International Paper Company

Georgia-Pacific Consumer Products, LP

ARCADIS

Slope Area Mitigation Project Completion Report

Curtis Specialty Papers Site
Milford, New Jersey

August 2013

Revised October 2013

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Curtis Specialty Papers Site
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Prepared for:
United States Environmental Protection Agency

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Executive Summary

International Paper Company (IP), Georgia-Pacific Consumer Products, LP (GP) and ARCADIS prepared this *Slope Area Mitigation Project Completion Report* (Completion Report) for the Curtis Specialty Papers Site located at 404 Frenchtown Road, Milford, New Jersey (the site).

During the summer and fall of 2011, heavy rains and flooding occurred within the Delaware River basin and its tributaries, including Quequacommissacong Creek (Q Creek) in the vicinity of the site. Following subsidence of floodwaters, an inspection of Q Creek identified that the bed of an emergency storm flow channel had been scoured to a depth several feet below that of the main channel around a meander upstream of the site. As a result, during typical seasonal flow conditions, Q Creek flows through the emergency flow channel and the former channel of the meander is a dry creek bed consisting of gravel, cobble and bedrock outcrops. Water routed through the shorter and steeper storm flow channel reaches downstream sections of Q Creek with greater velocity and potential energy. Further, regional flood events in the Delaware River result in backflow conditions, where river water levels rise quicker than those in Q Creek. These conditions inhibit drainage from Q Creek and result in high water levels with little or no water velocity. Under this hydraulic regime, the lower bank soils became saturated, increasing instability and the potential for erosion. In combination, these altered flow conditions resulted in erosion, undercutting and destabilization of the steep banks along the former Coatings Facility Area (CFA) of the site.

On January 30, 2012, representatives of the United States Environmental Protection Agency (USEPA), United States Fish and Wildlife Service (USFWS), New Jersey Department of Environmental Protection (NJDEP), IP, GP and ARCADIS met at the site to develop a plan to mitigate the unstable conditions of the slope of the Q Creek bank adjacent to the former CFA. Following the meeting, IP and GP proposed a two-phase Slope Area Mitigation (SAM) to provide long-term stability for this portion of the site. Phase 1 would address removal of several underground storage tanks (USTs) adjacent to the slope area, implementation of a Drainage Area Velocity Evaluation (DAVE), data collection to inform Phase 2 and preparation of design documents for slope stabilization activities. Phase 2 would consist of implementing activities as specified in the design documents.

SAM activities were scoped and implemented in accordance with a series of technical memoranda and associated addenda (IP et al. 2012a, 2012b, 2012c, 2012d). Between March and September 2012, IP and GP performed Phase 1 SAM activities and submitted and revised the engineering design documents associated with Phase 2 SAM.

In September 2012, Phase 2 SAM site preparation activities were completed. Site preparation activities included site surveying and installation of soil erosion and sediment controls (SESC) (silt fence, temporary fencing, and stabilized construction entrance) in both the former Building 54 and former Building 57 areas of the former CFA.

Following removal of vegetation and discharge pipe DP-15, the removal of in-place materials began in the former Building 57 area. Approximately 3,190 cubic yards (cy) of soil was removed from the former Building 57 area. Prior to backfilling, the excavated soil was sampled and analyzed and 2,350 cy was deemed acceptable for reuse on site.

Phase 2 SAM activities in the former Building 54 area included excavation of approximately 9,839 cy of soil, 14 former discharge pipes, 122 underground pipes, nine sumps and six former USTs.

Following excavation activities, post-excavation soil samples were collected and analyzed to document effectiveness of SAM activities. These post-excavation data were incorporated into the soil datasets used in the revised Baseline Human Health Risk Assessment (BHHRA) (IP et al. 2013a) and Baseline Ecological Risk Assessment (BERA) (IP et al. 2013b). These documents indicate order of magnitude decreases in risk and hazard estimates for soil attributable to SAM activities, resulting in acceptable risk levels for constituents in soil.

The following presents a summary of the type and quantity of waste generated/disposed as part of the Phase 1 and Phase 2 SAM activities:

- Wood chips and cleared vegetation (approximately 15 tons in one load) transported to the Waste Management, Inc. (WM) GROWS facility located in Morrisville, Pennsylvania for off-site disposal.

- Construction and demolition (C&D) debris (approximately 650 tons in 28 loads) from former building slabs, concrete sumps and other miscellaneous structures, pipe materials, personal protective equipment and decontamination supplies, and hoses transported to the WM GROWS facility in Morrisville, Pennsylvania for off-site disposal.

- Soil and materials characterized as Toxic Substances Control Act (TSCA)-regulated materials (approximately 2,032 tons in 90 loads) transported to the CWM Chemical Services, LLC (CWM) in Model City, New York for off-site disposal.

- Soil and materials characterized as TSCA-regulated, Resource Conservation and Recovery Act (RCRA)-hazardous materials (approximately 157 tons in seven loads) transported to the CWM facility in Model City, New York for off-site disposal.

- Soil and materials characterized as non-RCRA-hazardous materials (approximately 11,070 tons in 494 loads) transported to the WM GROWS facility in Morrisville, Pennsylvania for off-site disposal.

- Water drained from the excavations and containerized stormwater that accumulated on the liner from Material Handling and Loading Area (MHLA) areas and water collected from former USTs (16,044 gallons in five loads, including water used to clean tanks after use) transported to the Clean Earth of North Jersey, Inc. facility in South Kearny, New Jersey for off-site disposal.

- Sixty-nine tons of scrap metal shipped in five containers to the Sims Metal Management facility in Newark, New Jersey for recycling.

A combination of containerized plants and seed mixtures were used to restore a mosaic of native plant communities to the stabilized bank slope and upland areas. Species composition was based on riparian forest plant communities along the Delaware River, and reference communities along Q Creek. Additional vegetation maintenance and/or monitoring will be conducted in accordance with the approved restoration planting plan.

1. Introduction

International Paper Company (IP), Georgia-Pacific Consumer Products, LP (GP) and ARCADIS prepared this *Slope Area Mitigation Project Completion Report* (Completion Report) for the Curtis Specialty Papers Site located at 404 Frenchtown Road, Milford, New Jersey (the site) (Figure 1).

On January 30, 2012, representatives of the United States Environmental Protection Agency (USEPA), United States Fish and Wildlife Service (USFWS), New Jersey Department of Environmental Protection (NJDEP), IP, GP and ARCADIS met at the site to develop a plan to mitigate the unstable conditions of the slope of the Q Creek bank adjacent to the former Coatings Facility Area (CFA). Following the meeting, IP and GP proposed a two-phase Slope Area Mitigation (SAM) to provide long-term stability for this portion of the site. Phase 1 would address removal of several underground storage tanks (USTs) adjacent to the slope area, implementation of a Drainage Area Velocity Evaluation (DAVE), data collection to inform Phase 2 and preparation of design documents for slope stabilization activities. Phase 2 would consist of implementing activities as specified in the design documents.

IP and GP submitted a *Technical Memorandum – Quequacommissacong Creek Bank Stabilization* (Phase 1 tech memo) (IP et al. 2012a) to USEPA on March 9, 2012. The Phase 1 tech memo outlined proposed project elements to mitigate the unstable conditions of the slope and included information related to implementation, sequencing, regulatory compliance and schedule. IP and GP submitted a revised Phase 1 tech memo addressing comments received from USEPA, NJDEP and the National Oceanic and Atmospheric Administration (NOAA) that USEPA approved on March 21, 2012.

IP and GP initiated Phase 1 SAM field activities on March 26, 2012. Changed field conditions observed during implementation led to the submission of an April 24, 2012 *Technical Memorandum Addendum - Quequacommissacong Creek Bank Stabilization* (Phase 1 tech memo addendum) (IP et al. 2012b) outlining additional soil erosion and sediment control (SESC) measures to address the changed conditions. USEPA approved the Phase 1 tech memo addendum on April 27, 2012. Phase 1 SAM field activities were completed on May 7, 2012.

On June 15, 2012, IP and GP submitted a *Phase 2 Slope Area Mitigation Technical Memorandum – Quequacommissacong Creek Bank Stabilization* (Phase 2 tech memo) (IP et al. 2012c) summarizing completed Phase 1 SAM field activities and presenting a conceptual design and approach to bank stabilization based on results of Phase 1 SAM data collection and engineering analyses (i.e., DAVE and slope stability analyses).

On June 21, 2012, representatives of USEPA, NJDEP, IP, GP and ARCADIS met on site to review the conceptual design presented in the Phase 2 tech memo. Incorporating feedback received at the meeting, IP and GP prepared a *Phase 2 Slope Area Mitigation Technical Memorandum Addendum – Quequacommissacong Creek Bank Stabilization* (Phase 2 tech memo addendum) (IP et al. 2012d) to present soil sampling results conducted during Phase 1 SAM, design details and an implementation plan for the bank stabilization approach outlined in the Phase 2 tech memo. IP and GP submitted the Phase 2 tech memo addendum to USEPA on July 13, 2012. To expedite the implementation of the slope mitigation work, USEPA provided approval on August 3, 2012 of the Phase 2 tech memo addendum, with the exception of the planting plan which required revisions to address comments from NJDEP and NOAA. IP and GP submitted the revised Phase 2 tech memo addendum planting plan to USEPA on August 13, 2012. The revised planting plan addressed comments from NJDEP and NOAA and was approved by USEPA on August 16, 2012.

On September 6, 2012, IP and GP submitted a complete revised Phase 2 tech memo and Phase 2 tech memo addendum to USEPA formally addressing comments received from USEPA, NJDEP and NOAA.

SAM-related activities, as chronicled in the following sections of this Completion Report, were performed in accordance with the USEPA-approved technical memoranda and addenda.

1.1 Site Setting

The site is a former food-grade paper mill located along the Delaware River at 404 Frenchtown Road (County Road 619) in the Borough of Milford, Hunterdon County, New Jersey. The site occupies approximately 109 acres on Block 13, Lot 5.01 and Block 19, Lot 51 in the Borough of Milford and Block 17.01, Lot 1.01 in Alexandria Township.

Paper production began at the site in 1907 and ended in 2003. During these 96 years, four operational areas developed at the site (Figure 2):

- Main Mill Area (MMA) – process and office facilities of the Main Mill, a cogeneration power plant and loading/unloading areas

- CFA – the Coatings Facility, solvent recovery building and supporting outbuildings (the majority of the former CFA structures were demolished in 2012)

- Waste Water Treatment Plant (WWTP) Area (WWTPA) – two clarifier basins, a settling tank and intake/outfall structures on the shoreline of the Delaware River

- Coal Pile and Aeration Basin Area (CPABA) – currently undeveloped and the location of a former aeration basin; historically a portion of the area served as a staging area for coal that powered the site

Figure 2 identifies site features within each of the four areas. An unnamed tributary to the Delaware River (the unnamed tributary) bisects the site, separating the former MMA, CFA and WWTPA (to the north) from the former CPABA (to the south). A railroad right-of-way separates the former MMA and CFA (to the east) from the former WWTPA (to the west). Railroad operations have ceased along the right-of-way and off-site sections have become part of a rails-to-trails program. According to current Borough of Milford tax records, the Belvidere and Delaware River Railroad owns the section of right-of-way that bisects the site.

The Delaware River borders the former WWTPA to the west. Q Creek bisects the site north of the former CFA and separates it from an undeveloped parcel (i.e., the Northern Parcel) that did not support historical operations.

Site operations ceased in 2003 and the site has remained vacant since that time. Most of the facility's buildings remain standing, with security personnel and chain-link fencing restricting access to the site.

1.2 Q Creek – Pre-SAM Conditions

Q Creek drains high-gradient streams from the Musconetcong Mountains as well as stormwater drainage from adjacent developed areas. Over time, the Borough of Milford (in conjunction with the United States Army Corps of Engineers) modified an upstream section of Q Creek to alleviate scour and bank erosion along private property located on the east shoreline (pers. comm. J. Phillips 2012). Specifically, these modifications included excavation of an emergency storm flow channel (with a bed elevation higher than the main channel), and armoring of a scour-prone bank around a meander in Q Creek. The emergency storm flow channel allowed a portion of the creek's flow (during elevated-flow conditions) to bypass the meander, thus reducing the hydrodynamic forces that typically created scour and bank erosion.

During the summer and fall of 2011, heavy rains and flooding occurred within the Delaware River basin and its tributaries, including Q Creek in the vicinity of the site. Following subsidence of floodwaters, an inspection of Q Creek identified that the bed of the emergency storm flow channel had been scoured to a depth several feet below that of the main channel around the meander. As a result, during typical seasonal flow conditions, Q Creek flows through the emergency flow channel and the former channel of the meander is a dry creek bed consisting of gravel, cobble and bedrock outcrops (as seen in the photographs below).

Water routed through the shorter and steeper emergency flow channel results in the normal creek flow reaching downstream sections of Q Creek with greater velocity and potential energy. Further, regional flood events in the Delaware River result in backflow conditions, where river water levels rise quicker than those in Q Creek. These conditions inhibit drainage from Q Creek and result in higher water levels with less water velocity. Under this hydraulic regime, the soils along the lower portion of the Q Creek bank became saturated, increasing instability and the potential for erosion. In combination, these altered flow conditions resulted in erosion, undercutting and destabilization of the steep banks along the former CFA.

Former Channel/Dry Creek Bed

Emergency Storm Flow Channel

1.2.1 2011 Conditions Adjacent to the Former CFA

In the months immediately after the flooding, portions of the earthen bank adjacent to the former CFA and directly beneath the former location of Building 54 eroded along the toe of the bank (as seen in the photograph below). This erosion changed the slope, resulting in instability in areas of the upper portion of the bank. A portion of a block retaining wall adjacent to the northeast corner of former Building 54 and the outer security fence had collapsed as a result of the slope instability, as depicted in the photo below.

The bank continued to remain unstable until SAM activities were implemented. IP, GP, USEPA and NJDEP agreed that the presence of USTs (reportedly abandoned) near the top of the slope, and the continued degradation of the slope, required immediate attention. As described in Section 1, IP and GP conducted SAM activities in two phases. The following sections provide SAM implementation details.

2. Project Implementation

2.1 Pre-Construction Site Preparation

2.1.1 Cultural Resources Identification

Prior to initiating intrusive site activities, a cultural resources review was completed for the CFA portion of the site. The USEPA- and New Jersey State Historic Preservation Office- (NJSHPO-) approved *Phase IA Cultural Resources Investigation Report* (Phase IA Report) (IP et al. 2010a) for the site concluded that the northern portion of the former CFA and southern bank of Q Creek were not sensitive for the presence of potentially significant cultural resources.

The USEPA- and NJSHPO-approved *Phase IB Cultural Resources Investigation Report – Building and Accessory Structure Evaluation Archaeological Testing* (Phase IB Report) (IP et al. 2011) identified a previously recorded Pre-Contact period site (28-HU-14), likely a habitation site, near the southern end of former Building 73 in the former CFA. This Pre-Contact period site is located outside of the SAM project area; however, equipment and personnel were restricted from entering the archaeological resource area by construction fencing placed around the perimeter.

In addition, Dr. Eugene Boesch, Ph.D, R.P.A. (ARCADIS Principal Archaeologist) conducted a visual inspection of the SAM project area on April 26, 2012. This inspection indicated that the SAM project area was previously altered. Dr. Boesch considered it unlikely that intact archaeological resources of potential significance were present in the SAM project area and stated that SAM activities would not impact cultural resources in the former CFA.

The Phase IA Report (IP et al. 2010a) did not consider the locations of the Material Handling and Loadout Area (MHLA) in the former MMA and vehicle/equipment routes to be archaeologically sensitive. Accordingly, Dr. Boesch confirmed that impacts to potentially significant cultural resources would not occur in the MHLA or vehicle/equipment routes as a result of SAM activities. ARCADIS transmitted Dr. Boesch’s findings to USEPA on April 27, 2012 via electronic mail.

2.2 Phase 1 SAM Activities

Prior to and concurrent with SAM activity implementation, demolition of the above-grade portion of the buildings associated with the former CFA was conducted to provide safe access to the area for UST removal. CFA buildings removed include Buildings 33, 34, 35, 36, 37, 54, 57, 73 and 76. Concrete slabs were left in-place following removal of the above-grade structures. Phase 1 SAM field activities were initiated on March 26, 2012 and addressed abandoned in-place USTs located at the top of the Q Creek bank slope north of former Building 54 (Drawing 2 in Appendix B).

2.2.1 Pre-Construction Surveying, Utility Location and Staging Area Preparation

A licensed surveyor established site controls, including identification of locations for silt fence based on the drawings provided in the Phase 1 tech memo (IP et al. 2012a). Prior to excavation work, underground utilities were located by a utility survey company (Master Locators) to identify features below grade (e.g., pipes, tanks). The below-grade features were marked out on the ground with spray paint and a New Jersey One Call was initiated to comply with New Jersey requirements.

In addition, the MHLA was established on an existing asphalt covered area behind the former MMA buildings. Hay bales were installed around the perimeter of the MHLA. Plastic sheeting was used to cover soil and concrete piles within the MHLA prior to loading for off-site disposal.

2.2.2 Erosion and Sedimentation Control and Site Clearing

After completion of site survey work and after the minimum waiting period for the New Jersey One Call, site preparation activities commenced, including installation of SESC (silt fence, temporary fencing and stabilized construction entrance). Appendix A contains weekly construction reports that were previously submitted to USEPA; these reports contain photographs of site preparation and work activities.

2.2.3 UST Removals

Initial activities involved removal of overburden soil to identify the position and condition of the USTs. Excavated overburden soils were loaded directly into an end dump truck for transportation to the MHLA for staging and characterization sampling (Figure 2). During these activities, a steel reinforced concrete slab approximately 12-inches thick was found atop the four USTs (Nos. 20, 21, 22 and 23). To remove the USTs, this slab, which was not a building floor slab, was broken and removed over the westernmost USTs (Nos. 20 and 21); however, the potential for destabilizing the slope area to the north and east precluded its removal from above UST Nos. 22 and 23.

After exposing UST Nos. 20 and 21, the following activities were performed:

- Removal of the tops of UST Nos. 20 and 21 to identify contents. Both tanks contained pea gravel, with liquid intermixed with the pea gravel in UST No. 21.
- Transfer of 475 gallons of liquid from UST No. 21 to poly tanks staged in a lined roll-off container (i.e., secondary containment).
- Excavation of 22 cubic yards (cy) of pea gravel from UST Nos. 20 and 21 and loading into a lined roll-off container.
- Removal of UST Nos. 20 and 21, and transfer of the tank carcasses in an end dump truck to the MHLA. Additional soils removed to facilitate the UST removal were loaded directly into an end dump truck for transportation to the MHLA for staging and characterization sampling.
- Collection of floor and sidewall soil samples for initial analytical testing to obtain a representative understanding of soil quality in the vicinity of the former USTs. Phase 1 SAM post-excavation analytical data, laboratory analytical data packages and data validation reports are presented in Appendix C.
- Placement of non-woven geotextile (witness layer) within the excavation.
- Placement and compaction of imported certified clean quarry processed crushed stone atop the non-woven geotextile.

Air monitoring was conducted during these activities, in accordance with the Phase 1 tech memo (IP et al. 2012a) and the site health and safety plan (HASP) prepared in January 2010 and revised in May 2011. Phase 1 SAM waste characterization analytical data, laboratory analytical data packages, waste profiles and associated correspondence are presented in Appendix D.

UST Nos. 22 and 23, located 6 feet closer to the bank slope than initially estimated, could not be removed using the initial approach within the existing work area limits. The Phase 1 tech memo addendum (IP et al. 2012b) presented an alternative approach for removal of UST Nos. 22 and 23. The following section summarizes the implementation of this alternative approach.

2.2.3.1 Alternative Removal Approach – UST Nos. 22 and 23, and UST-X

The alternative removal approach involved expansion of the work area to accommodate a larger and deeper benched excavation to access and remove UST Nos. 22 and 23. Expansion of the work area toward Q Creek required installation of additional SESC measures. Removal progressed using methods similar to those used to remove UST Nos. 20 and 21 and included:

- Removal of overburden soil and concrete slab atop the USTs. Soil was loaded directly into an end dump truck for transportation to the MHLA for staging and characterization sampling.
- Removal of the tops of UST Nos. 22 and 23 to identify contents (i.e., pea gravel and water).
- Vacuum extraction of approximately 20 cy of pea gravel into a lined roll-off container.
- Extraction of approximately 850 gallons of liquid from pea gravel into poly tanks staged in a lined roll-off container (i.e., secondary containment).

Air monitoring was conducted during these activities, in accordance with the Phase 1 tech memo (IP et al. 2012a) and HASP. Phase 1 SAM waste characterization analytical data, laboratory analytical data packages, waste profiles and associated correspondence are presented in Appendix D.

Following removal of the tank contents, the soil berm in the area of the two USTs was removed to expose the remainder of the concrete slab that covered the tanks. The slab was moved away from the bank slope to provide access for tank removal. A previously unidentified tank (UST-X) was found beneath the slab.

UST-X was a steel tank located north of UST Nos. 22 and 23. The tank was measured and estimated to have a volume of approximately 550 gallons. The plan to remove UST Nos. 22 and 23 was revised to include characterization and removal of UST-X.

UST-X contained liquid with approximately 16 inches of sludge at the bottom. A sample of the sludge was collected for analytical testing and the analytical results (Appendix E) indicated the presence of toluene. In response, a plan was developed to render the atmosphere non-explosive to safely open the tank to remove the contents of UST-X. Removal activities conducted on May 7, 2012 included:

- Filling UST-X with water to purge the tank of available oxygen.
- Removal of the top of UST-X using non-sparking cutting equipment following verification of a safe atmosphere.

- Extraction of liquid and sludge by a vacuum truck. Materials were containerized in 55-gallon drums (15 total drums) and staged within secondary containment in Building 1.

- Removal of UST Nos. 22 and 23 and UST-X, and transfer of the tank carcasses in an end dump truck to the MHLA. Additional soils removed to facilitate the UST removal were loaded directly into an end dump truck for transportation to the MHLA for staging and characterization sampling.

- Collection of floor and sidewall soil samples for initial analytical testing to obtain a representative understanding of soil quality in the vicinity of the former USTs. Phase 1 SAM post-excavation analytical data, laboratory analytical data packages and data validation reports are presented in Appendix C.

- Placement of non-woven geotextile (witness layer) within excavation.

- Placement and compaction of certified clean, Dense-Graded Aggregate (DGA) atop the non-woven geotextile.

- Restoration and stabilization of the ground surface in accordance with the SESC Plan (SESCP) (Attachment 1 of the Phase 1 tech memo addendum [IP et al. 2012b]) to support Phase 2 activities.

Waste characterization analytical data, laboratory analytical data packages and waste profiles for surrounding soils are presented in Appendix D. The removal of the five USTs north of former Building 54 completed Phase 1 SAM field activities. Remaining Phase 1 SAM activities were conducted to support Phase 2 SAM engineering design and were summarized in the Phase 2 tech memo addendum (IP et al. 2012d). Wastes associated with Phase 1 SAM activities were loaded for off-site disposal between June 27 and July 19, 2012. Waste manifests/bills of lading for the Phase 1 SAM waste disposal are presented in Appendix F.

3. Phase 2 SAM Implementation and Restoration Activities

From April 2012 to June 2012, IP and GP completed the engineering investigation, analysis and conceptual design for Phase 2 SAM; the detailed design for Phase 2 SAM was completed in July 2012. The Phase 2 tech memo addendum (IP et al. 2012d) summarizes the final Phase 2 SAM detailed design and implementation approach to bank stabilization.

3.1 Site Clearing and Preparation

3.1.1 Pre-Construction Surveying, Utility Location and Staging Area Preparation

In September 2012, a licensed surveyor established site controls, including identification of locations for site clearing limits, silt fence and temporary fencing based on the construction/final design drawings. Likewise, survey points were placed at specific locations along the existing concrete retaining structure in Q Creek. A wall monitoring program was conducted weekly to assess potential movement of the wall during soil excavation and stone toe berm construction work. Monitoring points were established along the top of the wall as well as sections of the front face of the wall. Survey information regarding the monitoring of the retaining wall is provided in Appendix G. The results of the monitoring indicated that the wall did not move during the implementation of the Phase 2 SAM. Slight changes noted on the table are mainly attributable to instrument error and the very small increment readings obtained for this activity.

Prior to excavation work, underground utilities were located by a utility survey company (Master Locators) to identify features below grade (e.g., pipes, tanks). The below-grade features were marked out on the ground with spray paint and a New Jersey One Call was initiated to comply with New Jersey requirements.

In addition to the MHLA used for Phase 1 SAM activities, a second MHLA (MHLA2) was established within the limits of the floor slabs of the former CFA buildings (Figure 2). Hay bales were installed around the perimeter of the MHLA and MHLA2. Plastic sheeting was used to cover soil and concrete piles within the MHLA and MHLA2 prior to loading for off-site disposal.

3.1.2 Erosion and Sedimentation Control and Site Clearing

After completion of site survey work and after the minimum waiting period for the New Jersey One Call, ARCADIS initiated site preparation activities including installation of SESC (silt fence, temporary fencing and stabilized construction entrance) and area-specific traffic plan management (e.g., gate enforcement, truck staging). In addition, ARCADIS staged temporary facilities at the site including a construction trailer, two equipment storage trailers, and portable restroom facilities. Appendix A contains the weekly construction reports that were previously submitted to USEPA; these reports contain photographs of site preparation and work activities.

3.2 Former Building 57 Area Excavation

3.2.1 Discharge Pipe DP-15 Removal

The initial task for the former Building 57 area excavation work consisted of removing Discharge Pipe No. 15 (DP-15). Following setup of the site, vegetation was cleared by mechanical means (chain saw and heavy tracked-equipment) adjacent to former Building 57 and stockpiled on the MHLA2 for future off-site disposal. DP-15 receives stormwater runoff from Building 74 (which is presently used for document storage); therefore, some continued stormwater drainage capability was required for DP-15. DP-15, previously located and marked out, was removed with a large trackhoe excavator from the discharge point at Q Creek to a point approximately 5 feet north of Building 74. However, in order to allow for some small continued stormwater drainage to occur, a bed of open-graded crushed stone was placed in a 10-foot-long section at the outlet of the remaining pipe section to function as an infiltration gallery. Post-excavation soil samples from around the pipe were obtained at the time of removal. A summary table of analytical results and laboratory data reports are included in Appendix H.

3.2.2 Excavation Activities

With vegetation and DP-15 removed, the removal of in-place materials began in the former Building 57 area. Soils were excavated to meet the design subgrade and staged in the MHLA for future testing to assess suitability for reuse as backfill at the site. Sampling and analysis were performed in accordance with the Material Use and Reuse Plan (MURP) included as Appendix I of the Phase 2 tech memo addendum (IP et al. 2012d).

During the excavation work, it became apparent that the existing former Building 57 concrete slab was encroaching on the new slope area. Therefore, the former Building 57 concrete slab was removed and stockpiled in the MHLA for characterization and off-site disposal. In-place soils were generally loose to firm density silty sands with varying amounts of gravel. The field determination of these in-place soils required a reconsideration of the planned steeper slope in the area of former Building 57. ARCADIS identified that, in order to maintain a stable slope, the newly constructed slope needed to be a slightly flatter slope condition then as shown on the design plans. The revised flatter slope and extent of excavation is shown on Drawing 6 of Appendix B.

3.2.3 Estimated Soil Excavated and Post-Excavation Analytical Sampling

Approximately 3,190 cy of soil was removed from the former Building 57 area. Prior to backfilling, the excavated soil was tested and 2,350 cy was deemed acceptable for reuse on site. Appendix B presents record drawings that depict pre-construction topography, subbase/excavation topography, final topography, and post-excavation soil sample locations in a series of plan view sheets. Appendix I presents laboratory analytical results for soil reuse samples collected in accordance with the USEPA-approved MURP (Appendix I of the Phase 2 tech memo addendum [IP et al. 2012d]).

Following excavation activities, post-excavation soil samples were collected and analyzed to document polychlorinated biphenyl (PCB) concentrations within the soil that remained in-place. This provided a representative dataset to support human health and ecological risk assessments. Post-excavation soil samples were collected in accordance with protocols established and approved by USEPA as part of the *Remedial Investigation/Feasibility Study Work Plan* (RI/FS Work Plan) (IP et al. 2010b), and were analyzed by Accutest Laboratories in Edison, New Jersey. Appendix J presents laboratory analytical results for post-excavation soil samples representing soil remaining in-place at the completion of SAM activities in the former Building 57 area.

3.2.4 Borrow Source Materials

Material used for backfill either originated from off-site sources (i.e., imported fill, imported topsoil) or from portions of the former CFA where excavation occurred (i.e., reused on-site soil from the former Building 57 area as noted above). Laboratory analytical testing was performed on samples of imported fill, imported topsoil and on-site soil subject to reuse in accordance with the USEPA-approved MURP (Appendix I of the Phase 2 tech memo addendum [IP et al. 2012d]). Results of analytical testing were compared to NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS), the Impact to Groundwater Soil Remediation Standards (IGWSRS), and published regional background concentrations of inorganic constituents (Sanders 2003). Data summary tables and validated analytical laboratory data packages for imported fill and imported topsoil are included in Appendix K.

3.3 Former Building 54 Area Excavation

3.3.1 Excavation Activities

Soils were excavated to meet the design subgrade and the excavated soils were staged in the MHLA2 for waste characterization sampling. Work in the former Building 54 area was phased as described below.

3.3.1.1 TSCA Soil Excavation

As stated in the Phase 2 tech memo addendum (IP et al. 2012d), soil sampling performed during Phase 1 SAM investigation activities identified areas on the banks of Q Creek and in the northern portion of the former CFA that contained PCBs at concentrations (i.e., greater than or equal to 50 milligrams per kilogram [mg/kg]) that required handling and disposal as a Toxic Substances Control Act (TSCA)-regulated waste. The TSCA-regulated areas were excavated first and post-excavation samples were collected to confirm removal of TSCA-regulated materials prior to performing further soil excavation in non-TSCA areas.

TSCA areas were excavated individually prior to removal of material from other areas to facilitate segregation of TSCA-regulated materials, with the exception of TSCA Area Nos. 7 and 8. Due to the proximity of TSCA Area Nos. 7 and 8 to Q Creek, excavation of TSCA Area Nos. 7 and 8 were coordinated with non-TSCA excavation work near the creek to maintain safe excavation practices. Both areas were demarcated with spray paint and flagging and excavated individually once surrounding grades provided a safe work platform to execute the excavation.

Post-excavation sidewall and floor samples were collected from excavations involving TSCA-regulated waste to verify removal. Samples were collected at a rate of one sample per 30 linear feet of excavation sidewall and one sample per 900 square feet of excavation floor, in accordance with New Jersey Administrative Code (N.J.A.C.) 7:26E-6.4.

Excavation areas with sample results greater than or equal to 45 mg/kg PCBs were expanded to remove additional material. Limits of excavations were expanded in the direction of sample values greater than or equal to 45 mg/kg PCBs. Lateral excavation expansion was extended the entire length of the sidewall or to the location of the next sample with a PCB concentration below 45 mg/kg. Vertical excavation expansion was extended the entire footprint of the excavation or similarly to the location of the next sample with a PCB concentration below 45 mg/kg. Appendix L presents the post-excavation sample results for each excavation associated with TSCA-regulated material and sample locations are presented on Drawing 3 of Appendix B.

3.3.1.2 USTs, Sumps and Discharge Pipes

Phase 1 SAM activities removed five USTs from the top of the bank slope in the former Building 54 area. Removal of remaining abandoned-in-place USTs, sumps and former discharge pipes was completed as part of Phase 2 SAM activities.

3.3.1.2.1 USTs

Six USTs were removed as part of Phase 2 SAM. Initial activities involved removal of overburden soil to identify the position and condition of the USTs. Excavated overburden soils were loaded directly into an end dump truck for transportation to the MHLA2 for staging and waste characterization sampling.

After exposing UST Nos. 14, 15, 24, 25, 28 and 29/30, the following activities were performed:

- Removal of the tops of the USTs to identify contents. All tanks contained pea gravel, with liquid intermixed with the pea gravel.
- Transfer of liquid to poly tanks staged in a lined roll-off container (i.e., secondary containment).
- Removal of pea gravel into a lined roll-off container or loaded directly into an end dump truck for staging in the MHLA2. Pea gravel materials were handled and managed as listed hazardous waste (based on available records regarding contents in the former USTs) and were characterized prior to waste disposal to identify presence or non-presence of listed constituents. Presence of listed constituents required materials to be disposed of as Resource Conservation and Recovery Act (RCRA)-hazardous. Non-presence (i.e., non-detect) of listed constituents allowed for materials to be disposed of as non-RCRA-hazardous. Pea gravel materials were non-detect for listed constituents.
- Removal of USTs and transfer of the tank carcasses in an end dump truck to the MHLA2. Additional soils removed to facilitate the UST removal were loaded directly into an end dump truck for transportation to the MHLA2 for staging and characterization sampling.

- Post-excavation floor samples were obtained for volatile organic compound (VOC) analysis within the footprints of the UST excavations that were at elevations equal to design subgrade elevations (i.e., UST Nos. 14, 15, 28 and 29/30) and exhibited photoionization detector (PID) readings that exceeded 600 parts per million (ppm) from field samples obtained during the excavation work. These sample results were used to assess the potential for additional excavation beyond the design subgrade. Analytical data are included in Appendix M and sample locations are shown on Drawing 8 of Appendix B.

- As a result of PID readings above 600 ppm, and the results of VOC sample analyses, approximately 1,500 cy of additional VOC-impacted soils were removed from the area beneath former UST Nos. 14 and 15. Soils were removed until PID readings were non-detect (ND) for VOCs at the excavated grade, which was above the existing groundwater elevation. In addition, a sample was obtained at the final over-excavated grade to document VOC concentrations for that area. Analytical data for this sampling are included in Appendix M and sample locations are shown on Drawing 8 of Appendix B. Although PID readings were non-detect at the bottom of the excavation for former UST Nos. 14 and 15, the proximity of the western property boundary (adjacent to the railroad property) constrained further excavation to the west. As a means to assess conditions in this area of the site, one new overburden monitoring well, designated MW-18, has been installed. This well location is side-gradient of well MW-12R.

- A 24-inch-thick layer of open-graded crushed stone, meeting the gradational characteristics of the American Association of State Highway and Transportation Officials (AASHTO) No. 57 crushed aggregate (3/4 inch stone), was placed in the excavations of former UST Nos. 14 and 15. This open graded stone layer is above the existing groundwater elevation in this area. A 4-inch-diameter polyvinyl chloride (PVC) standpipe was placed halfway through the thickness of the crushed stone layer and the standpipe was extended upward to the ground surface as the area was backfilled with certified clean backfill soils. The area of this crushed stone layer is the southwest corner of the excavation at the location of former UST Nos. 14 and 15 as shown on Drawing 4 of Appendix B.

Air monitoring was conducted during these activities in accordance with the Phase 2 tech memo addendum (IP et al. 2012d) and the site HASP.

3.3.1.2.2 Sumps

Nine sumps were removed during Phase 2 SAM activities. Initial activities involved the removal of overburden soil to identify the position and condition of the sumps. Excavated overburden soils were loaded directly into an end dump truck for transportation to the MHLA2 for staging and characterization sampling.

After exposing the sumps, the concrete sumps and soil contents were transferred in an end dump truck to the MHLA2. Additional soils removed to facilitate the sump removal were loaded directly into an end dump truck for transportation to the MHLA2 for staging and waste characterization sampling. Note that sumps and additional soils located in TSCA excavation areas were deemed TSCA-regulated materials and managed accordingly.

During the removal of Sumps S-1 and S-2, a separate concrete structure was uncovered. The structure was identified as a former sanitary wastewater vault. The 10 feet by 10 feet square vault (hereafter referred to as the vault) had a concrete lid with an open former wooden panel hatch. PID readings were zero at the open hatch. The vault was estimated to be about 20 feet deep based on probing. Prior to disturbing the vault, a sample of the sludge that had collected in the vault was obtained to identify management requirements for the vault and its contents. The sample results indicated PCBs concentration less than 3 mg/kg and did not identify detectable VOCs. Analytical results are provided in Appendix N.

The concrete cover and a portion of the concrete side walls were subsequently removed to better expose the soft sludge. Based on topographic information obtained from the surveyor, it was identified that the elevation of the top of the vault was at least 12 feet below the final design surface grade. Additionally, due to its size and its proximity to the existing former Building 33 slab, it was recommended that the vault be left in-place. To address the soft condition of the sludge within the vault, 1,000 pounds of Portland cement was added to the vault sludge and mixed with the backhoe bucket. Adding the Portland cement provided adequate strength to the sludge within the vault, resulting in a hardened material capable of adequately supporting compacted fill for slope mitigation.

3.3.1.2.3 Discharge Pipes

Fourteen former discharge pipes (inclusive of DP-15 described above) of varying size and material and 122 underground/buried pipes were removed as part of Phase 2 SAM. The network of pipes was associated with both discharge pipes (i.e., from former sump areas and the vault described in Section 3.3.1.2.2) and production pipes from former Building 54. Most of the pipes were completely removed (from discharge point to origin [e.g., Building 54 slab, sump, vault]). There were a limited number (i.e., less than 10) of pipes that were removed between Q Creek and the existing CFA building slab (at former Buildings 33 and 34). These pipes appeared to extend back toward the CFA slab from several of the sumps and from the Building 54 slab area. Since the pipes were 3 feet below grade and empty, and to preserve the integrity of the existing concrete slab, the pipes were cut off and the ends crimped by mechanical means at the building slab location. In accordance with the Phase 2 tech memo addendum (IP et al. 2012d), if the discharge pipes contained residue the residue was transferred to a 55-gallon satellite drum for final waste characterization and disposal. Residual materials including liquid, soil, gravel, coal and fly ash, and personal protective equipment (PPE) used during SAM activities, were collected in two 55-gallon drums. Analytical data associated with residue sampling is included in Appendix O.

DP -14 was not removed as previous sampling did not indicate soil impacts around the pipe. Additionally, DP-14 is located upslope of the existing concrete retaining wall and removal of pipe was not recommended due to the potential for destabilizing the concrete retaining wall. In lieu of removing the pipe, it was cut at ground surface grade and plugged with non-shrink sealant.

3.3.2 Slope Area Under Former UST-X

Upon excavating to subgrade elevation in the area beneath former UST-X, the soils at subgrade elevation exhibited PID readings above 600 ppm from field samples obtained during the excavation work. As a result of these PID readings, approximately 2,200 cy of additional VOC-impacted soil was removed from the area beneath the former UST-X. Soils were removed until PID readings were ND for VOCs at the excavated grade. These soils were loaded into end dump trucks for transportation to the MHLA2 for staging and waste characterization sampling.

3.3.3 Estimated Soil Excavated and Post-Excavation Analytical Sampling

Approximately 9,839 cy of soil was excavated from the former Building 54 area. Appendix B presents record drawings that depict pre-SAM elevations, excavation elevations, final restored elevations, and post-excavation soil sample locations in a series of plan view sheets. Following excavation activities, post-excavation soil samples were collected and analyzed to document PCB concentrations in soil remaining in-place, and provide a representative dataset to support human health and ecological risk assessments. Post-excavation soil samples were collected in accordance with protocols established and approved by USEPA as part of the RI/FS Work Plan (IP et al. 2010b), and were analyzed by Accutest Laboratories in Edison, New Jersey. Appendix P presents laboratory analytical results for post-excavation soil samples within the former Building 54 area.

3.4 Backfilling – Former Building 54 and 57 Areas

Following excavation and review of post-excavation sample results as described in the previous sections, excavated areas were backfilled, compacted in lifts covered with topsoil and seeded to achieve target final grades in preparation for replanting per the project plans provided in the Phase 2 tech memo addendum (IP et al. 2012d). Slope restoration resulted in the placement of at least 3 feet of cover (with upper interval consisting of at least 12 inches of topsoil) over the excavated areas and achieved compliance with TSCA regulations (40 Code of Regulations [CFR] 761.61[a-c]) for self-implementing criteria in low-occupancy areas[1].

Material used for backfill either originated from off-site sources (i.e., imported fill [Appendix K], imported topsoil [Appendix K]) or from portions of the former CFA where excavation occurred (i.e., reused on-site soil [Appendix I]). Laboratory analytical testing was performed on samples of imported fill, imported topsoil and on-site soil subject to reuse in accordance with the USEPA-approved MURP (Appendix I of the Phase 2 tech memo addendum [IP et al. 2012d]).

Results of analytical testing were compared to NJDEP RDCSRS, IGWSRS and published regional background concentrations of inorganic constituents (Sanders 2003). Data validation reports for Phase 2 SAM post-excavation samples, imported material samples for Phase 2 SAM, and samples of on-site soil reused in Phase 2 SAM are presented in Appendix Q. Data validation was performed on post-excavation samples that represent material still in-place and included in the risk assessments. Laboratory data reports for post-excavation samples may contain data for samples of soils that were subsequently removed. Drawings in Appendix B depict the final post-excavation samples that represent soils that remained in-place. In addition, Appendix B provides cross-sections of the site depicting the soils that remain in-place and the newly placed fill required to generate the new surface grades. These cross-sections provide profile sections through both the former Building 54 and former Building 57 areas and incorporate existing post-excavation sample locations through those sections. The cross-sections show the elevation of the post-excavation sample and elevation of the final surface grade (i.e., to visually display the amount of soil cover over existing in-place soils).

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[1] A low-occupancy area is defined as an area where occupancy will not exceed an average of 6.7 hours per week.

3.5 Human Health and Ecological Risk Assessments

A revised risk characterization has been performed using an updated dataset that incorporates soil data collected as part of the SAM (i.e., pre-excavation sampling and post-excavation sampling) and excludes soil data from locations removed during Phase 2 SAM activities. Updated risk and hazard estimates are presented in the USEPA-approved revised BHHRA (IP et al. 2013a), the USEPA-approved BERA Work Plan (IP et al. 2013b) and the BERA Report (IP et al. 2013c). These documents indicate order of magnitude decreases in risk and hazard estimates for soil attributable to SAM activities, resulting in acceptable risk levels for PCBs in soil. The USEPA-approved revised BHHRA (IP et al. 2013a) and BERA Report (IP et al. 2013c) provide additional details regarding the incorporation of SAM data into modeling input parameters and the effects of SAM on the human health and ecological risk assessment results.

3.6 Site Restoration Activities

In addition to backfilling and grading, stone, bioengineering and plant materials were used to further stabilize the slope and restore native vegetation. Site restoration activities are described in the following subsections.

A combination of containerized plants and seed mixtures were used to restore a mosaic of native plant communities to the restored areas. Species composition was based on riparian forest plant communities along the Delaware River, and reference communities along Q Creek. These species reflect those surveyed by ARCADIS ecologists on February 14, 2012 in and proximate to the proposed bank restoration areas. Additional consideration was given to quick-establishing species with large canopies that would shade the southern bank and channel of Q Creek. Appendix R includes final planting plans.[2]

The final restored bank is segregated into four distinct planting areas based on expected flow conditions and slope. Planting areas include a stone toe berm, terrace, bank slope and an upland top of bank. The restoration approach for each area is described below.

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[2] Species were planted at the proposed or greater quantity specified in the restoration plan included in the USEPA-approved Phase 2 tech memo addendum (IP et al. 2012f). Modifications to the approved restoration plan with surrogate species and/or stock sizes selected for use were approved by USEPA via electronic communication on April 3, 2013.

3.6.1 Stone Toe Berm

In accordance with the Phase 2 tech memo addendum (IP et al. 2012d), a stone toe berm was installed at the toe of the slopes in both the former Building 54 and former Building 57 areas. The purpose of the toe berm is to resist scour forces caused by high-velocity flow within Q Creek. Large-diameter stone (minimum sizing between 50 and 450 millimeters per the DAVE) was installed at the toe of the slope to an elevation of 117 feet above mean sea level (amsl). Brown and grey stone was selected for the toe berm in order to match natural rock outcrops that appear in other portions of Q Creek. Per the plan provided and accepted by USEPA and NJDEP, Black willow (*Salix nigra*) one-year transplants were planted within the stone toe berm proximate to the water's edge. Planting positions were established so all transplants were in contact with the water table.

Due to concerns of deer herbivory along the water's edge and desiccation due to an absence of soil in the interstitial spaces of the stone toe berm, only 300 of the specified 1,032 transplants were installed in the spring of 2013. ARCADIS ecologists will evaluate survival of the initial plantings to better define the appropriate growing zone atop and within the stone toe berm in the spring of 2014. Based on this evaluation, the remaining black willow transplants will be planted as appropriate.

3.6.2 Terrace

Consistent with reference conditions observed on similar floodplain terraces within the Q Creek watershed, the terrace was restored as a palustrine scrub-shrub community. Shrubs and trees planted on the terrace included: gray dogwood (*Cornus racemosa*), silky dogwood (*Cornus amomum*), smooth alder (Alnus serrulata) and river birch (*Betula nigra*) (Appendix R).

In addition to planting of nursery stock, the terrace was seeded with a native seed mix suitable for floodplain terraces (i.e., Ernst Conservation Seeds [Ernst] Floodplain Mix [ERNMX 154]) (Appendix R). This seed mix was supplemented with an annual cover crop (i.e., annual rye [*Lolium multiflorum]*) to facilitate short-term vegetative cover to address concerns of soil stability in anticipation of slower germination of native species.

A temporary gravel road currently bisects the terrace in the former Building 54 area, and therefore planting was not completed in this area. Specified trees and shrubs were dispersed equally throughout the restored terrace and adjacent bank slopes. The road is anticipated to be removed following completion of groundwater investigation activities. Restoration activities will include removal of rock, placement of top soil, and seeding with a native seed mix suitable for floodplain terraces (i.e., Ernst Floodplain Mix ([ERNMX 154] or equivalent).

3.6.3 Bank Slope

Restoration of the bank slopes above the terrace included planting a diverse assemblage of native shrubs and ferns, and seeding with species typical of riparian forests. Native trees were not included in the proposed planting plan to avoid geotechnical concerns for bank stability. Shrub and fern species planted included: elderberry (*Sambucus canadensis*), Christmas fern (*Polystichum acrostichoides*) and ostrich fern (*Matteuccia struthiopteris*) (Appendix R). The area was seeded with a native riparian seed mix (Ernst Riparian Buffer Mix [ERNMX 178] (Appendix R). Consistent with the approach taken in the restored terrace area, the seed mix was supplemented with an annual cover crop (i.e., annual rye).

3.6.4 Top of Bank and Upland Areas

An upland woodland plant community was established landward of the bank slope areas (Appendix R). Canopy-forming species planted included: red maple (*Acer rubrum*), sycamore (*Platanus occidentalis*) and red oak (*Quercus rubra*). Additional tree species included silver maple (*Acer saccharinum*), tulip poplar (*Liriodendron tulipifera*), pin oak (*Quercus palustris)* and sassafras (*Sassafras albidum*). Several species of sumacs, including staghorn (*Rhus typhina*), winged (*Rhus copallium*) and smooth (*Rhus glabra*) were also planted along with arrowwood (*Viburnum dentatum*). Seeding occurred using a native riparian seed mix (Ernst Riparian Buffer Mix [ERNMX 178]).

3.7 Waste Management

As described in the preceding sections, slope mitigation activities generated several waste streams requiring off-site disposal. Waste characterization samples were collected and analyzed to characterize the excavated materials in accordance with facility requirements and applicable state and federal requirements. IP and GP obtained and received approvals from NJDEP, the Pennsylvania Department of Environmental Protection (PADEP) and the New York State Department of Environmental Conservation (NYSDEC) (i.e., the states of waste generation and receipt) through the classification of waste approach described in the May 22, 2012 electronic correspondence provided to USEPA. The results of Phase 2 SAM waste characterization sampling and waste profiles are presented within Appendix S. Appendix T presents a summary of the various waste streams and the waste manifests/bills of lading for each waste shipment. In addition to the disposal log presented in Table 1 of

Appendix T, the following presents a summary of the type and quantity of waste generated/disposed:

- Wood chips and cleared vegetation (approximately 15 tons in one load) transported to the Waste Management, Inc. (WM) GROWS facility in Morrisville, Pennsylvania for off-site disposal.

- Construction and demolition (C&D) debris (approximately 650 tons in 28 loads) from former building slabs, concrete sumps and other miscellaneous structures, pipe materials, PPE and decontamination supplies, and hoses transported to the WM GROWS facility in Morrisville, Pennsylvania for off-site disposal.

- Soil and materials characterized as TSCA-regulated materials (approximately 2,032 tons in 90 loads) transported to the CWM Chemical Services, LLC (CWM) facility in Model City, New York for off-site disposal.

- Soil and materials characterized as TSCA-regulated, RCRA-hazardous materials (approximately 157 tons in seven loads) transported to the CWM facility in Model City, New York for off-site disposal.

- Soil and materials characterized as non-RCRA-hazardous materials (approximately 11,070 tons in 494 loads) transported to the WM GROWS facility in Morrisville, Pennsylvania for off-site disposal.

- Water drained from the excavations and containerized stormwater that accumulated on the liner from MHLA areas and water collected from former USTs (16,044 gallons in 5 loads, including water used to clean tanks after use) transported to the Clean Earth of North Jersey, Inc. facility in South Kearny, New Jersey for off-site disposal.

- Sixty-nine tons of scrap metal shipped in five containers to the Sims Metal Management facility in Newark, New Jersey for recycling.

Appendix T presents disposal/recycling documentation, including non-hazardous bills of lading for the material disposed/recycled as part of Phase 2 SAM.

4. Summary

The SAM project successfully mitigated the unstable conditions of the slope of the Q Creek bank adjacent to the former CFA. Further, the implementation of SAM activities, as documented in this Completion Report, resulted in order of magnitude decreases in risk and hazard estimates such that there are no unacceptable risks related to PCBs in soil at the site.

Appendix B contains record drawings of the final conditions at the completion of the SAM project. The area has been returned to an open, vegetated condition with a species composition similar to riparian forest communities along the Delaware River and Q Creek. Additional vegetation maintenance and/or monitoring will be conducted in accordance with the USEPA-approved restoration planting plan.

In 2013, “No Trespassing” signs were posted along a new permanent fence placed at the top of the slope to discourage trespassers from entering the site and potential damaging the vegetative cover or wildlife habitat.

5. References

International Paper Company, Georgia-Pacific Consumer Products, LP and ARCADIS. 2010a. Phase IA Cultural Resources Investigation Report. Curtis Specialty Papers Site, Milford, New Jersey. August 26, 2010.

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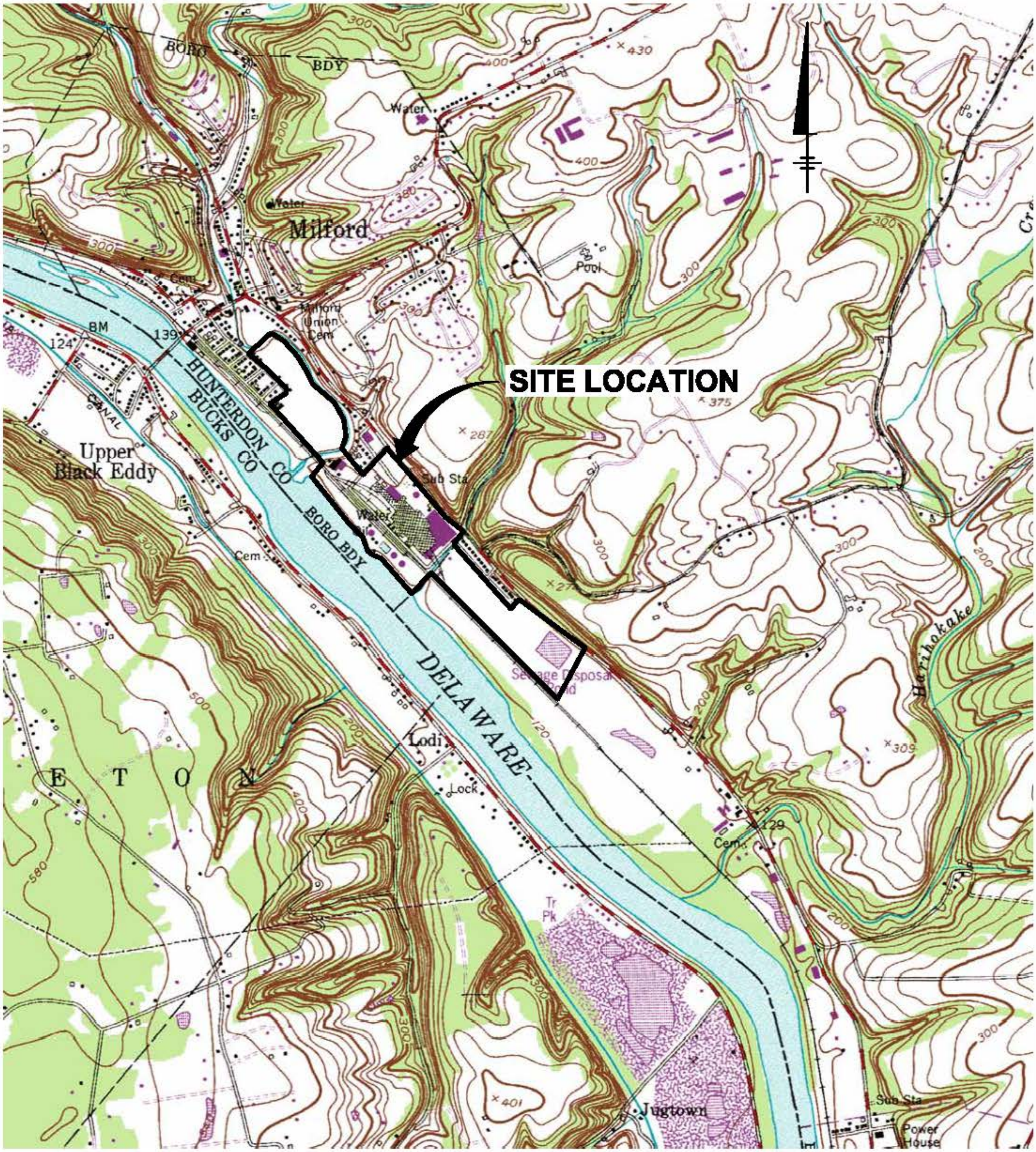
Figures



SOURCE:
USGS QUADRANGLE MAP
FRENCHTOWN, NJ
7.5 MINUTE SERIES, REVISED 1995
CONTOUR INTERVAL 20 FEET

NEW JERSEY

0 2000' 4000'
GRAPHIC SCALE

INTERNATIONAL PAPER COMPANY AND
GEORGIA-PACIFIC CONSUMER PRODUCTS, LP
CURTIS SPECIALTY PAPERS SITE
SAM PROJECT COMPLETION REPORT

SITE LOCATION MAP

ARCADIS

FIGURE
1

CITY: CRANBURY-NJ DIV/GROUP: ENVCAD DB: T.FATTO LD: T.FATTO PIC: PM: K.ROMAINE TM: L.HYATT LYR: ON=*;OFF=*REF* PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/8/2013 7:29 AM BY: FATTO, TRACEY
XREFS: IMAGES: PROJECTNAME: —

LEGEND

- SITE BOUNDARY
- LOT LINES
- EDGE OF WATER
- APPROXIMATE EDGE OF WATER
- FENCE
- RAILROAD
- SURFACE-WATER FLOW DIRECTION
- APPROXIMATE LOCATION OF BIOLOG
- 3 FT. WIDE DRAINAGE SWALE
- 117 BUILDING NUMBER
- BUILDING OUTLINE
- 117 BUILDING NUMBER (DEMOLISHED)
- BUILDING OUTLINE (DEMOLISHED)
- COAL PILE AND AERATION BASIN AREA
- COATINGS FACILITY AREA
- MAIN MILL AREA
- WASTEWATER TREATMENT PLANT AREA
- UNNAMED TRIBUTARY AREA
- MONITORING WELL

NOTES:

1. CFA: COATINGS FACILITY AREA
2. MMA: MAIN MILL AREA
3. CPABA: COAL PILE AND AERATION BASIN AREA
4. QC: QUEQUACOMMISSACONG CREEK
5. UT: UNNAMED TRIBUTARY
6. WWTPA: WASTEWATER TREATMENT PLANT AREA
7. BUILDINGS 100 AND 101 DEMOLISHED IN EARLY 2010.
8. AERATION BASIN AND BUILDING 127 DEMOLISHED IN EARLY 2011.
9. BUILDINGS 33, 34, 35, 36, 37, 73, 74 AND 76 DEMOLISHED IN MID 2012.
10. RI/FS: REMEDIAL INVESTIGATION FEASIBILITY STUDY
11. SAM: SLOPE AREA MITIGATION

SOURCES:

1. BASEMAP FROM ELECTRONIC FILE PROVIDED BY BORBAS SURVEYING & MAPPING, LLC. FILE NAME: 090609_BOUNDARY_2009-10-20SEND.DWG, DATED 10-13-09.
2. BUILDING AREAS FROM HISTORICAL REPORTS TAKEN FROM TRC ELECTRONIC FILE NAMED: PHASE-1. DWG, FIGURE 5-1, DATED: 9-14-09
3. GPS COORDINATES FOR USEPA SAMPLE LOCATIONS PROVIDED BY USEPA (ALISON HESS) VIA ELECTRONIC MAIL ON DECEMBER 2, 2009.
4. THE EXTENTS AND DESIGNATIONS OF THE REDEVELOPMENT AREAS HAVE BEEN APPROXIMATED AND DIGITIZED BASED ON FIGURE 3A FROM THE NOVEMBER 15, 2004 REPORT TITLED "REDEVELOPMENT PLAN – CURTIS PAPER MILL SITE" PREPARED BY T&M ASSOCIATES.

0 150' 300'
GRAPHIC SCALE

INTERNATIONAL PAPER COMPANY AND
GEORGIA-PACIFIC CONSUMER PRODUCTS, LP
CURTIS SPECIALTY PAPERS SITE
SAM PROJECT COMPLETION REPORT

SITE PLAN

ARCADIS

FIGURE
2