

Attachment A

Technical Addendum to the Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)



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Technical Addendum to the Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)

NJDEP Program Interest Number: G000005480

PPG Garfield Avenue Group
Hudson County Chromate Sites
Jersey City, New Jersey

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List of Acronyms/Definitions

The following acronyms and definitions apply to this document:

CCPW	Chromate Chemical Production Waste, a by-product generated from the production of sodium bichromate, including Chromite Ore Processing Residue (COPR), green-gray mud, and fill mixed with COPR or green-gray mud.
chromium (Cr)	An element found in nature that is commonly used in manufacturing activities. Chromium may be present in soil or water as trivalent chromium (Cr ⁺³) and hexavalent chromium (Cr ⁺⁶). Cr ⁺³ is an essential nutrient at trace concentrations. Cr ⁺⁶ can be present in many forms, some of which are carcinogenic at high concentrations. Total chromium, as measured in soil or groundwater, is the sum of Cr ⁺³ and Cr ⁺⁶ .
Cr ⁺⁶	hexavalent chromium
DGA	dense-graded aggregate
FCN	field change notification
FerroBlack [®] -H	FerroBlack [®] -H is a water-based suspension of 7 to 8% ferrous sulfide and 1 to 2% sodium hydrosulfide. The proprietary reagent is manufactured by Redox Solutions, LLC.
FHA	Flood Hazard Area
ft	foot or feet
GA	Garfield Avenue
GWTP	groundwater treatment plant
JCMUA	Jersey City Municipal Utilities Authority
MGP	manufactured gas plant
NJDEP	New Jersey Department of Environmental Protection
NRDCSRS	NJDEP Non-Residential Direct Contact Soil Remediation Standard
PI	Program Interest
PSEG	Public Service Electric and Gas Company
RAWP	Remedial Action Work Plan
RDCSRS	NJDEP Residential Direct Contact Soil Remediation Standard
remediation	Actions to reduce, isolate, or remove contamination with the goal of mitigating impacts to human health and the environment.

soil	Solid material (other than CCPW). Exceptions to this definition are specifically noted in the text.
SRP	Site Remediation Program
the City	The City of Jersey City, New Jersey

1.0 Introduction

On behalf of PPG, AECOM has prepared this Technical Addendum to the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1), Addendum to the Final Remedial Action Work Plan (Soil) Rev. 4, Garfield Avenue Group Sites, Jersey City, Hudson County, New Jersey* (Final Carteret RAWP) (AECOM, 2019a). The Final Carteret RAWP was prepared as an Addendum to the *Final Remedial Action Work Plan (Soil) Rev. 4, Garfield Avenue Group Sites, Jersey City, Hudson County, New Jersey* (GA Group RAWP) (AECOM, 2018a) and presented site-specific details pertaining to the remedial approach to be implemented within Carteret Avenue to create a clean corridor for utility workers in coordination with the City of Jersey City (the City) and the Jersey City Municipal Utilities Authority (JCMUA). This Technical Addendum provides additional technical and design details associated with the implementation of the remedial approach in Carteret Avenue.

Carteret Avenue is part of the Garfield Avenue (GA) Group Sites (Sites 114, 132, 133, 135, 137, and 143, Phase 4 Roadways, and Phase 5 Off-Site Properties), located in Jersey City, New Jersey. The portion of Carteret Avenue between Garfield Avenue and Pacific Avenue is located within Phase 4 Roadways of the GA Group Sites, and is tracked under the New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program (SRP) Program Interest (PI) number G000005480 for Site 114.

Elements of the GA Group RAWP that have not been modified since the submittal of these documents are not resubmitted herein.

2.0 Construction Activities

2.1 Excavation Phasing

The excavation in Carteret Avenue will be conducted in two separate phases. The first zone (Phase 1) excavation will extend from the intersection with Garfield Avenue to the western-limit of the Halladay Street right-of-way (**Figure 2-1**). In Phase 1, the excavation will extend across the entire width of the street. The second phase (Phase 2) excavation will extend from the western-limit of the Halladay Street right-of-way to the eastern limit of the excavation, approximately 20 feet (ft) from the intersection with Pacific Avenue (**Figure 2-2**). In Phase 2, the excavation will extend across the entire width of the street, with the exception of a 15-foot excavation offset adjacent to the One0One Pacific Building. Phasing the excavation in this manner will allow for internal traffic routes to be modified between phases, in an effort to minimize disruption to the Pacific Avenue businesses situated adjacent to Carteret Avenue and to maintain traffic flow in Halladay Street North (the portion of Halladay Street between Carteret Avenue and Forrest Street). Additional details regarding proposed internal traffic routes are provided in **Section 2.6**.

2.2 Excavation Around 96-Inch Combined Sewer

The excavation within each phase of work will be sequenced such that no more than 30 linear ft of the 96-inch combined sewer will be exposed at any one time to reduce the potential for damage to the sewer during excavation dewatering. Dry conditions will be maintained at all times during excavation below the top of the pipe.

For material above the spring-line of the 96-inch combined sewer, excavation within 24 inches of the pipe will be conducted using a mini-excavator outfitted with a rubber bucket. If the excavation needs to extend below the spring-line of the pipe to accommodate removal of source material, a 4-foot horizontal offset from the spring-line of the pipe will be maintained, and then the excavation will slope no steeper than 1.5H:1V as shown in Drawing D-01 - Detail 4 provided in the Final Carteret RAWP.

To prevent damage to the 96-inch combined sewer caused by vehicular traffic, large construction equipment will not be permitted to drive across or park over the pipe at any time unless either: 1) a minimum of 4 ft of backfill is present, or 2) a minimum of 2 ft of backfill is present overlain by a timber mat to distribute the load.

2.3 Backfilling

Open excavation areas will be reviewed and approved by the Engineer (AECOM) for placement of backfill on the same day that the bottom of excavation is inspected and surveyed. Prior to placing backfill, a visual demarcation layer will be installed. Backfill around the 96-inch combined sewer will be placed using the mini-excavator within 4 ft in any direction of the pipe. Compaction of the backfill within 4 feet of the pipe is to be completed with a compactor weighing less than 2 tons.

In areas where excavation is complete and approved for backfill, a minimum height of 6.4 ft of backfill will be maintained above the 96-inch combined sewer to prevent flotation of the pipe in the event of heavy rain.

2.4 48-Inch Combined Sewer Bedding Investigation

Based on data collected to date, there is no indication that Chromate Chemical Production Waste (CCPW)-related impacts are present beneath the 48-inch combined sewer within the footprint of Carteret Avenue. However, given the historical timing of sewer installation compared to the operation of the CCPW plant, there is the possibility that CCPW could have been placed beneath the 48-inch combined sewer during installation of that line. A test pit will be used to investigate the bedding in the pipe at approximately station 8+40 in Carteret Avenue (shown in Figure 5-1B in the Final Carteret RAWP), after the 48-inch combined sewer has been decommissioned by JCMUA. Depending on the timing of the sewer decommissioning, this test pit may be advanced during excavation in Carteret Avenue, or during the excavation of Halladay Street North.

Information gathered during the investigation will be used to determine the approach for addressing CCPW-related impacts beneath the 48-inch combined sewer, if present.

A sewer bedding investigation will also be conducted on the 96-inch sewer line, as discussed in Section 3.3 of the Final Carteret RAWP.

2.5 Stockpiling

Two soil stockpile areas will be prepared and maintained during construction. One stockpile area will be maintained for temporary placement of non-chrome fill material to be re-used beneath the clean corridor excavation in Carteret Avenue as described and in accordance with the technical memorandum entitled, *Carteret Avenue Non-Chrome Fill Soil Re-Use Plan (Revision 2)* (Non-Chrome Fill Soil Re-Use Plan) (AECOM, 2019c). This stockpile area will be located just south of Carteret Avenue in or adjacent to Site 132 (**Figures 2-1** and **2-2**) and will be maintained for the duration of excavation and backfilling activities. Stockpiles within this area will be managed in accordance with the Non-Chrome Fill Soil Re-Use Plan and with the Garfield Avenue Group of Sites Soil and Stockpile Management Plan with site policies and procedures as outlined in Field Change Notification (FCN) SWTEP 3 – Relocation of Stockpile Area, and with the Flood Hazard Area (FHA) Permit requirements.

A second stockpile area will be used for the temporary storage of backfill material and will be maintained near the open excavation to facilitate efficient and timely placement of backfill within the excavation. The location of this stockpile will vary as it will be relocated as the excavation progresses. Management of backfill stockpiles will be conducted in accordance with the Garfield Avenue Group of Sites Soil and Stockpile Management Plan with site policies and procedures as outlined in FCN SWTEP 3 – Relocation of Stockpile Area, and with the FHA Permit requirements.

2.6 Internal Traffic Routes

The proposed internal traffic route plan for Phases 1 and 2 of the excavation in Carteret Avenue is shown on **Figures 2-1** and **2-2**, respectively. The objective of the internal traffic plan is to minimize impacts to the Pacific Avenue businesses and maintain the flow of traffic within Halladay Street northeast of Carteret Avenue. Carteret Avenue (from Garfield Avenue to Pacific Avenue) will be closed to non-site traffic for the duration of construction.

During Phase 1, construction vehicle traffic will enter the site via Pacific Avenue, turning west onto Carteret Avenue (**Figure 2-1**). Upon entering the site, the trucks will approach a tarping station located south of Carteret Avenue prior to driving parallel to the excavation to a point east of the open excavation, which will move as the excavation progresses. The trucks will enter Carteret Avenue via a ramp over the sheet pile and back up to the open excavation where they will collect the material for transportation. Trucks will then drive east along Carteret Avenue passing over a decontamination pad and through another tarping station before exiting the site at Pacific Avenue.

During Phase 2, site traffic will enter the site via Halladay Street, southwest of Carteret Avenue. Trucks will drive along Halladay Street, passing through a tarping station, before entering Carteret Avenue. The trucks will back up to the edge of the excavation and will collect material for transportation. Trucks will then drive out of Carteret Avenue, passing over a decontamination pad and through another tarping station before exiting the site at the via Halladay Street southwest of Carteret Avenue.

2.7 Remediation of “Emanating-From” Parameters

As presented in the technical memorandum entitled, *Halladay Street North, Carteret Avenue, and Garfield Avenue – Emanating From Parameters*, dated September 19, 2018 (AECOM, 2018b), impacts that have emanated from Site 114 into Carteret Avenue (“emanating from” impacts), specifically manufactured gas plant (MGP)-related parameters, include the following:

- 2-Methylnaphthalene
- Benzene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Dibenzo(a,h)anthracene
- Indeno(1,2,3-cd)pyrene; and
- Naphthalene

On February 14, 2019, Weston, on behalf of NJDEP, provided comments in which NJDEP concurred with the conclusions set forth in the September 19, 2018 technical memorandum (Weston, 2019). PPG and PSEG are jointly responsible for MGP-related impacts that have emanated from Site 114 into Carteret Avenue. Based on the current proposed excavation limits presented in the Final Carteret RAWP, some MGP-related impacts will remain in soil within Carteret Avenue following excavation. Engineering controls and institutional controls (notice in lieu of deed notice) will be implemented to prevent exposure to soils containing MGP-related impacts that will remain within Carteret Avenue at concentrations greater than the NJDEP Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) following excavation. A notice in lieu of deed notice, to be prepared by PSEG, will also document MGP-related impacts that will remain within Carteret Avenue at concentrations greater than the NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS) following excavation.

3.0 Contingency Plans

This section describes contingency plans for a set of potential circumstances to be implemented during remedy construction in Carteret Avenue. The contingency plans described in the following sections have been developed to allow for continuity during construction, to prevent damage to property within and adjacent to Carteret Avenue, and to prevent recontamination of remediated soil.

3.1 Severe Storm Events

National Weather Service (NWS) forecasts will be monitored daily by AECOM. If the NWS forecast predicts more than 1 inch of precipitation from a storm event at three days prior to the forecasted event, the excavation will be stopped, a plastic liner will be placed over the exposed portion of the pipe, and two feet of backfill will be placed over the liner extending out a minimum of 10 ft on either side of the pipe to prevent erosion of the soils around the pipe.

If the NWS forecast predicts more than 6 inches of precipitation from a storm event, at three days prior to the forecasted event, the excavation will be stopped, a demarcation liner will be placed in the excavation and a plastic liner will be placed over the exposed portion of the pipe, and the excavation will be backfilled up to a minimum of 6.4 ft above the top of the pipe.

A minimum stockpile of at least 1,500 tons of dense-graded aggregate (DGA) will be maintained on site for backfilling when the pipe is exposed.

3.2 Dewatering Sump Pumps Failure

Dewatering of the excavation will be achieved via sump pumps. During excavation below the top of the pipe, sump pumps will be operating continuously (24 hours a day, 7 days a week) to maintain dry conditions; dewatering activities will be staffed at all times to facilitate continuous operations. Dewatering staff will include a pump operator in addition to a laborer. Additional sump pumps will be stored on site for use as backup should the active sump pumps become damaged or inoperable.

3.3 Groundwater Treatment Plant Failure

In the event of a groundwater treatment plant (GWTP) failure, a two-tiered contingency plan will be in place. Firstly, an additional 13 inches of freeboard, which is the equivalent of 60,000 gallons of capacity, will be maintained in the modutank during normal operations. This additional space can accommodate excavation water generated over a 24-hour period, and will allow for dewatering activities to continue while the GWTP is brought back online. If it is anticipated that the GWTP will be offline for a period greater than 24 hours, a demarcation layer will be placed within the open excavation, and the excavation will be backfilled with a minimum height of 6.4 ft of backfill over the top of the pipe to prevent flotation of the 96-inch combined sewer.

3.4 Pipe Deficiencies

3.4.1 Minor

In the event that a minor deficiency (i.e., cracking less than 1 foot in length, or a hole in the pipe less than 1 square foot in area) in the 96-inch combined sewer is encountered during excavation, excavation around the pipe will stop, and JCMUA and J. Fletcher Creamer & Son, Inc. (Creamer) will be notified immediately of the deficiency. Creamer is a JCMUA approved contractor who has been retained by PPG to implement emergency repairs to the 96-inch sewer, if required. Following notification of the deficiency, a JCMUA Engineer and Creamer representative will mobilize to the site for inspection (refer to **Section 4.0** for additional Stakeholder communication procedures). To expedite repairs to the pipe, Creamer will manufacture/procure materials needed to repair minor deficiencies prior to the start of excavation around the 96-inch sewer and store them on site. After the repairs are complete, AECOM, PPG, JCMUA, and Creamer will make a determination to continue excavation around the sewer upon completion of the sewer repair.

3.4.2 Major

In the event of a major deficiency in the 96-inch combined sewer, all excavation work will be stopped, JCMUA and Creamer will be notified immediately of the deficiency, and a JCMUA Engineer and a Creamer representative will mobilize to the site for inspection (refer to **Section 4.0** for additional Stakeholder communication procedures). Major deficiencies are considered to be a crack greater than 1 foot in length, a hole greater than 1 square foot in area, or a multiple holes less than 1 square foot in diameter. Upon review of the major deficiency by JCMUA's Engineer and Creamer's representative, Creamer will propose and implement a repair program for the pipe deficiency. After the repairs are complete, AECOM, PPG, JCMUA, and Creamer will make a determination to continue excavation around the sewer and what additional protective measures may be appropriate, such as creating a greater offset from the sewer, or stopping remedial activities until the pipe has been lined by JCMUA.

3.5 Vibration and Settlement Monitoring

Prior to the start of excavation within Carteret Avenue, AECOM will develop a plan to monitor vibration and settlement of structures within and adjacent to the excavation during construction, specifically the sheet pile, the 96-inch sewer, and the One0One Pacific Avenue building.

4.0 Stakeholder Communication

Site-specific contacts and emergency procedures to be implemented in the event of an emergency at the site are presented in the *Contingency and Communications Plan – Full Scale Remediation, Garfield Avenue Group, Jersey City, New Jersey (Revision 9)* (CCP), dated May 2019 (AECOM, 2019b), which was prepared for the GA Group Sites. Emergencies covered by the CCP include illnesses and physical injuries, catastrophic events, such as fires, explosions, or chemical spills, and safety equipment problems. **Attachment A** provides personnel and emergency contact information as presented in Table 2-1 of the CCP. In the event that structural deficiencies in the 96-inch combined sewer are encountered during remediation in Carteret Avenue, the AECOM Field Lead will contact the PPG Project Manager and the AECOM Engineering Design lead; they will then contact JCMUA as described in **Section 3.4**.

Emergency contacts specific to potential structural deficiencies in the 96-inch combined sewer, or to issues that may arise as a result of vibration or settlement during remediation in Carteret Avenue, are presented in **Table 1** below.

Table 1 –Structural Emergency Contacts – Carteret Avenue Remediation

Representative Body	Contact Person	Contact Information
PPG	Rich Feinberg (PPG Project Manager)	Cell: 732-233-4552 Email: Feinberg@ppg.com
AECOM	Cameron Dixon (Engineering Design Lead)	Cell: 978-496-6313 Email: Cameron.Dixon@aecom.com
JCMUA	Rich Haytas	Cell: TBD Email: r.haytas@jcmua.com
City of Jersey City	Joe Cunha (City Engineer)	Cell: 908-692-5624 Email: JCunha@jcnj.org
J. Fletcher Creamer & Son, Inc.	Rick DeNicola	Cell: 201-488-9866 Email: Rick.Denicola@jfcson.us
Structural Monitor (To Be Determined [TBD])	TBD	Cell: TBD Email: TBD

5.0 References

AECOM, 2018a. *Final Remedial Action Work Plan (Soil) Rev. 4, Garfield Avenue Group Sites, Jersey City, Hudson County, New Jersey*. September 2018.

AECOM, 2018b. Technical Memorandum: *Halladay Street North, Carteret Avenue, Garfield Avenue – Emanating From Parameters*. Dated September 19, 2018; Issued September 20, 2018.

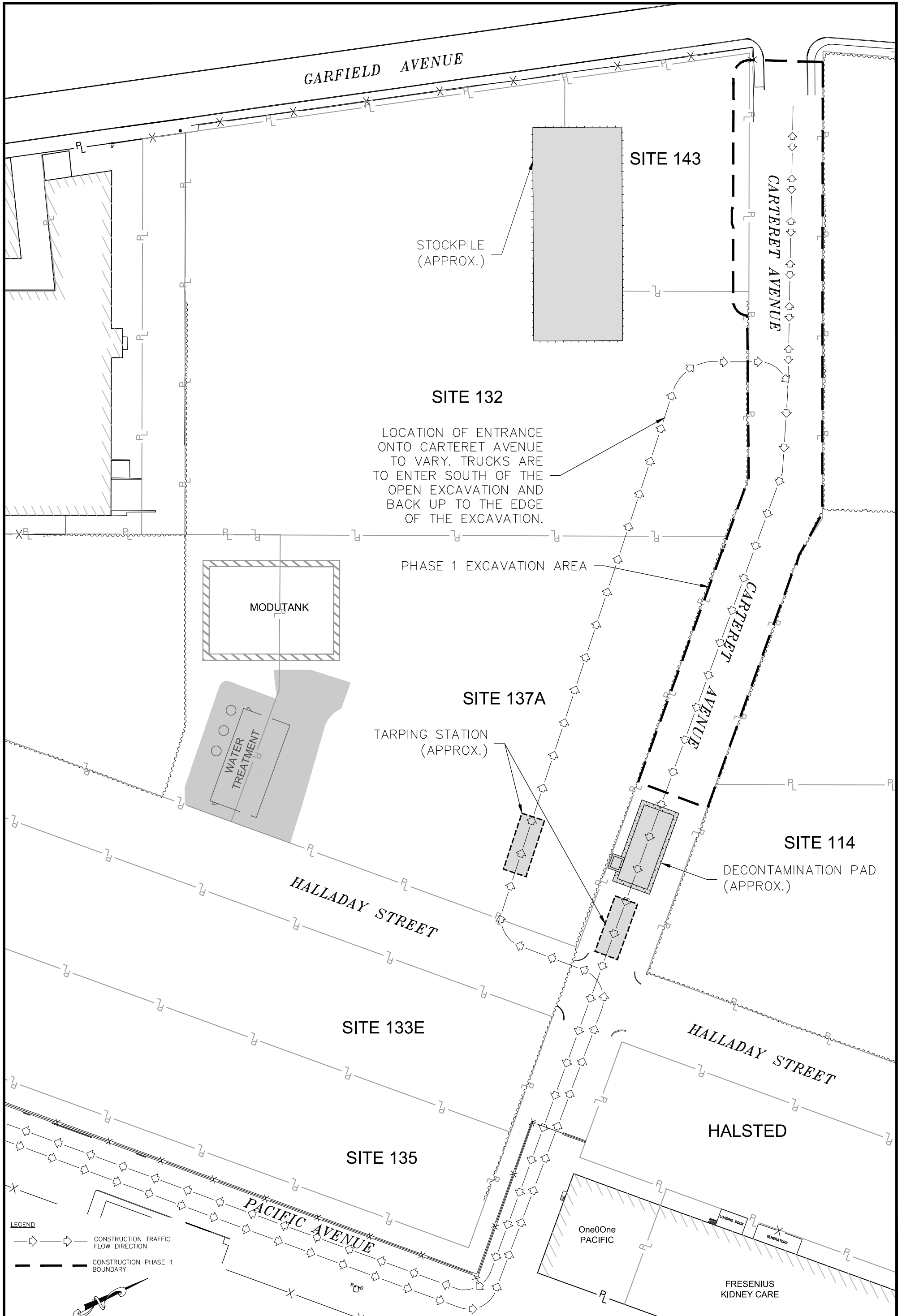
AECOM, 2019a. *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1), Addendum to the Final Remedial Action Work Plan (Soil) Rev. 4, Garfield Avenue Group of Sites, Jersey City, Hudson County, New Jersey*. June 2019.

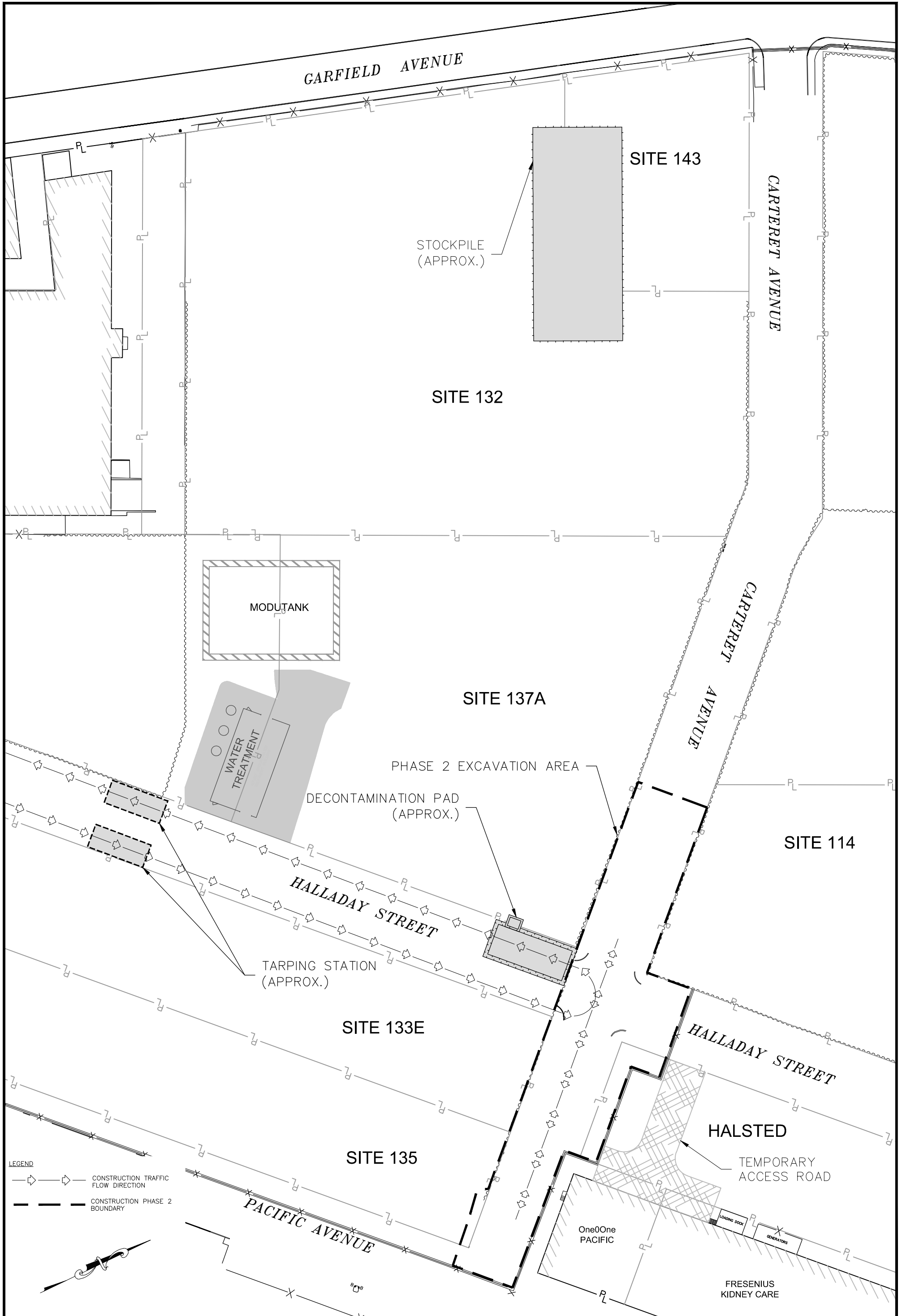
AECOM, 2019b. *Contingency and Communications Plan – Full Scale Remediation, Garfield Avenue Group, Jersey City, New Jersey (Revision 9)*. May 2019.

AECOM, 2019c. Technical Memorandum: *Carteret Avenue Non-Chrome Fill Soil Re-Use Plan (Revision 2)*. June 6, 2019.

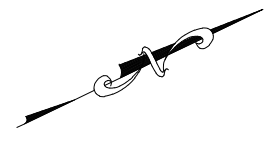
Weston, 2019. Email RE: *RE: GAG-147: Roadway Emanating From Evaluation*. February, 14, 2019.

Figures





LEGEND
 —>—>—> CONSTRUCTION TRAFFIC FLOW DIRECTION
 - - - - - CONSTRUCTION PHASE 2 BOUNDARY



AECOM

PPG GARFIELD AVENUE GROUP SITES JERSEY CITY, NEW JERSEY		CARTERET RAWP TECHNICAL ADDENDUM PHASE 2 INTERNAL TRAFFIC ROUTES
DATE: 05/28/2019	DRWN: DCB	Figure 2-2

Attachment A

Contingency and Communications Plan – Personnel and Emergency Contact Information

Table 2-1 Personnel and Emergency Contact Information

Name	Role/Affiliation	Office	Mobile	Email
Environmental Emergency Reporting				
Rich Feinberg	Emergency Coordinator (EC) & Project Manager (PM)/PPG		732-233-4552	Feinberg@ppg.com
Mark Hayden	1 st Alternate EC & Construction Manager/ENTACT		978-888-3168	mhayden@entact.com
Brendan Murphy	Field Lead/AECOM	732-564-3967	848-992-1560	Brendan.Murphy1@aecom.com
Cullen Flanders	PM/ARCADIS	724-934-9512	412-225-5097	cullen.flanders@arcadis.com
Rick DeNicola	PM/J. Fletcher Creamer & Son, Inc. - Sewer Repair	201-488-9866		Rick.Denicola@jfcson.us
To Be Determined	Field Staff/Structural Monitor	To Be Determined	To Be Determined	To Be Determined
Sean Metz	Plant Operator/ProAct Services Corporation	609-324-9024	717-802-1546	sean.metz@proact-usa.com
Jody Overmyer	Remediation Project Engineer/PPG	724-325-5070	412-235-8881	Overmyer@ppg.com
Mark Terril	Corporate Director, Environmental Affairs/PPG	412-434-2708	412-606-5459	Terril@ppg.com
Ronald Riccio	Site Administrator (SA)	732-733-6200	201-874-4581	RRiccio@mdmc-law.com
James Ray	SA PM	973-425-8707	201-240-4531	JRay@mdmc-law.com
Joe Cunha	Jersey City Engineer	201-547-4411	908-692-5624	Jcunha@icnj.org
Dave Spader	City Consultants/ERFS	914-834-4195	914-434-8533	DSpader@erfs.com
Diann Deal	Technical Consultant/Weston	732-417-5881	848-247-0239	Diann.Deal@westonsolutions.com
Prabal Amin	Technical Consultant/Weston	732-417-5857	609-240-5289	Prabal.Amin@westonsolutions.com
Wayne Howitz	Assistant Director incumbent/New Jersey Department of Environmental Protection (NJDEP)	609-984-1351		Wayne.Howitz@dep.nj.gov
David Doyle	Case Manager/NJDEP	609-292-2173		David.Doyle@dep.nj.gov
Other				
EQ Northeast	Spill Response Contractor	201-436-3500	Alternate: 734-576-0413	
NJDEP	Spill Hotline	877-WARNDEP	877-927-6337	
National Response Center		800-424-8802		
Jersey City Municipal Utilities Authority (JCMUA) (sewer and water)		201-432-1150 x0		
Passaic Valley Sewerage Commission (PVSC)		973-817-5712 (hours: M-F 8:15-4:15)	973-817-5858	
Public Service Electric and Gas (PSEG) (electric and gas)		800-436-7734		
Jersey City Dept. of Fire and Emergency Services		201-547-4239		
Jersey City Police non-emergency		201-547-5477		
Emergency		911		
AECOM Safety, Health & Environment (SH&E) Reporting Hotline		800-348-5046		