Laboratory QC is ppb

Table 2-2  
Surface Water Sampling Data per Location  
October 2012

| Station Number | Detection Limit | Total Dissolved Chromium (mg/L) |
|----------------|-----------------|---------------------------------|
|                |                 | 10/9/2012                       |
| 3B             | 0.01            | 0.005 U                         |
| 3T             | 0.01            | 0.0012 J                        |
| 4B             | 0.01            | 0.005 U                         |
| 4T             | 0.01            | 0.0012 J                        |
| 5B             | 0.01            | 0.005 U                         |
| 5T             | 0.01            | 0.00145 J *                     |
| 6B             | 0.01            | 0.005 U                         |
| 6T             | 0.01            | 0.005 U                         |
| 7B             | 0.01            | 0.0011 J                        |
| 7T             | 0.01            | 0.005 U                         |
| 8B             | 0.01            | 0.005 U *                       |
| 8T             | 0.01            | 0.005 U                         |
| 9B             | 0.01            | 0.005 U                         |
| 9T             | 0.01            | 0.005 U                         |
| 10B            | 0.01            | 0.005 U                         |
| 10T            | 0.01            | 0.005 U                         |
| 11B            | 0.01            | 0.005 U                         |
| 11T            | 0.01            | 0.005 U                         |
| 12B            | 0.01            | 0.005 U                         |
| 12T            | 0.01            | 0.005 U                         |
| 13B            | 0.01            | 0.005 U                         |
| 13T            | 0.01            | 0.005 U *                       |
| 14B            | 0.01            | 0.005 U                         |
| 14T            | 0.01            | 0.005 U                         |
| 15B            | 0.01            | 0.005 U                         |
| 15T            | 0.01            | 0.005 U                         |
| 16B            | 0.01            | 0.002 J                         |
| 16T            | 0.01            | 0.002 J                         |
| 17B            | 0.01            | 0.001 J                         |
| 17T            | 0.01            | 0.002 J                         |
| 18B            | 0.01            | 0.0013 J                        |
| 18M            | 0.01            | 0.0012 J *                      |
| 18T            | 0.01            | 0.002 J                         |
| 19B            | 0.01            | 0.0018 J                        |
| 19T            | 0.01            | 0.0018 J                        |
| 20B            | 0.01            | 0.0022 J                        |
| 20T            | 0.01            | 0.0018 J                        |
| Cent B         | 0.01            | 0.0018 J                        |
| Cent T         | 0.01            | 0.0025 J                        |
| Lady B         | 0.01            | 0.0022 J                        |
| Lady T         | 0.01            | 0.0017                          |

NOTES

T - Sample collected 1 foot below the surface (TOP)

M - Sample collected from the measured middle of the TOP and BOTTOM measurements (MIDDLE)

B - Sample collected 1 foot from the bottom (BOTTOM)

\* - Average of the sample and its Field Duplicate

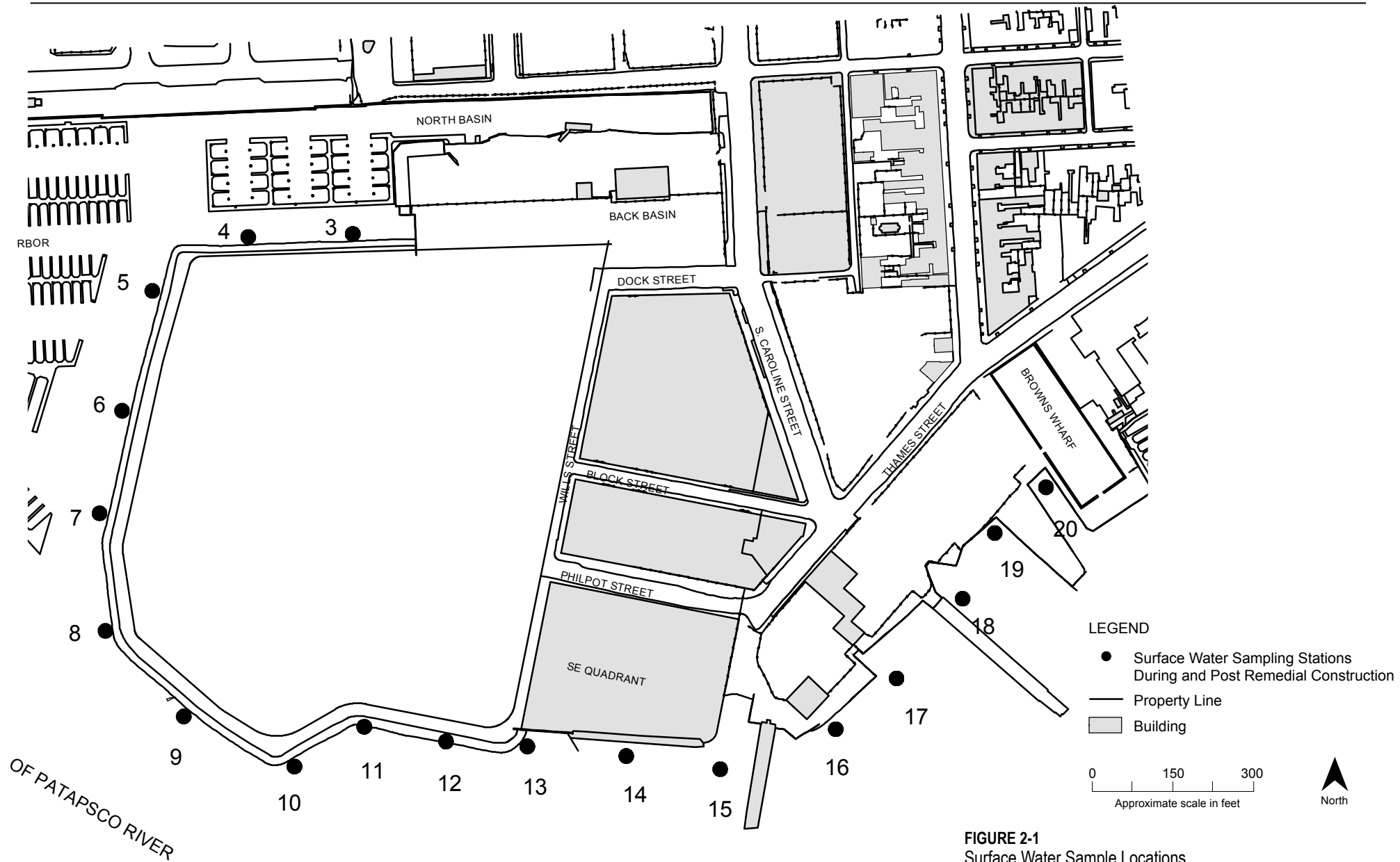
J - Results was reported below the Report Detection Limit

U - Result below the Method Detection Limit



Table 2-3  
 Surface Water Sampling Data per Sampling Station  
 October 2012

| Station Number | Total Dissolved Chromium (mg/L)            |
|----------------|--|
|                | 10/9/2012<br>Station Average of All Depths |
| 3              | 0.0031                                     |
| 4              | 0.0031                                     |
| 5              | 0.0042                                     |
| 6              | 0.0050                                     |
| 7              | 0.0031                                     |
| 8              | 0.0044                                     |
| 9              | 0.0050                                     |
| 10             | 0.0050                                     |
| 11             | 0.0050                                     |
| 12             | 0.0050                                     |
| 13             | 0.0050                                     |
| 14             | 0.0050                                     |
| 15             | 0.0050                                     |
| 16             | 0.002                                      |
| 17             | < 0.00175                                  |
| 18             | 0.0020                                     |
| 19             | < 0.0018                                   |
| 20             | < 0.002                                    |
| Cent           | < 0.00215                                  |
| Lady           | < 0.00195                                  |



**FIGURE 2-1**  
 Surface Water Sample Locations  
 Environmental Media Monitoring

# Air Monitoring

---

## 3.1 Methodology

The air monitoring program provides information on the level of potential constituents of concern at the perimeter of identified work zones. Samples were collected from each station during each day during intrusive activities and analyzed for hexavalent chromium and total respirable dust.

Sampling is conducted when intrusive activities are occurring onsite. Sampling locations are set up at the defined perimeter of the work zone. Each sampling location consists of an air pump with a Poly Vinyl Chloride (PVC) filter cassette. In addition to the air pumps each location was equipped with Thermos DR-4000 particulate meter equipped with a 360 degree particulate collector. The DR-4000 is equipped with a data logger that is set to record detected particulate levels at a minimum of 10 minute intervals.

Field blanks were also collected. The 37mm PVC filter is analyzed for hexavalent chromium using Occupational Safety and Health Administration (OSHA) 215.

The results received from the laboratory are entered into a database. The analytical results, chain-of-custody documentation, and field sampling reports are presented in Appendix B.

## 3.2 Current Quarter Results

Air monitoring results are reported for each day from each of the perimeter air emission monitoring stations. Perimeter air emission stations were established in four locations on the first day of well/piezometer servicing. The locations were situated upwind, downwind and cross wind of the most likely wind direction. The noted locations were located near V-1, V-10, and V-12 and between V-2 and V-3 near the fencing for the Morgan Stanley building Area 1 parking lot. Approximate locations are shown in Figure 3-1. Results from the stations sampled between January 18 and 22, 2013, are presented in Table 3-1. To support the sampling results general weather data are presented in Table 3-2 and Figure 3-2. The samples were analyzed for hexavalent chromium by the laboratory using OSHA method 215 and for total respirable dust using NIOSH 0500. Field blanks were also collected and analyzed.

## 3.3 Data Review

The air emissions monitoring program is intended to quantify the level, if any, of identified constituents of concern at the perimeter of each work zone. Samples were taken during each day of active work.

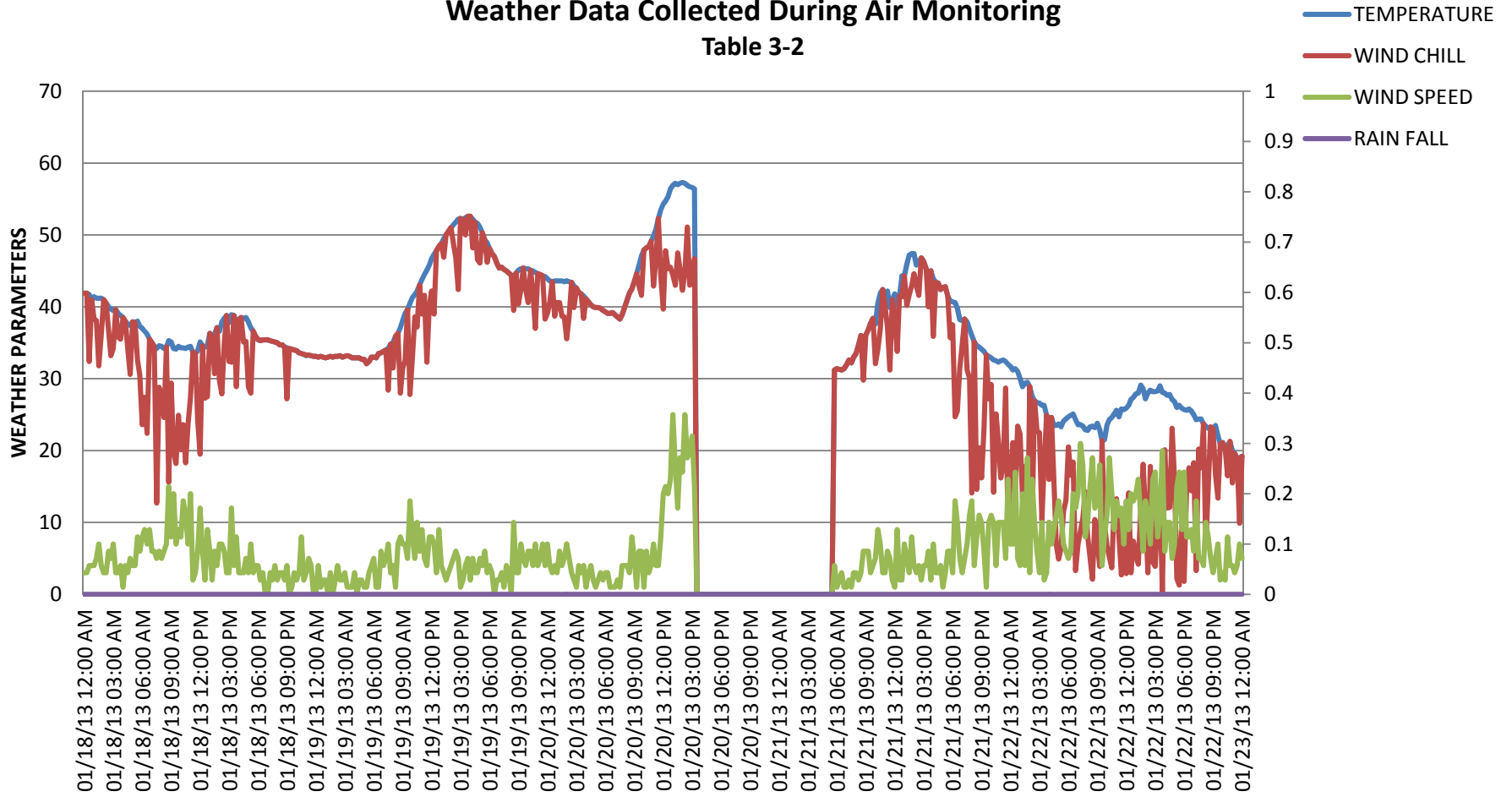
All results of samples analyzed for hexavalent chromium and total respirable particulate were below the site action levels. One sample reported a detection of total particulates at the detection limit. Three samples had reported detections of hexavalent chromium above the detection limit, but below site action levels.

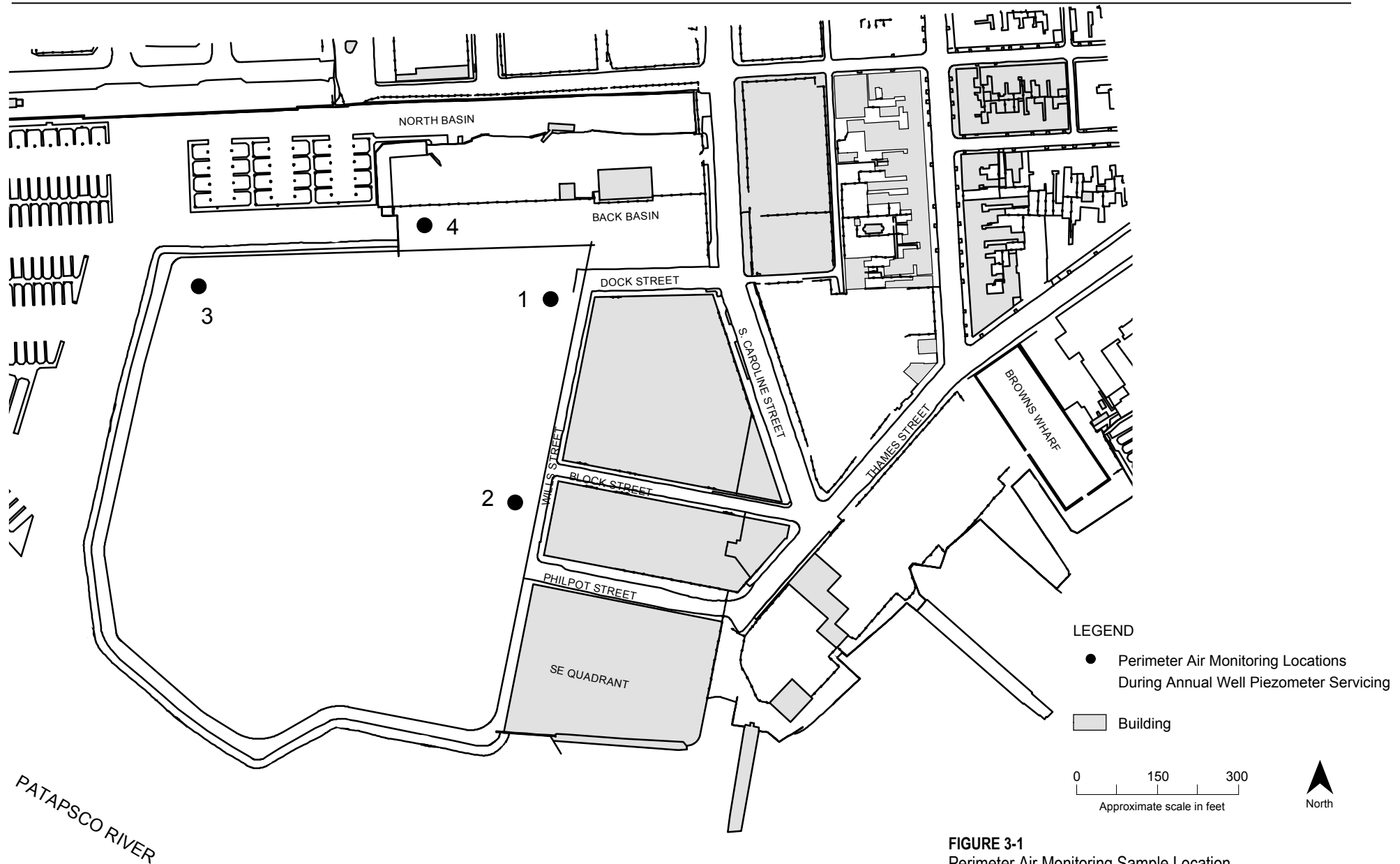
# Air Monitoring Sample Results

Table 3-1

| Date      | Location 1         |                   | Location 2         |                   | Location 3         |                   | Location 4         |                   |
|-----------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|
|           | Particles<br>mg/m3 | Chromium<br>ng/m3 | Particles<br>mg/m3 | Chromium<br>ng/m3 | Particles<br>mg/m3 | Chromium<br>ng/m3 | Particles<br>mg/m3 | Chromium<br>ng/m3 |
| 1/18/2013 | ND                 | 8.3               | ND                 | ND                | ND                 | ND                | ND                 | ND                |
| 1/21/2013 | ND                 | ND                | ND                 | ND                | 0.025              | ND                | ND                 | ND                |
| 1/22/2013 | ND                 | 2.4               | ND                 | ND                | ND                 | ND                | ND                 | 3.7               |

**Weather Data Collected During Air Monitoring**  
Table 3-2





**FIGURE 3-1**  
 Perimeter Air Monitoring Sample Location  
*Environmental Media Monitoring*

# Perimeter Air Monitoring Wind Rose (MPH)

Figure 3-2

