ATTACHMENT 10

AIR MONITORING REPORTS

May 2014
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for May 2014 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

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Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: May 2014

(This revised version replaces the original report dated June 20, 2014)

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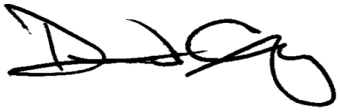
Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 2, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and May 31, 2014. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

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Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour to 10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and May 31, 2014 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	AMS-1 ng/m^3	AMS-2 ng/m^3	AMS-3 ng/m^3	AMS-4 ng/m^3	AMS-5 ng/m^3
30-day[2]	400	7.7	7.4	6.0	7.7	3.8
60-day[2]	300	NA	NA	NA	NA	NA
90-day[2]	200	NA	NA	NA	NA	NA
PTD[3]	450	7.6	7.3	6.0	7.6	3.6

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

Stations AMS-1 through AMS-5 started on April 28th and do not have 60 or 90 days of data available.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 24 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.55% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the month of May included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the May 2014 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Tuesday, April 08, 2014	7.5	7.5	7.5	7.5	7.5
Wednesday, April 09, 2014	7.0	6.5	14.0	7.0	6.5
Thursday, April 10, 2014	6.5	7.0	6.5	6.5	7.0
Monday, April 28, 2014	5.5	6.0	5.5	5.5	2.3
Tuesday, April 29, 2014	7.5	7.5	7.5	7.5	2.3
Wednesday, April 30, 2014	NA	NA	NA	NA	2.3
Thursday, May 01, 2014	7.0	7.0	7.5	7.5	2.3
Friday, May 02, 2014	7.5	7.5	7.5	8.5	0.8
Saturday, May 03, 2014					0.8
Sunday, May 04, 2014					0.8
Monday, May 05, 2014	7.5	7.5	7.0	8.0	2.3
Tuesday, May 06, 2014	10.0	9.0	9.5	9.0	2.3
Wednesday, May 07, 2014	8.5	8.0	7.5	8.0	2.3
Thursday, May 08, 2014	8.5	8.5	8.5	9.5	2.3
Friday, May 09, 2014	9.5	9.0	9.5	10.0	0.8
Saturday, May 10, 2014					0.8
Sunday, May 11, 2014					0.8
Monday, May 12, 2014	12.0	11.5	12.0	11.5	2.5
Tuesday, May 13, 2014	7.5	7.5	7.5	7.5	2.3
Wednesday, May 14, 2014	8.5	8.0	8.5	8.0	2.3
Thursday, May 15, 2014	6.5	6.5	6.5	7.0	2.4
Friday, May 16, 2014	10.0	10.0	2.3	10.5	11.5
Saturday, May 17, 2014			2.3		
Sunday, May 18, 2014			2.3		
Monday, May 19, 2014	6.0	5.5	9.0	6.0	6.0
Tuesday, May 20, 2014	5.5	5.5	2.4	5.5	5.5
Wednesday, May 21, 2014	5.5	5.5	2.4	5.5	6.0
Thursday, May 22, 2014	5.0	5.0	2.4	5.0	5.5
Friday, May 23, 2014	9.5	9.0	NA	9.5	9.5
Saturday, May 24, 2014			NA		
Sunday, May 25, 2014			NA		
Monday, May 26, 2014	NA	NA	NA	NA	NA
Tuesday, May 27, 2014	6.0	5.5	2.4	5.5	5.5
Wednesday, May 28, 2014	7.0	6.5	2.3	7.0	7.0
Thursday, May 29, 2014	6.5	5.5	NA	6.0	6.0
Friday, May 30, 2014	7.0	7.0	NA	7.0	7.0
Saturday, May 31, 2014			NA		

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Weekend samples were taken at AMS5 up until 5/16/14 when they were switched to AMS3. Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Tuesday, April 08, 2014	38.5	36.0	37.5	38.5	38.0
Wednesday, April 09, 2014	34.5	33.0	32.5	34.0	33.0
Thursday, April 10, 2014	32.5	33.5	32.5	33.0	34.0
Monday, April 28, 2014	28.0	28.5	28.5	27.0	31.0
Tuesday, April 29, 2014	38.0	37.0	37.5	37.0	23.0
Wednesday, April 30, 2014	NA	NA	NA	NA	11.5
Thursday, May 01, 2014	35.5	34.5	36.5	37.0	11.0
Friday, May 02, 2014	37.5	37.0	36.0	43.0	16.0
Saturday, May 03, 2014					16.0
Sunday, May 04, 2014					16.0
Monday, May 05, 2014	37.0	36.5	36.0	38.5	11.5
Tuesday, May 06, 2014	48.5	45.5	46.0	45.5	38.0
Wednesday, May 07, 2014	41.5	40.5	37.0	39.0	26.0
Thursday, May 08, 2014	43.0	41.5	42.0	47.0	37.0
Friday, May 09, 2014	46.5	45.5	46.0	50.0	39.0
Saturday, May 10, 2014					39.0
Sunday, May 11, 2014					39.0
Monday, May 12, 2014	60.0	55.0	60.0	55.0	110.0
Tuesday, May 13, 2014	38.0	37.5	38.0	38.0	45.0
Wednesday, May 14, 2014	41.0	40.0	40.5	110.0	54.0
Thursday, May 15, 2014	31.0	31.0	31.0	33.5	40.0
Friday, May 16, 2014	48.5	48.0	15.0	50.0	60.0
Saturday, May 17, 2014			15.0		
Sunday, May 18, 2014			15.0		
Monday, May 19, 2014	29.5	28.0	43.0	29.0	29.0
Tuesday, May 20, 2014	28.5	28.5	24.0	27.0	28.5
Wednesday, May 21, 2014	27.5	65.0	42.0	28.0	91.0
Thursday, May 22, 2014	25.5	25.0	53.0	25.5	100.0
Friday, May 23, 2014	48.0	45.5	NA	46.0	47.0
Saturday, May 24, 2014			NA		
Sunday, May 25, 2014			NA		
Monday, May 26, 2014	NA	NA	NA	NA	NA
Tuesday, May 27, 2014	29.0	26.0	41.0	60.0	26.0
Wednesday, May 28, 2014	35.0	33.0	11.5	33.5	34.0
Thursday, May 29, 2014	31.5	26.5	NA	30.5	30.5
Friday, May 30, 2014	88.0	34.0	NA	34.0	34.0
Saturday, May 31, 2014			NA		

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Weekend samples were taken at AMS5 up until 5/16/14 when they were switched to AMS3. Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

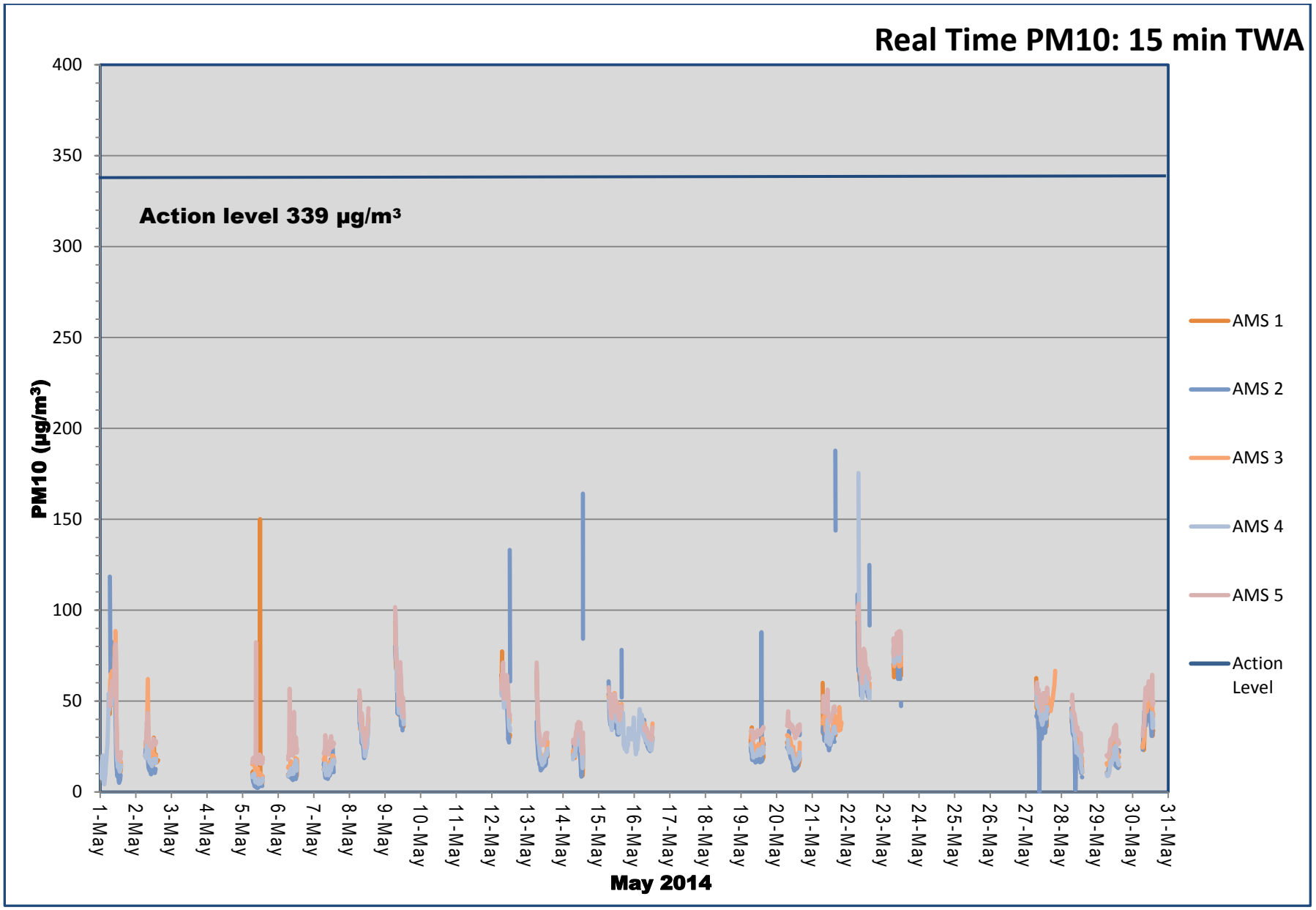


Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading (µg/m^3)	PID Reading (ppm)	Location
Tuesday, April 01, 2014	-	-	-	-
Wednesday, April 02, 2014	-	-	-	-
Thursday, April 03, 2014	-	-	-	-
Friday, April 04, 2014	-	-	-	-
Saturday, April 05, 2014	-	-	-	-
Sunday, April 06, 2014	-	-	-	-
Monday, April 07, 2014	-	-	-	-
Tuesday, April 08, 2014	9:30	12.0	0.0	DW Perimeter
Wednesday, April 09, 2014	10:21	15.0	0.0	DW Perimeter
Thursday, April 10, 2014	11:31	16.0	0.0	DW Perimeter
Friday, April 11, 2014	-	-	-	-
Saturday, April 12, 2014	-	-	-	-
Sunday, April 13, 2014	-	-	-	-
Monday, April 14, 2014	-	-	-	-
Tuesday, April 15, 2014	-	-	-	-
Wednesday, April 16, 2014	-	-	-	-
Thursday, April 17, 2014	-	-	-	-
Friday, April 18, 2014	-	-	-	-
Saturday, April 19, 2014	-	-	-	-
Sunday, April 20, 2014	-	-	-	-
Monday, April 21, 2014	-	-	-	-
Tuesday, April 22, 2014	-	-	-	-
Wednesday, April 23, 2014	-	-	-	-
Thursday, April 24, 2014	-	-	-	-
Friday, April 25, 2014	-	-	-	-
Saturday, April 26, 2014	-	-	-	-
Sunday, April 27, 2014	-	-	-	-
Monday, April 28, 2014	9:45	19.0	0.0	DW Perimeter
Tuesday, April 29, 2014	9:00	21.0	0.0	DW Perimeter
Wednesday, April 30, 2014	11:12	27.0	0.0	DW Perimeter
Thursday, May 01, 2014	10:00	18.0	5.0	DW Perimeter
Friday, May 02, 2014	10:40	19.0	0.0	DW Perimeter

Saturday, May 03, 2014	-	-	-	-
Sunday, May 04, 2014	-	-	-	-
Monday, May 05, 2014	8:07	5.0	0.0	DW Perimeter
Tuesday, May 06, 2014	9:10	3.0	0.0	DW Perimeter
Wednesday, May 07, 2014	10:00	22.0	0.2	DW Perimeter
Thursday, May 08, 2014	11:21	33.0	0.0	DW Perimeter
Friday, May 09, 2014	11:10	35.0	0.0	DW Perimeter
Saturday, May 10, 2014	-	-	-	-
Sunday, May 11, 2014	-	-	-	-
Monday, May 12, 2014	13:05	24.0	0.0	DW Perimeter
Tuesday, May 13, 2014	9:28	32.0	0.0	DW Perimeter
Wednesday, May 14, 2014	11:28	32.0	1.0	DW Perimeter
Thursday, May 15, 2014	10:44	45.0	0.5	DW Perimeter
Friday, May 16, 2014	12:00	16.0	1.4	DW Perimeter
Saturday, May 17, 2014	-	-	-	-
Sunday, May 18, 2014	-	-	-	-
Monday, May 19, 2014	11:45	12.0	0.6	DW Perimeter
Tuesday, May 20, 2014	11:00	28.0	1.0	DW Perimeter
Wednesday, May 21, 2014	13:30	32.0	0.4	DW Perimeter
Thursday, May 22, 2014	14:30	73.0	0.0	DW Perimeter
Friday, May 23, 2014	11:00	24.0	0.1	DW Perimeter
Saturday, May 24, 2014	-	-	-	-
Sunday, May 25, 2014	-	-	-	-
Monday, May 26, 2014	-	-	-	-
Tuesday, May 27, 2014	9:30	28.0	0.3	DW Perimeter
Wednesday, May 28, 2014	10:50	24.0	2.5	DW Perimeter
Thursday, May 29, 2014	9:45	19.0	0.5	DW Perimeter
Friday, May 30, 2014	11:17	25.0	0.0	DW Perimeter
Saturday, May 31, 2014	-	-	-	-

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site. Blank cells are days where no hand-held monitoring occurred.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

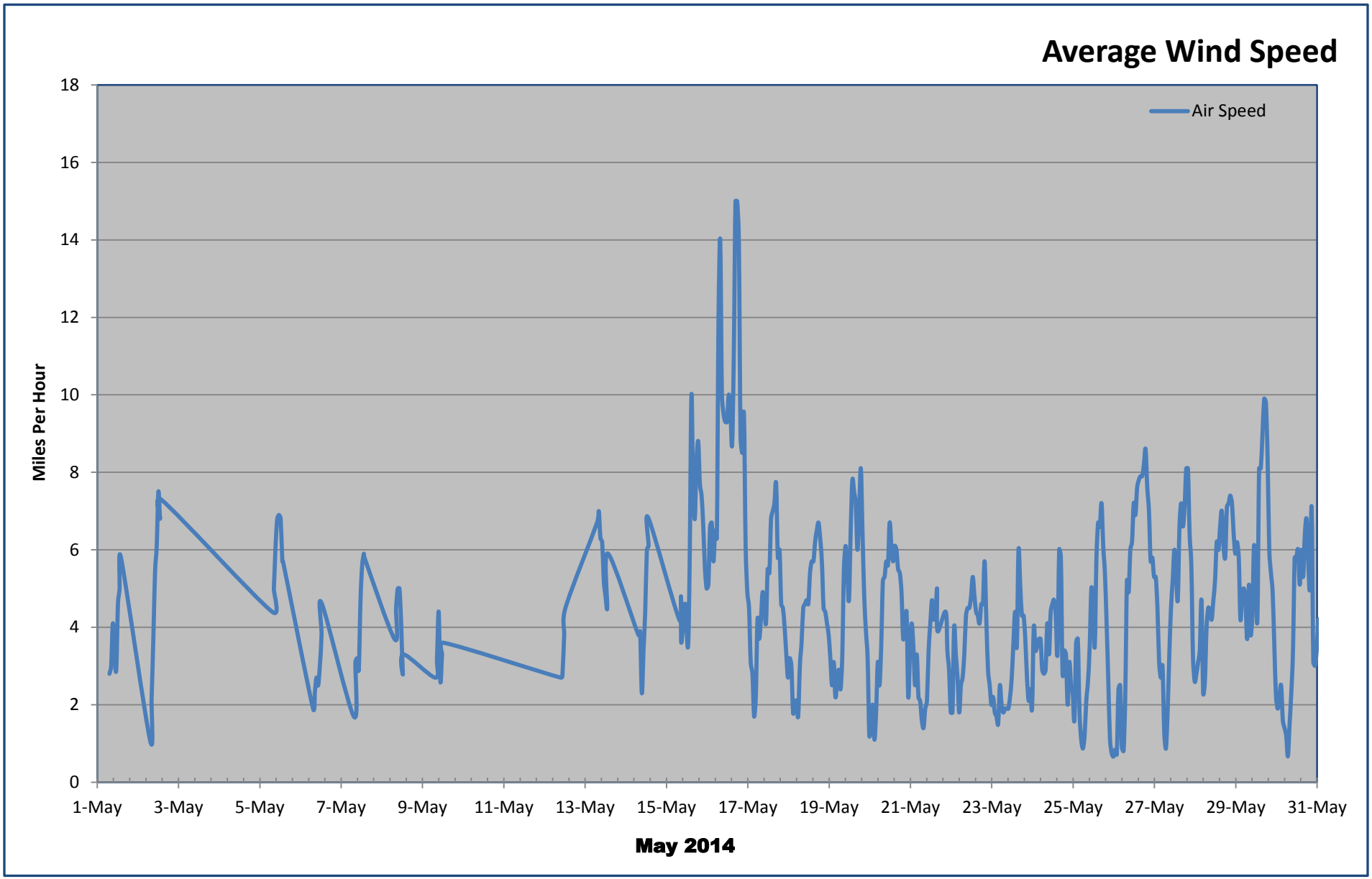


Figure A-3: Temperature

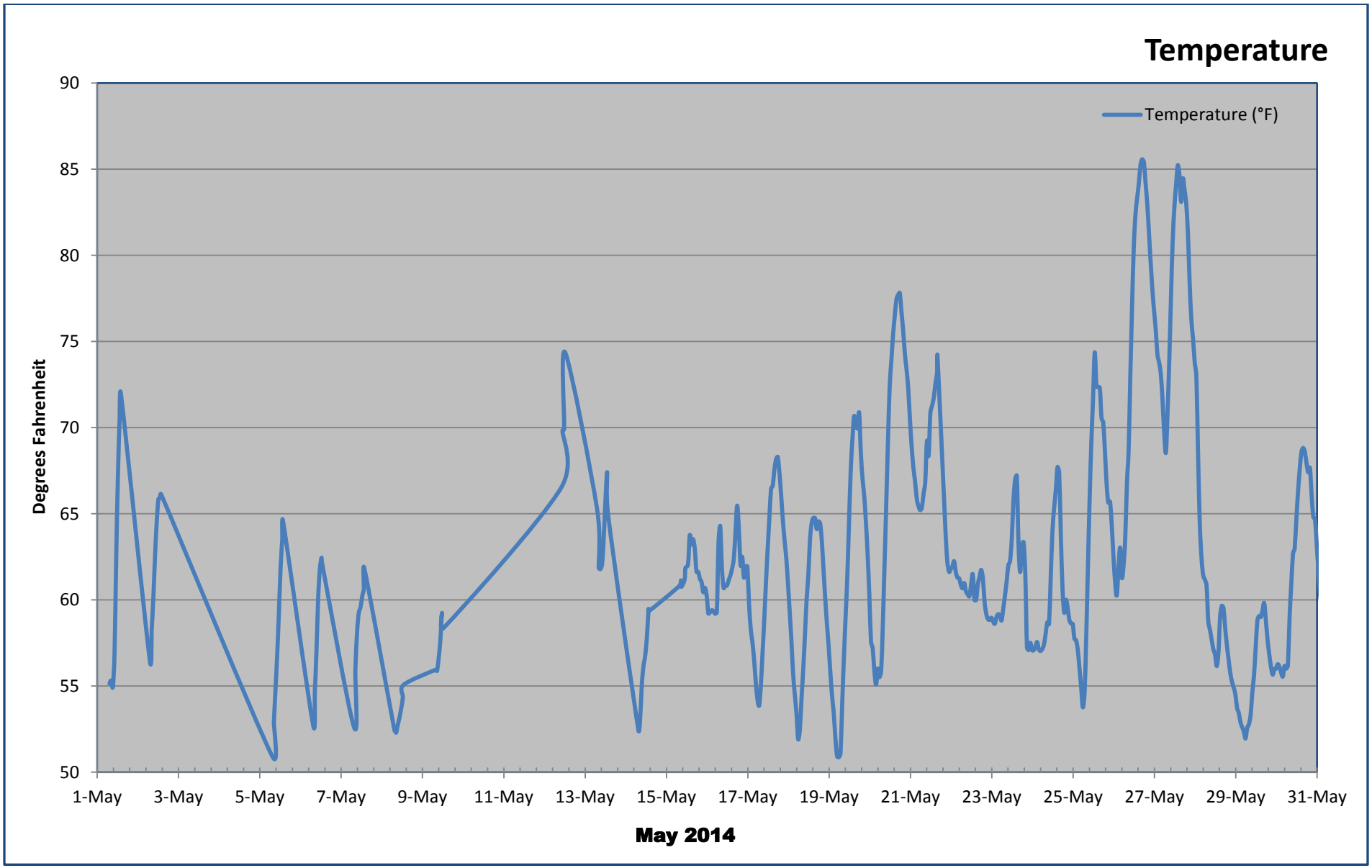


Figure A-4: Relative Humidity

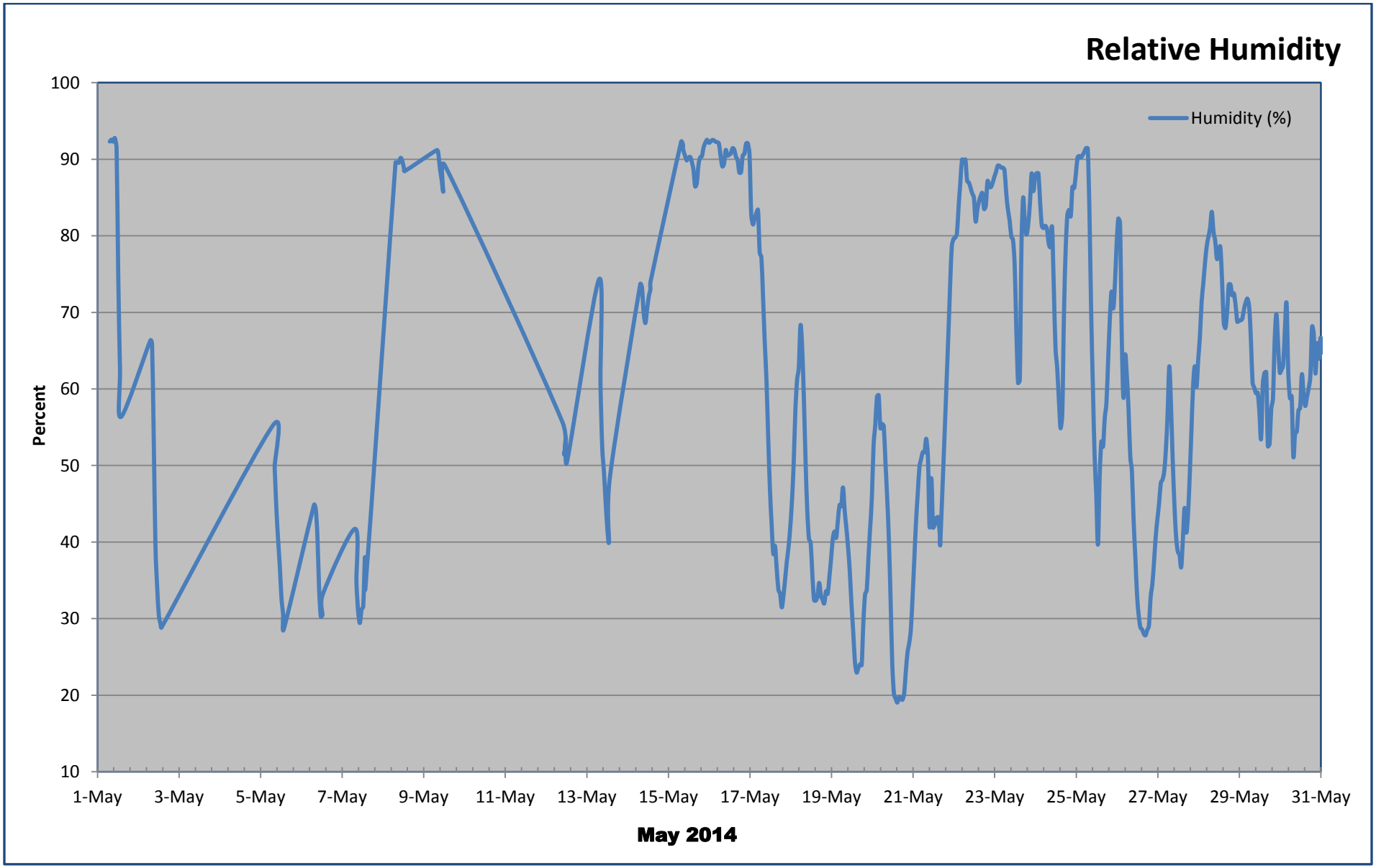


Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	23	23	20	23	24
Rate of Data Collection	95.8%	95.8%	83.3%	95.8%	100%
Number of Detected Samples[2]	0	0	1	0	0
% of Cr^{+6} Samples Greater than MDL	0.0%	0.0%	5.0%	0.0%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.020%	0.020%	0.017%	0.019%	0.012%
Maximum % Cr^{+6} in Dust[3]	0.021%	0.021%	0.021%	0.021%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
Program to Date	7.6	7.3	6.0	7.6	3.6
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	23	23	20	23	24
Rate of Data Collection	95.8%	95.8%	83.3%	95.8%	100%
Number of Detected Samples[2]	1	1	5	2	13
% Detection	4.3%	4.3%	25.0%	8.7%	54.2%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
Program to Date	39.8	37.8	35.2	41.9	38.7
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
Program to Date	29.8	29.4	33.5	29.2	38.9
All readings in µg/m3 – micrograms per cubic meter					

June 2014
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for June 2014 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

EMILCOTT

Submitted to:
PPG Industries, Inc.
4325 Rosanna Drive
Allison Park, PA

Submitted by:
Emilcott
190 Park Avenue
Morristown, NJ 07960

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: June 2014

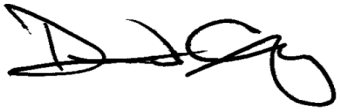
(This revised version replaces the original report dated July 20, 2014)

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: June 2014

(This revised version replaces the original report dated July 20, 2014)

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 2, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and June 30, 2014. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour to 10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and June 30, 2014 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	**AMS-1 ng/m^3**	**AMS-2 ng/m^3**	**AMS-3 ng/m^3**	**AMS-4 ng/m^3**	**AMS-5 ng/m^3**
30-day[2]	**45**	7.1	6.8	1.9	7.1	7.0
60-day[2]	**40**	7.4	7.1	3.9	7.4	5.1
90-day[2]	**35**	NA	NA	NA	NA	NA
PTD[3]		7.3	7.1	4.0	7.4	4.9

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

Stations AMS-1 through AMS-5 started on April 28th and do not have 90 days of data available.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 45 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.51% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the month of June included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the June 2014 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Sunday, June 01, 2014			NA		
Monday, June 02, 2014	5.0	5.0	NA	5.0	4.9
Tuesday, June 03, 2014	7.0	NA	2.3	7.0	7.0
Wednesday, June 04, 2014	7.0	6.5	2.4	6.5	6.5
Thursday, June 05, 2014	8.5	8.5	2.4	9.0	9.0
Friday, June 06, 2014	7.0	6.5	NA	7.0	7.0
Saturday, June 07, 2014			NA		
Sunday, June 08, 2014			NA		
Monday, June 09, 2014	8.5	8.0	2.3	8.5	8.5
Tuesday, June 10, 2014	6.5	6.5	2.4	6.5	6.5
Wednesday, June 11, 2014	7.0	7.0	2.4	7.0	7.0
Thursday, June 12, 2014	7.0	6.5	2.4	6.5	6.5
Friday, June 13, 2014	NA	NA	NA	NA	NA
Saturday, June 14, 2014			NA		
Sunday, June 15, 2014			NA		
Monday, June 16, 2014	6.5	6.5	2.3	7.0	7.0
Tuesday, June 17, 2014	7.0	6.5	2.3	6.5	6.5
Wednesday, June 18, 2014	6.5	6.5	2.4	7.0	6.5
Thursday, June 19, 2014	7.0	7.0	2.4	7.0	7.0
Friday, June 20, 2014	8.5	8.0	0.8	8.0	8.0
Saturday, June 21, 2014			0.8		
Sunday, June 22, 2014			0.8		
Monday, June 23, 2014	NA	NA	NA	NA	NA
Tuesday, June 24, 2014	NA	NA	2.3	NA	NA
Wednesday, June 25, 2014	7.0	6.5	2.3	7.0	6.5
Thursday, June 26, 2014	7.5	7.0	2.4	7.5	7.5
Friday, June 27, 2014	6.5	6.5	0.8	7.0	6.5
Saturday, June 28, 2014			0.8		
Sunday, June 29, 2014			0.8		
Monday, June 30, 2014	7.0	6..5	2.3	7.0	7.0

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Sunday, June 01, 2014			NA		
Monday, June 02, 2014	25.0	24.5	NA	24.5	24.0
Tuesday, June 03, 2014	85.0	NA	43.0	34.5	33.5
Wednesday, June 04, 2014	33.5	31.5	46.0	32.0	260.0
Thursday, June 05, 2014	41.0	42.5	11.5	43.5	43.5
Friday, June 06, 2014	34.0	33.0	NA	34.5	34.5
Saturday, June 07, 2014			NA		
Sunday, June 08, 2014			NA		
Monday, June 09, 2014	41.5	40.0	48.0	41.0	42.0
Tuesday, June 10, 2014	140.0	31.5	11.5	31.5	31.5
Wednesday, June 11, 2014	35.5	34.0	12.0	35.0	34.5
Thursday, June 12, 2014	75.0	33.0	12.0	33.0	120.0
Friday, June 13, 2014	NA	NA	NA	NA	NA
Saturday, June 14, 2014			NA		
Sunday, June 15, 2014			NA		
Monday, June 16, 2014	32.5	32.0	11.0	33.5	33.5
Tuesday, June 17, 2014	33.5	32.5	11.5	33.0	33.0
Wednesday, June 18, 2014	33.0	32.0	11.5	33.0	33.0
Thursday, June 19, 2014	34.0	33.5	11.5	34.5	110.0
Friday, June 20, 2014	41.0	39.5	3.9	40.5	40.5
Saturday, June 21, 2014			3.9		
Sunday, June 22, 2014			3.9		
Monday, June 23, 2014	NA	NA	NA	NA	NA
Tuesday, June 24, 2014	NA	NA	11.5	NA	NA
Wednesday, June 25, 2014	33.5	32.5	11.5	34.0	33.0
Thursday, June 26, 2014	37.0	35.5	11.5	36.5	36.0
Friday, June 27, 2014	33.0	33.0	3.8	34.0	120.0
Saturday, June 28, 2014			3.8		
Sunday, June 29, 2014			3.8		
Monday, June 30, 2014	33.5	33.0	24.0	33.5	130.0

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

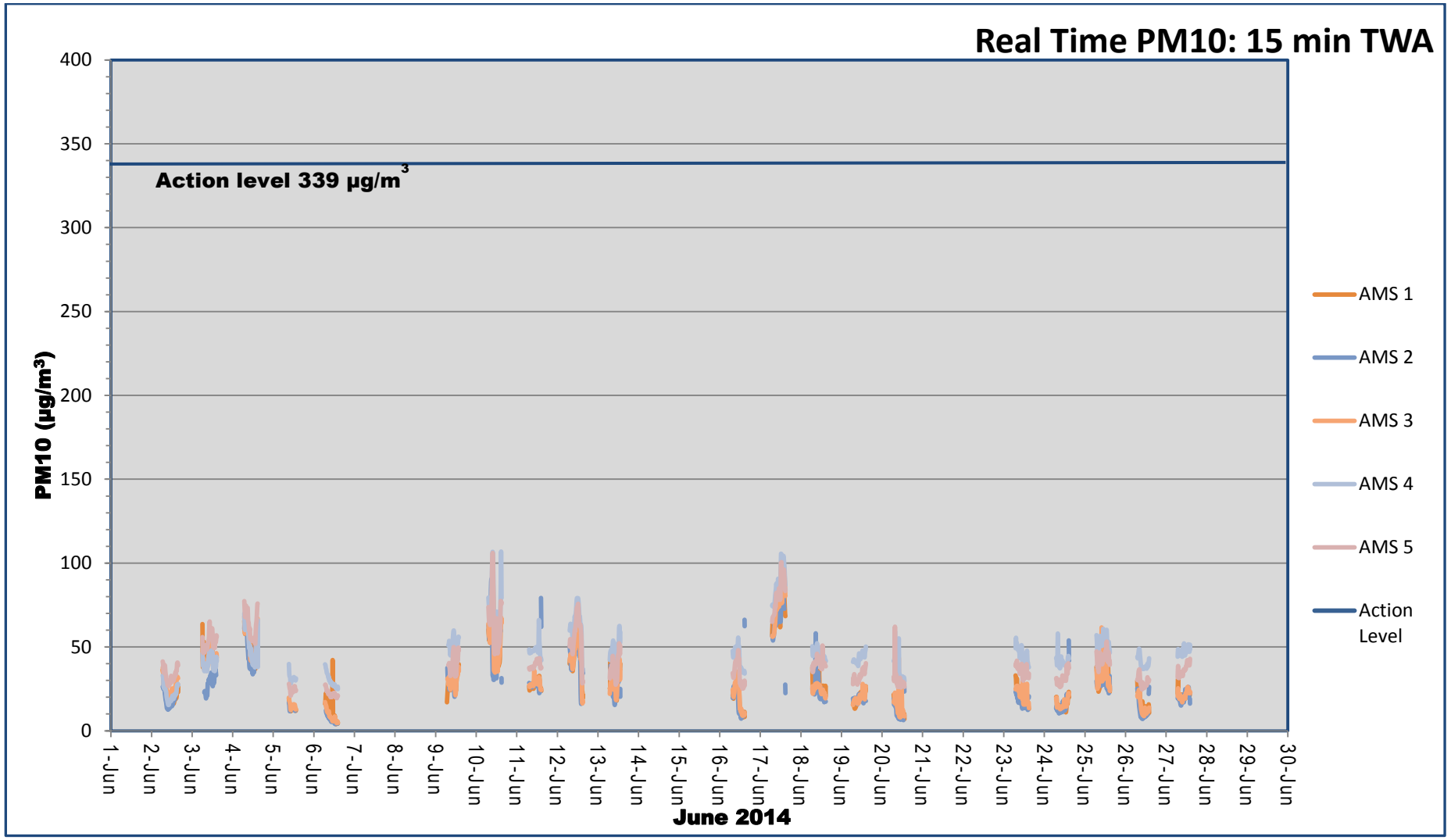


Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading ($\mu g/m^3$)	PID Reading (ppm)	Location
Sunday, June 01, 2014	-	-	-	-
Monday, June 02, 2014	9:00	30.0	0.0	DW Perimeter
Tuesday, June 03, 2014	11:50	63.0	0.0	DW Perimeter
Wednesday, June 04, 2014	11:30	52.0	0.0	DW Perimeter
Thursday, June 05, 2014	NA	NA	NA	DW Perimeter
Friday, June 06, 2014	13:00	34.0	0.0	DW Perimeter
Saturday, June 07, 2014	-	-	-	-
Sunday, June 08, 2014	-	-	-	-
Monday, June 09, 2014	12:30	33.0	0.0	DW Perimeter
Tuesday, June 10, 2014	13:00	38.0	0.0	DW Perimeter
Wednesday, June 11, 2014	9:30	30.0	0.0	DW Perimeter
Thursday, June 12, 2014	8:00	35.0	0.0	DW Perimeter
Friday, June 13, 2014	10:50	20.0	0.2	DW Perimeter
Saturday, June 14, 2014	-	-	-	-
Sunday, June 15, 2014	-	-	-	-
Monday, June 16, 2014	12:45	37.0	0.0	DW Perimeter
Tuesday, June 17, 2014	13:00	79.0	0.9	DW Perimeter
Wednesday, June 18, 2014	9:25	39.0	0.0	DW Perimeter
Thursday, June 19, 2014	12:55	44.0	0.0	DW Perimeter
Friday, June 20, 2014	12:00	22.0	0.0	DW Perimeter
Saturday, June 21, 2014	-	-	-	-
Sunday, June 22, 2014	-	-	-	-
Monday, June 23, 2014	10:45	56.0	0.0	DW Perimeter
Tuesday, June 24, 2014	9:55	21.0	0.0	DW Perimeter
Wednesday, June 25, 2014	13:10	36.0	0.0	DW Perimeter
Thursday, June 26, 2014	13:20	31.0	0.0	DW Perimeter
Friday, June 27, 2014	12:40	36.0	0.0	DW Perimeter
Saturday, June 28, 2014	-	-	-	-
Sunday, June 29, 2014	-	-	-	-
Monday, June 30, 2014	13:00	29.0	0.0	DW Perimeter

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred.

DW Perimeter denotes down-wind perimeter.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

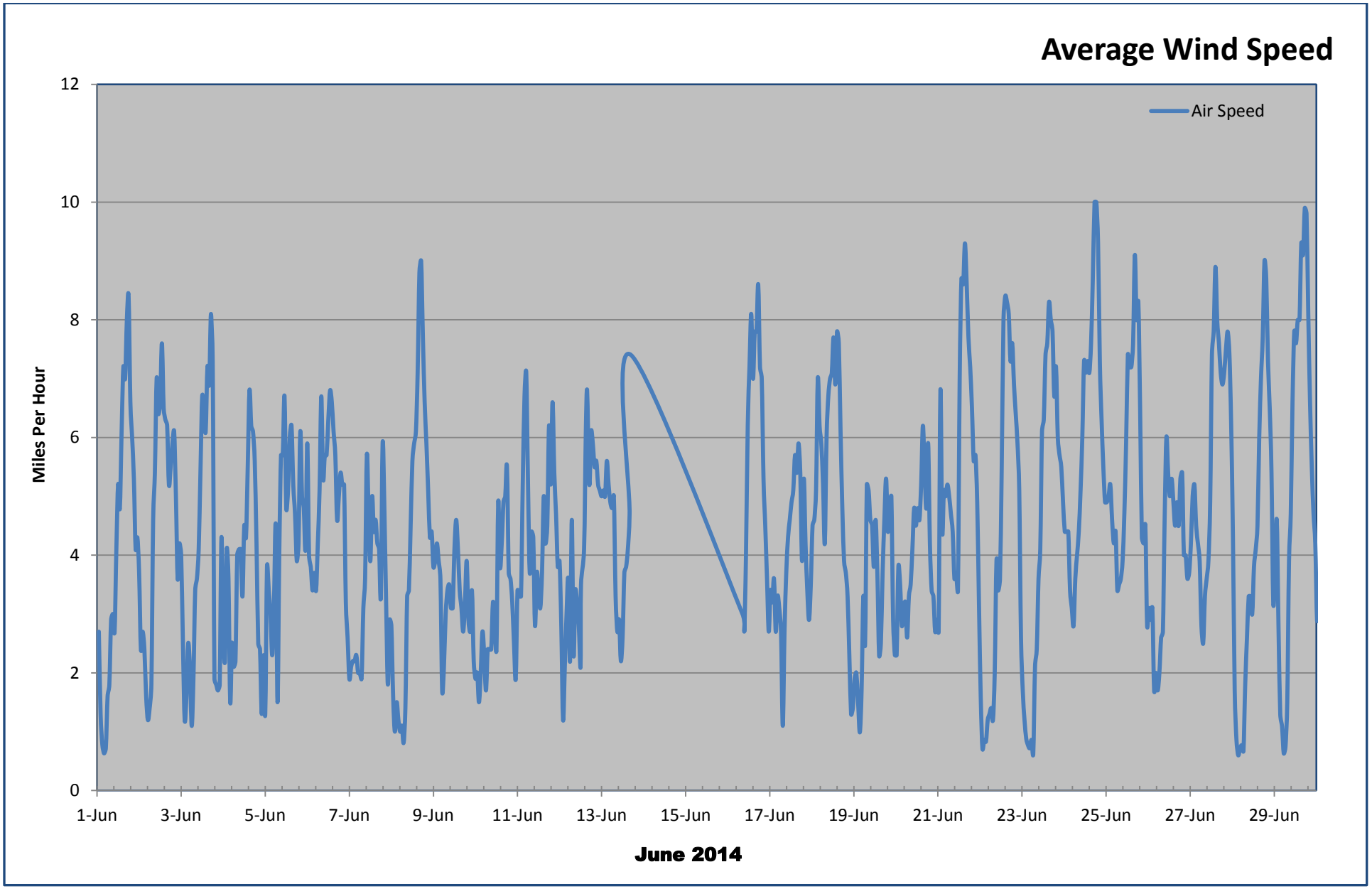


Figure A-3: Temperature

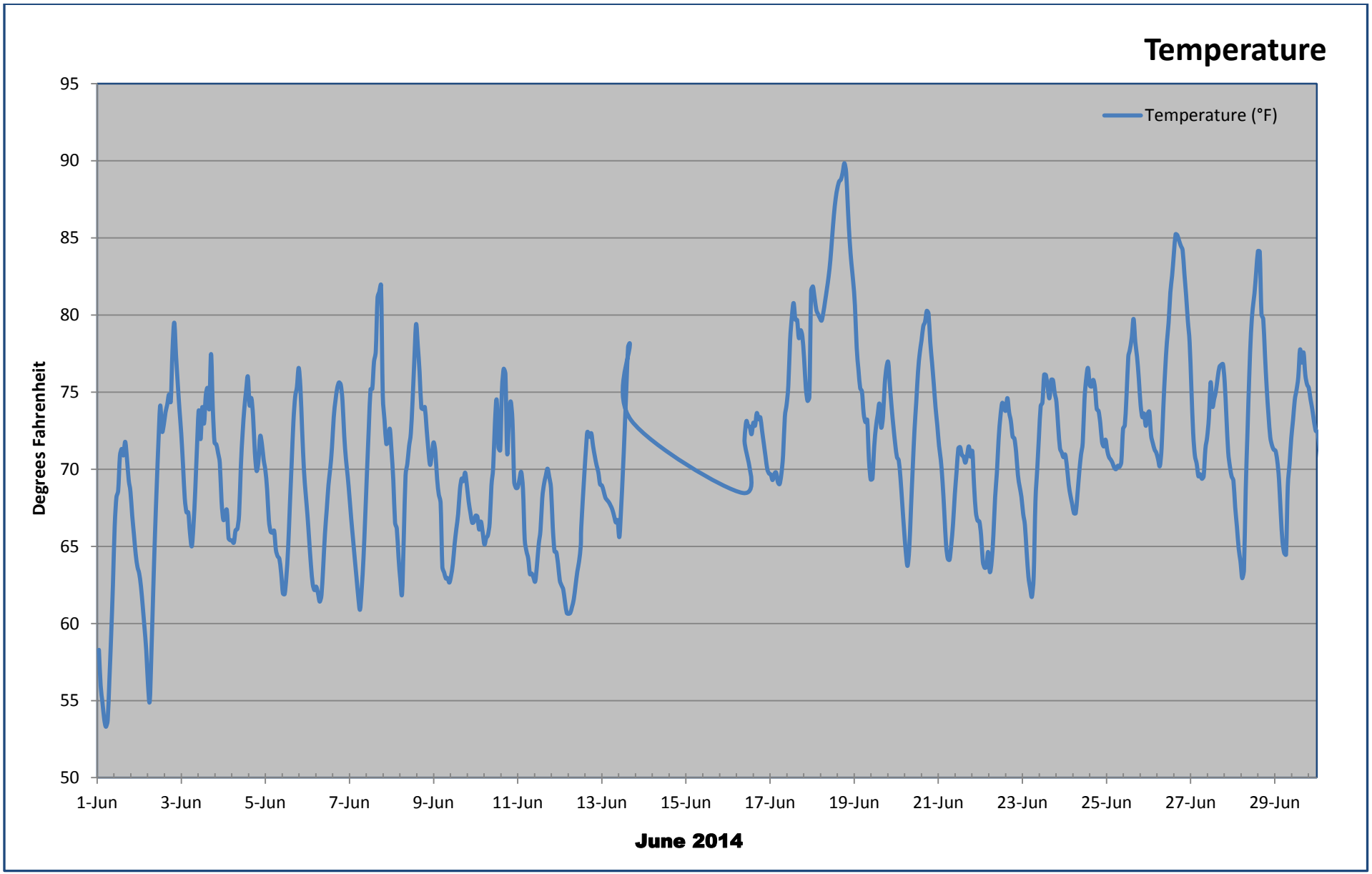


Figure A-4: Relative Humidity

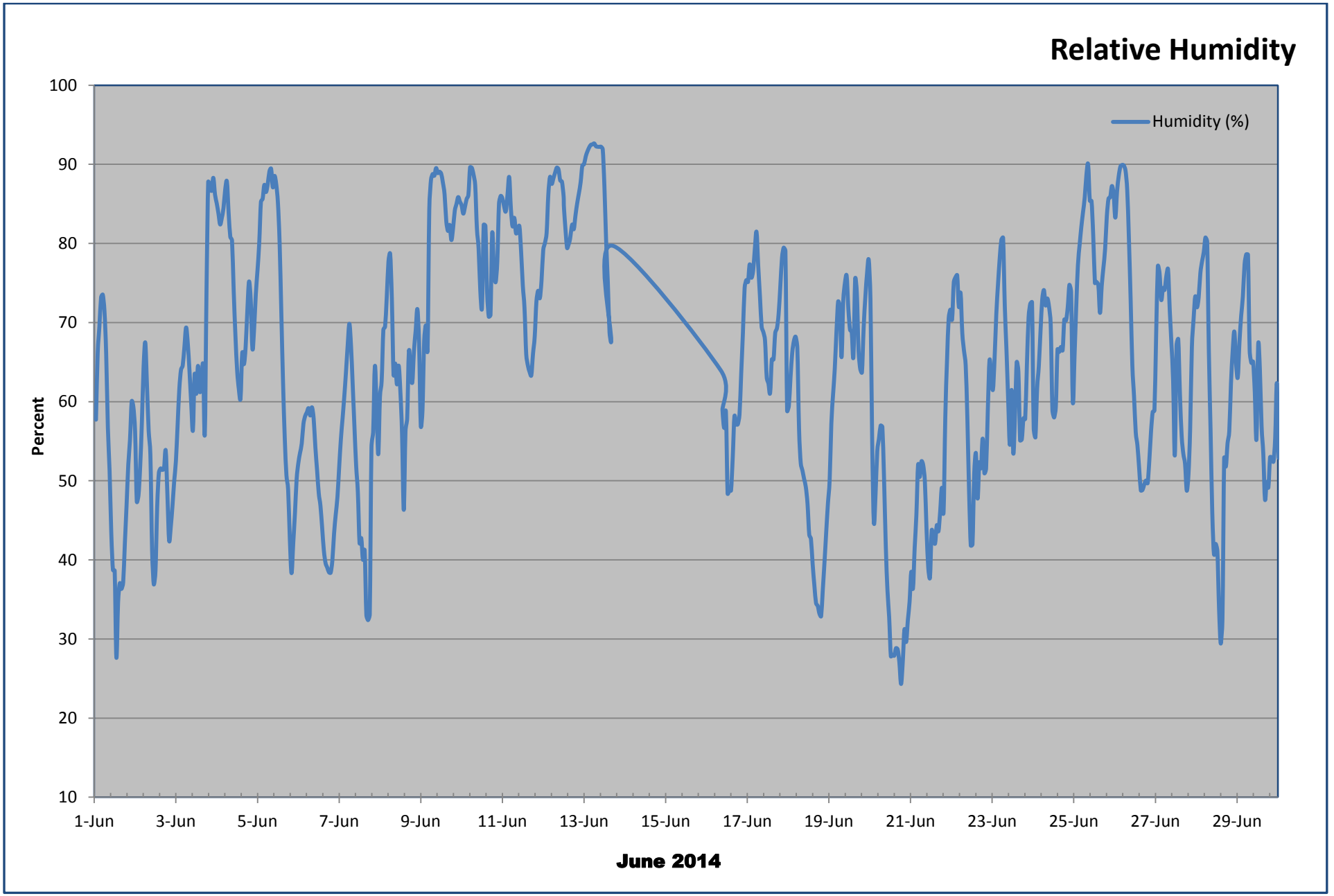


Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[2]	41	40	37	41	41
Rate of Data Collection	91.1%	88.9%	82.2%	91.1%	91.1%
Number of Detected Samples[3]	0	0	1	0	0
% of Cr^{+6} Samples Greater than MDL	0.0%	0.0%	2.7%	0.0%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust	0.018%	0.020%	0.018%	0.020%	0.016%
Maximum % Cr^{+6} in Dust	0.021%	0.021%	0.021%	0.021%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
Program to Date	7.3	7.1	4.0	7.4	4.9
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	41	40	37	41	41
Rate of Data Collection	91.1%	88.9%	82.2%	91.1%	91.1%
Number of Detected Samples[2]	4	1	9	2	18
% Detection	9.8%	2.5%	24.3%	4.9%	43.9%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
Program to Date	42.4	36.1	25.2	38.7	49.5
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
Program to Date	30.3	29.2	32.3	41.7	45.0
All readings in µg/m3 – micrograms per cubic meter					

July 2014
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for July 2014 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

EMILCOTT

Submitted to:
PPG Industries, Inc.
4325 Rosanna Drive
Allison Park, PA

Submitted by:
Emilcott
190 Park Avenue
Morristown, NJ 07960

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: July 2014

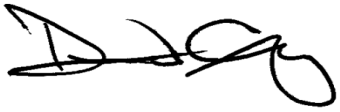
(This revised version replaces the original report dated August 20, 2014)

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: July 2014

(This revised version replaces the original report dated August 20, 2014)

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 2, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and July 31, 2014. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour to 10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and July 31, 2014 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	AMS-1 ng/m^3	AMS-2 ng/m^3	AMS-3 ng/m^3	AMS-4 ng/m^3	AMS-5 ng/m^3
30-day[2]	**45**	7.3	7.2	1.6	7.2	7.2
60-day[2]	**40**	7.2	7.0	1.7	7.1	7.1
90-day[2]	**35**	7.4	7.2	2.9	7.3	5.9
PTD[3]		7.3	7.1	3.0	7.3	5.7

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 67 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.50% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the month of July included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the July 2014 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Tuesday, July 01, 2014	7.0	7.0	2.4	6.5	6.5
Wednesday, July 02, 2014	6.5	6.5	2.4	6.5	6.5
Thursday, July 03, 2014	9.0	9.0	0.6	9.5	9.5
Friday, July 04, 2014			0.6		
Saturday, July 05, 2014			0.6		
Sunday, July 06, 2014			0.6		
Monday, July 07, 2014	7.5	7.5	2.4	7.5	8.0
Tuesday, July 08, 2014	7.0	7.0	2.4	7.0	7.0
Wednesday, July 09, 2014	7.0	7.0	2.4	6.5	6.5
Thursday, July 10, 2014	7.0	7.0	2.4	7.0	7.0
Friday, July 11, 2014	7.0	7.0	0.8	7.0	7.0
Saturday, July 12, 2014			0.8		
Sunday, July 13, 2014			0.8		
Monday, July 14, 2014	7.0	7.0	2.4	6.5	6.5
Tuesday, July 15, 2014	7.5	7.0	2.4	6.5	6.5
Wednesday, July 16, 2014	7.0	7.0	2.4	7.0	6.5
Thursday, July 17, 2014	7.0	6.5	2.3	6.5	6.5
Friday, July 18, 2014	9.0	9.0	0.8	9.0	9.0
Saturday, July 19, 2014			0.8		
Sunday, July 20, 2014			0.8		
Monday, July 21, 2014	7.0	7.0	2.3	7.5	7.5
Tuesday, July 22, 2014	8.0	7.5	2.3	7.5	7.5
Wednesday, July 23, 2014	7.5	7.0	2.3	7.5	8.0
Thursday, July 24, 2014	7.0	6.5	2.3	6.5	6.5
Friday, July 25, 2014	8.5	8.5	0.8	7.5	7.5
Saturday, July 26, 2014			0.8		
Sunday, July 27, 2014			0.8		
Monday, July 28, 2014	7.0	7.0	2.3	7.0	7.0
Tuesday, July 29, 2014	7.0	7.0	2.3	7.0	7.0
Wednesday, July 30, 2014	6.5	6.5	2.3	7.0	6.5
Thursday, July 31, 2014	7.0	7.0	2.3	7.0	7.0

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Tuesday, July 01, 2014	34.5	33.5	11.5	32.5	32.5
Wednesday, July 02, 2014	33.0	32.0	33.0	73.0	78.0
Thursday, July 03, 2014	45.5	45.0	2.9	46.0	46.0
Friday, July 04, 2014			2.9		
Saturday, July 05, 2014			2.9		
Sunday, July 06, 2014			2.9		
Monday, July 07, 2014	38.0	38.0	30.0	38.0	38.5
Tuesday, July 08, 2014	35.0	34.5	11.5	35.0	34.5
Wednesday, July 09, 2014	34.0	33.5	11.5	32.0	32.5
Thursday, July 10, 2014	35.0	34.5	11.5	34.5	34.5
Friday, July 11, 2014	35.0	34.5	3.9	34.5	35.0
Saturday, July 12, 2014			3.9		
Sunday, July 13, 2014			3.9		
Monday, July 14, 2014	34.5	34.0	29.0	33.0	33.0
Tuesday, July 15, 2014	36.0	34.0	38.0	33.0	140.0
Wednesday, July 16, 2014	35.5	34.5	11.5	33.5	75.0
Thursday, July 17, 2014	33.5	32.0	11.5	32.5	33.0
Friday, July 18, 2014	44.5	45.0	3.8	45.5	45.0
Saturday, July 19, 2014			3.8		
Sunday, July 20, 2014			3.8		
Monday, July 21, 2014	35.0	33.5	32.0	36.0	76.0
Tuesday, July 22, 2014	77.0	36.5	11.5	36.5	36.5
Wednesday, July 23, 2014	36.5	35.0	11.5	38.0	38.0
Thursday, July 24, 2014	34.0	33.0	11.5	33.0	33.0
Friday, July 25, 2014	41.5	40.5	3.8	37.5	37.5
Saturday, July 26, 2014			3.8		
Sunday, July 27, 2014			3.8		
Monday, July 28, 2014	35.0	35.0	29.0	35.5	35.0
Tuesday, July 29, 2014	34.0	34.0	11.5	34.0	33.5
Wednesday, July 30, 2014	33.0	33.0	11.5	33.5	33.0
Thursday, July 31, 2014	34.5	34.0	11.0	35.0	35.0

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

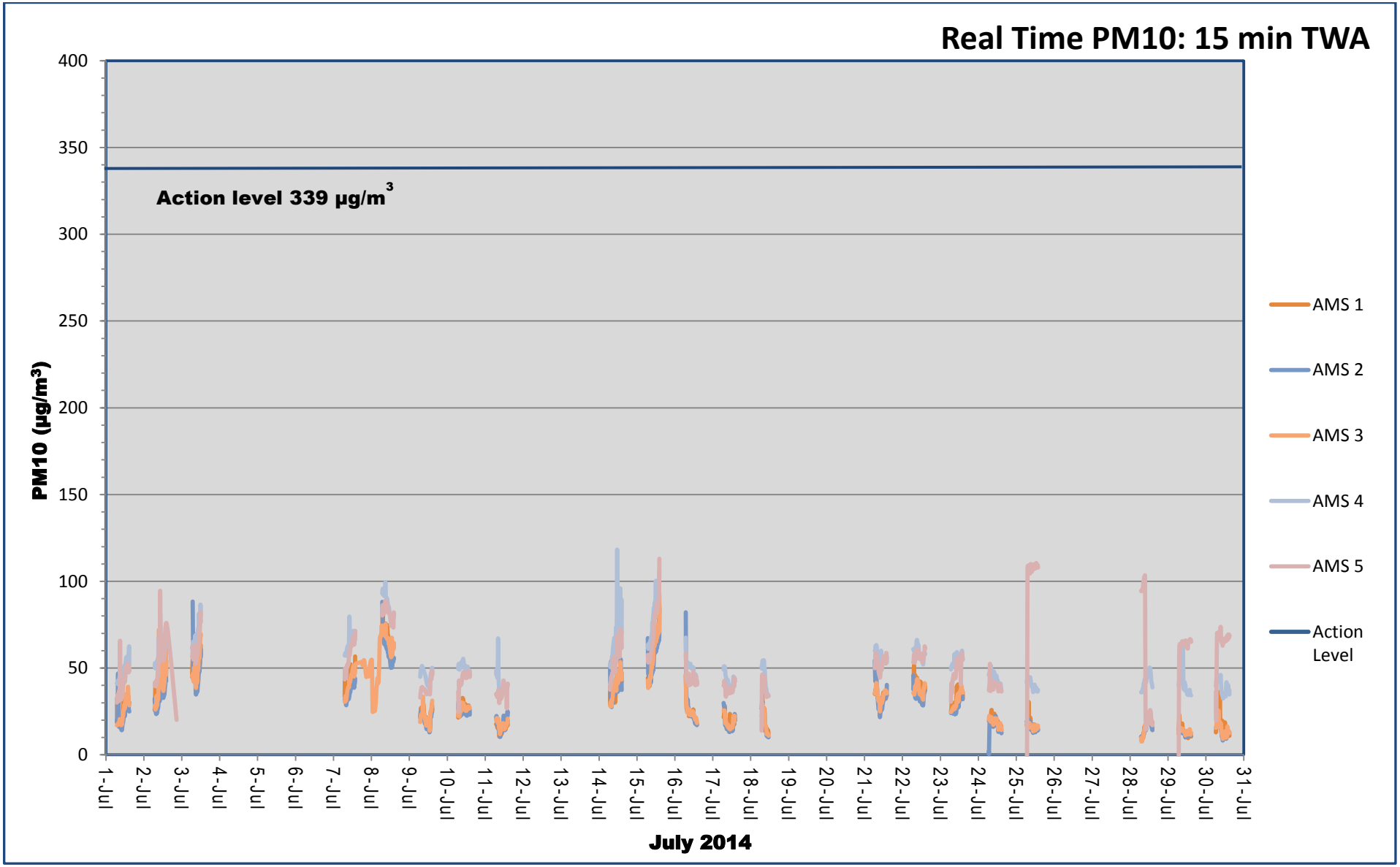

Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading (µg/m^3)	PID Reading (ppm)	Location
Tuesday, July 01, 2014	12:25	22.0	0.0	DW Perimeter
Wednesday, July 02, 2014	13:10	29.0	0.4	DW Perimeter
Thursday, July 03, 2014	8:25	70.0	0.1	DW Perimeter
Friday, July 04, 2014	NA	NA	NA	NA
Saturday, July 05, 2014	-	-	-	-
Sunday, July 06, 2014	-	-	-	-
Monday, July 07, 2014	12:50	40.0	0.1	DW Perimeter
Tuesday, July 08, 2014	9:30	61.0	0.0	DW Perimeter
Wednesday, July 09, 2014	9:00	31.0	0.0	DW Perimeter
Thursday, July 10, 2014	12:40	25.0	0.2	DW Perimeter
Friday, July 11, 2014	8:45	26.0	0.2	DW Perimeter
Saturday, July 12, 2014	-	-	-	-
Sunday, July 13, 2014	-	-	-	-
Monday, July 14, 2014	13:00	20.0	0.0	DW Perimeter
Tuesday, July 15, 2014	13:40	81.0	0.1	DW Perimeter
Wednesday, July 16, 2014	13:10	31.0	0.2	DW Perimeter
Thursday, July 17, 2014	12:50	31.0	0.6	DW Perimeter
Friday, July 18, 2014	8:40	28.0	0.5	DW Perimeter
Saturday, July 19, 2014	-	-	-	-
Sunday, July 20, 2014	-	-	-	-
Monday, July 21, 2014	10:15	32.0	0.0	DW Perimeter
Tuesday, July 22, 2014	12:45	63.0	0.0	DW Perimeter
Wednesday, July 23, 2014	7:25	54.0	0.0	DW Perimeter
Thursday, July 24, 2014	13:10	47.0	0.0	DW Perimeter
Friday, July 25, 2014	13:30	23.0	0.0	DW Perimeter
Saturday, July 26, 2014	-	-	-	-
Sunday, July 27, 2014	-	-	-	-
Monday, July 28, 2014	13:00	40.0	0.0	DW Perimeter
Tuesday, July 29, 2014	8:30	47.0	0.0	DW Perimeter
Wednesday, July 30, 2014	10:13	52.0	0.0	DW Perimeter
Thursday, July 31, 2014	10:00	43.0	0.0	DW Perimeter

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred.

DW Perimeter denotes down-wind perimeter.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

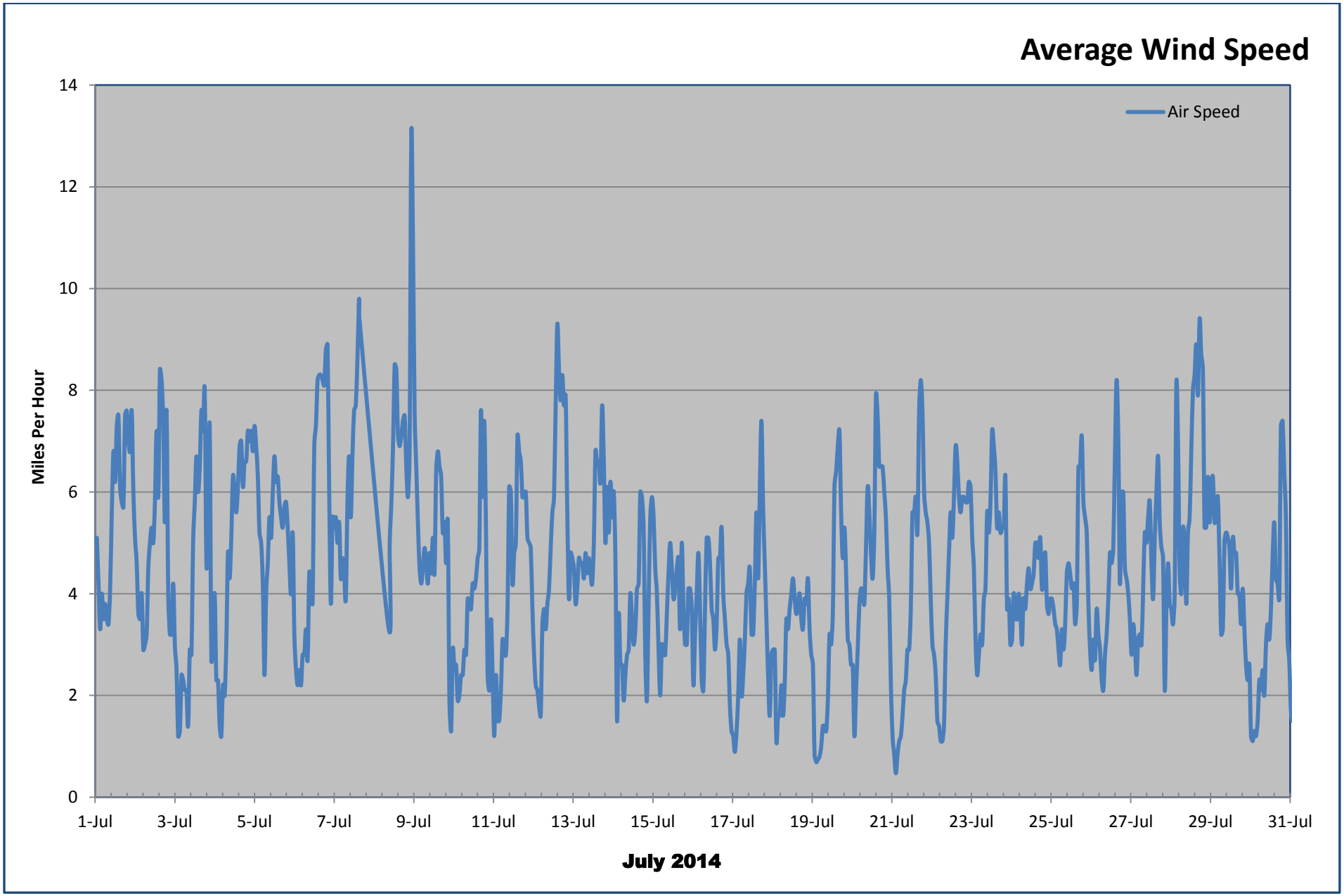

Figure A-3: Temperature

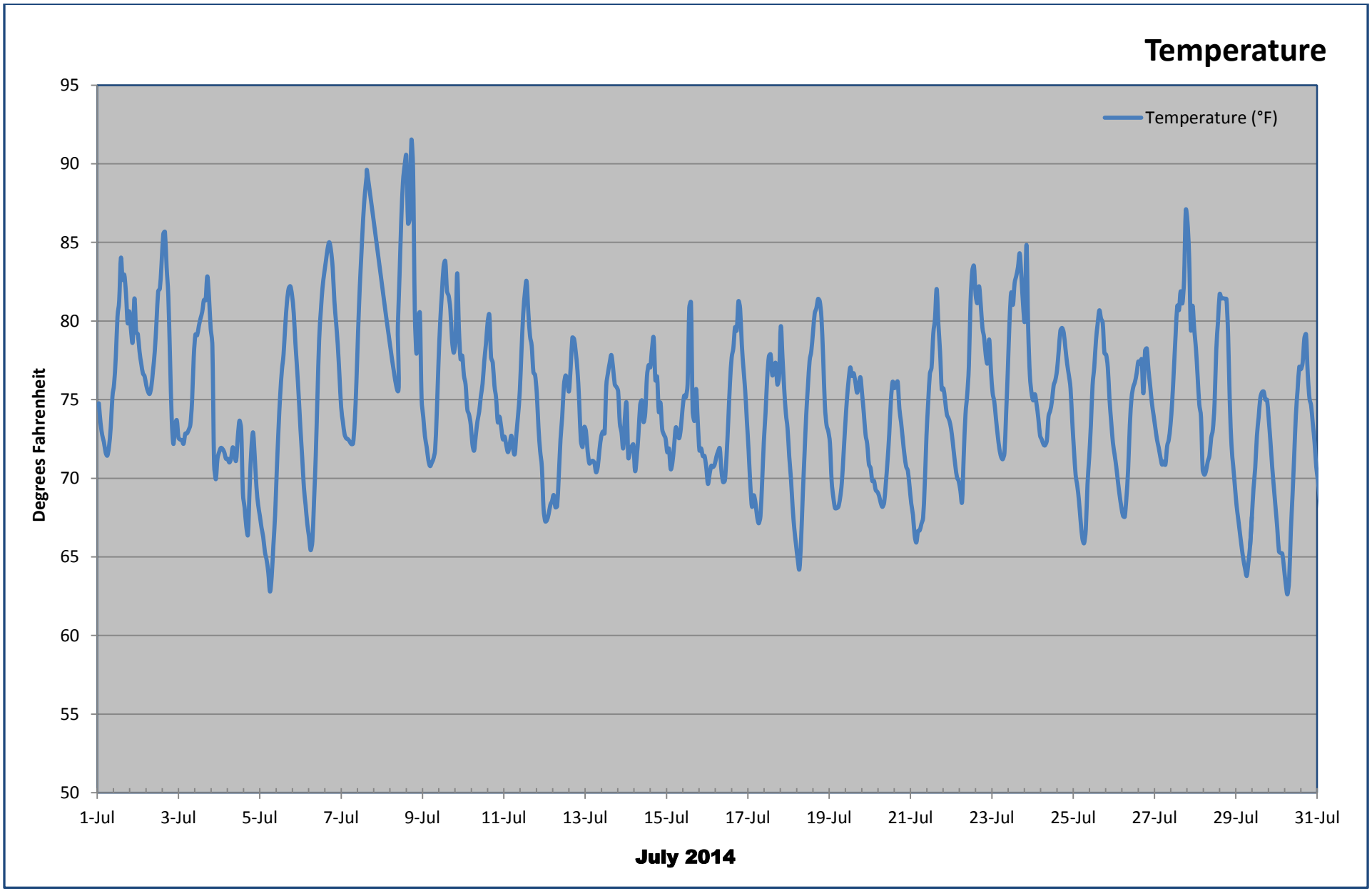

Figure A-4: Relative Humidity

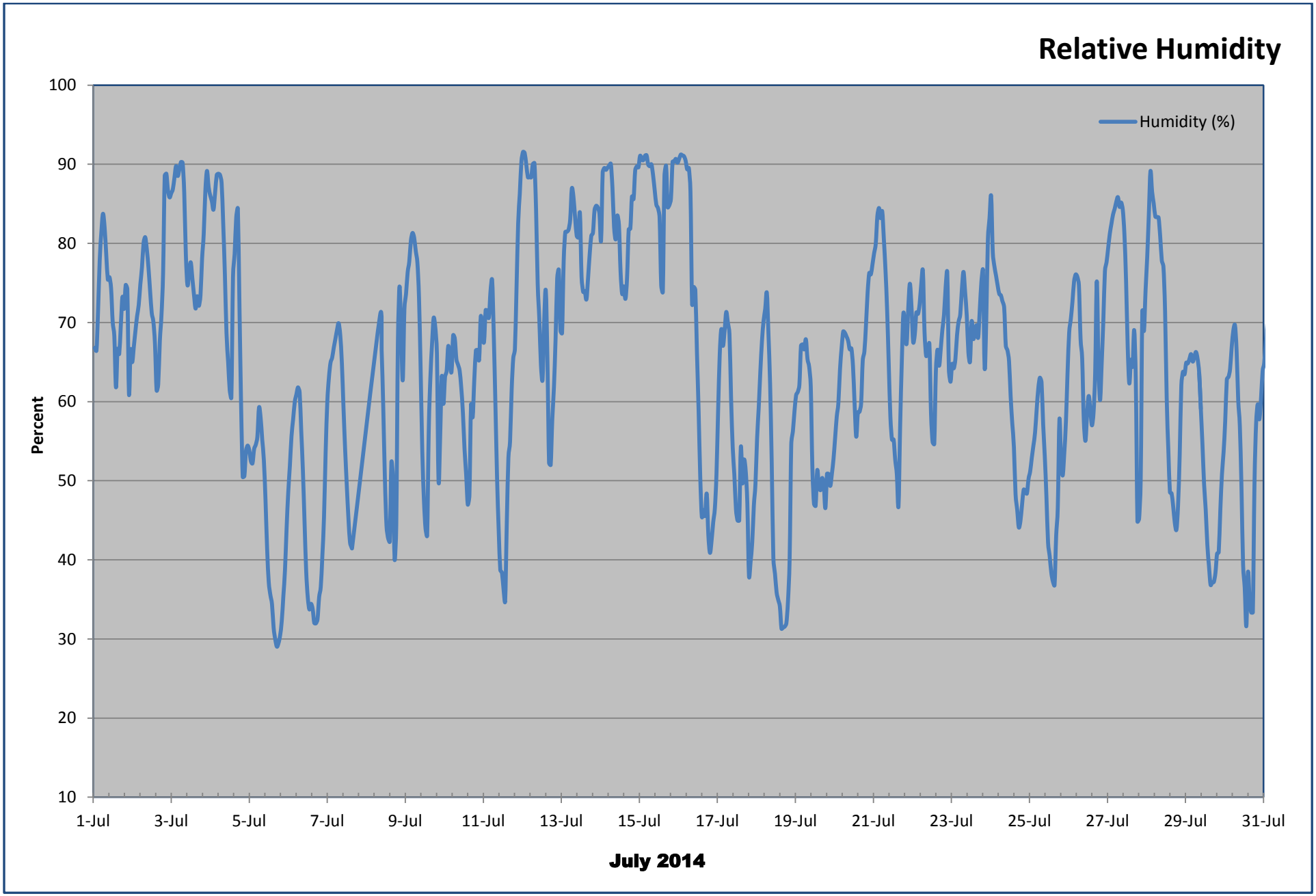

Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	63	62	59	63	63
Rate of Data Collection	94.0%	92.5%	88.0%	94.0%	94.0%
Number of Detected Samples[2]	0	0	1	0	0
% of Cr^{+6} Samples Greater than MDL	0.0%	0.0%	1.7%	0.0%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.020%	0.020%	0.018%	0.020%	0.018%
Maximum % Cr^{+6} in Dust[3]	0.021%	0.021%	0.021%	0.021%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
July	7.3	7.2	1.6	7.2	7.2
Program to Date	7.3	7.1	3.0	7.3	5.7
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	63	62	59	63	63
Rate of Data Collection	94.0%	92.5%	88.0%	94.0%	94.0%
Number of Detected Samples[2]	5	1	15	3	22
% Detection	7.9%	1.6%	25.4%	4.7%	34.9%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
July	37.9	35.4	12.1	37.4	46.1
Program to Date	40.8	35.8	19.7	38.2	48.4
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
July	30.2	28.4	31.5	52.2	53.9
Program to Date	28.5	27.5	30.2	34.8	41.4
All readings in µg/m3 – micrograms per cubic meter					

August 2014
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for August 2014 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

EMILCOTT

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Allison Park, PA

Submitted by:
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Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: August 2014

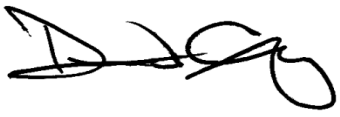
(This revised version replaces the original report dated September 16, 2014)

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: August 2014

(This revised version replaces the original report dated September 16, 2014)

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 2, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and August 31, 2014. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour to 10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and August 31, 2014 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	AMS-1 ng/m^3	AMS-2 ng/m^3	AMS-3 ng/m^3	AMS-4 ng/m^3	AMS-5 ng/m^3
30-day[2]	**45**	7.0	6.9	1.5	6.6	6.7
60-day[2]	**40**	7.1	7.0	1.6	6.9	6.9
90-day[2]	**35**	7.1	7.0	1.7	7.0	6.9
PTD[3]		7.2	7.1	2.6	7.1	5.9

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 88 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.48% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the month of August included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the August 2014 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Friday, August 01, 2014	8.0	8.0	0.8	8.0	8.0
Saturday, August 02, 2014			0.8		
Sunday, August 03, 2014			0.8		
Monday, August 04, 2014	7.5	7.5	2.4	7.0	7.0
Tuesday, August 05, 2014	7.0	7.0	2.4	6.5	7.0
Wednesday, August 06, 2014	7.0	7.0	2.4	6.5	7.0
Thursday, August 07, 2014	7.0	7.0	2.4	7.0	7.0
Friday, August 08, 2014	8.0	7.5	0.8	7.5	8.0
Saturday, August 09, 2014			0.8		
Sunday, August 10, 2014			0.8		
Monday, August 11, 2014	7.0	7.0	2.4	7.5	8.0
Tuesday, August 12, 2014	7.0	7.0	2.4	7.0	6.5
Wednesday, August 13, 2014	6.5	6.5	2.3	7.0	7.0
Thursday, August 14, 2014	7.0	6.5	2.2	7.0	6.5
Friday, August 15, 2014	7.5	7.5	0.8	7.0	7.5
Saturday, August 16, 2014			0.8		
Sunday, August 17, 2014			0.8		
Monday, August 18, 2014	6.0	6.0	2.1	5.5	6.0
Tuesday, August 19, 2014	6.0	5.5	2.0	5.5	5.5
Wednesday, August 20, 2014	6.0	6.0	2.0	5.5	5.5
Thursday, August 21, 2014	6.0	6.0	2.4	5.5	5.5
Friday, August 22, 2014	6.0	6.0	0.7	5.5	5.5
Saturday, August 23, 2014			0.7		
Sunday, August 24, 2014			0.7		
Monday, August 25, 2014	6.5	6.5	2.0	5.5	5.5
Tuesday, August 26, 2014	6.5	6.5	2.2	6.0	6.0
Wednesday, August 27, 2014	7.0	7.0	2.2	6.0	5.5
Thursday, August 28, 2014	6.5	6.5	2.2	6.0	5.5
Friday, August 29, 2014	10.0	10.0	0.6	10.5	10.5
Saturday, August 30, 2014			0.6		
Sunday, August 31, 2014			0.6		

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Friday, August 01, 2014	39.5	39.5	3.8	40.0	39.5
Saturday, August 02, 2014			3.8		
Sunday, August 03, 2014			3.8		
Monday, August 04, 2014	37.0	36.0	11.5	34.0	34.0
Tuesday, August 05, 2014	35.0	35.5	11.5	33.0	33.5
Wednesday, August 06, 2014	35.5	34.5	11.5	33.0	33.5
Thursday, August 07, 2014	35.0	35.5	11.5	33.5	33.5
Friday, August 08, 2014	38.0	37.0	3.9	38.0	38.5
Saturday, August 09, 2014			3.9		
Sunday, August 10, 2014			3.9		
Monday, August 11, 2014	35.5	35.0	11.5	36.0	38.5
Tuesday, August 12, 2014	35.0	35.5	11.5	34.0	33.0
Wednesday, August 13, 2014	33.0	32.5	11.0	35.0	34.5
Thursday, August 14, 2014	33.5	32.0	11.0	35.5	33.0
Friday, August 15, 2014	38.0	38.0	3.8	35.5	37.0
Saturday, August 16, 2014			3.8		
Sunday, August 17, 2014			3.8		
Monday, August 18, 2014	30.5	28.0	10.0	120.0	28.5
Tuesday, August 19, 2014	79.0	28.0	10.0	57.0	76.0
Wednesday, August 20, 2014	30.0	29.5	30.0	NA	27.5
Thursday, August 21, 2014	30.0	29.0	25.0	27.5	28.0
Friday, August 22, 2014	30.0	28.5	40.0	28.0	28.0
Saturday, August 23, 2014			40.0		
Sunday, August 24, 2014			40.0		
Monday, August 25, 2014	31.0	32.5	9.5	28.0	28.0
Tuesday, August 26, 2014	31.0	32.5	10.5	86.0	75.0
Wednesday, August 27, 2014	84.0	33.0	10.5	90.0	83.0
Thursday, August 28, 2014	33.0	33.0	11.0	28.5	59.0
Friday, August 29, 2014	49.5	49.5	2.9	50.0	50.0
Saturday, August 30, 2014			2.9		
Sunday, August 31, 2014			2.9		

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

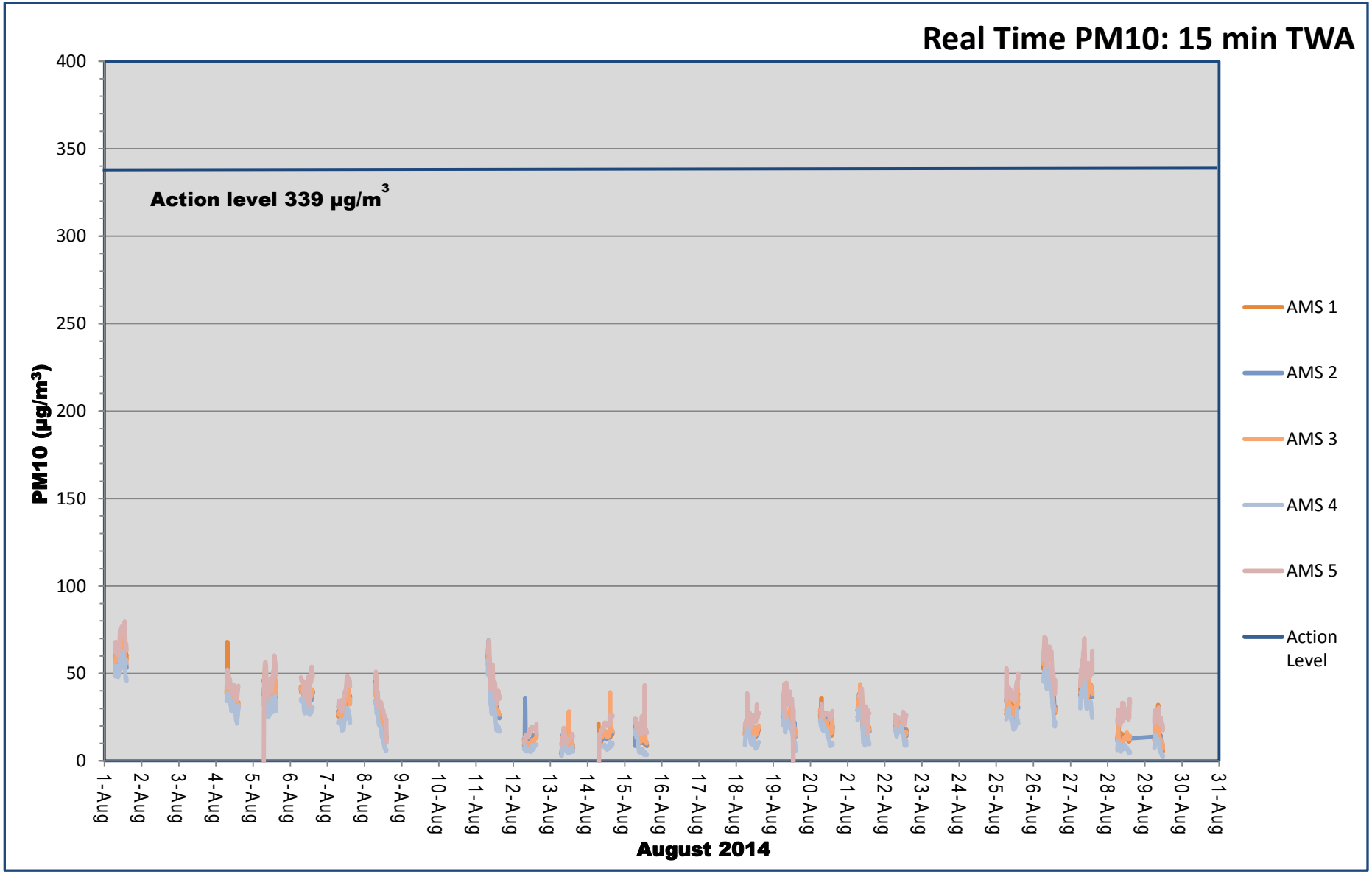

Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading (µg/m^3)	PID Reading (ppm)	Location
Friday, August 01, 2014	10:00	52.0	0.0	DW Perimeter
Saturday, August 02, 2014	-	-	-	-
Sunday, August 03, 2014	-	-	-	-
Monday, August 04, 2014	12:50	39.0	0.0	DW Perimeter
Tuesday, August 05, 2014	8:50	32.0	0.0	DW Perimeter
Wednesday, August 06, 2014	12:40	34.0	0.1	DW Perimeter
Thursday, August 07, 2014	12:58	46.0	0.0	DW Perimeter
Friday, August 08, 2014	12:25	34.0	0.0	DW Perimeter
Saturday, August 09, 2014	-	-	-	-
Sunday, August 10, 2014	-	-	-	-
Monday, August 11, 2014	9:40	25.0	0.0	DW Perimeter
Tuesday, August 12, 2014	12:50	14.0	0.0	DW Perimeter
Wednesday, August 13, 2014	8:30	41.0	0.0	DW Perimeter
Thursday, August 14, 2014	12:58	46.0	0.8	DW Perimeter
Friday, August 15, 2014	13:30	19.0	0.0	DW Perimeter
Saturday, August 16, 2014	-	-	-	-
Sunday, August 17, 2014	-	-	-	-
Monday, August 18, 2014	13:00	20.0	0.0	DW Perimeter
Tuesday, August 19, 2014	13:00	24.0	0.0	DW Perimeter
Wednesday, August 20, 2014	10:00	21.0	0.0	DW Perimeter
Thursday, August 21, 2014	13:00	29.0	0.0	DW Perimeter
Friday, August 22, 2014	13:30	34.0	0.0	DW Perimeter
Saturday, August 23, 2014	-	-	-	-
Sunday, August 24, 2014	-	-	-	-
Monday, August 25, 2014	10:00	30.0	0.0	DW Perimeter
Tuesday, August 26, 2014	10:00	41.0	0.0	DW Perimeter
Wednesday, August 27, 2014	13:00	22.0	0.0	DW Perimeter
Thursday, August 28, 2014	10:00	19.0	0.0	DW Perimeter
Friday, August 29, 2014	8:20	22.0	0.0	DW Perimeter
Saturday, August 30, 2014	-	-	-	-
Sunday, August 31, 2014	-	-	-	-

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred.

DW Perimeter denotes down-wind perimeter.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

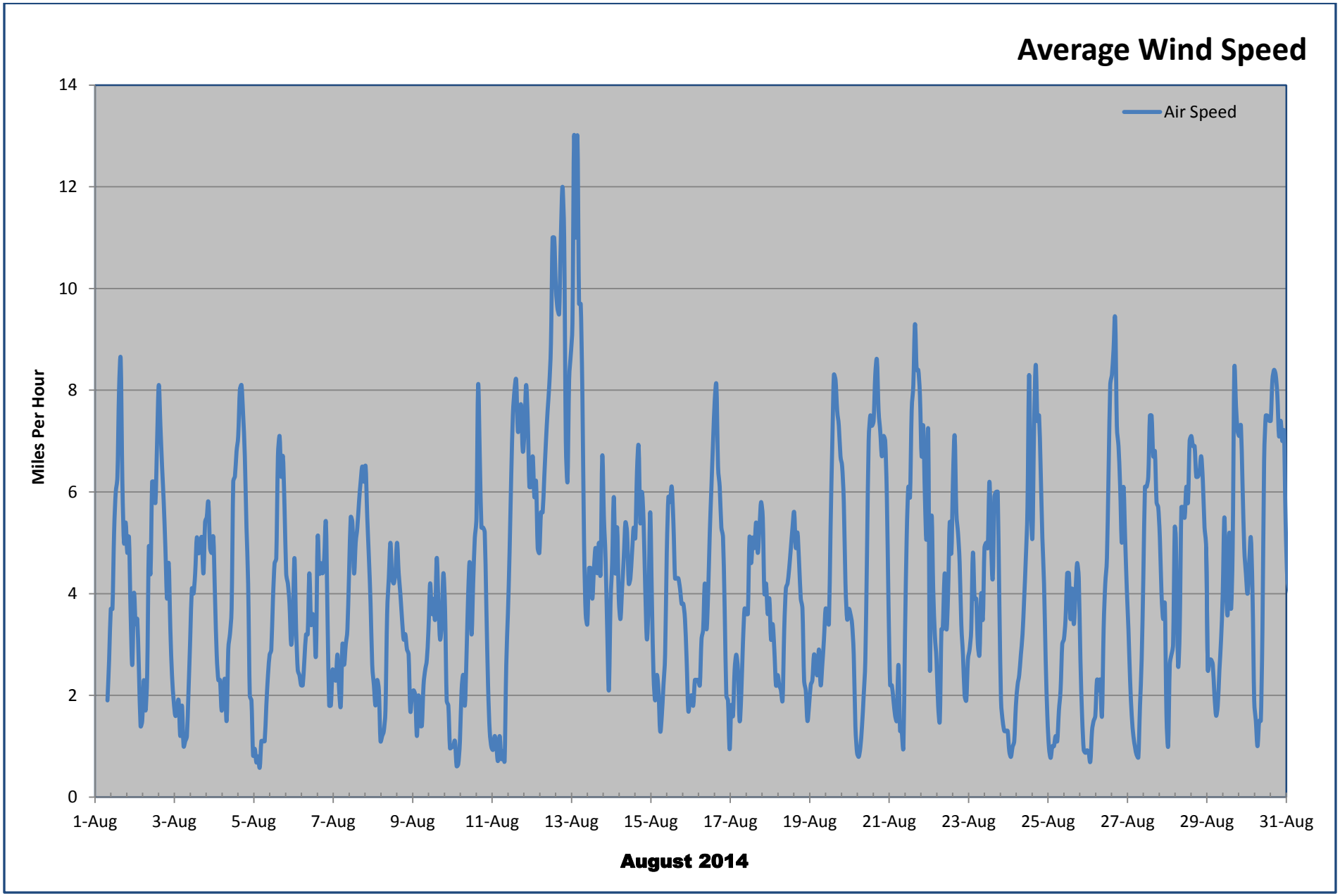

Figure A-3: Temperature

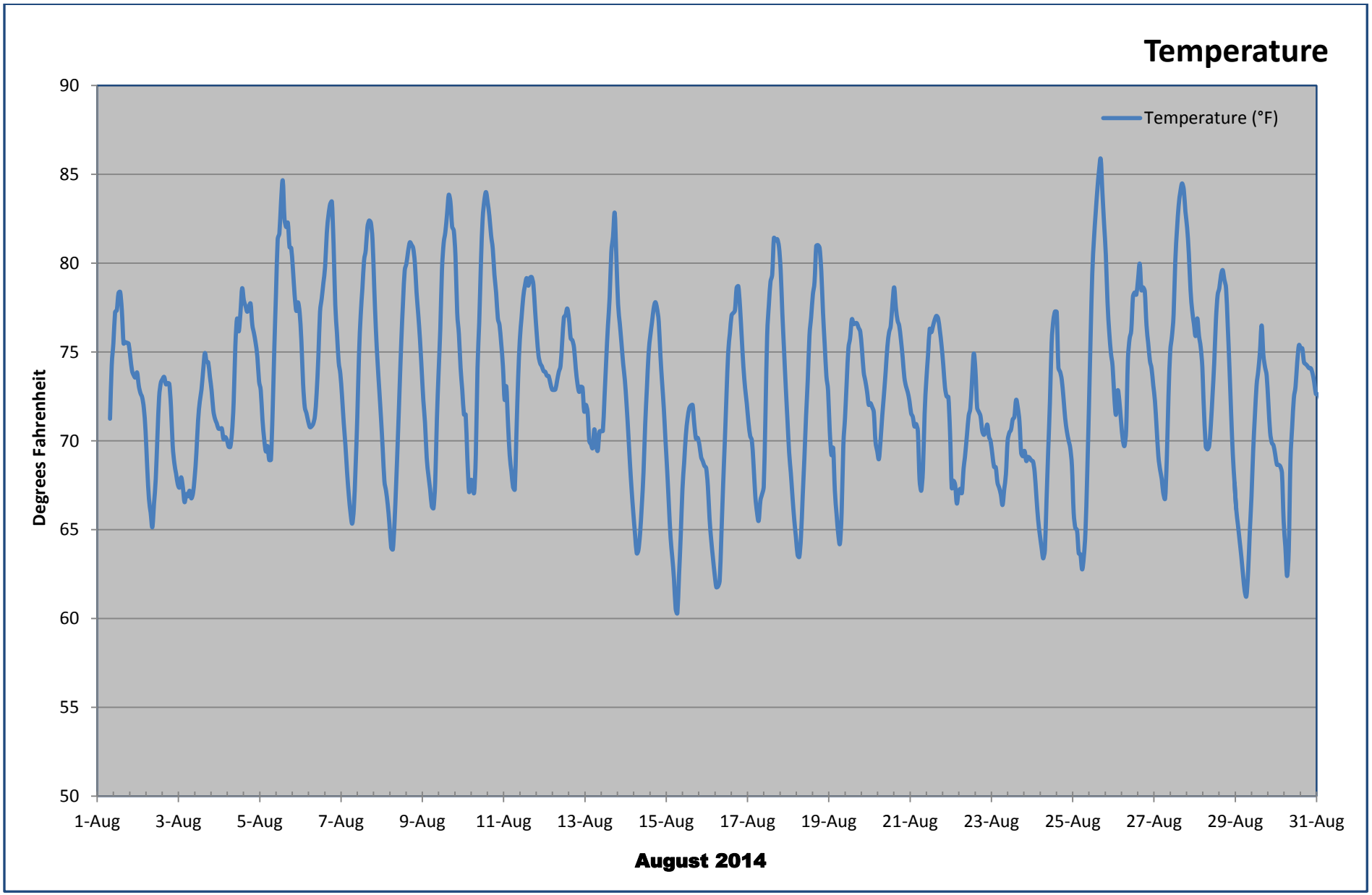

Figure A-4: Relative Humidity

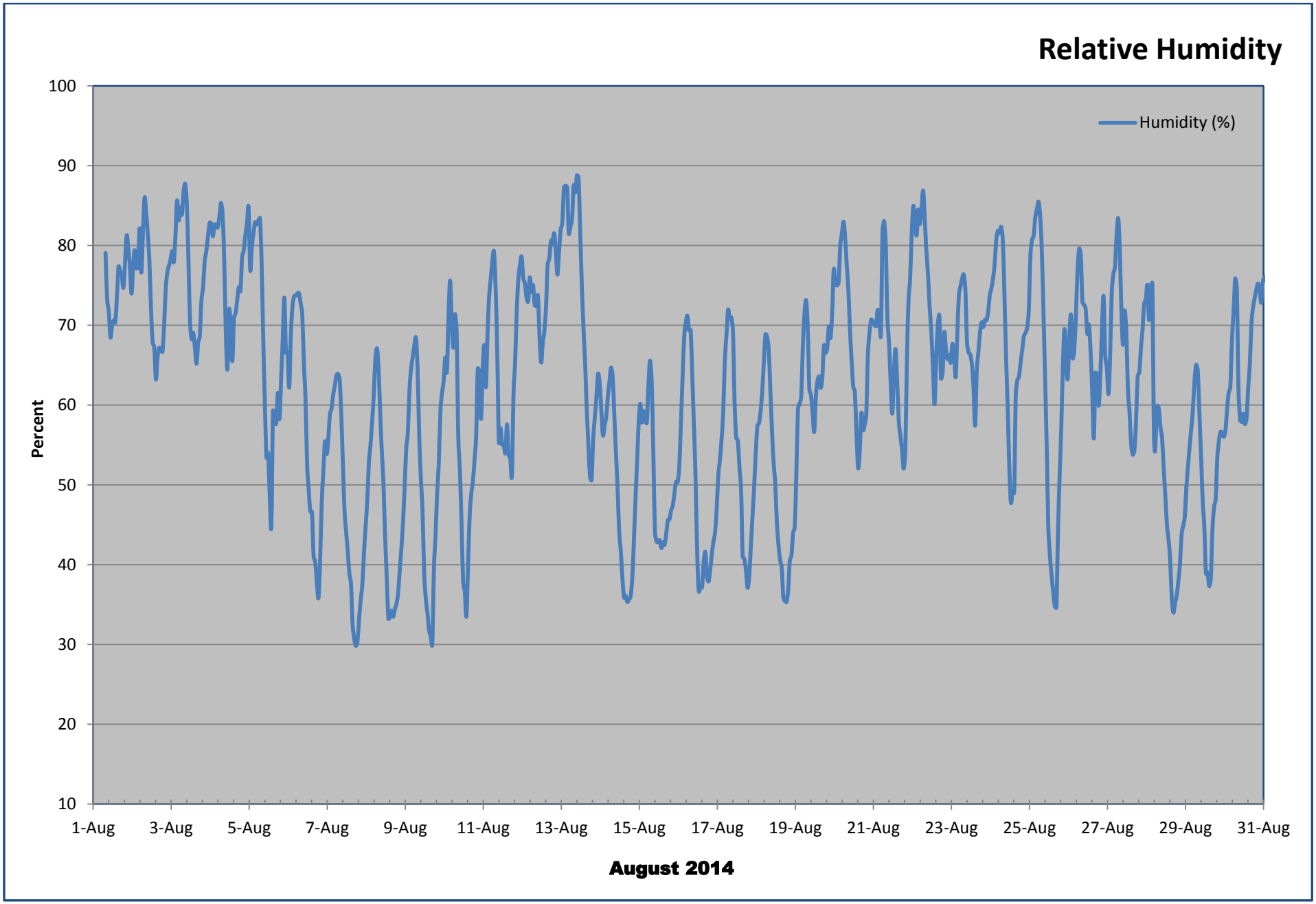

Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	84	83	80	84	84
Rate of Data Collection	95.5%	94.3%	90.9%	95.5%	95.5%
Number of Detected Samples[2]	0	0	1	0	0
% of Cr^{+6} Samples Greater than MDL	0.0%	0.0%	1.3%	0.0%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.019%	0.020%	0.018%	0.018%	0.018%
Maximum % Cr^{+6} in Dust[3]	0.021%	0.021%	0.021%	0.021%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
July	7.3	7.2	1.6	7.2	7.2
August	7.0	6.9	1.5	6.6	6.7
Program to Date	7.2	7.1	2.6	7.1	5.9
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	84	83	80	84	84
Rate of Data Collection	95.5%	94.3%	90.9%	95.5%	95.5%
Number of Detected Samples[2]	7	1	18	7	26
% Detection	8.3%	1.2%	22.5%	8.3%	31.0%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
July	37.9	35.4	12.1	37.4	46.1
August	39.2	34.0	11.9	45.1	41.5
Program to Date	40.4	35.4	17.4	39.9	46.8
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	**AMS 2**	**AMS 3**	**AMS 4**	**AMS 5**
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
July	30.2	28.4	31.5	52.2	53.9
August	26.6	26.6	27.8	21.3	34.6
Program to Date	28.5	27.5	30.2	34.8	41.4
All readings in µg/m3 – micrograms per cubic meter					

September 2014
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for September 2014 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

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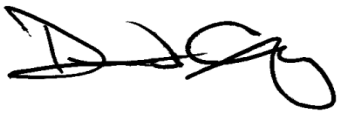
Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: September 2014

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: September 2014

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 2, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and September 30, 2014. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and September 30, 2014 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	**AMS-1 ng/m^3**	**AMS-2 ng/m^3**	**AMS-3 ng/m^3**	**AMS-4 ng/m^3**	**AMS-5 ng/m^3**
30-day[2]	**45**	7.8	7.7	1.6	7.6	7.7
60-day[2]	**40**	7.4	7.3	1.6	7.1	7.2
90-day[2]	**35**	7.3	7.3	1.6	7.2	7.2
PTD[3]		7.3	7.2	2.4	7.2	6.2

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 109 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.51% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the month of September included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the September 2014 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Monday, September 01, 2014			0.6		
Tuesday, September 02, 2014	10.0	9.5	2.4	9.5	9.5
Wednesday, September 03, 2014	9.0	9.0	2.3	8.5	9.0
Thursday, September 04, 2014	7.5	7.5	2.3	7.5	7.5
Friday, September 05, 2014	8.0	8.0	0.8	8.0	7.5
Saturday, September 06, 2014			0.8		
Sunday, September 07, 2014			0.8		
Monday, September 08, 2014	7.5	7.5	2.3	7.5	7.5
Tuesday, September 09, 2014	8.0	7.5	2.5	8.0	8.0
Wednesday, September 10, 2014	7.5	7.0	2.4	7.0	7.0
Thursday, September 11, 2014	7.5	7.5	2.4	7.0	7.0
Friday, September 12, 2014	8.0	8.0	0.8	8.0	8.0
Saturday, September 13, 2014			0.8		
Sunday, September 14, 2014			0.8		
Monday, September 15, 2014	7.5	7.5	2.3	7.5	7.5
Tuesday, September 16, 2014	8.0	8.0	2.4	8.0	8.0
Wednesday, September 17, 2014	8.0	8.0	2.4	8.0	8.0
Thursday, September 18, 2014	8.0	8.0	2.4	8.0	8.0
Friday, September 19, 2014	8.0	7.5	0.8	8.0	8.0
Saturday, September 20, 2014			0.8		
Sunday, September 21, 2014			0.8		
Monday, September 22, 2014	8.0	7.5	2.3	8.0	8.0
Tuesday, September 23, 2014	7.0	7.0	2.2	7.0	7.0
Wednesday, September 24, 2014	7.5	7.5	2.4	7.0	7.5
Thursday, September 25, 2014	6.5	7.0	2.4	6.5	6.5
Friday, September 26, 2014	7.5	8.0	0.8	7.5	7.5
Saturday, September 27, 2014			0.8		
Sunday, September 28, 2014			0.8		
Monday, September 29, 2014	7.0	7.0	2.4	6.5	7.0
Tuesday, September 30, 2014	7.0	6.5	2.3	7.0	7.0

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Monday, September 01, 2014			2.9		
Tuesday, September 02, 2014	49.0	48.0	31.0	47.5	98.0
Wednesday, September 03, 2014	43.5	43.5	11.0	42.5	110.0
Thursday, September 04, 2014	77.0	38.0	42.0	96.0	78.0
Friday, September 05, 2014	40.5	38.5	8.5	38.5	38.0
Saturday, September 06, 2014			8.5		
Sunday, September 07, 2014			8.5		
Monday, September 08, 2014	37.5	36.0	25.0	74.0	37.0
Tuesday, September 09, 2014	39.0	38.0	12.0	38.5	38.5
Wednesday, September 10, 2014	36.0	35.0	52.0	80.0	77.0
Thursday, September 11, 2014	36.0	36.0	31.0	35.0	35.5
Friday, September 12, 2014	39.0	38.5	13.0	39.0	210.0
Saturday, September 13, 2014			13.0		
Sunday, September 14, 2014			13.0		
Monday, September 15, 2014	37.5	36.0	34.0	36.5	37.0
Tuesday, September 16, 2014	39.0	38.5	11.5	39.0	40.0
Wednesday, September 17, 2014	39.0	38.5	100.0	39.5	39.0
Thursday, September 18, 2014	40.0	38.0	34.0	40.0	84.0
Friday, September 19, 2014	39.0	37.5	28.0	530.0	39.0
Saturday, September 20, 2014			28.0		
Sunday, September 21, 2014			28.0		
Monday, September 22, 2014	40.0	38.0	11.0	40.0	39.5
Tuesday, September 23, 2014	34.0	34.0	57.0	34.0	34.5
Wednesday, September 24, 2014	36.0	38.0	69.0	35.5	80.0
Thursday, September 25, 2014	31.5	34.5	11.5	32.0	32.0
Friday, September 26, 2014	38.5	40.5	3.9	38.0	100.0
Saturday, September 27, 2014			3.9		
Sunday, September 28, 2014			3.9		
Monday, September 29, 2014	120.0	69.0	70.0	97.0	120.0
Tuesday, September 30, 2014	95.0	33.0	46.0	75.0	99.0

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Samples that read NA were samples discarded due to pump failures resulting in insufficient sampling periods.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

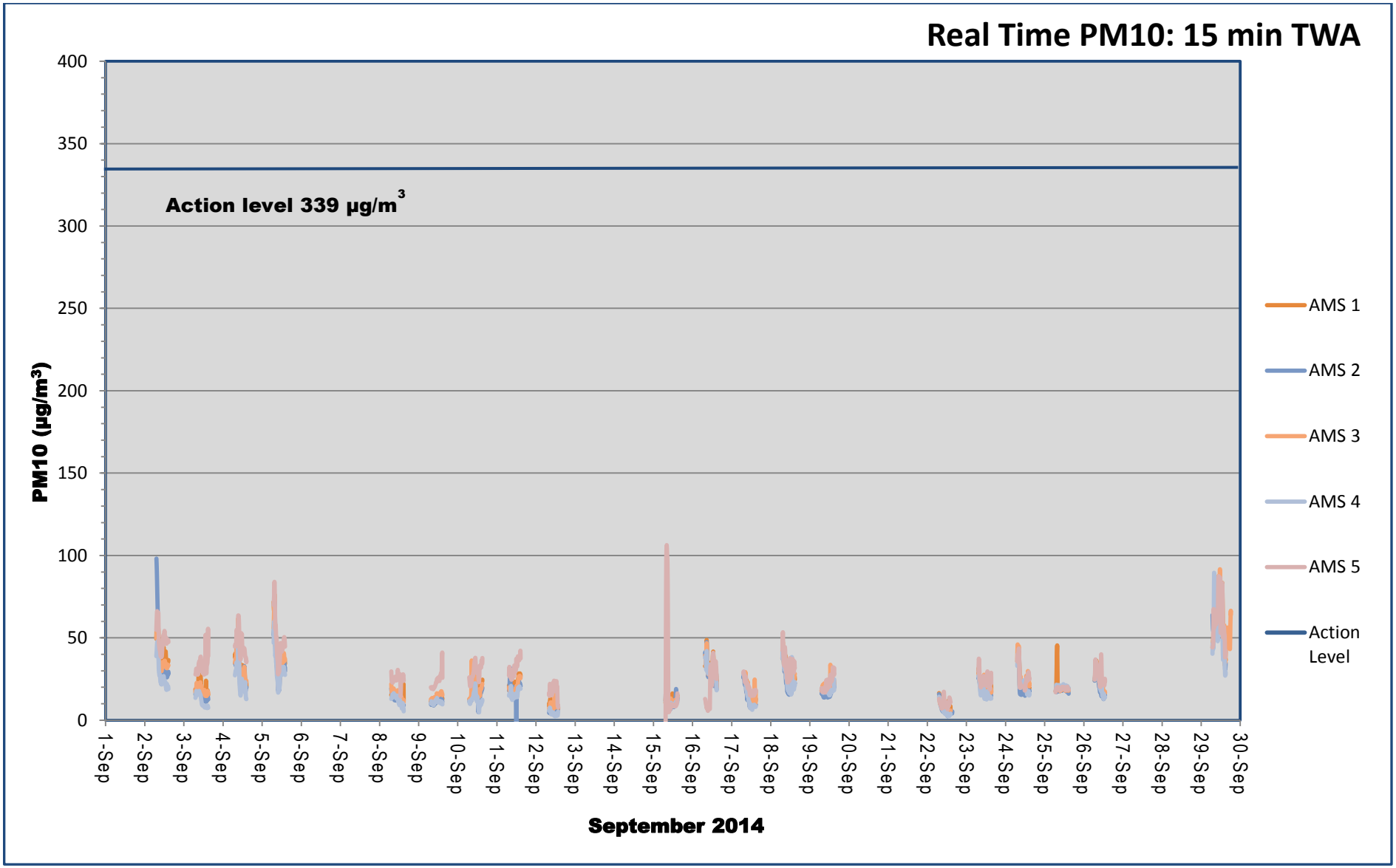

Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading (µg/m^3)	PID Reading (ppm)	Location
Monday, September 01, 2014	NA	NA	NA	NA
Tuesday, September 02, 2014	10:00	53.0	0.0	DW Perimeter
Wednesday, September 03, 2014	13:00	60.0	0.0	DW Perimeter
Thursday, September 04, 2014	10:00	32.0	0.0	DW Perimeter
Friday, September 05, 2014	13:00	48.0		DW Perimeter
Saturday, September 06, 2014	-	-	-	-
Sunday, September 07, 2014	-	-	-	-
Monday, September 08, 2014	13:00	40.0	0.0	DW Perimeter
Tuesday, September 09, 2014	10:00	36.0	0.0	DW Perimeter
Wednesday, September 10, 2014	10:00	41.0	0.0	DW Perimeter
Thursday, September 11, 2014	13:00	16.0	0.0	DW Perimeter
Friday, September 12, 2014	13:00	10.0	0.0	DW Perimeter
Saturday, September 13, 2014	-	-	-	-
Sunday, September 14, 2014	-	-	-	-
Monday, September 15, 2014	13:00	10.0	0.0	DW Perimeter
Tuesday, September 16, 2014	13:00	34.0	0.0	DW Perimeter
Wednesday, September 17, 2014	10:00	11.0	0.0	DW Perimeter
Thursday, September 18, 2014	13:00	34.0	0.0	DW Perimeter
Friday, September 19, 2014	10:00	20.0	0.0	DW Perimeter
Saturday, September 20, 2014	-	-	-	-
Sunday, September 21, 2014	-	-	-	-
Monday, September 22, 2014	10:00	10.0	0.0	DW Perimeter
Tuesday, September 23, 2014	13:00	47.0	0.0	DW Perimeter
Wednesday, September 24, 2014	13:00	17.0	0.0	DW Perimeter
Thursday, September 25, 2014	10:00	17.0	0.0	DW Perimeter
Friday, September 26, 2014	13:00	22.0	0.0	DW Perimeter
Saturday, September 27, 2014	-	-	-	-
Sunday, September 28, 2014	-	-	-	-
Monday, September 29, 2014	10:30	52.0	0.0	DW Perimeter
Tuesday, September 30, 2014	11:25	60.0	0.0	DW Perimeter

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred.

DW Perimeter denotes down-wind perimeter.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

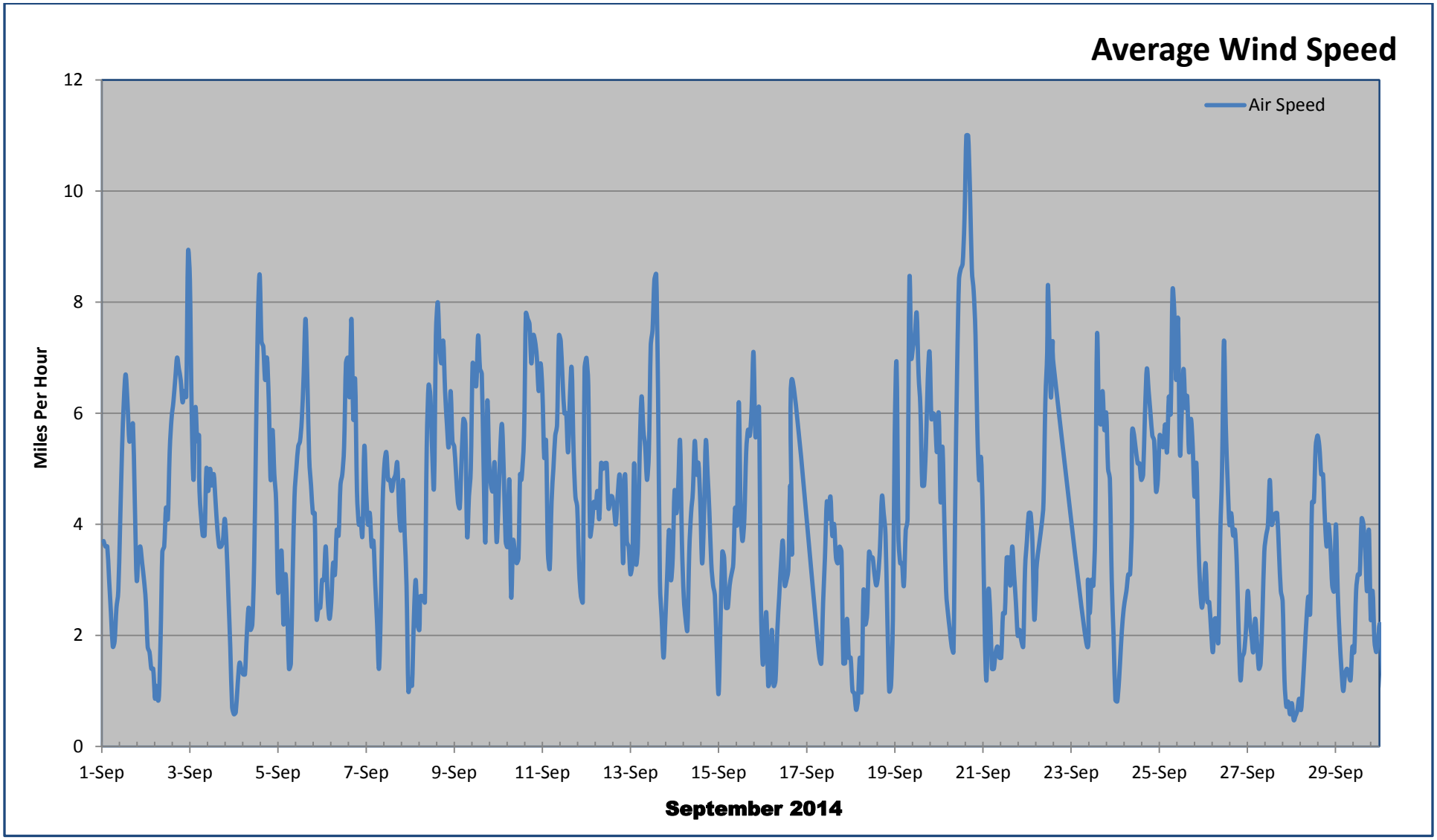

Figure A-3: Temperature

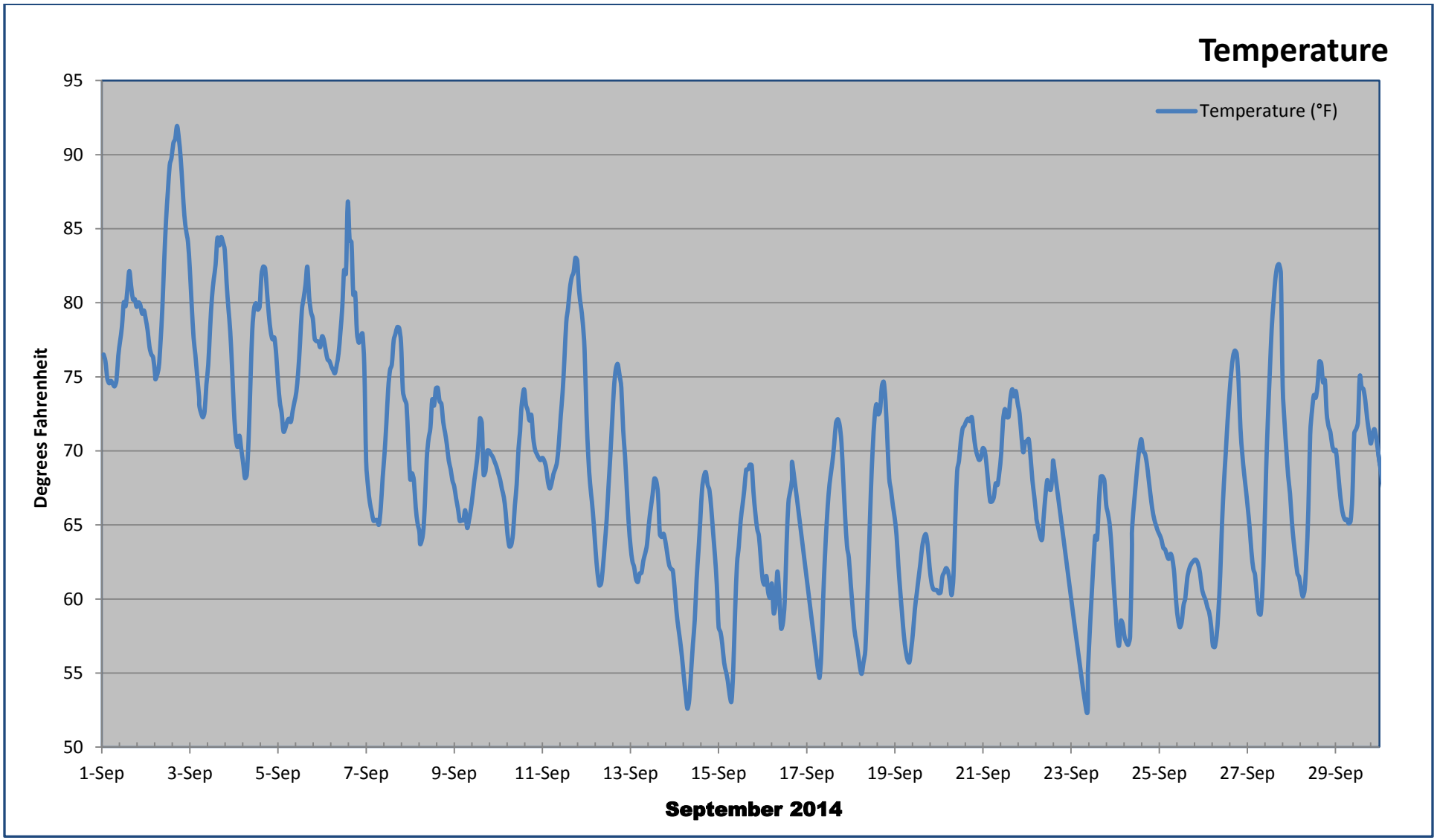

Figure A-4: Relative Humidity

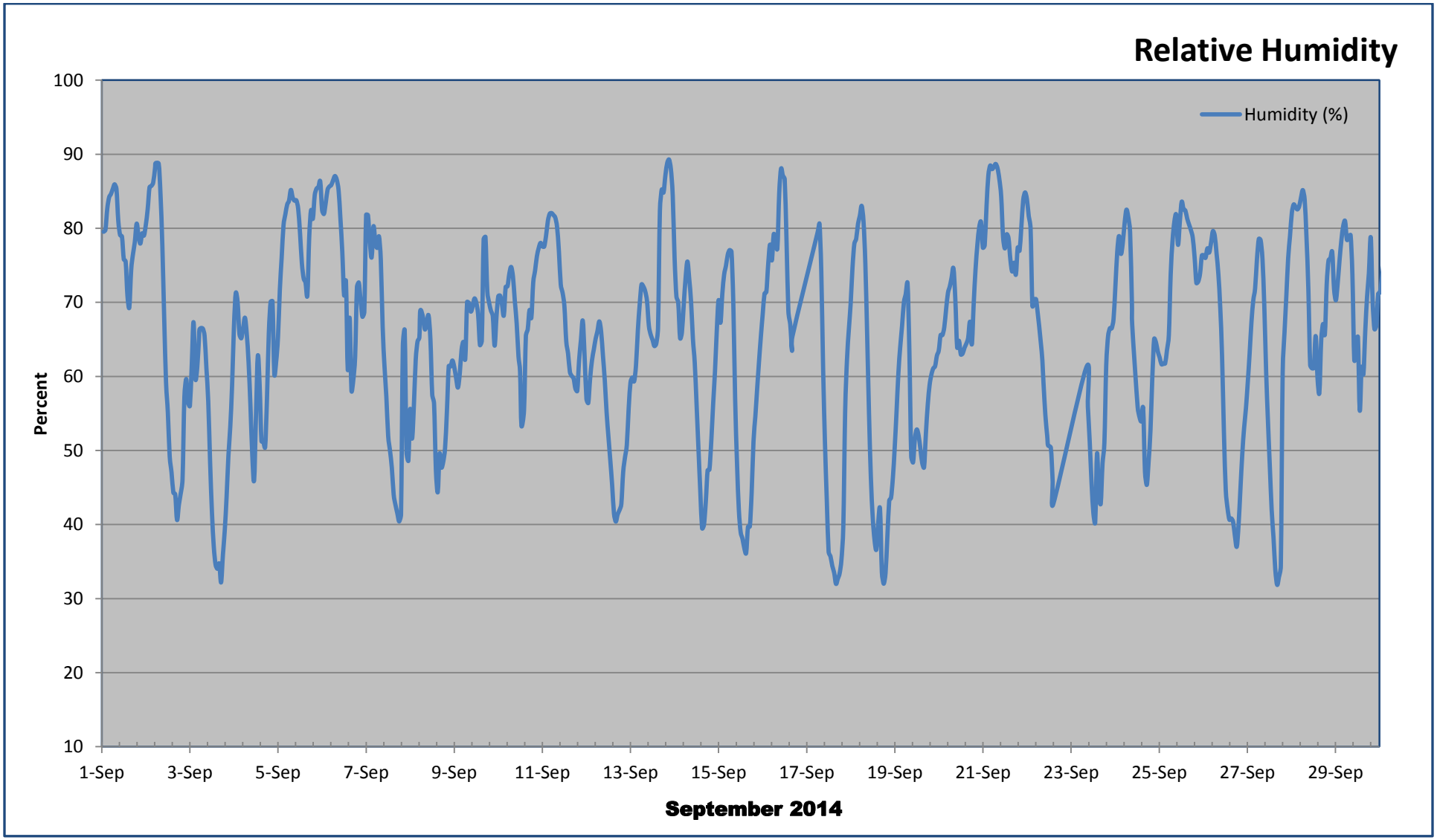

Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	105	104	101	105	105
Rate of Data Collection	96.3%	95.4%	92.7%	96.3%	96.3%
Number of Detected Samples[2]	0	0	1	0	0
% of Cr^{+6} Samples Greater than MDL	0.0%	0.0%	1.0%	0.0%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.019%	0.020%	0.010%	0.017%	0.014%
Maximum % Cr^{+6} in Dust[3]	0.021%	0.021%	0.021%	0.021%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
July	7.3	7.2	1.6	7.2	7.2
August	7.0	6.9	1.5	6.6	6.7
September	7.8	7.7	1.7	7.6	7.7
Program to Date	7.3	7.2	2.4	7.2	6.2
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	105	104	101	105	105
Rate of Data Collection	96.3%	95.4%	92.7%	96.3%	96.3%
Number of Detected Samples[2]	10	2	33	13	36
% Detection	9.5%	1.9%	32.7%	12.4%	34.3%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
July	37.9	35.4	12.1	37.4	46.1
August	39.2	34.0	11.9	45.1	41.5
September	47.0	39.4	27.0	72.7	69.8
Program to Date	41.7	36.2	19.6	46.5	51.2
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
July	30.2	28.4	31.5	52.2	53.9
August	26.6	26.6	27.8	21.3	34.6
September	25.1	21.9	25.8	20.9	31.0
Program to Date	28.2	27.0	29.9	33.6	40.0
All readings in µg/m3 – micrograms per cubic meter					

October 2014
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for October 2014 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

EMILCOTT

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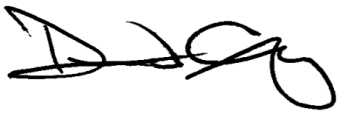
Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: October 2014

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: October 2014

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 2, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and October 31, 2014. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and October 31, 2014 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	AMS-1 ng/m^3	AMS-2 ng/m^3	AMS-3 ng/m^3	AMS-4 ng/m^3	AMS-5 ng/m^3
30-day[2]	**45**	7.8	7.8	1.6	7.8	7.8
60-day[2]	**40**	7.8	7.7	1.6	7.7	7.8
90-day[2]	**35**	7.5	7.4	1.6	7.3	7.4
PTD[3]		7.4	7.3	2.2	7.3	6.5

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 132 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.52% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the month of October included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the October 2014 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Wednesday, October 01, 2014	7.0	7.0	2.3	7.0	6.5
Thursday, October 02, 2014	7.0	7.5	2.1	6.5	6.5
Friday, October 03, 2014	9.5	9.5	0.7	9.0	9.0
Saturday, October 04, 2014			0.7		
Sunday, October 05, 2014			0.7		
Monday, October 06, 2014	8.0	8.5	2.3	8.0	8.0
Tuesday, October 07, 2014	8.5	8.5	2.3	8.5	8.5
Wednesday, October 08, 2014	7.5	7.0	2.2	7.0	7.0
Thursday, October 09, 2014	7.5	7.0	2.4	7.0	7.5
Friday, October 10, 2014	8.5	8.0	0.8	8.5	8.5
Saturday, October 11, 2014			0.8		
Sunday, October 12, 2014			0.8		
Monday, October 13, 2014	7.5	7.5	2.3	7.5	7.5
Tuesday, October 14, 2014	7.0	7.0	2.3	7.0	7.0
Wednesday, October 15, 2014	7.0	7.0	2.3	7.0	7.0
Thursday, October 16, 2014	7.0	7.0	2.4	7.0	7.0
Friday, October 17, 2014	7.0	7.0	0.8	7.0	7.5
Saturday, October 18, 2014			0.8		
Sunday, October 19, 2014			0.8		
Monday, October 20, 2014	7.0	6.5	2.3	6.5	7.0
Tuesday, October 21, 2014	7.5	7.5	2.1	8.0	7.5
Wednesday, October 22, 2014	11.5	11.5	2.3	11.5	12.0
Thursday, October 23, 2014	8.5	8.5	2.2	9.0	8.5
Friday, October 24, 2014	9.5	9.5	0.8	10.0	10.0
Saturday, October 25, 2014			0.8		
Sunday, October 26, 2014			0.8		
Monday, October 27, 2014	7.0	7.0	2.2	7.0	7.0
Tuesday, October 28, 2014	6.5	6.5	2.2	6.5	7.0
Wednesday, October 29, 2014	7.5	7.5	2.3	8.0	8.0
Thursday, October 30, 2014	6.5	7.0	2.2	6.5	6.5
Friday, October 31, 2014	8.5	8.5	0.8	8.5	9.0

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Wednesday, October 01, 2014	33.5	34.0	11.5	33.5	33.0
Thursday, October 02, 2014	35.0	36.0	10.5	33.5	33.5
Friday, October 03, 2014	46.0	47.0	12.0	44.5	44.5
Saturday, October 04, 2014			12.0		
Sunday, October 05, 2014			12.0		
Monday, October 06, 2014	40.0	41.5	11.0	40.0	40.5
Tuesday, October 07, 2014	42.5	42.5	34.0	41.5	41.5
Wednesday, October 08, 2014	36.5	35.5	27.0	35.5	35.5
Thursday, October 09, 2014	96.0	35.5	47.0	35.5	37.0
Friday, October 10, 2014	42.5	40.5	20.0	41.5	41.5
Saturday, October 11, 2014			20.0		
Sunday, October 12, 2014			20.0		
Monday, October 13, 2014	37.5	36.0	34.0	36.5	36.5
Tuesday, October 14, 2014	76.0	35.5	42.0	35.5	35.0
Wednesday, October 15, 2014	86.0	34.5	170.0	34.5	94.0
Thursday, October 16, 2014	34.0	34.0	11.5	34.0	34.5
Friday, October 17, 2014	140.0	35.5	3.7	35.0	36.5
Saturday, October 18, 2014			3.7		
Sunday, October 19, 2014			3.7		
Monday, October 20, 2014	34.0	33.5	50.0	33.0	34.0
Tuesday, October 21, 2014	110.0	37.0	42.0	81.0	79.0
Wednesday, October 22, 2014	55.0	55.0	11.5	60.0	60.0
Thursday, October 23, 2014	43.0	43.0	11.0	44.5	43.0
Friday, October 24, 2014	48.0	47.0	17.0	50.0	50.0
Saturday, October 25, 2014			17.0		
Sunday, October 26, 2014			17.0		
Monday, October 27, 2014	34.5	35.0	98.0	35.0	36.0
Tuesday, October 28, 2014	110.0	33.5	110.0	33.0	69.0
Wednesday, October 29, 2014	98.0	37.5	11.0	39.0	39.0
Thursday, October 30, 2014	32.5	33.5	26.0	32.5	33.0
Friday, October 31, 2014	43.5	43.5	13.0	43.5	120.0

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

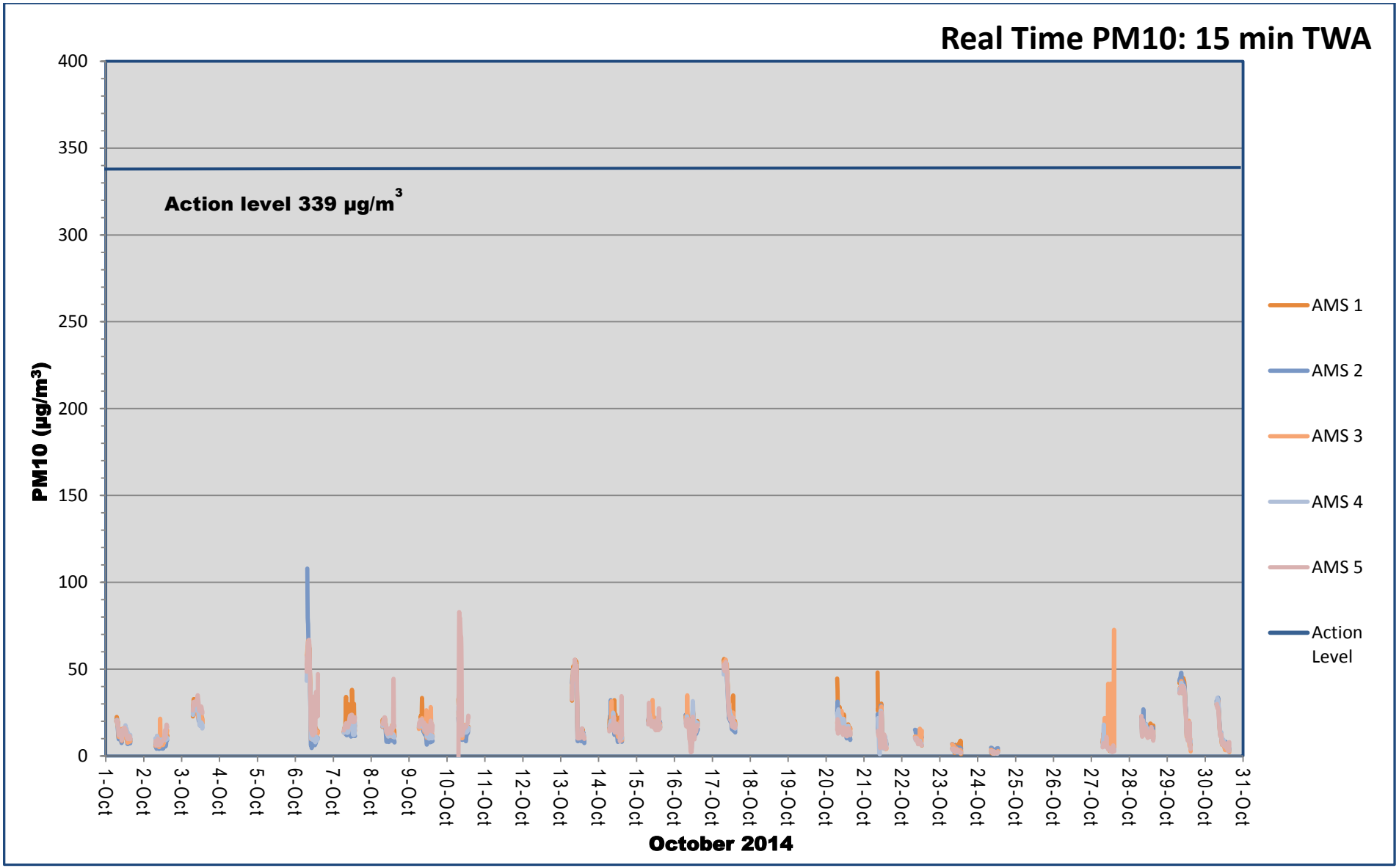

Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading (µg/m^3)	PID Reading (ppm)	Location
Wednesday, October 1, 2014	13:00	31.0	0.0	DW Perimeter
Thursday, October 2, 2014	13:00	20.0	0.0	DW Perimeter
Friday, October 3, 2014	11:00	31.0	0.0	DW Perimeter
Saturday, October 4, 2014	-	-	-	-
Sunday, October 5, 2014	-	-	-	-
Monday, October 6, 2014	11:30	42.0	0.0	DW Perimeter
Tuesday, October 7, 2014	10:00	22.0	0.0	DW Perimeter
Wednesday, October 8, 2014	13:00	17.0	0.0	DW Perimeter
Thursday, October 9, 2014	10:15	27.0	0.0	DW Perimeter
Friday, October 10, 2014	11:30	17.0	0.0	DW Perimeter
Saturday, October 11, 2014	-	-	-	-
Sunday, October 12, 2014	-	-	-	-
Monday, October 13, 2014	10:00	22.0	0.0	DW Perimeter
Tuesday, October 14, 2014	10:30	25.0	0.0	DW Perimeter
Wednesday, October 15, 2014	10:30	21.0	0.0	DW Perimeter
Thursday, October 16, 2014	13:30	15.0	0.0	DW Perimeter
Friday, October 17, 2014	10:25	28.0	0.0	DW Perimeter
Saturday, October 18, 2014	-	-	-	-
Sunday, October 19, 2014	-	-	-	-
Monday, October 20, 2014	13:00	28.0	0.0	DW Perimeter
Tuesday, October 21, 2014	11:00	22.0	0.0	DW Perimeter
Wednesday, October 22, 2014	10:30	15.0	0.0	DW Perimeter
Thursday, October 23, 2014	9:00	27.0	0.0	DW Perimeter
Friday, October 24, 2014	13:15	21.0	0.0	DW Perimeter
Saturday, October 25, 2014	-	-	-	-
Sunday, October 26, 2014	-	-	-	-
Monday, October 27, 2014	9:30	15.0	0.0	DW Perimeter
Tuesday, October 28, 2014	13:00	22.0	0.0	DW Perimeter
Wednesday, October 29, 2014	11:00	17.0	0.0	DW Perimeter
Thursday, October 30, 2014	11:30	29.0	0.0	DW Perimeter
Friday, October 31, 2014	9:30	23.0	0.0	DW Perimeter

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred.

DW Perimeter denotes down-wind perimeter.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No

Data

Figure A-2: Wind Speed

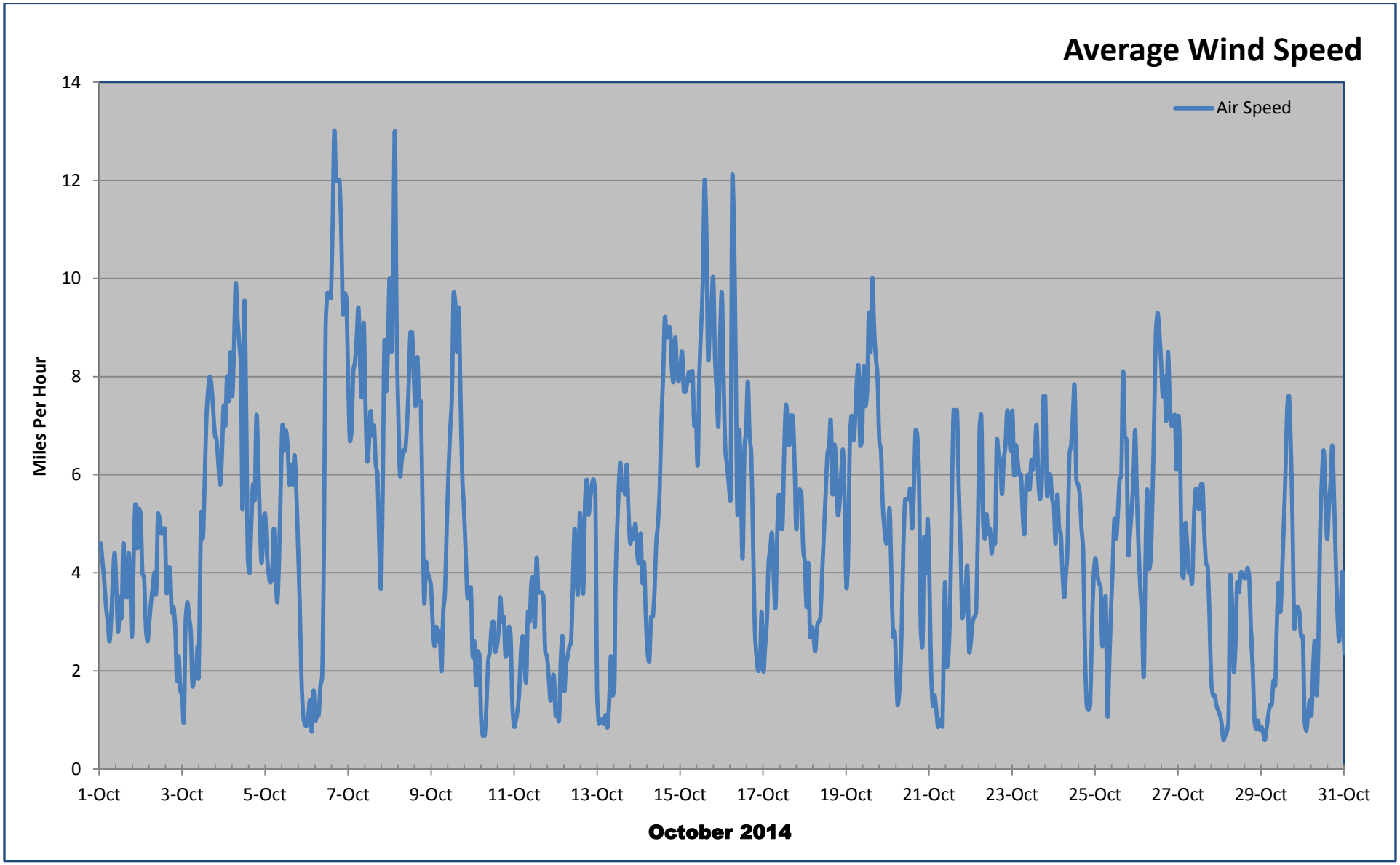

Figure A-3: Temperature

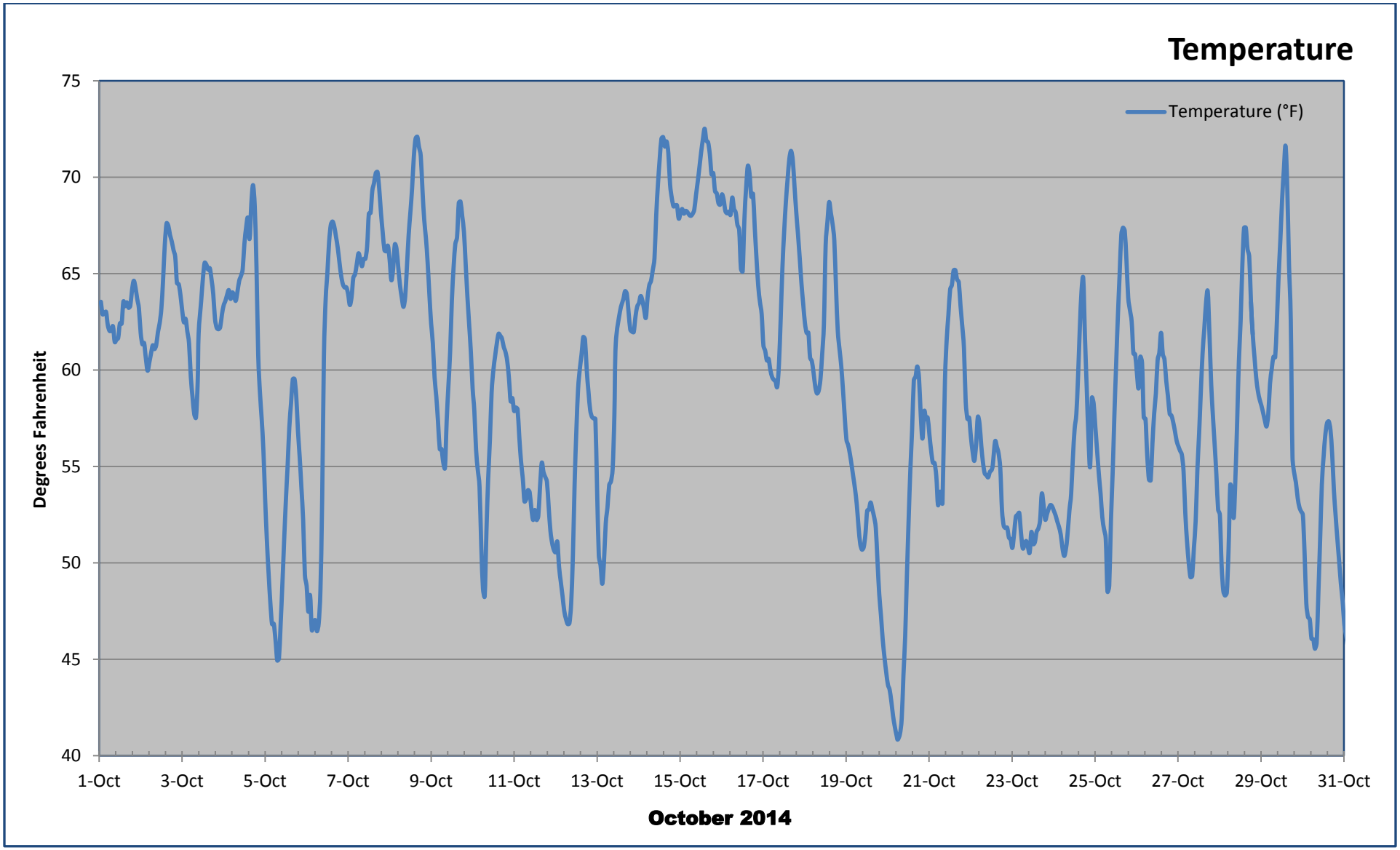

Figure A-4: Relative Humidity

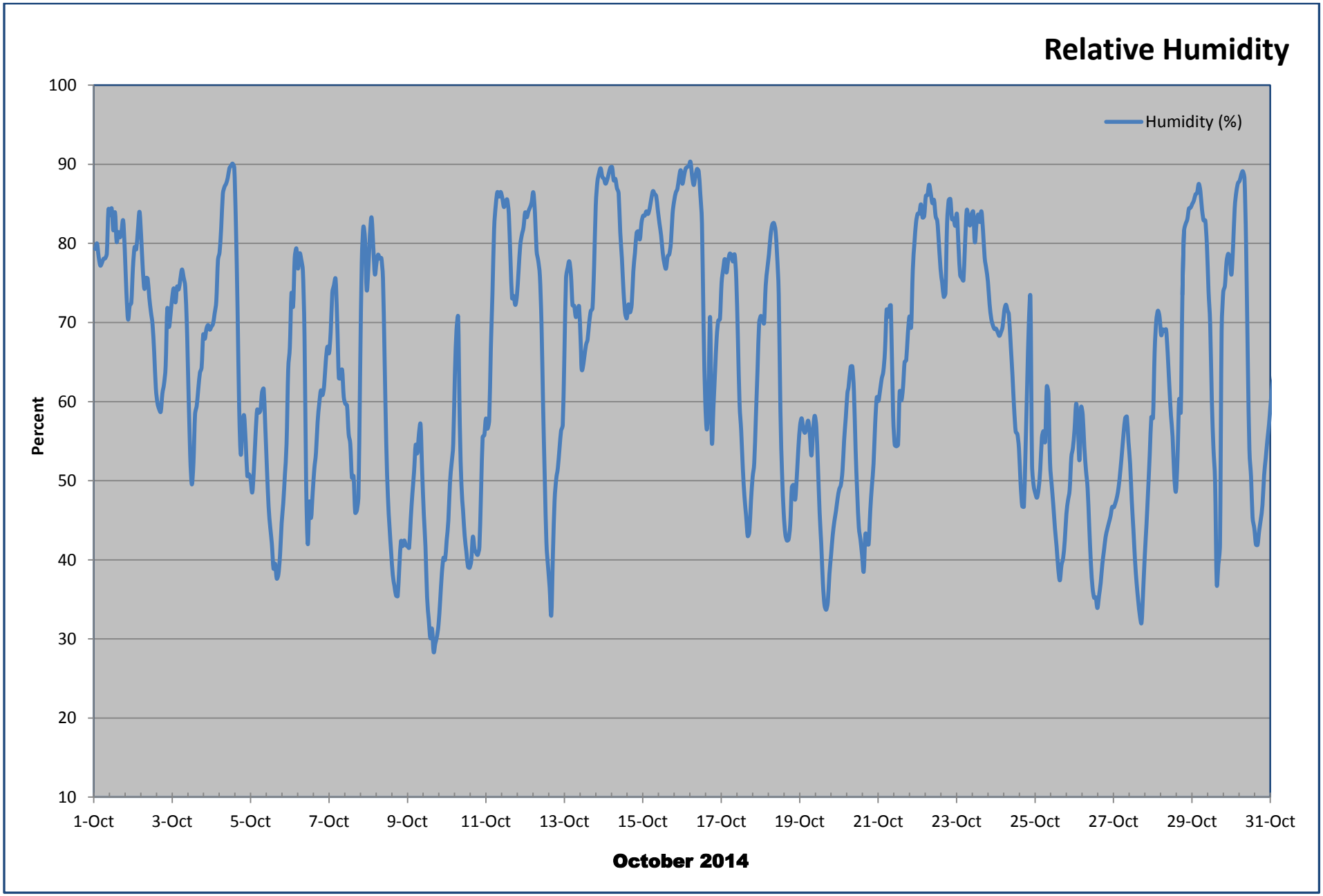

Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	128	127	124	128	128
Rate of Data Collection	97.0%	96.2%	93.9%	97.0%	97.0%
Number of Detected Samples[2]	0	0	1	0	0
% of Cr^{+6} Samples Greater than MDL	0.0%	0.0%	0.8%	0.0%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.016%	0.020%	0.010%	0.020%	0.018%
Maximum % Cr^{+6} in Dust[3]	0.021%	0.021%	0.021%	0.021%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
July	7.3	7.2	1.6	7.2	7.2
August	7.0	6.9	1.5	6.6	6.7
September	7.8	7.7	1.7	7.6	7.7
October	7.8	7.8	1.6	7.8	7.8
Program to Date	7.4	7.3	2.2	7.3	6.5
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	128	127	124	128	128
Rate of Data Collection	97.0%	96.2%	93.9%	97.0%	97.0%
Number of Detected Samples[2]	17	2	48	14	40
% Detection	13.3%	1.6%	38.7%	10.9%	31.3%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
July	37.9	35.4	12.1	37.4	46.1
August	39.2	34.0	11.9	45.1	41.5
September	47.0	39.4	27.0	72.7	69.8
October	58.9	38.5	30.0	40.5	48.1
Program to Date	44.8	36.6	21.5	45.4	50.6
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
July	30.2	28.4	31.5	52.2	53.9
August	26.6	26.6	27.8	21.3	34.6
September	25.1	21.9	25.8	20.9	31.0
October	17.3	15.2	16.7	16.0	17.1
Program to Date	26.4	25.0	27.8	30.7	36.1
All readings in µg/m3 – micrograms per cubic meter					

November 2014
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for November 2014 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

EMILCOTT

Submitted to:
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Allison Park, PA

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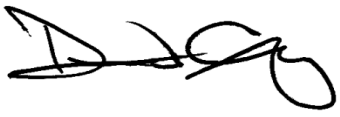
Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: November 2014

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: November 2014

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 2, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and November 30, 2014. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and November 30, 2014 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	AMS-1 ng/m^3	AMS-2 ng/m^3	AMS-3 ng/m^3	AMS-4 ng/m^3	AMS-5 ng/m^3
30-day[2]	**45**	7.7	7.8	1.4	7.7	7.8
60-day[2]	**40**	7.7	7.8	1.5	7.7	7.8
90-day[2]	**35**	7.7	7.7	1.6	7.7	7.8
PTD[3]		7.4	7.4	2.1	7.4	6.7

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 150 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.53% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the month of November included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the November 2014 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Saturday, November 1, 2014			0.8		
Sunday, November 2, 2014			0.8		
Monday, November 3, 2014	7.0	7.0	2.3	7.0	7.5
Tuesday, November 4, 2014	6.5	6.5	2.2	6.5	6.5
Wednesday, November 5, 2014	8.0	8.0	2.2	7.5	7.5
Thursday, November 6, 2014	7.0	7.0	2.2	7.0	7.0
Friday, November 7, 2014	9.5	9.5	0.8	9.5	9.5
Saturday, November 8, 2014			0.8		
Sunday, November 9, 2014			0.8		
Monday, November 10, 2014	6.5	7.0	2.3	7.0	7.0
Tuesday, November 11, 2014	7.0	7.5	2.3	7.0	7.5
Wednesday, November 12, 2014	6.5	6.5	2.2	6.5	6.5
Thursday, November 13, 2014	7.0	7.0	2.2	7.0	7.0
Friday, November 14, 2014	7.0	7.0	0.8	7.0	7.0
Saturday, November 15, 2014			0.8		
Sunday, November 16, 2014			0.8		
Monday, November 17, 2014	7.0	7.0	2.3	7.0	7.5
Tuesday, November 18, 2014	6.5	6.5	2.2	7.0	6.5
Wednesday, November 19, 2014	7.0	7.0	2.2	7.0	7.0
Thursday, November 20, 2014	7.0	7.0	2.3	7.0	7.0
Friday, November 21, 2014	7.5	7.5	0.8	7.5	7.5
Saturday, November 22, 2014			0.8		
Sunday, November 23, 2014			0.8		
Monday, November 24, 2014	7.5	7.5	2.2	7.5	7.5
Tuesday, November 25, 2014	7.0	7.0	2.2	7.0	7.0
Wednesday, November 26, 2014	16.0	17.0	0.5	16.0	16.5
Thursday, November 27, 2014	NA	NA	0.5	NA	NA
Friday, November 28, 2014	NA	NA	0.5	NA	NA
Saturday, November 29, 2014			0.5		
Sunday, November 30, 2014			0.5		

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Note: No samples taken on 11/27/14 and 11/28/14 due to site closure for holiday.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Saturday, November 1, 2014			13.0		
Sunday, November 2, 2014			13.0		
Monday, November 3, 2014	35.5	34.5	36.0	35.5	36.0
Tuesday, November 4, 2014	120.0	33.0	64.0	33.0	33.5
Wednesday, November 5, 2014	100.0	39.5	54.0	38.5	38.5
Thursday, November 6, 2014	35.0	34.0	27.0	35.5	35.0
Friday, November 7, 2014	46.5	47.0	9.7	47.0	47.0
Saturday, November 8, 2014			9.7		
Sunday, November 9, 2014			9.7		
Monday, November 10, 2014	120.0	34.5	100.0	35.0	98.0
Tuesday, November 11, 2014	160.0	37.0	94.0	91.0	110.0
Wednesday, November 12, 2014	33.0	33.5	32.0	33.5	33.5
Thursday, November 13, 2014	80.0	34.0	45.0	34.0	74.0
Friday, November 14, 2014	34.0	34.5	3.7	36.0	35.5
Saturday, November 15, 2014			3.7		
Sunday, November 16, 2014			3.7		
Monday, November 17, 2014	34.0	35.5	11.0	36.0	36.0
Tuesday, November 18, 2014	32.0	32.5	11.0	34.0	33.0
Wednesday, November 19, 2014	35.0	35.0	30.0	35.0	34.0
Thursday, November 20, 2014	81.0	34.0	31.0	36.0	34.5
Friday, November 21, 2014	36.0	36.5	20.0	37.5	36.5
Saturday, November 22, 2014			20.0		
Sunday, November 23, 2014			20.0		
Monday, November 24, 2014	37.0	37.0	27.0	37.0	37.0
Tuesday, November 25, 2014	34.0	34.0	25.0	34.0	34.0
Wednesday, November 26, 2014	80.0	85.0	2.3	80.0	80.0
Thursday, November 27, 2014	NA	NA	2.3	NA	NA
Friday, November 28, 2014	NA	NA	2.3	NA	NA
Saturday, November 29, 2014			2.3		
Sunday, November 30, 2014			2.3		

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Note: No samples taken on 11/27/14 and 11/28/14 due to site closure for holiday.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

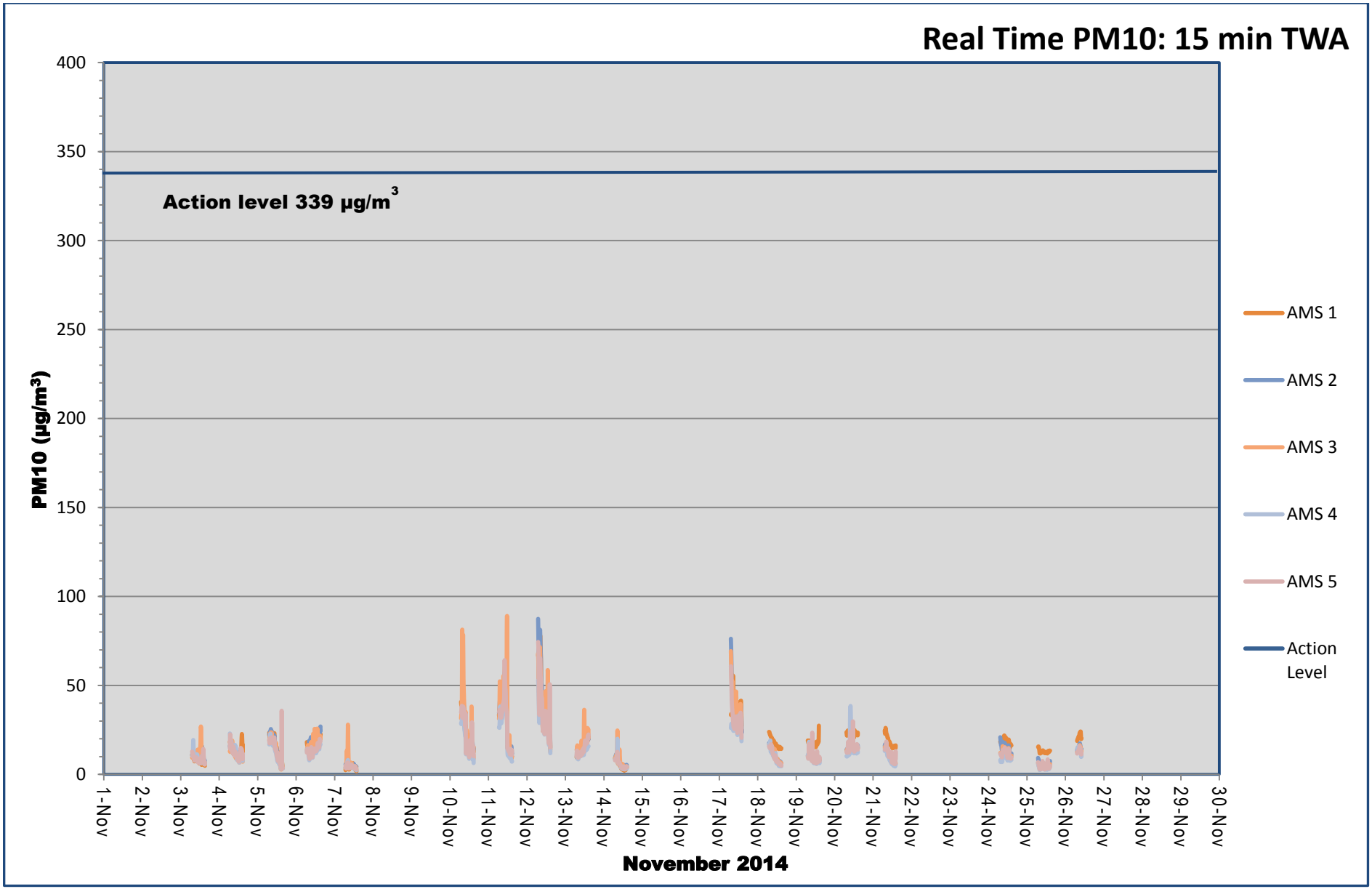

Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading ($\mu g/m^3$)	PID Reading (ppm)	Location
Saturday, November 1, 2014	-	-	-	-
Sunday, November 2, 2014	-	-	-	-
Monday, November 3, 2014	11:00	27.0	0.0	DW Perimeter
Tuesday, November 4, 2014	10:15	52.0	0.0	DW Perimeter
Wednesday, November 5, 2014	13:15	19.0	0.0	DW Perimeter
Thursday, November 6, 2014	8:45	27.0	0.0	DW Perimeter
Friday, November 7, 2014	9:30	10.0	0.0	DW Perimeter
Saturday, November 8, 2014	-	-	-	-
Sunday, November 9, 2014	-	-	-	-
Monday, November 10, 2014	13:30	42.0	0.0	DW Perimeter
Tuesday, November 11, 2014	11:15	58.0	0.0	DW Perimeter
Wednesday, November 12, 2014	10:00	62.0	0.0	DW Perimeter
Thursday, November 13, 2014	8:45	23.0	0.0	DW Perimeter
Friday, November 14, 2014	7:30	25.0	0.0	DW Perimeter
Saturday, November 15, 2014	-	-	-	-
Sunday, November 16, 2014	-	-	-	-
Monday, November 17, 2014	13:15	32.0	0.0	DW Perimeter
Tuesday, November 18, 2014	11:45	22.0	0.0	DW Perimeter
Wednesday, November 19, 2014	14:00	33.0	0.0	DW Perimeter
Thursday, November 20, 2014	9:45	32.0	0.0	DW Perimeter
Friday, November 21, 2014	9:00	19.0	0.0	DW Perimeter
Saturday, November 22, 2014	-	-	-	-
Sunday, November 23, 2014	-	-	-	-
Monday, November 24, 2014	10:15	17.0	0.0	DW Perimeter
Tuesday, November 25, 2014	9:30	12.0	0.0	DW Perimeter
Wednesday, November 26, 2014	9:00	19.0	0.0	DW Perimeter
Thursday, November 27, 2014	NA	NA	NA	NA
Friday, November 28, 2014	NA	NA	NA	NA
Saturday, November 29, 2014	-	-	-	-
Sunday, November 30, 2014	-	-	-	-

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred.

DW Perimeter denotes down-wind perimeter.

Note: No readings taken on 11/27/14 and 11/28/14 due to site closure for holiday.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

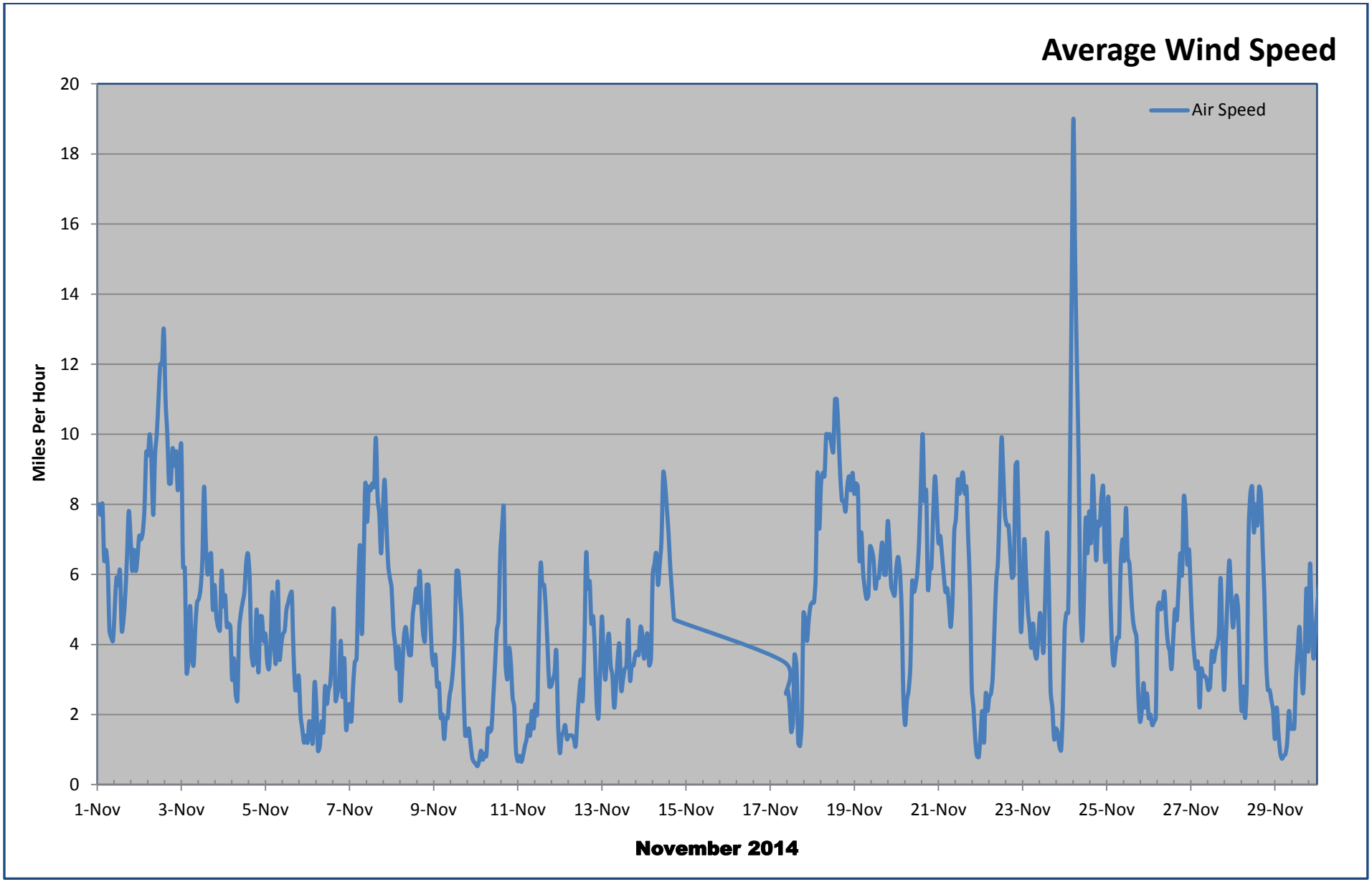

Figure A-3: Temperature

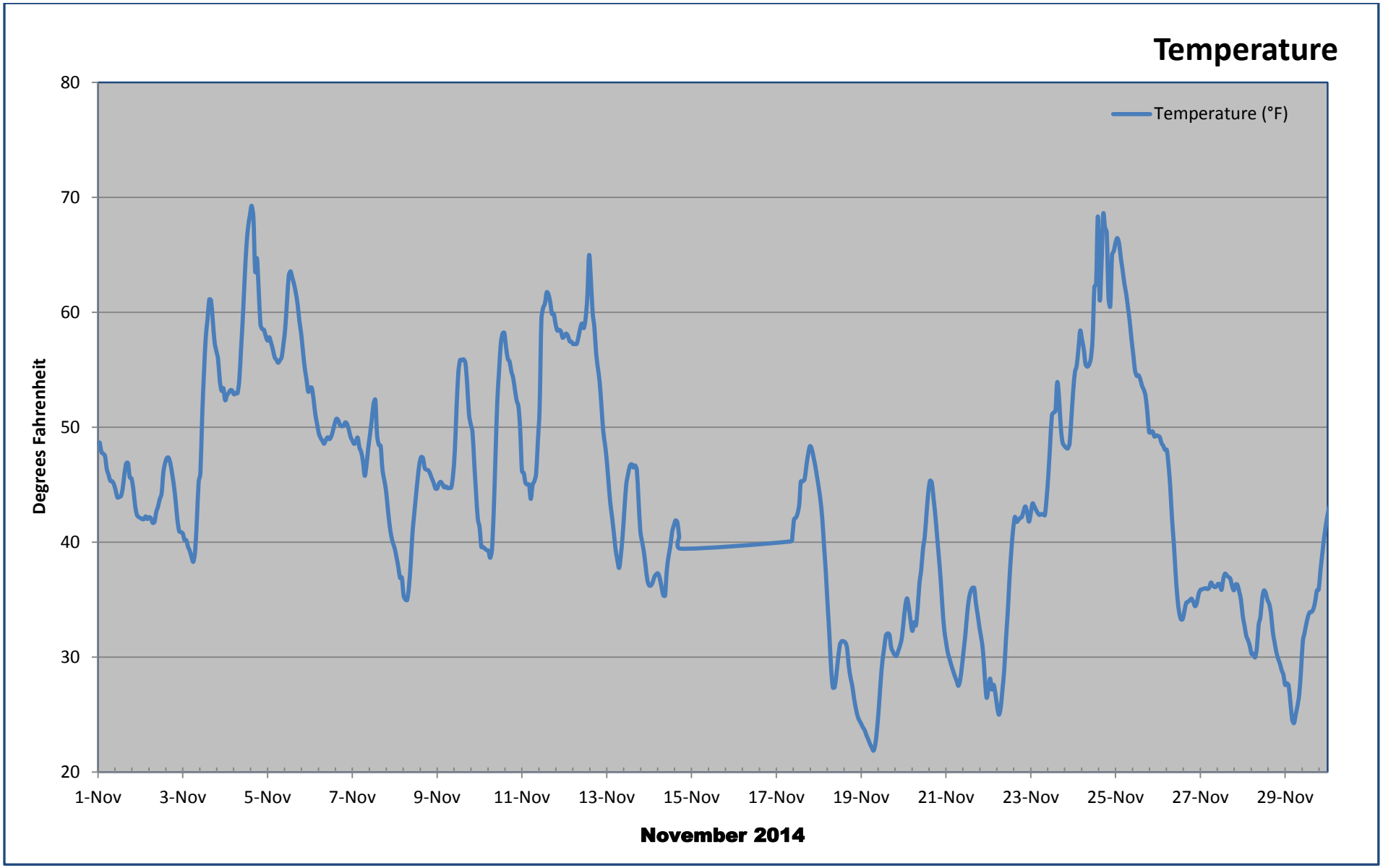

Figure A-4: Relative Humidity

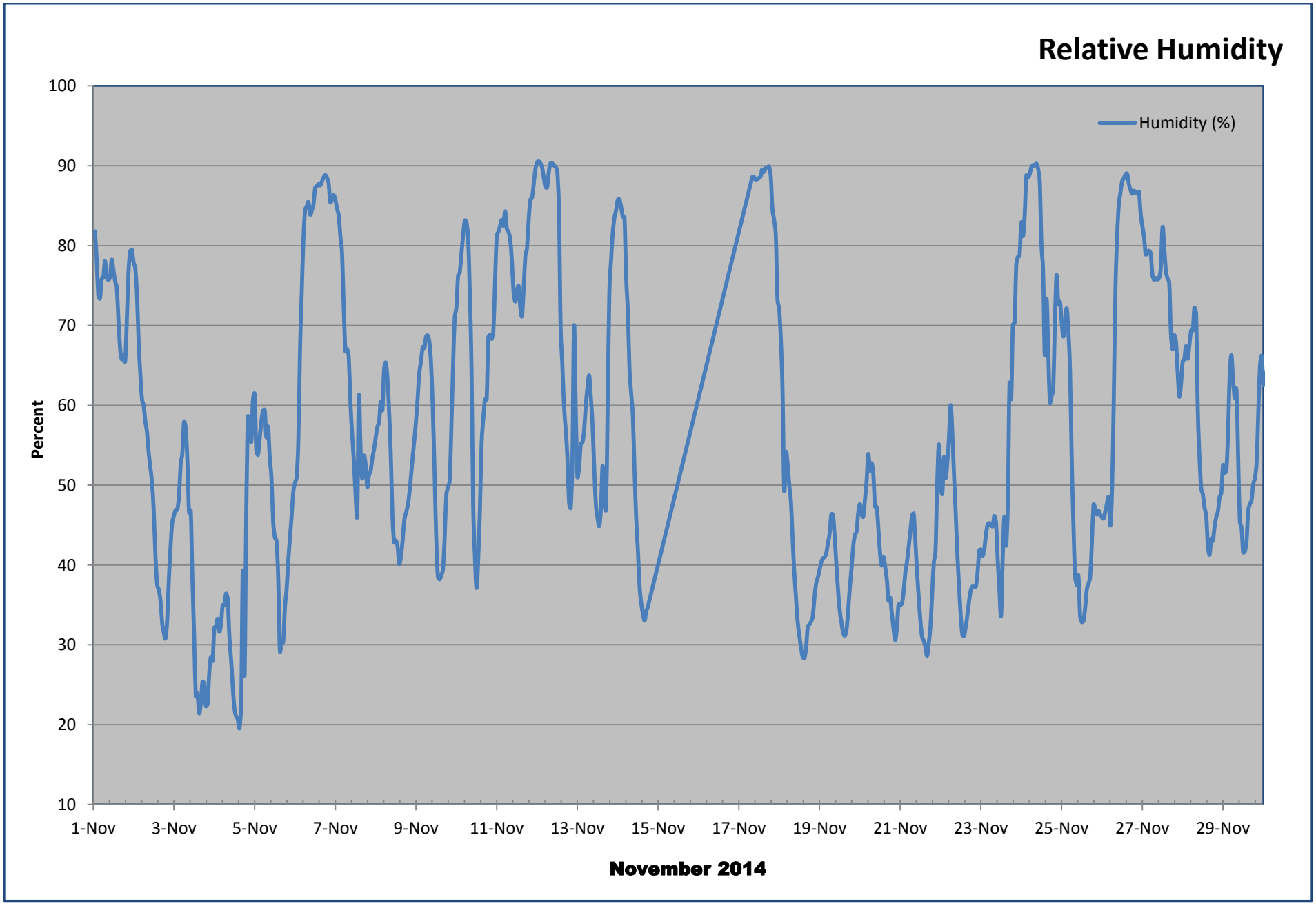

Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	146	145	142	146	146
Rate of Data Collection	97.3%	96.7%	94.7%	97.3%	97.3%
Number of Detected Samples[2]	0	0	1	0	0
% of Cr^{+6} Samples Greater than MDL	0.0%	0.0%	0.7%	0.0%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.016%	0.020%	0.011%	0.019%	0.018%
Maximum % Cr^{+6} in Dust[3]	0.021%	0.021%	0.021%	0.021%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
July	7.3	7.2	1.6	7.2	7.2
August	7.0	6.9	1.5	6.6	6.7
September	7.8	7.7	1.7	7.6	7.7
October	7.8	7.8	1.6	7.8	7.8
November	7.6	7.8	1.4	7.7	7.8
Program to Date	7.4	7.4	2.1	7.4	6.7
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	146	145	142	146	146
Rate of Data Collection	97.3%	96.7%	94.7%	97.3%	97.3%
Number of Detected Samples[2]	23	2	62	15	43
% Detection	15.8%	1.4%	43.7%	10.3%	29.5%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
July	37.9	35.4	12.1	37.4	46.1
August	39.2	34.0	11.9	45.1	41.5
September	47.0	39.4	27.0	72.7	69.8
October	58.9	38.5	30.0	40.5	48.1
November	62.9	38.4	24.1	41.6	48.1
Program to Date	47.1	36.8	21.9	45.0	50.3
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
July	30.2	28.4	31.5	52.2	53.9
August	26.6	26.6	27.8	21.3	34.6
September	25.1	21.9	25.8	20.9	31.0
October	17.3	15.2	16.7	16.0	17.1
November	18.2	16.8	16.5	13.2	14.8
Program to Date	25.5	24.0	26.5	28.6	33.5
All readings in µg/m3 – micrograms per cubic meter					

December 2014
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for December 2014 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

EMILCOTT

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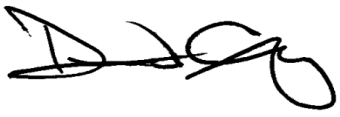
Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: December 2014

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: December 2014

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 3, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and December 31, 2014. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and December 31, 2014 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	**AMS-1 ng/m^3**	**AMS-2 ng/m^3**	**AMS-3 ng/m^3**	**AMS-4 ng/m^3**	**AMS-5 ng/m^3**
30-day[2]	**45**	8.0	7.7	1.6	7.7	7.7
60-day[2]	**40**	7.8	7.7	1.5	7.7	7.7
90-day[2]	**35**	7.8	7.8	1.5	7.7	7.8
PTD[3]		7.5	7.4	2.0	7.4	6.8

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 171 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.54% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the month of December included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the December 2014 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Monday, December 1, 2014	6.5	6.5	2.2	6.5	6.5
Tuesday, December 2, 2014	7.5	7.5	2.2	7.5	7.5
Wednesday, December 3, 2014	7.5	7.5	2.2	7.5	7.0
Thursday, December 4, 2014	7.0	7.0	2.3	7.0	7.0
Friday, December 5, 2014	7.5	6.5	2.2	6.5	6.5
Saturday, December 6, 2014			2.2		
Sunday, December 7, 2014			2.2		
Monday, December 8, 2014	7.0	6.5	2.3	6.5	6.5
Tuesday, December 9, 2014	NA	7.5	2.2	7.0	7.0
Wednesday, December 10, 2014	8.5	6.5	2.2	6.5	6.5
Thursday, December 11, 2014	7.5	6.5	2.2	6.5	6.5
Friday, December 12, 2014	8.5	8.5	0.8	8.0	8.5
Saturday, December 13, 2014			0.8		
Sunday, December 14, 2014			0.8		
Monday, December 15, 2014	8.0	7.5	2.2	7.5	7.5
Tuesday, December 16, 2014	7.0	7.0	2.2	7.0	7.0
Wednesday, December 17, 2014	6.5	6.5	2.3	6.5	7.0
Thursday, December 18, 2014	6.5	6.5	2.2	6.5	6.5
Friday, December 19, 2014	9.5	9.0	0.8	9.0	9.5
Saturday, December 20, 2014			0.8		
Sunday, December 21, 2014			0.8		
Monday, December 22, 2014	7.5	7.0	2.3	7.5	7.5
Tuesday, December 23, 2014	7.5	7.5	2.3	7.5	7.5
Wednesday, December 24, 2014	17.0	18.5	0.5	18.0	18.0
Thursday, December 25, 2014	NA	NA	0.5	NA	NA
Friday, December 26, 2014	NA	NA	0.5	NA	NA
Saturday, December 27, 2014			0.5		
Sunday, December 28, 2014			0.5		
Monday, December 29, 2014	7.5	7.5	2.1	7.5	7.5
Tuesday, December 30, 2014	7.0	7.0	2.2	7.0	7.0
Wednesday, December 31, 2014	NA	NA	0.4	NA	NA

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Note: No samples taken on 12/25/14 and 12/26/14 due to site closure for holiday. Samples from 12/31/14 discarded due to insufficient run time.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Monday, December 1, 2014	33.5	32.5	29.0	33.5	33.0
Tuesday, December 2, 2014	36.5	36.5	11.0	37.0	37.0
Wednesday, December 3, 2014	36.5	37.5	23.0	36.5	36.0
Thursday, December 4, 2014	34.0	34.0	37.0	34.0	34.0
Friday, December 5, 2014	37.0	32.0	41.0	32.5	32.0
Saturday, December 6, 2014			41.0		
Sunday, December 7, 2014			41.0		
Monday, December 8, 2014	34.5	32.5	57.0	33.5	33.5
Tuesday, December 9, 2014	NA	36.5	11.0	36.0	35.5
Wednesday, December 10, 2014	41.5	32.0	11.0	32.5	32.0
Thursday, December 11, 2014	37.0	32.5	11.0	33.0	32.5
Friday, December 12, 2014	43.5	43.5	3.8	41.0	41.5
Saturday, December 13, 2014			3.8		
Sunday, December 14, 2014			3.8		
Monday, December 15, 2014	83.0	36.5	57.0	36.5	36.5
Tuesday, December 16, 2014	140.0	35.0	70.0	150.0	190.0
Wednesday, December 17, 2014	32.0	33.0	11.5	33.5	34.5
Thursday, December 18, 2014	33.0	32.0	11.0	32.0	33.0
Friday, December 19, 2014	48.5	45.0	10.0	45.5	47.0
Saturday, December 20, 2014			10.0		
Sunday, December 21, 2014			10.0		
Monday, December 22, 2014	37.0	35.0	23.0	77.0	76.0
Tuesday, December 23, 2014	36.5	36.5	11.5	38.0	38.0
Wednesday, December 24, 2014	85.0	90.0	2.3	90.0	90.0
Thursday, December 25, 2014	NA	NA	2.3	NA	NA
Friday, December 26, 2014	NA	NA	2.3	NA	NA
Saturday, December 27, 2014			2.3		
Sunday, December 28, 2014			2.3		
Monday, December 29, 2014	36.5	36.5	10.5	38.0	36.5
Tuesday, December 30, 2014	34.5	35.5	23.0	35.5	35.5
Wednesday, December 31, 2014	NA	NA	8.5	NA	NA

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Note: No samples taken on 12/25/14 and 12/26/14 due to site closure for holiday. Samples from 12/31/14 discarded due to insufficient run time.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

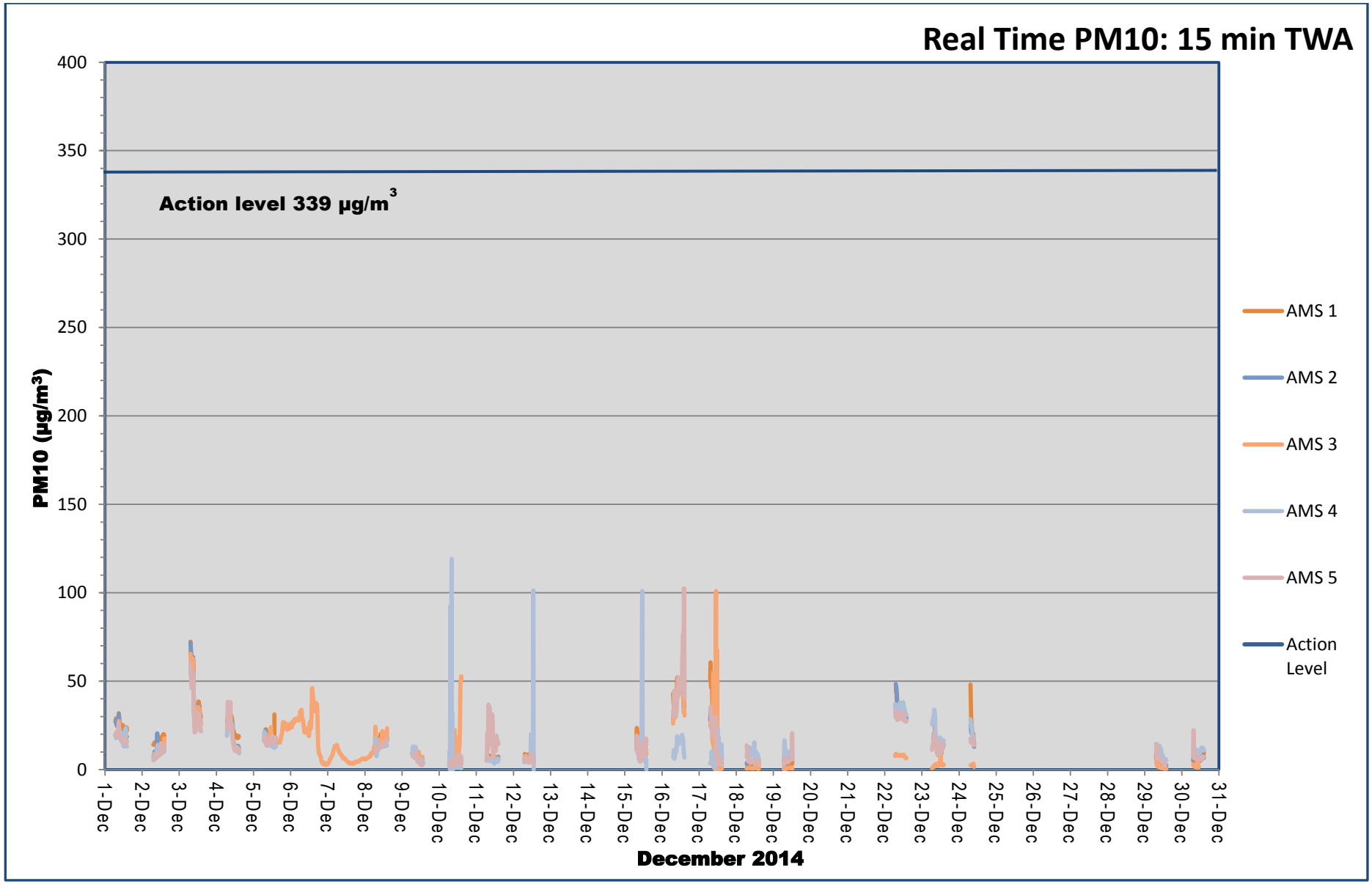

Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading (µg/m^3)	PID Reading (ppm)	Location
Monday, December 1, 2014	10:00	26.0	0.0	DW Perimeter
Tuesday, December 2, 2014	11:15	17.0	0.0	DW Perimeter
Wednesday, December 3, 2014	9:45	62.0	0.0	DW Perimeter
Thursday, December 4, 2014	8:45	33.0	0.0	DW Perimeter
Friday, December 5, 2014	10:00	23.0	0.0	DW Perimeter
Saturday, December 6, 2014	-	-	-	-
Sunday, December 7, 2014	-	-	-	-
Monday, December 8, 2014	13:00	15.0	0.0	DW Perimeter
Tuesday, December 9, 2014	10:30	17.0	0.0	DW Perimeter
Wednesday, December 10, 2014	14:00	22.0	0.0	DW Perimeter
Thursday, December 11, 2014	9:45	27.0	0.0	DW Perimeter
Friday, December 12, 2014	9:00	12.0	0.0	DW Perimeter
Saturday, December 13, 2014	-	-	-	-
Sunday, December 14, 2014	-	-	-	-
Monday, December 15, 2014	10:30	21.0	0.0	DW Perimeter
Tuesday, December 16, 2014	8:00	33.0	0.0	DW Perimeter
Wednesday, December 17, 2014	8:45	27.0	0.0	DW Perimeter
Thursday, December 18, 2014	11:30	11.0	0.0	DW Perimeter
Friday, December 19, 2014	13:15	14.0	0.0	DW Perimeter
Saturday, December 20, 2014	-	-	-	-
Sunday, December 21, 2014	-	-	-	-
Monday, December 22, 2014	13:30	17.0	0.0	DW Perimeter
Tuesday, December 23, 2014	11:00	23.0	0.0	DW Perimeter
Wednesday, December 24, 2014	7:45	26.0	0.0	DW Perimeter
Thursday, December 25, 2014	NA	NA	NA	NA
Friday, December 26, 2014	NA	NA	NA	NA
Saturday, December 27, 2014	-	-	-	-
Sunday, December 28, 2014	-	-	-	-
Monday, December 29, 2014	8:45	10.0	0.0	DW Perimeter
Tuesday, December 30, 2014	9:30	12.0	0.0	DW Perimeter
Wednesday, December 31, 2014	8:15	17.0	0.0	DW Perimeter

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred. DW Perimeter denotes down-wind perimeter.

Note: No readings taken on 12/25/14 and 12/26/14 due to site closure for holiday.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

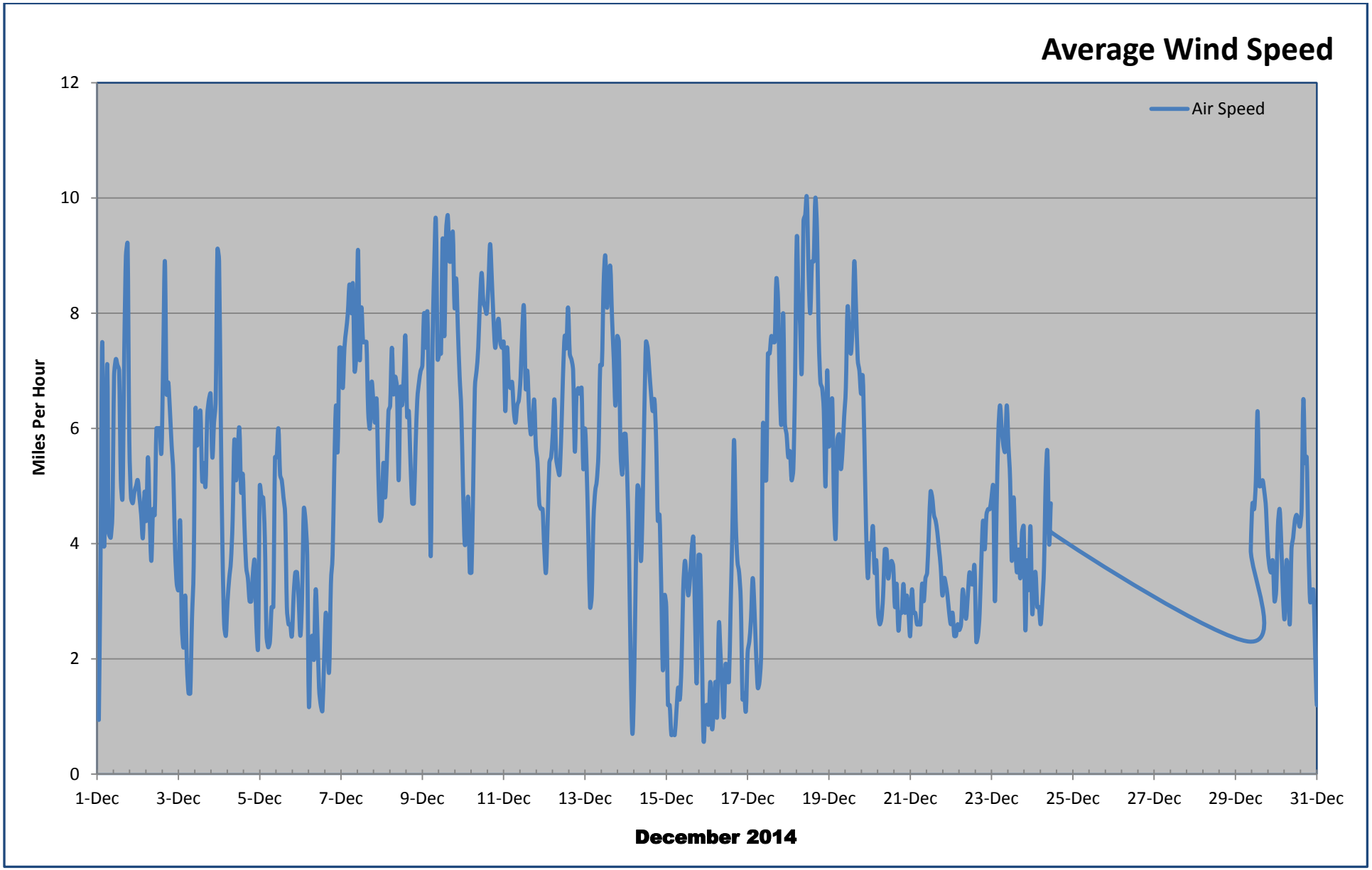

Figure A-3: Temperature

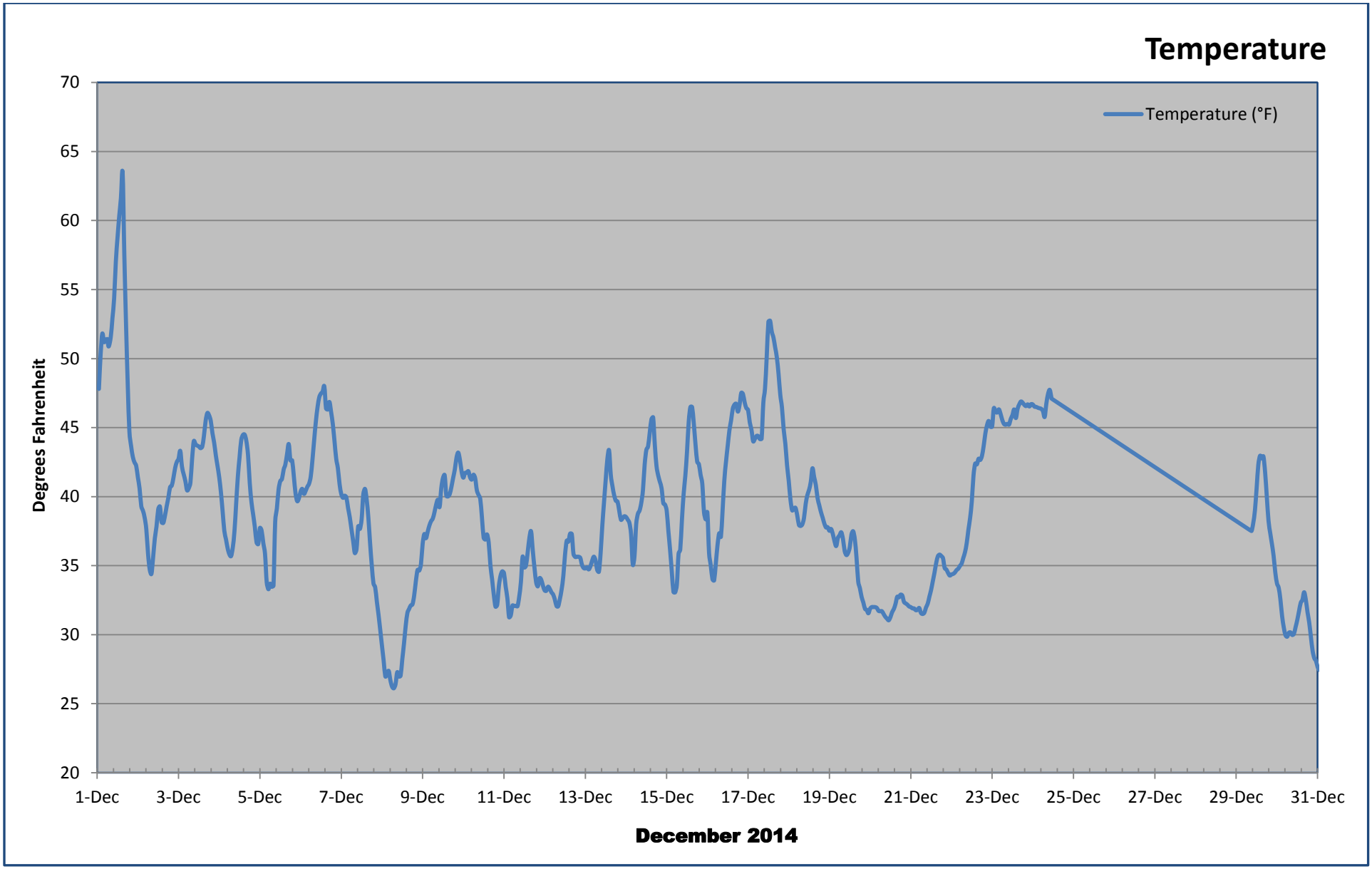

Figure A-4: Relative Humidity

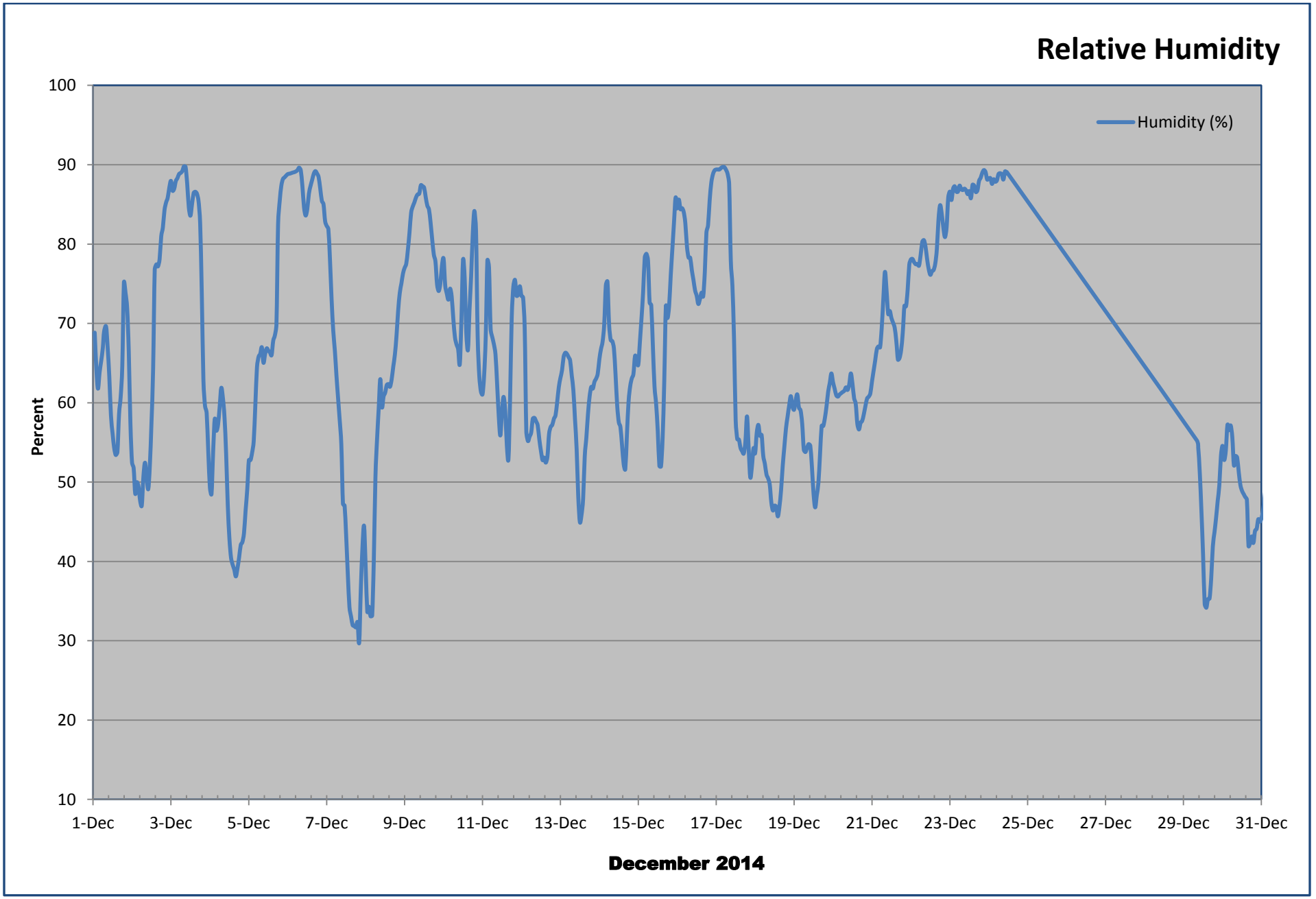

Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	165	165	163	166	166
Rate of Data Collection	96.5%	96.5%	95.3%	97.1%	97.1%
Number of Detected Samples[2]	0	0	1	0	0
% of Cr^{+6} Samples Greater than MDL	0.0%	0.0%	0.6%	0.0%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.019%	0.020%	0.013%	0.019%	0.019%
Maximum % Cr^{+6} in Dust[3]	0.021%	0.021%	0.020%	0.021%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
July	7.3	7.2	1.6	7.2	7.2
August	7.0	6.9	1.5	6.6	6.7
September	7.8	7.7	1.7	7.6	7.7
October	7.8	7.8	1.6	7.8	7.8
November	7.6	7.8	1.4	7.7	7.8
December	8.0	7.7	1.6	7.7	7.7
Program to Date	7.5	7.4	2.0	7.4	6.8
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	165	165	163	166	166
Rate of Data Collection	96.5%	96.5%	95.3%	97.1%	97.1%
Number of Detected Samples[2]	25	2	73	17	45
% Detection	15.2%	1.2%	44.8%	10.2%	27.1%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
July	37.9	35.4	12.1	37.4	46.1
August	39.2	34.0	11.9	45.1	41.5
September	47.0	39.4	27.0	72.7	69.8
October	58.9	38.5	30.0	40.5	48.1
November	62.9	38.4	24.1	41.6	48.1
December	47.4	38.2	19.1	46.3	48.2
Program to Date	47.1	37.0	21.5	45.1	50.1
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
July	30.2	28.4	31.5	52.2	53.9
August	26.6	26.6	27.8	21.3	34.6
September	25.1	21.9	25.8	20.9	31.0
October	17.3	15.2	16.7	16.0	17.1
November	18.2	16.8	16.5	13.2	14.8
December	17.2	14.9	12.9	16.1	15.0
Program to Date	24.6	23.0	24.4	27.2	31.4
All readings in µg/m3 – micrograms per cubic meter					

January 2015
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for January 2015 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

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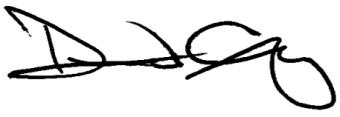
Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: January 2015

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: January 2015

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 3, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and January 31, 2015. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and January 31, 2015 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	AMS-1 ng/m^3	AMS-2 ng/m^3	AMS-3 ng/m^3	AMS-4 ng/m^3	AMS-5 ng/m^3
30-day[2]	**45**	8.4	7.6	2.1	8.2	7.6
60-day[2]	**40**	8.2	7.7	1.8	8.0	7.7
90-day[2]	**35**	8.0	7.7	1.7	7.8	7.7
PTD[3]		7.6	7.4	2.0	7.5	6.9

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 190 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.56% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the month of January included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the January 2015 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Thursday, January 1, 2015	NA	NA	0.4	NA	NA
Friday, January 2, 2015	NA	NA	0.4	NA	NA
Saturday, January 3, 2015			0.4		
Sunday, January 4, 2015			0.4		
Monday, January 5, 2015	8.0	6.5	2.2	7.0	7.0
Tuesday, January 6, 2015	7.5	7.5	2.3	7.5	7.0
Wednesday, January 7, 2015	7.5	7.0	2.3	7.5	7.0
Thursday, January 8, 2015	8.0	7.5	2.3	8.0	7.5
Friday, January 9, 2015	7.5	7.5	0.8	7.5	7.0
Saturday, January 10, 2015			0.8		
Sunday, January 11, 2015			0.8		
Monday, January 12, 2015	7.0	7.0	2.3	7.0	7.0
Tuesday, January 13, 2015	7.5	7.5	2.3	7.5	7.5
Wednesday, January 14, 2015	7.0	7.0	5.5	15.0	7.0
Thursday, January 15, 2015	17.0	7.5	4.8	8.0	8.0
Friday, January 16, 2015	7.5	7.5	0.8	7.5	7.5
Saturday, January 17, 2015			0.8		
Sunday, January 18, 2015			0.8		
Monday, January 19, 2015	7.5	7.0	2.3	7.5	7.5
Tuesday, January 20, 2015	7.5	7.0	2.3	7.5	7.0
Wednesday, January 21, 2015	7.5	7.5	2.3	7.5	7.0
Thursday, January 22, 2015	7.5	7.5	7.5	7.0	7.0
Friday, January 23, 2015	7.5	7.5	2.3	7.5	7.5
Saturday, January 24, 2015			2.3		
Sunday, January 25, 2015			2.3		
Monday, January 26, 2015	NA	NA	NA	NA	NA
Tuesday, January 27, 2015	NA	NA	NA	NA	NA
Wednesday, January 28, 2015	11.0	11.0	2.3	11.0	11.0
Thursday, January 29, 2015	8.0	8.0	2.3	8.0	8.0
Friday, January 30, 2015	9.5	9.5	2.3	9.0	9.0
Saturday, January 31, 2015			2.3		

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Note: No samples taken on 1/1/15 and 1/2/15 due to site closure for holiday. Samples from 1/26/15 discarded due to insufficient run time. No samples taken on 1/27/15 due to site closure due to snow.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Thursday, January 1, 2015			8.5		
Friday, January 2, 2015			8.5		
Saturday, January 3, 2015			8.5		
Sunday, January 4, 2015			8.5		
Monday, January 5, 2015	39.5	33.5	10.5	35.5	34.5
Tuesday, January 6, 2015	38.0	36.0	11.0	37.0	36.0
Wednesday, January 7, 2015	38.5	36.0	11.5	36.5	35.5
Thursday, January 8, 2015	39.5	37.5	31.0	39.5	38.5
Friday, January 9, 2015	37.5	37.0	3.8	36.0	35.5
Saturday, January 10, 2015			3.8		
Sunday, January 11, 2015			3.8		
Monday, January 12, 2015	35.0	36.0	32.0	36.0	36.0
Tuesday, January 13, 2015	36.5	36.5	11.5	37.0	36.5
Wednesday, January 14, 2015	36.0	36.0	45.0	36.0	36.0
Thursday, January 15, 2015	41.5	38.5	48.0	39.0	39.0
Friday, January 16, 2015	38.0	36.5	3.8	36.5	36.5
Saturday, January 17, 2015			3.8		
Sunday, January 18, 2015			3.8		
Monday, January 19, 2015	37.0	34.5	11.5	36.5	36.0
Tuesday, January 20, 2015	36.5	36.0	30.0	36.5	36.0
Wednesday, January 21, 2015	37.5	36.5	52.0	36.5	36.0
Thursday, January 22, 2015	89.0	37.0	37.0	36.0	35.5
Friday, January 23, 2015	130.0	38.0	84.0	37.0	78.0
Saturday, January 24, 2015			84.0		
Sunday, January 25, 2015			84.0		
Monday, January 26, 2015	NA	NA	NA	NA	NA
Tuesday, January 27, 2015	NA	NA	NA	NA	NA
Wednesday, January 28, 2015	55.0	55.0	11.5	55.0	55.0
Thursday, January 29, 2015	130.0	40.0	64.0	40.0	88.0
Friday, January 30, 2015	47.0	47.0	11.5	45.0	45.0
Saturday, January 31, 2015			11.5		

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Note: No samples taken on 1/1/15 and 1/2/15 due to site closure for holiday. Samples from 1/26/15 discarded due to insufficient run time. No samples taken on 1/27/15 due to site closure due to snow.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

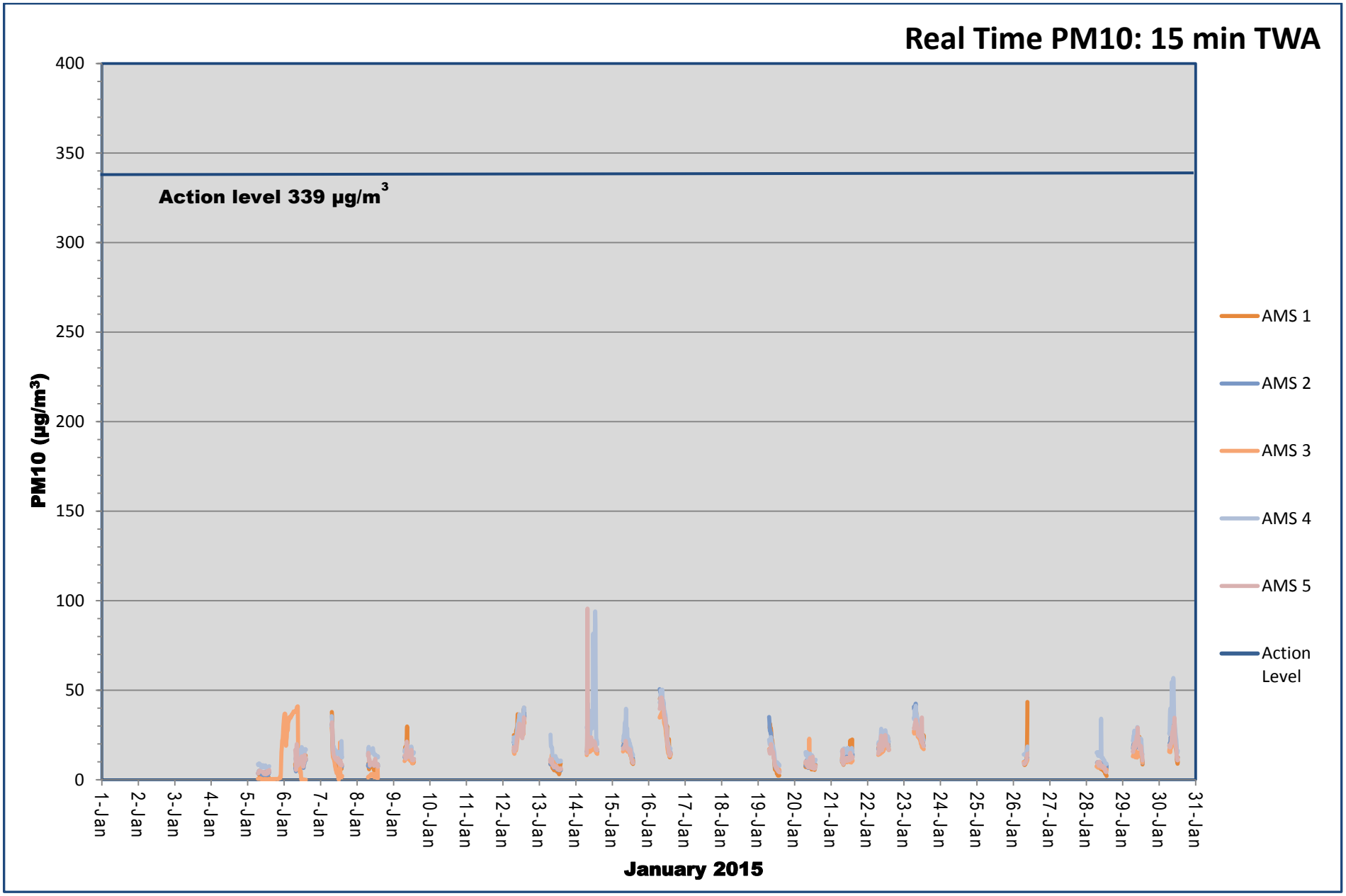

Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading (µg/m^3)	PID Reading (ppm)	Location
Thursday, January 1, 2015	NA	NA	NA	NA
Friday, January 2, 2015	NA	NA	NA	NA
Saturday, January 3, 2015	-	-	-	-
Sunday, January 4, 2015	-	-	-	-
Monday, January 5, 2015	10:15	7.0	0.0	DW Perimeter
Tuesday, January 6, 2015	9:30	23.0	0.0	DW Perimeter
Wednesday, January 7, 2015	8:45	33.0	0.0	DW Perimeter
Thursday, January 8, 2015	11:15	14.0	0.0	DW Perimeter
Friday, January 9, 2015	13:00	18.0	0.0	DW Perimeter
Saturday, January 10, 2015	-	-	-	-
Sunday, January 11, 2015	-	-	-	-
Monday, January 12, 2015	8:30	35.0	0.0	DW Perimeter
Tuesday, January 13, 2015	7:45	16.0	0.0	DW Perimeter
Wednesday, January 14, 2015	10:00	34.0	0.0	DW Perimeter
Thursday, January 15, 2015	13:15	27.0	0.0	DW Perimeter
Friday, January 16, 2015	13:30	44.0	0.0	DW Perimeter
Saturday, January 17, 2015	-	-	-	-
Sunday, January 18, 2015	-	-	-	-
Monday, January 19, 2015	9:45	27.0	0.0	DW Perimeter
Tuesday, January 20, 2015	10:45	14.0	0.0	DW Perimeter
Wednesday, January 21, 2015	9:30	19.0	0.0	DW Perimeter
Thursday, January 22, 2015	8:00	26.0	0.0	DW Perimeter
Friday, January 23, 2015	11:45	35.0	0.0	DW Perimeter
Saturday, January 24, 2015	-	-	-	-
Sunday, January 25, 2015	-	-	-	-
Monday, January 26, 2015	13:00	22.0	0.0	DW Perimeter
Tuesday, January 27, 2015	NA	NA	NA	NA
Wednesday, January 28, 2015	8:30	14.0	0.0	DW Perimeter
Thursday, January 29, 2015	9:00	27.0	0.0	DW Perimeter
Friday, January 30, 2015	11:15	41.0	0.0	DW Perimeter
Saturday, January 31, 2015	-	-	-	-

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred. DW Perimeter denotes down-wind perimeter.

Note: No readings taken on 1/1/15 and 1/2/15 due to site closure for holiday. No readings taken on 1/27/15 due to site closure for snow.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

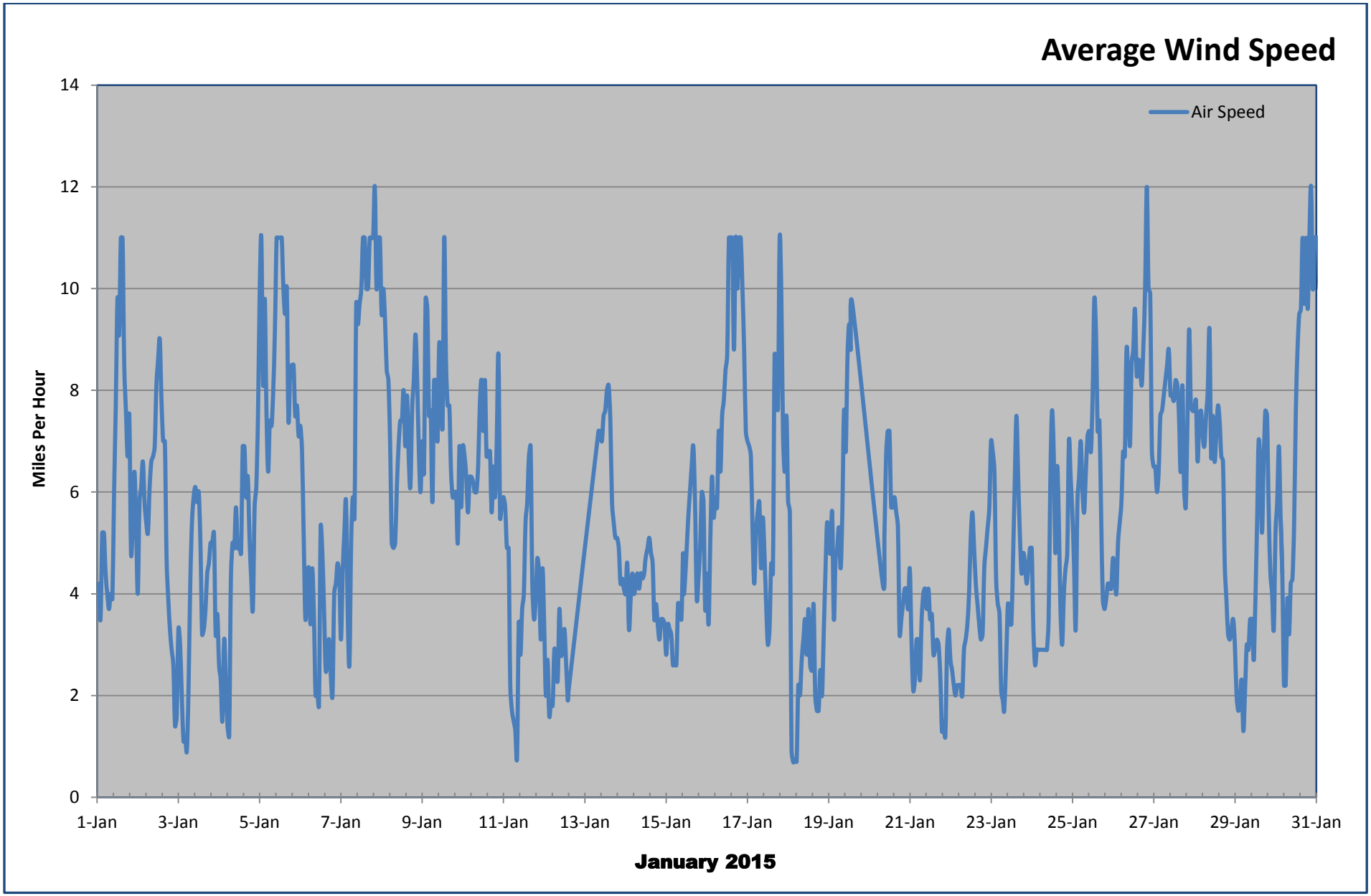

Figure A-3: Temperature

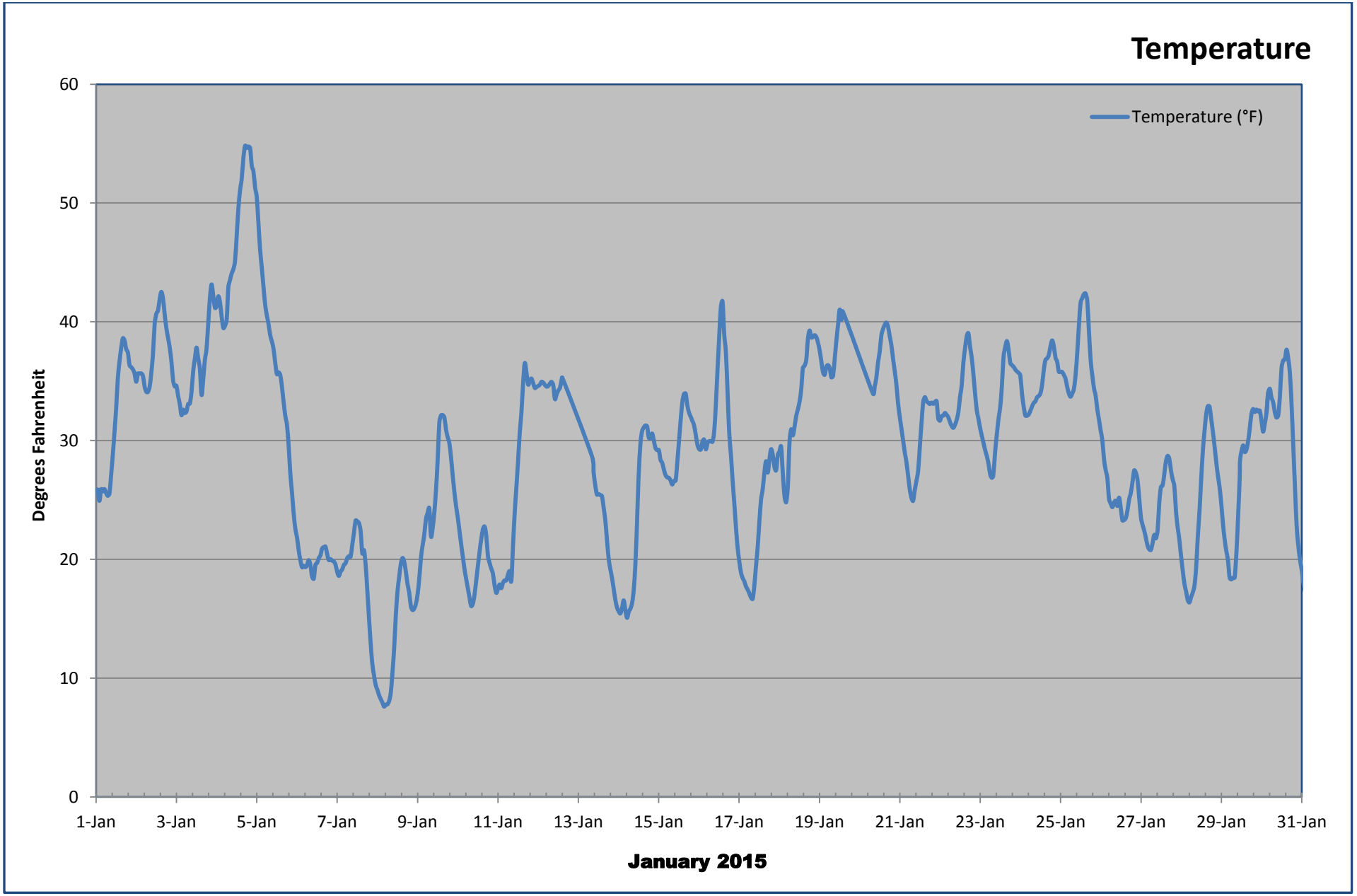

Figure A-4: Relative Humidity

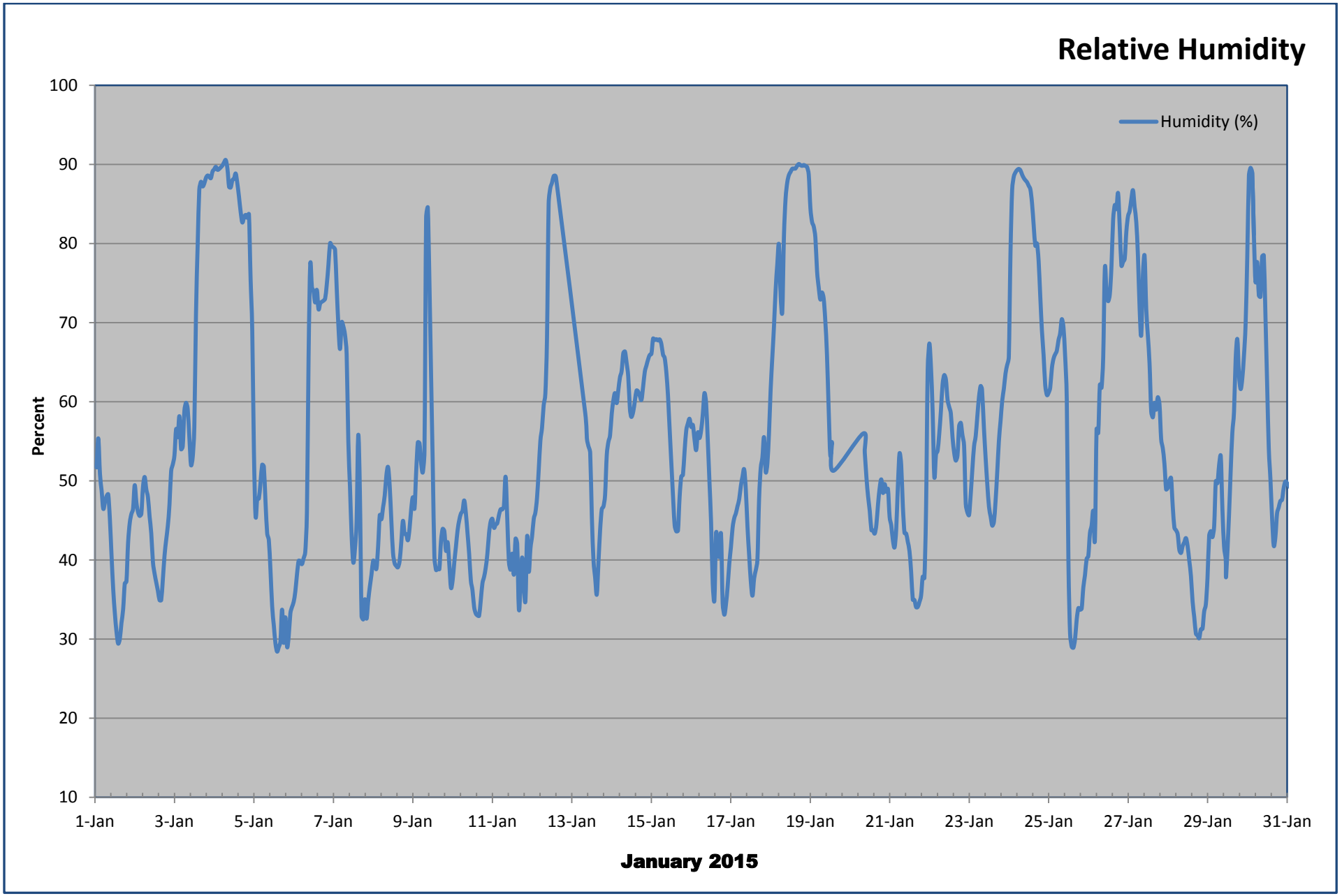

Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	183	183	181	184	184
Rate of Data Collection	96.3%	96.3%	95.3%	96.8%	96.8%
Number of Detected Samples[2]	1	0	3	1	0
% of Cr^{+6} Samples Greater than MDL	0.5%	0.0%	1.7%	0.5%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.019%	0.020%	0.013%	0.021%	0.019%
Maximum % Cr^{+6} in Dust[3]	0.041%	0.021%	0.021%	0.042%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
July	7.3	7.2	1.6	7.2	7.2
August	7.0	6.9	1.5	6.6	6.7
September	7.8	7.7	1.7	7.6	7.7
October	7.8	7.8	1.6	7.8	7.8
November	7.6	7.8	1.4	7.7	7.8
December	8.0	7.7	1.6	7.7	7.7
January	8.4	7.6	2.1	8.2	7.6
Program to Date	7.6	7.4	2.0	7.5	6.9
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	183	183	181	184	184
Rate of Data Collection	96.3%	96.3%	95.3%	96.8%	96.8%
Number of Detected Samples[2]	28	2	81	17	47
% Detection	15.3%	1.1%	44.8%	9.2%	25.5%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
July	37.9	35.4	12.1	37.4	46.1
August	39.2	34.0	11.9	45.1	41.5
September	47.0	39.4	27.0	72.7	69.8
October	58.9	38.5	30.0	40.5	48.1
November	62.9	38.4	24.1	41.6	48.1
December	47.4	38.2	19.1	46.3	48.2
January	52.3	38.2	25.5	38.4	43.0
Program to Date	47.6	37.1	22.0	44.5	49.4
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
July	30.2	28.4	31.5	52.2	53.9
August	26.6	26.6	27.8	21.3	34.6
September	25.1	21.9	25.8	20.9	31.0
October	17.3	15.2	16.7	16.0	17.1
November	18.2	16.8	16.5	13.2	14.8
December	17.2	14.9	12.9	16.1	15.0
January	15.4	15.6	13.4	20.3	15.7
Program to Date	23.8	22.4	23.4	26.6	30.0
All readings in µg/m3 – micrograms per cubic meter					

February/March 2015
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for February/March 2015 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

EMILCOTT

Submitted to:
PPG Industries, Inc.
4325 Rosanna Drive
Allison Park, PA

Submitted by:
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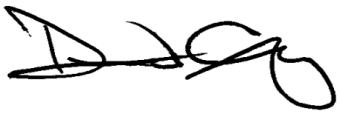
Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: February/March 2015

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: February/March 2015

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
April 23, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and March 2, 2015. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and March 2, 2015 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	**AMS-1 ng/m^3**	**AMS-2 ng/m^3**	**AMS-3 ng/m^3**	**AMS-4 ng/m^3**	**AMS-5 ng/m^3**
30-day[2]	**45**	5.8	5.2	1.5	5.0	5.0
60-day[2]	**40**	7.1	6.4	1.8	6.7	6.3
90-day[2]	**35**	7.4	6.9	1.7	7.0	6.8
PTD[3]		7.4	7.2	2.0	7.3	6.7

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 210 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.53% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the months of February and March included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the February/March 2015 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Sunday, February 1, 2015			2.3		
Monday, February 2, 2015	5.5	5.5	1.2	5.5	5.5
Tuesday, February 3, 2015	5.0	5.0	1.2	5.0	5.0
Wednesday, February 4, 2015	3.4	3.4	1.2	3.4	3.4
Thursday, February 5, 2015	3.6	3.6	1.2	3.5	3.5
Friday, February 6, 2015	4.3	4.2	1.2	4.0	4.0
Saturday, February 7, 2015			1.2		
Sunday, February 8, 2015			1.2		
Monday, February 9, 2015	8.5	8.5	2.3	8.0	8.0
Tuesday, February 10, 2015	7.0	7.0	2.4	7.0	7.0
Wednesday, February 11, 2015	7.5	7.5	2.3	7.0	7.0
Thursday, February 12, 2015	6.5	6.5	2.3	6.5	6.5
Friday, February 13, 2015	6.5	7.0	2.3	6.5	6.5
Saturday, February 14, 2015			2.3		
Sunday, February 15, 2015			2.3		
Monday, February 16, 2015			0.6		
Tuesday, February 17, 2015			0.6		
Wednesday, February 18, 2015	15.0	4.1	2.7	4.0	4.0
Thursday, February 19, 2015			1.2		
Friday, February 20, 2015			1.0		
Saturday, February 21, 2015			1.0		
Sunday, February 22, 2015	3.2	3.2	1.3	3.1	3.1
Monday, February 23, 2015			1.3		
Tuesday, February 24, 2015	4.0	4.1	1.2	4.0	4.0
Wednesday, February 25, 2015	4.1	4.2	1.2	4.2	4.0
Thursday, February 26, 2015	3.9	3.8	1.2	3.7	3.7
Friday, February 27, 2015	4.9	5.0	1.2	5.0	4.8
Saturday, February 28, 2015			1.2		
Sunday, March 1, 2015			1.2		
Monday, March 2, 2015	5.5	5.5	1.2	5.5	5.5

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Sunday, February 1, 2015			11.5		
Monday, February 2, 2015	55.0	55.0	11.5	50.0	50.0
Tuesday, February 3, 2015	50.0	50.0	44.0	50.0	50.0
Wednesday, February 4, 2015	78.0	34.0	65.0	33.5	34.0
Thursday, February 5, 2015	35.5	35.5	11.5	35.0	34.5
Friday, February 6, 2015	42.5	41.0	11.5	40.0	39.5
Saturday, February 7, 2015			11.5		
Sunday, February 8, 2015			11.5		
Monday, February 9, 2015	41.5	42.0	11.5	40.5	40.5
Tuesday, February 10, 2015	34.0	35.0	11.5	34.0	72.0
Wednesday, February 11, 2015	37.0	37.0	52.0	36.0	36.0
Thursday, February 12, 2015	89.0	32.5	29.0	32.0	31.5
Friday, February 13, 2015	32.5	34.0	11.5	33.0	32.5
Saturday, February 14, 2015			11.5		
Sunday, February 15, 2015			11.5		
Monday, February 16, 2015			30.0		
Tuesday, February 17, 2015			30.0		
Wednesday, February 18, 2015	180.0	93.0	100.0	100.0	100.0
Thursday, February 19, 2015			27.0		
Friday, February 20, 2015			9.5		
Saturday, February 21, 2015			9.5		
Sunday, February 22, 2015	32.0	67.0	38.0	31.0	73.0
Monday, February 23, 2015			38.0		
Tuesday, February 24, 2015	110.0	40.0	11.5	39.5	39.5
Wednesday, February 25, 2015	120.0	41.0	68.0	41.0	160.0
Thursday, February 26, 2015	38.5	38.0	25.0	36.5	36.5
Friday, February 27, 2015	49.0	50.0	11.5	50.0	97.0
Saturday, February 28, 2015			11.5		
Sunday, March 1, 2015			11.5		
Monday, March 2, 2015	55.0	55.0	11.5	55.0	55.0

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

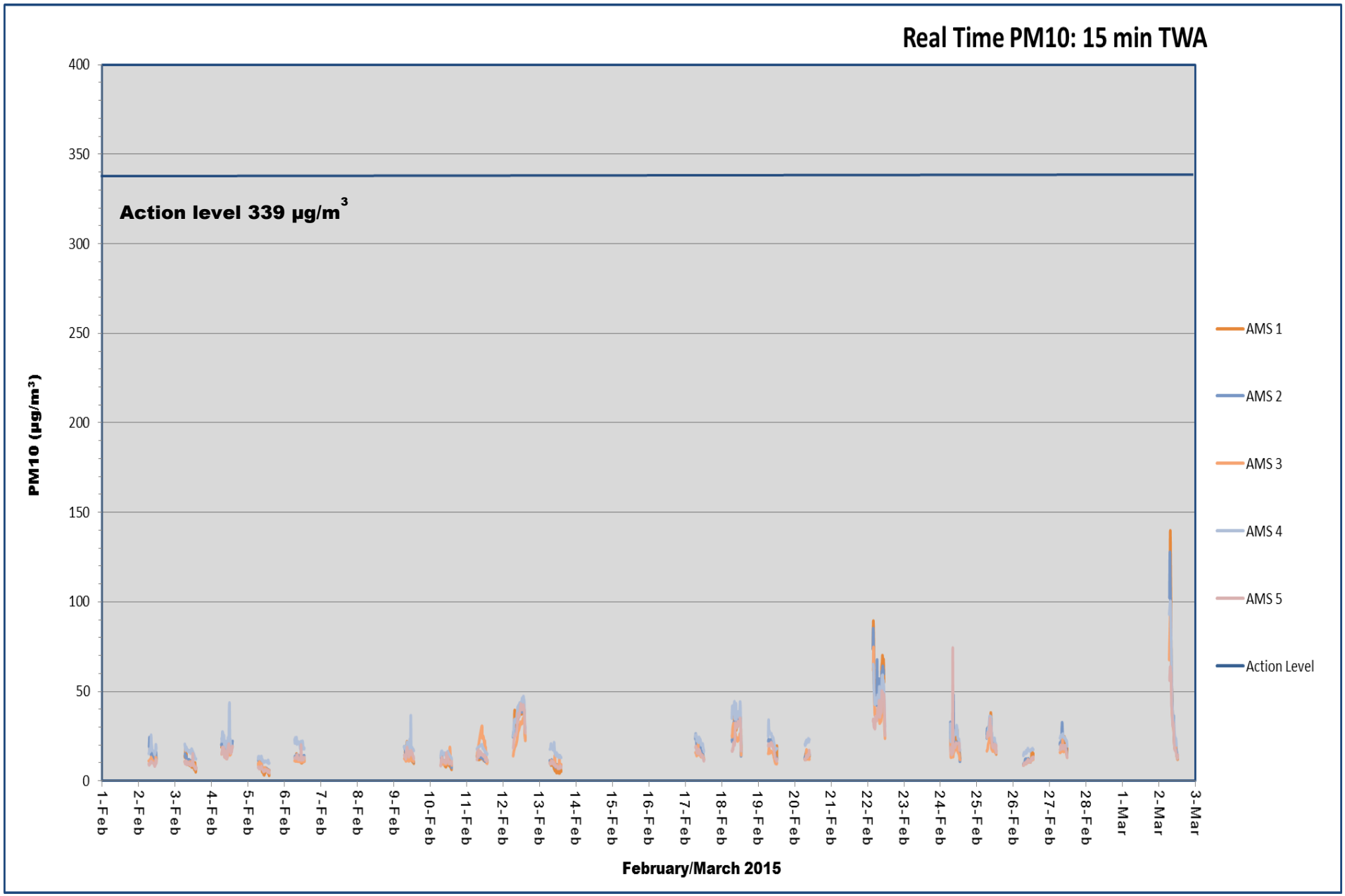

Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading (µg/m^3)	PID Reading (ppm)	Location
Sunday, February 1, 2015	-	-	-	-
Monday, February 2, 2015	9:45	16.0	0.0	DW Perimeter
Tuesday, February 3, 2015	13:00	13.0	0.0	DW Perimeter
Wednesday, February 4, 2015	10:00	29.0	0.0	DW Perimeter
Thursday, February 5, 2015	8:30	9.0	0.0	DW Perimeter
Friday, February 6, 2015	11:30	17.0	0.0	DW Perimeter
Saturday, February 7, 2015	-	-	-	-
Sunday, February 8, 2015	-	-	-	-
Monday, February 9, 2015	10:15	24.0	0.0	DW Perimeter
Tuesday, February 10, 2015	11:00	15.0	0.0	DW Perimeter
Wednesday, February 11, 2015	8:30	27.0	0.0	DW Perimeter
Thursday, February 12, 2015	9:15	52.0	0.0	DW Perimeter
Friday, February 13, 2015	13:15	16.0	0.0	DW Perimeter
Saturday, February 14, 2015	-	-	-	-
Sunday, February 15, 2015	-	-	-	-
Monday, February 16, 2015	NA	NA	NA	NA
Tuesday, February 17, 2015	11:30	23.0	0.0	DW Perimeter
Wednesday, February 18, 2015	9:45	37.0	0.0	DW Perimeter
Thursday, February 19, 2015	10:45	24.0	0.0	DW Perimeter
Friday, February 20, 2015	8:30	18.0	0.0	DW Perimeter
Saturday, February 21, 2015	-	-	-	-
Sunday, February 22, 2015	8:15	54.0	0.0	DW Perimeter
Monday, February 23, 2015	NA	NA	NA	NA
Tuesday, February 24, 2015	9:00	35.0	0.0	DW Perimeter
Wednesday, February 25, 2015	10:15	26.0	0.0	DW Perimeter
Thursday, February 26, 2015	10:30	15.0	0.0	DW Perimeter
Friday, February 27, 2015	8:45	27.0	0.0	DW Perimeter
Saturday, February 28, 2015	-	-	-	-
Sunday, March 1, 2015	-	-	-	-
Monday, March 2, 2015	8:30	32.0	0.0	DW Perimeter

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred. DW Perimeter denotes down-wind perimeter.

Note: No readings taken on 2/16/15 due to site closure for holiday. No readings taken on 2/23/15 due to site closure.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
NA	NA	NA	NA	NA	NA	NA

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter ($\mu g/m^3$)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

$\mu g/m^3$ – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

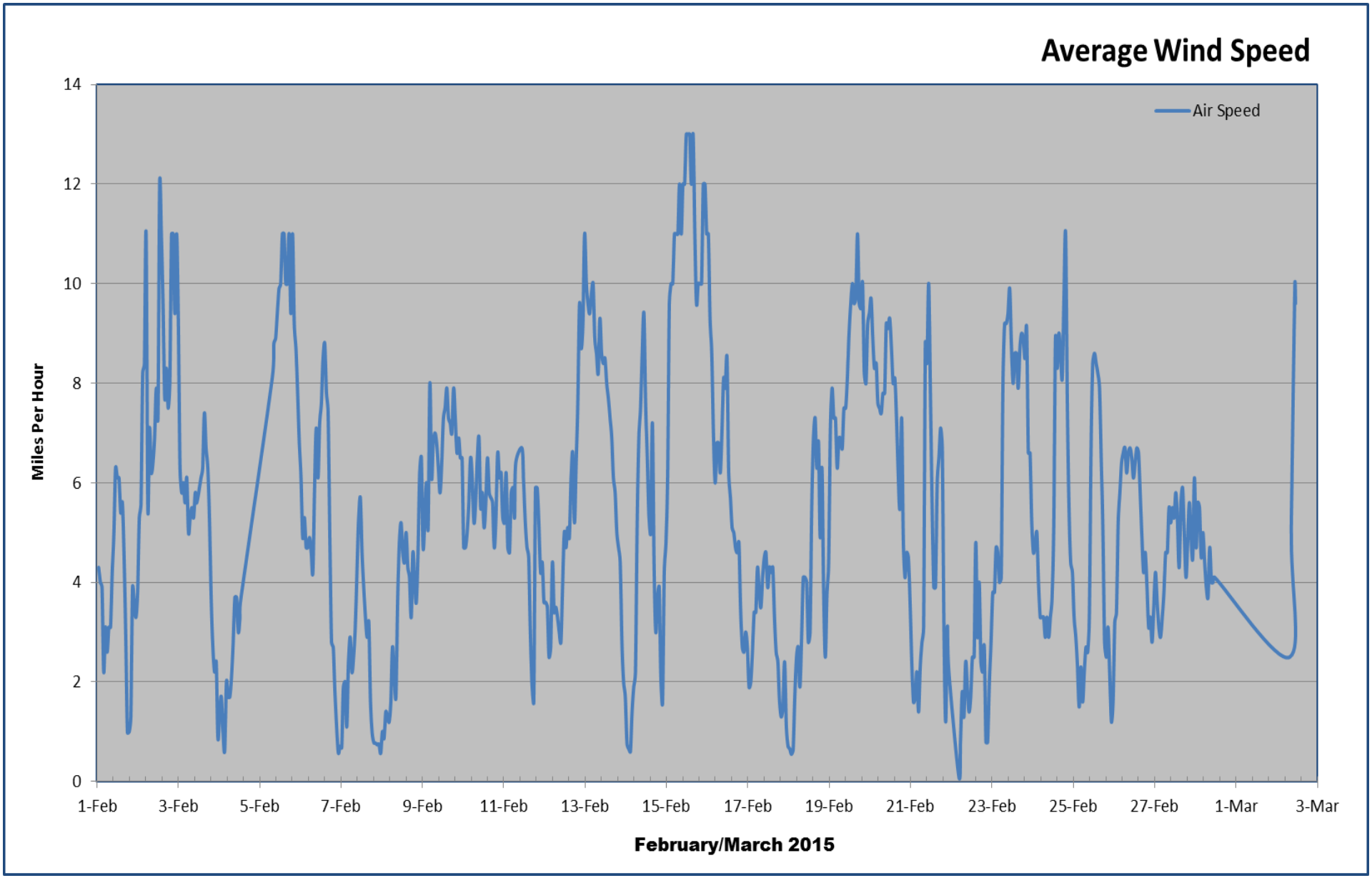

Figure A-3: Temperature

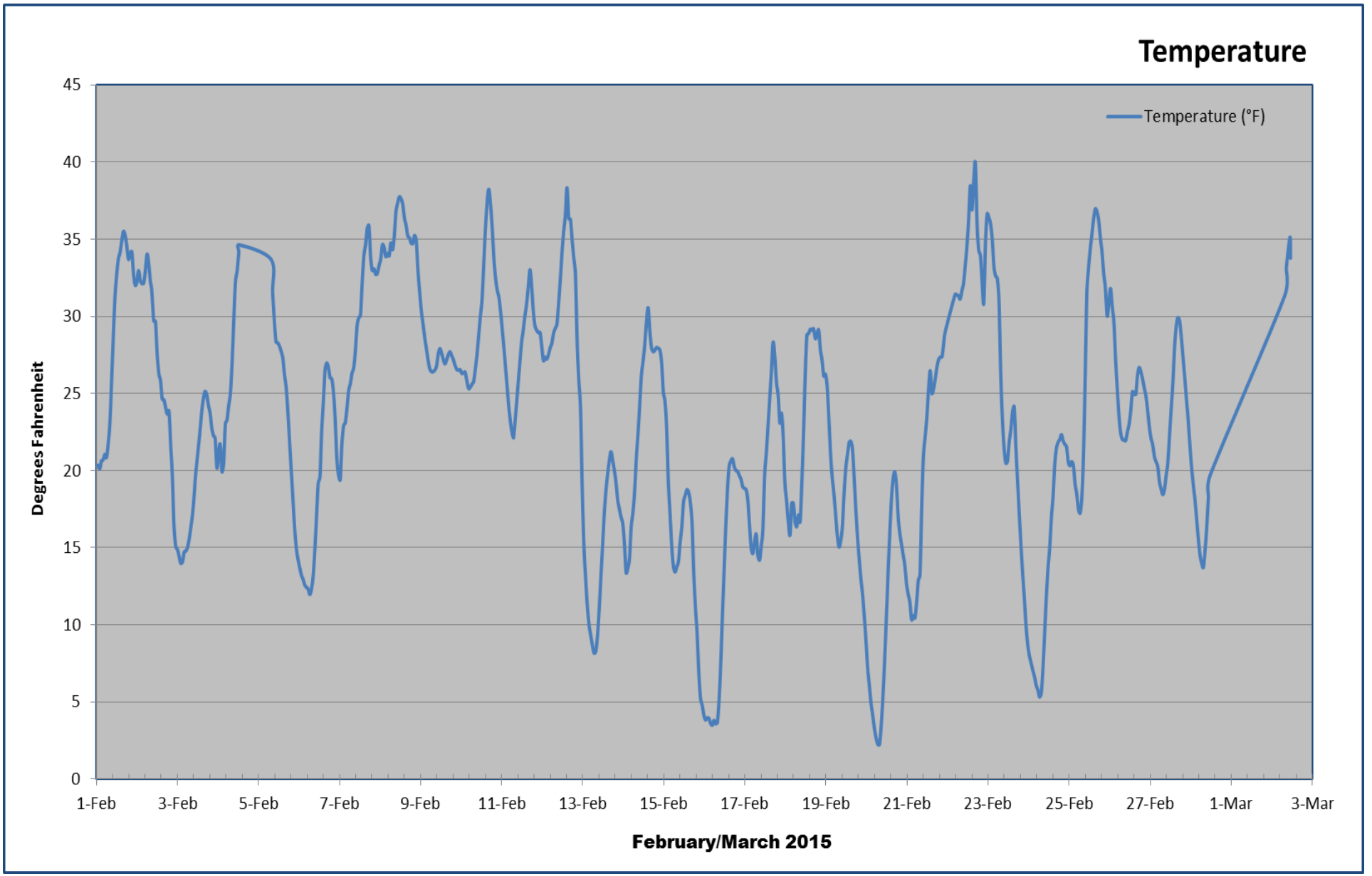

Figure A-4: Relative Humidity

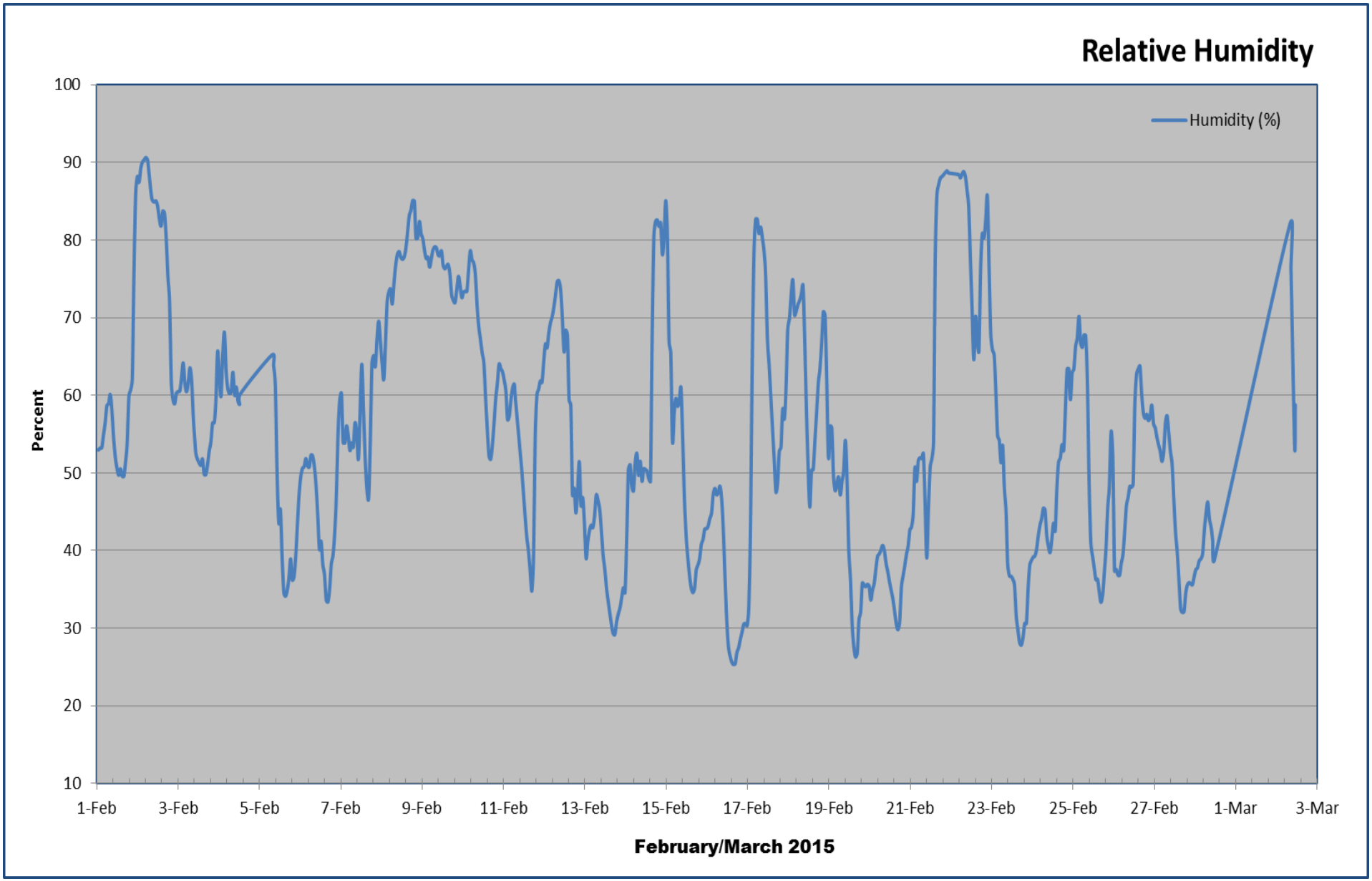

Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	200	200	201	201	201
Rate of Data Collection	95.2%	95.2%	95.7%	95.7%	95.7%
Number of Detected Samples[2]	2	0	5	1	0
% of Cr^{+6} Samples Greater than MDL	1.0%	0.0%	2.5%	0.5%	0.0%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.011%	0.012%	0.009%	0.013%	0.011%
Maximum % Cr^{+6} in Dust[3]	0.021%	0.021%	0.020%	0.021%	0.021%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
July	7.3	7.2	1.6	7.2	7.2
August	7.0	6.9	1.5	6.6	6.7
September	7.8	7.7	1.7	7.6	7.7
October	7.8	7.8	1.6	7.8	7.8
November	7.6	7.8	1.4	7.7	7.8
December	8.0	7.7	1.6	7.7	7.7
January	8.4	7.6	2.1	8.2	7.6
February/March	5.8	5.2	1.5	5.0	5.0
Program to Date	7.4	7.2	2.0	7.3	6.7
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	200	200	201	201	201
Rate of Data Collection	95.2%	95.2%	95.7%	95.7%	95.7%
Number of Detected Samples[2]	33	4	91	18	52
% Detection	16.5%	2.0%	45.3%	9.0%	26.0%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
July	37.9	35.4	12.1	37.4	46.1
August	39.2	34.0	11.9	45.1	41.5
September	47.0	39.4	27.0	72.7	69.8
October	58.9	38.5	30.0	40.5	48.1
November	62.9	38.4	24.1	41.6	48.1
December	47.4	38.2	19.1	46.3	48.2
January	52.3	38.2	25.5	38.4	43.0
February/March	63.5	45.9	25.0	43.4	57.7
Program to Date	49.0	37.9	22.3	44.4	50.1
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
July	30.2	28.4	31.5	52.2	53.9
August	26.6	26.6	27.8	21.3	34.6
September	25.1	21.9	25.8	20.9	31.0
October	17.3	15.2	16.7	16.0	17.1
November	18.2	16.8	16.5	13.2	14.8
December	17.2	14.9	12.9	16.1	15.0
January	15.4	15.6	13.4	20.3	15.7
February/March	20.3	20.2	16.8	24.2	19.4
Program to Date	23.5	22.2	22.9	26.4	29.1
All readings in µg/m3 – micrograms per cubic meter					

April/May 2015
Air Quality Report
Burma Road Site

Attached is a technical summary of air quality data for April/May 2015 at the Burma Road cleanup site submitted by PPG Industries' air monitoring consultant.

This report provides air monitoring information about conditions at the perimeter associated with Sites 63/65 (Burma Road).

Also, this document notes any deviations from the monitoring plan and work schedule caused by factors beyond the control of cleanup contractors, such as inclement weather and malfunctioning equipment.

EMILCOTT

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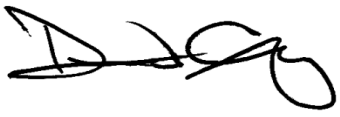
Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: April/May 2015

Monthly Air Monitoring Report
Burma Road Site
Jersey City, New Jersey

Reporting Period: April/May 2015

Prepared By: Carey Wu



Reviewed By: Dave Tomsey
July 20, 2015

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List of Acronyms

AAC – Acceptable Air Concentration

AMP – Air Monitoring Plan

AMS – Air Monitoring Station

Cr^{+6} – Hexavalent Chromium

FAM – Fixed Air Monitoring

LPM – Liters per Minute

ng/m^3 – Nanograms per Cubic Meter of Air

NJDEP – New Jersey Department of Environmental Protection

PM_{10} – Particulate Matter 10 Microns or less in Diameter

PPG – PPG Industries, Inc.

ppb – Parts per Billion

ppm – Parts per Million

$\mu g/m^3$ – Micrograms per Cubic Meter of Air

Executive Summary

Air monitoring conducted at the Burma Road Site was completed in accordance with the Site-Specific Air Monitoring Plan (AMP), and included sampling and analysis for 8-hour integrated hexavalent chromium (Cr^{+6}) and total particulates, as well as real-time monitoring for PM_{10} at all air monitoring stations. In addition to the air monitoring conducted in accordance with the AMP, 24-hour Cr^{+6} and total particulate sampling with lab analysis was also conducted at one station. This program is designed to measure various aspects of air quality at the Site to ensure that remedial activities at the Site do not have an adverse effect on Site workers and the surrounding community.

Results of the integrated Cr^{+6} sampling and analysis indicate that program-to-date average airborne Cr^{+6} concentrations are significantly below the Acceptable Air Concentration (AAC) at each of the AMS locations. The results and calculations document continuing compliance with the current AAC set by the New Jersey Department of Environmental Protection (NJDEP), confirm that dust control measures continue to be effective, and indicate that the levels of Cr^{+6} in dust generated at the Site do not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

1.0 Introduction

This monthly air monitoring report update includes both tabular information and written discussions summarizing the ambient air quality data collected in accordance with the Air Monitoring Plan (AMP) at the Burma Road Site (referred herein as Site), in Jersey City, New Jersey.

This monthly report is designed to provide a summary of the air monitoring data collected during the intrusive activities associated with Sites 63/65 through the reporting period. This monthly report includes both monthly and program-to-date summaries of the following:

- Integrated hexavalent chromium analytical results;
- Integrated total particulate analytical results;
- Real-time 15-minute average PM_{10} readings; and
- Meteorological conditions.

Results have been evaluated and compared to the Site-specific Acceptable Air Concentration (AAC) and the Action Levels in accordance with the AMP.

2.0 Air Monitoring

This report summarizes air monitoring at the Site performed between the baseline period and the end of the reporting period, with a focus on data collected during the recent month of activities. The baseline period includes data measured between April 8, 2014 and April 10, 2014.

Remedial activities began in the northern portion of the Site on April 28, 2014. Air monitoring stations provided protection during intrusive work between April 28, 2014 and May 5, 2015. The site contains five ground level stations. One station collects Cr^{+6} and total particulate samples for 24 hours during the week and 72 hours over the weekend. **Figure 2-1** provides an overview of the Site and a typical configuration of the AMS for the Site through the end of the reporting period. **Table 2-1** provides an overview of the air monitoring approach.

Air monitoring results to date have confirmed protection of the community, and the overall effectiveness of the program will be evaluated on a continuous basis. Success will ultimately be determined at the end of the remediation program when the average Cr^{+6} concentrations at each AMS location are compared to the AAC. This monthly report has been designed to evaluate the program's effectiveness on a monthly basis and a program-to-date basis. The Cr^{+6} average concentrations measured at each AMS will continually be compared to the site-specific AAC for Cr^{+6} to confirm the effectiveness of the program. Thus, the monthly reports will focus largely on the integrated analytical results collected as part of the Cr^{+6} fence-line air monitoring.

Air monitoring data collected at the Site includes:

- 8-hour integrated Cr^{+6} and total particulate sample collection and associated laboratory analysis;
- 24-hour and 72-hour integrated Cr^{+6} and total particulate samples collection and laboratory analysis; and
- Real-time 15-minute average PM_{10}, readings measured at the perimeter.
- Hand-held readings for PM_{10} and TVOC measured at the perimeter.

The following sections outline the types of data collected, frequency of collection, and the corresponding locations.

Table 2-1: Air Monitoring Approach

Site	Station	Integrated Air Monitoring	Real-Time Air Monitoring
Sites 63/65	**AMS1, AMS2, AMS3, AMS4, AMS5**	Integrated 8-hour Cr^{+6} and total particulate sampling and analysis during work days. 24-hour and 72-hour Cr^{+6} sampling and analysis at one station 7 days per week.	15-minute average PM_{10} readings measured during a typical work day.

Note: 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS5 from 5/01/14 through 5/15/14. From 5/16/14 to the present date, 24-hour and 72-hour Cr^{+6} sampling was conducted at station AMS3 to coincide with the relocation of the weather station.

2.1 Integrated Air Sampling

Integrated Cr^{+6} and total particulate samples are collected at each of the AMS for an 8-hour-to-10-hour duration each working day (typically Monday – Friday). Samples are collected on a pre-weighed polyvinyl chloride 37mm filter cassette for both Cr^{+6} and total particulate. Sampling pumps operate at or around 2 liters per minute and are calibrated at the beginning and end of each sampling run.

Figure 2-1: Site Overview

Legend:

- Fenceline AMS operates 8 to 10-hours per day
- Example Hand-Held Monitoring Locations
- Meteorological Station

N

Definitions:

AMS – Air Monitoring Station

2.1.1 Integrated Cr^{+6} Sampling

The exposed Cr^{+6} filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for Cr^{+6} analysis using Modified OSHA ID 215. The sample weights are provided by the laboratory with a laboratory detection limit of 20.0 ng. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated Cr^{+6} air concentrations in nanograms per cubic meter of air (ng/m^3). Filter weights reported as non-detect are included in the concentration calculation at one-half the laboratory detection limit for data reporting purposes.

In addition to sampling performed during working hours, 24-hour and 72-hour Cr^{+6} sampling and analysis are also performed at one AMS. These longer duration samples show Cr^{+6} concentrations during overnight and weekend periods. The 24-hour samples are typically collected daily from 7AM to 7AM Monday through Thursday, and a single 72-hour sample is collected from 7AM Friday through 7AM Monday.

2.1.2 Integrated Total Particulate Sampling

The exposed total particulate filters are shipped to an American Industrial Hygiene Association Industrial Hygiene Laboratory Accreditation Program-certified analytical laboratory for total particulate analysis using NIOSH Method 0500. The sample weights are provided by the laboratory with a laboratory detection limit of 100 ug. The sample weights and flow information are utilized to calculate 8-hour-to-10-hour integrated total particulate air concentrations in micrograms per cubic meter of air ($\mu g/m^3$). Filter weights reported as non-detect are included in the concentration calculation at one half the laboratory detection limit for data reporting purposes.

2.2 Real-Time Air Monitoring

Real-time air monitoring is divided into two types of monitoring including: perimeter monitoring and meteorological monitoring. Each monitoring type is described in more detail in the following sections.

2.2.1 Perimeter

Perimeter air monitoring consists of ground level stations at the perimeter of the Site. Perimeter monitoring includes the following:

- Real-time 15-minute average PM_{10} readings at each AMS location. All AMS operate 8-10 hours during remedial activities, Monday through Friday.

2.2.2 Meteorological Measurements

Meteorological measurements of 15-minute average wind speed and direction, relative humidity, pressure, and temperature are recorded onsite at station AMS-3, 24-hours a day, seven days a week.

2.3 Hand-held Air Monitoring

Hand-held air monitoring consists of two types of monitoring: perimeter PM_{10} readings and perimeter TVOC readings. Each type of monitoring is described in more detail in the following sections.

2.3.1 Perimeter PM_{10} Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities and logged to be reported weekly. The readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded for comparison to adjacent perimeter stations.

2.3.2 Perimeter TVOC Hand-held Monitoring

Hand-held readings will be taken along the downwind perimeter of the Site periodically each day during remedial activities in known VOC areas. Readings will be collected as instantaneous readings and if levels are elevated, 15-minute averages will be recorded and logged to be reported weekly.

3.0 Site-Specific Acceptable Air Concentration and Real-Time Action Levels

Site-specific Acceptable Air Concentration (AAC) and real-time Action Levels have been developed for Cr^{+6} and real-time PM_{10} concentrations by NJDEP as part of the approved AMP, in compliance with risk assessment procedures. The AAC and real-time Action Levels have been developed to protect off-site receptors from potential adverse health impacts from Cr^{+6} and particulates over the duration of the intrusive remediation activities.

Real-time monitoring and integrated results are compared against the AAC and the real-time action levels to alert Site management of the potential need to enhance control of emissions and curtail operations to maintain concentrations at levels below the specified criteria. The AAC and real-time action levels for integrated Cr^{+6} concentrations and real-time PM_{10} are outlined in the following sections.

3.1 Integrated Cr^{+6} Acceptable Air Concentration

A Site-specific Cr^{+6} AAC has been developed by NJDEP to protect off-site receptors from potential adverse health impacts due to potential exposure to Cr^{+6} in dust. The AAC for Cr^{+6} was developed to represent the maximum allowable average concentration of Cr^{+6} in the air at each AMS over the project duration. In accordance with New Jersey regulatory requirements, the AAC represents a maximum level corresponding to a one-in-one-million (1E-06) excess cancer risk to nearby residents due to potential exposure to Cr^{+6} emanating from the Site.

The AAC of 487 ng/m^3 is applicable at the perimeter and represents the maximum allowable average concentration measured over the project duration and was developed to ensure the protection of human health. This AAC is also used to evaluate the effectiveness of dust control. PPG has established an operational goal of achieving a project average hexavalent chromium air concentration of 49 ng/m^3 to the extent practicable using best management practices throughout the duration of intrusive remedial activities at the site.

To ensure ongoing compliance with the AAC, shorter duration rolling averages are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented to ensure that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. These shorter duration average concentrations metrics include:

program-to-date, 90-day, 60-day, and 30-day running averages where the average Cr^{+6} concentration over the previous 90-day, 60-day, and 30-day periods are calculated for each sample day. Sampling days are considered days where routine sampling was conducted (typically Monday – Friday). The shorter term average concentrations are compared against the list of metrics provided in Table 3-1 which also depicts respective response actions.

Table 3-1: Running Cr^{+6} Metrics

Metric Observation	Response Action
30-day[1] Cr^{+6} average concentration greater than or equal to 45 ng/m3	External meeting to review levels, evaluate activities each day when elevated concentrations were observed, and trigger corrective action if required.
60-day[1] Cr^{+6} average concentration greater than or equal to 40 ng/m3	
90-day[1] Cr^{+6} average concentration greater than or equal to 35 ng/m3	
[1] Refers to days on which samples were collected, not necessarily calendar days	

3.2 Real-Time Alert and Action Levels

Real-time Alert and Action Levels were designed to monitor and assist in control of Site emissions to ensure protection of human health, and represent an important aspect of the remedial program at the Site. The real-time Alert and Action Levels used on Site are shown in Table 3-2.

Table 3-2: Site-specific Alert and Action Levels

Parameter	Alert Level (15-min TWA)	Action Level (15-min TWA)
PM_{10}	255 µg/m^3	339 µg/m^3
TVOC (hand-held monitoring only)	1ppm	1.4ppm

4.0 Air Sampling and Monitoring Results

Results of air sampling and monitoring conducted between April 28, 2014 and May 5, 2015 are summarized herein. The following sections present both tabular and written discussions of the air sampling and monitoring results for the reporting period including:

- Monthly integrated and real-time results;
- Program-to-date integrated and real-time statistics;
- Evaluation of program success versus the Site-specific AAC and action levels;
- Meteorological results; and
- Hand-held monitoring results

Air sampling and monitoring results are presented in detail in the Appendices of this report. Appendix A includes summary of the air sampling and monitoring results for the reporting period. Appendix B includes program-to-date statistics and monthly comparison of results.

4.1 Integrated Air Sampling Results

Results of the integrated Cr^{+6} and total particulate sampling and analysis are presented in the following sections.

4.1.1 Cr^{+6} Sampling Results

Results of the Cr^{+6} sampling from the reporting period and a program-to-date evaluation are discussed in the following sections.

Reporting Period

Individual integrated 8-hour Cr^{+6} concentrations measured during the reporting period are presented in Table A-1. If an individual sample result exceeds 80% of the project duration AAC, additional evaluation and review of relevant Site conditions and activities were performed to potentially modify procedures if necessary to reduce the potential for increasing Cr^{+6} concentration trends. Any elevated concentration data during the reporting period are listed and discussed in Table A-3.

Program-to-date

Sampling and analytical statistics for integrated 8-hour Cr^{+6} results are shown in Table B-1 and include various program-to-date metrics relative to Cr^{+6} analytical data. Monthly average 8-hour Cr^{+6} concentration results are shown in Table B-2 for each AMS location.

Table 4-1: Short-Term Average 8-hour Integrated Cr^{+6} Metrics

Running Cr^{+6} Metrics[1]		Sites 63/65				
	Metric (ng/m^3)	**AMS-1 ng/m^3**	**AMS-2 ng/m^3**	**AMS-3 ng/m^3**	**AMS-4 ng/m^3**	**AMS-5 ng/m^3**
30-day[2]	**45**	5.1	5.9	2.2	5.2	5.1
60-day[2]	**40**	5.1	5.9	2.2	5.2	5.1
90-day[2]	**35**	5.5	5.5	1.8	5.1	5.0
PTD[3]		7.3	7.1	2.0	7.1	6.6

ng/m^3 – nanograms per cubic meter

1. Running Cr^{+6} metrics are utilized to provide for the early and regular assessment of performance trends and, if necessary, allow for responsive corrective measures to be implemented ensuring that emissions of Cr^{+6} are maintained well below the AAC over the duration of the project, and are minimized to the greatest extent practicable. The running Cr^{+6} metrics are designed to evaluate the program success on short duration intervals (monthly) and do not represent the long-term (program) ending success.
2. Running Cr^{+6} metrics are valid on the last day in the report period and include the previous 30, 60, or 90-days of sample results. 60-day and 90-day metrics were not available due to the short duration of sampling during this phase of the project.
3. Program-to-date - Air monitoring conducted from April 28, 2014 through the end of the reporting period.

4.1.2 Total Particulate Sampling Results

Results of the 8-hour integrated total particulate sampling and analysis from the reporting period and program-to-date results are discussed in the following sections.

Reporting Period

Individual integrated 8-hour total particulate concentrations measured at each station during the reporting period are presented in Table A-2.

Program-to-date

Sampling and analytical statistics for integrated total particulate are shown in Table B-3 and include various metrics relative to total particulate analytical data. Monthly average total particulate concentration results are shown in Table B-4 for each AMS.

4.1.3 Integrated Air Sampling Results Summary

There have been 225 sample days between April 28th and the end of the reporting period for stations AMS-1 through AMS-5. The results of the sample analysis are summarized in the following sections.

Air Monitoring

The program through this reporting period shows the 8-hour Cr^{+6} average concentrations, based upon lab analytical results at each AMS, were less than 1.49% of the AAC, demonstrating that the dust control measures continue to be effective.

4.2 Real-Time Air Monitoring Results

Real-time air monitoring for PM_{10} is conducted during all remedial activities. The results of the real-time air monitoring are presented in the following sections.

4.2.1 PM_{10} Monitoring Results

Results of the real-time PM_{10} sampling for the reporting period and the start of intrusive activities are discussed in the following sections.

Reporting Period

Real-time 15-minute PM_{10} averages measured during the reporting period are presented in Figure A-1. Real-time 15-minute PM_{10} averages were compared directly to the PM_{10} Action Level (339 µg/m^3) and averages greater than the action level are subject to additional evaluation. If applicable, elevated PM_{10} averages are listed and discussed in Table A-4.

Program-to-date

Real-time monthly PM_{10} averages are shown in Table B-5 for each AMS. Dust readings measured during the reporting period are similar to those during the baseline period (when no intrusive activities were occurring). This indicates that dust control measures during intrusive activities have been effective.

4.3 Meteorological Monitoring Results

Time series plots for wind speed, temperature, and relative humidity for the reporting period are show in Figure A-2 through Figure A-4, respectively.

4.4 Hand-held Monitoring Results

Hand-held monitoring results during the reporting period are displayed in Table A-3. Readings were compared directly to the 15-Minute TWA Action Level (1.4ppm) and averages greater than the action level are subject to additional evaluation. If applicable, elevated TVOC averages are listed and discussed in Table A-4.

4.5 Site Activities

Activities which occurred on the site during the months of April and May included:

- Excavate and load out chromium-impacted soils;
- Backfill excavation;

4.6 Site Map(s)

Site maps during the reporting period are documented and included in Figure A-5.

5.0 Conclusions

Results of the April/May 2015 reporting period for the Burma Road Site air sampling and monitoring program indicate that the average Cr^{+6} concentrations for each AMS are well below the site safety goal of 49 ng/m^3 and below the AAC of 487 ng/m^3. The Cr^{+6} concentrations and the percent Cr^{+6} in dust samples through this period demonstrate that the dust control measures continue to be effective at maintaining concentrations of Cr^{+6} in airborne dust at the Site well below the AAC. These results indicate that dust generated at the Site contains very small percentages of Cr^{+6} and does not represent an emission source of Cr^{+6} sufficient to create potential offsite exposure to Cr^{+6} at or exceeding the AAC.

Appendix A

Monthly Results Summaries

- Integrated 8-hour Cr^{+6} Concentrations
- Integrated 8-hour Total Particulate Concentrations
- Real-time PM^{10} Readings
- Hand-held Readings
- Meteorological Data
- Site Map

Table A- 1: Daily Integrated 8-hour Cr^{+6} Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Wednesday, April 01, 2015					
Thursday, April 02, 2015					
Friday, April 03, 2015					
Saturday, April 04, 2015					
Sunday, April 05, 2015					
Monday, April 06, 2015					
Tuesday, April 07, 2015					
Wednesday, April 08, 2015					
Thursday, April 09, 2015					
Friday, April 10, 2015					
Saturday, April 11, 2015					
Sunday, April 12, 2015					
Monday, April 13, 2015					
Tuesday, April 14, 2015					
Wednesday, April 15, 2015	6.5	6.5	2.3	7.0	6.5
Thursday, April 16, 2015	6.5	7.0	2.4	7.0	7.0
Friday, April 17, 2015	6.5	7.0	2.4	7.0	7.0
Saturday, April 18, 2015			2.4		
Sunday, April 19, 2015			2.4		
Monday, April 20, 2015	5.5	15.0	2.9	6.0	5.5
Tuesday, April 21, 2015	3.6	3.7	1.2	3.8	3.6
Wednesday, April 22, 2015	3.9	3.7	3.1	7.7	7.7
Thursday, April 23, 2015	3.9	3.9	1.2	4.0	3.9
Friday, April 24, 2015	3.8	9.7	2.7	9.6	3.9
Saturday, April 25, 2015			2.7		
Sunday, April 26, 2015			2.7		
Monday, April 27, 2015	14.0	10.0	3.5	3.6	8.5
Tuesday, April 28, 2015	3.9	4.0	1.2	4.0	3.9
Wednesday, April 29, 2015	3.8	3.9	1.2	4.0	4.0
Thursday, April 30, 2015	3.6	3.7	1.2	3.8	3.7
Friday, May 01, 2015	3.5	3.7	1.2	3.8	3.7
Saturday, May 02, 2015			1.2		
Sunday, May 03, 2015			1.2		
Monday, May 04, 2015	3.6	3.7	3.0	3.8	3.7
Tuesday, May 05, 2015	3.5	3.6	3.7	3.8	3.6

Results in nanograms per cubic meter

Highlighted cells indicate a detectable level of Cr^{+6}. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Table A- 2: Daily Integrated 8-hour Total Particulate Sampling Results

Date of Sample	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Wednesday, April 01, 2015					
Thursday, April 02, 2015					
Friday, April 03, 2015					
Saturday, April 04, 2015					
Sunday, April 05, 2015					
Monday, April 06, 2015					
Tuesday, April 07, 2015					
Wednesday, April 08, 2015					
Thursday, April 09, 2015					
Friday, April 10, 2015					
Saturday, April 11, 2015					
Sunday, April 12, 2015					
Monday, April 13, 2015					
Tuesday, April 14, 2015					
Wednesday, April 15, 2015	32.5	33.5	130.0	34.0	33.0
Thursday, April 16, 2015	33.0	34.0	11.5	35.0	100.0
Friday, April 17, 2015	32.5	33.5	11.5	34.5	33.5
Saturday, April 18, 2015			11.5		
Sunday, April 19, 2015			11.5		
Monday, April 20, 2015	150.0	55.0	11.0	60.0	140.0
Tuesday, April 21, 2015	35.0	36.5	11.0	37.5	36.0
Wednesday, April 22, 2015	150.0	36.5	43.0	37.0	110.0
Thursday, April 23, 2015	38.0	38.5	11.5	39.5	38.5
Friday, April 24, 2015	37.0	38.5	11.5	39.5	38.0
Saturday, April 25, 2015			11.5		
Sunday, April 26, 2015			11.5		
Monday, April 27, 2015	35.5	36.0	24.0	36.0	36.0
Tuesday, April 28, 2015	38.5	39.5	11.5	39.5	38.5
Wednesday, April 29, 2015	37.5	39.0	11.5	40.0	40.0
Thursday, April 30, 2015	36.0	37.0	50.0	37.5	36.0
Friday, May 01, 2015	73.0	36.0	11.5	37.5	36.0
Saturday, May 02, 2015			11.5		
Sunday, May 03, 2015			11.5		
Monday, May 04, 2015	130.0	37.0	79.0	38.0	160.0
Tuesday, May 05, 2015	130.0	36.0	140.0	140.0	230.0

Results in micrograms per cubic meter

Highlighted cells indicate a detectable level of total particulate. All other values are below the laboratory method detection limit (MDL). Values below the MDL are shown in the table at one-half the MDL for data reporting purposes. This established practice is consistent with PPG's Site 114 reporting of non-detects by AECOM.

Figure A- 1: Real-Time 15-minute average PM_{10} Monitoring Results

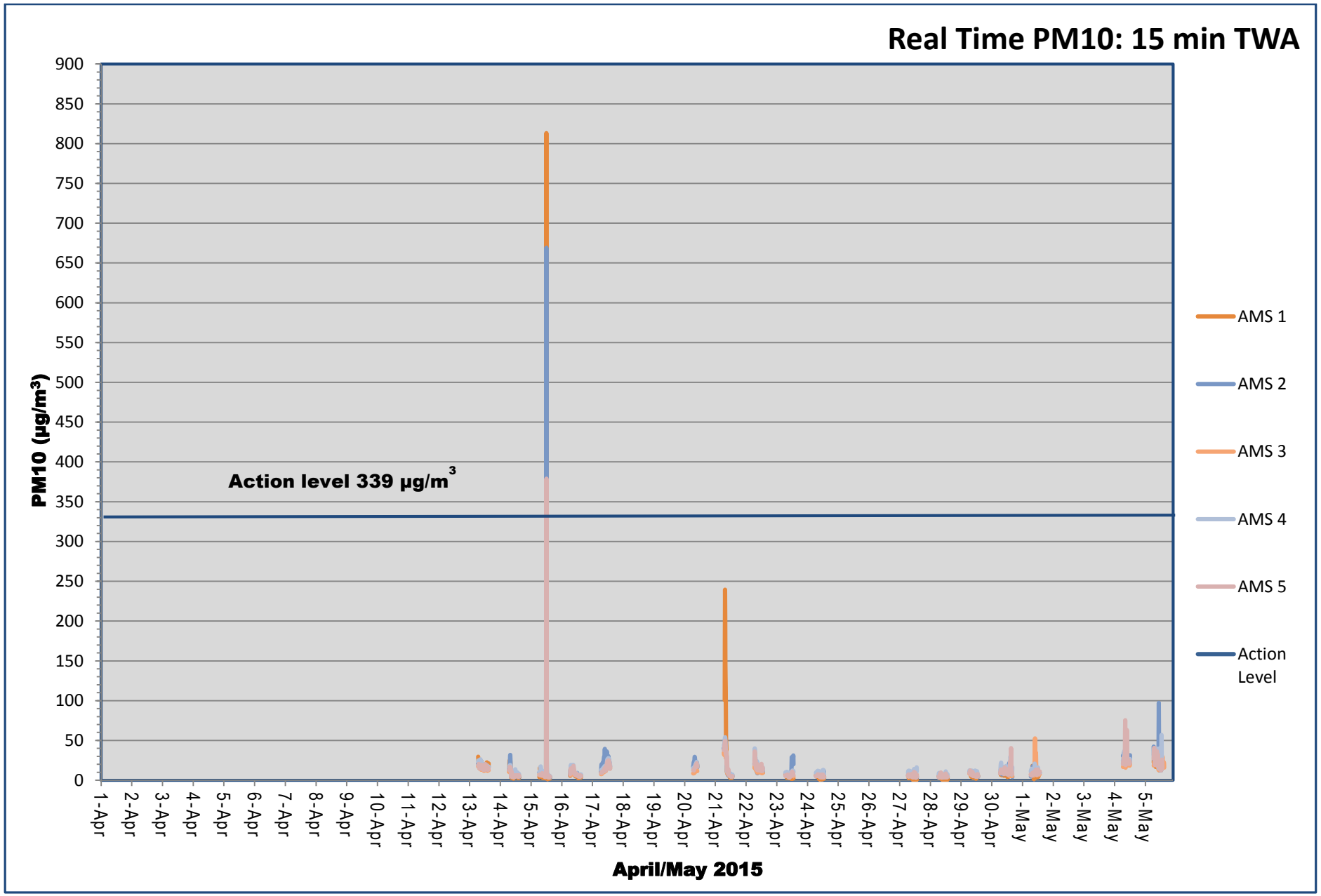

Table A-3: Daily Hand-held Monitoring Instantaneous Results

Date	Time	Dust Reading (µg/m³)	PID Reading (ppm)	Location
Wednesday, April 01, 2015	-	-	-	-
Thursday, April 02, 2015	-	-	-	-
Friday, April 03, 2015	-	-	-	-
Saturday, April 04, 2015	-	-	-	-
Sunday, April 05, 2015	-	-	-	-
Monday, April 06, 2015	-	-	-	-
Tuesday, April 07, 2015	-	-	-	-
Wednesday, April 08, 2015	-	-	-	-
Thursday, April 09, 2015	-	-	-	-
Friday, April 10, 2015	-	-	-	-
Saturday, April 11, 2015	-	-	-	-
Sunday, April 12, 2015	-	-	-	-
Monday, April 13, 2015	-	-	-	-
Tuesday, April 14, 2015	-	-	-	-
Wednesday, April 15, 2015	10:15	32.0	-	DW Perimeter
Thursday, April 16, 2015	9:30	24.0	0.0	DW Perimeter
Friday, April 17, 2015	11:30	23.0	0.0	DW Perimeter
Saturday, April 18, 2015	-	-	-	-
Sunday, April 19, 2015	-	-	-	-
Monday, April 20, 2015	8:30	17.0	0.0	DW Perimeter
Tuesday, April 21, 2015	11:15	29.0	0.0	DW Perimeter
Wednesday, April 22, 2015	8:15	43.0	0.0	DW Perimeter
Thursday, April 23, 2015	9:30	51.0	0.0	DW Perimeter
Friday, April 24, 2015	10:00	37.0	0.0	DW Perimeter
Saturday, April 25, 2015	-	-	-	-
Sunday, April 26, 2015	-	-	-	-
Monday, April 27, 2015	8:45	25.0	0.0	DW Perimeter
Tuesday, April 28, 2015	9:15	16.0	0.0	DW Perimeter
Wednesday, April 29, 2015	8:00	22.0	0.0	DW Perimeter
Thursday, April 30, 2015	10:15	47.0	0.0	DW Perimeter
Friday, May 01, 2015	11:30	36.0	0.0	DW Perimeter
Saturday, May 02, 2015	-	-	-	-
Sunday, May 03, 2015	-	-	-	-
Monday, May 04, 2015	9:45	29.0	0.0	DW Perimeter
Tuesday, May 05, 2015	8:45	42.0	0.0	DW Perimeter

Note: Cells highlighted in green are instantaneous peaks that are values above the TVOC Alert Level (15-minute average of 1 ppm) and TVOC Action Level (15-minute average of 1.4) but were not sustained levels and did not require any corrective actions on the Site.

Blank cells or cells that read NA are days where no hand-held monitoring occurred. DW Perimeter denotes down-wind perimeter.

Table A- 4: Elevated Concentration Summary

Parameter	Date	Time	Location	Wind Conditions	Elevated Concentration	Explanation
PM_{10}	4/15/15	12:00	AMS1	W Wind	813.1 µg/m^3	Heavy black diesel exhaust from passing truck enveloped the site. Readings returned to normal once the truck exhaust dissipated.
PM_{10}	4/15/15	12:00	AMS2	W Wind	669.2 µg/m^3	Heavy black diesel exhaust from passing truck enveloped the site. Readings returned to normal once the truck exhaust dissipated.
PM_{10}	4/15/15	12:05	AMS3	W Wind	360.9 µg/m^3	Heavy black diesel exhaust from passing truck enveloped the site. Readings returned to normal once the truck exhaust dissipated.
PM_{10}	4/15/15	12:05	AMS4	W Wind	326.9 µg/m^3	Heavy black diesel exhaust from passing truck enveloped the site. Readings returned to normal once the truck exhaust dissipated.
PM_{10}	4/15/15	12:05	AMS5	W Wind	378.9 µg/m^3	Heavy black diesel exhaust from passing truck enveloped the site. Readings returned to normal once the truck exhaust dissipated.

PM_{10} – Respirable Particulate Matter measured in micrograms per cubic meter (µg/m^3)

TVOC—Total Volatile Organic Compounds measured in parts per million (ppm)

ng/m^3 – nanograms per cubic meter

µg/m^3 – micrograms per cubic meter

NA – Not Applicable

ND –No Data

Figure A-2: Wind Speed

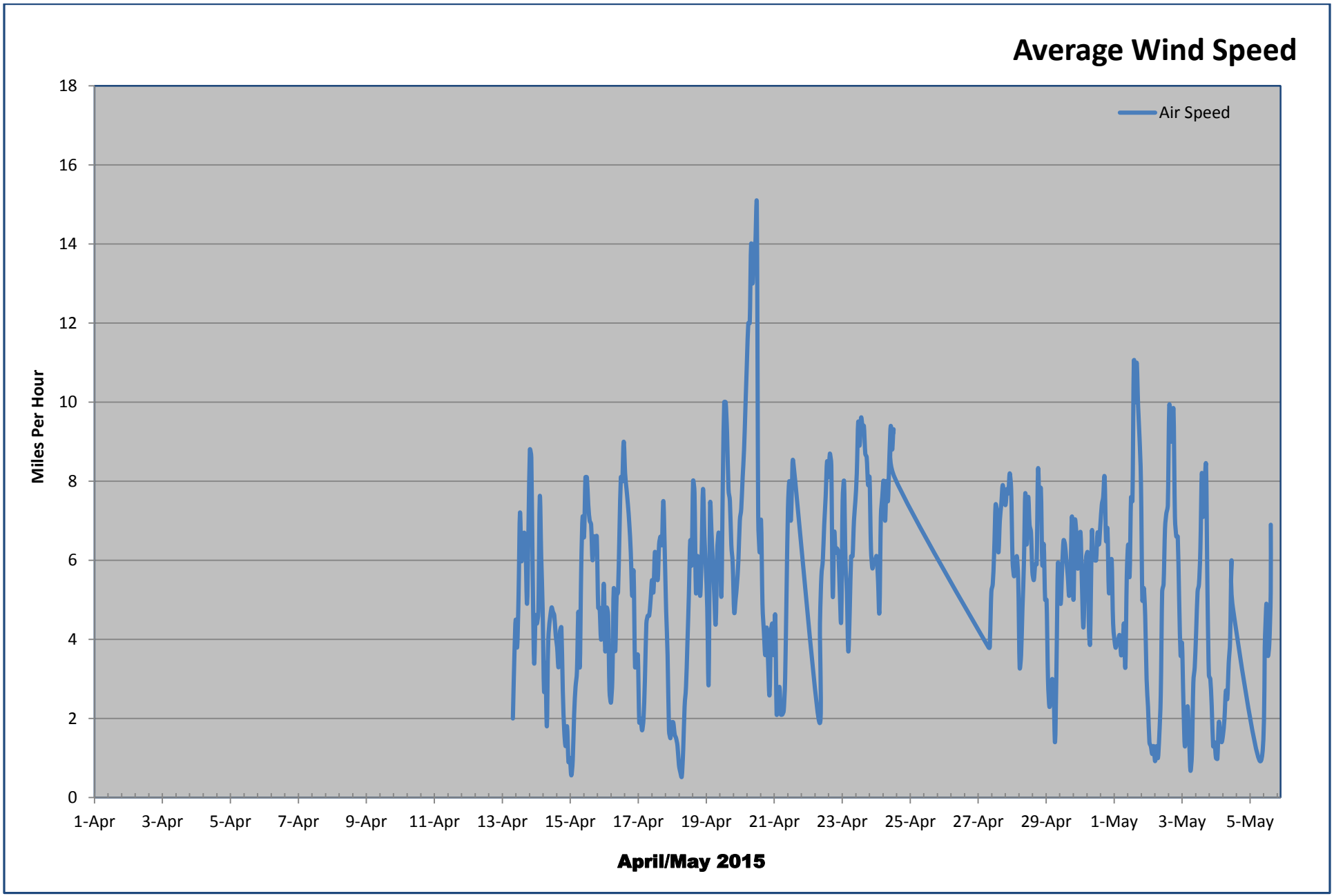

Figure A-3: Temperature

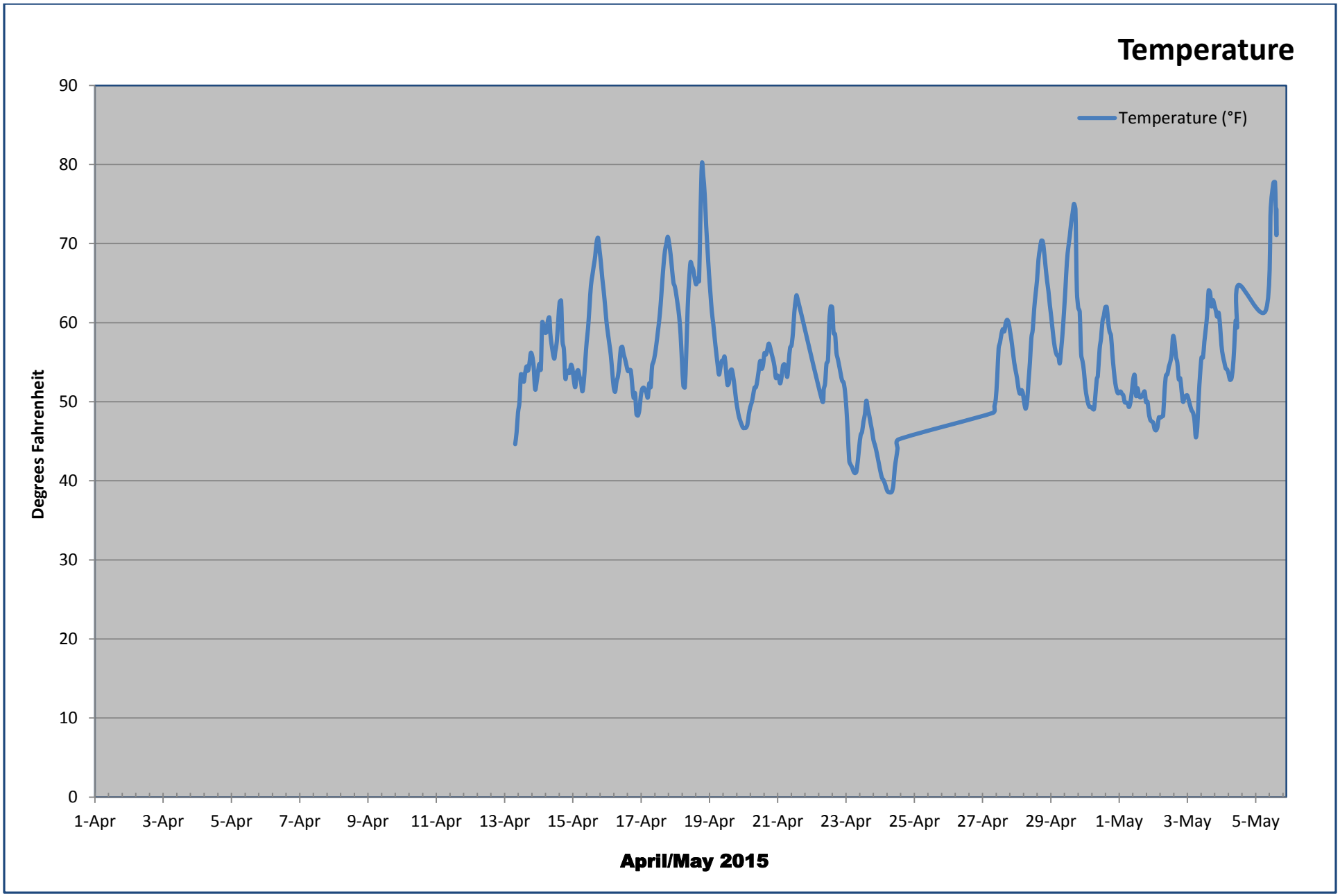

Figure A-4: Relative Humidity

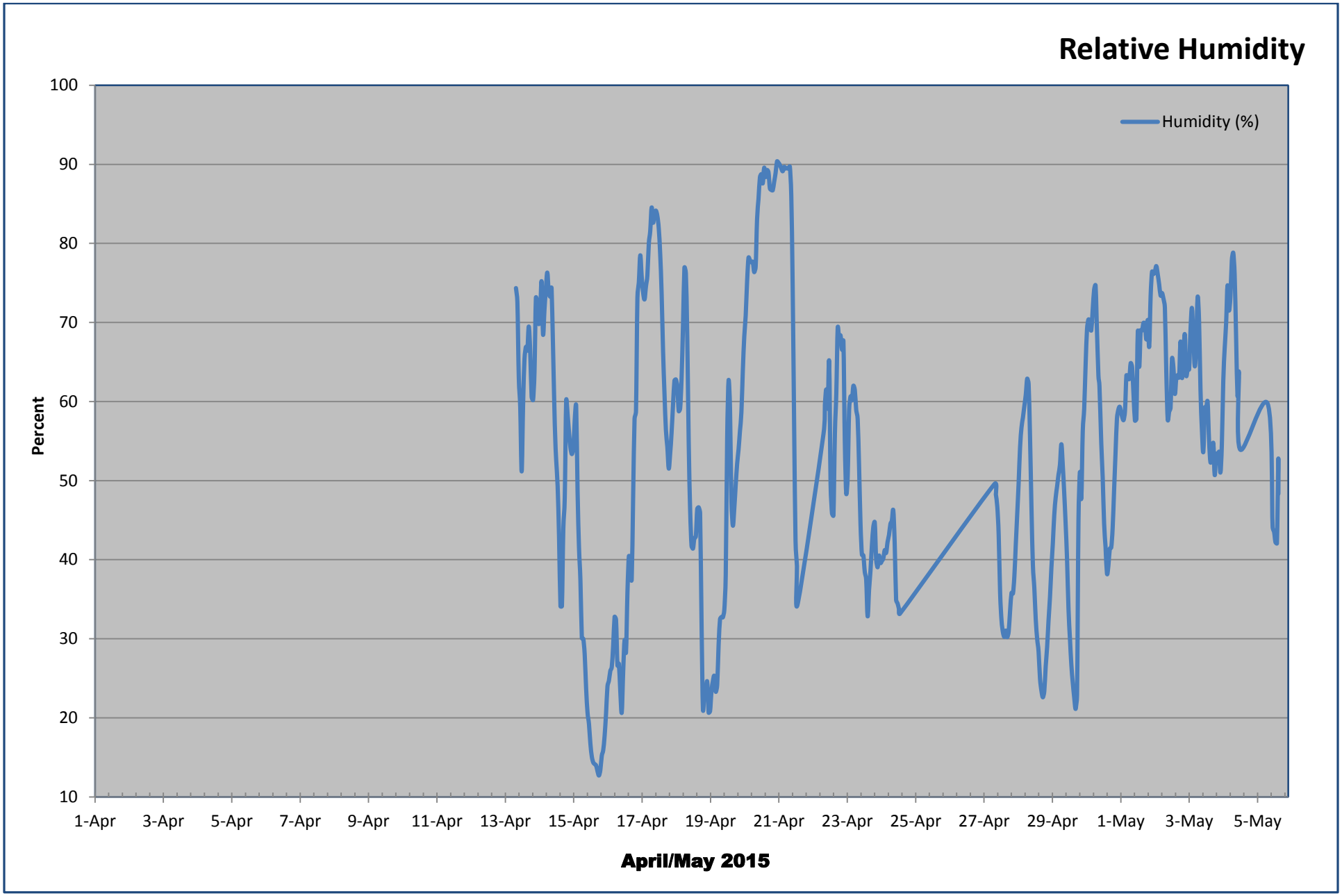

Figure A–5: Site Map Sites 63/65 (04.28.14 – End of Reporting Period)

Appendix B

Program-to-date Result Summaries

- Integrated 8-hour Cr^{+6} Concentration Summaries
- Integrated 8-hour Total Particulate Concentration Summaries
- Real-time PM^{10} Concentrations Summaries

Table B- 1: Program-to-date Integrated 8-hour Cr^{+6} Sampling Results Statistics

Statistics[1]	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	215	215	216	216	216
Rate of Data Collection	95.6%	95.6%	96.0%	96.0%	96.0%
Number of Detected Samples[2]	3	3	11	3	2
% of Cr^{+6} Samples Greater than MDL	1.4%	1.4%	5.1%	1.4 %	1.4%
Number of Samples Above AAC	0	0	0	0	0
Average % Cr^{+6} in Dust[3]	0.012%	0.015%	0.012%	0.013%	0.010%
Maximum % Cr^{+6} in Dust[3]	0.039%	0.028%	0.026%	0.024%	0.024%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

[3] The program-to-date average and maximum percent Cr^{+6} in dust was calculated using all the integrated Total Particulate and Cr^{+6} sample results collected since April 28, 2014.

Table B- 2: Monthly Average Integrated 8-hour Cr^{+6} Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS3	AMS 4	AMS 5
April	6.5	6.8	6.5	6.5	2.3
May	7.7	7.4	6.0	7.7	3.8
June	7.1	6.8	1.9	7.1	7.0
July	7.3	7.2	1.6	7.2	7.2
August	7.0	6.9	1.5	6.6	6.7
September	7.8	7.7	1.7	7.6	7.7
October	7.8	7.8	1.6	7.8	7.8
November	7.6	7.8	1.4	7.7	7.8
December	8.0	7.7	1.6	7.7	7.7
January	8.4	7.6	2.1	8.2	7.6
February / March	5.8	5.2	1.5	5.0	5.0
April / May	5.1	5.9	2.2	5.2	5.1
Program to Date	7.3	7.1	2.0	7.1	6.6
All readings in ng/m3 – nanograms per cubic meter					

Table B- 3: Program-to-date Integrated Total Particulate 8-hour Sampling Results Statistics

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
Total Number of Samples[1]	215	215	216	216	216
Rate of Data Collection	95.6%	95.6%	96.0%	96.0%	96.0%
Number of Detected Samples[2]	38	4	97	19	57
% Detection	17.7%	1.9%	44.9%	8.8%	26.4%

Results in ng/m^3 – nanograms per cubic meter

[1] Total number of samples collected since April 28, 2014. Variations in the number of samples collected are specifically identified in Table A-1 within the report month of the variation. In general variations are caused by sampler malfunctions, site activities, weather conditions, etc.

[2] Total number of sample results since April 28, 2014 reported above the laboratory reporting limit.

Table B- 4: Monthly Average Integrated 8-hour Total Particulate Sampling Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	33.0	32.8	33.0	32.0	21.8
May	40.5	38.3	35.4	42.9	40.7
June	45.6	33.7	14.8	34.6	66.3
July	37.9	35.4	12.1	37.4	46.1
August	39.2	34.0	11.9	45.1	41.5
September	47.0	39.4	27.0	72.7	69.8
October	58.9	38.5	30.0	40.5	48.1
November	62.9	38.4	24.1	41.6	48.1
December	47.4	38.2	19.1	46.3	48.2
January	52.3	38.2	25.5	38.4	43.0
February / March	63.5	45.9	25.0	43.4	57.7
April / May	65.9	37.8	30.4	45.7	73.7
Program to Date	50.1	37.9	22.8	44.5	51.7
All readings in µg/m3 – micrograms per cubic meter					

Table B- 5: Monthly Average Real-Time PM_{10} Monitoring Results

Statistics	Sites 63/65				
	AMS 1	AMS 2	AMS 3	AMS 4	AMS 5
April	14.0	11.9	17.9	10.6	19.5
May	32.3	33.0	36.4	31.4	41.4
June	29.3	27.5	29.8	47.2	42.0
July	30.2	28.4	31.5	52.2	53.9
August	26.6	26.6	27.8	21.3	34.6
September	25.1	21.9	25.8	20.9	31.0
October	17.3	15.2	16.7	16.0	17.1
November	18.2	16.8	16.5	13.2	14.8
December	17.2	14.9	12.9	16.1	15.0
January	15.4	15.6	13.4	20.3	15.7
February / March	20.3	20.2	16.8	24.2	19.4
April / May	12.9	13.5	10.8	16.7	12.4
Program to Date	22.8	21.5	22.1	25.9	27.9
All readings in µg/m3 – micrograms per cubic meter					