

Table 5-1
Cr⁺⁶ Analytical Results for In-Place Soil Compared to Chromium Soil Cleanup Criterion
Carteret Avenue, Garfield Avenue Group
PPG, Jersey City, New Jersey

															Analyte CAS RN Units CrSCC	CHROMIUM (HEXAVALENT) 18540-29-9 mg/kg 20	
Station (G1)	Offset (G2)	Location ID (G3)	Location Elevation (ft NAVD88) (G4, G5)	Sample ID (G6)	Depth Interval (ft bgs) (G7)	Sample Start Elevation (ft NAVD88) (G5, G8)	Sample End Elevation (ft NAVD88) (G5, G9)	Lab ID (G10)	Lab SDG (G10)	Date Collected (G11)	Sample Status (G12, G13)	Sample Type (G14)	Validated (Y/N) (G15)	Matrix (G16)	Result (G17, G18)	Qualifier (G19, G20)	Specific Notes
NA	NA	CAR-PDI-GG23A	8.5	CAR-PDI-GG23A-8.0-8.5X	8.0 - 8.5	0.5	0.0	JC22160-18	JC22160	06/14/2016	Remaining	FD	Y		< 0.34	UJ	S37
NA	NA	CAR-PDI-GG23A	8.5	CAR-PDI-GG23A-10.0-10.5	10.0 - 10.5	-1.5	-2.0	JC22160-13R	JC22160R	06/14/2016	Remaining	N	Y		0.84	J	S37
NA	NA	CAR-PDI-GG23A	8.5	CAR-PDI-GG23A-10.5-11.0	10.5 - 11.0	-2.0	-2.5	JC22160-14	JC22160	06/14/2016	Remaining	N	Y		0.88	J	S37
NA	NA	EF-17	9.7	EF-B17-0.5	0.5 - 1.0	9.2	8.7	460-25550-39	460255501	04/19/2011	Remaining	N	Y		3.2	J	S37
NA	NA	EF-17	9.7	EF-B17-2.0	2.0 - 2.5	7.7	7.2	460-25550-40	460255501	04/19/2011	Remaining	N	Y		10.0	J	S37
NA	NA	EF-17	9.7	EF-B17-4.0	4.0 - 4.5	5.7	5.2	460-25550-42	460255501	04/19/2011	Remaining	N	Y		3.0	J	S37
NA	NA	EF-17	9.7	EF-B17-6.0	6.0 - 6.5	3.7	3.2	460-25599-9	460255991	04/20/2011	Remaining	N	Y		< 0.65	UJ	S37
NA	NA	EF-17	9.7	EF-B17-10.0	10.0 - 10.5	-0.3	-0.8	460-25599-10	460255991	04/20/2011	Remaining	N	Y		< 0.64	UJ	S37
NA	NA	EF-17	9.7	EF-B17-12.0	12.0 - 12.5	-2.3	-2.8	460-25599-11	460255991	04/20/2011	Remaining	N	Y		< 0.64	UJ	S37
NA	NA	EF-17	9.7	EF-B17-12.0X	12.0 - 12.5	-2.3	-2.8	460-25599-12	460255991	04/20/2011	Remaining	FD	Y		< 0.63	UJ	S37
NA	NA	EF-17	9.7	EF-B17-17.0	17.0 - 17.5	-7.3	-7.8	460-25599-13	460255991	04/20/2011	Remaining	N	Y		< 1.4	UJ	S37
NA	NA	EF-17	9.7	EF-B17-22.5	22.5 - 23.0	-12.8	-13.3	460-25599-14	460255991	04/20/2011	Remaining	N	Y		< 0.97	UJ	S37

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ABBREVIATIONS:

bgs - below ground surface
CAS RN - Chemical Abstracts Service Registry Number
CCPW - Chromate Chemical Production Waste
Cr - chromium
Cr⁺⁶ - hexavalent chromium
CrSCC - Chromium Soil Cleanup Criteria
El. - elevation
FD - field duplicate sample type
ft - feet
HDPE - high-density polyethylene
JCMUA - Jersey City Municipal Utilities Authority
MDL- method detection limit
mg/kg - milligrams per kilogram
N - normal sample type
NA - not applicable
NAVD88 - North American Vertical Datum of 1988
NJDEP - New Jersey Department of Environmental Protection
PDI - Pre-Design Investigation
SDG - sample delivery group
µg/L - micrograms per liter
U.S. - United States
USCS - Unified Soil Classification System

MATRICES

FILL - fill
MM - meadow mat
UNDno – undisturbed native deposits – non-organic

USCS CLASSIFICATIONS

CL - clayey silt
ML - silt
PT - peat
SC - some clay
SM - silty sand
SP - poorly-graded sand

QUALIFIERS:

B - Indicates that the analyte was detected at a concentration less than the Practical Quantitation Limit but greater than or equal to the Instrument Detection Limit.
J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.
J- - The analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.
JB - The analyte concentration is greater than three times, but less than 10 times, the concentration in the associated method blank. The presence of that analyte in the sample is considered "real". The concentration is quantitatively qualified (JB) due to method blank contamination.
R - The result was rejected due to serious deficiencies; the presence or absence of the analyte could not be confirmed.
RA - The result was rejected due to deficiencies but is considered usable for decision-making purposes.
U - The analyte was not detected above the sample reporting limit shown.
UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

GENERAL NOTES:

G1. "Station" refers to a sample's location along the excavation's centerline, which runs the length of the center of Carteret Avenue starting from the westernmost edge of Carteret Avenue, as presented on Figure 5-1. Station values are presented in hundreds of feet. For example, station 1+50 is 150 feet along the excavation's centerline. An entry of "NA" in this column indicates the sample is located beyond the limits of the centerline established as part of the Carteret Avenue excavation.
G2. "Offset" refers to a sample's distance in feet 90 degrees from the excavation's centerline in the southeasterly direction, as presented on Figure 5-1. An addition of "L" in this column indicates the sample is located to the left of the excavation's centerline and an addition of "R" in this column indicates the sample is located to the right of the excavation's centerline. An entry of "NA" in this column indicates the sample is located beyond the limits of the centerline established as part of the Carteret Avenue excavation.
G3. "Location ID" refers to the location name where samples were collected.
G4. "Location Elevation" refers to the pre-remediation surface elevation for samples collected from the pit bottom or sidewall, and the surface elevation of the sample location when the sample was collected via boring or test pit.
G5. Elevation vertical datum is NAVD88, in U.S. survey ft.
G6. "Sample ID" refers to the name of a sample collected at a given location and is unique to the depth of the sample collected.
G7. "Depth Interval" is based on the "Location Elevation."
G8. "Sample Start Elevation" refers to the start of the sample interval. There may be up to 0.1 ft variation between the listed Sample Start Elevation and the elevation calculated using the Location Elevation and Depth Interval due to rounding of the numbers.
G9. "Sample End Elevation" refers to the end of the sample interval. There may be up to 0.1 ft variation between the listed Sample End Elevation and the elevation calculated using the Location Elevation and Depth Interval due to rounding of the numbers.
G10. "Lab ID" refers to the identification number assigned to the sample by the analytical laboratory performing the sample analysis. "Lab SDG" refers to the delivery group number assigned to the sample by the analytical laboratory.
G11. "Date Collected" refers to the date the soil sample was collected.
G12. "Sample Status" indicates whether a sample is remaining or removed:

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- "Remaining" indicates the soil in that interval is outside the excavation footprint and remains in-place at that location;
- "Removed" indicates the sample was removed during excavation.

G13. The post-excavation survey points and 1-ft post-excavation contours representing the as-built terminal excavation elevations are provided on Figure 5-1.

G14. "Sample Type" indicates whether the sample type is normal (N) or a field duplicate (FD).

G15. "Y" indicates that a sample underwent data validation and "N" indicates that data validation was not conducted.

G16. For samples with Cr⁶⁺ CrSCC exceedances, the USCS Classification is provided. Where the sample was collected above 20 ft bgs, the matrix (e.g., MM or FILL) is also specified. In the event that a post-excavation sample supersedes a sample with Cr⁶⁺ CrSCC exceedances, the USCS Classification and matrix, if applicable, for the post-excavation sample is also provided.

G17. "Result" refers to the analytical result, which is reported in mg/kg.

G18. Bold text indicates that the result exceeds the CrSCC. Non-bold text indicates that the result does not exceed the CrSCC.

G19. "Qualifier" refers to the data qualifier assigned by the data validation team reviewing the data from the laboratory for validated data. For unvalidated data, it refers to the qualifier assigned by the laboratory.

G20. Non-detect results are shown on this table using the Method Detection Limit, if available; otherwise they are shown at the Reporting Limit.

SPECIFIC NOTES:

S1. At Station 0+07, Offset 18L, the Cr⁶⁺ results for PDI samples P4-A`14A-14.0-14.5, P4-A`14A-16.0-16.5, and P4-A`14A-18.0-18.5 are greater than the CrSCC but are in compliance with the Chromium Policy because 1) these samples were collected from UND, 2) the UND is not commingled with CCPW, 3) these samples were collected from fine to coarse grained (SP-SM) material, 4) the Cr⁶⁺ results are less than 1,000 mg/kg, 5) a clean sample was collected in UND above these samples from PDI sample P4-A`14A-12.0-12.5, and 6) these samples were collected in a non-chrome fill area from El. 11.1 ft NAVD88 to the bottom of excavation as presented in the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*. The higher concentrations at deeper elevations but not shallower elevations indicate that the samples with Cr⁶⁺ concentrations greater than the CrSCC result from contact with impacted groundwater.

S2. At Station 0+07, Offset 18L, the Cr⁶⁺ result for PDI sample P4-A`14A-20.0-20.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected from UND, 2) UND is not commingled with CCPW, 3) this sample was collected from greater than 20 ft bgs, 4) this sample was collected from fine to coarse grained (SP-SM) material, and 5) the Cr⁶⁺ result is less than 1,000 mg/kg.

S3. This sample was collected by another party. A data validation memorandum has not been identified.

S4. At Station 0+19, Offset 22R, the Cr⁶⁺ result for sample PPG-114-MW22BD(17.5-18.0)J46994-5 is greater than the CrSCC but is in compliance with the Chromium Policy because 1) this sample was collected from UND, 2) the UND is not commingled with CCPW, 3) the sample was collected from fine to coarse grained (SP-SM) material, 4) the Cr⁶⁺ result is less than 1,000 mg/kg, 5) clean samples were collected above these samples in UND from samples PPG-114-MW22BC(13.0-14.0)J46994-3 and PPG-114-MW22BCD(13.0-14.0)J46994-4, and 6) this sample was collected in a non-chrome fill area from El. 7.0 ft NAVD88 to the bottom of excavation as presented in the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*. The higher concentrations at deeper elevations but not shallower elevations indicated that the sample with a Cr⁶⁺ concentration greater than the CrSCC results from contact with impacted groundwater.

S5. This sample serves as a Cr⁶⁺ confirmation pit bottom sample and was removed due to excavation of non-chrome fill from El. 11.1 ft NAVD88 to the bottom of excavation required to create a clean corridor for utility workers in accordance with the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*.

S6. At Station 0+36, Offset 17L, the Cr⁶⁺ result for sample P4-A14A-18.0-18.5 is greater than the CrSCC but is in compliance with the Chromium Policy because 1) this sample was collected from UND, 2) the UND is not commingled with CCPW, 3) the sample was collected from fine to coarse grained (SP-SM) material, 4) the Cr⁶⁺ result is less than 1,000 mg/kg, 5) clean samples were collected above these samples in UND from PDI samples P4-A14A-11.5-12.0, P4-A14A-12.0-12.5, P4-A14A-14.0-14.5, and P4-A14A-16.0-16.5, and 6) this sample was collected in a non-chrome fill area from El. 11.1 ft NAVD88 to the bottom of excavation as presented in the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*. The higher concentrations at deeper elevations but not shallower elevations indicated that the sample with a Cr⁶⁺ concentration greater than the CrSCC results from contact with impacted groundwater.

S7. This sample serves as a Cr⁶⁺ confirmation pit bottom sample and was removed due to excavation of non-chrome fill from El. 7.0 ft NAVD88 to the bottom of excavation required to create a clean corridor for utility workers in accordance with the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*.

S8. At Station 0+62, Offset 33R, the Cr⁶⁺ results for excavation sidewall samples CAR-0+60-SW-N-1-8.3-8.8 and CAR-0+60-SW-N-2-6.3-6.8, which remain in place in Site 143, are greater than the CrSCC. These samples were collected from fill material in the Carteret Avenue excavation sidewall, which sloped into Site 143. The concentrations of Cr⁶⁺ greater than the CrSCC at these locations result from contact with impacted groundwater because 1) this sample was collected from the saturated zone (i.e., below the groundwater elevation of 7.2 ft NAVD88 in Carteret Avenue, which was estimated as the 50th percentile groundwater elevation from 11 monitoring wells located in Carteret Avenue gauged between February 2007 and May 2018 (see Appendix A for monitoring well locations and associated data), 2) total Cr concentrations in shallow groundwater within Carteret Avenue prior to soil remediation ranged from less than detection limits to 1,460 µg/L as reported in the *Capillary Break Design Final Report (Revision 2)* (Capillary Break Report), 3) total Cr concentrations in intermediate groundwater within Carteret Avenue prior to soil remediation ranged from 140 to 1,140,000 µg/L as reported in the Capillary Break Report, 4) MM is not present within this area, 5) the Cr⁶⁺ concentration in post-excavation sample 143-B15A-PB2-6.7-7.2 collected in Site 143 as part of the remediation at Site 143 and removed during the Carteret Avenue excavation was below the MDL, 6) removed PDI samples 143-P3A-B15A-5.0-5.5, 143-P3A-B15A-7.0-7.5, and 143-P3A-B15A-9.0-9.5 and remaining PDI samples 143-P3A-B15A-11.0-11.5, 143-P3A-B15A-13.0-13.5, and 143-P3A-B15A-13.5-14.0 collected in Carteret Avenue had concentrations of Cr⁶⁺ that were less than the CrSCC, and 7) no visible CCPW was observed in the Carteret Avenue excavation sidewall along Site 143.

S9. At Station 0+96, Offset 17L, the Cr⁶⁺ result for PDI sample P4-C14A-20.0-20.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected from UND, 2) UND is not commingled with CCPW, 3) this sample was collected from greater than 20 ft bgs, 4) this sample was collected from fine to coarse grained (SP) material, and 5) the Cr⁶⁺ result is less than 1,000 mg/kg.

S10. At Station 1+13, Offset 30L, the Cr⁶⁺ results for PDI samples 114-A4MW4VG-36-36.5 and 114-A4MW4VGD-36-36.5 are greater than the CrSCC but are in compliance with the Chromium Policy per the Method to Determine Compliance because 1) these samples were collected below MM from UND, 2) UND is not commingled with CCPW, 3) these samples were collected from greater than 20 ft bgs, 4) these samples were collected from fine grained (CL) material, 5) the Cr⁶⁺ results are less than 1,000 mg/kg, and 6) excavation of this sample would compromise the existing MM layer, which is less than 1-ft thick, present from El. -3.5 to -4.3 ft NAVD88.

S11. There is a 2.1 ft difference between confirmation sidewall samples CAR-EX-1+20-SW-N-1-8.5-9.0 (El. 4.4 to 3.9 ft NAVD88) and CAR-EX-1+20-SW-N-2-6.4-6.9 (El. 6.5 to 6.0 ft NAVD88) because safety and structural concerns during excavation precluded taking a sample at the designated 2.0 ft interval.

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S12. At Station 1+27, Offset 17L, the Cr⁺⁶ result for PDI sample P4-D14A-16.0-16.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected from MM, 2) MM is not commingled with CCPW, 3) the Cr⁺⁶ result is less than 1,000 mg/kg, and 4) excavation of this sample would compromise the existing 1.5-ft thick MM layer present from El. -2.9 to -4.4 ft NAVD88.

S13. At Station 1+33, Offset 27L, the Cr⁺⁶ result for sample MW4B (30-32)-693428 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected below MM from UND, 2) UND is not commingled with CCPW, 3) this sample was collected from greater than 20 ft bgs, 4) this sample was collected from fine grained (SM) material, 5) the Cr⁺⁶ result is less than 1,000 mg/kg, and 6) excavation of this sample would compromise the existing 3-ft thick MM layer present from El. -1.3 to -4.3 ft NAVD88.

S14. This sample serves as a Cr⁺⁶ confirmation pit bottom sample and was removed due to excavation of non-chrome fill from El. 9.8 ft NAVD88 to the bottom of excavation required to create a clean corridor for utility workers in accordance with the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*.

S15. This sample serves as a Cr⁺⁶ confirmation pit bottom sample and was removed due to excavation required to create a clean corridor for utility workers in accordance with the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*.

S16. At Station 1+58, Offset 18L, the Cr⁺⁶ result for PDI sample P4-E14A-20.0-20.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected below MM from UND, 2) UND is not commingled with CCPW, 3) this sample was collected from greater than 20 ft bgs, 4) this sample was collected from fine to coarse grained (SP-SM) material, 5) the Cr⁺⁶ result is less than 1,000 mg/kg, and 6) excavation of this sample would compromise the existing 2-ft thick MM layer present from El. -2.8 to -4.8 ft NAVD88.

S17. This sample serves as a Cr⁺⁶ confirmation pit bottom sample and was removed due to excavation of non-chrome fill from El. 8.0 ft NAVD88 to the bottom of excavation required to create a clean corridor for utility workers in accordance with the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*.

S18. At Station 2+16, Offset 17L, the Cr⁺⁶ result for PDI sample P4-G14A-16.0-16.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected from MM, 2) MM is not commingled with CCPW, 3) the Cr⁺⁶ result is less than 1,000 mg/kg, and 4) excavation of this sample would compromise the existing 3-ft thick MM layer present from El. -2.1 to -5.1 ft NAVD88.

S19. This sample is remaining in place in Carteret Avenue and the Cr⁺⁶ result is greater than the CrSCC. Compliance with the CrSCC is demonstrated through spatial averaging. The spatially weighted average Cr⁺⁶ concentration calculated as part of the compliance averaging evaluation is 5 mg/kg, which is compliant with the CrSCC. The calculations of the compliance averaging evaluation are included in the Technical Memorandum *Carteret Avenue Compliance Averaging for Hexavalent Chromium in Soil* (Appendix K). Additionally, institutional controls (Notice in Lieu of Deed Notice), which establish restricted use within areas of Carteret Avenue where compliance with the CrSCC is demonstrated through spatial averaging, have been implemented to provide further protectiveness.

S20. At Station 2+76, Offset 18L, the Cr⁺⁶ result for PDI sample P4-I14A-14.5-15.0 is greater than the CrSCC but is in compliance with the Chromium Policy because it was actually removed. Based on the sample elevation (El. -2.4 to -2.9 ft NAVD88), this sample appears to be remaining in place; however, based on field observations, this sample was actually removed. The boring log indicates this sample was collected from fill directly above MM. The excavation field notes indicate that the fill material was removed, and this area was excavated to visually clean MM. This sample was superseded by the confirmation pit bottom sample CAR-EX-2+70-15L-15.4-15.9 (El. -2.6 to -3.1 ft NAVD88), which has a Cr⁺⁶ result less than the CrSCC. Also, at station 2+76, Offset 18L, PDI sample P4-I14A-14.0-14.5, which was collected just above removed PDI sample P4-I14A-14.5-15.0 from El. -1.9 to -2.5 ft NAVD88, was also removed based on the same rationale (though it did not have a Cr⁺⁶ result greater than the CrSCC).

S21. This sample serves as a Cr⁺⁶ confirmation pit bottom sample and was removed due to excavation to MM, which was encountered shallower than anticipated based on observations made during the PDI field program and noted in the boring log.

S22. At Station 3+08, Offset 18L, the Cr⁺⁶ result for PDI sample P4-J14A-20.0-20.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected below MM from UND, 2) UND is not commingled with CCPW, 3) this sample was collected from greater than 20 ft bgs, 4) this sample was collected from medium to coarse grained (SP) material, 5) the Cr⁺⁶ result is less than 1,000 mg/kg, and 6) excavation of this sample would compromise the existing 3.5-ft thick MM layer present from El. -4.4 to -7.9 ft NAVD88.

S23. At Station 3+87, Offset 30L, the Cr⁺⁶ result for PDI sample P4-M14A-20.0-20.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected below MM from UND, 2) UND is not commingled with CCPW, 3) this sample was collected from greater than 20 ft bgs, 3) this sample was collected from fine grained (SM) material, 4) the Cr⁺⁶ result is less than 1,000 mg/kg, and 5) excavation of this sample would compromise the existing 6.8-ft thick MM layer present from El. 0.1 to -6.7 ft NAVD88.

S24. At Station 4+28, Offset 16L, the Cr⁺⁶ result for PDI sample P4-N15A-20.0-20.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected from UND, 2) UND is not commingled with CCPW, 3) this sample was collected from greater than 20 ft bgs, 4) this sample was collected from fine grained (SM) material, and 5) the Cr⁺⁶ result is less than 1,000 mg/kg.

S25. At Station 4+63, Offset 27R, the Cr⁺⁶ results for PDI samples P4-O16A-20.0-20.5 and P4-O16A-20.0-20.5X are greater than the CrSCC but are in compliance with the Chromium Policy per the Method to Determine Compliance because 1) these samples were collected below MM from UND, 2) UND is not commingled with CCPW, 3) these samples were collected from greater than 20 ft bgs, 4) these samples were collected from fine grained (ML) material, 5) the Cr⁺⁶ results are less than 1,000 mg/kg, and 6) excavation of these samples would compromise the existing 1-ft thick MM layer present from El. -1.9 to -2.9 ft NAVD88.

S26. At Station 7+23, Offset 30R, the Cr⁺⁶ result for PDI sample P4-W19A-20.0-20.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected from MM, 2) MM is not commingled with CCPW, 3) this sample was collected from greater than 20 ft bgs, 4) the Cr⁺⁶ result is less than 1,000 mg/kg, and 5) excavation of this sample would compromise the existing 4.5-ft thick MM layer present from El. -4.0 to -8.5 ft NAVD88.

S27. At Station 7+45, Offset 23R, the Cr⁺⁶ result for PDI sample P4-X19A-20.0-20.5 is greater than the CrSCC but is in compliance with the Chromium Policy per the Method to Determine Compliance because 1) this sample was collected below MM from UND, 2) UND is not commingled with CCPW, 3) this sample was collected from greater than 20 ft bgs, 4) this sample was collected from fine grained (SM-SC) material, 5) the Cr⁺⁶ result is less than 1,000 mg/kg, and 6) excavation of this sample would compromise the existing 2.1-ft thick MM layer present from El. -6.0 to -8.1 ft NAVD88.

S28. This sample serves as a Cr⁺⁶ confirmation pit bottom sample and was removed due to excavation to the spring-line of the 96-inch sewer in accordance with the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*.

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S29. This sample serves as a Cr⁺⁶ confirmation pit bottom sample and was removed due to excavation below the 48-inch sewer for purposes of decommissioning the sewer at the direction of JCMUA.

S30. This sample is remaining in place in Carteret Avenue and the Cr⁺⁶ result is greater than the CrSCC. Compliance with the CrSCC is demonstrated through spatial averaging. The spatially weighted average Cr⁺⁶ concentration calculated as part of the compliance averaging evaluation is 12 mg/kg, which is compliant with the CrSCC. The calculations of the compliance averaging evaluation are included in the Technical Memorandum *Carteret Avenue Compliance Averaging for Hexavalent Chromium in Soil* (Appendix K). Additionally, institutional controls (Notice in Lieu of Deed Notice), which establish restricted use within areas of Carteret Avenue where compliance with the CrSCC is demonstrated through spatial averaging, have been implemented to provide further protectiveness.

S31. This sample serves as a Cr⁺⁶ confirmation pit bottom sample and was removed due to excavation of non-chrome fill from El. 6.4 ft NAVD88 to the bottom of excavation required to create a clean corridor for utility workers in accordance with the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*.

S32. This sample serves as a Cr⁺⁶ confirmation sidewall sample and was removed due to excavation of non-chrome fill from El. 6.4 ft NAVD88 to the bottom of excavation required to create a clean corridor for utility workers in accordance with the *Final Remedial Action Work Plan (Soil) – Carteret Avenue (Revision 1)*.

S33. There is a 3.0 ft difference between confirmation sidewall samples CAR-9+30-SW-N-3-2.2-2.7 (El. 8.5 to 8.0 ft NAVD88) and CAR-9+30-SW-N-2-5.2-5.7 (El. 5.5 to 5.0 ft NAVD88) because safety and structural concerns during excavation precluded taking a sample at the designated 2.0 ft interval.

S34. This sample is remaining in place in the support-of-excavation offset for the Pacific Avenue buildings and the Cr⁺⁶ result is greater than the CrSCC. Compliance with the CrSCC is demonstrated through spatial averaging. The spatially weighted average Cr⁺⁶ concentration calculated as part of the compliance averaging evaluation is 12 mg/kg, which is compliant with the CrSCC. The calculations of the compliance averaging evaluation are included in the Technical Memorandum *Carteret Avenue Compliance Averaging for Hexavalent Chromium in Soil* (Appendix K). Additionally, institutional controls (Notice in Lieu of Deed Notice), which establish restricted use within areas of Carteret Avenue where compliance with the CrSCC is demonstrated through spatial averaging, have been implemented to provide further protectiveness.

S35. This sample serves as a Cr⁺⁶ confirmation pit bottom sample and was removed during excavation of soil required to accommodate placement of an HDPE liner beneath the sidewalk adjacent to the building in Block 21502, Lot 11. Refer to Figure 5-1B for details regarding the HDPE liner.

S36. This sample serves as a Cr⁺⁶ confirmation sidewall sample and was removed due to excavation sloping in the support-of-excavation offset for the Pacific Avenue buildings.

S37. Samples were collected at this location in Pacific Avenue and are being used in the evaluation of delineation of CCPW-related impacts.