WORKER TRAINING MANUAL
FOR MANAGING CONTAMINATED SOILS AND GROUNDWATER AT THE

SITE 153 FORMER MORRIS CANAL

AND

NEW JERSEY CITY UNIVERSITY
WEST CAMPUS
COMMERCIAL AREA OF CONCERN

JERSEY CITY, NEW JERSEY

Prepared by:
Amec Foster Wheeler Environment and Infrastructure, Inc.
200 American Metro Boulevard, Suite 113
Hamilton, New Jersey 08619

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This Worker Training Manual is hereby approved by the following parties and each agrees to abide by the obligations placed upon them by this Worker Training Manual:

John J. Moniz — 1/4/17

Honeywell - Global Remediation Director — Date

Bayonne Municipal Utilities Authority - Director — Date

New Jersey City University — Date

~~Director of Campus Planning~~
~~Facilities and Construction Management~~
Vice President for Administration and Finance 1/17/2017

Alicia C. Alcorn, counsel for plaintiffs — Date
Hackensack Riverkeeper, Inc.,
William Sheehan, Lawrence Baker,
Rev. Winston Clarke

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Honeywell - Global Remediation Director	Date
Bayonne Municipal Utilities Authority - Director	12.27.16 Date
New Jersey City University ~~Director of Campus Planning~~ ~~Facilities and Construction Management~~ Vice President for Administration and Finance	Date 1/17/2017
Alicia C. Alcorn, counsel for plaintiffs Hackensack Riverkeeper, Inc., William Sheehan, Lawrence Baker, Rev. Winston Clarke	Date

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Honeywell - Global Remediation Director _____ Date _____

Bayonne Municipal Utilities Authority - Director _____ Date _____

Alfred E. Ramey Jr.
University Counsel
New Jersey City University _____ January 20, 2017 Date

~~Director of Campus Planning~~
~~Facilities and Construction Manager~~

Alicia C. Alcorn, counsel for plaintiffs _____ Date _____
Hackensack Riverkeeper, Inc.,
William Sheehan, Lawrence Baker,
Rev. Winston Clarke

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Honeywell - Global Remediation Director _____ Date _____

Bayonne Municipal Utilities Authority - Director _____ Date _____

New Jersey City University _____ Date _____
~~Director of Campus Planning~~
~~Facilities and Construction Management~~
Vice President for
Administration and Finance J.K. 1/17/2017

Alicia C. Alcorn _____ 1/3/2017

Alicia C. Alcorn, counsel for plaintiffs Date
Hackensack Riverkeeper, Inc.,
William Sheehan, Lawrence Baker,
Rev. Winston Clarke

1.0 INTRODUCTION

This Worker Training Manual (Manual) provides health and safety information applicable to workers who may have to perform subsurface work on certain sites where chromium is known to be present. There are two such sites, both in Jersey City. **Figure 1** shows their locations.

The two sites are commonly known as Site 153 Former Morris Canal (referred to by the NJDEP as Site No. 153) ("Site 153") and New Jersey City University (NJCU), West Campus, Commercial Area of Concern (referred to by the NJDEP as Sites 090/184) ("NJCU Commercial AOC"). In this document the use of the term "Sites" refers to all of Site 153 and the NJCU Commercial AOC. Portions of these Sites contain chromium ore processing residue (COPR) and/or chromium contaminated fill.

Figure 1: Site 153 and NJCU Commercial AOC

This Manual is applicable to any subsurface work performed at the Sites. It was prepared in accordance with the following two legal documents, which are collectively referred to as "Consent Decrees" in the remainder of this document.

- Consent Decree Regarding Remediation of the NJCU Redevelopment Area (including Site 153 North), Paragraph 83 (the "NJCU Consent Decree")[1] and
- Consent Decree Regarding Sites 79 and 153 South, Paragraph 72 (the "Site 153 Consent Decree").[2]

The Consent Decrees set forth the remedial measures and engineering controls that were implemented at the Sites and that make up the Chromium Remedy. The Consent Decrees govern the future use and development of the Sites, and place restrictions on such use and development. The Consent Decrees place various obligations on Honeywell, BMUA, and NJCU regarding the protection, monitoring, maintenance, repair and replacement of the Chromium Remedy. Reference to Honeywell, BMUA, NJCU, or plaintiffs shall include each party's successors, assigns, heirs, corporate parents, subsidiaries and affiliates as set forth in paragraph 152 of the NJCU Consent Decree and paragraph 98 of the Site 153 Consent Decree. For purposes of this Worker Training Manual, the provisions of this Worker Training Manual are not applicable to NJCU lessees or sub-lessees that are prohibited from conducting subsurface work in the Commercial AOC and intrusive activities that will disturb the Chromium Remedy.

On or about September 21, 2015, NJCU entered into a Ground Lease with CRT Holdings, LLC ("CRT") of property known as Block 6 of the West Campus a/k/a

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[1] This document, the "Consent Decree Regarding Remediation of the New Jersey City University Redevelopment Area," ECF No. 302, was entered by the United States District Court for the District of New Jersey on January 21, 2010, in Civil No. 05-05955, later consolidated with Civil No. 95-2097. It is available from the Court and at the following website url: http://tpmlaw.com/lawyer/More-Information-Current-RCRA-Hazardous-Waste-Cases_cp9945.htm.

[2] This document, the "Consent Decree Regarding Sites 79 and 153 South," ECF No. 301, was entered by the United States District Court for the District of New Jersey on January 21, 2010, in Civil No. 05-05955, later consolidated with Civil No. 95-2097. It is available from the Court and at the following website url: http://tpmlaw.com/lawyer/More-Information-Current-RCRA-Hazardous-Waste-Cases_cp9945.htm.

Block 21902.01, Lot 1 as shown on the Major Subdivision Plan of Block 21902 ("Block 6"). Part of Block 6 is within the Commercial AOC on the NJCU West Campus Site and thus subject to Court oversight under the NJCU Consent Decree. On the same date, NJCU also entered into a Project Development Agreement with CRT. The Ground Lease requires, among other things, that CRT develop and construct on Block 6 a building known as Building 6 and, in connection therewith, comply with the obligations of NJCU under the provisions of the Deed Notice and Consent Decree. The Project Development Agreement also requires that CRT comply with the Deed Notice and Consent Decree relating to any and all planned construction work, emergency work and/or disturbance on Block 6, performed by CRT or any of its employees, agents, servants and/or contractors with respect to the Chromium Remedy, and in connection with such work, relating to the regulatory notification process, restoration of engineering controls in the event of disturbance of the Chromium Remedy and coordination of such work with Honeywell and NJCU. And, the Project Development Agreement further requires CRT (i) to familiarize itself with the Worker Training Manual, which must be followed by its agents, servants and contractors in connection with work on the Building portions of which are in the Commercial Area of Concern and the Residential Area of Concern and (ii) to complete and execute a subsurface work authorization form for digging and excavation permit checklist before any intrusive subsurface work is performed in the Commercial Area of Concern; and (iii) to comply with and to use all reasonable and good faith efforts to cause its Contractors to comply with all of CRT's responsibilities in the Project Development Agreement described above.

NJCU shall provide to Honeywell any subsurface dig authorization form submitted by CRT and all plans provided to NJCU by CRT for all proposed construction work by CRT, or any of its employees and/or contractors for Building 6 involving proposed subsurface work or disturbance of the Chromium Remedy. Honeywell shall review and determine whether to approve all such subsurface dig authorization forms and plans for such work before it is undertaken. NJCU shall seek to enforce all of CRT's contractual obligations under the Ground Lease and Project Development Agreement relating to CRT's compliance with the Consent Decree, Deed Notice and Worker Training Manual with respect to any disturbance of the Chromium Remedy.

This manual incorporates by reference the definitions set forth in the Consent Decrees. Any reference to Honeywell, NJCU, CRT, or BMUA in this document shall

include Honeywell, NJCU, CRT, or BMUA, as the case may be, and their respective agents and contractors.

This Manual prescribes requirements applicable to any entity conducting subsurface work at the Sites, including but not limited to Honeywell, NJCU, BMUA, and easement holders and operators of any portion of the Sites, including their contractors and consultants, for (i) training and protection of workers who may be exposed to COPR, chromium-impacted soils or groundwater in conjunction with utility or other subsurface work performed at the Sites; and (ii) identifying which work may be subject to special protective measures and coordinating this work with Honeywell.

This Manual:

- Identifies health and safety requirements for workers who maintain, repair, or replace utilities or conduct other subsurface activities (e.g., digging, drilling, excavation) in areas of COPR and/or chromium contaminated fill.
- Provides a basis for worker awareness and training to inform workers of potential hazards associated with chromium-impacted media.
- Addresses identification and coordination of work with Honeywell.

The Consent Decrees also contain certain requirements specific to the BMUA. According to the Consent Decrees, the BMUA shall:

1. Develop a permanent plan to implement health and safety procedures for its workers in accordance with OSHA rules related to hazardous materials; and
2. Utilize the Worker Training Manual prepared by Honeywell setting forth the procedures and protections that BMUA shall employ when it conducts activities at Site 153.

Specifically for the BMUA, this Manual supplements a Standard Operating Procedure (SOP) for identifying and coordinating work within chromium soils, which has been developed by Honeywell in cooperation with the BMUA and its consultant engineer, CME Associates and systems operator, Suez Bayonne (formerly United Water Bayonne). The SOP addresses coordination of work between the BMUA and Honeywell in the area of the force main sewer line on Site 153 property. The

coordination covers notification, response, and handling and disposal of chromium soils in conjunction with sewer work at the Sites.

The BMUA has entered into a long-term agreement with Suez Bayonne for the operation and maintenance of its water and sewer systems. Accordingly, any reference to the BMUA in terms of operation and maintenance of their system shall be interpreted to include reference to Suez Bayonne, or any other future entity performing the operation and maintenance of the BMUA water and sewer systems, and its employees.

In addition to Honeywell, BMUA, and NJCU, other potential users of the Manual may include the following entities:

- Jersey City Municipal Utilities Authority (JCMUA);
- Public Service Electric and Gas Company (PSE&G);
- Comcast;
- Verizon;
- Other utilities and their contractors; and
- New Jersey Department of Transportation (NJDOT).

Honeywell will undertake reasonable efforts to work with these entities to urge them to comply with the contents of this Worker Training Manual to protect their workers. This effort will consist of Honeywell's contractor reviewing key sections of this document with the crew in the field, prior to the crew starting any work. In April of each year, Honeywell will provide annual notification letters to these entities in accordance with the Consent Decrees.[3] The annual notification letters will attach, or offer to provide on request, a copy of the current version of this Worker Training Manual. The annual notification letters include information on site conditions, remedial measures, engineering and institutional controls (deed notices), and instructions for contacting Honeywell prior to performing subsurface work in the area of Site 153 and NJCU Commercial Area. Annual notification letters are also provided to Jersey City Fields, LLC (owner of Site 117; located next to Site 153 and NJCU property). A separate Worker Protection Plan for Site 117,

[3] The NJCU Consent Decree, paragraph 104(e), requires NJCU to provide Honeywell with a list of tenants in any development on the NJCU Commercial AOC.

similar to this Worker Training Manual, exists for use by the property owner/operators and contractors.

It is essential that the Chromium Remedy is not compromised by utility or other subsurface work. The Chromium Remedy engineering controls are part of the NJDEP approved remedial system that protects human health and the environment. Deed notice documents contain specific requirements pertaining to notification, disturbance and repair of engineering controls, as defined in the Deed Notice. Copies of Deed Notices for Site 153 and NJCU Commercial Area are included for reference in Appendix **G**.

Honeywell has also entered into a contract with Terradex Inc. to notify Honeywell through the New Jersey One Call system whenever soil disturbing work takes place at the Sites. Notice through the Terradex LandWatch system will enable Honeywell to work with entities doing subsurface work at the Sites and inform them of the processes described in this Worker Training Manual. Honeywell will continue to use the Terradex LandWatch system to notify Honeywell of any subsurface activities on the Sites, provided Terradex is willing and able to provide this service, and provided Terradex is able to provide this service consistent with the requirements of New Jersey law.

Long Term Monitoring Plans (LTMPs) for Site 153 and NJCU Commercial AOC have been prepared in accordance with the Consent Decrees. The LTMPs contain details regarding monitoring, maintenance, notification, reporting, and contingency plan requirements. Copies of these plans have been provided to the BMUA and NJCU, and NJCU shall provide a copy to CRT. The LTMPs are reviewed annually and will be updated as needed based on changes to field conditions and/or requirements of the Worker Training Manual or other project documents for Site 153 and NJCU Commercial AOC. This Worker Training Manual will be included as an attachment to the LTMPs.

This Manual is organized into the following sections:

Section 1 – Introduction: identifies the purpose and scope of the Manual consistent with the requirements of the Consent Decrees.

Section 2 – Site Background: includes background information including previous investigations, remedial actions, engineering and institutional controls.

Section 3 – Coordination of Work: addresses coordination of work with Honeywell including removal and disposal of chromium-impacted materials in connection with utility or other subsurface work.

Section 4 – Hazard Evaluation: provides information on potential health hazards associated with chromium.

Section 5 – Health and Safety Requirements: identifies applicable health and safety requirements for workers.

2.0 SITE BACKGROUND

The section provides background information for Site 153 and NJCU West Campus Commercial AOC properties, including the Chromium Remedy. Site maps are provided in **Appendix A**.

2.1 FORMER MORRIS CANAL

Site 153 consists of a narrow strip of land (24 feet approximate width) located along the eastern side of Route 440 between Carbon Place and Danforth Avenue in Jersey City. It is adjacent to the current NJCU West Campus Property and the current Home Depot retail center. The property is designated as Block 21902, Lot 1 and contains various utility lines including a 36-inch diameter sanitary sewer force main operated by the BMUA. Honeywell purchased the property from the BMUA in August 2007, and the BMUA maintains an easement for the existing sewer line. The Site is divided into three sections designated as Site 153 North, Site 153 South Upper Segment and Site 153 South Lower Segment.

The portion of Site 153 of interest here was a small segment of the original Morris Canal, which operated from the 1860s to the early 1900s. COPR was used to fill portions of the canal during its closure between 1924 and 1935. During 1990, the City of Bayonne excavated a section of Site 153 and installed a new sewer pipeline. The BMUA force main is constructed of concrete encased PCCP (pre-stressed concrete cylinder pipe), with depths to the top of the pipeline ranging from just below the surface pavement (next to NJCU and Home Depot) to approximately 4 to 6 feet below grade (south of Home Depot). The force main conveys sewage from the City of Bayonne to the Jersey City MUA for ultimate treatment at the Passaic Valley Sewerage Commission facility in Newark. Other utilities along portions of the site include electric, gas, storm sewer, water, and telephone lines that provide service to adjacent commercial properties.

Remedial investigation work to assess the presence of chromium impacts in both soils and the groundwater has been completed. Remedial actions were completed in 2009-2011. Areas of chromium contamination in soils and groundwater and the Chromium Remedy are indicated on site maps in **Appendix A-2**. Soil sample locations and concentrations above the NJDEP soil criteria of 20 ppm for hexavalent chromium are indicated in the Deed Notice (Exhibit B) in **Appendix G-1**. The remedial actions are summarized as follows:

Adjacent to the NJCU site, remedial actions at Site 153 North included engineering controls consisting of asphalt pavement in the western portion (above and west of the BMUA force main sewer line) and a multi-layered cap system associated with the NJCU Commercial Area in the eastern portion (east of the force main). Engineering controls east of the force main include: linear low density polyethylene (LLDPE) liner and geo-composite drainage layer; orange demarcation warning layer (geotextile); two to eighteen inches of clean granular fill; and four inches of pavement surface. The eastern perimeter of Site 153 North also has a sheet pile wall along the property boundary with NJCU. Remedial actions were coordinated with the NJCU Chromium Remedy and documented in the Remedial Action Report (RAR) for the NJCU site dated September 2012. Refer to Section 2.2 for a description of the Chromium Remedy for the NJCU Commercial Area.

Adjacent to and south of the Home Depot site, remedial actions at Site 153 South consisted primarily of:

- excavation of shallow soils (up to three feet below grade);
- placement of orange demarcation layer (geotextile material) at the bottom of excavation areas;
- backfilling with clean granular fill;
- restoration of soil vegetative or asphalt cap consistent with pre-remediation surface types; and
- re-pavement or replacement of existing asphalt.

The Chromium Remedy includes a combination of clean fill/vegetative cover and asphalt pavement. Remedial actions for this portion of the property were documented in interim remedial measures reports dated October 13, 2010 and November 26, 2013. The remedial actions for the Morris Canal are also described in a combined Remedial Investigation Report/Remedial Action Work Plan/Remedial Action Report dated December 2014; revised March 2015.

The following illustrations present simplified profiles showing the Chromium Remedy and subsurface features for Site 153.

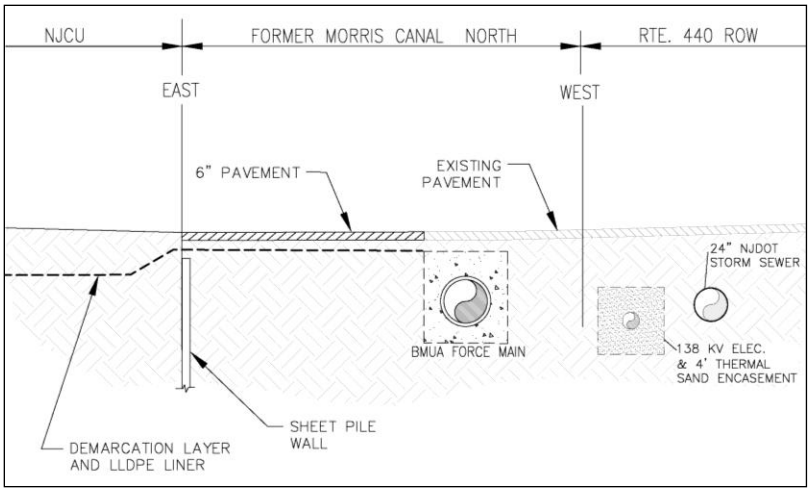


Illustration 1: Site 153 North – Cap Profile

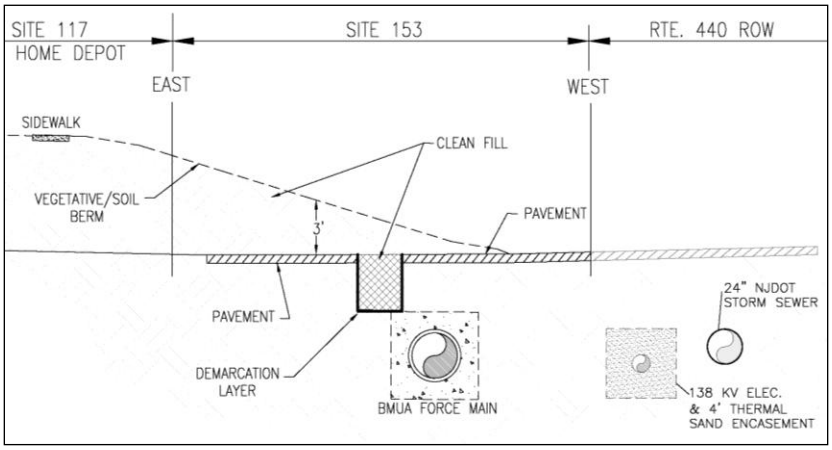


Illustration 2: Site 153 South Upper Segment – Cap Profile

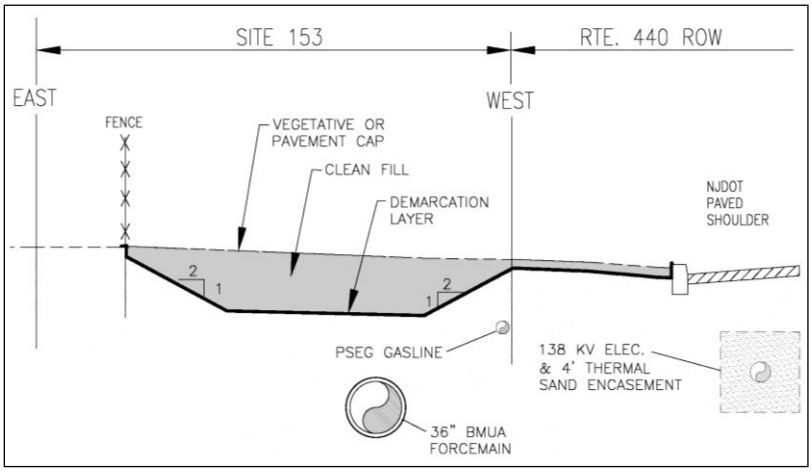


Illustration 3: Site 153 South Lower Segment – Cap Profile

In addition to the Chromium Remedy, access point warning signs were installed within sewer manholes to communicate the presence of COPR or chromium contaminated soils. Warning sign information including sign example, summary table and photos are included in **Appendix E**. Refer to **Appendix B** of this Worker Training Manual for copies of as-built figures for the remedial actions for Site 153 and the NJCU Commercial AOC. Refer to **Appendix C** of this Worker Training Manual for copies of as-built figures for the NJCU Commercial AOC redevelopment completed as of June 1, 2016. Refer to the SOP for details regarding the identification and coordination between Honeywell and the BMUA at Site 153. Refer to the LTMP for information on monitoring, maintenance and reporting requirements.

Subsurface Work Authorization Forms ("Dig Permit") have been developed for work at Site 153, and will be used in order to facilitate coordination of subsurface work at Site 153. There is one form for work by the BMUA and/or its contractors and another form for work by non-BMUA entities. For work by BMUA, the BMUA and/or its contractors will initiate completion of the form and coordinate work with Honeywell. For work by non-BMUA entities (e.g., other utilities or contractors), Honeywell will initiate completion of the form upon notification of work, and then work with the utility entity and/or its contractors and/or other contractors for coordination of work involving chromium soils or repair/restoration of the Chromium Remedy. Dig Permit Forms for work by the BMUA are included in **Appendix I-1**. Dig Permit Forms for work by non-BMUA entities are included in **Appendix I-2.** Refer to Section 3 for details regarding coordination of work between Honeywell and the BMUA or other parties.

A Deed Notice for Site 153 was recorded on November 30, 2010 with the Hudson County Register of Deeds (see **Appendix G-1**). A modified Deed Notice has been prepared to reflect the completed remedial actions, current block and lot information, and current NJDEP deed notice format. The modified Deed Notice is expected to be recorded by Honeywell in 2017. When recorded, a copy of the modified Deed Notice will be included in **Appendix G**.

The Deed Notice is a form of institutional control that is used to communicate the presence of contaminated soils, and is intended to help prevent the unauthorized disturbance of the Chromium Remedy. The Deed Notice specifies that the Consent Decrees shall govern if there is any conflict or inconsistency between the terms of the Deed Notice and the terms of the Consent Decrees, or if any action to be taken

pursuant to the Deed Notices is in conflict or inconsistent with the Consent Decrees. The Deed Notice specifies conditions for any alteration, improvement, and/or disturbance of the engineering controls as well as monitoring, maintenance, notification and reporting requirements. These requirements include notification by the site owner/operator to Honeywell and the NJDEP prior to disturbance of the engineering controls, and documentation that applicable worker health and safety laws and regulations are followed during the disturbance and restoration of those controls. Refer to the Deed Notice for Site 153 (**Appendix G-1**) for notification and reporting requirements.

An institutional control for groundwater in the form of a Classification Exception Area (CEA) was established by the NJDEP for Study Area 5 (which includes Site 153, the NJCU Commercial AOC, Site 117, and other sites) and Study Areas 6 and 7 (located on the west side of Route 440) to address chromium in groundwater above the NJDEP groundwater quality standards. A CEA is required where residual groundwater contaminants may remain at concentrations above the NJDEP groundwater quality standards to communicate the presence of, and prevent the use of contaminated groundwater. Maps showing the regional CEA for groundwater are included in **Appendix A-4**.

2.2 NJCU WEST CAMPUS COMMERCIAL AREA

The NJCU West Campus Commercial Area of Concern (AOC) is located in the southwestern portion of the new NJCU west campus. The full campus runs from West Avenue to Route 440, to the east and west, and between Carbon Place and the Home Depot site, to the north and south. The NJCU Commercial AOC abuts the northern portion of Site 153.

Remedial Actions

Construction of the Chromium Remedy was completed at the NJCU site during 2010-2011 in accordance with a Remedial Action Work Plan approved by the NJDEP. Areas of chromium contamination in soils and groundwater and existing engineering controls are indicated on site maps in **Appendix A**. Soil sample locations and concentrations above the NJDEP soil criteria of 20 ppm for hexavalent chromium are indicated in the Deed Notice (Exhibit B) in **Appendix G-2.**

The Chromium Remedy for the Commercial AOC included installation of engineering controls consisting of a multi-layered cap with the following components above chromium-contaminated soils (from bottom to ground surface):

- impervious geo-membrane linear low density polyethylene (LLDPE) liner;
- geo-composite drainage layer (consisting of geotextile and clay soils); and
- orange demarcation warning layer (The warning layer consists of an orange colored geotextile material with markings that state in English and Spanish "DANGER DO NOT DIG" and "PELIGRO NO EXCAVAR" to prevent penetration of the underlying cap materials).

The Chromium Remedy also includes engineering controls that are located above the cap, including asphalt paving and clean soil cover (minimum 1-foot in paved areas, 2 feet in landscaped areas, and 3 feet in tree planting areas). The following illustration presents a simplified profile of the Chromium Remedy.

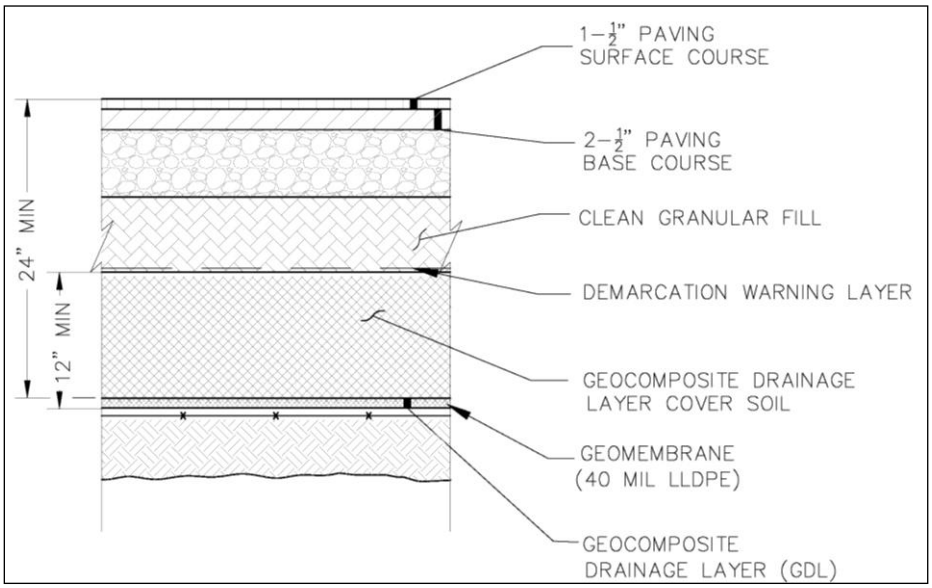


Illustration 4: NJCU Commercial Area Cap Profile

In addition, focused soil excavation was conducted to allow for clean utility corridors (i.e., future Mallory and Stegman Boulevards) for site redevelopment with new utilities to be installed above the cap. Utility corridor maps for the NJCU Commercial Area are included in **Appendix D**.

Other remedial measures included the installation of a perimeter hydraulic barrier partially encompassing the NJCU Commercial AOC cap, consisting of sealed sheet pile, with bottom depths that vary from elevation 0 feet msl to elevation - 35 feet msl, groundwater monitoring wells, and a groundwater recovery and treatment

system. In September 2016, Honeywell proposed, and the parties agreed, that Honeywell would construct approximately 500 additional linear feet of an underground barrier wall to fully encompass the NJCU Commercial AOC cap in order to restrict the flow of the shallow groundwater and facilitate the maintenance of an inward gradient. This WTM and its appendices will be updated in 2017 after the completion of the additional underground barrier wall, in order to reflect the modifications to the groundwater remedy.

The Chromium Remedy, cap area and engineering controls, are indicated on site maps in **Appendix A-3**. For further details regarding the Chromium Remedy including as-built figures, refer to **Appendix B** and the RAR dated September 2012 for NJCU.

In addition to the Chromium Remedy, warning/notice signs were installed within the Commercial AOC with a telephone number to call prior to digging so that Honeywell is notified prior to any subsurface work. Example warning/notice signage and a map showing the locations of the signs as of September 2016 are included in **Appendix E**. Once the construction of Building 6 is complete, the parties will review the locations of the warning/notice signs in the vicinity of Building 6 to determine the number and location(s) of sign(s) in that area following construction. An updated map with the locations of the warning/notice signs will be included in Appendix B in a future annual update to this Worker Training Manual.

Future Site Redevelopment

The NJCU Commercial AOC currently serves as a parking area for NJCU. The potential for exposure to chromium-impacted soils and/or groundwater will exist in the event that future site work, including the construction of Building 6, involves disturbance of the Chromium Remedy or penetration of the cap. This Worker Training Manual addresses protection of workers who may be exposed to chromium-impacted soils or groundwater in conjunction with construction, utility, maintenance, repair or other work within the Commercial AOC.

It should be noted that, with the exception of existing utilities within the portion of Site 153 abutting the NJCU Property and any drains, sumps, extraction wells or monitoring wells associated with the groundwater remedial actions, all utilities in the Commercial AOC will be installed above the cap. Therefore, future utility work in the Commercial AOC, other than any necessary repairs to the trench drains and sumps, and installation of monitoring wells, would not be expected to involve

disturbance of the cap or potential exposure to chromium-impacted soils.

Coordination with Honeywell of planned subsurface work in the Commercial AOC is required to avoid any potential impact to the cap. A "Subsurface Work Authorization Form/Digging and Excavation Permit" (Dig Permit) checklist has been developed for use by NJCU, CRT, and Honeywell to facilitate coordination prior to conducting any subsurface work in the area of the Commercial AOC (see Section 3 and **Appendix H**). Use of the Dig Permit is required for all subsurface work in the Commercial AOC.

Deed Notice

A Deed Notice was recorded for the NJCU Commercial AOC on May 4, 2012. Soil sample locations and concentrations are indicated in the Deed Notice (Exhibit B) in **Appendix G-2**. The Deed Notice is a form of institutional control that is used to communicate the presence of contaminated soils, and is intended to help prevent the unauthorized disturbance of engineering controls. The Deed Notice specifies that the NJCU Consent Decree shall govern if there is any conflict or inconsistency between the terms of the Deed Notice and the terms of the NJCU Consent Decree, or if any action to be taken pursuant to the Deed Notices is in conflict or inconsistent with the NJCU Consent Decree. The Deed Notice specifies conditions for any alteration, improvement, and/or disturbance of the engineering controls as well as monitoring, maintenance, notification and reporting requirements. These requirements include notification by the site owner/operator to Honeywell and the NJDEP prior to disturbance of engineering controls, and documentation that applicable worker health and safety laws and regulations are followed during the disturbance and restoration of those controls. Refer to the Deed Notices for NJCU or Morris Canal for notification and reporting requirements.

Adjacent Site 117

Site 117 (former Ryerson Steel; current Home Depot retail center) is located east of Site 153 Morris Canal and south of the NJCU property. Remedial actions at Site 117 were completed during the late 1990s and included implementation of engineering controls (cap) and institutional controls (deed notice). Engineering controls consist of a multi-layered cap system with geomembrane liner situated beneath existing pavement and landscaped areas. The capping system includes the following components (from bottom to ground surface): geotextile protection fabric, 40-mil linear LLDPE impervious geomembrane; geocomposite drainage material; and minimum 6 to 12 inches of clean fill above the cap materials. A separate

Worker Protection Plan for Site 117, similar to this Worker Training Manual, applies to the property owner/operators/tenants or their contractors, and contains information regarding remedial actions, site maps showing engineering controls and chromium soil concentrations, and coordination of work with Honeywell.

2.3 NJCU RESIDENTIAL AREA

The NJCU Residential Area of Concern (AOC) was remediated for hexavalent chromium to allow for unrestricted use. Accordingly, no controls are needed in this area for worker protection with respect to hexavalent chromium. However, the NJCU Consent Decree calls for segregation of soils with less than 5 ppm hexavalent chromium (in the top four feet of soil) from soils with hexavalent chromium between 5 and 20 ppm (which may be present in soils below 4 feet). Any soil removed from the top four feet of soil needs to be restored, or replaced with soil that is less than 5 ppm hexavalent chromium, and cannot be commingled with the soils that are below four feet, relative to final redevelopment grade. See Section 3.1.10 of the Long Term Monitoring Plan and paragraph 73 of the NJCU Consent Decree for additional information on management of soils in the Residential AOC.

3.0 COORDINATION OF WORK

Prior to performing subsurface work in the area of the Chromium Remedy, any entity conducting such work, including but not limited to the BMUA, NJCU, CRT, easement holders and operators of any portion of the Sites, including their contractors and consultants, must notify Honeywell and provide information regarding the work location and nature of disturbance (i.e., area and depth of disturbance, timing of work). Other parties (e.g.., utilities, easement holders and operators of the Sites) have been advised to contact Honeywell prior to performing subsurface work in the area of the Sites via annual notification letters sent by Honeywell. Honeywell will also coordinate with other parties performing subsurface work once Honeywell becomes aware of their work through notification by the utility or the Terradex LandWatch system. This information will enable coordination of work, establishing requirements for worker protection, handling and disposal of chromium-impacted media, and repair and restoration of the Chromium Remedy. The deed notice requirements also specify notification to Honeywell and the NJDEP prior to any activities that will involve the disturbance of engineering controls.

Subsurface Work Authorization Forms ("Dig Permit") have been developed for work in the Sites (**Appendices H and I**). Use of the dig permit is required for all planned work in the Sites, including planned repairs of any unplanned/unintended disturbances of the Chromium Remedy in the Sites.

According to the Consent Decrees, "*BMUA shall develop a permanent plan to implement health and safety measures for its workers . . . in accordance with OSHA rules related to hazardous materials and shall utilize the plan prepared by Honeywell . . . setting forth the procedures and protections that BMUA shall employ when it conducts activities at Site 153."* See Site 153 Consent Decree, Paragraph 77; NJCU Consent Decree, Paragraph 85. Honeywell will provide for training to BMUA and its environmental consultant, which is currently CRT Associates, and their employees as indicated in this Manual. The BMUA will develop and implement a permanent worker training plan based on the requirements indicated in Section 5. Honeywell will also provide awareness training to NJCU employees as indicated at the end of this section.

Pursuant to Paragraph 71 of the Site 153 Consent Decree and Paragraph 82 of the NJCU Consent Decree, Honeywell is responsible for the removal, replacement and/or disposal of chromium-contaminated soils whenever:

- any section of the BMUA force main sewer pipeline on Site 153 is to be replaced;
- normal operating repairs for any section of the sewer on Site 153 results in removal of chromium soils;
- any portion of ingress and egress and/or roadway areas for which NJCU holds or may in the future hold an easement over Site 153 is being installed, repaired, or replaced; or
- normal operating repairs, improvements or any other work on the NJCU property require removal of chromium soils.

If necessary to implement any required repairs on the force main sewer line, the Consent Decrees require that Honeywell or the appropriate sewer authority remove chromium contaminated soils. Honeywell would make arrangements for disposal of such soils and replacement of soils. The replacement soils brought onto the site must meet the following criteria:

- be deemed appropriate by the BMUA; and
- have a hexavalent chromium concentration less than the more stringent of (i) a formal New Jersey soil standard for unrestricted use or (ii) 1 mg/kg.

The same requirements for the disposal and replacement of chromium-contaminated soils apply for work within the NJCU Commercial AOC. For the NJCU Commercial AOC, future utilities shall be installed above the cap, thus potential disturbances in this area would be primarily related to the trench drains, sumps, or monitoring wells associated with the groundwater remedial actions, or with future development. Refer to the LTMP for details regarding procedures, contingency plan and requirements in the event of future development or other site work that may disturb the Chromium Remedy within the NJCU Commercial Area

As indicated in the Consent Decrees and the Long Term Monitoring Plans, Honeywell, the BMUA and NJCU are required to notify the Plaintiffs and Honeywell prior to any planned or emergency work that will involve the disturbance

of the Chromium Remedy. Deed Notice requirements also specify notification to Honeywell and the NJDEP prior to any activities that will involve the disturbance of engineering controls. The Chromium Remedy and engineering controls are indicated in Section 2 and shown on site maps in **Appendix A**.

Honeywell has established a telephone notification and response system for use by any entity conducting subsurface work, including but not limited to the BMUA, NJCU, CRT, and easement holders and operators of any portion of the Sites, including their contractors and consultants, to notify Honeywell of any work activities planned or required on an emergency basis that may disturb the Chromium Remedy or affect the force main or other utilities within the Site 153 or the NJCU Commercial AOC. The notification and response system facilitates coordination of activities between Honeywell and the BMUA, NJCU and other parties with respect to handling and disposal of chromium-contaminated media that may be generated during work at the Sites.

The notification system includes a telephone answering service (referred to as the Chromium Response Hotline: **855-727-2658**); this number is also included in Deed Notice documents for providing notification to Honeywell prior to disturbance of the Chromium Remedy. All parties who plan to perform any work that may have the potential to disturb the Chromium Remedy and/or cause exposure to chromium-impacted media beneath the cap materials must notify Honeywell and determine what level of worker protection is appropriate and if the proposed work activities comply with or are applicable to the deed notice requirements.

3.1 SOP FOR COORDINATION OF WORK BETWEEN HONEYWELL AND THE BMUA

Honeywell in cooperation with the BMUA has developed a Standard Operating Procedure (SOP) for identifying and coordinating work in the area of the force main sewer line. The SOP addresses work performed as part of planned maintenance work or required as a result of an emergency situation. Prior to performing sewer work, BMUA will contact the Chromium Response Hotline, which will prompt Honeywell to coordinate field work activities including proper handling and disposal of chromium-contaminated materials with the BMUA. Refer to the SOP document and to the Subsurface Work Authorization Form/Digging and Excavation Permit in **Appendix I** for further details regarding procedures for coordination of work between Honeywell and the BMUA. For coordination of work between Honeywell and NJCU refer to sub-section 3.3 of this section, the flow chart presented in **Figure**

2, and Subsurface Work Authorization Form/Digging and Excavation Permit in **Appendix H**).

3.2 COORDINATION OF WORK BETWEEN HONEYWELL AND THE BMUA

The following steps summarize procedures for coordination of work between Honeywell and the BMUA for performing subsurface work in the area of Site 153 or NJCU Commercial AOC:

1. BMUA identifies work project (e.g., sewer/utility repair or replacement) at the Sites.
2. BMUA notifies Honeywell of the work location and the estimated schedule/timing for completion of work via the Chromium Response Hotline.
3. For emergency situations related to the force main where work needs to be done within a short timeframe before a determination can be made on whether or not the work is in an area of chromium soils, BMUA's contractor will proceed with work using properly trained contractors (i.e., OSHA 40-hour HAZWOPER training) and Honeywell will provide technical assistance and field support (to be determined in cooperation with the BMUA). For non-emergency situations, Honeywell determines whether or not the proposed work location is within an area of chromium soils and provides confirmation to the BMUA. Honeywell, in consultation with BMUA, reviews the scope of work regarding deed notice disturbance, health and safety requirements including the need for HAZWOPER 40-hour trained workers, and repair and restoration of the Chromium Remedy (including both the soil and shallow groundwater remedies set forth in Article III of the NJCU Consent Decree). BMUA and Honeywell complete the Dig Permit (**Appendix I-1**). If the work location is confirmed to be in an area of chromium soils, Honeywell coordinates with the BMUA and/or its contractor regarding response and field work activities. If Honeywell determines that the proposed work is not in an area of chromium soils, then BMUA would proceed with work without further coordination with Honeywell.
4. Honeywell provides notice to the Plaintiffs and applicable stakeholders regarding the planned actions pursuant to the Consent Decrees; stakeholders include property owners/tenants/lessees/operators and any entity having a utility easement at the site. Plaintiffs shall be notified at least 5 business days in advance of any planned action that will disturb the Chromium Remedy. Plaintiffs shall be notified within 1 business day after notice is

provided to NJDEP after the occurrence of an unplanned or emergency disturbance of the Chromium Remedy.

5. Honeywell provides notification to the NJDEP, as required in accordance with Deed Notice requirements for disturbance of engineering controls (refer to the Deed Notice for notification requirements).

6. Honeywell coordinates with the BMUA as needed for performance of field work including the use of qualified contractors for excavation of chromium-contaminated materials and disposal at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of the Chromium Remedy. Work coordination will also include arrangements as needed between the parties to observe or inspect cap repairs and site restoration work. For work involving the force main sewer line, it is expected that BMUA's contractor will take the lead in performing field work associated with excavation and sewer repair/replacement. Honeywell (or its designated contractor) will provide technical assistance and field support as needed for documentation and reporting requirements and make arrangements for disposal of chromium contaminated materials.

7. Following the completion of work in a chromium-impacted area, Honeywell prepares, if applicable, a revised as-built drawing of the Chromium Remedy and/or a map showing the revised limit of the chromium soil contaminated area, and provides a copy of such drawing or map to BMUA. A revised as-built drawing and/or contamination limits map shall be prepared anytime an engineering control is modified, and the revised as-built shall indicate the location of any modification to the engineering controls. Updated as-built drawings and/or maps will also be included as part of the next annual update to the LTMP. All repairs to the engineering controls will be documented in the Quarterly Monitoring Logs required by Section 4.1 of the LTMP.

8. As set forth in Section 4.1.1 of the LTMP, following completion of work involving the disturbance and restoration of the Chromium Remedy (e.g., engineering controls or cap materials), Honeywell will document, through the Certification of a New Jersey Professional Engineer, that the work was completed in compliance with the Consent Decree and that the Chromium Remedy was restored in conformance with the original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the Chromium Remedy as set forth in Article III of the Consent Decrees. The documentation will be provided concurrently with the Report of Deed Notice

Disturbance to the NJDEP and/or concurrently with the Subsurface Work Authorization Form.

3.3 COORDINATION OF WORK BETWEEN HONEYWELL AND NJCU

The coordination of work between Honeywell and NJCU and requirements for work activities involving the disturbance and restoration of the Chromium Remedy in the NJCU Commercial AOC are addressed in the following documents:

- NJCU Consent Decree
- This Worker Training Manual
- Long Term Monitoring Plan
- Deed Notice (**Appendix G-2**)
- Subsurface Work Authorization Form/Digging and Excavation Permit - checklist document developed for the identification and coordination of work between NJCU and Honeywell for implementation and use prior to the performance of any subsurface work in the area of the NJCU Commercial AOC (see **Appendix H**)
- Shallow Groundwater Document that is currently being developed and will be included as Appendix L to the LTMP when completed.

Refer to the LTMP for details regarding monitoring, maintenance, reporting and contingency plan requirements. This Worker Training Manual will be incorporated by reference in the LTMP.

Additional activities and administrative controls include quarterly cap inspections by Honeywell as specified in the LTMP and Deed Notice, and regular communications via calls or meetings between Honeywell and NJCU regarding any upcoming subsurface work by any entity, including but not limited to, NJCU or CRT, or easement holders and operators of any portion of the Sites, including their contractors and consultants, in the area of the NJCU Commercial AOC. The schedule for regular communications and meetings between Honeywell and NJCU, is indicated below:

- Pre-construction phase – monthly
- During construction – weekly
- Post-construction – quarterly

As of the date of this Worker Training Manual, NJCU is in the construction phase and CRT is in the pre-construction phase. The following steps summarize procedures for coordination of work between Honeywell, and NJCU when subsurface work is performed in the area of the NJCU Commercial AOC (also see **Figure 2**). These steps reflect the nature of the NJCU Commercial AOC and that the NJCU Commercial AOC is expected to be subject to future commercial development, consistent with the NJCU Consent Decree.

1. NJCU identifies a work project in the area of the Commercial AOC.
2. NJCU notifies Honeywell of the work project, its location and the estimated schedule/timing for completion of work via the Chromium Response Hotline or other appropriate methods, i.e., periodic calls, meetings and/or email correspondence. NJCU and Honeywell notify Plaintiffs and applicable stakeholders in the NJCU Commercial AOC regarding the planned actions pursuant to the Consent Decrees; stakeholders in the NJCU Commercial AOC include property owners/ tenants/operators and any entity having a utility easement at the NJCU Commercial AOC. Plaintiffs shall be notified at least 5 business days in advance of any planned action that will disturb the Chromium Remedy. Plaintiffs shall be notified within 1 business day after notice is provided to NJDEP after the occurrence of an unplanned or emergency disturbance of the Chromium Remedy.
3. Honeywell reviews the scope of work with respect to the Chromium Remedy and makes a determination, in consultation with NJCU, regarding requirements pertaining to deed notice disturbance, health and safety requirements including the need for HAZWOPER 40-hour trained workers, maintenance of the effectiveness of the Chromium Remedy (including both the soil and shallow groundwater remedies set forth in Article III of the NJCU Consent Decree) during and after construction, and any necessary repair, and restoration of the Chromium Remedy. NJCU and Honeywell will complete the Dig Permit (**Appendix H**).
4. Following completion of the Dig Permit, if the proposed work is determined by Honeywell to involve disturbance of the Chromium Remedy, NJCU and the entity performing the subsurface work will proceed with such work with contractors who are properly trained (pursuant to the requirements of this Worker Training Manual) and Honeywell will provide technical assistance and field support (to be determined in cooperation with the NJCU). If

Honeywell determines that the proposed work will not involve disturbance of the Chromium Remedy, then NJCU may proceed with work without further coordination with Honeywell. If the work is limited to clean cover soils above the orange demarcation layer, then HAZWOPER 40-hour trained workers would not be required; however, Honeywell field oversight may be required (to be determined in consultation with NJCU). In the event of any field changes or design changes during implementation of the work, NJCU must obtain Honeywell's approval prior to proceeding with the work using the Dig Permit Form.

Note: Excavation work within 12 inches of the cap materials (i.e., at or below the warning layer or greater than approximately 12 inches below existing grade) must be performed by hand/soft dig techniques or other method approved by Honeywell which is similarly protective of the Chromium Remedy.

5. NJCU provides notification to the NJDEP, as required in accordance with Deed Notice requirements for disturbance of engineering controls (refer to the Deed Notice for notification requirements).
6. Honeywell coordinates with NJCU as needed for performance of field work including the use of on-site monitoring, qualified contractors for excavation of chromium-contaminated materials and disposal at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of the Chromium Remedy. Work coordination will also include arrangements between NJCU and Honeywell to observe and inspect cap repairs and site restoration work. Generally, Honeywell's contractor will perform repair of the cap materials, i.e., geomembrane liner, drainage layer and demarcation layer. Honeywell's contractor will also generally perform repair of the elements of the shallow groundwater system. Restoration of other aspects of the Chromium Remedy or surface features (i.e., clean fill, pavement) will be determined on a case by case basis. Honeywell (or its designated contractor) will provide technical assistance and field support as needed for documentation and reporting requirements and make arrangements for disposal of chromium contaminated materials.
7. As set forth in Section 4.1.1 of the LTMP, following completion of work involving the disturbance and restoration of the Chromium Remedy (e.g., engineering controls or cap materials), Honeywell will document, through the Certification of a New Jersey Professional Engineer, that the work was

completed in compliance with the Consent Decree and that the Chromium Remedy was restored in conformance with the original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the original Chromium Remedy. The documentation will be provided concurrently with the Report of Deed Notice Disturbance to the NJDEP and/or concurrently with the Subsurface Work Authorization Form. NJCU shall provide the Report of Deed Notice Disturbance to Plaintiffs and Honeywell concurrently with its submittal to NJDEP. Honeywell shall ensure that NJCU submits the Report of Deed Notice Disturbance to NJDEP and that it is concurrently submitted to plaintiffs.

8. Following the completion of work in a chromium-impacted area, Honeywell prepares, if applicable, a revised as-built drawing of the Chromium Remedy and/or a map showing the revised limit of the chromium soil contaminated area, and provides a copy of such drawing or map to NJCU. A revised as-built drawing and/or contamination limits map shall be prepared anytime any engineering control including an element of the groundwater system or an element from the warning layer down to the geomembrane LLDPE liner is modified, and the revised as-built shall indicate the location of any modifications to the engineering controls. Updated as-built drawings and/or maps will also be included as part of the next annual update to the LTMP. All repairs to the engineering controls will be documented in the Quarterly Monitoring Logs required by Section 4.1 of the LTMP.

3.4 COORDINATION OF WORK BETWEEN HONEYWELL AND OTHER PARTIES

This Manual applies to all subsurface work in Site 153 and at the NJCU Commercial AOC and is intended to be used by all other parties who may perform subsurface work at the Sites. These other parties may include, but are not limited to, JCMUA, PSE&G, Comcast, Verizon, NJDOT, other utilities, including their contractors and consultants. Honeywell will undertake reasonable efforts to work with other parties to make them aware of this Worker Training Manual and to urge them to use it to protect their workers. In most cases, this effort will consist of Honeywell's contractor reviewing key sections of this document with the crew in the field, prior to the crew starting any work. Honeywell will provide annual notification letters to the above-referenced entities in accordance with the Consent Decrees; these notification letters include information on site conditions, remedial measures, engineering and institutional controls, and instructions for contacting Honeywell prior to performing subsurface work at the Sites. The annual notification letter will also provide, or offer to provide on request, a copy of this Worker Training Manual. Honeywell may also receive notification of work by other parties through the Terradex LandWatch system.

The following steps summarize procedures for coordination of work between Honeywell and other parties and/or their contractors for performing subsurface work in the area of Site 153 or the NJCU Commercial AOC:

1. Other party notifies Honeywell regarding work project (e.g., utility repair) by contacting the Chromium Response Hotline: **855-727-2658** or Honeywell is notified of work through the Terradex LandWatch system.
2. For notification of work through the Terradex LandWatch system, Honeywell will initiate telephone contact with third party contractors and follow-up with electronic mail notification within 24 hours. Honeywell shall send electronic mail notification (A) below, advising the contractor of the nature of the Chromium Remedy (e.g., engineering controls) and the need for approval from Honeywell before proceeding with the soil disturbance (the electronic mail communication will include a copy of the annual utility notification letter); or if Honeywell is able to determine that the proposed work will not impact the Chromium Remedy, Honeywell shall send electronic mail notification (B) below, advising that no further review by Honeywell is

needed. Honeywell will copy Plaintiffs on electronic mail notification (A) to third parties.

Text for email notification to third parties:

(A) "**NOTICE:** Confirming our telephone conversation and based on the information provided, you have proposed actions that may disturb a federal court ordered remedy at a chromium contaminated site for which Honeywell is responsible. We request an on-site meeting with a representative of your firm to review the specific scope and location of the proposed work prior to any disturbance. Honeywell has prepared a Worker Training Manual to address work in chromium contaminated areas. If your proposed actions are found to impact the Chromium Remedy this Worker Training Manual will be made available to you and must be followed."

or

(B) "**NOTICE:** Confirming our telephone conversation and based upon the information provided, the planned intrusive work is outside of the areas of known chromium-impacted soils. We do not require any additional coordination with Honeywell for this scope."

3. For emergency situations where subsurface work needs to be done within a short timeframe before a determination can be made on whether or not the work is in an area of chromium soils, the other party may proceed with work using properly trained contractors (i.e., OSHA 40-hour HAZWOPER training) and Honeywell will provide technical assistance and field support (to be determined in cooperation with the party). For non-emergency situations, Honeywell determines whether or not the proposed work location is within an area of chromium soils and provides confirmation to the party as described above. Honeywell, in consultation with the party performing work, completes the Dig Permit (**Appendix H or I-2**). If the work location is confirmed to be in an area of chromium soils, then Honeywell coordinates with the party regarding response and field work activities. If Honeywell determines that the proposed work is not in an area of chromium soils, then the party would proceed with work without further coordination with Honeywell.

Note: Excavation work within 12 inches of the force main or warning layer (which is beneath pavement east of the force main) must be performed by hand/soft dig techniques or other method approved by

the BMUA and Honeywell which is similarly protective of the Chromium Remedy.

4. Honeywell shall notify Plaintiffs and applicable stakeholders regarding the planned disturbance of the Chromium Remedy pursuant to the Consent Decrees; stakeholders include property owners/tenants/lessees/operators and any entity having a utility easement at the Commercial AOC. Plaintiffs shall be notified at least 5 business days in advance of any planned action that will disturb the Chromium Remedy. Plaintiffs shall be notified within 1 business day after notice is provided to NJDEP after the occurrence of an unplanned or emergency disturbance of the Chromium Remedy.
5. Honeywell or the other party provides notification to the NJDEP, as required in accordance with Deed Notice requirements for disturbance of engineering controls (refer to the Deed Notice for notification requirements).
6. Honeywell coordinates with the party as needed for performance of field work including the use of qualified contractors for excavation of chromium-contaminated materials and disposal at a facility licensed to accept such materials, backfilling, and site restoration including repair/replacement of the Chromium Remedy. Work coordination will also include arrangements as needed between the parties to observe or inspect cap repairs and site restoration work. Honeywell will observe any planned disturbance and restoration of the Chromium Remedy. Honeywell (or its designated contractor) will provide technical assistance and field support as needed for documentation and reporting requirements and make arrangements for disposal of chromium contaminated materials.
7. Following the completion of work in a chromium-impacted area, Honeywell prepares, if applicable, a revised as-built drawing of the Chromium Remedy and/or a map showing the revised limit of the chromium soil contaminated area, and provides a copy of such drawing or map to NJCU, CRT, and/or BMUA, as applicable. A revised as-built drawing and/or contamination limits map shall be prepared anytime any engineering control including an element of the groundwater system or an element from the warning layer down to the geomembrane LLDPE liner is modified, and the revised as-built shall indicate the location of any modifications to the engineering controls. Updated as-built drawings and/or maps will also be included as part of the next annual update to the LTMP. All repairs to the engineering controls will

be documented in the Quarterly Monitoring Logs required by Section 4.1 of the LTMP.

8. As set forth in Section 4.1.1 of the LTMP, Honeywell or NJCU (in consultation with Honeywell or NJCU, and/or the entity responsible for the disturbance, as applicable) prepares and submits a Report of Deed Notice Disturbance with documentation of work and restoration of the Chromium Remedy to the NJDEP (with copies provided concurrently to the Plaintiffs and BMUA and/or NJCU as applicable) in accordance with Deed Notice and Consent Decree requirements. Honeywell will document, through a certification of a New Jersey Professional Engineer, that the work was completed in compliance with the Consent Decree and that the Chromium Remedy was restored in conformance with the original Final 100% Remedial Design specifications or to a level of protection at least equivalent to the original Chromium Remedy as set forth in Article III of the Consent Decrees. The documentation will be provided concurrently with submittal of the Report of Deed Notice Disturbance and/or concurrently with the Subsurface Work Authorization Form. It is anticipated that the Report of Deed Notice Disturbance will be submitted to the NJDEP by the site property owner, specifically Honeywell for Site 153 and NJCU for the NJCU Commercial AOC. If NJCU is responsible for preparing and submitting the Report of Deed Notice Disturbance, Honeywell shall ensure that NJCU submits the Report of Deed Notice Disturbance to NJDEP and that it is concurrently submitted to Plaintiffs.

3.5 TRAINING – BMUA, NJCU AND OTHER ENTITIES

With respect to training of BMUA employees, Honeywell will provide training support to the BMUA and BMUA will develop and implement a permanent worker training plan based on the requirements outlined in the Worker Training Manual. Honeywell in consultation with the BMUA has identified the following training needs for BMUA employees that would be provided by Honeywell (or its designated contractor):

- Chromium Awareness Training - initial and periodic training (every 2 years estimated): estimated 1 to 2 hours and include BMUA staff with responsibility for performing some level of field work.
- HAZWOPER 40-hour training and annual 8-hour refresher training: estimated to include two BMUA supervisory employees.

BMUA's contractors performing field work on the subject site will be required to have applicable health and safety training as indicated in the Worker Training Manual. It is expected that health and safety training requirements for BMUA contractors will be specified as part of BMUA's bidding process for sewer work and that contractors will be required to demonstrate appropriate training documentation to the BMUA prior to performing field work at the subject site.

For NJCU and CRT, Honeywell will provide initial and periodic training (at least biennially) on the Worker Training Manual, chromium awareness and remedial actions completed within the Commercial Area of Concern. The training would be provided by Honeywell (or its designated contractor) and include appropriate NJCU management and staff. NJCU shall include in the training, as appropriate, any other entities conducting regular activities on the NJCU Commercial AOC.

Any entity conducting subsurface work in the Commercial AOC, including but not limited to, NJCU, CRT, easement holders and operators of any portion of the Sites, including their contractors and consultants, performing field work will be required to have applicable health and safety training as indicated in the Worker Training Manual. Health and safety training requirements for any entity allowed by NJCU or CRT to perform subsurface work at the Sites will be specified as part of the bidding process for construction work. For any work to be performed by NJCU or CRT in the Commercial AOC, all contractor bid/design documents are required to adhere to the requirements of the LTMP Sections [2.1.3 (Existing Administrative and Institutional Controls) and 3.3.2.3 (Coordination of Work)] and include descriptive information regarding the Chromium Remedy, engineering controls, applicable restrictions and reference to key documents including the LTMP (which includes the Contingency Plan), Worker Training Manual, and Deed Notice.

The timing for training will be coordinated in consultation with BMUA, NJCU, and CRT.

The BMUA is responsible for providing a copy of the Worker Training Manual to its employees, contractors, lessees, tenants, and operators performing work at the Site 153.

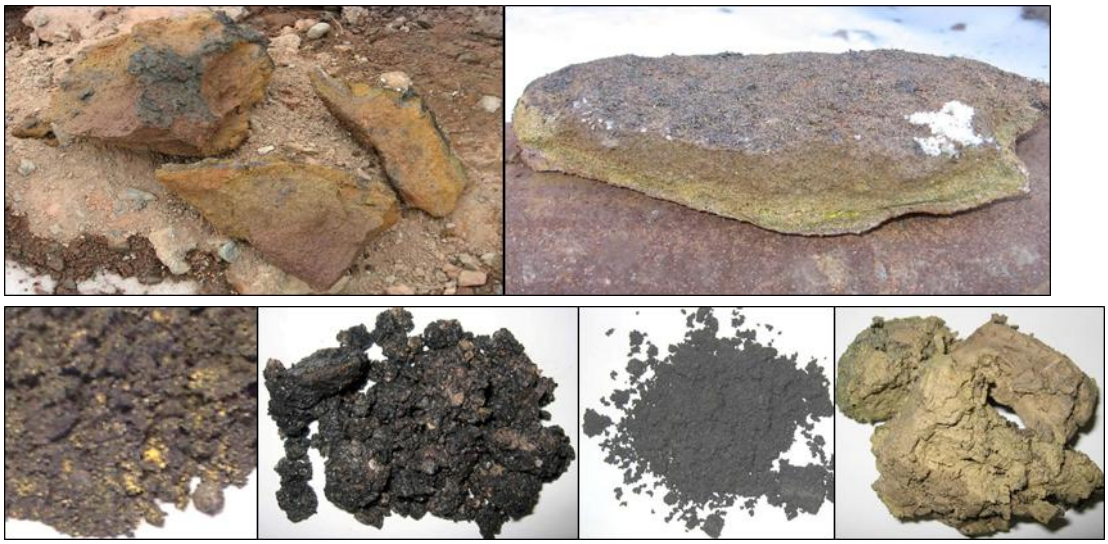
Honeywell is responsible for providing a copy of the Worker Training Manual (a) to any Honeywell contractor performing work at the site; (b) to any entity known to

Honeywell to be intending to perform subsurface work at the Sites; and (c) upon NJCU's or CRT's written request, to any NJCU or CRT contractor performing work at the sites owned by NJCU.

4.0 HAZARD EVALUATION

The section provides information on chromium, including health and safety information and general assessment of potential hazards and health and safety concerns for work on sites where COPR fill or chromium-impacted media such as soils or groundwater are present.

Chromium ore processing residue (COPR) is a by-product of the extraction process of chromium from its ore, which involves the roasting of chromite ore under highly alkaline conditions. COPR contains both hexavalent and trivalent chromium in a complex mineral matrix and may be caustic, i.e., highly alkaline with pH values typically greater than 11. Hexavalent chromium rarely occurs in nature but is produced from industrial processes. COPR is typically a grayish-black granular material and may also be indicated by the presence of yellow to green colored staining or hard layers of reddish brown material. The following are photographs of COPR taken in the vicinity of the Commercial AOC.



Fact sheets with information on chromium, potential health hazards, and precautions to prevent exposure are identified later in this section and included in **Appendix F**.

Potential chemical hazards associated with sewer repair and/or replacement work at Site 153 or disturbance of the Chromium Remedy within the NJCU Commercial

AOC includes the presence of hexavalent chromium in fill soils and groundwater. Chromium soils refers to soils containing hexavalent chromium above the NJDEP soil criteria, currently 20 milligrams per kilogram (mg/kg or parts per million [ppm]). Chromium-impacted groundwater refers to groundwater containing chromium above the NJDEP groundwater quality standards, currently 70 micrograms per liter (µg/L or parts per billion [ppb] based on total chromium).

Potential chemical exposure pathways include:

- Inhalation of airborne dusts and mists that may contain contaminated particulates
- Skin and eye contact and absorption due to direct contact with contaminated soil sediment, and/or liquids
- Incidental ingestion of contaminated soils, liquids, and/or particulates.

All these pathways of exposure must be strictly avoided by workers. Hexavalent chromium is a human carcinogen (i.e., cancer-causing agent). Skin or eye contact with COPR may cause allergic contact dermatitis. Potential exposure to chromium contamination could occur by construction or utility workers performing subsurface activities (e.g., drilling, digging, excavation) that would penetrate the cap materials. Only properly trained and equipped personnel should perform tasks that may involve the disturbance of cap materials and handling of known or suspected contaminated media (i.e., OSHA 40-hour HAZWOPER training). Worker training requirements are included in Section 5. Engineering controls are discussed in Section 2 and indicated on site maps in **Appendix A**.

In the event of any inadvertent disturbance to the Chromium Remedy, workers are advised to stop work, cover and secure the area using appropriate measures (e.g., plastic sheeting, traffic cones or barrier) and notify appropriate site management personnel (Honeywell, BMUA, NJCU, CRT or other applicable party). On-going work would then be coordinated with Honeywell with respect to the management of chromium-contaminated materials and repair/restoration of the Chromium Remedy (see Section 3 for coordination of work).

NOTE: Within the NJCU Commercial Area, an orange geotextile material (warning layer) is installed below clean cover soils at approximately one

foot above the geomembrane liner. Within the majority of Site 153, (South portion adjacent to and south of Home Depot), an orange warning layer is installed at a depth of approximately 3 feet below grade (which corresponds to the bottom of clean fill within previous excavation areas). If the orange warning layer is inadvertently encountered, workers must stop work and notify their supervisor (also see Section 5).

The listed fact sheets, included in **Appendix F**, provide additional information on chromium, potential health hazards, and precautions to prevent exposure.[4]

- Agency for Toxic Substance and Disease Registry (ATSDR) Fact Sheet on Chromium
- Occupational Safety and Health Administration (OSHA) Fact Sheet on Health Effects of Hexavalent Chromium
- New Jersey Department of Health and Senior Services (DHSS) Right to Know Hazardous Substance Fact Sheet

[4] Additional information and studies regarding the potential health hazards of hexavalent chromium can be found at the Integrated Risk Information System (IRIS) U.S. Environmental Protection Agency, Chemical Assessment Summary National Center for Environmental Assessment, Chromium (VI) , (available at https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0144_summary.pdf).

5.0 HEALTH AND SAFETY REQUIREMENTS

This section presents health and safety requirements for workers who may be potentially exposed to hazardous substances including hexavalent chromium. Applicable regulations include Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements at 29 Code of Federal Regulations (CFR) Section 1926.65 and the Hexavalent Chromium Standard (29 CFR 1926.1126; Construction Industry Standard). A summary of worker training requirements for hazardous waste sites and hexavalent chromium is provided for reference on **Table 1**.

The training requirements in this section apply to workers who could be exposed to chromium-contaminated materials and are to be addressed by the employer of the person performing the work. The engineering controls for Site 153 and NJCU West Campus Commercial Area are described in Section 2 and shown on figures in **Appendix A**.

Prior to work that might involve disturbance of the Chromium Remedy, Honeywell must be notified as indicated in Section 3 to confirm requirements and coordinate removal and/or disposal of chromium soils and restoration of the Chromium Remedy. Any entity conducting subsurface work in the Commercial AOC, including but not limited to, BMUA, NJCU, CRT, easement holders and operators of any portion of the Sites, including their contractors and consultants, should incorporate the worker protection requirements of this section into their Health and Safety Plan (HASP), which would be prepared and implemented by site contractors performing the work under OSHA HAZWOPER requirements.

BMUA, NJCU, and CRT personnel are not expected to conduct subsurface activities (e.g., excavation, digging, drilling) that will potentially disturb the Chromium Remedy. It is expected that such activities (if required) would be implemented by contractors for BMUA, NJCU, CRT, easement holders and operators of any portion of the Sites. Any contractor that will perform subsurface work at Site 153 or the NJCU Commercial AOC must be knowledgeable about potential hazards and procedures to be followed when work is conducted in areas of the Chromium Remedy. Therefore, Honeywell must inquire and the BMUA, NJCU, CRT, easement holders and operators of any portion of the Sites, including their contractors and

consultants, conducting subsurface work in the Sites are obligated to confirm to Honeywell that their personnel and contractors have appropriate training.

Honeywell Training

Honeywell will provide the following training (refer to Section 3 for details):

- Initial and periodic training for BMUA, NJCU, and CRT on this Worker Training Manual including chromium awareness, the details of the Chromium Remedy, and procedures for coordination of work with Honeywell

Initial and periodic training for any entity known by Honeywell to be conducting subsurface work on the Sites on this Worker Training Manual including chromium awareness, the details of the Chromium Remedy, and procedures for coordination of work with Honeywell

Requirements Applicable to Subsurface Work at the Sites

The following sections include, but are not necessarily limited to, current OSHA requirements expected to be applicable to work involving disturbance of the Chromium Remedy and potential for exposure to chromium-contaminated soils or groundwater. All parties conducting subsurface work at the Sites are responsible for complying with current OSHA requirements.

Personnel Training

- OSHA HAZWOPER training is required for field personnel whose job responsibilities cause them to be exposed or have the potential to be exposed to hazardous substances/wastes, in this case, hexavalent chromium. This applies to work involving disturbance of engineering controls at the Sites or work within the exclusion zone or regulated area for field work as defined in the site-specific HASP. This requirement does not apply to work that does not involve potential exposure to contaminants, such as non-intrusive work or work limited to the clean cover soils above the warning layer.
- Management and Supervisory Training is required for individuals who manage or supervise personnel engaged in hazardous waste operations.
- Training documentation is required to be maintained by the party conducting the field work. Field work contractor supervisory personnel (i.e., health and safety officer) are responsible for checking training documentation to verify that workers have complete and current documentation, and for prohibiting

workers who do not have applicable training documentation from entry into the work zone.

Determination regarding use of OSHA HAZWOPER 40-hour trained workers will be made on project specific basis based on the nature of field work. It is expected that, in most cases, 40-hour trained workers will be required for any work that will involve disturbance of the orange demarcation warning layer, and that 40-hour trained workers will not be required for work only anticipated to disturb clean soils. Within the NJCU Commercial Area, the orange warning layer is installed below clean cover soils at elevation approximately one foot above the geomembrane liner. Within the majority of Site 153, (South portion adjacent to and south of Home Depot), the orange warning layer is installed at a depth of approximately 3 feet below grade (which corresponds to the bottom of clean fill within previous excavation areas). However, portions of Site 153, next to Home Depot (i.e., pavement areas along Route 440 and driveway entrances) and next to NJCU (pavement area above and west of force main) do not have a subsurface orange warning layer. In areas without a subsurface orange warning layer all subsurface work must use OSHA HAZWOPER 40-hour trained workers. Refer to the site maps in Appendix A for details and specific information regarding the location of engineering controls.

NOTE: If the orange colored geotextile warning layer and/or black geomembrane liner materials described above are encountered by workers who are not property trained according to the requirements of this section, then they must stop work and notify supervisory personnel, who will then notify appropriate NJCU, CRT, and Honeywell management personnel.

Preparation of Site Health and Safety Plan

- Potential exposure to contaminants in the soil or groundwater would be addressed as part of a site-specific HASP, which would be prepared and implemented by contractors performing field work under OSHA HAZWOPER requirements.

Medical Monitoring

- Under the OSHA HAZWOPER standard, medical monitoring is required for workers performing field work onsite for more than 30 days per year and exposed to hazardous substances including hexavalent chromium above

applicable exposure limits. Medical monitoring requirements would apply to most work situations involving disturbance of engineering controls and potential for exposure to chromium-contaminated soils, to be determined on a case by case basis by the entity performing field work. Medical monitoring requirements would not apply to work that does not involve potential exposure to contaminants, such as non-intrusive work or work limited to the clean cover soils above the warning layer. If required, medical monitoring is provided by the employer of the person performing field work.

Hazard Communication

- OSHA hazard communication requirements govern "hazardous substances" and exclude "hazardous waste." For hazardous waste site work, the OSHA Hazard Communication standard only applies to hazardous chemicals brought to the site (e.g., decontamination fluids), not to the contaminants in the soil or groundwater.
- The hazard communication program is required to be part of the Health and Safety Policy and Procedures Manual and be made available to employees for review. A model hazard communication program can be found at the following OSHA website: *http//www.osha.gov/dsg/hazcom/oshacomplianceassistance.html.*
- Containers of hazardous substances are required to be labeled as to the contents, appropriate hazard warning, and the name and address of the manufacturer. The name on the label must match the name on Material Safety Data Sheets/Globally Harmonized System. Material Safety Data Sheets are obtained from the manufacturer when hazardous substances are purchased to conduct field work, and maintained at the work site for all hazardous substances to be used.

In addition to the above requirements to address work at the Sites involving potential exposure to hexavalent chromium, there may be other applicable OSHA training requirements for contractors performing field work. Compliance with such requirements, as for example those pertaining to excavation activities under OSHA 29 CFR 1926.650, is the result of the type of activity undertaken rather than the presence of chromium, thus the BMUA, NJCU, CRT, easement holders and operators working in the Sites, and any entity conducting subsurface work in the Commercial AOC must independently evaluate the need to comply with such

requirements. All parties conducting work at the Sites must check applicability and comply with current OSHA requirements.

TABLE 1
SUMMARY OF WORKER TRAINING REQUIREMENTS

TABLE 1: Summary of Worker Training Requirements
Hazardous Waste Sites and Hexavalent Chromium Standard

Type of Workers	Hexavalent Chromium Standard Awareness Training	40-Hour OSHA Hazwoper Training	24-Hour OSHA Hazwoper Training [1]	On The Job Training	8-hour refresher	8-hour Supervisory	Repiratory Protection	Medical Monitoring [2]	Hazard Communication [3]
Hands On Site Workers (BMUA, NJCU, Contractors and/or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR or hexavalent chromium	Required on hazardous waste sites for site workers. Site workers may potentially be required to wear respirators. This training applies to workers who may be directly exposed (direct contact) to COPR or hexavalent chromium. While the use of respiratory protection isn't expected to be required, this would allow the use of repiratory protection should site conditions warrant	Not applicable - superceded by 40-hour training	3 Days	Required annually	Required if directly supervises other workers	Respiratory protection program is required for workers who work on hazardous waste sites	Medical monitoring is required for workers who work on hazardous waste sites. Typically, HAZWOPER physicals also cover medical monitoring requirements under the Hexavalent Chromium Standard (verify with examining physician)	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.
Supervisory Type Personnel (BMUA, NJCU, Contractors and/or Other Parties)	Required for those working in exclusion zone/regulated area who maybe exposed to COPR or hexavalent chromium	Not required	Minimum Training allowable for working on hazardous waste sites and typically does not include in-depth coverage of respiratory protection and level C and B personal protection equipment. Cannot be used if respiratory protection will be required.	1 Day	Required annually	Required if directly supervises other workers	These types of workers are unlikely to be exposed to levels above the PEL/TLV therefore, the need for respiratory protection is not likely to be required	Workers are not expected to be exposed to elevated levels above the PEL/TLV, medical monitoring is not likely required under the OSHA Standard	Hazard Communication Program is applicable for chemical usage including any chemicals brought onsite for use during site work.

Notes:

This table is provided for reference purposes; all parties conducting work at the subject sites are responsible to verify applicability and comply with current OSHA requirements, as applicable.

[1] Workers who have only received 24-hour of initial training who then need to wear a respirator will first be required to complete an additional 16 hour of classroom training and two additional days of on the job training and be enrolled in a medical monitoring program. If use of respirator is likely, then worker should receive 40-hours of initial training.

[2] Medical monitoring is required under the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard (29 CFR 1926.65) and the Hexavalent Chromium Standard (29 CFR 1926.1126) if on site more than 30 days per year and exposed to hazardous waste or hexavalent chromium above applicable exposure limits (PEL/TLVs). In addition, medical clearance is required prior to wearing a respirator (29 CFR 1910.134). *If required, medical exams include baseline physicals, periodic exams (typically annually), and exit physicals. The content and frequency of medical exams must be determined in consultation with the BMUA's medical consultant/physican; typical medicial exam requirements include: occupational/medical history, physical exam, blood/urine test, ability to wear PPE (e.g., pulmonary function testing, EKG), and baseline monitoring based on potential onsite exposure to particular contaminants (e.g., hexavalent chromium). For further information, refer to OSHA Guidance Manual for Hazardous Waste Site Activities at http://www.cdc.gov/niosh/85-115.html*

[3] Hazard Communication is applicable to hazardous substances such as any chemical brought onsite for use during site work. For work on hazardous waste sites, a Site Health and Safety Plan would be required to be prepared and implemented by the site remediation contractor to address potential exposure to contaminated soils and/or groundwater. *For more information, refer to the OSHA Hazard Communication Standard at http://www.osha.gov/dsg/hazcom/oshacomplianceassistance.html*