



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Site Remediation Program
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June 4, 2012

Mr. Michael McCabe
Site Administrator
Jersey City PPG Chromium Sites

Subject: Comments on the March 2012 Remedial Investigation Report; Site 16; Jersey City, New Jersey

Dear Mr. McCabe:

Please find herein the New Jersey Department of Environmental Protection (Department) comments on the March 2012 *Remedial Investigation Report; Sites 016; Jersey City, New Jersey* (RI Report) prepared by Tetra Tech, on behalf of PPG Industries, Inc. (PPG).

As stated in the purpose section of the RI report, "The RI was conducted to determine the nature and extent of chromate chemical production waste (CCPW) contamination." However, the RI report did not include any discussion of the presence of CCPW (including chromate ore processing residue [COPR]) other than identification of COPR in the boring logs provided in Appendix B. This issue of not identifying CCPW/COPR within the body of RI reports has been brought to the attention of PPG in the past on other sites (e.g., Site 114 off-site borings, Site 63/65 RIR). The presence and/or absence of CCPW (including COPR) needs to be identified, pursuant to Judicial Consent Order (JCO), in the text, tables, and figures in this, and subsequent reports, for all sites.

GENERAL COMMENTS

1. Comments to the RIR, dated May 11, 2012 provided by Environmental Remediation and Financial Services, LLC (ERFS, consultant to Jersey City), were considered during development of these comments. Administrative/Editorial comments included in ERFS' email, forwarded by the Site Administrator's project manager on May 11, 2012 to PPG should be incorporated into the revised RIR.
2. Delineation has not been completed for CCPW-related contamination in soil present at Site 16. There were no clean hexavalent chromium samples (less than 20 milligrams per kilogram) between specific samples and property boundaries, there were multiple borings containing COPR (as noted in the boring logs) along the property boundaries, and there were multiple samples which contained vanadium and thallium at concentrations greater than the residential direct contact soil remediation standards (RDCSRS) along the property boundaries. Full delineation to the RDCSRS is required.

3. A significant number of samples exceeded the Department's default impact to groundwater soil remediation standards (IGWSRS). PPG may wish to develop site-specific IGWSRS, consistent with one of the Department-approved methods identified at <http://www.nj.gov/dep/srp/guidance/rs/> rather than rely on the default values. In addition, the discussions of IGWSRS exceedances should include evaluation of the groundwater elevation, as IGWSRS only apply to soils in the vadose zone. As per New Jersey Administrative Code (N.J.A.C.) 7:26E-4.2(a)3, contamination at the site must be delineated to whichever IGWSRS is established for the site.
4. Exceedances (at a minimum) of current remedial standards in historic soil samples (e.g., information referenced in the Remedial Investigation Work Plan) which have not previously been remediated by excavation (e.g., PE11-001), should be included in the text, tables, and figures of the RIR to ensure that a complete picture of the site-related contamination is presented.
5. The presence, location, and volume of waste material (COPR), identified in the boring logs, should have been presented within the body of the RIR document. Identification of this information is critical to understanding the scope of contamination present at the site.
6. CCPW (e.g., COPR) was identified in several borings without there being "clean" (non-CCPW-containing) borings between the boring location and the site perimeter. The extent of all CCPW must be fully identified, and be addressed in the Remedial Action Work Plan.
7. The RIR must discuss data quality issues, including how those issues impact the findings of the Remedial Investigation. The RIR should discuss the impact of quantitation levels exceeding remedial standards (e.g., thallium) on the remedial investigation findings. The RIR should also discuss how the outcome of the validation reports presented in Appendix E impact the findings, and what impact samples having detection limits that were greater than remedial standards have on the conclusions presented in the RIR.
8. Pursuant to N.J.A.C. 7:26E-1.12(e)2, an updated receptor evaluation is required to accompany any submitted RIR. Please ensure all receptor evaluation updates are submitted in accordance with the timeframes and at the milestones established under the applicable regulations. Based on the information presented within the RIR, further evaluation, specifically, surface water and sediment sampling within Claremont Creek/Ditch would be required to eliminate the potential contaminant exposure pathway and support the conclusion that an ecological risk assessment is not required.
9. Delineation has not been completed for CCPW-related contamination in groundwater at Site 16. Total chromium in groundwater has not been delineated horizontally to the east of 016_MW08 and no vertical delineation sampling has been conducted at the site to date. Please complete delineation and submit the findings of the groundwater investigation within the revised RIR.
10. Since groundwater contamination has been detected at Site 16, PPG must determine the locations and invert depths of all utilities at the site and compare those data to the horizontal and vertical limits of the groundwater plume to determine if there is a potential for contaminant migration along utility bedding and/or infiltration into utilities. This assessment

should be done concurrently with delineation (horizontal and vertical) for chromium exceedances in groundwater detected at Site 16.

11. As per N.J.A.C. 7:26E-1.6(a)3, a completed case inventory document is required.

SECTION-SPECIFIC COMMENTS

1. **Remedial Investigation Report Form** Several issues were noted on the Remedial Investigation Report Form, as presented below:
 - a. **Section E, items 1 through 3**: Since this RIR is for CCPW-related contamination only, item 1 should have the “Area(s) of Concern (AOCs) Only” box checked rather than the “Entire Site (based on a completed and submitted Preliminary Assessment/Site Investigation)” box. Also please fill in items 2 and 3.
 - b. **Section E, item 4**: Please change “Yes” to “No” for the question “Is the Remedial Investigation Complete.” See General Comment 2.
 - c. **Section F, item 4**: Please also check the “contaminated soil in the saturated zone” box, as this reflects conditions described in the RIR.
 - d. **Section G, item 1**: Item 1 specifies that default remediation standards were used for direct contact soil standards, impact to groundwater soil screening levels, and ecological screening levels. Please identify where in the RIR the ecological screening levels were discussed.
 - e. **Section J, Item 3**: Based on the information presented in the RIR, the CCPW-related contaminants (including COPR identified in boring logs) is “located within the defined boundaries of the historic fill.” Please change response for this item from “No” to “Yes.”
 - f. **Section L, item 3**: Since bedrock groundwater samples have not been collected, the answer of “No” to the question “Is ground water in the bedrock aquifer contaminated?” should be deleted/question left unanswered.
 - g. **Section L, item 4**: It appears that vertical delineation has not been accomplished for the groundwater contamination identified in the RIR. Please revise this answer from “Yes” to “No.”
2. **Executive Summary, page ES-1, third paragraph, third sentence**: The sentence should be revised to clarify that it was the trivalent chromium soil cleanup criteria which was not exceeded at the site, as the next sentence indicates that the hexavalent chromium soil cleanup criteria (not screening criteria, as stated) was exceeded in 15 soil samples.
3. **Executive Summary, page ES-1, fifth paragraph, last sentence**: The text should be revised to clarify that, while antimony and thallium were not detected in the groundwater samples collected from the site, in every sample the detection limit exceeded its respective groundwater quality standard for these two contaminants of concern. See General Comment 7.

4. Executive Summary, page ES-1, seventh paragraph: See General Comment 8.
5. Section 1.2, page 2, second and third paragraph: The RIR should present on figures the locations of all Interim Remedial Measures (IRMs) still present, the locations and depths of all areas where remediation has taken place, and the locations of all samples collected historically with contaminant concentrations in excess of current remedial standards which were not previously remediated. The RIR should also provide a figure with the locations/extent of previously-conducted remedial actions for which No Further Action (NFA) determinations have been provided by the Department (and provide a copy of the NFA determinations as an appendix to the RIR).
6. Section 2.1, page 4: Per the sixth bullet, the locations of foundation wall samples 016_I010FW, 016_I010aFW, 016_I011FW, and 016_I012FW have been adjusted from what was proposed through the approved field change request (dated 8/31/2011) from the work plan. These locations should be graphically depicted in the RIR. Additionally, deviations from the work plan (e.g., planned samples not collected, such as the 20-20.5 feet below ground surface [ft bgs] sample from boring 016-C009) should also be captured in Section 2.1 of the RIR.
7. Section 2.2.1, page 4: The text states that “geological cross sections using the new boring logs are shown in Figures 3 and 4.” The cross sections should be revised to incorporate presence of CCPW identified in the boring logs provided in Appendix B. See General Comment 5.
8. Section 2.2.3, page 6: Please provide, and reference, a figure which shows the location of the concrete foundation wall samples.
9. Section 2.3.1, page 6, first paragraph, second sentence, and Appendix C: The monitoring well records provided in Appendix C do not meet the requirements of the Monitoring Well Certification Forms A and B, since they do not include the certification information by the licensed well driller and surveyor, respectively. Please include copies of the appropriately-certified forms. Also, please correct the discrepancy between the text (which states protective casings and protective covers were used for each well) and the Monitoring Well Records in Appendix C (which indicate that protective casings were not used on any well).
10. Section 2.6.4, page 9: See General Comment 7.
11. Section 3.4.1, page 12, second paragraph: Please change the two references to “Sites 63 and 65” to “Site 16.” Also please update the industrial well information to refer to wells identified in the Receptor Evaluation for Site 16.
12. Section 3.4.1, page 11, second to last sentence: Please provide additional information as to the location and status of the industrial groundwater well in relation to the site. In addition, the February 2011 draft Remedial Investigation Work Plan indicated “[a]n updated well search will be performed during the Site 016 RI and presented in the RI Report.” The updated well search is not included with the RIR.

13. Section 3.4.2, page 12: The statement in the text that “groundwater flow is towards the east to the Upper New York Bay” is not supported by the groundwater contour map presented as Figure 5, which shows the groundwater flow direction to the north-northeast. Please revise.
14. Section 4.0 and subsequent subsections: The RIR should present information on the limits and extent of CCPW observed during installation of the Remedial Investigation sampling program. See General Comment 5. Additionally, a subsection specific to thallium should be added; see General Comments 3 and 7. Further, per the requirements of N.J.A.C. 7:26E-4.2(a), the limits of soils containing exceedances of the residential direct contact and impact to groundwater soil remediation standards must be fully delineated.
15. Section 4.1.1, page 13: It is noted that antimony contamination has not been fully delineated either vertically or horizontally. While antimony was undetected in samples along the perimeter boundary (e.g., 016_D005, 016_J005, 016_L005), the detection limits for these samples were an order or magnitude above the applicable remedial standard. Further, as indicated on Tables 6 through 8, forty-seven soil samples had non-detectable concentrations of antimony with detection limits greater than the default impact to groundwater soil remediation standard, and four soil samples had non-detectable concentrations of antimony with detection limits greater than the residential direct contact soil remediation standard. See General Comments 3 and 7.
16. Section 4.1.3, page 14: Hexavalent chromium contamination at Site 16 has not been fully delineated horizontally to the north, east, or south. Also, as indicated on Tables 6 and 8, sample 016_I012_2.5 had a non-detectable concentration of hexavalent chromium with a detection limit of 69.3 milligrams per kilogram (mg/kg), greater than its remedial criterion of 20 mg/kg. See General Comment 2 and General Comment 7.
17. Section 4.1.4, page 14: Nickel contamination has not been fully delineated at Site 16; however, with the exception of one sample, all exceedances of nickel were exceedances of the default IGWSRS. See General Comment 3.
18. Section 4.1.5, page 14: Vanadium contamination has not been fully delineated horizontally to the north, east, or south. See General Comment 2.
19. Section 4.2, page 15: Groundwater contamination at the site (chromium and possibly antimony and thallium) has not been delineated vertically and horizontally as required per N.J.A.C. 7:26E-4.3(a)4.
20. Section 4.2.1, page 15: While it is agreed that antimony and thallium were not detected in any of the groundwater samples collected at Site 16, the detection limit for all samples exceeded the groundwater quality standard for both analytes. Per N.J.A.C. 7:26E-2.1(a)4, the detection limit must be sufficiently sensitive to accurately measure concentrations to meet the remedial standards. See General Comment 7.
21. Section 4.2.3, page 15: Please remove the sentence “None of the groundwater samples exceeded Groundwater Quality Standard” as the Department has not established a groundwater quality standard for hexavalent chromium.

22. Section 5.2, page 18, last paragraph: The text refers to the receptor evaluation report “found in Appendix H-2.” The receptor evaluation report was not included in the RIR. See Section-Specific Comment 42.
23. Section 5.3, page 18: A determination of whether thallium may be a contaminant of potential environmental concern (COPEC) should be evaluated against the detection limit achieved for thallium in the surface soil samples. See General Comment 7.
24. Section 5.4, page 18: See General Comment 8.
25. Section 6.0, pages 19-20: The “Conclusions” section of the RIR should describe the completeness of the delineation of all contaminants detected in each media at the Sites in concentrations in excess of remedial criteria, the limits of CCPW identified in the investigatory borings, and a summary of concerns arising from the data quality assessment. See General Comments 2, 6, and 7. The RIR must also include a recommendations section, per N.J.A.C. 7:26E-4.9(a)6, which determines whether remedial action is required for each area of concern. See General Comments 5 and 6.
26. Section 6.0, page 19, Soil: As per N.J.A.C. 7:26E-4.2(b)1, the Remedial Investigation must include a sufficient number of soil samples to delineate the horizontal and vertical extent of soil contamination, yet delineation has not been completed at Site 16. See General Comments 2, 3, and 7. Additionally, the conclusions section should take into account all historic data for which remedial action(s) were not conducted to date. See General Comment 4.
27. Section 6.0, page 19-20, Groundwater: As per N.J.A.C. 7:26E-4.3(a)4, the Remedial Investigation for groundwater must include vertical as well as horizontal delineation of groundwater contamination.
28. Section 6.0, page 19-20, Groundwater: As per N.J.A.C. 7:26E-4.3(a)7 and N.J.A.C. 7:26E-4.9(a)7, a proposed groundwater classification exception area is required.
29. Section 6.0, page 20, Groundwater, second bullet: See General Comment 7.
30. Section 6.0, page 20, Groundwater, last bullet: Please delete the last sentence in this bullet.
31. Section 6.0, page 20, last paragraph: See General Comment 8.
32. Table 4 and Appendix C: The contour reporting form indicates “No” to the question “Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen?” However, the data presented in Table 4 (Monitoring Well Characteristics) show that the water elevation in every well was higher than the well screen for that respective well. Please address.
33. Tables 5A, 5B, 5C, , 9, 11, and 12: Tables 5, 9, 11, and 12 were provided as “positive hit/hits tables” for soil, groundwater core, and foundation samples, respectively (Table 5 was divided into three sub-tables, 5A, 5B, and 5C to compare results to residential, non-residential, and impact to groundwater soil standards, respectively). Please clarify that all data used to make remedial decisions have been validated.

34. Tables 5A and 5B: Note that the remedial criterion identified for “chromium” in Table 5A is for trivalent chromium only. The remedial criterion for “chromium” should be removed from Table 5B, as a non-residential criterion has not been developed for trivalent or total chromium.
35. Table 12: Table 12, identified as the “Positive Hits Table for Foundation Samples” identified as the second Table 11 should be renumbered as Table 12.
36. Table 13: Please provide a source for the “New Jersey Ecological Screening Criteria table” and include the source in the references section of the RIR.
37. Figures 3 and 4: See General Comment 5 and Section-Specific Comment 7.
38. Figures 7, 7A, 7B, and 7C: Figure 7, identified as Soil Sampling Exceedances, must be revised to include all exceedances, including historic exceedances (e.g., post-excavation sample PE011-001) which were not removed/remediated following sample collection. It appears as if the data presented on Figure 7 is limited to that data set collected during the 2011-2012 field mobilizations. This applies also to the information presented on Figures 7A, 7B, and 7C. See Section-Specific Comment 5.
39. Figure 7C: As per current Department guidance, “the impact to groundwater pathway only pertains to the unsaturated zone” (*Frequently Asked Questions for the Impact to Ground Water Pathway in Soil Remediation Standards*, Ver 1.0, 1/27/2011). Therefore, it is not possible to exceed the impact to groundwater soil remediation standards at depths below the water table. Figure 7C should be revised to remove all references to impact to groundwater “exceedances” in soil samples below the water table, as established by the groundwater contour map provided as Figure 5. See General Comment 3. Also, Figure 7C should be revised to remove references to hexavalent chromium “exceedances” of the impact to groundwater soil remediation standards, as a default IGWSRS has not been developed for this substance.
40. Appendix B: The boring logs appear internally inconsistent in some instances. One example: in boring 016-F005, the description of soil recovered from the 2.3-4.4 ft interval is described as “Very Dark Grayish Brown (10YR 3/2) medium SAND, little fine sand, trace coarse sand & silt, 80% COPR from 1.6’ – 2.1 ft, loose to medium dense, moist-wet, no odor (SP)” while the field notes section reports “80% COPR noted 1.5’ – 2.1’.” In addition to the depth intervals of reported COPR not being consistent between the Burmister System Soil Description column and the notes column, it is not understood why information on the presence of COPR in the 1.6’ (or 1.5’) -2.1 ft interval would be reported in a description for soil types reported in the 2.3-4.4 ft interval. Please review the boring logs as presented against the raw field notes to ensure accuracy and consistency of information presented, and revise the RIR, as needed, based on the findings of the review. See General Comment 5.
41. Appendix E: Analytical data packages, including full data deliverables for hexavalent chromium soil sample results, must be provided as per N.J.A.C. 7:26E-2.1(a)15. Electronic data deliverables (HazSite Data Deliverables format) must be provided as per N.J.A.C. 7:26E-1.6(a)5.

42. Appendix H: As per N.J.A.C. 7:26E-1.12(e)2 and N.J.A.C. 7:26E-4.9(a)2, an updated Receptor Evaluation form must be submitted with the Remedial Investigation Report. As was noted in an email from AECOM (A. LoPilato) to Weston (P. Amin) and Planning Progress (B. McPeak) dated January 20, 2012, the Receptor Evaluation was to be “updated based on the BEE [Baseline Ecological Evaluation] findings, and resubmitted with the Tetra Tech RI.” See General Comment 8.

If you have any questions regarding this matter, contact me at (609) 984-2905.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Tom Cozzi', is centered on the page. The signature is fluid and cursive, with a large initial 'T' and 'C'.

Thomas J. Cozzi, Assistant Director
Site Remediation DEP

C: Brian McPeak, Project Manager
Dave Doyle, DEP