Honeywell
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Morristown, NJ 07962

February 4, 2015

Mr. David Doyle, Case Manager
New Jersey Department of Environmental Protection
Division of Responsible Party Site Remediation
401 East State Street, Mail Code 401-06
Trenton, NJ 08625-0420

RE: Post-Treatment Sampling Results Report
Study Area 5 – Site 079 Route 440 Vehicle Corp.
Jersey City, Hudson County, NJ
NJDEP PI# G000008706

Dear Mr. Doyle:

Honeywell is transmitting one (1) hard copy and three (3) electronic copies of the enclosed Post-Treatment Sampling Results Report for Site 079 Route 440 Vehicle Corp. (Site).

The enclosed report addresses post-remediation monitoring requirements in accordance with the Remedial Action Report (RAR) and Confirmatory Sampling Work Plan (Work Plan) dated September 2011. The RAR documented remedial actions completed at the Site during 2010 including in-situ treatment of hexavalent chromium impacted soils, focused removal of chromium-impacted soils at one location, and implementation of engineering controls (capping) and institutional controls (deed notice). The Work Plan specified post-treatment sampling including soil sampling within the in-situ treatment area and groundwater sampling of shallow monitoring wells.

The remedial actions are also subject to the Consent Decree Regarding Sites 79 and 153 South (Consent Decree). The in-situ treatment activities address requirements of Paragraph 57 of the Consent Decree and the treatment protocol included as Exhibit C of the Consent Decree. The Work Plan was approved by Plaintiffs in a letter dated October 26, 2011 and by the NJDEP on February 21, 2012.

The enclosed report presents results of the post-remediation sampling conducted in accordance with the approved Work Plan. Overall, treatment resulted in the reduction of hexavalent chromium concentrations, as shown in particular at sampling points for which prior data existed, but did not achieve reduction to the NJDEP soil policy guideline of 20 mg/kg at every sampling point. Groundwater sampling results indicate that hexavalent chromium was not detected and total chromium results were non-detect or less than 10 micrograms per liter (µg/L), well below the NJDEP Groundwater Quality Standard of 70 µg/L.

While the 20 mg/kg soil criterion may not have been achieved at every sampling point, the overall remedial action was successful as it was effective in further reducing soil concentrations. Moreover, the overall remedial action, consisting of the capping remedy in conjunction with the treatment, has been and continues to be fully protective since its implementation in 2010.

As indicated in the enclosed report, no further post-remediation soil or groundwater sampling is recommended, based on the remedial actions completed and post-treatment sampling results. The existing engineering controls and deed notice will remain in place. Post-remediation cap inspections, submittal of remedial action protectiveness certification biennial reports and other applicable

requirements will continue under the existing Deed Notice, Remedial Action Soil Permit, and Long-Term Monitoring Plan.

Honeywell is submitting the enclosed document for NJDEP review and approval with respect to post-treatment sampling requirements and above-referenced recommendations.

If you have any questions, please call me at 973-455-3302.

Sincerely,

Maria Kaouris

Maria Kaouris
Remediation Manager

Enclosure: Post-Treatment Sampling Results Report – Site 079 Route 440 Vehicle Corp.
(1 hard copy and 3 electronic copies)

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POST-TREATMENT SAMPLING RESULTS REPORT

HUDSON COUNTY CHROMATE SITE 079
ROUTE 440 VEHICLE CORP.
JERSEY CITY, NEW JERSEY
NJDEP PI#G000008706

Prepared for

Honeywell

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Morristown, New Jersey 07962

Prepared by

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FEBRUARY 2015

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This Post-Treatment Sampling Results Report (Report) was prepared by Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) on behalf of Honeywell to address post-remediation monitoring requirements for Site 079 Route 440 Vehicle Corp. in Jersey City, New Jersey (Site).

Remedial actions were completed during 2010 and consisted of in-situ treatment of hexavalent chromium impacted soils by direct injection of calcium polysulfide and focused removal of isolated impacted soils. The remedial actions were documented in a Remedial Action Report (RAR) and Confirmatory Sampling Work Plan dated September 2011 (Amec, 2011). The RAR presented the results of the remedial actions and contained a Post-Remediation Monitoring Plan for soil and groundwater sampling in the area where in-situ treatment of hexavalent chromium impacted soils was performed. The New Jersey Department of Environmental Protection (NJDEP) approved the RAR and Confirmatory Sampling Work Plan (Work Plan) in a letter dated February 21, 2012 (**Appendix A**). (NJDEP approved a remedy based on containment without treatment). This report presents results of the post-remediation sampling conducted in accordance with the approved Work Plan.

In addition to the approved Work Plan, remedial actions are governed by an Administrative Consent Order between Honeywell (formerly Allied Signal, Inc.) and the NJDEP dated June 17, 1993 (as modified by the Consent Judgment between the NJDEP et al. and Honeywell et al., dated September 7, 2011), the New Jersey Technical Requirements for Site Remediation (N.J.A.C. 7:26E), the NJDEP's Chromium Policy Directive (Memorandum dated February 8, 2007), and the Consent Decree Regarding Sites 079 and 153 South between the Hackensack Riverkeeper Inc. (Riverkeeper or Plaintiffs), Honeywell, the Bayonne Municipal Utilities Authority, and Robert G. Ciasulli dated January 21, 2010 (Consent Decree). The in-situ treatment activities address requirements of Paragraph 57 of the Consent Decree and the treatment protocol included as Exhibit C of the Consent Decree.

The Work Plan was approved by Plaintiffs in a letter dated October 26, 2011 and by the NJDEP on February 21, 2012.

1.2 REPORT ORGANIZATION

This document organized into the following sections:

- *Site Background*. This section contains information on Site location and summary of the in-situ treatment work completed in 2010.
- *Post-Treatment Sampling Field Activities*. This section presents a summary of the post-treatment field sampling activities.
- *Post-Treatment Sampling Results*. This section presents results of the post-treatment sampling program.
- *Findings/Recommendations*. This section presents a summary of findings and recommendations.
- *References*. This section presents a list of references used in this report.
- *List of Acronyms and Abbreviations*. This section contains a list of acronyms and abbreviations used in this report.

2.0 SITE BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

Site 079 (Route 440 Vehicle Corp.) is located at 540 Route 440 North in Jersey City, New Jersey. A Site location map is included as **Figure 1.**

The Site is currently occupied by a Honda automobile dealership facility known as Metro Honda. The Site property consists of two separate lots:

- Block 22001, Lot 4 (formerly Block 1291, Lot 76): the main car dealership facility including one building and vehicle parking area between Route 440 and the dealership building (front parking lot) and a vehicle parking area between the dealership building and Martorano Way (rear parking lot).
- Block 22001, Lot 3 (formerly Block 1292, Lot 56): vehicle storage lot on the east side of Mortorano Way.

Remediation of hexavalent chromium contaminated soils was conducted in 2010 in accordance with the NJDEP-approved Remedial Action Work Plan (RAWP). The in-situ treatment was conducted within the front parking lot area between the car dealership building and Route 440, which comprises an area of approximately 18,000 square feet (0.4 acres) within Block 22001, Lot 4. The NJDEP issued a Remedial Action Soil Permit on May 4, 2012 and a No Further Action (NFA) approval letter dated May 7, 2012.

As part of the remedial actions, a Deed Notice was recorded on April 29, 2010 to address hexavalent chromium in soils exceeding the NJDEP soil policy guideline of 20 milligrams per kilogram (mg/kg) beneath the pavement in the area between the car dealership building and Route 440. A new Deed Notice was recorded on June 25, 2013 which reflects current block and lot information, current NJDEP model deed notice format, and the completed remedial actions. The asphalt pavement serves as the engineering control (cap) in accordance with the NJDEP approved RAWP and the Consent Decree. The Deed Notice restricts land use within the capped area to commercial, retail, or open space, including continued use as an automobile dealership.

2.2 IN-SITU TREATMENT PROGRAM SUMMARY

The In-Situ Treatment Program (ITP) was completed at the Site during October 2010 in accordance with the following documents:

- In-Situ Treatment Protocol (Exhibit C of the Consent Decree).
- Remedial Action Work Plan dated July 2009, approved by the NJDEP on September 30, 2010.
- NJDEP Discharge to Groundwater Permit Request and In-Situ Chemical Reduction Injection Treatment Program Field Implementation Work Plan dated July 2010, approved by the NJDEP on July 28, 2010.

The ITP field work included injection of calcium polysulfide (CAPS) solution during two weekend work cycles (from Saturday evening through Monday morning). The overall treatment program included 56 injection points and injection of a total of 33,000 gallons of CAPS solution (or 16,000 gallons of undiluted 29% CAPS). Locations of injection points are shown on **Figure 2**. For details and documentation regarding the ITP field work, refer to the September 2011 RAR (Amec, 2011).

Following completion of the ITP field work, the entire parking lot area between the car dealership building and Route 440 was milled and resurfaced with new asphalt pavement.

3.0 POST-TREATMENT SAMPLING FIELD ACTIVITIES

This section describes the post-treatment sampling field activities including field mobilization, soil borings and sampling, and groundwater sampling. In accordance with the timeframe prescribed in the RAR, field work was completed during July and August 2014. The post-treatment sampling program is presented on **Table 1**.

3.1 FIELD MOBILIZATION

Pre-sampling field mobilization activities included utility mark-out and notification to the NJDEP regarding disturbance to the engineering control (pavement cap) in accordance with Deed Notice requirements.

Prior to completion of soil borings, underground utilities were marked out using the public utility mark-out system (New Jersey One-Call). As part of the utility mark-out task, a geophysical survey was conducted by TPI Environmental on July 23, 2014, to verify locations of underground utilities and/or obstructions in the area of targeted soil boring locations. The utility mark-out and geophysical survey included the use of ground penetrating radar at each soil boring location, review of utility mark-outs and meeting with the site facility manager to check locations of underground utilities.

Notification of the disturbance to the engineering control was made to the NJDEP hotline on August 18, 2014 by Amec Foster Wheeler on behalf of Honeywell (NJDEP incident number 14-08-18-1002-46). In accordance with the deed notice, documentation regarding disturbance and restoration of the engineering control will be included with the next Remedial Action Protectiveness / Biennial Certification Report to be submitted by May 4, 2016 in accordance with the schedule in the Remedial Action Soil Permit.

3.2 SOIL BORINGS AND SAMPLING

The scope of work for post-treatment soil sampling included 22 soil borings, including 12 borings specified in Exhibit C of the Consent Decree (Outline for In-Situ Treatment of Chromium Impacted Soils) and 10 borings added as requested by Plaintiffs to provide additional confirmation at areas where a lower injection solution dilution rate was used and in the area along the 138 kilovolt underground transmission line.

Soil borings were completed from August 18 through August 21, 2014 by TPI Environmental. All borings were located by Global Positioning System equipment prior to sampling. Each boring was advanced to 9 feet below grade and did not penetrate the meadow mat. Soil sampling included collection of discrete samples (6-inch intervals) at 1-foot depth intervals between 3 feet and 9 feet below ground surface (bgs), corresponding to the treatment interval. Soil boring logs are provided in **Appendix B**.

A total of 132 samples were collected from 22 soil boring locations. Soil samples were submitted to Accutest Laboratories of Dayton, New Jersey for analysis of hexavalent chromium and sulfide. The sulfide data was collected to evaluate potential hexavalent chromium data qualification or rejection and determine whether reducing conditions were naturally occurring or attributable to persistence of the injected CAPS.

3.3 GROUNDWATER SAMPLING

In accordance with the RAR and Work Plan, post-injection groundwater samples were collected from groundwater monitoring wells 079-MW-001 and 079-MW-A02 on July 24, 2014. Groundwater field sampling logs are provided in **Appendix C**. The samples were collected using low-flow purging/sampling methods and submitted to Accutest Laboratories of Dayton, New Jersey for analysis of filtered and unfiltered total chromium and hexavalent chromium.

4.0 POST-TREATMENT SAMPLING RESULTS

4.1 SOIL SAMPLING RESULTS

Post-treatment soil sample results are presented on **Table 2** and **Figure 2**. Concentrations of hexavalent chromium were below the NJDEP soil criteria of 20 mg/kg at 5 of the 22 soil boring locations. Of the remaining 17 locations, most of the hexavalent chromium concentrations ranged from 20 mg/kg to 150 mg/kg. Samples from two soil boring locations had results greater than 150 mg/kg: 079-SB-218 (256 mg/kg at 5-6 feet bgs) and 079-SB-219 (3,580 mg/kg at 6-7 feet bgs; 4,150 mg/kg at 7-8 feet bgs). (It is evident from the data that these detections represent a limited, isolated volume of higher strength material. The residual reductant left behind by treatment coupled with the measured site-wide ambient reductive conditions will continue to convert hexavalent chromium to trivalent chromium and mitigate the potential for migration.)

Ten of the 22 soil borings were co-located with previous remedial investigation (RI) borings. Previous RI soil sample results are also shown for reference on **Figure 2**. Comparison of hexavalent chromium concentrations in co-located samples (38 samples total) and percent reduction information are presented in **Table 3**.

Of the 10 soil borings co-located with previous RI borings, hexavalent chromium reductions were observed in the majority of samples with a wide range of percent reduction (less than 10% to greater than 90% reduction). Twenty-one of the 38 co-located samples had greater than 50% reduction in hexavalent chromium concentrations.

Geochemical data (Eh and pH) collected with the samples along with hexavalent chromium concentrations and residual sulfide was plotted for evaluation of geochemical conditions, and is presented on **Figures 4 and 5**. Refer to Section 5 for further data evaluation and summary of findings.

4.2 GROUNDWATER SAMPLING RESULTS

Post-treatment groundwater sampling results are presented on **Table 4** and shown on **Figure 3**. Groundwater sampling results indicate that hexavalent chromium was not detected. Total chromium results were non-detect or less than 10

micrograms per liter (µg/L), well below the NJDEP Groundwater Quality Standard of 70 µg/L. Historical groundwater sampling results are included for reference on **Figure 3.** Groundwater field measurements indicate neutral pH (6.8 to 7.5), negative redox levels (-189 to -382 millivolts [mV]), and very low to no dissolved oxygen; these data indicate reducing conditions within the shallow fill zone.

4.3 DATA USABILITY

Laboratory analytical data was validated to document compliance with quality assurance/quality control requirements for the selected analytical methods. Data validation was conducted in accordance with NJDEP protocols by Validata, LLC for 100% of the samples analyzed for total chromium and hexavalent chromium using the following guidance documents:

- NJDEP, 2002. Standard Operating Procedure (SOP) entitled Quality Assurance Data Validation of Analytical Deliverables for Inorganics (based on United States Environmental Protection Agency [EPA] SW-846 Methods), SOP No. 5.A.16. Trenton, New Jersey.
- NJDEP, 2001. Standard Operating Procedure for the Completion of the Data Validation Report Forms and the Preparation of the Final Data Validation Report, SOP No. 5.A.15, Trenton, New Jersey.
- NJDEP, 2005. Standard Operating Procedure for Analytical Data Validation of Hexavalent Chromium, SOP No. 5.A.10, Revision 2, Trenton, New Jersey.
- NJDEP, 2001. Standard Operating Procedure for the Completion of the Hexavalent Chromium Data Validation Report Forms and the Preparation of the Final Data Validation Report, SOP No. 5.A.09 Trenton, New Jersey.

Laboratory data reports and electronic data deliverables are provided on compact disk in **Appendix D**. Copies of data validation reports are provided on compact disk in **Appendix E**.

Data validation results indicate that soil and groundwater data are acceptable for use with minor qualifications, mainly related to some sample results being qualified as estimated. Data qualifications are summarized as follows:

- Total chromium results in some soil samples were qualified as estimated due to low matrix spike recovery, elevated matrix spike duplicate recovery, or serial dilution precision exceedances.
- Hexavalent chromium results in some soil samples were qualified as estimated due to elevated matrix spike recovery or laboratory duplicate precision exceedance.
- Sulfide results in some soil samples were qualified as estimated due to low matrix spike recovery.
- Hexavalent chromium groundwater sample results in two of the filtered samples (079-MW-A02-072414-F, 079-MW-A02-072414DP-F) were qualified as estimated due to holding time exceedance.

Based on review of data and validation results, the soil and groundwater data is usable as qualified and is acceptable for use in evaluation of post-treatment conditions. The data qualifications do not have a negative impact on overall project objectives.

5.0 FINDINGS AND RECOMMENDATIONS

This section presents findings and recommendations based on the sampling results.

Findings

The post-treatment soil sampling analytical results indicate that reduction of hexavalent chromium has occurred across the Site. In the majority of the co-located samples there was a reduction of hexavalent chromium concentrations, as much as over 90%. Residual sulfide concentrations above the reporting limit are present in at least 40% of the samples. The NJDEP soil policy guideline of 20 mg/kg for chromium was not attained in all areas. There is no defined spatial distribution of the results, perhaps due the variability of the historic fill and the variability of pre-treatment hexavalent chromium concentrations.

The geochemical data (Eh and pH) collected with the samples (see **Figure 4**) show that the overall Site geochemical conditions favor reduction of hexavalent chromium to trivalent chromium. Almost all samples with hexavalent chromium concentrations above 20 mg/kg are located in soils where the geochemical conditions favor the conversion of hexavalent to trivalent chromium. This suggests that additional reduction of hexavalent chromium concentrations should be expected. For some of the samples, data indicate that sulfide is still present and the electron source provided by the injection of calcium polysulfide is still available to support further hexavalent chromium reduction (see **Figure 5**). In the cases where sulfide concentrations were below the laboratory reporting limit, additional reduction is expected to proceed by utilizing electron donors already present in the historic fill.

Data indicate only two locations where hexavalent chromium concentrations exist under oxidative conditions (at samples 079-219-0607 and 079-219-0708). The elevated concentration of hexavalent chromium and high pH indicate that chromite ore processing residue may be present at this location. There are no pretreatment data corresponding to these samples, so the efficacy of treatment cannot be assessed. Even then, these points are only slightly into the oxidizing geochemical region, suggesting that conditions are transitional rather than aggressively oxidizing and strongly favoring the stability of hexavalent chromium. However, high concentrations of sulfide remain at this location, suggesting that further reduction of hexavalent chromium could occur over time.

In conclusion, data from the post-treatment sampling program shows that the ITP resulted in the reduction of hexavalent chromium concentrations, but did not achieve reduction to below 20 mg/kg at every sampling point. The reductions are best demonstrated by the co-located samples which provide a good basis of comparison in terms of treatment effectiveness, because of the existing pretreatment data. For the majority of those samples, there was a reduction of hexavalent chromium concentrations, of as much as 90% or greater. Therefore, although the treatment did not result in the attainment of the 20 mg/kg hexavalent chromium criterion at every sampling point, it resulted in concentration reductions, and was successful. Moreover, the overall remedial action has been and continues to be fully protective based on the current land use.

Recommendations

Because the remedial action is considered successful and protective under the existing land use, no further post-remediation soil or groundwater sampling is recommended at this time. (Moreover, paragraph 57 of the Consent Decree establishes that Honeywell has no further treatment or sampling obligations beyond those conducted as part of the remedial action in 2010.) The existing engineering controls and Deed Notice will remain in place. Post-remediation cap inspections, submittal of remedial action protectiveness certification biennial reports, and other applicable post-remediation monitoring and reporting requirements will continue under the existing Deed Notice, Remedial Action Soil Permit, and Long-Term Monitoring Plan for the Site.

6.0 REFERENCES

Amec, 2011; Remedial Action Report and Confirmatory Sampling Work Plan, Site 079 Route 440 Vehicle Corp. September 2012.

Amec, 2010; Discharge to Groundwater Permit Request and In-Situ Chemical Reduction Injection Treatment Program Field Implementation Work Plan. July 2010.

Amec, 2009; Remedial Action Work Plan, Site 079 Route 440 Vehicle Corp. July 2009.

EPA, 2000; In Situ Treatment of Soil and Groundwater Contaminated with Chromium, EPA/625/R-00/005, October 2000.

NJDEP, 2012; Letter Correspondence re: Approval of Remedial Action Report and Confirmatory Sampling Work Plan, Site 079 Route 440 Vehicle Corp. Letter dated February 21, 2012.

7.0 LIST OF ACRONYMS AND ABBREVIATIONS

bgs	Below Ground Surface
CAPS	Calcium Polysulfide
Cr(VI)	Hexavalent Chromium
EPA	United States Environmental Protection Agency
ITP	In-Situ Treatment Program
mg/kg	milligrams per kilogram
µg/L	micrograms per liter
NFA	No Further Action
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
SOP	Standard Operating Procedure

TABLES

TABLE 1

Post-Treatment Sampling Program

Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.

Jersey City, New Jersey

Activity	Soil Boring or Well ID	Number of Samples	Sampling Date	Sampling Method	Matrix	Sampling Interval	Analytical Parameters
Post-Treatment Soil Sampling	079-SB-201	6	8/18/2014	Geoprobe Macro-Core	Soil	Six 1-foot samples per boring from 3 to 9 ft below grade	Hexavalent Chromium, pH, Eh, sulfide
	079-SB-202	6	8/18/2014				
	079-SB-203	6	8/18/2014				
	079-SB-204	6	8/19/2014				
	079-SB-205	6	8/19/2014				
	079-SB-206	6	8/21/2014				
	079-SB-207	6	8/19/2014				
	079-SB-208	6	8/21/2014				
	079-SB-209	6	8/19/2014				
	079-SB-210	6	8/19/2014				
	079-SB-211	6	8/19/2014				
	079-SB-212	6	8/18/2014				
	079-SB-213	6	8/19/2014				
	079-SB-214	6	8/19/2014				
	079-SB-215	6	8/18/2014				
	079-SB-216	6	8/18/2014				
	079-SB-217	6	8/19/2014				
	079-SB-218	6	8/18/2014				
	079-SB-219	6	8/18/2014				
	079-SB-220	6	8/18/2014				
	079-SB-221	6	8/19/2014				
	079-SB-222	6	8/18/2014				
Post-Treatment Groundwater Sampling	079--MW-001	2	7/24/2014	Low-flow	Groundwater	Mid-screen	Filtered and unfiltered Cr (total), Cr(VI), pH, Eh
	079-MW-A02	2	7/24/2014				

Notes:

1. Borings were not advanced below the existing meadow mat or organic clay stratum.
2. Quality assurance/quality control (QA/QC) samples were collected at a rate of 5% of the total number of soil; and field blank samples at a rate of one per sample even and field blank samples at a rate of one per sample event.
3. Laboratory analytical results were reported using NJDEP Regulatory Format II. Full Laboratory Data Deliverables - Non-USEPA/CLP Methods.

TABLE 2

Post-Treatment Soil Sample Results

Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.

Jersey City, New Jersey

Location		079-SB-201													
Sample Date		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014	
Sample Depth		3-4 ft		4-5 ft		4-5 ft (DUP)		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	NS		NS		NS		NS		NS		NS		NS	
HEXAVALENT CHROMIUM (mg/kg)	20	0.45	UJ	10		**20.3**	**J**	1.8		5.8		4.3	J	1.3	J
REDOX POTENTIAL (mV)	-	203		233		253		217		218		228		217	
pH (S.U.)	-	7.75		7.11		7.26		8.05		7.41		7.26		7.9	
SOLIDS, PERCENT	-	91.3		83.3		70.4		91.9		82.6		83.1		75.5	
SULFIDE (mg/kg)	-	16.5		31.3		17.2		13.9		15.5		15.4		16	

Location		079-SB-202													
Sample Date		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		6-7 ft (DUP)		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	NS		NS		NS		NS		NS		NS		NS	
HEXAVALENT CHROMIUM (mg/kg)	20	1.4	J	0.66	J	8.3		7.1	J	8.7	J	9.2		16.6	J
REDOX POTENTIAL (mV)	-	220		209		193		314		318		326		276	
pH (S.U>)	-	7.62		7.59		7.11		7.22		7.53		7.06		7.5	
SOLIDS, PERCENT	-	73.9		74.6		80.4		84.6		85.6		83.4		83.2	
SULFIDE (mg/kg)	-	4.2	U	4.2	U	3.8	U	3.8	U	11.6		3.6	U	5	U

Location		079-SB-203													
Sample Date		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		5-6 ft (DUP)		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	NS		NS		NS		NS		NS		NS		NS	
HEXAVALENT CHROMIUM (mg/kg)	20	1.4		9.7	J	**20.1**	**J**	**29.8**	**J**	2.7	J	17.3	J	17.8	J
REDOX POTENTIAL (mV)	-	340		400		295		301		257		270		314	
pH (S.U>)	-	8.59		6.53		6.15		6.9		7.66		8.09		7.44	
SOLIDS, PERCENT	-	92.8		89.5		47.8		60.4		80.9		83.7		80.5	
SULFIDE (mg/kg)	-	3.5	U	3.5	U	6.7	U	5.1	U	4.1		3.8	U	3.9	U

TABLE 2
Post-Treatment Soil Sample Results
Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.
Jersey City, New Jersey

Location		079-SB-204													
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		6-7 ft (DUP)		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	31.7	J	67.4	J	2900	J	461	J	636	J	386	J	206	J
HEXAVALENT CHROMIUM (mg/kg)	20	1.8		2.3		10.9		**22.4**		**37.7**		17.3		16.6	
REDOX POTENTIAL (mV)	-	262		265		254		222		299		271		335	
pH (S.U>)	-	8.18		8.19		7.76		7.6		7.64		7		5.97	
SOLIDS, PERCENT	-	90.5		88		74.7		82.6		81.8		82.8		83.7	
SULFIDE (mg/kg)	-	5.5	J	4.5	UJ	14.7	J	4.8	UJ	4.8	U	4.8	UJ	4.7	UJ

Location		079-SB-205											
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	87.3	J	993	J	1470	J	7090	J	33200	J	7850	J
HEXAVALENT CHROMIUM (mg/kg)	20	18		0.51		**71.6**		1.8		5.2		1	
REDOX POTENTIAL (mV)	-	307		275		231		169		-39.5		-8.8	
pH (S.U>)	-	7.54		7.8		7.68		8.15		8.84		8.45	
SOLIDS, PERCENT	-	78		81.4		86.3		64.9		37.1		41.2	
SULFIDE (mg/kg)	-	5.1	U	4.9	U	4.6	U	6	U	32.2		72.7	

Location		079-SB-206											
Sample Date		8/21/2014		8/21/2014		8/21/2014		8/21/2014		8/21/2014		8/21/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	28.1	J	105	J	535	J	2490	J	1910	J	1060	J
HEXAVALENT CHROMIUM (mg/kg)	20	2.4	J	8.4	J	10.3	J	**47.4**	**J**	**124**	**J**	**27.8**	**J**
REDOX POTENTIAL (mV)	-	375		344		325		337		328		327	
pH (S.U>)	-	7.05		8.01		7.53		8.33		8.54		8.45	
SOLIDS, PERCENT	-	83.7		87.5		81.5		74.6		79.5		68.4	
SULFIDE (mg/kg)	-	4.8	U	4.6	U	4.9	U	5.4	U	5	U	5.8	U

TABLE 2

Post-Treatment Soil Sample Results

Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.

Jersey City, New Jersey

Location		079-SB-207											
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	32.9	J	120	J	5900	J	6390	J	20100	J	3440	J
HEXAVALENT CHROMIUM (mg/kg)	20	2.5		0.98	U	**80.4**		11		0.64	U	**127**	
REDOX POTENTIAL (mV)	-	234		239		230		237		208		238	
pH (S.U>)	-	8.21		7.46		8.19		7.84		8.45		8.15	
SOLIDS, PERCENT	-	81.2		42.4		70.9		61.9		64.7		67.6	
SULFIDE (mg/kg)	-	4.9	U	46.5		5.6	U	7	U	6.2		5.9	U

Location		079-SB-208											
Sample Date		8/21/2014		8/21/2014		8/21/2014		8/21/2014		8/21/2014		8/21/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	55.4		75.2		526		75.3		2040		1820	
HEXAVALENT CHROMIUM (mg/kg)	20	4.1		1	J	0.51	U	0.49	UJ	**92.7**		**122**	**J**
REDOX POTENTIAL (mV)	-	355		392		299		287		307		280	
pH (S.U>)	-	7.67		6.42		7.89		7.72		7.23		7.92	
SOLIDS, PERCENT	-	85.6		83.1		77.8		81.7		82.1		66.8	
SULFIDE (mg/kg)	-	4.7	U	4.8	U	5.1	U	4.9		4.9	U	6	U

Location		079-SB-209											
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	43	J	3170	J	9590	J	3300	J	4560	J	12000	J
HEXAVALENT CHROMIUM (mg/kg)	20	9		14.7	J	**294**	**J**	11.5		112	J	5	J
REDOX POTENTIAL (mV)	-	269		295		294		197		217		77	
pH (S.U>)	-	7.48		7.23		7.34		6.6		7.42		7.7	
SOLIDS, PERCENT	-	83		81.9		67.1		72.4		67.2		41.3	
SULFIDE (mg/kg)	-	4.8	U	4.9	U	5.9	U	5.5	U	6	U	15.6	

TABLE 2

Post-Treatment Soil Sample Results

Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.

Jersey City, New Jersey

Location		079-SB-210											
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	54.4	J	15.7	J	16.3	J	45800	J	17000	J	13600	J
HEXAVALENT CHROMIUM (mg/kg)	20	3	J	0.61	J	1.1	J	4.6	J	1.8	J	2	J
REDOX POTENTIAL (mV)	-	192		235		244		189		79.6		171	
pH (S.U>)	-	8.58		7.72		7.6		6.85		7.53		7.71	
SOLIDS, PERCENT	-	91.6		90.7		87.2		44.2		64.6		66.2	
SULFIDE (mg/kg)	-	4.3	U	4.4	U	4.5	U	8.9	U	6.1	U	5.9	U

Location		079-SB-211											
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	135	J	174	J	965	J	3940	J	5090	J	12900	J
HEXAVALENT CHROMIUM (mg/kg)	20	12.5	J	11.6		**70.9**	**J**	**163**		**26.5**		0.95	U
REDOX POTENTIAL (mV)	-	237		256		287		293		260		71.6	
pH (S.U>)	-	8.1		8.08		7.72		7.07		8.15		7.88	
SOLIDS, PERCENT	-	83		84.6		81.3		78.5		72.6		43.5	
SULFIDE (mg/kg)	-	4.8	U	4.7	U	4.9	U	5	U	5.4	U	8.9	U

Location		079-SB-212													
Sample Date		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		7-8 ft (DUP)		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	NS		NS		NS		NS		NS		NS		NS	
HEXAVALENT CHROMIUM (mg/kg)	20	1.3	J	1.6	J	4.6	J	10.3	J	14.8	J	17.1	J	9.1	J
REDOX POTENTIAL (mV)	-	341		464		382		148		229		258		223	
pH (S.U>)	-	7.05		4.44		6.83		7.24		7.92		8.07		8.05	
SOLIDS, PERCENT	-	93.9		92.2		84.5		83.6		80.7		83.6		82.5	
SULFIDE (mg/kg)	-	3.4	U	3.4	U	3.8	U	3.7	U	3.9	U	4		3.8	U

TABLE 2

Post-Treatment Soil Sample Results

Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.

Jersey City, New Jersey

Location		079-SB-213											
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	82.7	J	38.8	J	150	J	1240		5750		2920	
HEXAVALENT CHROMIUM (mg/kg)	20	12		5		21		**125**	**J**	3	J	0.75	J
REDOX POTENTIAL (mV)	-	225		252		277		279		201		210	
pH (S.U>)	-	7.72		7.19		7.07		7.48		6.78		7.5	
SOLIDS, PERCENT	-	88		86.9		87.4		69.8		75.2		72	
SULFIDE (mg/kg)	-	4.5	U	4.6	U	4.5	U	5.6	U	5.3	U	5.5	U

Location		079-SB-214											
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	21.2		42.5		7100		20000		10000		1100	
HEXAVALENT CHROMIUM (mg/kg)	20	1.6	J	0.49	UJ	18.3	J	1.1	J	16.3	J	0.65	J
REDOX POTENTIAL (mV)	-	255		211		201		74.3		70.5		49.6	
pH (S.U>)	-	7.1		7.74		7.69		7.66		7.85		8.02	
SOLIDS, PERCENT	-	88.7		83.9		43.5		62.6		47.4		62.1	
SULFIDE (mg/kg)	-	6.1		8.9		14.7		6.2	U	69		21.6	

Location		079-SB-215											
Sample Date		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	NS		NS		NS		NS		NS		NS	
HEXAVALENT CHROMIUM (mg/kg)	20	0.76	J	0.47	J	**91.4**	**J**	19.1	J	**23.7**	**J**	6.2	J
REDOX POTENTIAL (mV)	-	266		302		181		234		244		205	
pH (S.U>)	-	8.31		8.36		7.18		7.81		7.51		8.41	
SOLIDS, PERCENT	-	91		89.2		81.5		81.3		82.9		79.4	
SULFIDE (mg/kg)	-	4.1	U	4.5	U	4.8	U	5	U	4.6		40.1	

TABLE 2

Post-Treatment Soil Sample Results

Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.

Jersey City, New Jersey

Location		079-SB-216											
Sample Date		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	NS		NS		NS		NS		NS		NS	
HEXAVALENT CHROMIUM (mg/kg	20	0.51	J	3.2	UJ	9.8	J	1.8	J	1.1		2.9	UJ
REDOX POTENTIAL (mV)	-	269		267		241		210		187		143	
pH (S.U>)	-	7.86		5.88		7.19		7.28		7.85		8.05	
SOLIDS, PERCENT	-	91.4		62.6		47.3		66		82.7		70.1	
SULFIDE (mg/kg)	-	4.2	U	6.6	U	12.8		12.6		4.8		11.7	

Location		079-SB-217											
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	31.3		33		26.7		3000		541		374	
HEXAVALENT CHROMIUM (mg/kg	20	14.8	J	2.4	J	3.6	J	**41.9**	**J**	**74.1**	**J**	14.1	J
REDOX POTENTIAL (mV)	-	233		251		252		233		264		671	
pH (S.U>)	-	7.79		7.52		7.87		8.39		7.3		7.59	
SOLIDS, PERCENT	-	91.1		84.2		83		81.4		84.1		82.5	
SULFIDE (mg/kg)	-	6		4.7	U	4.8	U	4.9	U	4.6	U	4.8	U

Location		079-SB-218													
Sample Date		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		6-7 ft (DUP)		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	NS		NS		NS		NS		NS		NS		NS	
HEXAVALENT CHROMIUM (mg/kg	20	0.46	J	**25.7**		**256**	**J**	**60.4**	**J**	**26.4**		**29.1**	**J**	4.4	J
REDOX POTENTIAL (mV)	-	252		250		161		155		215		221		227	
pH (S.U>)	-	8.26		6.66		9.04		9.57		9.18		8.3		7.67	
SOLIDS, PERCENT	-	90.2		60.1		51.9		78.5		80		80.6		52.2	
SULFIDE (mg/kg)	-	4.3	U	6.7		35.6		28.1		28.7		11.8		21.6	

TABLE 2

Post-Treatment Soil Sample Results

Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.

Jersey City, New Jersey

Location		079-SB-219													
Sample Date		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014	
Sample Depth		3-4 ft		3-4 ft (DUP)		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	NS		NS		NS		NS		NS		NS		NS	
HEXAVALENT CHROMIUM (mg/kg)	20	1	J	5.1	J	**156**	**J**	**26.8**	**J**	**3580**		**4150**		**24.2**	**J**
REDOX POTENTIAL (mV)	-	281		241		405		373		95.6		95.2		116	
pH (S.U>)	-	8.18		7.99		7.46		7.05		11.82		11.9		9.59	
SOLIDS, PERCENT	-	84.5		89.7		83.3		59		43.8		45.2		41.1	
SULFIDE (mg/kg)	-	4.8	U	7.8		8.2		6.8		33.9		53.4		119	

Location		079-SB-220													
Sample Date		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014		8/18/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft		8-9 ft (DUP)	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	NS		NS		NS		NS		NS		NS		NS	
HEXAVALENT CHROMIUM (mg/kg)	20	0.43		0.83	J	**29.1**	**J**	**55.1**	**J**	2.4		**28.4**	**J**	10	
REDOX POTENTIAL (mV)	-	260		260		156		219		206		249		260	
pH (S.U>)	-	7.48		7.23		7.09		7.62		7.39		8.04		8.01	
SOLIDS, PERCENT	-	91.3		89.4		81.4		81.7		59		83.4		84.3	
SULFIDE (mg/kg)	-	9.8		10		12.4		19.7		53.9		21.6		21.5	

Location		079-SB-221											
Sample Date		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014		8/19/2014	
Sample Depth		3-4 ft		4-5 ft		5-6 ft		6-7 ft		7-8 ft		8-9 ft	
Parameter Name	RDCSRS	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q	CONC	Q
CHROMIUM (mg/kg)	-	21.2		17.8		151		121		279		257	J
HEXAVALENT CHROMIUM (mg/kg)	20	0.79	J	1.2	J	7.4		6.7	J	11	J	**25.5**	**J**
REDOX POTENTIAL (mV)	-	380		388		362		324		360		359	
pH (S.U>)	-	8.44		8.16		8.25		9.22		7.89		8.07	
SOLIDS, PERCENT	-	91.9		88.9		84.9		83.1		79.3		81.3	
SULFIDE (mg/kg)	-	4.3	U	4.4	U	4.6	U	4.8	U	5	U	4.8	U

TABLE 2

Post-Treatment Soil Sample Results

Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.

Jersey City, New Jersey

Location		079-SB-222						
Sample Date		8/18/2014	8/18/2014	8/18/2014	8/18/2014	8/18/2014	8/18/2014	8/18/2014
Sample Depth		3-4 ft	4-5 ft	5-6 ft	5-6 ft (DUP)	6-7 ft	7-8 ft	8-9 ft
Parameter Name	RDCSRS	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
CHROMIUM (mg/kg)	-	NS	NS	NS	NS	NS	NS	NS
HEXAVALENT CHROMIUM (mg/kg)	20	0.46 UJ	4.1 J	0.49 U	6.1 J	5.7	4.6	0.48 U
REDOX POTENTIAL (mV)	-	232	277	290	267	344	309	265
pH (S.U>)	-	9.29	7.91	7.53	7.33	6.1	6.72	6.35
SOLIDS, PERCENT	-	89.6	89.6	81.9	82.3	85.6	84.7	84
SULFIDE (mg/kg)	-	25.7	19	17	18.2	16	14.3	4.7 U

Notes:

RDCSRS: NJDEP Residential Direct Contact Soil Remediation Standards [N.J.A.C. 7:26D; last amended 5/7/2012].

Hexavalent chromium criterion of 20 mg/kg based on NJDEP Policy Memorandum (2/8/2007)

Bold and shaded concentrations exceed 20 mg/kg

Depths reported in feet below ground surface

CONC: Concentration reported in units noted

Q: Data qualifier assigned by laboratory or data validator

DUP: Field Duplicate

U: Not detected above method detection limit

J: Estimated concentration

NS: Not Sampled

-: No Standard

Table 3
Comparison of Co-Located RI and Post Treatment Sample Results
Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.
Jersey City, New Jersey

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-A02**	**079-SB-216**	
Date	**5/14/1997**	**8/18/2014**	
0-2 (ft)	9.6	-	NA
2-4 (ft)	2.2 U	-	76.8%
3-4 (ft)	-	0.51	
4-5 (ft)	-	3.2 U	98.9%
4-6 (ft)	**304**	-	
5-6 (ft)	-	9.8	NA
6-7 (ft)	-	1.8	NA
7-8 (ft)	-	1.1	NA
8-10 (ft)	**73.9**	-	96.1%
8-9 (ft)	-	2.9 U	
12-14 (ft)	2.4 U	-	NA
14-16 (ft)	2.5 U	-	NA

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-033**	**079-SB-215**	
Date	**5/17/2009**	**8/18/2014**	
0-1 (ft)	1.8 U	-	NA
1-2 (ft)	1.8 U	-	NA
2-3 (ft)	2.2	-	NA
3-4 (ft)	-	0.76	NA
4-5 (ft)	**155**	0.47	99.7%
5-6 (ft)	**109**	**91.4**	16.1%
6-7 (ft)	**29.2**	19.1	34.6%
7-8 (ft)	**21.6**	**23.7**	No Reduction
8-9 (ft)	10.1	6.2	38.6%

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-D02**	**079-SB-212**	
Date	**10/27/1999**	**8/18/2014**	
0-2 (ft)	13.2	-	NA
2-4 (ft)	**33.9**	-	96.2%
3-4 (ft)	-	1.3	
4-5 (ft)	-	1.6	92.6%
4-6 (ft)	**21.7**	-	NA
5-6 (ft)	-	4.6	78.8%
6-7 (ft)	-	10.3	67.1%
6-8 (ft)	**31.3**	-	NA
7-8 (ft)	-	17.1	45.4%
8-9 (ft)	-	9.1	NA
10-12 (ft)	**29.8**	-	NA
12-14 (ft)	**24.8**	-	NA
14-16 (ft)	2 U	-	NA
16-18 (ft)	2.9	-	NA
18-20 (ft)	2 U	-	NA

Prepared by: JJH
Reviewd by: KK

Table 3
Comparison of Co-Located RI and Post Treatment Sample Results
Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.
Jersey City, New Jersey

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-029**	**079-SB-214**	
Date	**5/17/2009**	**8/19/2014**	
0-1 (ft)	**23.8**	-	NA
1-2 (ft)	16.7	-	NA
2-3 (ft)	1.1 U	-	NA
3-4 (ft)	-	1.6	NA
4-5 (ft)	**169**	0.49 U	99.7%
5-6 (ft)	**129**	18.3	85.8%
6-7 (ft)	-	1.1	NA
7-8 (ft)	-	16.3	NA
8-9 (ft)	1.4 U	0.65	53.6%

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-008**	**079-SB-219**	
Date	**7/27/2005**	**8/18/2014**	
0-2 (ft)	6.5	-	NA
2-3 (ft)	**50.4**	-	NA
3-4 (ft)	-	5.1	NA
4-5 (ft)	**331**	**156**	52.9%
5-6 (ft)	-	**26.8**	NA
6-7 (ft)	-	**3580**	NA
7-8 (ft)	-	**4150**	NA
8-10 (ft)	2 U	-	No Reduction
8-9 (ft)	-	**24.2**	

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-B02**	**079-SB-217**	
Date	**11/20/1998**	**8/19/2014**	
0-2 (ft)	3.8	-	NA
2-4 (ft)	2 U	-	No Reduction
3-4 (ft)	-	14.8	
4-5 (ft)	-	2.4	No Reduction
4-6 (ft)	2 U	-	
5-6 (ft)		3.6	
6-7 (ft)	-	**41.9**	86.9%
6-8 (ft)	**321**	-	
7-8 (ft)	-	**74.1**	NA
8-9 (ft)	-	14.1	NA
10-12 (ft)	**34.8**	-	NA

Prepared by: JJH
Reviewd by: KK

Table 3
Comparison of Co-Located RI and Post Treatment Sample Results
Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.
Jersey City, New Jersey

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-C02**	**079-SB-222**	
Date	**5/14/1997**	**8/18/2014**	
0-2 (ft)	19.3	-	NA
2-4 (ft)	6.9	-	93.3%
3-4 (ft)	-	0.46 U	
4-5 (ft)	-	4.1	37.9%
4-6 (ft)	6.6	-	NA
5-6 (ft)	-	6.1	7.6%
6-7 (ft)	-	5.7	NA
7-8 (ft)	-	4.6	NA
8-10 (ft)	**41.6**	-	98.8%
8-9 (ft)	-	0.48 U	
10-12 (ft)	15.6 U	-	NA
12-14 (ft)	**63.8**	-	NA
14-16 (ft)	6.1	-	NA

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-B01**	**079-SB-213**	
Date	**5/14/1997**	**8/19/2014**	
0-2 (ft)	**72.1**	-	NA
2-4 (ft)	2.7	-	No Reduction
3-4 (ft)	-	12	
4-5 (ft)	-	5	99.2%
4-6 (ft)	**601**	-	NA
5-6 (ft)	-	**21**	96.5%
6-7 (ft)	-	**125**	NA
7-8 (ft)	-	3	NA
8-10 (ft)	**35.1**	-	97.9%
8-9 (ft)	-	0.75	
12-14 (ft)	4.4	-	NA

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-031**	**079-SB-220**	
Date	**5/17/2009**	**8/18/2014**	
0-1 (ft)	1.9 U	-	NA
1-2 (ft)	1.9 U	-	NA
3-4 (ft)	-	0.43	NA
4-5 (ft)	13.3	0.83	93.8%
5-6 (ft)	3.8	**29.1**	No Reduction
6-7 (ft)	**57**	**55.1**	3.3%
7-8 (ft)	-	2.4	NA
8-9 (ft)	3.2	**28.4**	No Reduction

Prepared by: JJH
Reviewd by: KK

Table 3
Comparison of Co-Located RI and Post Treatment Sample Results
Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.
Jersey City, New Jersey

	Pre-Treatment (RI)	Post-Treatment	Percent Reduction
Boring ID	**079-SB-035**	**079-SB-218**	
Date	**5/17/2009**	**8/18/2014**	
2-3 (ft)	0.92 U	-	NA
3-4 (ft)	1.1 U	0.46	58.2%
4-5 (ft)	4.7	**25.7**	No Reduction
5-6 (ft)	**2770**	**256**	90.8%
5-6 A (ft)	**103**	**256**	No Reduction
6-7 (ft)	16.1	**60.4**	No Reduction
7-8 (ft)	-	**29.1**	NA
8-9 (ft)	-	4.4	NA

Notes:
All results in milligrams per kilogram (mg/kg)
Hexavalent chromium criterion of 20 mg/kg based on NJDEP Policy Memorandum (2/8/2007)
Bold and shaded concentrations exceed 20 mg/kg
Depths reported in feet below ground surface
U: Not detected above method detection limit
J: Estimated concentration
NA: Depth intervals do not match, no comparison was made
-: No Standard
ft: Feet below ground surface
Instances where duplicate was collected, the higher of the 2 results is presented.

Prepared by: JJH
Reviewd by: KK

TABLE 4

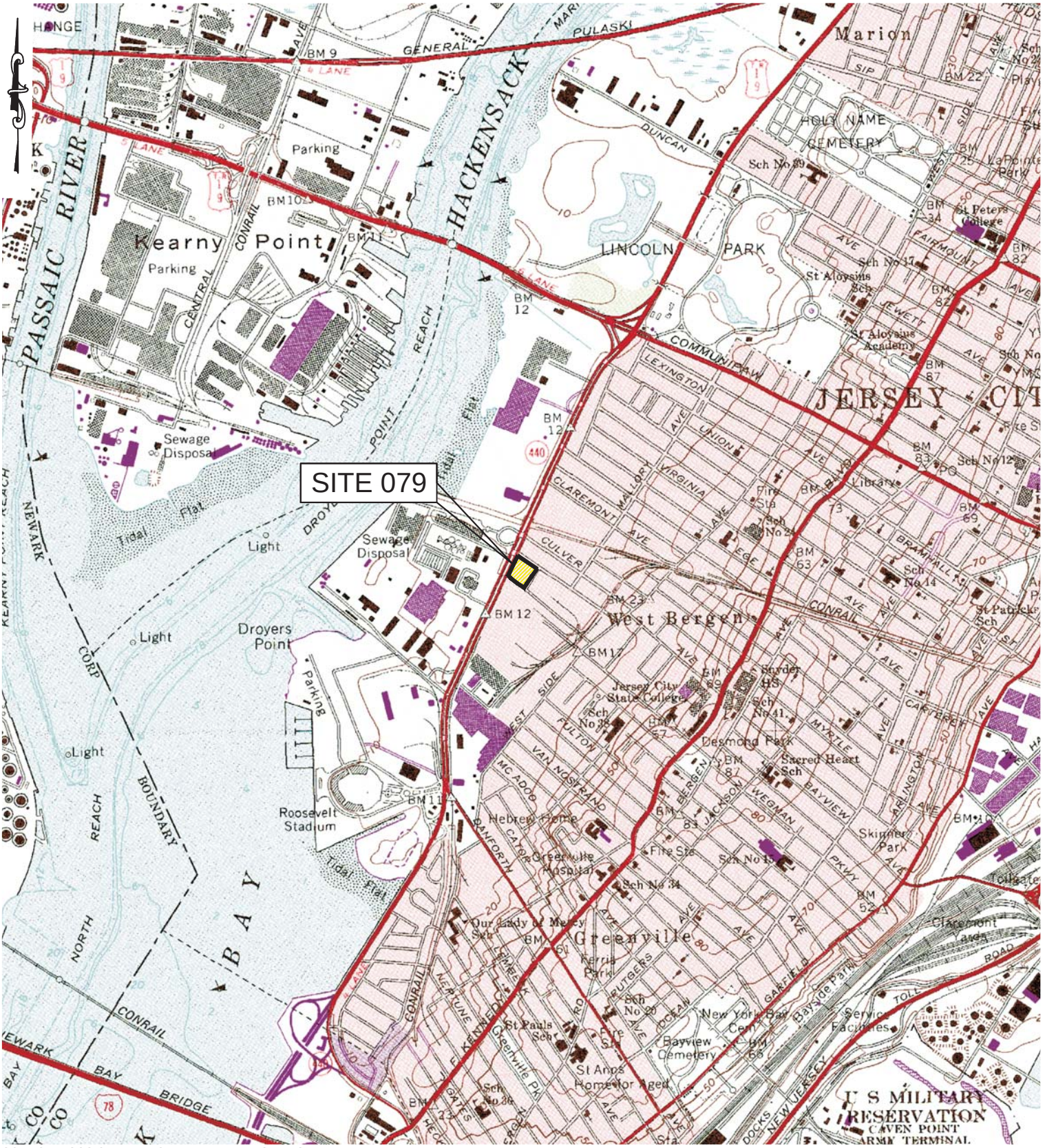
Groundwater Sample Results - July 2014
Study Area 5 - NJDEP Site 079 Route 440 Vehicle Corp.
Jersey City, New Jersey

		Field Sample ID	079-MW-001-072414		079-MW-001-072414F		079-MW-A02-072414	
		Location	079-MW-001		079-MW-001		079-MW-A02	
		Lab Sample ID	JB72424-1		JB72424-1F		JB72424-2	
		Sample Date	7/24/2014		7/24/2014		7/24/2014	
Parameter Name	Units	GWQS	CONC	Q	CONC	Q	CONC	Q
CHROMIUM	ug/l	70	4.0	U	4.0	U	5.5	
HEXAVALENT CHROMIUM	ug/l	-	5.5	U	5.5	U	5.5	U

		Field Sample ID	079-MW-A02-072414DP		079-MW-A02-072414F		079-MW-A02-072414DPF	
		Location	079-MW-A02		079-MW-A02		079-MW-A02	
		Lab Sample ID	JB72424-3		JB72424-2F		JB72424-3F	
		Sample Date	7/24/2014		7/24/2014		7/24/2014	
Parameter Name	Units	GWQS	CONC	Q	CONC	Q	CONC	Q
CHROMIUM	ug/l	70	5.7		4.5		4.2	
HEXAVALENT CHROMIUM	ug/l	-	5.5	U	5.5	UJ	5.5	UJ

Notes:
Q: Qualifier
U: Not detected above method detection limit
J: Estimated concentration
GWQS: Groundwater Quality Standard
-: No Standard

FIGURES



SOURCE: USGS QUADRANGLE MAP, 7.5 MIN SERIES
JERSEY CITY, NJ-NY 1967, PHOTO REVISED 1981

0 2000 4000
SCALE IN FEET

Amec Foster Wheeler PROJ No.: 3480120313 *DRAWING:* 3480120313-6100-SLM0-0001	
PREPARED/DATE: STR 10/24/14	*CHECKED/DATE:* JH 10/24/14

amec foster wheeler

ENVIRONMENT & INFRASTRUCTURE, Inc.
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE 1
SITE LOCATION MAP
SA 5 - SITE 079
ROUTE 440 VEHICLE CORP.
JERSEY CITY, NEW JERSEY

LEGEND

- MONITORING WELL
- RI BORING LOCATION (1998–2009)
- POST–REMEDIATION BORING LOCATION (2014)
- MANHOLE
- HYDRANT
- SIGN
- UTILITY POLE
- LIGHT POLE
- CATCH BASIN
- INLET
- TREE OR
- VEGETATION/SHRUB/LANDSCAPED AREA
- SITE 079 BOUNDARY
- SANITARY/STORM SEWER
- ELECTRIC LINE
- OVERHEAD UTILITY LINE
- WATER LINE
- GAS LINE
- 138 KV ELECTRIC LINE
- FENCE LINE
- 10 GROUND SURFACE ELEVATION CONTOUR LINE
- BUILDING/STRUCTURE (ON SITE)
- RI DATA (1998–2009)
- POST–REMEDIATION DATA(2014)

NOTES:

U– COMPOUND NOT DETECTED AT DETECTION LIMIT

J– ESTIMATED VALUE BELOW REPORTING LIMIT

D– FIELD DUPLICATE SAMPLE

Cr(VI)– HEXAVALENT CHROMIUM

NOTES:

PREVIOUS RI SOIL BORING LOCATIONS AND DATA (1998/1999) FROM REMEDIAL INVESTIGATION REPORT DATED NOVEMBER 1999, PREPARED BY TETRA TECH; FIGURE 4–3

2005/2008/2009 BORING LOCATIONS COMPLETED BY MACTEC

SAMPLE LOCATIONS WITH TOTAL CHROMIUM DATA FROM IRM REPORT (FEB, 1994). SOME LOCATIONS FROM 1994 IRM MAP SLIGHTLY ADJUSTED TO FIT ACTUAL PROPERTY DIMENSIONS.

ALL SOIL RESULTS IN MILLIGRAMS PER KILOGRAM (mg/kg)

BOLD AND SHADED VALUES INDICATES HEXAVALENT CHROMIUM CONCENTRATIONS DETECTED ABOVE THE NJDEP SOIL CLEANUP CRITERIA (20 mg/kg).

079–SB–206	
Date	8/21/2014
Parameter	CR (VI)
Depth (ft)	
3–4	2.4 J
4–5	8.4 J
5–6	10.3 J
6–7	**47.4 J**
7–8	**124 J**
8–9	**27.8 J**

079–SB–207	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	2.5
4–5	0.98 U
5–6	**80.4**
6–7	11
7–8	0.64 U
8–9	**127**

079–SB–208	
Date	8/21/2014
Parameter	CR (VI)
Depth (ft)	
3–4	4.1
4–5	1 J
5–6	0.51 U
6–7	0.49 UJ
7–8	**92.7**
8–9	**122 J**

079–SB–033	
Date	5/17/2009
Parameter	CR (VI)
Depth (ft)	
0–1	1.8 UJ
1–2	1.8 UJ
2–3	2.2
4–5	**155 J**
5–6	**109 J**
6–7	**29.2 J**
7–8	**20.3 J**
7–8 D	**21.6**
8–9	10.1

079–SB–209	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	9
4–5	14.7 J
5–6	**294 J**
6–7	11.5
7–8	**112 J**
8–9	5 J

079–SB–211	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	12.5 J
4–5	11.6
5–6	**70.9 J**
6–7	**163**
7–8	**26.5**
8–9	0.95 U

079–SB–221	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	0.79 J
4–5	1.2 J
5–6	7.4
6–7	6.7 J
7–8	11 J
8–9	**25.5 J**

079–SB–205	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	18
4–5	0.51
5–6	**71.6**
6–7	1.8
7–8	5.2
8–9	1

079–SB–009	
Date	7/27/2005
Parameter	CR (VI)
Depth (ft)	
0–2	2 UJ
0–2 D	2 UJ
2–4	18.4 J
4–6	2 UJ
4–6 D	2 UJ
8–10	7.7 J

079–SB–B01	
Date	5/14/1997
Parameter	CR (VI)
Depth (ft)	
0–2	**72.1 J**
2–4	2.7 J
4–6	**601 J**
8–10	**35.1 J**
12–14	4.4 J

079–SB–213	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	12
4–5	5
5–6	**21**
6–7	**125 J**
7–8	3 J
8–9	0.75 J

079–SB–215	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	0.76 J
4–5	0.47 J
5–6	**91.4 J**
6–7	19.1 J
7–8	**23.7 J**
8–9	6.2 J

079–SB–210	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	3 J
4–5	0.61 J
5–6	1.1 J
6–7	4.6 J
7–8	1.8 J
8–9	2 J

079–SB–029	
Date	5/17/2009
Parameter	CR (VI)
Depth (ft)	
0–1	**23.8**
1–2	16.7
2–3	1.1 U
4–5	**169**
5–6	**129**
8–9	1.4 U

079–SB–214	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	1.6 J
4–5	0.49 UJ
5–6	18.3 J
6–7	1.1 J
7–8	16.3 J
8–9	0.65 J

079–SB–A02	
Date	5/14/1997
Parameter	CR (VI)
Depth (ft)	
0–2	9.6 J
2–4	2.2 UJ
4–6	**304 J**
8–10	5.3 J
8–10 D	**73.9 J**
12–14	2.4 UJ
14–16	2.5 UJ

079–SB–216	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	0.51 J
4–5	3.2 UJ
5–6	9.8 J
6–7	1.8 J
7–8	1.1
8–9	2.9 UJ

079–SB–220	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	0.43
4–5	0.83 J
5–6	**29.1 J**
6–7	**55.1 J**
7–8	2.4
8–9	**28.4 J**
8–9 D	10

079–SB–031	
Date	5/17/2009
Parameter	CR (VI)
Depth (ft)	
0–1	1.9 UJ
1–2	1.9 UJ
4–5	13.3 J
5–6	3.8 J
6–7	**57.1**
8–9	3.2 J

079–SB–203	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	1.4
4–5	9.7 J
5–6	**20.1 J**
5–6 D	**29.8 J**
6–7	2.7 J
7–8	17.3 J
8–9	17.8 J

079–SB–219	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	1 J
3–4 D	5.1 J
4–5	**156 J**
5–6	**26.8 J**
6–7	**3580**
7–8	**4150**
8–9	**24.2 J**

079–SB–008	
Date	7/27/2005
Parameter	CR (VI)
Depth (ft)	
0–2	6.5 J
2–3	**50.4 J**
2–3 D	**38.3 J**
4–5	**331 J**
8–10	2 UJ

079–SB–212	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	1.3 J
4–5	1.6 J
5–6	4.6 J
6–7	10.3 J
7–8	14.8 J
7–8 D	17.1 J
8–9	9.1 J

079–SB–002	
Date	10/27/1999
Parameter	CR (VI)
Depth (ft)	
0–2	13.2 J
2–4	**33.9 J**
4–6	**21.7 J**
6–8	**31.3 J**
10–12	**29.8 J**
12–14	**24.8 J**
14–16	2 UJ
16–18	2.9 J
18–20	2 UJ

079–SB–218	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	0.46 J
4–5	**25.7**
5–6	**256 J**
6–7	**60.4 J**
6–7 D	**26.4**
7–8	**29.1 J**
8–9	4.4 J

079–SB–035	
Date	5/17/2009
Parameter	CR (VI)
Depth (ft)	
2–3	0.92 U
3–4	1.1 U
4–5	4.7
5–6	**2770**
6–7	6.7
6–7 D	16.1

079–SB–012	
Date	12/8/2008
Parameter	CR (VI)
Depth (ft)	
0.5–1	1
2.5–3	0.93 U
4–4.5	18.1
6–6.5	0.94 U
8.5–9	0.95 U

079–SB–028	
Date	5/17/2009
Parameter	CR (VI)
Depth (ft)	
0–1	6.6
1–2	1.5
2–3	0.89 U
4–5	0.92 U
5–6	8.5
6–7	8.2
7–8	8.1
8–9	14.8
9–10	

079–SB–030	
Date	5/17/2009
Parameter	CR (VI)
Depth (ft)	
0–1	0.86 U
1–2	0.89 U
2–3	0.89 U
2–3 D	1.2
4–5	4.4
5–6	5.2
6–7	11.2
8–9	17.6

079–SB–034	
Date	5/17/2009
Parameter	CR (VI)
Depth (ft)	
0–1	1.2
1–2	0.92 U
2–3	1.1 U
4–5	2.2
5–6	9.8
6–7	6.9
8–9	10.2

079–SB–222	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	0.46 UJ
4–5	4.1 J
5–6	0.49 U
5–6 D	6.1 J
6–7	5.7
7–8	4.6
8–9	0.48 U

079–SB–201	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	0.45 UJ
4–5	10
4–5 D	**20.3 J**
5–6	1.8
6–7	5.8
7–8	4.3 J
8–9	1.3 J

079–SB–010	
Date	7/27/2005
Parameter	CR (VI)
Depth (ft)	
0–2	2 UJ
2–3.5	2 UJ
4–6	5.2 J
6–7.5	15.6 J
8–10	2 UJ
8–10 D	2 UJ

079–SB–204	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	1.8
4–5	2.3
5–6	10.9
6–7	**22.4**
6–7 D	**37.7**
7–8	17.3
8–9	16.6

079–SB–202	
Date	8/18/2014
Parameter	CR (VI)
Depth (ft)	
3–4	1.4 J
4–5	0.66 J
5–6	8.3
6–7	7.1 J
6–7 D	8.7 J
7–8	9.2
8–9	16.6 J

079–SB–C02	
Date	5/14/1997
Parameter	CR (VI)
Depth (ft)	
0–2	19.3 J
2–4	6.9 J
4–6	6.6 J
8–10	**41.6 J**
10–12	15.6 UJ
12–14	**63.8 J**
14–16	6.1 J

079–SB–B02	
Date	11/20/1998
Parameter	CR (VI)
Depth (ft)	
0–2	3.8 J
2–4	2 UJ
4–6	2 UJ
6–8	**321 J**
6–8 D	**267 J**
10–12	**34.8 J**

079–SB–217	
Date	8/19/2014
Parameter	CR (VI)
Depth (ft)	
3–4	14.8 J
4–5	2.4 J
5–6	3.6 J
6–7	**41.9 J**
7–8	**74.1 J**
8–9	14.1 J

079–SB–032	
Date	5/17/2009
Parameter	CR (VI)
Depth (ft)	
0–1	1.7 UJ
1–2	1.8 UJ
2–3	1.9 U
4–5	9.2 J
5–6	12.7 J
8–9	17.7 J

079–SB–014	
Date	12/8/2008
Parameter	CR (VI)
Depth (ft)	
1–1.5	2.1
2–2.5	5.3
4–4.5	1.6
6.5–7	0.87 U
8–8.5	12.4
12–12.5	1.1 U

079–SB–013		
Date	12/8/2008	12/9/2008
Parameter	CR (VI)	CR (VI)
Depth (ft)		
1–1.5	1.3	
2–2.5	1.8	
4–4.5	2.3	
6–6.5	11	3.4
10–10.5	362 J	3.4
10–10.5 D	6.1	

NEW JERSEY STATE HIGHWAY ROUTE 440

HONDA CAR DEALERSHIP BLDG.

SITE 079

BLOCK 1291

LOT 76

CARBON PLACE

FISK STREET

MORTORANO WAY

ASPHALT PARKING LOT

DEPRESSED CURB

CONC. SIDEWALK

GATE

RAMP

BASIS OF BEARINGS: NEW JERSEY STATE PLANE COORDINATE SYSTEM, NAD 1983

BASEMAP SOURCE:
REMEDIAL INVESTIGATION REPORT DATED
NOVEMBER 1999, PREPARED BY TETRA TECH.

0 15 30 60
SCALE IN FEET

REV.	DATE	STATUS	PRPD BY	CHKD BY

Amec Foster Wheeler PROJECT No. 3480120313
DRAWING: 3480120313–6100–SSR0–0002

PREPARED/DATE: STR 10/28/14

CHECKED/DATE: JH 01/13/15

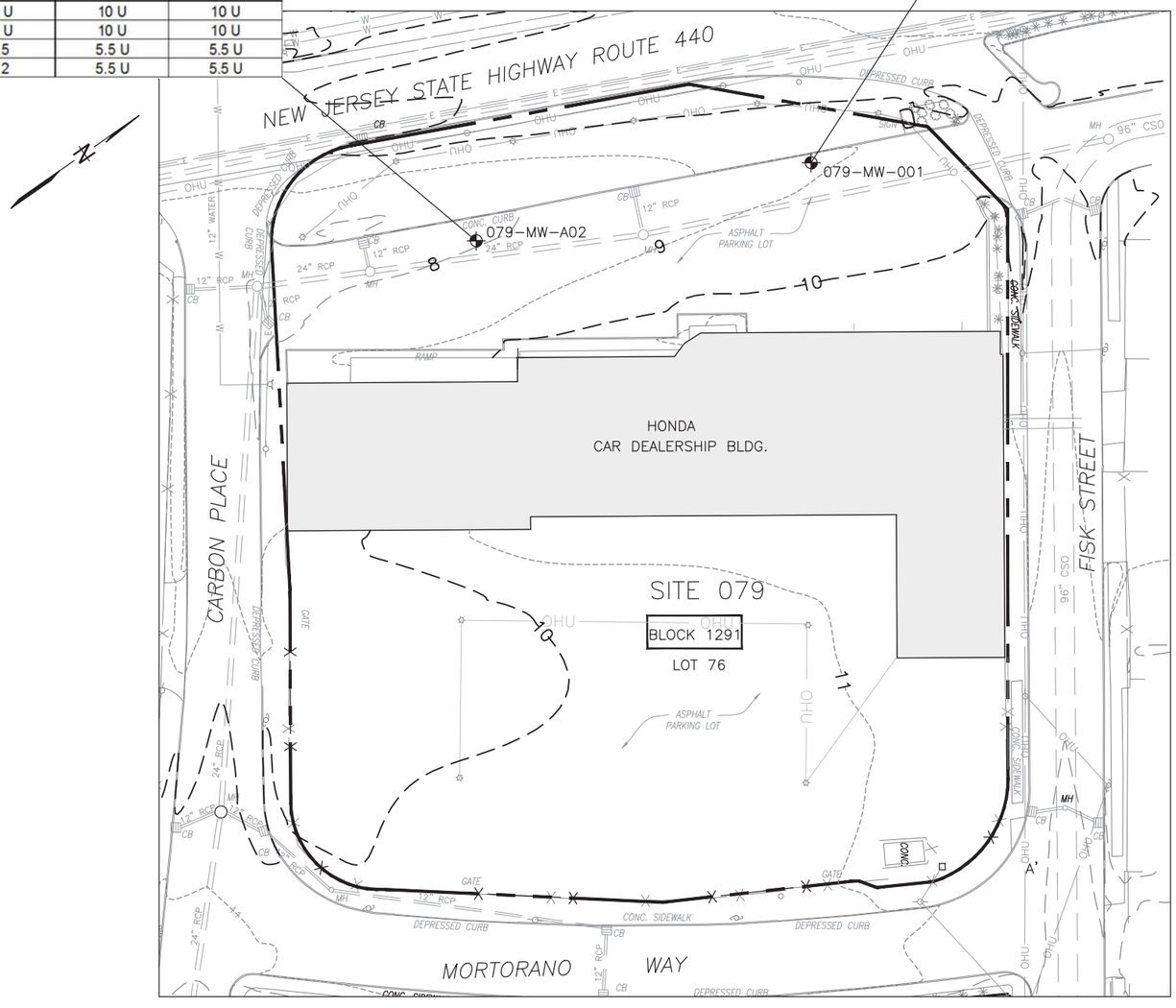
amec foster wheeler

ENVIRONMENT & INFRASTRUCTURE, Inc.
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE 2
POST-TREATMENT AND REMEDIAL INVESTIGATION SOIL SAMPLE RESULTS
STUDY AREA 5 - NJDEP SITE 079
ROUTE 440 VEHICLE CORP.
JERSEY CITY, NEW JERSEY

079-MW-A02				
Sample Date	Total Chromium ug/l	Total Chromium ug/l (Filtered)	Hexavalent Chromium ug/l	Hexavalent Chromium ug/l (Filtered)
10/21/1997	17	5.2 B	10 U	10 U
7/13/1998	6.8 B	6.6 B	10 U	10 U
4/15/2003	10.7	6 B	10 U	10 U
7/24/2006	**321**	16.3	50 U	50 U
6/5/2008	10 U	10 U	10 U	10 U
7/10/2008	10 U	10 U	10 U	10 U
7/8/2010	10 U	10 U	10 U	10 U
7/24/2014	5.5	4.5	5.5 U	5.5 U
7/24/2014 (Dup)	5.7	4.2	5.5 U	5.5 U

079-MW-001				
Sample Date	Total Chromium ug/l	Total Chromium ug/l (Filtered)	Hexavalent Chromium ug/l	Hexavalent Chromium ug/l (Filtered)
7/8/2010	20.5	10 U	10 U	10 U
7/8/2010 (Dup)	14.9	10 U	10 U	10 U
7/24/2014	4.0 U	4.0 U	5.5 U	5.5 U



LEGEND

- MONITORING WELL
- MANHOLE
- HYDRANT
- SIGN
- UTILITY POLE
- LIGHT POLE
- CATCH BASIN
- INLET
- TREE
- VEGETATION/SHRUB/LANDSCAPED AREA
- SITE 079 BOUNDARY
- SANITARY/STORM SEWER
- E — ELECTRIC LINE
- OHU — OVERHEAD UTILITY LINE
- W — WATER LINE
- GAS — GAS LINE
- E — 138 KV ELECTRIC LINE
- X — X — FENCE LINE
- 10 — GROUND SURFACE ELEVATION CONTOUR LINE
- BUILDING/STRUCTURE (ON SITE)

NOTES:

U– COMPOUND NOT DETECTED

ug/L– MICROGRAMS PER LITER

DUP– FIELD DUPLICATE SAMPLE

SHADED AND BOLD RESULTS EXCEED THE GROUNDWATER QUALITY STANDARDS OF 70 ug/L

0 15 30 60

SCALE IN FEET

BASEMAP SOURCE:
REMEDIAL INVESTIGATION REPORT DATED
NOVEMBER 1999, PREPARED BY TETRA TECH.

REV.	DATE	STATUS	DRFT BY	CHKD BY

Amec Foster Wheeler PROJECT No. 3480120313
DRAWING: 3480120313-6100-HGWR-0000

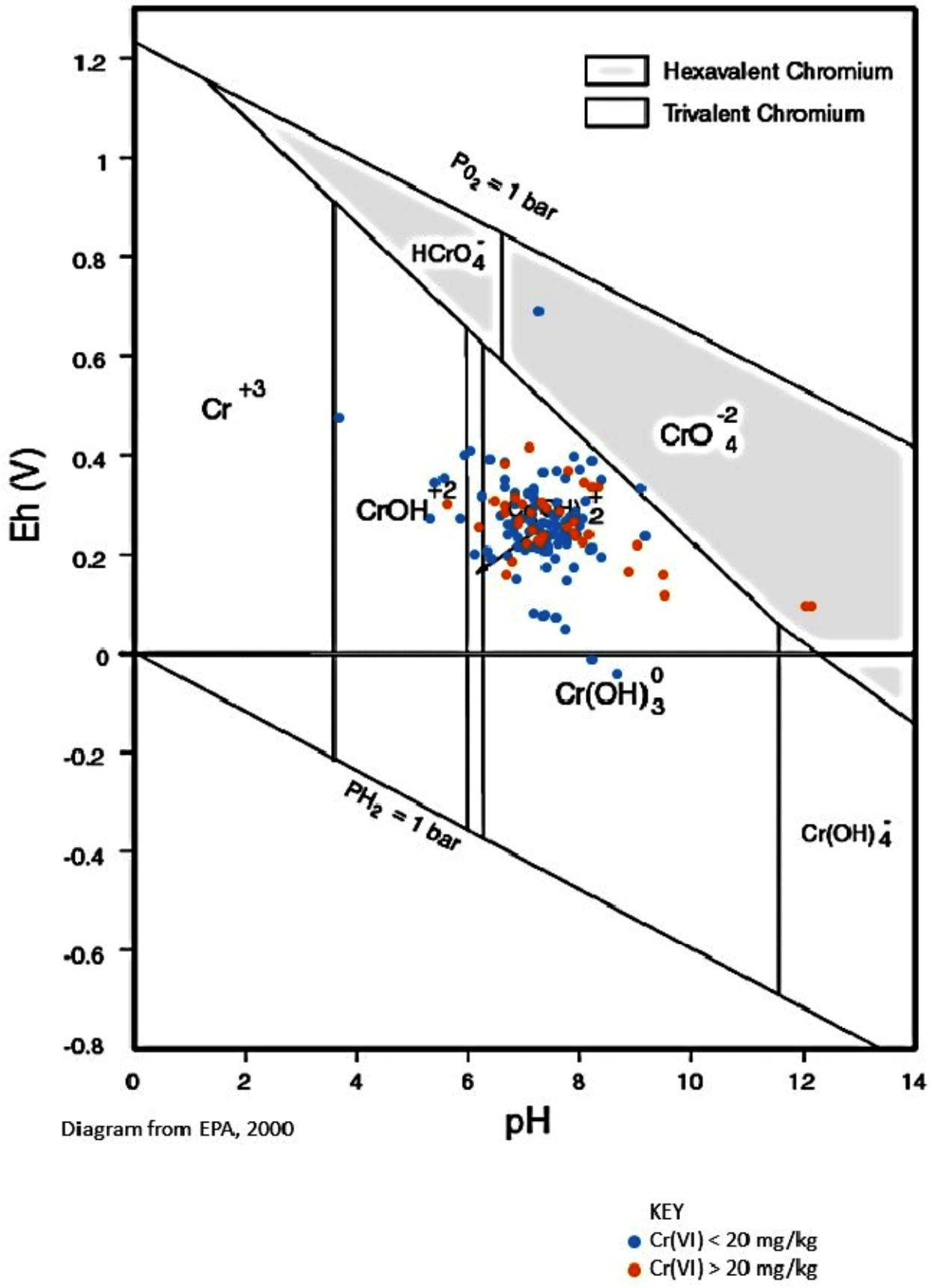
PREPARED/DATE: STR 10/23/14

CHECKED/DATE: JH 10/24/14

amec foster wheeler
ENVIRONMENT & INFRASTRUCTURE. Inc.
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE 3
HISTORICAL GROUNDWATER SAMPLING RESULTS
STUDY AREA 5 - NJDEP SITE 079
ROUTE 440 VEHICLE CORP.
JERSEY CITY, NEW JERSEY

P:\CAD\HONEWELL\JERSEY CITY\SA 5\SITE 079\3480120313\6100\610002\3480120313-6100-HGWR-0000.dwg Wed, 14 Jan 2015 - 10:49am scott.rudkin



Amec Foster Wheeler
Environment & Infrastructure
200 American Metro Blvd, Suite 113
Hamilton, New Jersey 08619

amec foster wheeler

Figure 4
Geochemical Conditions
and Cr(VI) Concentrations
SA-5 Site 079
Route 440 Vehicle Corp.
Jersey City, New Jersey

PROJ. NO.	3480120313		01/12/2015	REV.
DWN. BY.	WSL	CHKD BY.	JJH	

Document Path: P:\GIS\Projects\Honeywell\Study Area 5\Site 079\20141223 - Figure 4 and 5 Geochemical Conditions\Figure 4 - Geochemical conditions and Cr(VI) concentrations.mxd

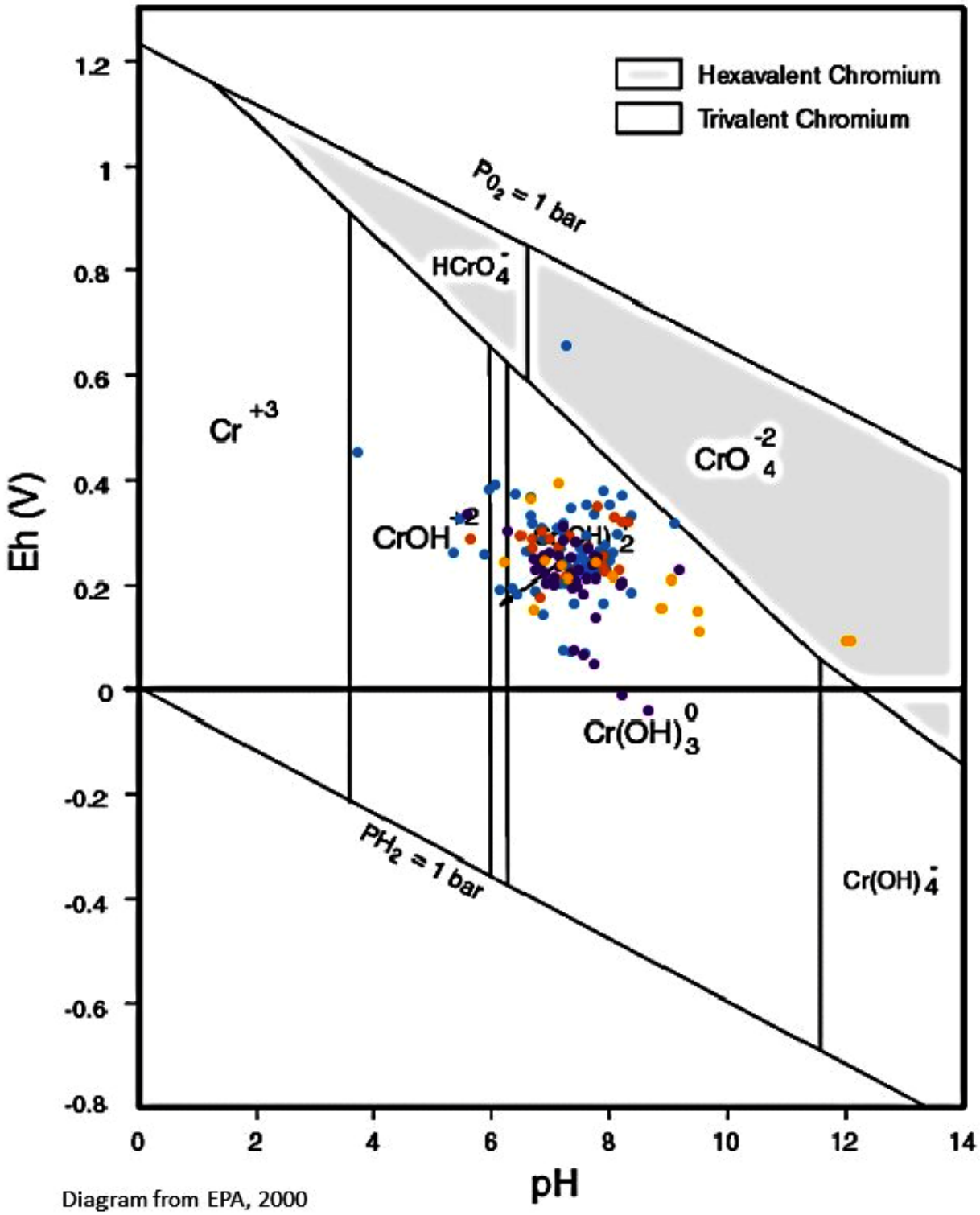


Diagram from EPA, 2000

KEY

- Cr(VI) < 20 mg/kg, S^{2-} < RL
- Cr(VI) > 20 mg/kg, S^{2-} < RL
- Cr(VI) < 20 mg/kg, S^{2-} > RL
- Cr(VI) > 20 mg/kg, S^{2-} > RL

Document Path: P:\GIS\Projects\Honeywell\Study Area 5\Site 079\20141223 - Figure 4 and 5 Geochemical Conditions\Figure 5 – Geochemical conditions, Cr(VI) concentrations and residual sulfide.mxd

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Environment & Infrastructure
200 American Metro Blvd, Suite 113
Hamilton, New Jersey 08619

amec foster wheeler

Figure 5
Geochemical Conditions,
Cr(VI) Concentrations and Residual Sulfide
SA-5 Site 079
Route 440 Vehicle Corp.
Jersey City, New Jersey

PROJ. NO.	3480120313	01/12/2015	REV.
DWN. BY.	WSL	CHKD BY.	JJH

APPENDIX A

Relevant Correspondence

REC'D FEB 24 2012

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Site Remediation Program
401 E. State Street, 6th Floor
Mail Code 401-06 P. O. Box 420
Trenton, New Jersey 08625-0420
Tel. #(609) 292-1250
Fax # (609) 984-6514

Honeywell Inc.
Attn: Ms. Maria Kaouris, Project Manager
PO Box 1057
Morristown, NJ 07962-1057

Date: February 21, 2012

Approval

Re: Hudson County Chromate - Allied
Study Area 5 (Sites 079 – Route 440 Vehicle Corp.)
Jersey City, Hudson County
SRP PI# G000008789 (Site 079 PI# G000008706)
Activity Number Reference: RPC02000
Case Name/Number: 9-20-11 RAR/CSWP

Dear Ms. Maria Kaouris:

The New Jersey Department of Environmental Protection (Department) has completed review of the Remedial Action Report and Confirmatory Sampling Work Plan (dated September 2011) and received on September 21, 2011. The Department has determined that the document is in compliance with the Technical Requirements for Site Remediation, N.J.A.C. 7:26E, and other applicable requirements. The Department hereby approves the document, effective the date of this letter. Per Section 4 (Post-Remediation Monitoring Plan) and 6 (Conclusions and Recommendations), post-remediation soil and groundwater sampling of the treated area will be conducted in approximately three years. A report discussing evaluation of the effectiveness of the treatment will be submitted to the parties for review, on or about February 4, 2015.

The Department requests Honeywell submit copies of this letter to the appropriate parties. If you have any questions regarding this matter, please contact Dave Doyle at (609) 292-2173.

Sincerely,

Thomas J. Cozzi, Assistant Director
Site Remediation Program

cc: Dave Doyle, NJDEP
John Morris, Honeywell

TERRIS, PRAVLIK & MILLIAN, LLP

BRUCE J. TERRIS
CAROLYN SMITH PRAVLIK
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EHSAN TABESH*
TODD A. GLUCKMAN*

* Not admitted D.C. Bar

October 26, 2011

VIA ELECTRONIC MAIL

John Morris
Remediation Portfolio Director
Honeywell International, Inc.
101 Columbia Rd.
Morristown, NJ 07962

Re: Sites 79 and 153 South Consent Decree
Site 79 Remedial Action Report and In-Situ Confirmatory Sampling Work Plan

Dear John:

Plaintiffs and their experts have reviewed Honeywell's Site 79 Remedial Action Report ("RAR") and Confirmatory Sampling Work Plan ("Work Plan") that was submitted to NJDEP on September 20, 2011.

Plaintiffs have no further technical comments on the RAR and Work Plan, and hereby approve them.

However, as set forth in plaintiffs' comments dated May 9, 2011, the parties continue to disagree regarding the issue of analytic interference due to the continued presence of sulfides in the soils at the time of future confirmatory sampling. While this disagreement persists, plaintiffs believe that, at this point, the parties can agree to disagree.

Plaintiffs' position remains that the post-treatment sampling and analysis that is to be conducted in 2013 is the framework for any future determinations regarding hexavalent chromium concentrations at Site 79, including any re-delineation or attempt to satisfy the requirements of paragraph 61 of the Consent Decree. Moreover, plaintiffs believe that the Site 79 in-situ confirmatory sampling analytic process should be the same as that agreed to for Study Area 6 North. Therefore, since Honeywell did not incorporate plaintiffs' comments regarding sulfides into the Work Plan, if Honeywell conducts future sampling and analysis that we believe has resulted in invalid data, and Honeywell attempts to use that data to re-delineate the site or to satisfy the requirements of paragraph 61 of the Consent Decree, plaintiffs will object to such use of the data and either bring this issue before the Special Master, if the Special Master is appointed, or move the Court regarding it.

Thank you for your attention to this matter. If you have any questions, please contact Alicia Alcorn at 202-204-8471.

Sincerely,

s/ Alicia C. Alcorn

Bruce J. Terris
Carolyn Smith Pravlik
Alicia Clark Alcorn

Counsel for Plaintiffs

cc: Michael Daneker
Jeremy Karpatkin
Resa Drasin
Joseph Karpa

APPENDIX B

Soil Boring Logs

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-201
DATE BEGAN: 8/18/14
DATE FINISHED: 8/19/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: NE
DRILLER: Ed B.
NORTH: 685672.64214500000
EAST: 604193.50308900000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 4.0' FILL: Brown fine to coarse SAND, trace brick, coal, and concrete		
	3.0							Samples 079-SB-201-0304 at 0830
	4.0					4.0 - 6.0' FILL: Brown fine to coarse SAND, trace brick and coal		Samples 079-SB-201-0405 at 0832; DUP at 0835
	5.0							Samples 079-SB-201-0506 at 0840
	6.0	S-2	NA	3.0		6.0 - 9.0' FILL: Brown fine to coarse SAND; End of boring at 9.0' bgs		Samples 079-SB-201-0607 at 0845
	7.0							Samples 079-SB-201-0708 at 0850
	8.0							Samples 079-SB-201-0809 at 0855
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-204
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685586.73871700000
EAST: 604142.42254400000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 4.0' FILL: Reddish brown fine to coarse SAND		
	3.0							Samples 079-SB-204-0304 at 0730
	4.0					4.0 - 5.0' FILL: WOOD		Samples 079-SB-204-0405 at 0735
	5.0					5.0 - 6.0' FILL: Black fine to coarse SAND and SILT		Samples 079-SB-204-0506 at 0738
	6.0	S-2	NA	3.0		6.0 - 9.0' FILL: Dark brown fine to coarse SAND; End of boring at 9.0' bgs		Samples 079-SB-204-0607 at 0740; DUP at 0744
	7.0							Samples 079-SB-204-0708 at 0750
	8.0							Samples 079-SB-204-0809 at 0755
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-205
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685549.25514300000
EAST: 604056.96176300000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	3.5		2.0 - 6.0' FILL: Dark brown SANDY SILT, few gravel, trace coal ash; stiff, dry		
	3.0							Samples 079-SB-205-0304 at 0945
	4.0							Samples 079-SB-205-0405 at 0947
	5.0							Samples 079-SB-205-0506 at 0949
	6.0	S-2	NA	3.0		6.0 - 7.5' FILL: Dark brown fine to coarse SAND, trace gravel and silt; loose, wet		Samples 079-SB-205-0607 at 0951
	7.0							Samples 079-SB-205-0708 at 0953
	8.0					7.5 - 9.0' FILL: Black SILTY CLAY; plastic, wet; End of boring at 9.0' bgs		Samples 079-SB-205-0809 at 0954
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-206
DATE BEGAN: 8/21/14
DATE FINISHED: 8/21/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685574.34832400000
EAST: 604056.23649900000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 3.0' Auger	NM	
	1.0							
	2.0							
	3.0	S-1	NA	3.0		3.0 - 9.0' FILL: Black fine to coarse SAND, trace coal ash; End of boring at 9.0' bgs		Samples 079-SB-206-0304 at 0930
	4.0							Samples 079-SB-206-0405 at 1145
	5.0							Samples 079-SB-206-0506 at 1150
	6.0	S-2	NA	3.0				Samples 079-SB-206-0607 at 1200
	7.0							Samples 079-SB-206-0708 at 1205
	8.0							Samples 079-SB-206-0809 at 1210
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-207
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: K. Kacperowski
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685587.20507100000
EAST: 604073.49202100000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 6.0' FILL: Dark brown SILTY SAND, some gravel; stiff, dry		
	3.0							Samples 079-SB-207-0304 at 0910
	4.0							Samples 079-SB-207-0405 at 0912
	5.0							Samples 079-SB-207-0506 at 0914
	6.0	S-2	NA	3.0		6.0 - 9.0' FILL: Dark gray GRAVEL, trace sand; loose, wet; End of boring at 9.0' bgs		Samples 079-SB-207-0607 at 0916
	7.0							Samples 079-SB-207-0708 at 0918
	8.0							Samples 079-SB-207-0809 at 0920
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-208
DATE BEGAN: 8/21/14
DATE FINISHED: 8/21/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685630.21600800000
EAST: 604081.25635600000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 3.0' Auger	NM	
	1.0							
	2.0							
	3.0	S-1	NA	3		3.0 - 4.0' FILL: Coal fragments, slag		Samples 079-SB-208-0304 at 1010
	4.0					4.0 - 9.0' FILL: Black fine to coarse , trace coal, brick, and slag; End of boring at 9.0' bgs		Samples 079-SB-208-0405 at 1030
	5.0							Samples 079-SB-208-0506 at 1035
	6.0	S-2	NA	3				Samples 079-SB-208-0607 at 1040
	7.0							Samples 079-SB-208-0708 at 1044
	8.0							Samples 079-SB-208-0809 at 1050
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-209
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: K. Kacperowski
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685646.42791200000
EAST: 604101.37659000000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4		2.0 - 6.0' FILL: Dark brown fine to coarse SAND, trace gravel; stiff, dry		
	3.0							Samples 079-SB-209-0304 at 1110
	4.0							Samples 079-SB-209-0405 at 1111
	5.0							Samples 079-SB-209-0506 at 1112
	6.0	S-2	NA	3		6.0 - 8.0' FILL: Dark brown coarse SAND and GRAVEL; loose, wet		Samples 079-SB-209-0607 at 1113
	7.0							Samples 079-SB-209-0708 at 1114
	8.0					8.0 - 9.0' FILL: Balck CLAYEY SILT; plastic, moist; End of boring at 9.0' bgs		Samples 079-SB-209-0809 at 1115
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-210
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: K. Kacperowski
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 8.5' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685648.85171400000
EAST: 604120.95714600000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4		2.0 - 6.0' FILL: Reddish brown SANDY SILT, trace gravel; stiff, dry		
	3.0							Samples 079-SB-210-0304 at 1135
	4.0							Samples 079-SB-210-0405 at 1136
	5.0							Samples 079-SB-210-0506 at 1137
	6.0	S-2	NA	2.5		6.0 - 8.5' FILL: Dark gray GRAVEL, some fine to coarse sand; loose, wet; End of boring at 8.5' bgs		Samples 079-SB-210-0607 at 1138
	7.0							Samples 079-SB-210-0708 at 1139
	8.0							Samples 079-SB-210-0809 at 1140
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-211
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: K. Kacperowski
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 8.5' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685686.09749000000
EAST: 604130.03101900000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 6.0' FILL: Dark brown SILTY SAND; stiff, dry		
	3.0							Samples 079-SB-211-0304 at 1156
	4.0							Samples 079-SB-211-0405 at 1157
	5.0							Samples 079-SB-211-0506 at 1158
	6.0	S-2	NA	2.5		6.0 - 8.5' FILL: Dark brown GRAVEL and SAND; loose, wet; End of boring at 8.5' bgs		Samples 079-SB-211-0607 at 1159
	7.0							Samples 079-SB-211-0708 at 1200
	8.0							Samples 079-SB-211-0809 at 1201
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-213
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: K. Kacperowski
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685613.94072700000
EAST: 604093.67707100000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 6.0' FILL: Dark brown SANDY SILT, few gravel; medium stiff, dry		
	3.0							Samples 079-SB-213-0304 at 1029
	4.0							Samples 079-SB-213-0405 at 1030
	5.0							Samples 079-SB-213-0506 at 1031
	6.0	S-2	NA	3.0		6.0 - 9.0' FILL: Black GRAVEL; loose, wet; End of boring at 9.0' bgs		Samples 079-SB-213-0607 at 1032
	7.0							Samples 079-SB-213-0708 at 1033
	8.0							Samples 079-SB-213-0809 at 1034
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-214
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: K. Kacperowski
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: NE
DRILLER: Ed B.
NORTH: 685704.37185600000
EAST: 604146.22682100000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 4.5' FILL: Reddish brown SANDY SILT; stiff, dry		
	3.0							Samples 079-SB-214-0304 at 1223
	4.0							Samples 079-SB-214-0405 at 1224
	5.0					4.5 - 9.0' FILL: Dark brown/black CLAYEY SILT; plastic, moist; End of boring at 9.0' bgs		Samples 079-SB-214-0506 at 1225
	6.0	S-2	NA	3.0				Samples 079-SB-214-0607 at 1226
	7.0							Samples 079-SB-214-0708 at 1227
	8.0							Samples 079-SB-214-0809 at 1228
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-215
DATE BEGAN: 8/18/14
DATE FINISHED: 8/18/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: NE
DRILLER: Ed B.
NORTH: 685602.04842000000
EAST: 604129.40224000000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 5.0' FILL: Reddish brown fine to coarse SAND		
	3.0							Samples 079-SB-215-0304 at 1115
	4.0							Samples 079-SB-215-0405 at 1120
	5.0					5.0 - 6.0' FILL: Black fine to coarse SILTY SAND		Samples 079-SB-215-0506 at 1125
	6.0	S-2	NA	3.0		6.0 - 9.0' FILL: Dark brown fine to coarse SAND; End of boring at 9.0' bgs		Samples 079-SB-215-0607 at 1128
	7.0							Samples 079-SB-215-0708 at 1130
	8.0							Samples 079-SB-215-0809 at 1133
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-216
DATE BEGAN: 8/18/14
DATE FINISHED: 8/18/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685546.35153100000
EAST: 604086.87463300000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 3.0' FILL: Reddish brown fine to coarse SAND		
	3.0					3.0 - 7.0' FILL: Black fine to coarse SILTY SAND		Samples 079-SB-216-0304 at 1150
	4.0							Samples 079-SB-216-0405 at 1155
	5.0							Samples 079-SB-216-0506 at 1200
	6.0	S-2	NA	3.0				Samples 079-SB-216-0607 at 1205
	7.0					7.0 - 9.0' FILL: Light brown fine to medium SAND; End of boring at 9.0' bgs		Samples 079-SB-216-0708 at 1210
	8.0							Samples 079-SB-216-0809 at 1215
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-217
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: K. Kacperowski
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: NE
DRILLER: Ed B.
NORTH: 685575.27075200000
EAST: 604149.30498800000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 4.0' FILL: Reddish brown SILT, trace gravel, clay,and sand; stiff, dry		
	3.0							Samples 079-SB-217-0304 at 0835
	4.0					4.0 - 7.0' FILL: Dark brown SILT, few sand, trace clay and gravel; stiff, dry		Samples 079-SB-217-0405 at 0838
	5.0							Samples 079-SB-217-0506 at 0840
	6.0	S-2	NA	3.0				Samples 079-SB-217-0607 at 0842
	7.0					7.0 - 9.0' FILL: Brown fine to medium SAND; medium stiff, moist; End of boring at 9.0' bgs		Samples 079-SB-217-0708 at 0845
	8.0							Samples 079-SB-217-0809 at 0847
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-218
DATE BEGAN: 8/18/14
DATE FINISHED: 8/18/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685495.95105300000
EAST: 604079.10084900000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 3.0' FILL: CONCRETE		
	3.0					3.0 - 4.5' FILL: Reddish brown fine to coarse SAND		Samples 079-SB-218-0304 at 1245
	4.0							Samples 079-SB-218-0405 at 1248
	5.0					4.5 - 6.0' FILL: Black fine to medium SILT		Samples 079-SB-218-0506 at 1250
	6.0	S-2	NA	3.0		6.0 - 7.0' FILL: Black SILT		Samples 079-SB-218-0607 at 1255
	7.0					7.0 - 9.0' FILL: Dark brown fine to medium SAND; End of boring at 9'		Samples 079-SB-218-0708 at 1258
	8.0							Samples 079-SB-218-0809 at 1300
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-219
DATE BEGAN: 8/18/14
DATE FINISHED: 8/18/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: NA
DRILLER: Ed B.
NORTH: 685498.93611700000
EAST: 604049.10962000000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 4.0' FILL: Reddish brown fine to medium SAND		
	3.0							Samples 079-SB-219-0304 at 1320; DUP at 1322
	4.0					4.0 - 6.0' FILL: Black fine to coarse SAND, trace ash/coal		Samples 079-SB-219-0405 at 1325
	5.0							Samples 079-SB-219-0506 at 1330
	6.0	S-2	NA	3.0		6.0 - 8.0' FILL: Yellowish brown fine to medium SANDY SILT		Samples 079-SB-219-0607 at 1333
	7.0							Samples 079-SB-219-0708 at 1335
	8.0					8.0 - 9.0' FILL: Dark brown fine to medium SAND; End of boring at 9.0' bgs		Samples 079-SB-219-0809 at 1340
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-220
DATE BEGAN: 8/18/14
DATE FINISHED: 8/18/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: 6' bgs
DRILLER: Ed B.
NORTH: 685660.13776900000
EAST: 604151.70027500000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 5.0' FILL: Reddish brown fine to coarse SAND, trace coal and silt		
	3.0							Samples 079-SB-220-0304 at 1035
	4.0							Samples 079-SB-220-0405 at 1038
	5.0					5.0 - 6.0' FILL: Black fine to coarse SAND		Samples 079-SB-220-0506 at 1040
	6.0	S-2	NA	3.0		6.0 - 9.0' FILL: Dark brown fine to coarse SAND; End of boring at 9.0' bgs		Samples 079-SB-220-0607 at 1045
	7.0							Samples 079-SB-220-0708 at 1050
	8.0							Samples 079-SB-220-0809 at 1100; DUP at 1101
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-221
DATE BEGAN: 8/19/14
DATE FINISHED: 8/19/14
INSPECTOR: K. Kacperowski
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: NE
DRILLER: Ed B.
NORTH: 685620.61983400000
EAST: 604151.00359900000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 4.0' FILL: Reddish brown SILT, trace gravel, clay, and sand; stiff, dry		
	3.0							Samples 079-SB-221-0304 at 0910
	4.0					4.0 - 7.0' FILL: Dark reddish brown SILT, few sand, trace clay and gravel		Samples 079-SB-221-0405 at 0912
	5.0							Samples 079-SB-221-0506 at 0915
	6.0	S-2	NA	3.0				Samples 079-SB-221-0607 at 0917
	7.0					7.0 - 9.0' FILL: Brown fine to medium SAND; medium stiff, moist; End of boring at 9.0' bgs		Samples 079-SB-221-0708 at 0920
	8.0							Samples 079-SB-221-0809 at 0922
	9.0							

PREPARED BY: KK
CHECKED BY: JA

Honeywell SA-5

LOCATION: Site 079
PROJECT NO: 3480120313
BORING ID: 079-SB-222
DATE BEGAN: 8/18/14
DATE FINISHED: 8/18/14
INSPECTOR: T. Giouzelis
DRILLING CO: B&B Drilling
DRILLING METHOD: Direct Push
DRILL EQUIP: 7710 DT
SAMPLING TOOL: 4ft Macrocore
COMPLETION DEPTH: 9' bgs
GW DEPTH: NE
DRILLER: Ed B.
NORTH: 685665.56787900000
EAST: 604194.99744600000

ELEV (FT.)	DEPTH (FT.)	RUN NO.	SPT BLOWS PER 0.5'	REC (FT.)	PROFILE	DESCRIPTION	VOLATILE ORGANIC VAPORS (PPM)	REMARKS
	0.0	Auger	NA	NA		0.0 - 2.0' Auger	NM	
	1.0							
	2.0	S-1	NA	4.0		2.0 - 4.0' FILL: Brown fine to coarse SAND, trace brick, coal, and wood		
	3.0							Samples 079-SB-222-0304 at 0915
	4.0					4.0 - 6.0' FILL: Black fine to coarse SAND, trace ash		Samples 079-SB-222-0405 at 0918
	5.0							Samples 079-SB-222-0506 at 0920; DUP at 0924
	6.0	S-2	NA	3.0		6.0 - 9.0' FILL: Brown fine to coarse SAND; End of boring at 9.0' bgs		Samples 079-SB-222-0607 at 0922
	7.0							Samples 079-SB-222-0708 at 0930
	8.0							Samples 079-SB-222-0809 at 0933
	9.0							

PREPARED BY: KK
CHECKED BY: JA

APPENDIX C

Groundwater Sampling Field Logs

amec

Job Name: HW SA-5 Site 079

Groundwater Sampling Form

Job Number:

Well Number: 079-MW-001

WELL PURGING INFORMATION

PURGE VOLUME

Low Flow Method: ☑

3 to 5 Volume Purge Method: ☐

Number of Well Volumes to be Purged:

Well Type: Monitor ☑ Other ☐

Well Material: PVC ☑ Stainless Steel ☐ Steel ☐

Casing Diameter (D in Inches): 4

Well Depth (ft BTOC): 8.7

Screen Interval in Feet (BTOC) from to

PURGE METHOD

Bailer - Type: Monsoon

Submersible ☑ Centrifugal ☐

Bladder ☐ Peristaltic ☐

PURGE VOLUME CALCULATIONS

(TD - WL) x D^2 x No. Volumes x ##### = Calculated Purge Volume Gallons

Purge Water Disposal: Drum ☐ Type Other ☑

Size

PUMP INTAKE SETTING

Near Top ☐

Center ☑

Near Bottom ☐

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-52 Depth to Water: 4.51 Time: 11:08 Date: 7/24/2014

Serial Number: 21090 Depth to Bottom of Well: 8.70 PID Reading (inside of Casing): 2.1

For Calibration Information, See Instrument Calibration Record Sheet Dated: 7/24/2014

FIELD PARAMETER MEASURMENTS

Recorded By: Elias Bayeh (Signature) Sampled By: Elias Bayeh Purge Start Time: 11:11

Time	Rate ☑ lpm ☐ gpm	pH (S.U.)		Cond. (ms/cm)		Turbidity (NTUs)		Diss. O_2 (mg/L)		Temp (°C)		Salinity (%)		Redox (mV)		Depth to Water (ft)		Comments
		Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	
		0.1 Unit		3%		10%		10%		3%		NA		10 mV		0.3 ft		
11:11	0.2	7.44	-	5.73	-	0.0	-	0.63	-	24.62	-	0.31	-	-200	-	4.57	-	
11:15	0.2	7.41	0.03	5.84	1.9%	0.0	0.0%	0.42	33.3%	23.85	3.1%	0.32	0.01	-203	3	4.59	0.02	
11:20	0.2	7.39	0.02	5.86	0.3%	0.0	0.0%	0.25	40.5%	23.42	1.8%	0.32	0.00	-189	14	4.60	0.01	
11:25	0.2	7.35	0.04	5.82	0.7%	0.0	0.0%	0.06	76.0%	23.09	1.4%	0.32	0.00	-203	14	4.61	0.01	
11:30	0.2	7.36	0.01	5.80	0.3%	0.0	0.0%	0.03	50.0%	23.20	0.5%	0.31	0.01	-206	3	4.62	0.01	
11:35	0.2	7.38	0.02	5.77	0.5%	0.0	0.0%	0.00	100.0%	23.29	0.4%	0.31	0.00	-209	3	4.63	0.01	
11:40	0.2	7.37	0.01	5.76	0.2%	0.0	0.0%	0.00	0.0%	23.25	0.2%	0.31	0.00	-209	0	4.66	0.03	
11:45	0.2	7.37	0.00	5.73	0.5%	0.0	0.0%	0.00	0.0%	23.29	0.2%	0.31	0.00	-211	2	4.68	0.02	
11:50	0.2	7.37	0.00	5.75	0.3%	0.0	0.0%	0.00	0.0%	23.28	0.0%	0.31	0.00	-212	1	4.68	0.00	
11:55	Sample																	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Total Volume Purged: 3 gallons

Well Condition: Good, rainwater around well

Color of GW: Clear

Sample ID: 079-MW-001 @ 11:55

Odor: None

Other:

Sample ID:

amec

Job Name: HW SA-5 Site 079

Groundwater Sampling Form **Job Number:** **Well Number:** 079-MW-A02

WELL PURGING INFORMATION

PURGE VOLUME

Low Flow Method: ☑
3 to 5 Volume Purge Method: ☐
Number of Well Volumes to be Purged:
Well Type: Monitor ☑ Other ☐
Well Material: PVC ☑ Stainless Steel ☐ Steel ☐
Casing Diameter (D in Inches):
Well Depth (ft BTOC): 13.5
Screen Interval in Feet (BTOC) from to

PURGE METHOD

Bailer - Type: Monsoon
Submersible ☑ Centrifugal ☐
Bladder ☐ Peristaltic ☐

PUMP INTAKE SETTING

Near Top ☐
Center ☑
Near Bottom ☐

PURGE VOLUME CALCULATIONS

(TD - WL) x D^2 x No. Volumes x ##### = Calculated Purge Volume Gallons

Purge Water Disposal: Drum ☐ Type Size Other ☑

INSTRUMENT IDENTIFICATION RECORD AND FIELD MEASUREMENTS

Instrument Type: Horiba U-52 Depth to Water: 4.37 Time: 9:24 Date: 7/24/2014
Serial Number: 21090 Depth to Bottom of Well: 13.5 PID Reading (inside of Casing): NM
For Calibration Information, See Instrument Calibration Record Sheet Dated: 7/24/2014

FIELD PARAMETER MEASURMENTS

Recorded By: Dave Rosenthal (Signature) Sampled By: Elias Bayeh Purge Start Time: 9:34

Time	Rate ☑ lpm ☐ gpm	pH (S.U.)		Cond. (ms/cm)		Turbidity (NTUs)		Diss. O_2 (mg/L)		Temp (°C)		Salinity (%)		Redox (mV)		Depth to Water (ft)		Comments
		Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	Reading	Change	
		0.1 Unit		3%		10%		10%		3%		NA		10 mV		0.3 ft		
9:35	**0.2**	**6.85**	**-**	**4.74**	**-**	**192.0**	**-**	**0.08**	**-**	**22.96**	**-**	**0.25**	**-**	**-309**	**-**	**4.97**	**-**	
9:40	**0.2**	**6.88**	**0.03**	**4.77**	**0.6%**	**136.0**	**29.2%**	**0.12**	**50.0%**	**23.86**	**3.9%**	**0.26**	**0.01**	**-327**	**18**	**5.08**	**0.11**	
9:45	**0.2**	**6.92**	**0.04**	**4.86**	**1.9%**	**104.0**	**23.5%**	**0.05**	**58.3%**	**23.84**	**0.1%**	**0.26**	**0.00**	**-335**	**8**	**5.24**	**0.16**	
9:50	**0.2**	**6.95**	**0.03**	**4.96**	**2.1%**	**81.6**	**21.5%**	**0.03**	**40.0%**	**22.90**	**3.9%**	**0.27**	**0.01**	**-341**	**6**	**5.49**	**0.25**	
9:55	**0.2**	**7.00**	**0.05**	**5.14**	**3.6%**	**39.7**	**51.3%**	**0.02**	**33.3%**	**21.80**	**4.8%**	**0.28**	**0.01**	**-355**	**14**	**5.83**	**0.34**	
10:00	**0.2**	**7.02**	**0.02**	**5.21**	**1.4%**	**32.2**	**18.9%**	**0.00**	**100.0%**	**21.42**	**1.7%**	**0.28**	**0.00**	**-360**	**5**	**5.84**	**0.01**	
10:05	**0.2**	**7.03**	**0.01**	**5.24**	**0.6%**	**28.5**	**11.5%**	**0.00**	**0.0%**	**21.08**	**1.6%**	**0.28**	**0.00**	**-368**	**8**	**5.80**	**0.04**	
10:10	**0.2**	**7.08**	**0.05**	**5.21**	**0.6%**	**27.2**	**5%**	**0.00**	**0.0%**	**21.00**	**0.4%**	**0.28**	**0.00**	**-376**	**8**	**5.77**	**0.03**	
10:15	**0.2**	**7.05**	**0.03**	**5.23**	**0.4%**	**25.1**	**8%**	**0.00**	**0.0%**	**20.91**	**0.4%**	**0.28**	**0.00**	**-380**	**4**	**5.78**	**0.01**	
10:20	**0.2**	**7.06**	**0.01**	**5.21**	**0.4%**	**25.4**	**1%**	**0.00**	**0.0%**	**20.88**	**0.1%**	**0.28**	**0.00**	**-382**	**2**	**5.78**	**0.00**	
10:25	**Sample**																	

Note: > = Greater Than < = Less Than NM = Not Measured EF = Equipment Failure

OBSERVATIONS DURING WELL PURGING

Total Volume Purged: 3 gallons Odor: Sulfurous
Well Condition: Poor -- no cap, dirt around well Other:
Color of GW: Clear
Sample ID: 079-MW-A02 @ 10:25 Sample ID: 079-MW-A02DP @ 10:30

APPENDIX D

Laboratory Analytical Data/Electronic Data Deliverables (Compact Disk)

APPENDIX E

Data Validation Reports
(Compact Disk)