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July 31, 2019

**VIA FEDERAL EXPRESS AND EMAIL**

The Honorable Jeffrey R. Jablonski, P.J. Ch.  
Superior Court of New Jersey  
Brennan Courthouse  
583 Newark Avenue  
Jersey City, New Jersey 07306

Re: **PROGRESS REPORT (January 25, 2019 through the date of this Report):**  
New Jersey Department of Environmental Protection, et al. v. Honeywell International, Inc., et al. v. City of Jersey City, et al., Superior Court of New Jersey, Chancery Division, Hudson County, Civil Action No. HUD-C-77-05; Partial Consent Judgment Concerning the PPG Sites (the “**JCO**”)

Dear Judge Jablonski:

I respectfully submit this Progress Report pursuant to my responsibilities as independent Site Administrator operating under the JCO. This Report covers the period January 25, 2019 through the date of this Report.

I submit this Progress Report pursuant to paragraph 1(b)(i)1 of the “Order Administratively Dismissing This Matter Without Prejudice and Retaining Jurisdiction” entered by Judge Sarkisian on May 4, 2016. That Order requires that I provide Progress Reports to the Court twice per year. This is my seventh Progress Report. The prior Progress Reports are dated July 29, 2016, January 27, 2017, July 28, 2017, January 30, 2018, July 31, 2018 and January 24, 2019.

In addition to serving as Site Administrator, I am also a Court-appointed Mediator pursuant to the February 22, 2016 “Order Referring Third-Party Complaint and Referring Certain Matters to Mediation and Entering Stay” (the “**Mediation Order**”). A summary of the progress of the Mediation is included in this Progress Report.

**I. New Master Schedule:** With the help and cooperation of all the JCO Parties<sup>1</sup> the last Master Schedule dated January 24, 2019 was revised. A copy of the revised Master Schedule dated July 31, 2019 is enclosed.

**II. IRM Inspection Program:** Inspections of all of the Interim Remedial Measures (“**IRMs**”)<sup>2</sup> in place at the PPG Sites are performed at varying frequencies depending upon numerous factors, such as the levels of contamination, the potential for exposures, and the types of IRMs being utilized. The IRM inspections for the period covered by this Report confirmed that all of the IRMs remain effective.

### **III. Remediation Progress**

Attached to the revised Master Schedule are **Figure 1** and **Figure 2**. These figures depict the “Garfield Avenue Group” of sites (the “**GAG Sites**”), the Garfield Avenue Group Phase 4 Roadways (the “**GAG Roadways**”) and the Garfield Avenue Group Phase 5 – Off-Site Properties (the “**GAG Off-Site Properties**”). This section of the Progress Report is broken down into a discussion of the remediation progress at the GAG Sites, the GAG Roadways, the GAG Off-Site Properties and the Non-GAG Sites. The “Non-GAG Sites” include all PPG sites that are not GAG Sites, GAG Roadways or GAG Off-Site Properties.

The GAG Sites include the following parcels, broken down as “Phases,” shown on **Figure 1** and **Figure 2**:

- Interim Remedial Measure (IRM) #1, located within Site 114;
- Phases 1A and 1B, considered the Southwest (SW) Area within Site 114;
- Phase 1C, located within Site 114;
- Phase 2A, located within Site 114, addressed under Public Service Electric and Gas Company’s (“PSE&G”) remedial action;
- Phase 2B, which includes Phases 2B-1 through 2B-4, located within Site 114;
- Phase 3A, which includes Site 132 and most of Site 143;
- Phase 3B North, which includes a portion of Site 132 and a portion of Site 137;
- Phase 3B South, which includes Site 133 West, a portion of Site 137, the former Fishbein property, the Ten West Apparel property, and a small portion of Halladay Street South; and
- Phase 3C, which includes Site 133 East, the remainder of Halladay Street South, and Site 135 North.

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<sup>1</sup> For the purpose of this Report, the “JCO Parties” include PPG, the New Jersey Department of Environmental Protection (“NJDEP”) and the City of Jersey City.

<sup>2</sup> An Interim Remedial Action is an action taken at a contaminated site in order to reduce the chances of human or environmental exposure to site contaminants. It is an action taken to protect public health or remove an obvious source of contamination before a remedial investigation is complete. The need for and type of IRM is determined on a case-by-case basis. Examples of IRMs in use at some of the PPG sites include epoxy, plastic sheeting, plywood, duct tape, cones, caution tape, folding caution signs, stone/gravel, or other barriers.

The GAG Roadways are CCPW<sup>3</sup>-impacted roadways surrounding the GAG Sites, including Halladay Street North, Forrest Street, Carteret Avenue, and Garfield Avenue (from Carteret Avenue to the Light Rail).

The GAG Off-Site Properties include CCPW-impacted properties adjacent to the GAG Sites, including the former Halsted Corporation, Forrest Street Properties, Ten West Apparel, 816 Garfield Avenue (Fishbein Parcel) and Al Smith Moving.

#### A. Remediation of the GAG Sites

Excavation, backfilling and restoration of impacted soils at the GAG sites is substantially complete, though some work still remains to be done. Restoration of the IRM #1 Area of Site 114 is on hold pending groundwater remediation that is taking place in this area. Soil treatment activities were conducted in a small portion of Site 114 adjacent to Garfield Avenue referred to as the “Western Sliver,” but these treatment efforts were unsuccessful. The JCO Parties and Hampshire<sup>4</sup> are negotiating to address remaining soil impacts in the Western Sliver area of Site 114 by designating a narrow strip of the western boundary of Site 114 (parallel to the eastern boundary of Garfield Avenue), including the Western Sliver area, for perpetual use as a roadway. Establishment of this strip of land as a roadway would mean that it would be addressed by a restricted-use remedial approach. The establishment of this strip of land as part of Garfield Avenue is also consistent with the Canal Crossing Redevelopment Plan, which calls for the widening of Garfield Avenue.

Approval by NJDEP of Soils Remedial Action Reports<sup>5</sup> for some of the GAG Sites was delayed as a result of discussions among the JCO Parties regarding the administrative handling of chromium-related contaminants for which PPG is responsible versus manufactured gas plant contaminants that are the responsibility of PSE&G. It is currently anticipated that RAR Determinations<sup>6</sup> for the PPG soils areas of concern at most of the GAG Sites will be issued by the end of this year.

The primary focus at this time in terms of field work at the GAG Sites is groundwater delineation and remediation. In December 2017, PPG commenced Phase I of an interim groundwater treatment program at Site 114. This treatment program targets chromium contamination in the water table through the use of, among other things, injection of a food source (sugars) to stimulate biological activity that will reduce the chromium contamination without harm to the environment. PPG provides the JCO Parties with quarterly reports addressing the progress of the groundwater treatment program.

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<sup>3</sup> “CCPW” refers to chromate chemical production waste and is more particularly defined in the JCO.

<sup>4</sup> “Hampshire” refers collectively to 900 Garfield Avenue, LLC, the owner of a portion of Site 114, and Hampshire Urban Renewal Development, LLC, which is the City of Jersey City’s designated redeveloper for Site 114, as well as other parcels within the Canal Crossing Redevelopment Area. See Section IV infra.

<sup>5</sup> A “Remedial Action Report” is a comprehensive report that documents the actions that were taken to remediate a given site to the applicable NJDEP standards. The specific requirements for a Remedial Action Report are set forth in the Department’s Technical Requirements for Site Remediation, N.J.A.C. 7:26E-5.7.

<sup>6</sup> “RAR Determination” means that the Department has determined that the Remedial Action Report meets the requirements of applicable Department regulations and guidance.

PPG is currently in the process of installing the infrastructure for a second phase (Phase II) of the interim groundwater program. Phase II calls for approximately 190 injection, extraction and monitoring wells, in addition to below ground and above ground conveyance piping. PPG also plans to construct an additional groundwater treatment plant, which, along with the existing groundwater treatment plant, will collectively be designed to handle water generated from the Phase II groundwater remediation program and from dewatering of groundwater in connection with excavation activities at Carteret Avenue, Halladay Street North, Ten West and other areas to be excavated in concert with the Ten West excavation. Installation of the infrastructure for Phase II is currently expected to be completed by December 2019.

Phase II of the groundwater program calls for approximately 12 months of active treatment and up to twenty-four months of post-remediation performance monitoring. The JCO Parties have agreed, however, to undertake dialogue and collaboration during Phase II regarding the performance of the program that may result in a revisiting of these timeframes.

Ten West Apparel Property (800 Garfield Avenue): Pursuant to a settlement entered in April 2017 between PPG and Mid-Newark, L.P., the former owner of the 800 Garfield Avenue property, Ten West Apparel is required to vacate the property on or prior to March 2020. Demolition of the building and excavation of chromium impacted soils under the building located at this site cannot commence until Ten West Apparel has vacated the building.

Properties Adjacent to Ten West: PPG initiated excavation at Sites 137B and Site 133 West in 2018, but could not complete the excavation work because of various technical issues related to a volatile organic compound (VOC) source in this area and the temporary shut down of PPG's water treatment plant. PPG resumed the excavation work in 2019 in non-VOC source areas to reach final depths in the portions of these sites where excavation had previously been partially completed. The remaining portion of the planned excavation at Sites 137B and Site 133 West was deferred until Ten West Apparel vacates 800 Garfield Avenue and will be included with the Ten West Apparel and Fishbein<sup>7</sup> excavations.

B. Remediation of the GAG Roadways:

Halladay Street North: PPG and the Jersey City Municipal Utilities Authorities (“JCMUA”) have agreed upon a remedial approach in this roadway that calls for the JCMUA's abandonment of a sewer line located in a portion of this roadway and the re-routing of the flow from this sewer line. That will allow PPG to have unfettered access to excavate the chromium impacted portions of Halladay Street North, as well as remaining impacts along the western boundary of the former Halsted Corporation (see discussion of that site below). JCMUA has reported that the sewer re-routing work will be completed by September 2019. PPG currently expects to commence the excavation in Halladay Street North (and the remaining impacts on the Halsted site) in March 2020.

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<sup>7</sup>The former Fishbein property is part of Phase 3B South and is shown on Figures 1 and 2 attached to the Master Schedule.

Forrest Street Roadway: The JCO Parties are working toward finalizing a Remedial Action Report for the soil remedial work at this roadway and a final approval letter from NJDEP.

Garfield Avenue: JCO Parties are currently negotiating to revise the Remedial Action Work Plan for this roadway to designate a strip of property along the western boundary of Site 114 for perpetual use as part of the Garfield Avenue roadway.

Carteret Avenue: The excavation of chromium impacts in this roadway commenced on June 3, 2019. PPG currently anticipates completing the excavation work by March 2020. Following completion of the remediation activities, the JCMUA will commence replacement of a portion of the 96" combined sewer pipe located within this roadway and installation of a liner in a portion of the pipe. This has been a very complicated remediation project given the presence of the sewer pipe and the precautions required to ensure that the pipe is not damaged during the remediation work.

Pacific Avenue/Caven Point Avenue: CCPW impacts were discovered in portions of these roadways. PPG currently anticipates submitting a Remedial Investigation Report Addendum/Remedial Action Work Plan for this roadway by December 2019.

#### C. Remediation of the GAG Offsite Properties

Al Smith Moving Property (33 Pacific Avenue). All chromium impacted soils have been excavated and this site has been restored. NJDEP issued an RAR Determination letter on May 28, 2019 with respect to the soils Remedial Action Report for this site.

Former Halsted Corporation Property (78 Halladay Street): The bulk of the contaminated soil has been removed and the site restored as of October 2018. Remediation of residual chromium impacted soils on the western boundary of this site will take place during the remediation of Halladay Street North. Chromium impacts that cannot be removed along the eastern boundary of this site will be addressed via a restricted use remedy.

Forrest Street Properties: The soil contamination at this property is being handled under two separate remedial approaches, one for the exterior portions of the buildings and one for the chromium impacts that remain in place under building structures located at this property. PPG, NJDEP and the property owner reached a conceptual understanding regarding a remedial approach for the excavation and backfilling of impacted soils in and around the exterior of building structures. It is currently anticipated that an RAR Determination will be made by NJDEP in October 2019 for the exterior portions of the building structures. PPG and the property owner are not, however, in agreement on the details of the proposed remedy for impacts under the building structures. In March 2018, PPG submitted a draft Remedial Action Work Plan to memorialize a proposed restricted use remedy for the chromium impacts that remain in place under the building structures. NJDEP, PPG and the property owner have been in discussions for quite some time regarding this Remedial Action Work Plan and, as of this Progress Report, have not yet agreed on the content of that submittal. I am continuing my efforts to expedite agreements between and among all parties involved with this site.

#### D. Remediation of the Non-GAG Sites

Site 156, Metropolis Towers: A Consent Judgment Compliance Letter<sup>8</sup> was issued by NJDEP on June 28, 2019 for the soils Area of Concern (other than the footprint of the Boiler Room) and the groundwater Area of Concern. The only remaining area of environmental concern at this site is the boiler room located in one of the towers. PPG is coordinating efforts with the property owner to repair any damaged areas of a floor coating that was installed by PPG as an engineering control in the boiler room. Electrical work currently being conducted by the property owner and PSE&G, and out of PPG's control, is impeding the completion of the floor coating repairs in the boiler room.

Site 16, Linden Avenue East: I am actively involved in overseeing negotiations between PPG and the property owner with respect to a scope of work for future remediation of chromium impacts under the building structures located at this site.

Site 63, Baldwin Oil (1 Burma Road): All soil impacts have been addressed at this site and a Consent Judgment Compliance Letter for soil was issued by NJDEP on January 30, 2018. PPG's efforts are now focused on impacted groundwater at this site (and Site 65). PPG submitted a Groundwater Remedial Investigation Report/Remedial Action Work Plan on May 13, 2019. This submittal calls for the establishment of a classification exception area/well restriction<sup>9</sup> area and a groundwater remedial action permit as the remedial action for the groundwater at this site.

Site 65, Portions of Burma Road/Morris Pesin Drive: NJDEP issued an RAR Determination for soils at this site on May 31, 2019. A Soils Remedial Action Permit is pending. Any impacted groundwater at Site 65 will be deemed to have emanated from Site 63. Therefore, no action vis-à-vis groundwater is required for Site 65.

Sites 107, Site 108 and the Conrail Property: The JCO Parties have agreed to manage Site 107, Site 108 and impacts under an adjacent Conrail rail line as three separate areas of concern/sites for administrative purposes with separate Master Schedule milestones for each. The status of each of these areas of concern/sites is as follows:

Site 107: Site 107 was determined to be impacted by chromium beyond the originally anticipated limits. PPG has made significant progress in excavating impacted soils and backfilling the site and currently anticipates completing those efforts in December 2019.

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<sup>8</sup> A "Consent Judgment Compliance Letter" means a letter issued by the Department pursuant to that certain Consent Judgment in the matter captioned New Jersey Department of Environmental Protection, et al. v. Honeywell International Inc., et al., Docket No C-77-05, Superior Court of New Jersey, Chancery Division, Hudson County (filed September 7, 2011). The Consent Judgment Compliance Letter is the Department's equivalent of a No Further Action letter that is issued after all appropriate remediation documents have been finalized, an RAR Determination has been made, and after the issuance by the Department of any required remedial action permits with respect to the applicable media and areas of concern.

<sup>9</sup> A "classification exception area/well restriction area" is an administrative and institutional control to address groundwater contamination.

Site 108: The approved Remedial Investigation Report for Site 108 had indicated that the “hotspot” contaminated area on Site 108 was presumed to have emanated from Site 107, and required that remedial action at Site 108 would be performed as part of the Site 107 remedial action. Excavation at Site 108 was more extensive than had been anticipated. PPG is currently reevaluating the anticipated remedial limits and is in discussions with the property owner with respect to a scope of work, the timing of implementation of the work and arrangements for access.

Conrail Property: A restricted-use remedy is anticipated for the Conrail property located adjacent to Sites 107 and 108 based on the recent discovery of CCPW along the limits of excavation established to protect the rail infrastructure. As a result, the Conrail property will be addressed as a separate area of concern from the remainder of Site 107 and Site 108 soils. Separating the Conrail property into a separate area of concern will allow the RAR Determination date for Site 107 soils to be achieved independent of the Conrail RAR Determination.

Site 174, Dennis Collins Park (Bayonne): PPG and the City of Bayonne have executed a Memorandum of Understanding (MOU) addressing the coordination of the City’s redevelopment of the Park with the installation by PPG of a 2 ft. clean soil cap and other required engineering controls for the remediation of soils. In April 2019, PPG submitted to NJDEP, Division of Land Use Regulation, a Coastal Zone Management Permit application with respect to the installation of a revetment (engineering control) along the shoreline of the Kill Van Kull. The revetment will act as a barrier from the CCPW identified within the banks of the waterway. This engineering control is part of the soils remedy for the Park. The Coastal Zone Management Permit is required before PPG can install the revetment. The revetment must be installed before PPG can install the 2 ft. cap on the Park proper. PPG is working with the Division of Land Use Regulation with respect to a request from the Division for additional information needed to complete the review of the permit application.

457 Communipaw Avenue: In March 2019, PPG commenced the remedial investigation of this site pursuant to an NJDEP-approved Remedial Investigation Work Plan. The JCO Parties await PPG’s submittal of the data from the RI work to determine next steps.

#### **IV. Mediation Proceedings**

I am currently mediating two issues, as set forth below.

##### **A. Infrastructure Reimbursement Agreement**

I am continuing to mediate an Infrastructure Reimbursement Agreement among PPG, JCRA and the City of Jersey City. The agreement pertains to reimbursement by PPG for costs in connection with replacement of City/JCRA infrastructure damaged or removed during PPG remediation activities at the GAG sites.

It was reported to me in January 2019 that PPG and the City agencies had agreed upon the dollar amount to be paid by PPG and that a written agreement memorializing the terms of payment and related matters had been agreed upon. However, before the agreement was presented to the City Council and the JCRA Board for approval, I was advised that the City and JCRA could not execute the agreement without the approval of Hampshire.

Hampshire has objected to the agreement primarily because it includes a consent by the City/JCRA to the recording of deed notices against parcels of property in which Hampshire has an interest. Execution of this agreement is still being negotiated by the parties, which now includes Hampshire. I will likely need to conduct additional mediation sessions.

## B. Issues Between Hampshire and PPG

Issues have arisen between PPG and Hampshire over, among other things, the completion of remediation by PPG at the GAG sites and the commencement of redevelopment by Hampshire.

Section 8 of the JCO contains the following language: “The PPG Sites shall be remediated in a manner that permits redevelopment consistent with the redevelopment plan adopted by Jersey City.” My primary responsibility pursuant to the JCO is to ensure the safe, effective and efficient remediation of all of the PPG sites. Under Section 8 I am also required to give consideration to the interaction between remediation and redevelopment. Overseeing remediation, restoration and redevelopment activities requires balancing the sometimes conflicting interests of multiple parties.

Hampshire has been designated as Redeveloper<sup>10</sup> by the JCRA of Site 114, as well as other parcels located within the Canal Crossing Redevelopment Area, pursuant to an Amended and Restated Redevelopment Agreement dated August 22, 2018. This agreement amends and restates prior redevelopment agreements and amendments entered into between the JCRA and Hampshire in 2003, 2008 and 2009.

Hampshire has been monitoring PPG’s remediation efforts, in particular as it relates to Site 114. Hampshire communicated to me and the JCO Parties its desire to commence redevelopment at Site 114 in May 2020. While the remediation of soils and restoration of the soil remediation areas at Site 114 has largely been completed, groundwater remediation at Site 114 is complicated and has posed several technical difficulties. High concentrations of total chromium and hexavalent chromium are present in the intermediate and deep water-bearing zones below Site 114.

An extensive array of infrastructure has been installed at Site 114 as part of the groundwater remediation program. For instance, as part of Phase I of the groundwater IRM program, PPG installed approximately 80 injection wells, extraction wells and monitoring

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<sup>10</sup> The “Redeveloper” is defined in the referenced Amended and Restated Redevelopment Agreement to collectively include Hampshire Urban Renewal Redevelopment, LLC and Garfield JC Partners, LLC.

wells, as well as above ground and below ground conveyance piping throughout Site 114. Also, as part of Phase II of the program, PPG plans to install approximately 190 injection, extraction and monitoring wells. As indicated in Section III.A. above, PPG has only recently commenced installation of the Phase II infrastructure and currently does not anticipate completing that installation until December 2019.

It is currently anticipated that the Phase II system will be operated for 12 months, followed by two years of post-remediation monitoring. Added to all of this were recent delays in installation of the Phase II infrastructure and shutdowns of the Phase I groundwater IRM system and a groundwater treatment plant associated with the system. Hampshire's desire to commence redevelopment in May 2020 at or in close proximity to the locations of the groundwater IRM infrastructure and PPG's intention to operate the groundwater IRM system at least through the summer of 2020, has created serious and complex issues between these two parties.

I have been facilitating cooperation and communication between PPG and Hampshire to resolve the issues between them, including speaking directly with Hampshire, coordinating regular phone meetings between PPG and Hampshire, facilitating Hampshire's involvement on project manager calls, personally discussing Hampshire concerns on the bi-weekly calls I have with the JCO Parties, and holding face-to-face meetings with all interested parties. For instance, on May 15, 2019, I coordinated a meeting with an extensive agenda that addressed remediation and redevelopment issues. The meeting was attended by over 25 people, including representatives of PPG, Hampshire, NJDEP, the City, the JCRA, the JCMUA, PSE&G and the technical consultants and attorneys for these parties. A similar meeting is scheduled for August 20, 2019.

Despite the complicated issues related to coordinating the remediation efforts with the redevelopment by Hampshire, I remain optimistic that the parties will come to an amicable resolution. I am satisfied that all the involved parties are competent and acting in good faith.

## **V. Current and Future Activities**

Web Site: My office, with the help of the JCO Parties, maintains a web site referred to as the Chromium Cleanup Partnership, which can be found at [www.chromiumcleanup.com](http://www.chromiumcleanup.com). The web site contains extensive information including, among other things, the status of remediation at the PPG chromium sites. We are currently (and continually) updating the web site to include the most recent information about the PPG chromium sites. This Progress Report with all attachments/enclosures will be posted to the web site. All prior Progress Reports are also posted on the web site. In addition, we recently posted information about the commencement of excavation at Carteret Avenue and my recent presentation before the Jersey City Environmental Commission (see below).

Newsletter: A newsletter is published at least annually that summarizes the status of activities at the PPG chromium sites. I provided Your Honor with the last newsletter with

my January 24, 2019 Progress Report. We are planning another newsletter for distribution in January 2020.

Appearance before Jersey City Environmental Commission: On April 16, 2019, I appeared at a meeting of the Environmental Commission of Jersey City. This appearance was made in connection with my continuing efforts to share information with the public about the PPG chromium sites. Numerous questions were raised by the public and the Commission. While the majority of the questions were answered at the meeting, the Commission asked that I provide additional information as a follow-up to some of the questions raised at the meeting. On May 30, 2019, I submitted a detailed letter to the Commission addressing the Commission's request for additional information. A copy of that letter is attached for Your Honor's information. A copy of my letter was uploaded to the Chromium Cleanup Partnership web site.

PPG Employment Report: Attached is PPG's 1Q 2019 Employment Report in which PPG reports that it has satisfied the JCO goals for the reporting period.

I trust that Your Honor will find this Progress Report helpful. I am available at your convenience to answer any questions you may have.

Respectfully submitted,

*/s/ Ronald J. Riccio*

Ronald J. Riccio  
Site Administrator

Attachments:

- Master Schedule dated July 31, 2019 with figures/maps
- PPG 1Q 2019 Employment Report
- May 30, 2019 Letter to Jersey City Environmental Commission

cc: Via email: PPG, NJDEP and the City of Jersey City

**Master Schedule for the NJ PPG Chrome Remediation Sites**

**(Exhibit 2/3)**

**Revision Date: July 31, 2019**

**SOILS - GARFIELD AVENUE SITES**

Group/Phase or Site (See Figure 1 attached)	Property Description (Owner) (See Figure 2 attached)	Access/Road Closure Plan	Excavation Start Actual OR Required	Excavation Complete Actual OR Required	Backfill Complete Actual OR Required	Restoration Complete Actual OR Required	RAR Determination	Comments
GA Group IRM #1 and Phases 1A, 1B, 1C, 2A, 2B-1, 2B-2, 2B-3, and 2B-4	Site 114 (JCRA/ Hampshire)	See Comments	12/31/2013	11/24/2014	1/21/2015	1/31/2018 (see Comments)	October 2019	<p>Site 114 is the subject of pending litigation between PPG, Hampshire, JCRA and the City, but the Court issued an Order granting PPG access to conduct remediation work at this site. Any remaining issues are the subject of mediation between the mediating parties. If the mediation is unsuccessful, the litigation may again become active.</p> <p>Finalization of the Soils Remedial Action Report ("RAR") for Site 114 was delayed as a result of continued discussions among the JCO Stakeholders (see General Notes for definition) regarding the approach for closing out the manufactured gas plant ("MGP") areas of concern ("AOCs") located within Site 114. It was agreed that PSE&amp;G will take the lead on MGP AOCs under the Licensed Site Remediation Program ("LSRP") program. (See letter from PPG and PSE&amp;G to Wayne Howitz, NJDEP, dated July 9, 2019 confirming same). The RAR Determination date excludes MGP-related AOCs.</p> <p>PPG, the City and Hampshire are negotiating to address remaining soil impacts in a portion of Site 114 referred to as the "Western Sliver" area by the recordation of an easement (or subdivision) designating a narrow strip of the western boundary of Site 114 (parallel to the eastern boundary of Garfield Avenue), including the Western Sliver area, for perpetual use as a roadway. Establishment of this strip of land as a roadway would mean that it would be addressed by a restricted-use remedial approach. Establishment of this easement area is consistent with the Canal Crossing Redevelopment Plan, which calls for the widening of Garfield Avenue.</p> <p>Restoration was deemed complete for all of Site 114, except for the soil IRM #1 area where active groundwater remediation is being performed. Restoration of the soil IRM #1 area is on hold pending the referenced groundwater remediation activities.</p>
GA Group Phase 3A	Site 132 (824 Garfield) (JCRA)	See Comments	3/4/2014	9/5/2014	5/15/2015	1/31/2018	6/27/2019	<p>Site 132 is the subject of pending litigation between PPG, Hampshire, JCRA and the City, but the Court issued an Order granting PPG access to conduct remediation work at this site. Any remaining issues are the subject of mediation between the mediating parties. If the mediation is unsuccessful, the litigation may again become active.</p> <p>All CCPW has been excavated and the Site restored. An RAR Determination letter was issued on 6/27/2019.</p>
	Site 143 (846 Garfield) (PPG)	PPG Owned	3/4/2014	9/5/2014	5/15/2015	1/31/2018	September 2019	<p>Finalization of the Soils RAR for Site 143 was delayed as a result of continued discussions among the JCO Stakeholders regarding the approach for closing out the MGP AOCs. It was agreed that PSE&amp;G will take the lead on MGP AOCs under the LSRP program. While it was determined that MGP-related contaminants have not emanated from Site 114 onto Site 143, they had been determined to have emanated from Site 114 onto Site 137 North. Since Sites 143 and 137 North were combined into a single RAR, the delay related to Site 137 North also impacted the schedule for the Site 143 RAR Determination.</p>
GA Group Phase 3B North (45 Halladay and a portion of 25 Halladay)	Site 137 North (PPG)	PPG Owned	7/9/2014	5/15/2015	8/3/2015	1/31/2018	September 2019	<p>During the remediation of Phase 3B North, the southern portion of Site 137 (i.e., Site 137 South) was not able to be remediated because of its proximity to the Ten West Apparel Building, and is now considered part of Phase 3B South under this Master Schedule (see below). Finalization of the Soils RAR for Site 137 North was delayed as a result of continued discussions among the JCO Stakeholders regarding the approach for closing out the MGP AOCs located within this Site. It was agreed that PSE&amp;G will take the lead on MGP AOCs under the LSRP program. The RAR Determination date excludes MGP-related AOCs.</p>
GA Group Phase 3B South (15 Halladay, the remainder of 25 Halladay with 800 and 816 Garfield Avenue added)	Site 133 West (PPG) and Site 137 South (PPG)	PPG Owned	8/29/2018	April 2021	June 2021	July 2021	September 2022	<p>PPG has excavated a portion of this Site. The remaining portion of the planned excavation was deferred until Ten West Apparel vacates 800 Garfield Avenue and will be included with the Ten West Apparel and Fishbein excavation.</p> <p>The sites included within GA Group Phase 3B South were not part of NJDEP's March 30, 2017 capillary break determination letter or the NJDEP-approved December 2017 Capillary Break Design Report. Therefore, a separate determination must be made by the Department prior to Restoration Complete as to the need for a capillary break at these sites.</p>
	Fishbein (816 Garfield Avenue) (PPG)	PPG Owned	November 2020	April 2021	June 2021	July 2021	September 2022	<p>The access litigation between PPG and Ten West Apparel was settled in April 2017. Pursuant to the terms of settlement, Mid-Newark, L.P., the former owner of the 800 Garfield Avenue property, transferred title to the property to PPG on March 2, 2018. Ten West Apparel is required to vacate the property on or prior to the 24<sup>th</sup> month following the property transfer, i.e., by March 2020. The sites included within GA Group Phase 3B South were not part of NJDEP's March 30, 2017 capillary break determination letter or the NJDEP-approved December 2017 Capillary Break Design Report. Therefore, a separate determination must be made by the Department prior to Restoration Complete as to the need for a capillary break at these sites.</p>
	Ten West Apparel (800 Garfield Avenue) (PPG)	PPG Owned						

**Master Schedule for the NJ PPG Chrome Remediation Sites**

**(Exhibit 2/3)**

**Revision Date: July 31, 2019**

**SOILS - GARFIELD AVENUE SITES**

Group/Phase or Site (See Figure 1 attached)	Property Description (Owner) (See Figure 2 attached)	Access/Road Closure Plan	Excavation Start Actual OR Required	Excavation Complete Actual OR Required	Backfill Complete Actual OR Required	Restoration Complete Actual OR Required	RAR Determination	Comments
GA Group Phase 3C	Halladay Street South (Jersey City)	Road Closure In Place	4/21/2015	10/22/2015 (See Comments)	7/29/2016 (See Comments)	1/31/2018 (See comments)	5/2/2019	PPG completed excavation, backfilling and restoration in Halladay Street South with the exception of grids adjacent to Ten West Apparel; those grids will be excavated, backfilled, and restored in connection with the Ten West Apparel remediation activities consistent with the Ten West Apparel Master Schedule milestones. The RAR Determination Letter for Halladay Street South was issued on 5/2/2019 (exclusive of the referenced grids), but it indicated that several administrative comments related to the closeout of MGP AOCs must be addressed in order to receive final approval of the RAR.  It was agreed that PSE&G will take the lead on MGP AOCs under the LSRP program. The RAR Determination date excludes MGP-related AOCs.
	Site 133 East (22-68 Halladay) (PPG)	PPG Owned	4/21/2015	10/22/2015 (See Comments)	7/29/2016 (See Comments)	1/31/2018 (See comments)	October 2019	PPG completed excavation, backfilling and restoration in these areas with the exception of grids in Site 133 East adjacent to Ten West Apparel; those grids will be excavated, backfilled, and restored in connection with the Ten West Apparel remediation activities consistent with the Ten West Apparel Master Schedule milestones.  Finalization of the combined Soils RAR for Site 133 East and Site 135 was delayed as a result of continued discussions among the JCO Stakeholders regarding the approach for closing out the MGP AOCs located within Site 133 East. It was agreed that PSE&G will take the lead on MGP AOCs under the LSRP program. While it was determined that MGP-related contaminants have not emanated from Site 114 onto Site 135, they had been determined to have emanated from Site 114 onto Site 133 East. Since Site 133 East and Site 135 were combined into a single RAR, the delay related to Site 133 East also impacted the schedule for the Site 135 North RAR Determination. It was agreed that PSE&G will take the lead on MGP AOCs under the LSRP program. The RAR Determination date excludes MGP-related AOCs.
	Site 135 North (Portion of 51-99 Pacific) (PPG)	PPG Owned	2/23/2016	5/25/2016	7/29/2016	1/31/2018		
GA Group Site 135 South	Site 135 South (Remainder of 51-99 Pacific) (PPG)	PPG Owned	3/16/2016	8/23/2016 (See Comments)	12/29/2016 (See Comments)	1/31/2018	October 2019	Finalization of the Soils RAR for the Site was delayed as a result of continued discussions among the JCO Stakeholders regarding the approach for closing out the MGP AOCs. It was agreed that PSE&G will take the lead on MGP AOCs under the LSRP program. While it was determined that MGP-related contaminants have not emanated from Site 114 onto Site 135, they had been determined to have emanated from Site 114 onto Site 133 East. Since Site 133 East and Site 135 were combined into a single RAR, the delay related to Site 133 East also impacted the schedule for the Site 135 South RAR Determination.
GA Group Phase 5 Off Site Properties	Halsted Corporation (78 Halladay St) (PPG)	PPG Owned	5/7/2018	8/10/2018 (See Comments)	8/24/2018 (See Comments)	10/4/2018 (See Comments)	December 2021 (See Comments)	Excavation, backfilling, and restoration of this site have been completed with the exception of:  (i) Residual impacted soils along the eastern boundary of the site, which will remain in order to protect building structures located on adjacent properties; remedial excavation of this eastern area will be deferred pending redevelopment of the adjacent properties, and  (ii) Residual impacted soils along the western boundary of the site which will be addressed concurrently with the Halladay Street North remediation.  The RAR for the Halsted site will be finalized upon completion of the excavation and backfilling of the impacted soils that remain on the western boundary. Chromium impacts that cannot be removed along the eastern boundary of the site will be addressed via a restricted use remedy.  It was agreed that PSE&G will take the lead on MGP AOCs under the LSRP program. The RAR Determination date excludes MGP-related AOCs.  This property was not part of NJDEP's March 30, 2017 capillary break determination letter or the NJDEP-approved December 2017 Capillary Break Design Report. Therefore, a separate determination must be made by the Department as to the need for a capillary break at this Site.
	Forrest Street Properties 108 Forrest St (Caragliano)	Access complete	3/27/2017	7/19/2017	8/9/2017	5/2/2018	October 2019	PPG, NJDEP and the property owner reached a conceptual understanding regarding a remedial approach for 108 Forrest Street that called for the excavation and backfilling of impacted soils for the majority of the property, and a restricted use remedy adjacent to the 100 Forrest Street building where excavation was prohibited to avoid structural damage to the building. Excavation and backfilling of the agreed upon area was completed and engineering controls consistent with the property's current non-residential use were installed to address remaining impacts adjacent to the 100 Forrest Street building. PPG will conduct remedial excavation of the remaining impacts prior to the property's future residential use. The timing of any redevelopment of the property is unknown and outside of the scope of this Master Schedule.  It was agreed that PSE&G will take the lead on MGP AOCs under the LSRP program. The RAR Determination date excludes MGP-related AOCs.

**Master Schedule for the NJ PPG Chrome Remediation Sites**

**(Exhibit 2/3)**

**Revision Date: July 31, 2019**

**SOILS - GARFIELD AVENUE SITES**

Group/Phase or Site (See Figure 1 attached)	Property Description (Owner) (See Figure 2 attached)	Access/Road Closure Plan	Excavation Start Actual OR Required	Excavation Complete Actual OR Required	Backfill Complete Actual OR Required	Restoration Complete Actual OR Required	RAR Determination	Comments
GA Group Phase 5 Off Site Properties (continued)	Forrest Street Properties 84, 86-90, and 98-100 Forrest St (Caragliano)	Access complete	See Comments	See Comments	See Comments	See Comments	See Comments	In March 2019, PPG submitted a RAWP to memorialize a restricted use remedy for these properties taking into account the properties' current non-residential use and impacts that remain under and adjacent to the buildings. PPG will propose schedule milestones for implementation of the RAWP within three months of NJDEP approval of and property owner consent to the RAWP; this new schedule may be included in the next update to the Master Schedule. PPG will conduct remedial excavation of the impacts that remain under and adjacent to the buildings in conjunction with the properties' future residential development. The timing of any redevelopment of the property is unknown and outside of the scope of this Master Schedule. It was agreed that PSE&G will take the lead on MGP AOCs under the LSRP program. The RAR Determination date excludes MGP-related AOCs.
	Al Smith Moving (33 Pacific Avenue) (NJEDA c/o Al Smith Moving)	Access Complete	8/16/2017	1/8/2018	1/26/2018	2/15/2018	5/28/2019	All CCPW has been excavated and the Site restored. An RAR Determination letter for soils was issued on 5/28/2019.
GA Group Phase 4 Roadways	Carteret Avenue (Jersey City)	See Comments	6/3/2019	March 2020	April 2020	May 2020	July 2021	Carteret Avenue area/phase includes the Carteret Avenue roadway from the intersection with Garfield Avenue through the intersection with Pacific Avenue. Remediation of this area/phase is made more difficult by the presence of a 96" combined sewer pipe that runs the full length of this area/phase. Following the remediation of this roadway, the JCMUA intends to replace a portion of the 96" sewer pipe and to install a liner in portions of the pipe. The portion of Carteret Avenue from the intersection with Garfield Avenue to approximately 100 feet beyond the intersection with Halladay Street is closed. Large portions of this roadway will remain closed during the remediation of this roadway by PPG and the subsequent sewer pipe work to be performed by the JCMUA. PPG, the City and the JCMUA executed a Memorandum of Understanding in January 2019 with respect to the planning for the remediation of this roadway and the sewer pipe work. It was agreed that PSE&G will take the lead on MGP AOCs under the LSRP program. The RAR Determination date excludes MGP-related AOCs. This roadway was not part of NJDEP's March 30, 2017 capillary break determination letter or the NJDEP-approved December 2017 Capillary Break Design Report. Therefore, a separate determination must be made by the Department prior to Restoration Complete as to the need for a capillary break at this Site.
	Halladay Street North (Jersey City)	See Comments	March 2020	July 2020	September 2020	October 2020	December 2021	PPG and JCMUA agreed to permanently reroute the sewer flow in a 30" sewer line that exists in this roadway and abandon a portion of that sewer line, which will enable PPG to have unfettered access to conduct the excavation work in this roadway (i.e., portions of the roadway located between Forrest Street and Carteret Avenue). The JCMUA is anticipating completion of the sewer rerouting by September 2019. When remedial action is implemented in Halladay Street North, residual contamination on the western boundary of the Halsted Corporation site will be addressed. It was agreed that PSE&G will take the lead on MGP AOCs under the LSRP program. The RAR Determination date excludes MGP-related AOCs. This roadway was not part of NJDEP's March 30, 2017 capillary break determination letter or the NJDEP-approved December 2017 Capillary Break Design Report. Therefore, a separate determination must be made by the Department prior to Restoration Complete as to the need for a capillary break at this Site.

**Master Schedule for the NJ PPG Chrome Remediation Sites**

**(Exhibit 2/3)**

**Revision Date: July 31, 2019**

**SOILS - GARFIELD AVENUE SITES**

Group/Phase or Site (See Figure 1 attached)	Property Description (Owner) (See Figure 2 attached)	Access/Road Closure Plan	Excavation Start Actual OR Required	Excavation Complete Actual OR Required	Backfill Complete Actual OR Required	Restoration Complete Actual OR Required	RAR Determination	Comments
GA Group Phase 4 Roadways (continued)	Forrest Street (Jersey City)	See Comments	3/27/2017	8/4/2017	9/1/2017	6/27/2018	October 2019	<p>The Principals agreed that Forrest Street and Forrest Street Properties shall be considered one combined site for the purpose of the Excavation Start milestone set forth herein.</p> <p>PPG, the City, NJDEP and the adjacent Forrest Street property owner reached a conceptual understanding regarding a remedial approach for Forrest Street that called for the excavation and backfilling of impacted soils for a portion of this roadway and a restricted use remedy adjacent to the buildings located on the Forrest Street Properties where excavation was prohibited so as to avoid structural damage to the buildings. Excavation and backfilling of the agreed upon area was completed and engineering controls were installed to address remaining impacts in the roadway adjacent to the Forrest Street Properties buildings. PPG maintains responsibility for addressing remaining impacted soils whenever utility work beneath the Forrest Street roadway is necessary. PPG will conduct remedial excavation of the remaining impacts in the roadway in conjunction with the Forrest Street Properties' future residential development. The timing of any redevelopment of the Forrest Street Properties is unknown and outside of the scope of this Master Schedule.</p> <p>It was agreed that PSE&amp;G will take the lead on MGP AOCs under the LSRP program. The RAR Determination date excludes MGP-related AOCs.</p> <p>A portion of this roadway was not part of NJDEP's March 30, 2017 capillary break determination letter or the NJDEP-approved December 2017 Capillary Break Design Report. Therefore, a separate determination must be made by the Department as to the need for a capillary break in those portions of this Site.</p>
	Garfield Avenue (Jersey City)	See Comments	See Comments	See Comments	See Comments	See Comments	October 2020	<p>In consideration of the numerous utilities located in this roadway and traffic issues, the City, PPG and NJDEP agreed upon a restricted use remedy for this roadway that was incorporated into a Remedial Action Work Plan (RAWP). The RAWP calls for, among other things, deferring excavation of shallow impacts until the street is closed/partially closed for street widening work by the City. The RAWP is currently under review by the Parties.</p> <p>PPG, the City and Hampshire are negotiating to address remaining soil impacts in a portion of Site 114 referred to as the "Western Sliver" area by the recordation of an easement (or subdivision) designating a narrow strip of the western boundary of Site 114 (parallel to the eastern boundary of Garfield Avenue), including the Western Sliver area, for perpetual use as a roadway. Establishment of this strip of land as a roadway would mean that it would be addressed by a restricted-use remedial approach. Establishment of this easement area is consistent with the Canal Crossing Redevelopment Plan, which calls for the widening of Garfield Avenue.</p>
	Pacific Avenue/Caven Point Avenue	See Comments	See Comments	See Comments	See Comments	See Comments	See Comments	June 2021

**Master Schedule for the NJ PPG Chrome Remediation Sites**

**(Exhibit 2/3)**

**Revision Date: July 31, 2019**

**SOILS - NON-GARFIELD AVENUE GROUP SITES**

Group/Phase or Site	Property Description (Owner)	Access/Road Closure Plan	Excavation Start Actual OR Required	Excavation Complete Actual OR Required	Backfill Complete Actual OR Required	Restoration Complete Actual OR Required	RAR Determination	Comments
Site 16	45 Linden Ave. East (Etzion)	Access agreement in place	6/16/2014 (See Comments)	November 2020	January 2021	September 2021	December 2022	PPG completed excavation and backfilling of the exterior area of this property in June 2015. PPG and the property owner are in mediation with the Site Administrator concerning the remedy for the impacts under the building structure. Some remediation will be required in the street. That remediation will be performed concurrent with the remediation of the building. PPG will notify the City at least 90 days prior to the date that the street needs to be closed.
Site 63	Baldwin Oil (Nisan 12)	Access agreement in place	4/28/2014	5/19/2015	5/19/2015	6/13/2015	4/27/2017	All CCPW has been excavated and the Site has been restored. A Consent Judgment Compliance Letter with respect to soils was issued by NJDEP on January 30, 2018.
Site 65	Burma Road/Morris Pesin Drive (Jersey City)	See Comments	4/28/2014	Not Applicable (See Comments)	Not Applicable (See Comments)	Not Applicable (See Comments)	5/31/2019	PPG, the City, JCMUA and NJDEP entered into a Settlement Agreement dated January 9, 2018 with respect to this site. Pursuant to the Settlement Agreement, the remedy for this site consists of institutional and engineering controls. An RAR Determination letter was issued on 5/31/19. A Remedial Action Permit is pending.
Site 107	Fashionland (Site 107 – Ancam, LLC, aka EMI)	107 - Access agreement in place	6/13/2018 (See Comments)	November 2019	December 2019	December 2019	March 2021	Milestones have been extended beyond those identified in the last version of this Master Schedule (January 24, 2019) due to the remedial excavation extending beyond the previously-anticipated limits.
Conrail Right-of-Way (AOC Adjacent to Site 107 and Site 108)	Conrail Right-of-Way	See Comments	6/13/2018 (See Comments)	See Comments	See Comments	See Comments	See Comments	A restricted-use remedy is anticipated for the Conrail property adjacent to Site 107 and Site 108 based on the recent discovery of CCPW along the limits of excavation established to protect the rail infrastructure. As a result, Conrail property will be addressed as a separate AOC from the remainder of Site 107 and Site 108 soils. Separating the Conrail property into a separate AOC will allow the RAR Determination date for Site 107 and Site 108 soils to be achieved independent of the Conrail remedy RAR Determination. PPG and Conrail will negotiate access for additional work in the right-of-way.
Site 108	Albanil Dyestuff (Site 108 - American Self Storage Liberte, LLC)	See Comments	6/13/2018 (See Comments)	TBD (See Comments)	TBD (See Comments)	TBD (See Comments)	TBD (See Comments)	The approved Remedial Investigation Report for Site 108 had indicated that the “hotspot” contaminated area on Site 108 was presumed to have emanated from Site 107, and required that remedial action at Site 108 would be performed as part of the Site 107 remedial action. Excavation at Site 108 was more extensive than had been anticipated. PPG is currently reevaluating the anticipated remedial limits and is in discussions with the property owner with respect to a scope of work, the timing of implementation of the work and arrangements for access.
Site 156	Metro Towers (ALMA)	Access agreement in place	3/18/2013	5/23/2014	5/30/2014	6/30/2014	Soils Area of Concern: 10/12/2018	A Consent Judgment Compliance Letter for the soils AOC (other than the footprint of the Boiler Room) and the groundwater AOC was issued on 6/28/2019.
							Boiler Room: See Comments	The Boiler Room (AOC #3) remedial action (i.e., installation of a floor coating to act as an engineering control) has been postponed, at the property owner’s request, while the property owner completes electrical work in the Boiler Room. The remedial action will resume upon authorization to proceed from the property owner. An RAR Determination Date for the Boiler Room will be established at that time.
Site 174	Dennis Collins Park (City of Bayonne)	Access agreement (See Comments)	4/8/2013	9/30/2016	9/30/2016	9/30/2016 (See Comments)	September 2020	PPG completed focused excavation, backfilling, and restoration of a portion of the Park in September 2016. PPG conducts weekly inspections of the Park, which will continue until the final remedy is installed.  On June 6, 2019, PPG and the City of Bayonne entered into a Memorandum of Understanding (MOU) setting forth the parties’ understandings concerning the coordination of the installation of a 2 ft. clean soil cap and other required engineering controls for the remediation of soils with the City’s redevelopment of the Park. The existing Access Agreement between PPG and the City of Bayonne has been amended to allow PPG continuing access to the Site to complete the remediation of CCPW and any future maintenance and monitoring of engineering controls that is required. PPG, the City of Bayonne, and Green Acres are negotiating an access agreement that incorporates Green Acres requirements for implementation of the final remedy. That Agreement is expected to be effective from October 2019 to April 2022.  The RAR Determination milestone assumes capping installation starts on or before October 2019. Commencement of the capping work at the Park awaits approval by NJDEP of a waterfront development permit application for installation of an engineering control along the shoreline of the Kill Van Kull and approval by the Army Corps of Engineers of a USACOE Nationwide General Permit 38. That shoreline work must be completed in conjunction with the capping of the Park.

**Master Schedule for the NJ PPG Chrome Remediation Sites**

**(Exhibit 2/3)**

**Revision Date: July 31, 2019**

**SOILS – NON-GARFIELD AVENUE SITES**

Site 186	Garfield Avenue #1	Access no longer required; Remediation Complete	8/19/2013	11/1/2013	11/1/2013	11/20/2013	4/16/2014	All CCPW has been excavated and the Site restored. A Consent Judgment Compliance Letter was issued July 15, 2015.
457 Communipaw	457 Communipaw Right-of-Way (285 Lincoln Avenue, LLC)	See Comments	TBD	TBD	TBD	TBD	TBD	The portion of this area in the right-of-way has been fully remediated by PPG. It was determined, however, that CCPW impacts extend onto 457 Communipaw Avenue (privately owned) and several parcels owned by JCRA. A site investigation was performed in 2017 at 457 Communipaw Avenue. PPG submitted a PA/SI/RIWP for this property in February 2018. The RI work at this site began in March 2019 and is ongoing. Access agreements with affected property owners have expired and are currently being negotiated.

**Master Schedule for the NJ PPG Chrome Remediation Sites**

**(Exhibit 2/3)**

**Revision Date: July 31, 2019**

**GROUNDWATER**

GA GROUP GROUNDWATER MILESTONES							
Group/Phase or Site	Property Description (Owner)	IRM Start	IRM Performance Monitoring Complete	Remedial Investigation Report Submitted	Remedial Action Work Plan Submitted	Remedial Action Report Submitted	Comments
GW IRM Phase I	Site 114 (JCRA/Hampshire)	12/29/2017	See Comments	N/A	N/A	N/A	The IRM was designed to extract ground water from the areas of highest Cr concentration in the northern portion of Site 114 and make use of the treated water to support bio-precipitation in the southern portion of Site 114. For more detail, see "Groundwater Interim Remedial Measure: Phase I Design and Permit-by-Rule Authorization Request" dated June 2017. The IRM Phase I activities also include active remediation within the shallow zone groundwater to address localized exceedances of the groundwater quality standards. Phase I of the IRM called for approximately one year of active treatment (although it is still in operation) and up to two years of performance monitoring after the Phase I active treatment is complete. The JCO Parties have agreed to ongoing dialogue and collaboration around IRM performance that may result in a revisiting of the post-remediation monitoring timeframes. Quarterly reporting on the progress of the IRM has been provided by PPG.
GW IRM Phase II	Site 114 (JCRA/Hampshire)	December 2019	December 2022	N/A	N/A	N/A	Conceptually, Phase II of the IRM will implement bio-precipitation in the intermediate and deep water-bearing zones, with the same considerations as noted above for Phase I. For more detail, see "Groundwater Interim Remedial Measure: Phase II Design and Permit-by-Rule Authorization Request" dated February 2019.
GW IRM Phase III	South of Carteret (PPG & JCRA)	December 2020	December 2023	N/A	N/A	N/A	Phase III is contingent on PPG Management approval. Conceptually, Phase III of the IRM will address the area south of Carteret Avenue, with the same considerations as noted above for Phase I.
IRM Phase IV or RAWP	Other Adjacent Properties	TBD	TBD	N/A	N/A	N/A	Phase IV (if warranted) is contingent on PPG Management approval. Adjacent properties may include but are not limited to roadways adjacent to the GAG Sites (i.e., Forrest Street, Halladay Street, Carteret Avenue and Garfield Avenue), the Forrest Street Properties, the former Halsted Corporation property and the Ten West Apparel property. Other properties/roadways may be identified by the ongoing groundwater remedial investigation. Milestone dates will need to be established at an appropriate point in the future based on information generated by the remedial investigation.
Remedial Investigation	Entire Site Group	N/A	N/A	January 2020	N/A	N/A	RIR must address shallow, intermediate, deep and bedrock groundwater zones. The draft GW RIR was submitted to NJDEP in October 2018. PPG plans to resubmit the GW RIR in November 2019. Access has been obtained for many of the properties included in the scope of the remedial investigation. However, as full delineation is required, access may be required to other properties. Access to these other properties will need to be obtained at a future date as needed and could impact the dates listed.
Remedial Action Work Plan	Entire Site Group	N/A	N/A	N/A	May 2021	N/A	PPG may submit the RAWP in advance of the date presented herein if sufficient information is obtained during IRM Phases I and/or II. Areas with soil remediated after submittal of the groundwater RAWP can be addressed through addenda to the groundwater RAWP as an alternate approach.
Remedial Action Report	Entire Site Group	N/A	N/A	N/A	N/A	November 2023	Areas with groundwater remediated after submittal of the groundwater RAR can be addressed through addenda to the groundwater RAR.
NON-GA GROUP GROUNDWATER MILESTONES							
Site 16	(see non-GAG Soils table)	N/A	N/A	RIR/RAWP Submittal: 4/15/2019		TBD	PPG submitted the draft Groundwater Remedial Investigation Report/Remedial Action Work Plan on April 15, 2019.
Site 63	(see non-GAG Soils table)	N/A	N/A	RIR/RAWP Submittal: 5/13/2019 (See Comments)		TBD	PPG submitted the draft Groundwater Remedial Investigation Report/Remedial Action Work Plan on 5/13/2019.
Site 65	(see non-GAG Soils table)	N/A	N/A	See Comments		See Comments	Pursuant to the settlement agreement entered by PPG, the City, JCMUA and NJDEP, any impacted groundwater at Site 65 will be deemed to have emanated from Site 63. Therefore, no action vis-à-vis groundwater is required for Site 65.
Site 107, Site 108 and Conrail Right-of-Way	(see non-GAG Soils table)	N/A	N/A	RIR/RAWP Submittal: January 2021		TBD	RIR/RAWP submittal Milestone assumes restoration complete is achieved in December 2019.
Site 156	(see non-GAG Soils table)	N/A	N/A	RIR Submittal: 4/16/2018	N/A	None required, See Comments	The GW RIR demonstrated compliance with the GWQS. A Consent Judgment Compliance Letter for the groundwater AOC (AOC #2) was issued on 6/28/2019.

**Master Schedule for the NJ PPG Chrome Remediation Sites**

**(Exhibit 2/3)**

**Revision Date: July 31, 2019**

**GROUNDWATER**

GA GROUP GROUNDWATER MILESTONES							
Group/Phase or Site	Property Description (Owner)	IRM Start	IRM Performance Monitoring Complete	Remedial Investigation Report Submitted	Remedial Action Work Plan Submitted	Remedial Action Report Submitted	Comments
Site 174	(see non-GAG Soils table)	N/A	N/A	RIR/RAWP Submittal: August 2019		TBD	
Site 186	(see non-GAG Soils table)	N/A	N/A	Site 186 Groundwater Remedial Investigation incorporated into GA Group RI		November 2023	Site 186 groundwater investigation/remedial action is considered part of the Garfield Avenue Group groundwater program.

## **Master Schedule for the NJ PPG Chrome Remediation Sites**

**(Exhibit 2/3)**

**Revision Date: July 31, 2019**

### **NOTES**

#### **GENERAL NOTES:**

Redevelopment cannot occur until a capillary break determination has been made and capillary break installation (where required) has been completed.

“JCO” means the Partial Consent Judgment Concerning the PPG Sites entered in the matter captioned New Jersey Department of Environmental Protection, et al. v. Honeywell International, Inc., et al. v. City of Jersey City, et al., Superior Court of New Jersey, Chancery Division, Hudson County, Civil Action No. HUD-C-77-05.

“JCO Stakeholders,” for the purpose of this Master Schedule, means PPG, the City of Jersey City, NJDEP and the Site Administrator (Ronald J. Riccio).

“Consent Judgment Compliance Letter” means a letter issued by the Department pursuant to that certain Consent Judgment in the matter captioned New Jersey Department of Environmental Protection, et al. v. Honeywell International Inc., et al., Docket No C-77-05, Superior Court of New Jersey, Chancery Division, Hudson County (filed September 7, 2011). The Consent Judgment Compliance Letter is the Department’s equivalent of a No Further Action letter that is issued after all appropriate remediation documents have been finalized, an RAR Determination has been made, and after the issuance by the Department of any required remedial action permits with respect to the applicable media and areas of concern.

#### **SOILS NOTES:**

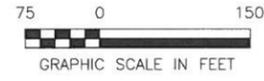
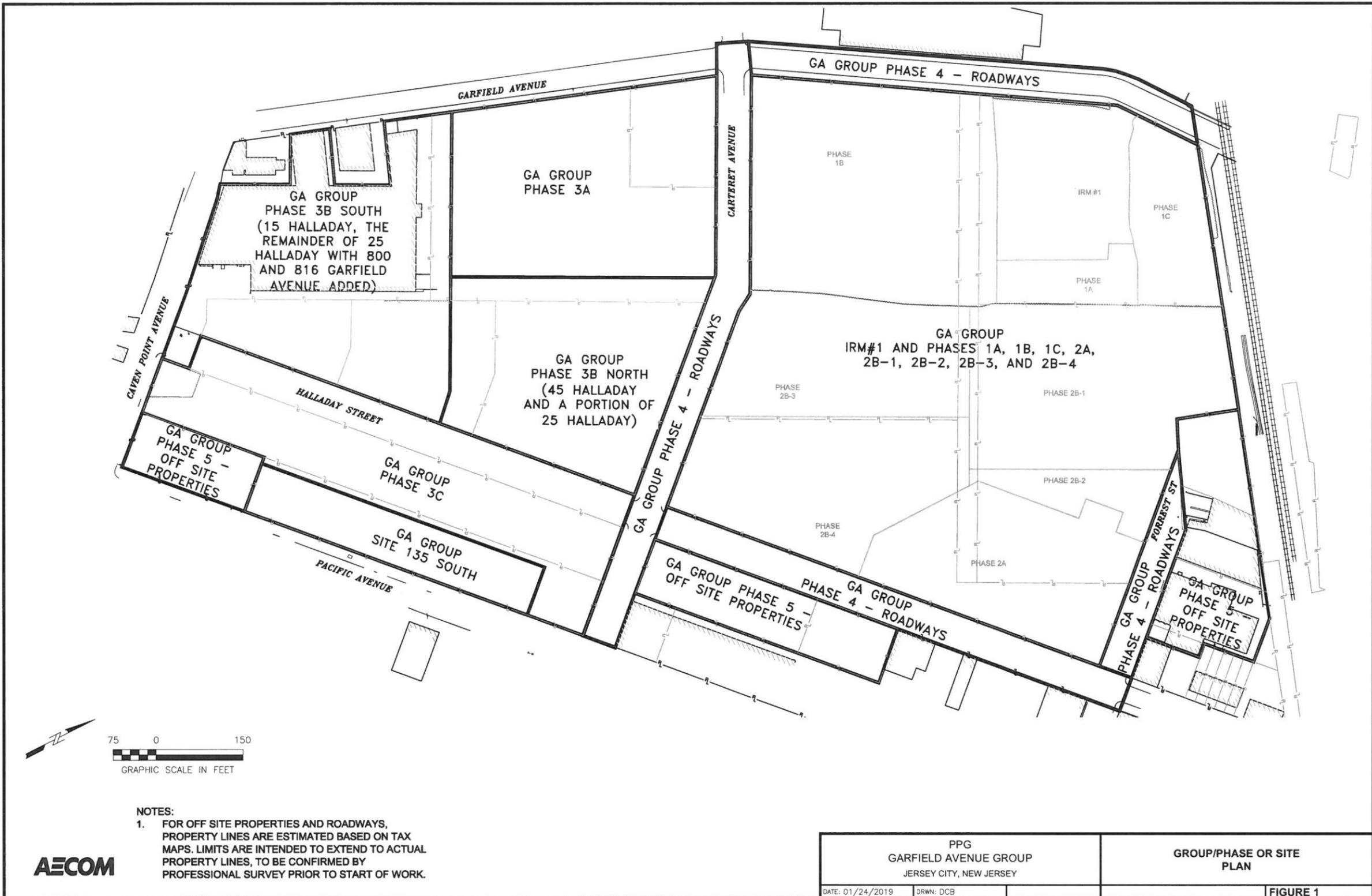
- 1) Green shading indicates that milestones have been attained.
- 2) “Excavation Start” means access has been gained, building demolition and shoring installation, if required, have been completed, there are no known impediments to proceeding with excavation and excavation has actually commenced.
- 3) For Garfield Avenue Group Sites, PPG is currently addressing groundwater treatment plant capacity issues and permitting limitations.
- 4) For Garfield Avenue Group Sites, “Backfill Complete” means backfill is brought to elevations approved by NJDEP.
- 5) For the purpose of this Master Schedule, “restoration” is defined as final remediation grading in accordance with an NJDEP-approved Restoration Technical Execution Plan or other NJDEP-approved document identifying restoration requirements, and a capillary break has been installed if required. In-kind replacement of existing infrastructure (i.e., pavement and utilities) is covered under the PPG/Jersey City Infrastructure Settlement Agreement, which has been agreed to in principle by all Parties.
- 6) Restoration within specific areas under/around infrastructure necessary to support on-going remediation may be delayed if such a delay is acceptable to the Department and property owners.
- 7) For the purpose of this Master Schedule, “RAR Determination” means that the Department will determine whether the Remedial Action Report (RAR) meets the requirements of applicable Department regulations and guidance. The Department will determine whether the milestone identified in the Exhibit is achieved assuming: (i) the RAR Figures/Tables have been submitted by PPG and reviewed/approved by the Department prior to complete RAR submittal, and (ii) the initial submittal of the complete RAR (i.e., text plus figures, tables and other Department-required information) is received 26 weeks prior to the RAR Determination milestone. (The referenced 26 week time period assumes 12 weeks for the Department/Weston and the City of Jersey City to provide comments to the initial complete RAR submittal, 7 weeks thereafter for PPG to review and incorporate such comments and submit the final version of the full RAR, and 7 weeks thereafter for the Department to make the RAR Determination).
- 8) This version of the Master Schedule has combined “Exhibit 2” and “Exhibit 3” from the version of the Master Schedule dated October 13, 2015. The term Exhibits 2/3 is used here because prior orders entered by the court in NJDEP, et al. v. Honeywell International, Inc., et al. reference those exhibits as exhibits to the Master Schedule, which Master Schedule remains in effect as modified by these changes to Exhibits 2 and 3.
- 9) NJ Transit Right-of-Way (ROW): CCPW located beneath this ROW will be addressed concurrent with Site 199, as part of remediation requirements specified in the 2011 Consent Order (Orphan Sites Agreement).

#### **GROUNDWATER NOTES:**

- 1) For purposes of this schedule, the Garfield Avenue Group Access date is assumed to be March 2017 and would continue without interruption although litigation between JCRA and PPG is ongoing for JCRA owned properties.
- 2) “N/A” means not applicable

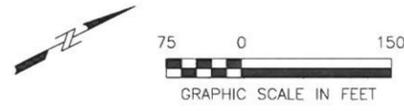
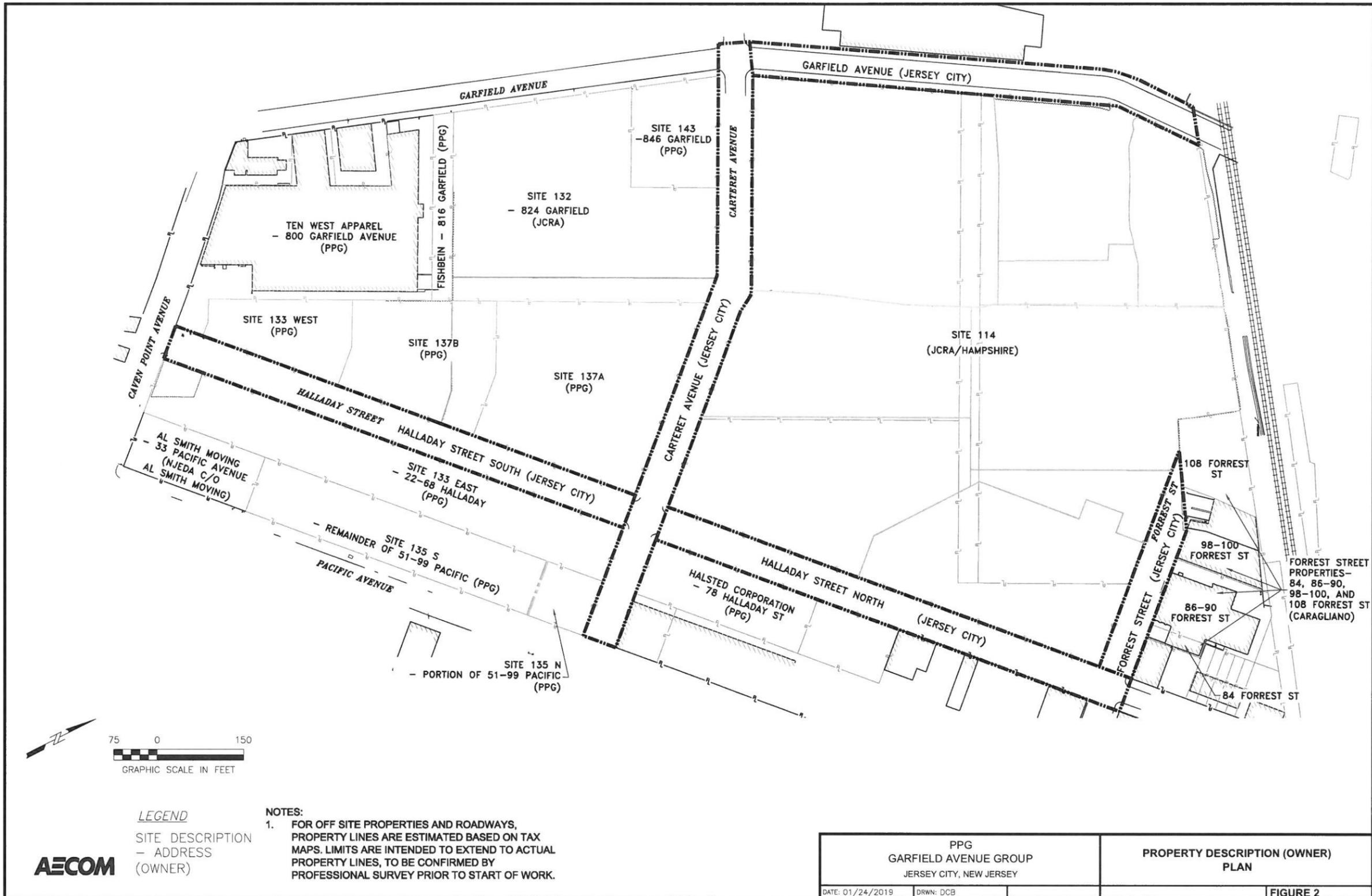
**FIGURES 1 and 2 ATTACHED**

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 User: Amy.Krayer Plotted: Jan 24, 2019 - 9:53am  
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PPG GARFIELD AVENUE GROUP JERSEY CITY, NEW JERSEY		GROUP/PHASE OR SITE PLAN
DATE: 01/24/2019	DRWN: DCB	FIGURE 1

Piscataway on uspsw2\vp001\Data\_uspsw2\vp001\Environment\U  
 User: Amy Krayner Plotted: Jan 24, 2019 - 9:54am  
 File: P:\Jobs\Rem\_Eng\Project Files\PPG Industries\Garfield Avenue\30% Design\CADD\MEETING FIGURES\2016-07-28 GAG Vicinity Ref Figure 2.dwg Layout: FIGURE 2



**LEGEND**  
 SITE DESCRIPTION  
 - ADDRESS  
 (OWNER)

**NOTES:**  
 1. FOR OFF SITE PROPERTIES AND ROADWAYS, PROPERTY LINES ARE ESTIMATED BASED ON TAX MAPS. LIMITS ARE INTENDED TO EXTEND TO ACTUAL PROPERTY LINES, TO BE CONFIRMED BY PROFESSIONAL SURVEY PRIOR TO START OF WORK.

PPG GARFIELD AVENUE GROUP JERSEY CITY, NEW JERSEY		PROPERTY DESCRIPTION (OWNER) PLAN
DATE: 01/24/2019	DRWN: DCB	FIGURE 2



440 College Park Drive  
Monroeville, PA 15146 USA  
T: 724.325.5070  
M: 412.235.8881  
E: [overmyer@ppg.com](mailto:overmyer@ppg.com)  
ppg.com

**Jody Overmyer**  
Remediation Project Engineer

July 22, 2019

Ronald Riccio (*Via Email [rriccio@mdmc-law.com](mailto:rriccio@mdmc-law.com)*)  
McElroy, Deutsch, Mulvaney & Carpenter, LLP  
One Hovchild Plaza  
4000 Route 66  
Tinton Falls, New Jersey 07753

Re: PPG New Jersey Chrome  
1Q19 Employment Report

Dear Mr. Riccio:

This report describes PPG's progress on the contracting and employment goals described in the Partial Consent Judgment filed on June 26, 2009 in compliance with the requirements of Paragraph 60 of the Order.

During the first quarter of 2019, 11 firms provided services, including environmental consultants, for on-site activities directly related to investigation and remediation of PPG's chromium sites. Two of these firms (ENTACT and Securitas) maintain a business presence in Jersey City. Note that ENTACT opened a Jersey City office January 2, 2018; ENTACT hours prior to this date do not count in the firms with operations in Jersey City total.

To date, firms with operations in Jersey City have provided 28.1% of the manpower employed on the project. Jersey City residents accounted for a total of 2,409 manhours or 19.7% of the manpower used on the project during the first quarter, and 268,018 manhours or 30.2% of the manpower used for the project to date. The calculation of progress toward the local hiring goal includes all on-site labor except consulting services and over-the-road truck drivers, as was previously agreed to by the Local Employment Goals Work Group.

Sincerely,

A handwritten signature in black ink that reads 'Jody Overmyer' followed by a small 'es' at the end.

Jody Overmyer

Ecc:

P. Amin  
P. Baker  
H. Bartges  
N. Colson  
D. Doyle  
R. Engel

S. Faeth  
R. Feinberg  
C. Fiore  
W. Howitz  
J. Lagrotteria  
D. Laguzza

J. Ray  
D. Spader  
N. Strasser  
M. Terril  
J. Worden

**PPG**  
**New Jersey Chrome Project**  
Garfield Avenue Group Sites  
Q1 2019 Local Employment Report  
July 22, 2019

	Borbas Surveying	ENTACT	ProAct	Scholes Electric	Securitas	Totals
January	0	176	0	0	552	728
	32	880	897	48	864	2,721
February	0	504	0		448	952
	8	2,330	705		672	3,715
March	0	672	0		482	1,154
	48	3,108	757		743	4,656
April						0
						0
May						0
						0
June						0
						0
July						0
						0
August						0
						0
September						0
						0
October						0
						0
November						0
						0
December						0
						0
<b>Totals:</b>	0	1,352	0	0	1,482	2,834
	88	6,318	2,358	48	2,279	11,091

Note: Jersey City Contractors in Red

Project to Date (All Sites)	Jersey City MH's	Total MH's	% Jersey City Residents
2009:	1,875	5,581	33.6%
2010:	11,808	30,181	39.1%
2011:	19,449	58,741	33.1%
2012:	18,685	73,753	25.3%
2013:	39,546	165,638	23.9%
2014:	62,951	204,031	30.9%
2015:	35,784	103,123	34.7%
2016:	25,046	64,783	38.7%
2017:	21,448	70,307	30.5%
2018:	25,378	86,644	29.3%
2019:	6,049	23,789	25.4%
<b>Project Totals:</b>	<b>268,018</b>	<b>886,571</b>	<b>30.2%</b>

**PPG**  
**New Jersey Chrome Project**  
 Non-Garfield Avenue Group Sites  
 Q1 2019 Local Employment Report  
 July 22, 2019

	Site 107			Totals
	Cambridge Security	Cascade	ENTACT	
January	447		488	935
	672		3,578	4,250
February	718		480	1,198
	840		3,306	4,146
March	578	0	504	1,082
	672	16	3,614	4,302
April				0
				0
May				0
				0
June				0
				0
July				0
				0
August				0
				0
September				0
				0
October				0
				0
November				0
				0
December				0
				0
<b>Totals:</b>	1,743	0	1,472	3,215
	2,184	16	10,498	12,698

**Note: Jersey City Contractors in Red**

**RONALD J. RICCIO**  
SITE ADMINISTRATOR

Direct Dial: 201-874-4581  
Email: [riccio@mdmc-law.com](mailto:riccio@mdmc-law.com)

McElroy, Deutsch, Mulvaney & Carpenter  
One Hovchild Plaza  
4000 Route #66, 4<sup>th</sup> Floor  
Tinton Falls, New Jersey 07753  
Tel. 732-733-6200  
Fax 732-922-2702

May 30, 2019

**VIA EMAIL**

Alison Cucco, Chair  
Jersey City Environmental Commission  
575 State Route #440  
Jersey City, New Jersey 07305

Dear Ms. Cucco:

I am pleased to submit this letter as a follow-up to my April 16, 2019 presentation before the Commission at which time the Commission requested additional information concerning four topics. In preparing this letter I have relied upon input from Weston Solutions, Inc. (“Weston”). Weston is my Technical Consultant, appointed pursuant to an Order of the Superior Court of New Jersey, Hudson County, entered in 2009. Representatives of the City of Jersey City, PPG and the New Jersey Department of Environmental Protection (“NJDEP”) also assisted in the preparation of this letter.

1. Status of the Blood Monitoring Study

At the April 16 meeting, questions were asked by members of the public and the Commission regarding the status of the blood monitoring study (“Study”) conducted between 2010-2016 by the Environmental and Occupational Health Sciences Institute at the Rutgers School of Public Health (“EOHSI”). EOHSI was originally contracted by my predecessor, Site Administrator Michael McCabe, in June 2010 to perform the Study in connection with the cleanup of the PPG chrome sites. Participation in the program was voluntary. Upon my appointment as Site Administrator in January, 2016, I renewed the contract with EOHSI so that the Study could be continued. The results of the Study were summarized in a report by EOHSI dated December 6, 2016, entitled “Results of the Blood Monitoring Program at the Garfield Avenue Chromium (VI) Remediation Sites” (the “EOHSI Report”).<sup>1</sup>

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<sup>1</sup>The EOHSI Report can be found on the Chromium Cleanup Partnership web site at [www.chromiumcleanup.com](http://www.chromiumcleanup.com).

Pursuant to the Study, the first blood samples were collected in July, 2010 by EOHSI from community residents who, prior to, and at that time of the blood draw, resided in a defined Study Area located in proximity to the Garfield Avenue Site<sup>2</sup>. The Study Area consisted of the area from the Garfield Avenue Site west to Ocean Avenue; south to Bayview Avenue and north to Bramhall Avenue. Blood samples were then collected annually by EOHSI up to and including 2016. The samples were analyzed by an independent laboratory.

There were originally 42 persons who participated at the outset of the Study. During the period from the initial sampling in 2010 until the seventh and final annual round of sampling in 2016, the number of volunteers declined from 42 to 28. A total of 21 persons participated in all of seven rounds of sampling.

It is significant that the initial round of blood sampling was conducted in June/July of 2010, before the start of remediation activities at the GAG Sites<sup>3</sup>. All of the 2010 blood sample results were below the 2.0 micrograms per liter ( $\mu\text{g/L}$ ) limit of detection of the analytical method being used by the laboratory at that time. (2.0 micrograms per liter is equivalent to 2 parts per billion). Results from the remaining six rounds of sampling, commencing in February/March 2011 (after the excavation activities had commenced) through June/July 2016 did not evidence an increase in the blood chromium levels of the participants, despite the fact that PPG dug up and hauled away approximately 1 million tons of chromium contaminated soil and debris during the Study period.

The EOHSI Report concluded that the protective measures implemented at the cleanup sites were effective. Those protective measures included and continue to include the following:

- Setting stringent limits on airborne dust and chromium;
- Monitoring air quality 24/7;
- Water misting work areas to suppress dust;
- Spraying surfaces with dust suppression materials;
- Pressure-washing trucks in a protected area before exiting the site; and
- Covering open excavations and stockpiles when not being worked.

The original program director of the Study was Dr. Paul J. Liroy, PhD, a preeminent scientist specializing in human exposure to airborne toxic pollutants. He was one of the key scientists who examined health impacts on first responders and workers in the wake of the World Trade Center 9/11 attacks. He, unfortunately, died in 2015. He was replaced by his colleague, Dr. Robert Laumbach, M.D., Assistant Professor, Department of Environmental and

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<sup>2</sup> The “Garfield Avenue Site” generally refers to the former chrome production facility located at and/or near 880 Garfield Avenue, Jersey City, Hudson County, New Jersey. This letter may refer to the Garfield Avenue Site or the “Garfield Avenue Group of Sites” or the “GAG Sites,” which is the group of sites in proximity to the Garfield Avenue Site, consisting of sites east of Garfield Avenue, south of the Hudson-Berge Light Rail track (NJ Transit line), west of Pacific Avenue and north of Caven Point Avenue.

<sup>3</sup> See footnote 2 for a definition of the “GAG Sites.”

Occupational Health, Rutgers School of Public Health. Dr. Laumbach, the author of the EOHSI Report, concluded that the results from the six-year study “support the conclusion that the work practices, dust suppression activities and the air monitoring program for controlling potential exposures to Chromium(VI) during the site remediation activities provided effective protection for residents in the Study Area.”

Based upon the conclusions in the EOHSI Report I recommended in my “Update to the May 2010 Health Exposure Study Recommendation” dated June 2, 2018<sup>4</sup> that “no further health testing activities are planned at this time.” My recommendation was made with input from representatives of NJDEP, the City of Jersey City and PPG.

In the absence of any scientific based reason to resume the Study, and especially in the absence of any request from any of the participants in or not in the Study to do so, I have no plan at this time to resume the Study.

Two members of the public at the Commission’s meeting expressed an interest in having their own medical professionals take samples of their blood to assess chromium levels. It goes without saying that any person is free to have their blood tested by their own medical professionals for any reason whatsoever. Should information be brought to my attention resulting from any such medical examinations indicating a need for further action on my part, I will take such action as may be required.

2. Residential Inspection Program/Concerns About Eminent Domain/Condemnation.

As I explained at the April 16 meeting, a total of 79 property owners were enrolled in the residential inspection program (“Program”) since its inception in 2010. All of the property owners were contacted by PPG and its consultants. Some decided not to participate in the Program; others who did participate had their properties studied, sampled and/or remediated. CCPW<sup>5</sup> was not identified at any of the properties that were inspected. Hexavalent chromium (not CCPW) was identified at 7 sites at levels that exceeded the applicable cleanup criteria. PPG remediated those 7 sites on a voluntary basis even though no CCPW was detected. Because a few years have passed since a request was made by property owners to enroll in the Program, I discontinued it in 2018. However, as stated in my Update report referenced in section 1 of this letter, I am amenable to re-opening the Program on a case-by-case basis, upon a showing of good cause to do so.

At the April 16 meeting a member of the public indicated that she and others did not enroll in the Program (or perhaps enrolled and later decided not to have their properties studied)

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<sup>4</sup> A copy of my Update was supplied to the Commission and can be found on the Chromium Cleanup Partnership web site at [www.chromiumcleanup.com](http://www.chromiumcleanup.com).

<sup>5</sup> Chromate chemical production waste (CCPW) is a by-product generated from the production of sodium dichromate. It was used as construction fill material at many sites in Hudson County. Also known as chromium ore processing residue (COPR), CCPW contains hexavalent chromium.

out of fear of losing their properties to an eminent domain/condemnation proceeding. I had not previously heard of that concern.

Eminent domain or condemnation generally describes the power of a state, municipal or other governmental agency to take private property for public use without providing just compensation. I have consulted with lawyers that practice in the field of condemnation law. None of them thought that the State of New Jersey, City of Jersey City or any other governmental agency could legally attempt to condemn the property of a resident that entered into the Program.

The fact is that 7 properties were remediated under the Program. None of those properties were condemned or “taken” via eminent domain.

### 3. Despite PPG’s Cleanup Efforts, Will Any Hexavalent Chromium That May Be Left in the Ground Present a Risk to Residential Uses at the PPG Chromium Sites.

Concern was expressed at the April 16 meeting about the fact that some hexavalent chromium may remain in soil and groundwater upon the completion of PPG’s cleanup efforts. Questions were raised whether residual hexavalent chromium could present a risk to residential development at the PPG sites.

PPG is conducting the remediation of its chromium sites in accordance with the most stringent requirements established by the NJDEP. The remedies being implemented are protective of human health and the environment. Nevertheless, environmental cleanups of this level of complexity and magnitude generally take a long period of time to complete, and may not necessarily restore a site to “pristine” conditions. Therefore, residual contamination that may remain in soil or groundwater during and after the cleanup process must be managed and monitored to ensure that the remedial measures remain protective of human health and the environment over time. To better illustrate how these measures are being accomplished at the PPG chromium sites, below is an overview of the remediation work done to date, as well as measures to ensure protectiveness over time at the GAG Sites slated for future residential redevelopment in the near future.

#### ***Removal of CCPW Source Material***

The primary source of hexavalent chromium contamination at the PPG chromium sites is CCPW. CCPW includes waste materials known as Chromite Ore Processing Residue (“COPR”) and green-grey mud. Over the years, these waste materials were deposited at the PPG chromium sites as fill material for various uses. The high levels of hexavalent chromium within these waste materials leached over time into the soil and groundwater.

To address the CCPW source material and contaminated soils at the PPG chromium sites, the recommended remedy was full excavation and removal of these materials combined with off-site treatment and disposal. The full excavation approach was the remedial alternative preferred

by the NJDEP and the City of Jersey City. This approach was supported by the community in 2010 before the onset of the remediation. It was also considered to be the most amenable for supporting the planned residential redevelopment at the GAG Sites due to its high level of effectiveness and ability to meet the aggressive remediation timelines set forth by the Master Schedule.<sup>6</sup> The overall goals of this full excavation remedy were as follows:

- Elimination of potential exposure to hexavalent chromium in CCPW source materials due to direct contact or windborne dust;
- Removal of source materials and hexavalent chromium-contaminated soils that adversely affect groundwater quality; and
- Establishing site conditions suitable for future uses of the GAG Sites.

The excavation remedy implemented by PPG must comply with the regulatory requirements set forth by the NJDEP, namely the “20/20 Chromium Policy” (memorandum from Lisa Jackson, Commissioner, February 8, 2007). A requirement of the 20/20 Chromium Policy, among other things, is to remediate hexavalent chromium contamination in soils to the NJDEP’s soil cleanup criterion of 20 parts per million (“ppm”) to a depth of 20 feet below the ground surface. The 20/20 Chromium Policy allows for the remediation to be accomplished by way of excavation or by in-situ treatment of the soils to levels at or below a concentration of 20 ppm, which is the cleanup criterion for hexavalent chromium in soil established by the 20/20 Chromium Policy. The 20/20 Chromium Policy allows for hexavalent chromium levels to remain in soils above 20 ppm so long as these soils are 20 feet below the ground surface.

At the GAG Sites, the CCPW source material and contaminated soils were fully excavated by PPG, as required by the 20/20 Chromium Policy, using conventional earth-moving equipment to varying depths below ground surface as dictated by a number of factors. These factors included: (1) removal of hexavalent chromium in soil above 20 (ppm) in accordance with the 20/20 Chromium Policy, (2) removal of all visible CCPW source material, (3) excavation to a depth at which competent meadow mat is present (typically at 15 feet to 20 feet below ground surface), and (4) excavation of all CCPW source material to a maximum vertical depth limit of 35 feet below ground surface in areas where competent meadow mat is absent. The meadow mat is an organic peat-like layer that acts as a natural barrier to chrome migration. The organic material in the meadow mat also has the capacity to convert hexavalent chromium to trivalent chromium which is the less mobile and non-toxic form of chromium. For these reasons, the meadow mat, if competent and of sufficient thickness, was protected from damage during the excavation activities to the extent practicable due to its beneficial properties.

All excavated areas at the PPG chromium sites, including the GAG Sites, were and continue to be backfilled with material that satisfies NJDEP’s regulatory definition of “clean fill.” In many of the excavation areas, PPG used a material called dense graded aggregate (“DGA”) which was compacted to a level deemed satisfactory for redevelopment purposes. In

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<sup>6</sup> Pursuant to a Partial Consent Judgment Concerning the PPG Sites (JCO) entered by the Superior Court of New Jersey on June 26, 2009, I am authorized as Site Administrator to establish a “Master Schedule” governing the timing of the remediation of the PPG chromium sites.

excavated areas at the GAG Sites where the highest levels of contaminated groundwater existed in the shallow zone, the DGA backfill material was amended or supplemented, prior to emplacement in the excavation, with a non-toxic iron reductant material called FerroBlack®-H. The FerroBlack®-H is a treatment material which helps to convert (i.e., reduce) hexavalent chromium to trivalent chromium. Trivalent chromium is a relatively immobile and non-toxic form of chromium. Once emplaced into the excavation in areas where the water table is higher than the bottom of the excavation, the clean backfill and FerroBlack®-H admixture begins to immediately treat the impacted groundwater. Because the treatment properties of the FerroBlack®-H admixture are long-lasting, the admixture will continue to treat the groundwater over the long term and will protect the clean backfill from becoming re-contaminated by remaining residual groundwater impacts.

### ***Groundwater Remediation***

The deposit of CCPW waste at the PPG chromium sites over a period of decades has contaminated the groundwater at these sites. At the GAG Sites, for study purposes, the groundwater was divided into the following zones: shallow, intermediate, deep, and bedrock.

The shallow groundwater zone typically extends to less than 20 feet deep. The intermediate groundwater zone is typically 20 feet to 40 feet deep. The deep groundwater zone is typically 40 feet deep to up to 100 feet (the top of bedrock).

The shallow zone, which is the zone above the meadow mat layer (if present), was the most highly contaminated groundwater zone at the GAG Sites due to the fact that it was in direct contact with the deposited CCPW waste. The intermediate, deep and bedrock groundwater zones were contaminated primarily through the downward migration of hexavalent chromium that leached from the CCPW source material through areas where the meadow mat layer was not in existence (e.g., in the area of the GAG Sites where the former Morris Canal breached the meadow mat).

The full excavation of CCPW source material and contaminated soils at the GAG Sites, coupled with the amendment of the clean backfill with FerroBlack®-H, has resulted in a significant improvement in shallow zone groundwater quality. In fact, chromium concentrations in most of the shallow groundwater at the GAG Sites are already below the NJDEP's groundwater quality standard of 70 parts per billion ("ppb") for total chromium. It is hoped that all of the shallow groundwater at the GAG Sites will achieve this standard within the next several years. It is worth noting that the groundwater beneath the GAG Sites is not used as a source of drinking water.

At the end of 2017, PPG initiated a groundwater interim remedial measure ("IRM") at one of the GAG Sites (Site 114) for the shallow, intermediate, and deep groundwater zones. The IRM was designed to occur in multiple phases (i.e., Phases I, II, and III). Each phase consists of approximately 1 year of groundwater extraction via pumping (and treated aboveground via an on-site treatment plant) combined with in-situ groundwater treatment via the injection of

treatment agents into the various zones through wells, followed by 2 years of groundwater monitoring to evaluate the effectiveness of the treatment. In the shallow groundwater zone, an emulsified vegetable oil (“EVO”) solution was injected. In the intermediate and deep groundwater zones a combination of groundwater extraction and injection of a water and molasses solution are currently being used. Both the EVO and molasses solutions are food sources which stimulate naturally-occurring microorganism activity to promote the permanent conversion of hexavalent chromium to trivalent chromium. These processes are harmless to the environment. Coupled with the injection of EVO and molasses, the extraction of impacted groundwater from the intermediate and deep zones permanently removes chromium mass from the groundwater.

Phase I is anticipated to be completed by the end of 2020. Phase II is planned for 2019 to 2022, and Phase III for 2020 to 2023. While the IRM is not the final groundwater remedy for the entirety of the GAG Sites, it is actively treating the groundwater in the most highly impacted areas. Information from the groundwater IRM work will be used to develop the design of the final groundwater remedy for the entirety of the GAG Sites by the spring 2021 timeframe. The site-wide groundwater remedy may include a combination of various components, including groundwater extraction, in-situ groundwater treatment, containment barriers and monitored natural attenuation (i.e., the dissipation of chromium through natural processes).

### ***Measures to Ensure Protectiveness for Remaining Impacts***

Essentially all CCPW source materials and contaminated soils containing hexavalent chromium above remedial standards at the PPG chromium sites will be excavated and disposed off-site at secure licensed disposal facilities. However, certain areas exist at the GAG Sites, or in the vicinity of the GAG Sites, which are inaccessible for full excavation and removal of CCPW source material and contaminated soils. Examples of inaccessible areas at the GAG Sites include main roadways such as Garfield Avenue, the Hudson Bergen Light Rail tracks, and nearby properties with active business operations. Full excavation in these areas could compromise sensitive infrastructure such as underground utilities or building structures, and could result in negative impacts to the community. The inaccessible areas will not be used for residential development.

The CCPW impacts within inaccessible areas will be thoroughly investigated to determine the extent of impacts. Measures such as containment systems, protective barriers or in-situ treatment will be evaluated to support the selection of the most highly protective measure for any CCPW that will remain in place. Considerations will be made for the particular effectiveness of a measure in preventing human exposure to the remaining CCPW source material and its ability to prevent any further impacts from the source material to groundwater over time. Additionally, plans may be made to fully remediate the soils consistent with the remedial plans implemented at the rest of the GAG Sites at some time in the future (e.g., if future activities make these areas accessible).

The process of remediating chromium impacts in groundwater may take a significant period of time. While treatment is taking place, in limited areas where chromium concentrations in groundwater still remain above the NJDEP cleanup standard of 70 ppb total chromium under certain conditions, PPG is installing a protective layer above the groundwater table called a capillary break as part of the restoration of the sites.

A capillary break is designed to prevent the upward migration of dissolved hexavalent chromium in groundwater through capillary action (i.e., capillary rise). The 20/20 Chromium Policy requires the use of a capillary break under certain circumstances. The capillary break acts as a barrier to the upward migration of hexavalent chromium from groundwater, through the soil, to the ground surface and building interiors. Installing a capillary break prevents direct human exposure to hexavalent chromium that may be deposited by the evaporation of water on porous surfaces (more commonly referred to as “blooms”). Capillary breaks can either be impermeable or permeable, and can be constructed from various materials such as coarse stone or an impermeable synthetic liner. PPG is using various types of capillary breaks in areas at the GAG Sites as technical circumstances dictate. Prior to the use of these capillary breaks during the design stage, PPG performed comprehensive field pilot testing on different types of capillary break materials that could be used in various situations at the site. This testing involved the collection of data over multiple seasons and changing site conditions, to support the selection of the optimal, and most protective, materials to use in the construction of the capillary breaks.

Assuming the chromium levels in the shallow groundwater still exceed NJDEP’s cleanup standard of 70 ppb for total chromium at the time of commencement of development of the GAG Sites, the developer will have to consider whether any structures that are part of the development could be impacted by the presence of chromium in the groundwater. If so, the developer will need to ensure that any remaining groundwater contamination will not impact occupants of the structures by designing the appropriate protective elements into its construction. The developer will also need to ensure that the construction renders intact all of the protective measures implemented by PPG in accordance with NJDEP requirements. Given the fact that the soils at the GAG Sites have been remediated to the NJDEP hexavalent chromium cleanup criterion of 20 ppm and that the shallow groundwater is presently nearing compliance with the NJDEP groundwater standard of 70 ppb for total chromium, risks to future occupants of any residential structures located at the GAG Sites are not anticipated. Furthermore, the developer has recently informed me that the proposed construction of the buildings at the GAG Sites will be of “slab on grade” construction, with minimal intrusion of the building structure into the subsurface. Such construction will further reduce the likelihood of these structures coming in contact with the remaining residual chromium impacts at the GAG Sites.

4. Will the Public Be Assured that the PPG Chromium Sites Are Monitored in the Future to Prevent Environmental and Public Health Risks.

After the final remedies for the soil and groundwater at the PPG chromium sites are approved and implemented, residual chromium contamination will remain in certain areas as described in Item #3 of this letter. Although the NJDEP prefers complete and permanent removal

or destruction of contamination sources at contaminated sites, certain complete and permanent remedies may be technically infeasible as is the case at the GAG Sites. To ensure protection of human health and the environment over the long term in these cases, NJDEP's rules and regulations require the implementation and maintenance of site-specific engineering controls, institutional controls, soil remedial action permits and groundwater remedial action permits. A brief explanation of each of these particular items is provided below.

### ***Engineering and Institutional Controls***

Engineering controls are physical protective measures that can be used as a component of the final soil or groundwater remedy where residual contaminants remain above NJDEP criteria or standards. They typically consist of physical structures that contain or stabilize contamination to ensure the effectiveness of the remedial action over time by both controlling the potential spread of contamination and preventing human contact with residual contamination. Engineering controls proposed for soil at the GAG Sites include cap containment systems, barrier walls, and other physical measures. Engineering controls that may be proposed as part of the final groundwater remedy at the GAG Sites include capillary breaks, containment through barrier walls, hydraulic control via pumping, and monitoring systems.

Institutional controls (or administrative and legal controls) provide notice to the public that contaminants remain above the NJDEP's remedial standards. For contaminated soils, the institutional controls may take the form of a Deed Notice or a Notice in Lieu of Deed Notice (for roadways), and for groundwater these controls may take the form of a Classification Exception Area ("CEA"), which protects the public by providing notification of the presence of contaminated groundwater. These controls include mechanisms to limit human activities at or near a contaminated site to ensure the protectiveness of the remedial action over time.

### ***Soil and Groundwater Remedial Action Permits***

The use of engineering and institutional controls requires systems and reporting procedures to be in place to ensure long-term monitoring and maintenance of those controls. The ongoing responsibility to monitor and maintain the controls primarily lies with the party responsible for implementing the remedy, but also with the current property owner. Following the final approval by NJDEP of the soil and groundwater remedies for the PPG chromium sites, the NJDEP ensures that the responsible party (i.e., PPG) and the property owner implement ongoing monitoring and maintenance through the use of Soil Remedial Action Permits ("Soil RAP") and/or Groundwater Remedial Action Permits ("Groundwater RAP"). The Soil RAP and Groundwater RAP obligate the permit holders, which will include PPG and the property owner as co-permittee, to perform certain activities until such time that the soil or groundwater contaminants achieve NJDEP's most stringent applicable regulatory criteria or standards.

A Soil RAP is required any time that engineering or institutional controls are developed as a component of a soil remedial action. A Soil RAP requires the responsible party to perform periodic visual inspections of all components of each engineering control implemented relative

to the soil remedy to ensure it continues to operate as designed, repair any shortcomings or issues observed during the inspection process, and certify to the NJDEP that the engineering controls and institutional controls continue to be protective of human health and the environment. For the GAG Sites, for instance, after the soil remedy is finalized and complete, a Soil RAP will require PPG to perform these inspections on an annual basis at a minimum, and provide certifications to the NJDEP every 2 years. These certifications will also include a determination that the deed notice or other institutional controls remain in place and are protective, as required.

A Soil RAP would also require PPG to establish financial assurance for any remedial action that includes an engineering control. The financial assurance mechanism ensures that monies are set aside to pay for monitoring, maintenance, and repair of engineering controls for as long as they are needed (to a maximum of 30 years). In accordance with NJDEP requirements, each financial assurance mechanism must take the form of one of the following: (1) a remediation trust fund agreement, (2) an environmental insurance policy, (3) a line of credit agreement, (4) a letter of credit, or (5) a self-guarantee.

To address any remaining groundwater contamination at the PPG chromium sites, a Groundwater RAP will be required. A Groundwater RAP is required by NJDEP whenever groundwater contamination exceeding the NJDEP's remedial standards remains after the remedial action has been finalized and demonstrated to be protective of human health and the environment. Similar to a Soil RAP, a Groundwater RAP would require PPG to perform periodic monitoring of the remaining groundwater impacts at the PPG chromium sites, as well as any treatment system that may be a component of the ongoing site-wide groundwater remedy. The Groundwater RAP would also require PPG to establish a financial assurance mechanism to pay for the costs associated with ongoing monitoring, maintenance or treatment for the anticipated period of time (to a maximum of 30 years) for the groundwater remedy to achieve NJDEP's applicable remedial standards. The same methods of financial assurance that are acceptable for a Soil RAP would be allowed for Groundwater RAP, except that a self-guarantee is not allowed to document financial assurance under a Groundwater RAP.

Each Groundwater RAP also requires that a CEA be established. A CEA is an administrative control that identifies the boundaries of groundwater impacts and the contaminants which exceed the remedial standards within those boundaries. The boundaries and contaminants associated with each CEA in New Jersey are maintained by the NJDEP in a state-wide database. Like a Soil RAP, a Groundwater RAP requires certification on a 2-year schedule to document that the groundwater remedy continues to be protective of the environment and human health, and that the CEA remains in place as required. In June 2018, as part of the remediation of groundwater at the GAG Sites, PPG established a CEA for the groundwater zones. The CEA will remain in place until such time that all contaminants in groundwater at the GAG Sites are below their respective remediation standards.

If certain changes to a remediation area occur after establishment of the Soil RAP or Groundwater RAP, PPG is required to notify the NJDEP and a permit modification may be needed. For significant changes (e.g., constructing a building on previously vacant land in an

area with a Soil RAP and a deed notice) PPG would also need to modify the Soil RAP and update the deed notice. Minor changes, such as a temporary disruption of an engineering control which is repaired to original condition (e.g., during installation of a lawn sprinkler system) would only require notification to the NJDEP as part of the 2-year protectiveness certification immediately following the temporary disruption.

If, after a period of time, the soil and/or groundwater remedies achieve remedial standards, PPG will document that all applicable remedial standards have been met to the satisfaction of NJDEP. At that time, the deed notice (in the case of soil) or CEA (in the case of groundwater) can be lifted, and the applicable Soil RAP or Groundwater RAP would be terminated.

I hope that this information satisfies the Commission's request for additional information. Should the Commission require any further information concerning any of the topics addressed above, please do not hesitate to contact me. We invite you to post this letter to the Commission's web site, if you desire. I will be posting this letter to the Chromium Cleanup Partnership web site. ([www.chromiumcleanup.com](http://www.chromiumcleanup.com)).

Thank you for your consideration and courtesies.

Sincerely,

*/s/ Ronald J. Riccio*

Ronald J. Riccio  
Site Administrator