

Attachment 14

Compliance Averaging Documentation



MEMORANDUM

To Crystal L. Leavey, LSRP Page 1

CC

Subject Compliance Averaging Analysis, PPG Site 16, 45 Linden Avenue East, Jersey City

From Matthew Coller, LSRP

Date October 17, 2018

In general, soil excavation activities proceeded from the north to the south in the three main phases, including the southern loading dock, which completed in the spring of 2015. Soils were excavated in a grid system that was pre-characterized for waste classification and acceptance at an appropriate disposal facility. The Site was divided into 30 by 30 foot grids (432 total).

In order to demonstrate compliance at the site with the soil remediation standards (SRS), soil sample results were evaluated using a compliance averaging analysis, specifically the “75 Percent / 10x Procedure.”

Delineation

Based on the extensive data set of post-remedial sample locations (including both pre-post-excavation and post-excavation samples), combined with visual observations during excavation, the aerial extent of the onsite chromate chemical production waste (CCPW) impacted fill has been horizontally and vertically delineated. As the 2013 design boring program was implemented to obtain pre-post-excavation samples to demonstrate vertical delineation of CCPW-impacted fill, APTIM believes that it is technically appropriate to apply compliance averaging techniques to vertical delineation sample results that are located within the delineated horizontal boundaries of the impacted area. The addition of sidewall and base post-excavation samples from the perimeter of the excavation complete the horizontal delineation of the impacted area that is the subject of this exercise.

Remedial Volume

The area for this analysis covers the remedial extents of the completed excavation, which constitutes one continuous area of concern (AOC) and covers ±2.82-acres. As per Appendix A4.0 of the *NJDEP Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria* (Version 1.0, September 2012), a minimum of 12 samples are required per 3,000 cy of material excavated/remediated from the exterior portion of the site. A total of 23,204 tons of material was excavated from the site, and assuming a density of 1.5 tons per cubic yard (CY) of material, this equates to approximately 15,469 CY of material. Therefore, a minimum of 62 post-remedial samples are required to apply the method. The following post-remedial sample location counts were collected during each phase of investigation at the site:

- 463 samples were collected during initial investigation field activities from 2011-2012;
- 29 samples were collected during delineation investigations in 2012-2013;

- 241 samples were collected during investigation in 2013
- 210 base and sidewall sample locations during remedial action (RA) from 2014-2015;
- 20 generator sample locations during the remedial Action RA form 2014-2015;

A total of 963 sample locations define the limits of the excavation in the exterior portion of the site. Note that in some cases, multiple samples were collected at various depths at each location, but for the purposes of this analysis, we are only considering the single uppermost sample per location as a compliance point. The vertical zone of CCPW-impacted materials ranged from 0 to 10.3 feet below ground surface (ft bgs) and all samples used for this analysis were present within this single zone.

Remediation Standards and Criteria

The following table summarizes the applicable soil remediation standards and soil screening levels used in this compliance averaging analysis:

Table 1
Applicable Soil Remediation Standards and/or Criteria
PPG Site 16
PPG, Jersey City, New Jersey

Metals	NRDCSRS (mg/kg)	RDCSRS (mg/kg)	IGW SSL (mg/kg)
Antimony	450	31	6

Notes:

mg/kg = milligrams per kilogram.

NRDCSRS - NJDEP Non-Residential Direct Contact Soil Remediation Standards (N.J.A.C. 7:26D, last amended September 2017)

RDCSRS - NJDEP Residential Direct Contact Soil Remediation Standards (N.J.A.C. 7:26D, last amended September 2017)

IGW SSL - NJDEP Default Impact to Groundwater Soil Screening Levels (November 2013)

Antimony (Sb)

Two samples, 3T-SW-NORTH and 15S-SW-EAST, exhibited an antimony concentration in excess of the NJDEP SRS. All other areas of the exterior of the Site containing antimony at concentrations in exceedance of the NJDEP SRS have been excavated. Therefore 99.8% of the post-remedial sample locations are either non-detect or exhibit antimony concentrations less than the soil remediation standards (SRS) and/or impact-to-groundwater soil screening level (IGW SSL). This is above the 75% threshold for this analysis.

All remaining reporting limits and detections for antimony are less than 10 times the most stringent standard (IGW SSL) of 6 mg/kg (i.e., less than 60 mg/kg).

Conclusions

Greater than 75% of the post-remedial sample results were either non-detect or in compliance with the standards and criteria for antimony, and all reporting limits and contaminant detections were less than 10 times the applicable remediation standard or criteria. Based on these findings, the remediation of antimony in soil is deemed complete.