Environmental Engineering Unit
Engineering/Architecture Design

Goethals Bridge Replacement Project
Block 1885 Lot 35
Staten Island, NY

Remedial Design/Remedial Action Work Plan

October 2014

Revised July 2015

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EXECUTIVE SUMMARY

The Port Authority of New York and New Jersey (PANYNJ) plans on performing remedial activity on Block 1885 Lot 35 and Block 1885 Lot 75 (Site) based on analytical data collected during several site investigations and the New York State Department of Environmental Conservation (NYSDEC) January 2014 Record of Decision (ROD). In congruence with the NYSDEC ROD and a Baseline Remediation Plan (BRP) developed by PANYNJ. The PANYNJ proposes to perform a remedial action consisting of the following components:

- Excavation and disposal of soils that exceed NYSDEC Industrial Use Soil Cleanup Objectives (SCOs) for PCBs or NYSDEC Protection of Groundwater SCOs for 1,4 dichlorobenzene or chlorobenzene as detailed in the NYSDEC ROD and BRP dated April 2014.
- Backfill with certified clean fill and provide a site cover (includes bridge features and former concrete building slabs) on the whole site except for the off-site sediment areas (shown on Figure 2B) that allow for industrial use of the Site.
- Establish an Environmental Easement for the Site.
- Create a Site Management Plan.
- Provide annual post-remedial monitoring reports based on site inspections conducted by competent personnel.

The combination of these actions is the most cost-effective and technically feasible remedial alternative, and, taken in concert, is protective of human health and the environment.

The schedule for the selected remedial action is expected to coincide with proposed construction activities on the Site related to the Goethals Bridge Replacement Project.

The contractor selected to perform the remedial action will submit a work plan detailing the stages of remediation to be performed to allow for concurrent bridge construction activities.

A Construction Completion Report will be submitted by the contractor and submitted to PANYNJ for review, which will document all work activities performed on the site. This report will then be submitted to NYSDEC as part of the required site closure documentation listed in the Consent Order. This document will be provided in a PANYNJ produced Final Engineering Report. This report shall include “as-built

drawings" provided by the contractor detailing final remedial site conditions and describing any deviation from this RD/RA Work Plan.

PANYNJ plans to begin submitting the documents required for creating an Environmental Easement on the Site, as well as a finalized SMP approximately 6 months after remedial work at the Site is complete. Remedial site work (excavation, backfill, and restoration) is currently anticipated to begin in September 2017 and be complete in September 2018.

Authorization for remedial work in adjacent wetland areas on the Site has been granted by NYSDEC under the existing Goethals Bridge Replacement Project wetland disturbance permit.

1.0 INTRODUCTION

This RD/RA Work Plan has been prepared for Block 1885 Lot 35 and Block 1885 Lot 75, located at 250 North Washington Avenue, Staten Island, New York (Site). The location of the Site is shown in Figure 1 in the NYSDEC ROD (Appendix A). The Site has previously been listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site (Site #243008) due to known releases to the environment resulting from operations on the Property. In January 2014, the NYSDEC issued a ROD for the Site.

PANYNJ is currently in the process of replacing the existing Goethals Bridge due to its deficiencies in handling increasing traffic demands. In a ROD dated January 31, 2011, the United States Coast Guard approved the replacement of the Goethals Bridge, utilizing the designated "New Alignment South right-of-way" across the Arthur Kill between Staten Island, New York and Elizabeth, New Jersey. The Site is located within the New Alignment South right-of-way and was acquired by PANYNJ.

1.1 Purpose

The Port Authority's objective for preparing this RD/RA Work Plan is to establish and describe the proposed remedial action for the Site. The remedial action is based on the data collected during Phase I and Phase II investigations, and the January 2014 NYSDEC ROD issued for the Site which included site investigations conducted by the former property owner. A summary of the Phase I and Phase II investigations is provided in Section 1.2 and Section 2.0. A summary of the NYSDEC ROD is provided in Section 1.2.3.

1.2 Site Reporting Summary

1.2.1 Phase I Environmental Site Assessment (June 2012)

A *Phase I Environmental Site Assessment* (ESA) *250 Goethals Road North Block 1885 Lot 35 Staten Island, NY 10303* report was finalized for the Site by ARCADIS on June 4, 2012. The Phase I ESA Report concluded the following:

- The site is confirmed to have polychlorinated biphenyls (PCBs), semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), and metals contamination to soil and groundwater based on historical document review.
- Urban Historic Fill is likely present at the Site

- Due to the close proximity of the Goethals Bridge (I-278) approach ramp, which abuts a portion of the north side of the Site, there is potential exposure to motor vehicle fluids and winter roadway maintenance materials (sands and salt).
- Historical industrial activities on adjacent properties that have the potential to impact the Site include:
    - The former GATX Terminal to the southwest.
    - Operations and the history of releases at the Coca-Cola facility to the east.

1.2.2 Phase II Investigation Report (October 2012)

In order to vertically delineate the Site, a limited (due to property owner restrictions) Phase II Investigation was conducted. A *Phase II Investigation Report - Block 1885 Lot 35* for the Baker Property was prepared by ARCADIS and finalized on October 19, 2012. This report has been previously submitted to NYSDEC. Included in the appendices of the Phase II report are historic investigation reports. These historical reports provided site investigation data that was used congruently with the data collected during this Phase II Investigation to provide justification for the recommended remedial action as discussed in Section 4.0 of this RD/RA Work Plan. The limited Phase II Investigation concluded the following about the Site:

- PCBs were detected in soil samples at concentration greater than regulatory criteria. Other soil parameters were not analyzed.
- Groundwater sampling was not part of this investigation

Data results from the historical investigations and this Phase II Investigation Report are discussed in Section 2.0

1.2.3 NYSDEC ROD (January 2014)

A *Record of Decision – R. Baker & Son Machinery Dismantlers, Inc State Superfund Project Staten Island, Richmond County Site No. 243008 January 2014* was issued for the Site in January 2014 by the NYSDEC. The NYSDEC ROD (Appendix A) provides a detailed summary of the remedial action based off Investigation Reports prepared by Brinkerhoff Environmental Services and supplemental investigations conducted by Arcadis. The NYSDEC ROD details the following remedial actions for the Site:

- Soils up to 20ft below grade that exceed NYSDEC Industrial Site Cleanup Objectives (SCOs) for PCBs or protection of groundwater SCOs for 1,4 dichlorobenzene or chlorobenzene shall be excavated and disposed of offsite.
- Contaminated wetland sediment 'hot spots' will be excavated for offsite disposal.
- A site cover will be required to allow for industrial use of the Site.
- An Environmental Easement will be imposed on the Site.
- A Site Management Plan will be required for the Site.

Further details on the remedial action based on the NYSDEC ROD is provided in Section 4.0 and 5.0.

1.2.4 Baseline Remediation Plan (April 2014)

A *Baseline Remediation Plan* (BRP) – *Goethals Bridge Replacement Project* (included as Appendix B) was prepared by ARCADIS. The BRP has been revised and submitted to PANYNJ on April 17, 2014. The BRP incorporates the work outlined in the NYSDEC ROD and serves as the basis for the work plan for the subject Site. The BRP also serves as the work plan for several sites (located in New York and New Jersey) associated with the Goethals Bridge Replacement Project. The information for those separate properties in the BRP is considered independent of this RD/RA Work Plan. Details in the Baseline Remediation Plan include the following:

- Extent and depth of soil to be excavation on Site (Figure 2B, This figure has been pulled from the Baseline Remediation Plan document and provided as a separate figure for simple referencing purposes).
- Backfill and restoration requirements.
- Details of contractor's minimum requirements (work plans, submittals, regulatory requirements, documentation requirements, and final reporting).
- Specifications and details of products (i.e. silt fence, geotextile fabrics, backfill, and topsoil).
- Provides performance requirements and specifications for reporting, surveying, site preparation, excavation, post-excavation sampling, stockpiling, waste handling / management / characterization / transportation, dewatering, backfill, compaction, QA/QC, and vegetative plantings.

Further information regarding the BRP is discussed in Section 5.1.

1.2.5 NYSDEC Consent Order (August 2014)

The NYSDEC *Order on Consent and Administrative Settlement Index # R2-0832-14-06, Site # 243008* was executed on August 19, 2014. The Consent Order details the required documents and actions related to the remediation of the Site as well as public notice requirements and a schedule of each document to be submitted. These documents include the following:

- Citizen Participation Plan
- Initial Submittal (Records Search Report)
- Public Notice
- Remedial Design/Remedial Action Work Plan
- Progress Reports
- Site Management Plan
- Final and Annual Reports

The goal of the Consent Order is the implementation of the NYSDEC ROD, although other Site activities may be performed pursuant to the terms of the Consent Order.

1.3 Site History and Property Description

The Site is approximately 6.5 acres in size and approximately 3 acres have been filled and used for salvage yard operations by R. Baker & son Machinery Dismantlers, Inc. The remaining portion of the Site is tidal wetlands. The filled (upland) portion of the property has been used for equipment dismantling since at least 1970. The filled area is unpaved and consists primarily of crushed asphalt and gravel covered surfaces. Four permanent buildings are present on the Site. A petroleum pipeline (owned, operated, and maintained by others) crosses the property from the northeast to the southeast corner of the Site. An easement was granted by R. Baker & Son for this pipeline crossing. Based on a review of historical documents and discussions with the NYSDEC, the primary contaminants of concern are PCBs in soil and sediment.

According to the NYSDEC Fact Sheet for the Site, a Phase II investigation in late 1985 documented the presence of PCBs in groundwater and sediments on the property. As listed in the ARCADIS October

2012 Phase II Investigation report, previous investigations have shown that PCBs are present in the subsurface soil at depths of at least 20 feet below ground surface (bgs) at concentrations greater than NYSDEC cleanup objectives. PCBs are also present in the sediment surrounding the filled area of the property at concentrations greater than NYSDEC cleanup objectives for the protection of ecological resources. Additional investigations have occurred at the Site in response to an August 2009 NYSDEC Consent Order, but no remedial activities have been conducted to date.

1.4 Physical Conditions

1.4.1 Geology

The Site generally consists of 5 feet of historic fill (Layer 1) underlain by sand and silt (Layer 2). Below Layer 2 is a layer of silt and peat (Layer 3, referred to as "Meadow Mat"). Following Layer 3 is marine sand (Layer 4) overlain on glacial till (Layer 5). Shale bedrock (Layer 6) is present below Layer 5. Refer to the previously submitted Phase II Investigation Report for each layer's approximate depth and thickness.

1.4.2 Groundwater and Hydrogeology

The shallow groundwater flow direction is generally to the west towards Old Place Creek and the Arthur Kill based on historical site investigations performed by others.

1.4.3 Topography

Based on monitoring well survey data collected by others, the elevation of the Site ranges from approximately 3 feet to 8 feet above the North American Vertical Datum of 1988 (NAVD 88). The filled area (as described in Section 1.3) is approximately 5 to 8 feet above the NAVD 88.

1.5 Site Ecological Evaluation

Based on discussions between NYSDEC and PANYNJ, it was agreed that impacts to ecological resources would have to be evaluated to determine a cleanup objective for PCB-impacted sediments surrounding the filled area of the Site. The NYSDEC approved work plan entitled "Work Plan for Shellfish Evaluation, Goethals Bridge Replacement Project, R. Baker & Son Machinery Dismantlers, Inc., Block 1885/Lot 35, 250 North Washington Avenue, Staten Island, New York, NYSDEC Site I.D. #243008", dated June 29, 2012, was conducted on July 17, 2012. Execution of this work plan was part of a Fish and Wildlife Impact Analysis (FWIA).

As described in the Arcadis Phase II Investigation Report, samples were collected in areas where PCB concentrations were highest. The results of the shellfish tissue sampling indicate that the ribbed mussel population has not been impacted by the PCBs present in the tidal wetland sediments. Further discussion on the results of this sampling effort is presented in Section 2.3.

Also, based on previous investigations, the tidal wetlands have been sampled and fully delineated. The highest concentrations of PCB contamination were found immediately adjacent to the backfilled portions of the site, with concentrations quickly decreasing with increased distance. Sediment locations identified for remediation are presented in the Baseline Remediation Plan (Figure 2B).

2.0 NATURE AND EXTENT OF CONTAMINATION AT THE SITE

As determined in the NYSDEC ROD the contaminates of concern for the Site include PCBs, chlorobenzene, 1,4-dichlorobenzene, and 1,3-dichlorobenzene. These contaminates of concern exceed the applicable NYSDEC Standard Criteria or Guidance (SCG) for soil, groundwater, and sediment.

2.1 Soil

A summary of the analytical results collected during several site investigations is presented below.

- VOCs (chlorobenzene, 1,4-dichlorobenzene, and 1,3-dichlorobenzene) were detected above NYSDEC Unrestricted Use SCOs in several soil samples but were below the NYSDEC SCOs for Industrial Use.
- SVOCs, specifically PAHs, were detected above NYSDEC Unrestricted Use SCOs in multiple samples. The likely source of these compounds is the presence of urban historic. NYSDEC has indicated that there were reports of historic on-site burning that could also be a source of SVOCs.
- Metals were detected above NYSDEC Unrestricted Use SCOs in multiple samples. These compounds and analytes are the results of urban historic fill and not from Site operations.
- As presented in the historical reports in the Appendix of the Arcadis Phase II Investigation Report and in the NYSDEC ROD (Figures 4A, 4B, 4C, and 4D provided in Appendix A), PCBs (predominately Aroclor 1260) were detected above NYSDEC Industrial Use SCOs at varying depths across the site.

Analytical soil data for the Site has been previously submitted to NYSDEC in the Arcadis Phase II Investigation Report. The Arcadis Phase II Investigation report also includes the investigation data collected by the former property owner. These reports are provided in the appendix of the Arcadis Phase II Investigation Report.

2.2 Groundwater

The summary below is based off the September 2011 Supplemental Remedial Investigation Report and November 2010 Site Investigation Report provided as an Appendix in the Arcadis Phase II Investigation Report.

- The groundwater investigation conducted identified limited impact to groundwater as a result of the PCBs detected in the soil at the Site. PCBs were detected in only one (southeast portion of the

property) of the four groundwater monitoring wells. The concentrations of PCBs detected in that well was 4.3 ug/L (March 2011: possibly due to high turbidity in samples) and 0.54 ug/L (April 2010: below the laboratory instrumentation detection limit and, therefore an estimated value).

- VOCs were detected above NYSDEC SCGs in two of the four wells installed (one in the northwestern portion of the property and one in the southeastern portion of the property). The laboratory reported chlorobenzene (up to 9.7 ug/L in the southeastern well and up to 98 ug/L in the northwestern well), 1,3 dichlorobenzene (up to 75 ug/L in the northwestern well), and 1,4 dichlorobenzene (up to 490 ug/L in the northwestern well).

- The SVOC 2,4 dichlorophenol was reported in one well at 0.84 ug/L (April 2010). Presence of this compound is typical of urban historic fill and is not considered a site specific contaminate of concern.

- No heavy metals were reported over NYSDEC SCG values in either filtered or unfiltered samples.

Analytical groundwater data for the Site has been previously submitted to NYSDEC in the Arcadis Phase II Investigation Report. The Arcadis Phase II Investigation report also includes the investigation data collected by the former property owner. These reports are provided in the appendix of the Arcadis Phase II Investigation Report.

2.3 Sediment

A summary of the sediment sampling and FWIA analytical results are presented below.

- As presented in the reference reports in the Appendix of the Arcadis Phase II Investigation Report and in the NYSDEC ROD (Figure 5 provided in Appendix A), PCBs (predominately Aroclor 1260) were detected above NYSDEC SCOs.
- Samples also exceeded NYSDEC SCOs for dichlorobenzenes, SVOCs, and metals. As per the NYSDEC, the sediment contaminants of primary concern are PCBs.
- Locations of the sediment samples are in tidal wetland areas outside the historic fill area on the Site and on adjacent properties.

- PCBs were detected at a concentration of 0.173 mg/kg in one (1) shellfish tissue sample. The safety level for PCB in shellfish is 2mg/kg. PCBs were not detected in tissue samples from any other location.
- As stated in the NYSDEC ROD "Field observations identified characteristics of a health tidal marsh community, including the area with the highest reported PCB concentrations."

Analytical sediment and shellfish data for the Site has been previously submitted to NYSDEC in the Arcadis Phase II Investigation Report.

3.0 SUMMARY OF HUMAN EXPOSURE PATHWAYS

Inhalation, direct contact, and ingestion are the three major pathways in which chemicals can enter the body. This is referred to as exposure. A human exposure assessment based on site-related contaminates was provided in the NYSDEC ROD. The quoted text below is the summary from the NYSDEC ROD.

"Based on the location of the Site in an industrial area under the Goethals Bridge, it is unlikely that unauthorized persons could enter the Site and come in contact with contaminants present in the soil or in wetland sediments adjacent to the Site. However, any bridge related maintenance/construction activities, which include excavation, would increase the potential for exposure to contaminates present in Site soil and sediments. Exposure to site-related contaminants in groundwater is not a concern since the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds (VOCs) in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential exists for exposure to VOCs through soil vapor intrusion for occupants of buildings constructed on or adjacent to this site. However, based on the location of the site under the Goethals Bridge and planned construction for a replacement bridge, any future building construction near or at the Site is unlikely."

The proposed remedial action will address these potential exposure pathways through source removal and engineering and institutional controls. These details are discussed in the subsequent sections of this RD/RA Work Plan.

4.0 REMEDIAL ACTION SELECTION

The purpose of the remedial action selection is to evaluate remedial alternatives in accordance with DER-10 and identify the recommended remedial action for the Site. The overall goal of the remediation is to be protective of human health and the environment, given the intended use of the Site.

At a minimum, the selected remedy should eliminate or mitigate significant threats (if any) to public health and/or the environment presented by the migration of contaminants from impacted media to human and ecological/environmental receptors. The objectives for the selected remedial action are as follows:

- Overall protection of public health;
- Compliance with standards, criteria and guidance (SCGs);
- Long term effectiveness;
- Reduction of toxicity, mobility, or volume;
- Short term effectiveness;
- Implementability; and,
- Cost.

PANYNJ is implementing the remedial action as detailed in the NYSDEC ROD. The BRP serves as a work plan for several sites associated with the Goethals Bridge Replacement Project (in New York and New Jersey) and includes the subject Site. The BRP details the contractor's requirements in order to perform the remedial action on the Site (including horizontal and vertical excavation and fill limits based on the NYSDEC ROD and analytical data – see Appendix B).

Several remedial alternatives were evaluated in the NYSDEC ROD (Appendix B). Those alternatives included the following:

- Alternative 1 - No action
- Alternative 2 - Site Management
- Alternative 3 - Excavation and Off-site Disposal with Soil Cover and Hot Spot Sediment Excavation with Off-site disposal
- Alternative 4 - Excavation and Off-site Soil Disposal with Soil Cover and Sediment Excavation to 5 ppm with Off-site Disposal
- Alternative 5 - Restoration to Pre-Disposal or Unrestricted Conditions

Based on the alternatives analysis in the NYSDEC ROD it was determined (by NYSDEC) that Alternative 3 - Excavation and Off-site Disposal with Soil Cover and Hot Spot Sediment Excavation with Off-site disposal will be the selected remedial action. This remedial action is intended to address the contaminates of primary concern for soil (PCBs, chlorobenzene, and 1,4 dichlorobenzene) and sediments (PCBs). No action is contemplated for groundwater under this alternative.

The BRP was developed based on the selected remedial action and meets the objectives stated above.

5.0 PROPOSED SCOPE OF REMEDIAL ACTION

The intended use of the Site is for the construction of the Goethals Bridge, and as a right-of-way for the bridge post construction. Redevelopment of the Site will include the construction of bridge piers and an access road. An evaluation of remedial alternatives based on future site use has been assessed in the NYSDEC ROD and the excavation of soils on site to specified depths and installing a soil cover has been determined to be the remedial action for the Site. As per the NYSDEC ROD a site cover will be placed on the whole site except for the off-site sediment areas. As detailed in the NYSDEC ROD, an area of contamination exceeding NYSDEC Industrial SCOs will be left in-place since excavating the soil (approximately +20ft below grade) is impractical considering future site use. This area is identified as Area 4-3B in the BRP.

The BRP designates the excavation and fill areas on the Site (including adjacent properties not part of the NYSDEC ROD) as Area 4. The Area 4 excavation and fill areas are shown on Figure 2B, which includes the subject Site (Block 1885 Lot 35 and Block 1885 Lot 75), as well as the adjacent property (Block 1885 Lot 50). This RD/RA Work Plan applies only to work within the Site's property boundaries (Block 1885 Lot 35 and Block 1885 Lot 75). Excavations within the Site's boundaries are identified as Area 4-1A, 4-1B, 4-3A, 4-3B, and 4-4. Area 4-2 is a designated fill (cover) area and is bounded in the north by the property line and identified by corner point's 4-2-ZH to the west and 4-2-B to the east. A surveyor licensed in the state of New York will document the limits of excavations and existing ground elevations. Excavation and fill area depths and volumes are detailed below.

- Area 4-1A: Excavation depth is 3 feet below grade. Approximate volume to be excavated is 215 in-place cubic yards.
- Area 4-1B: Excavation depth is 3 feet below grade. Approximate volume to be excavated is 95 in-place cubic yards
- Area 4-2: Fill thickness is 1foot above grade. Approximate volume of fill required is 1,983 in-place cubic yards. This volume includes the additional 1-foot of cover over the excavation areas.
- Area 4-3A: Excavation depth is 1 foot below grade. Approximate volume to be excavated is 14 in-place cubic yards.
- Area 4-3B: Excavation depth is 20 feet below grade. Approximate volume to be excavated is 109 in-place cubic yards.

- Area 4-4: Excavation depth is 1 foot below grade. Approximate volume to be excavated is 39 in-place cubic yards.

The excavation limits presented in Figure 2B are intended to remediate the Site to NYSDEC Industrial SCOs for PCBs, chlorobenzene, and 1,4 dichlorobenzene (contaminates of concern identified in the NYSDEC ROD). The BRP provides a full list of details and requirements for excavating, backfilling, restoring, and capping the Site as per the NYSDEC ROD. This RD/RA Work Plan mirrors the work plan described in the BRP.

All field activities conducted under this RD/RA Work Plan will be supervised by a qualified representative of the PANYNJ.

5.1 General Provisions of the Selected Remedial Action

All work will be performed in a safe and professional manner to avoid damage to all existing improvements (e.g. above and below-grade utilities) and to protect the health and safety of construction workers and on-site personnel. Because there is no residential housing adjacent (within 0.5 mile radius) to the Site, it is not anticipated that the public will be exposed to harmful vapors or dust. The contractor selected to complete the work will implement the provisions of a site-specific Health and Safety Plan (HASP) in accordance with 29 CFR 1910.126, which includes a Community Air Monitoring Plan (CAMP). At a minimum, the HASP will address potential exposure of construction workers and on-site personnel to vapors or dust that may be released during excavation. All workers will be trained in accordance with 29 CFR 1910.120. See Section 5.3 for more details on the HASP requirements.

The contractor will place the required New York One Call, and utility companies will mark out the locations of underground utility lines located on the Site. The contractor will be responsible for clearing utilities at interior locations of the property prior to the initiation of the recommended remedial action. Each excavation area (specifically areas 4-1A, 4-1B, 4-3A, 4-3B, and 4-4 located on the Site) will be excavated and protected as per OSHA requirements.

5.1.1 Excavation Requirements

Authorization for sediment excavations in the adjacent tidal wetland areas has been granted by NYSDEC under the existing Goethals Bridge Replacement Project wetland disturbance permit. Correspondence with NYSDEC regarding this subject has been included in this RD/RA Work Plan as Appendix C.

In all cases, the remediation areas will be excavated to elevations specified in the BRP and detailed in Section 5.0 of this RD/RA Work Plan. Each area shall be excavated and sloped so that it will remain open to the target depth to the extent practical. If the sidewall(s) of a remediation area collapses, the collapsed soil will be excavated as soon as possible. All designed sloping and/or vertical excavation support devices (i.e. trench boxes or sheet piling) shall comply with the requirements of OSHA 1926, Subpart P. Excavation, sloping, and inspection requirements are further detailed in Section 3.08 in the BRP.

Physical and administrative controls will be used to limit access to areas where excavations remain open. All remediation areas that have been completely excavated will be surrounded by a physical barrier at all times, and at the end of each workday. The physical barrier will be fluorescent orange hurricane fencing on metal posts. The administrative control will consist of signs posted along the barrier. The signs will read “KEEP OUT – SOIL EXCAVATION AREA”.

All fluids pumped out of the remediation areas will be contained until they can be disposed of in accordance with applicable, local, state, and federal laws. It is assumed that one water sample per 6,000 gallons pumped from the excavation and backfill areas will be collected for waste characterization analysis. Clean water may be discharged to a catch basin in accordance with the requirements of the National Pollutant Discharge Elimination System (NPDES) construction dewatering discharges general permit for New York State. Water shall not be discharged through wetlands, pavement or other adjacent areas. See Section 3.15 and 3.16 in the BRP for further dewatering and water disposal requirements.

5.1.2 Post Excavation Sampling

Upon completion of excavation activities, the environmental quality of the soil left in place will be determined through post-excavation soil samples. Samples will be collected from each excavation area in accordance with DER-10 and the BRP. Regardless of the size of the excavation, the post-excavation samples will be biased towards where, based on field observations, potential soil impacts have been identified.

Post excavation sample analysis will be provided by an Environmental Laboratory Accreditation Program (ELAP) accredited laboratory in ASP-B deliverable format. These samples results will then be independently validated. As defined in Section 3.18 in the BRP post-excavation sampling for Area 4 excavations will include collecting bottom centerline samples every 50 feet of excavation along the centerline or at a rate of one (1) sample per every 900 square feet, whichever is greater. A minimum of one bottom sample will be collected from each excavation area. Post Excavation samples will also be

collected every 30 feet (approximate) along the sidewall. Samples in Area 4 will be analyzed for PCBs. A post-excavation sampling plan will be submitted to PANYNJ for review and approval.

Post-excavation samples may be collected in-situ prior to excavating via Geoprobe sampling techniques or equivalent. Locations for the sample points and excavation extents will be confirmed through surveying.

5.1.3 Waste Classification/Handling/Management/Disposal Requirements

The impacted soil will be staged on plastic sheeting and will be covered each day (when not in use) with plastic and secured with sand bags or equivalent in order to prevent airborne dust and any migration due to rain. Material that appears to be grossly impacted either by visual observation or detected by a calibrated instrument shall be segregated and placed into plastic-lined secure, covered roll-off container or equivalent. Excavated materials will be staged in piles no greater than 250 cubic yards in volume. Only soils with similar contamination levels will be stockpiled together. The contractor will perform adequate tilling of the stockpiles in order to facilitate drying of soil prior to offsite disposal. The stockpiles shall also be covered prior to any storm event to prevent re-saturation. Impacted soil stockpiles shall meet the regulations defined in 40 CFR 264.250. Section 3.09 in the BRP provides further details about stockpiling excavated materials.

Following the completion of excavation activities, the impacted soil will be sampled for waste classification purposes and will be transported for offsite disposal. Waste shipment records and manifest will be prepared and maintained as required by the Resource Conservation and Recovery Act (RCRA), Toxic Substance Control Act (TSCA), US Federal Department of Transportation (DOT), and the New York State Department of Transportation (NYSDOT). The contractor will be required to obtain all permits required for loading, hauling, and offsite transportation of waste in accordance with applicable Federal, State, and local regulations. Waste handling requirements are detailed in Section 3.10 of the BRP. Waste management requirements are detailed in Section 3.11 of the BRP. Waste characterization requirements are detailed in Section 3.12 of the BRP. Waste Transportation requirements are detailed in Section 3.13 of the BRP. Disposal documentation requirements are detailed in Section 3.14 of the BRP.

5.1.4 Decontamination Procedures

Decontamination procedures (Section 3.17 of the BRP) for equipment used on the Site include the following:

- Pre-clean the equipment to remove all loose dust and dirt.
- Apply an appropriate cleaning solution to each surface of the equipment and scrubbing brushes or pads as necessary.
- Place used scrubbers and absorbent pads in an appropriately label DOT approved container for future disposal.
- Personnel leaving the decontamination area must clean and store, or discard all PPE, as appropriate.

5.1.5 Site Restoration

Site restoration includes bridge elements that are not described below. These features include bridge piers, foundations, and access roads. Location and extent of these features will be shown on final design drawings provided to PANYNJ by the bridge developer and incorporated into a SMP.

Backfill Requirements

Certified clean fill will be brought to the site and used as backfill. The clean fill shall meet the Unrestricted NYSDEC SCOs (6 NYCRR Part 375) and all other material characteristic requirements as define in Section 2.03 of the BRP. Prior to placing backfill, the contractor will ensure the subgrade is properly prepared and in suitable to accept backfill. Clean fill will be placed in maximum 12-inch lifts and compact to 95% of Standard Proctor as determined by ASTM D698. Compaction testing will be performed at a frequency of 5 per acre / lift area or 1 per lift, whichever is greater in accordance with ASTM 6938 testing procedures.

For sediment excavation areas, as per the NYSDEC ROD, “Clean fill existing of sand and meeting the SCOs as set forth in 6 NYCRR Part 375-6.7(d) for protection of ecological resources will be brought in to complete the backfilling of the excavation and establish the design grades at the Site.”

Soil Cover

As stated in the NYSDEC ROD “A site cover will be required to allow for industrial use of the Site. The cover will consist either of the structures such as building slabs, pavement, sidewalks, comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable SCOs. Where the soil cover is required [Area 4-2 in the BRP] it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for industrial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient

quality to maintain a vegetation layer. … No soil cover will be placed in the tidal wetlands other than backfill to the original grade in the areas of excavation [Areas 4-1A and 4-1B in the BRP]."

Topsoil, Seeding, and Vegetative Replantings

A layer of topsoil will placed to support seeding activities and serve as the final grade for the Site. All disturbed areas will be seeded for the final restoration unless designated for alternate use in the Goethals Bridge Replacement Project. Details on the seeding requirements for the Site are presented in the BRP. Vegetation maintenance requirements (i.e. replantings and guarantees) are also detailed in Section 3.24 and 3.25 in the BRP.

A vegetative buffer will be planted around the Site in disturbed areas in contact with the tidal marsh. The contractor selected for this work will submit restoration plans for PANYNJ review and approval. Plant species, materials, and planting schedule approvals will be coordinated by PANYNJ through NYSDEC.

5.2 Health and Safety Plan

Remedial actions will be overseen by PANYNJ and implemented by a contractor. A HASP will be developed by the contractor in accordance with 29 CFR Part 1910 and adhered to by all entities partaking in proposed remedial action activities. The HASP shall be prepared and signed by a qualified and licensed health and safety professional.

A Community Air Monitoring Program (CAMP) has been establish in accordance with the requirements of the NYSDOH and attached to the HASP. The HASP/CAMP is provided in Appendix D and the document is titled Construction Health and Safety Plan for Soil Disturbance June 2015 (previously approved by NYSDEC/NYSDOH under separate cover). A copy of the HASP/CAMP will be available to all personnel working at the Site.

5.3 Cost Estimate

The estimated cost to perform the remedial action is $907,118.07. This cost analysis was prepared by Arcadis in August 2012 and revised in September 2014 by PANYNJ and is included as Appendix E.

The cost is based on remedial contractor costs, engineering costs, and contingency. A list of assumptions and limitations is also provided in the Cost Estimate (Appendix E).

5.4 Remedial Action Schedule and Progress Reporting

The schedule for the selected remedial action is expected to coincide with proposed construction activities on the Site related to the Goethals Bridge Replacement Project. Currently, temporary access roads are being constructed on-site in support of this project. This work entails placement of clean fill and roadway materials. No subsurface soil or groundwater is being disturbed during this phase of activity nor will any disturbance occur until approval is received from NYSDEC.

Due to the complex design and construction challenges faced with rebuilding the Goethals Bridge superstructure, the areas designated for excavation and fill on the site might be performed in stages. The access road that is being constructed east – west across the Site is being installed to support the construction of bridge piers and other various elements associated with that project. Current design drawings show some of these piers are to be located over sections of proposed remedial excavation areas. The contractor will submit work plans detailing the sequence of how the Site will be fully remediated in accordance with the BRP (i.e. whether it will be remediated at once or remediated in stages as needed).

A Construction Completion Report will be submitted by the contractor and submitted to PANYNJ for review, which will document all work activities performed on the site. This report will then be submitted to NYSDEC as part of the required site closure documentation listed in the Consent Order. This document will be provided in a PANYNJ produced Final Engineering Report. This report shall include “as-built drawings” provided by the contractor detailing final remedial site conditions and describing any deviation from this RD/RA Work Plan.

PANYNJ plans to begin submitting the documents required for creating an Environmental Easement on the Site, as well as a finalized SMP approximately 6 months after remedial work at the Site is complete. Remedial site work is currently anticipated to be complete in September 2018.

Progress reports will be submitted to NYSDEC and others (identified in Subparagraph XII.A.1 in the executed Consent Order) on a quarterly basis. This schedule deviates from the Consent Order since remedial activities will not be performed on a continuous basis during bridge construction. The reporting will commence with the month subsequent to the approval of this RD/RA Work Plan and ending with the termination date of the Consent Order.

Requirements for these progress reports as stated in the Consent Order are as follows: “Such reports shall, at a minimum, include: all actions taken pursuant to this Order during the reporting period and those anticipated for the upcoming reporting period; all approved modifications to work plans and/or schedules;

all results of sampling and tests and all other data received or generated by or on behalf of Respondent [PANYNJ] in connection with the Site during the reporting period, including quality assurance/quality control information; information regarding percentage of completion , unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays; and information regarding activities undertaken in support of the Citizen Participation Plan during the reporting period and those anticipated for the upcoming reporting period."

6.0 POST-REMEDIAL STRATEGY

Following excavation and restoration activities on the Site, several site controls will be enacted to continue to allow the remedial actions taken at the Site to be protective of human health and the environment. These site controls are same as outlined in the NYSDEC ROD for the Site.

6.1 Engineering Control

The engineering control for the Site consists of the soil backfill layer in excavation areas 4-1A, 4-1B, 4-3A, 4-3B, and 4-4, the twelve-inch soil cover layer in Area 4-2, the demarcation barrier, proposed restoration features (including the vegetative cover in the tidal wetland areas), and the proposed bridge features located on the Site. All of these features will serve as a site cover preventing direct contact with impacted soil/groundwater/sediment left in place. An orange delineation non-woven geotextile as manufactured by TenCate (or approved equal) will serve as the demarcation layer separating original soil from clean backfill in all excavation and fill areas. The site cover will allow for industrial use of the site and serve as a protective barrier from contact with potential environmental impacts left in-place below excavation elevations.

Proper maintenance and an annual inspection of the engineering controls will be required. Any planned disturbances below the ground surface after the remedial action is completed will follow the soil management plan outline in an NYSDEC approved SMP. The observations resulting from the annual inspection of the engineering control will be included in the Annual Post-Remedial Monitoring Report along with any recommendations for repairs.

6.2 Institutional Control

An Environmental Easement will be submitted for the Site in accordance with ECL Article 71, Title 36 and 6 NYCRR Part 375-1.8(h)(2). The establishment of the Environmental Easement would require the conditions listed below:

- Compliance with a NYSDEC-approved Site Management Plan
- Limiting the use and development of the property to industrial use only. Land use however, is subject to local zoning laws.
- Restricting the use of groundwater as a source of potable water, without necessary water quality treatment as determined by NYSDOH; and
- Completion and periodic submission of a certification that meets the requirements described below to the NYSDEC.

The periodic certification will be prepared and submitted by a professional engineer or other such expert acceptable to the NYSDEC and must be provided by the property owner (i.e. PANYNJ). The document will be submitted until the NYSDEC notifies PANYNJ in writing that this certification is no longer needed. The document will certify that the institutional and engineering controls are still in place, will allow for NYSDEC access to the Site, and will ensure that nothing has occurred that would impair the ability of the controls to protect public health or the environment or to constitute a violation or failure to comply with the Site Management Plan.

The Environmental Easement will be applied for within six (6) months when the remedial action has been completed.

6.3 Site Management Plan

The SMP for the Site will be submitted as an addendum to this RD/RA Work Plan after the proposed remedial action is completed on the Site. A contractor submitted final engineering report and “as-built” drawings will illustrate the post-remedial Site conditions in regards to ground surface elevations, perimeter fencing, and other features installed in relation the remediation of the Site and the construction of the bridge. This information will then be incorporated into the SMP providing an accurate representation of the Site post-remedial action. A draft SMP will be submitted to NYSDEC six (6) months after the remedial action for the Site is completed.

The SMP for the Site will provide and include details on the following items:

- Development, implementation, and management of the site institutional and engineering controls to ensure they are in place and remain effective;
- Development and implementation of all site monitoring requirements;

- Development of a soil management plan in the event that future excavations or construction activities are performed on the Site.
- Implementation of the SMP, including inspections and the preparation of annual Post-Remedial Monitoring Reports, inspection reports, submission of a site management report, and institutional/engineering control certification; and,
- The completion of the remedial program and closeout of the Site.

At this time, PANYNJ has no plans to construct any habitable building(s) at the Site. Should PANYNJ or any applicable future tenants plan to construct and occupy a building at the Site, PANYNJ will notify the NYSDEC and NYSDOH in advance of construction. PANYNJ understands that a vapor intrusion investigation may be required prior to occupancy.

Cap inspections will be conducted following the completion of the scope of work for the remedial action, redevelopment, and the establishment of an Environmental Easement. The integrity of the site cover will be inspected on an annual basis and repaired as necessary. The annual certification submitted to the NYSDEC will ensure that the institutional/engineering controls are still in place and that nothing has occurred that would impair the ability of the site controls to protect human health or the environment, or constitute a violation or failure to comply with the SMP.

6.4 Annual Post-Remedial Monitoring Report

The Annual Post-Remedial Monitoring Report will address the following topics:

- Inspection of institutional/engineering controls
- Details of changes, modifications, intrusions, and/or repairs to the soil cover (if any)
- Summary of corrective actions taken (if any)

An Annual Post-Remedial Monitoring Report will be submitted to the NYSDEC and will include a summary of the results of the engineering and institutional control inspection. The report will include recommendations to repair damaged areas (surface erosion, dips, divots, burrow holes, deceased vegetative areas, and all other “defective” features.) of the engineering controls should they exist. The integrity of perimeter fencing will also be inspected to ensure that unauthorized visitors cannot access the Site. The report will summarize any recommend corrective actions for the Site. It will be the responsibility of PANYNJ to correct any deficiencies noted in the annual inspection report in a timely manner.

If determined by PANYNJ that the annual inspection is no longer required, a letter will be sent to NYSDEC requesting termination of the Annual Post-Remedial Monitoring Report. This letter will be signed by a Professional Engineer petitioning that annual inspections are no longer necessary.

7.0 REMEDIAL ACTION SUMMARY

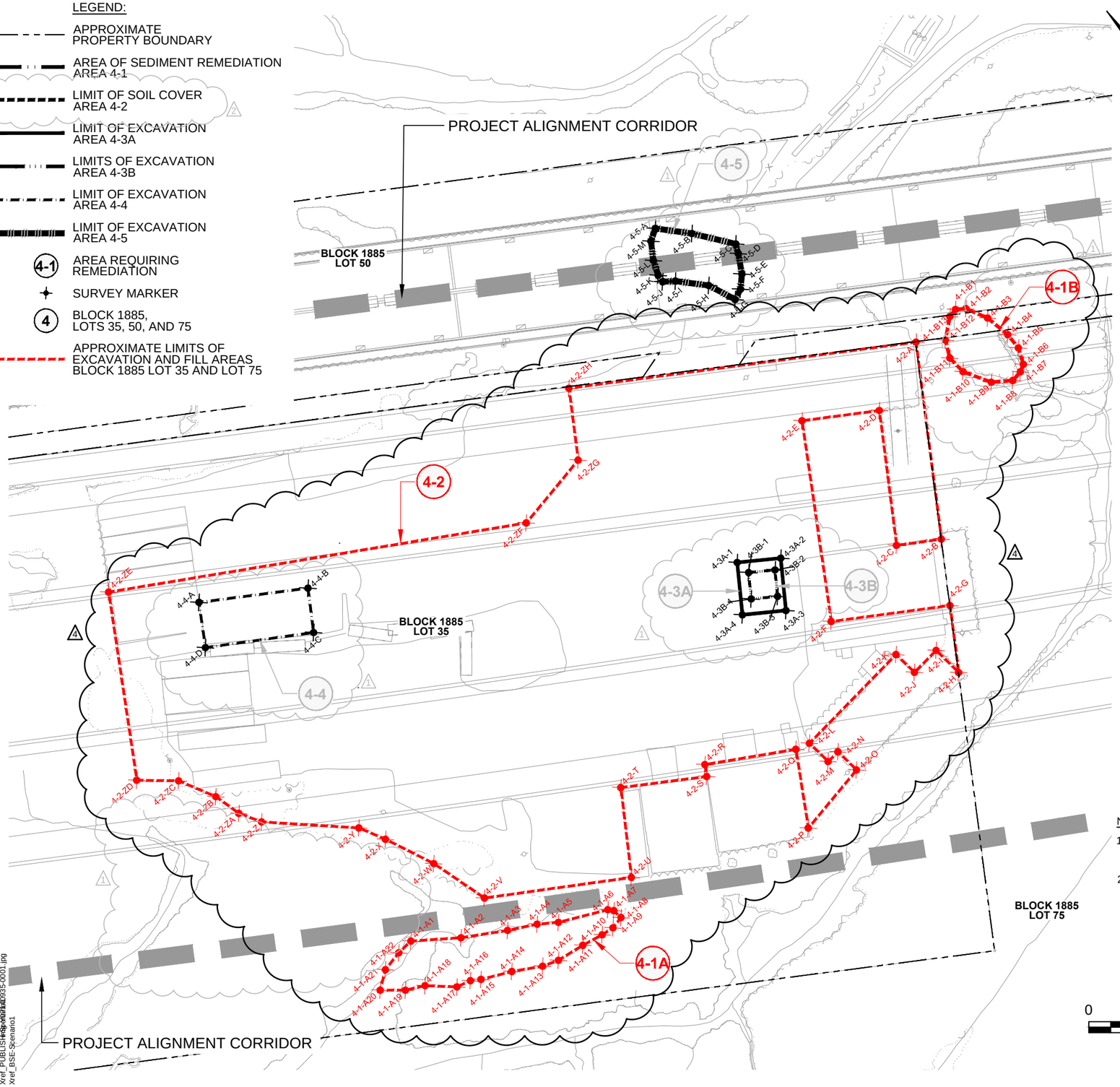
Based on the results of the site investigations and review of the NYSDEC ROD, the following summary is provided for the remedial action:

- Environmental investigations conducted on the Site to date reveal PCB, chlorobenzene, and 1,4 dichlorobenzene impacted soil, groundwater, and sediment.
- The only potential human receptors are personnel working at the Site. A summary of human exposure pathways is provided in the NYSDEC ROD.
- PANYNJ will implement the remedial strategy as described in the NYSDEC ROD. This includes excavating soils as defined in the BRP and establishing an Environmental Easement. A soil cover will be provided to allow for industrial use of the Site. A SMP will be submitted to NYSDEC for approval and implemented at the Site.
- The Environmental Easement will be established to preclude unauthorized disturbance of impacted soil that remains following site development and restricts the use of groundwater on the site without prior approval from NYSDEC and NYSDOH. The SMP will include a soil management plan in case bridge maintenance/repair activities disturbed the soils left in place below the demarcation barrier. The SMP will also detail inspection requirements to be summarized in an annual report submitted to NYSDEC.
- Post remedial monitoring will include inspections of the integrity of the site cover. Inspections will be conducted annually. A professional engineer can issue a letter to NYSDEC petitioning to end annual inspections if deemed appropriate.

FIGURES

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- AREA OF SEDIMENT REMEDIATION AREA 4-1
- LIMIT OF SOIL COVER AREA 4-2
- LIMIT OF EXCAVATION AREA 4-3A
- LIMITS OF EXCAVATION AREA 4-3B
- LIMIT OF EXCAVATION AREA 4-4
- LIMIT OF EXCAVATION AREA 4-5
- 4-1 AREA REQUIRING REMEDIATION
- SURVEY MARKER
- 4 BLOCK 1885, LOTS 35, 50, AND 75
- APPROXIMATE LIMITS OF EXCAVATION AND FILL AREAS BLOCK 1885 LOT 35 AND LOT 75



Area 4-1A Excavation Depth 3ft		
Corner Marker	Easting (X)	Northing (Y)
4–1–A1	577800.2400	655211.5600
4–1–A2	577818.2600	655197.3700
4–1–A3	577836.3300	655185.6100
4–1–A4	577848.2700	655178.6900
4–1–A5	577856.0600	655172.8100
4–1–A6	577876.6900	655162.0100
4–1–A7	577878.4600	655159.8500
4–1–A9	577872.8800	655154.2700
4–1–A8	577878.7600	655155.2900
4–1–A10	577867.0800	655155.2200
4–1–A11	577857.3400	655157.5600
4–1–A12	577844.4500	655159.9200
4–1–A13	577837.3000	655162.7500
4–1–A14	577825.2100	655170.3700
4–1–A15	577812.3300	655177.1200
4–1–A16	577808.3200	655179.9400
4–1–A17	577801.8600	655181.9100
4–1–A18	577791.4100	655192.1100
4–1–A19	577783.3500	655196.5600
4–1–A20	577774.8100	655204.2500
4–1–A21	577782.8300	655209.6500
4–1–A22	577792.5400	655211.2800

Area 4-1B Excavation Depth 3ft		
Corner Marker	Easting (X)	Northing (Y)
4–1–B1	578178.1700	655259.4200
4–1–B2	578181.9700	655256.4900
4–1–B3	578186.4600	655246.6800
4–1–B4	578188.2200	655234.8700
4–1–B5	578187.7700	655227.1400
4–1–B6	578184.4500	655220.0300
4–1–B7	578181.1800	655218.4100
4–1–B8	578175.9200	655217.7900
4–1–B9	578168.0900	655223.7400
4–1–B10	578161.7000	655236.0000
4–1–B11	578161.3900	655244.6100
4–1–B12	578165.3900	655252.1000
4–1–B13	578174.1200	655258.7200

Area 4-2 Soil Coverage Area 12-Inches		
Corner Marker	Easting (X)	Northing (Y)
4–2–A	578154.8100	655260.4000
4–2–B	578103.1800	655185.7900
4–2–C	578086.0600	655197.4000
4–2–D	578121.4200	655248.4100
4–2–E	578092.0100	655268.5800
4–2–F	578040.5900	655191.5100
4–2–G	578085.8100	655160.6200
4–2–H	578068.2700	655135.2300
4–2–I	578067.4000	655149.6300
4–2–J	578053.3400	655148.8400
4–2–K	578052.5000	655160.5200
4–2–L	577995.9900	655156.8600
4–2–M	577996.7600	655144.9500
4–2–N	578003.0900	655145.2600
4–2–O	578003.8200	655133.4200
4–2–P	577969.7300	655128.4500
4–2–Q	577989.5400	655158.9700
4–2–R	577954.0000	655181.5700
4–2–S	577950.9800	655176.9800
4–2–T	577918.3900	655199.4700
4–2–U	577894.5500	655165.7300
4–2–V	577838.3600	655203.6800
4–2–W	577831.6600	655230.8600
4–2–X	577822.7000	655253.8700
4–2–Y	577817.1200	655265.8700
4–2–Z	577785.9400	655297.6600
4–2–ZA	577780.8300	655307.4900
4–2–ZB	577778.1100	655320.2100
4–2–ZC	577770.3100	655336.9500
4–2–ZD	577756.2900	655349.9600
4–2–ZE	577804.2200	655422.4200
4–2–ZF	577967.1700	655318.2000
4–2–ZG	578003.9700	655323.6700
4–2–ZH	578022.8300	655350.8900

Area 4-3A Excavation Depth 1ft		
Corner Marker	Easting (X)	Northing (Y)
4–3A–1	578026.7200	655240.2500
4–3A–2	578042.8300	655228.4000
4–3A–3	578028.6100	655209.0700
4–3A–4	578012.5000	655220.9200

Area 4-3B Excavation Depth 20ft		
Corner Marker	Easting (X)	Northing (Y)
4–3B–1	578027.5200	655233.3700
4–3B–2	578037.2900	655226.1900
4–3B–3	578030.1000	655216.4200
4–3B–4	578020.3300	655223.6000

Area 4-4 Excavation Depth 1ft		
Corner Marker	Easting (X)	Northing (Y)
4–4–A	577831.7900	655391.3000
4–4–B	577873.1600	655362.7900
4–4–C	577861.5000	655346.0200
4–4–D	577820.1700	655373.9700

AREA 4-5 Excavation Depth 10ft		
Corner Marker	Easting (X)	Northing (Y)
4–5–A	578101.0000	655378.7100
4–5–B	578111.8700	655365.7800
4–5–C	578123.4200	655349.0400
4–5–D	578121.4900	655344.7300
4–5–E	578116.5000	655336.7400
4–5–F	578111.3800	655332.0100
4–5–G	578106.3900	655330.1500
4–5–H	578101.7000	655343.0300
4–5–I	578091.7400	655354.6600
4–5–J	578087.1400	655358.3400
4–5–K	578087.6700	655361.9100
4–5–L	578090.5300	655368.3800
4–5–M	578095.6500	655375.6800

NOTES:

1. COORDINATES REFERENCED TO NEW JERSEY STATE PLANE NAD 83.
2. SITE AERIAL PHOTOGRAPHY ADOPTED FROM GOOGLE EARTH WITH AN IMAGERY DATE OF 11.05.2012.

0 50' 100'

SCALE IN FEET

No.	Date	Revisions	By	Ckd
4	11/14	EXCAVATION AREAS 4-1A, 4-1B, AND 4-2 UPDATED	BW	AV
3	5/14	AREA 4-2 SOIL COVER UPDATE PER NYSDEC ROD	BW	AV
2	4/14	SOIL COVER ADDED PER NYSDEC ROD	BW	AV
1	4/14	REMEDIATION AREAS REVISED PER NYSDEC ROD	BW	AV

GOETHALS BRIDGE REPLACEMENT PROJECT
STATEN ISLAND, NEW YORK
BASELINE REMEDIATION PLAN

NEW YORK
PROPOSED AREAS OF EXCAVATION
AREA 4

ARCADIS

FIGURE
2B

CITY:MELVILLE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:AS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* G:\ENVCAD\SYRACUSE\ACT\049070850\010\D\049070850B01.dwg LAYOUT: 2B (2) SAVED: 11/11/2014 3:10 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: BBL-FULL.CTB PLOTTED: 11/11/2014 3:11 PM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ----
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Xref_PUBLISH-Scenario1
Xref_BSE-Scenario1

APPENDIX A

NYSDEC ROD January 2014

RECORD OF DECISION

R.Baker & Son Machinery Dismantlers, Inc
State Superfund Project
Staten Island, Richmond County
Site No. 243008
January 2014

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - RECORD OF DECISION

R.Baker & Son Machinery Dismantlers, Inc
State Superfund Project
Staten Island, Richmond County
Site No. 243008
January 2014

Statement of Purpose and Basis

This document presents the remedy for the R.Baker & Son Machinery Dismantlers, Inc site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the R.Baker & Son Machinery Dismantlers, Inc site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

•Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
•Reducing direct and indirect greenhouse gases and other emissions;
•Increasing energy efficiency and minimizing use of non-renewable energy;
•Conserving and efficiently managing resources and materials;
•Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
•Maximizing habitat value and creating habitat when possible;
•Fostering green and healthy communities and working landscapes which balance ecological,

economic and social goals; and
•Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation and Off-Site Disposal

All on-site soils in and beneath upland fill areas to depths of up to 20 feet which exceed industrial SCOs for PCB or protection of groundwater SCOs for 1,4 dichlorobenzene or chlorobenzene, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. This includes two areas to be excavated to 1 foot depth and a small area excavated to a depth of 18 feet. The 37 ppm of PCB found at a depth of 25 feet at boring B-2 will be left in place beneath the cover system due to the impracticality of removal. Approximately 240 cubic yards of soil will be removed from the site. Clean fill meeting the SCOs as set forth in 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site. The site will be re-graded to accommodate installation of a cover system as described in remedy element 3. Soil derived from the re-grading may be used to backfill the excavation beneath the cover system.

3. Sediment Excavation

Contaminated wetlands sediment surrounding hot spots identified by
sample C-1 (29.0 ppm) and sample WT-1 (36 ppm) will be excavated for off-site disposal. The horizontal extent of the focused remediation will begin at the sample locations, extending until either the estimated 5 ppm contour, the hydrologic surface at the edge of the base of the upland fill, or a tidal channel is reached. The vertical extent of the sediment remediation will be limited to removal of sediment from the existing surface to the base of the peat layer. The boundaries will be determined by field/visual observations. Clean fill consisting of sand and meeting the SCOs as set forth in 6 NYCRR Part 375-6.7(d) for protection of ecological resources will be brought in to complete the backfilling of the excavation and establish the design grades at the site.

4. Soil Cover

A site cover will be required to allow for industrial use of the site. The cover will consist either of the structures such as building slabs, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for industrial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d). No soil cover will be placed in the tidal wetlands other than backfill to the original grade in the areas of excavation. A vegetated buffer planted in topsoil would have to remain around the portions of the property in contact with tidal marsh, the dimensions of which would have to be determined in the Remedial Design.

5. Environmental Easement

Imposition of an institutional control in the form of an environmental easement

•requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
•allows the use and development of the controlled property for industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
•restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH and County DOH; and
•requires compliance with the Department approved Site Management Plan.

6. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 4 above.

Engineering Controls: The soil cover discussed in Paragraph 3 above.

This plan includes, but may not be limited to:

•an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination, including adherence to a Community Air Monitoring Plan;
•descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
•a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
•provisions for the management and inspection of the identified engineering controls;
•maintaining site access controls and Department notification; and
•the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

•monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

January 6, 2014

Date

Robert W. Schick, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

R.Baker & Son Machinery Dismantlers, Inc
Staten Island, Richmond County
Site No. 243008
January 2014

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

Todt Hill-Westerleigh Library
2550 Victory Blvd.
Staten Island, NY 10314
Phone: (718) 494-1642

Science, Industry and Business Library
188 Madison Avenue
New York, NY 10016-4314
Phone: (917) 275-6975

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The R. Baker and Son Machinery Dismantlers site, also referred to as 250 South Washington Avenue in site reports, is an industrial property used to store construction equipment located adjacent to and beneath the Goethals Bridge in the northwestern corner of Staten Island. The site is located at the extreme western end of South Washington Avenue, now known as Goethals Road North. The area is primarily light industrial properties such as trucking companies and the New York Container Terminal. Nearby bodies of water include the tidal estuaries Old Place Creek (located approximately 450 feet south and west of the site)and the Arthur Kill (located approximately 1/3 mile to the northwest).

Site Features: The site consists of approximately 3 acres of filled-in wetlands. Except for the access road to Goethals Road North, the site is bounded entirely by marshland and tidal creeks, including Old Place Creek. The site is home to several small warehouse buildings and trailers not intended for continuous occupancy.

Current Zoning and Land Use: The site has been utilized as an industrial property used to store construction equipment since at least the 1970s. The property and surrounding area is zoned manufacturing, which allows manufacturing uses, most commercial uses and some community facility uses.

Past Use of the Site: It is believed the site has been in use as an industrial property used to store

construction equipment ever since it was reclaimed from the surrounding wetlands by filling. In the past, dismantling of obsolete electrical transformers has taken place at the site. The Department first inspected the property in 1977 and waste disposal reportedly dates back to 1972.

Site Geology and Hydrology: The site is located in a filled in tidal wetland. Depth to groundwater ranges from 2 to 7 feet below ground surface at the site. Fill at the site is comprised of various sand, slit, clay, brick, and wood fragments. Groundwater flow is subject to tidal fluctuation but overall trends to the west.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to industrial use as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

Walter A. Baker and R. Baker & Son All Industrial Svcs, Inc.

The Department and Walter A. Baker and R. Baker & Son All Industrial Services, Inc. (the PRPs) entered into a Consent Order on August 27, 2009. The Order obligates the PRPs to implement a RI/FS only remedial program. After the remedy is selected, the Department will approach the PRPs to implement the selected remedy. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the

nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- sediment

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

POLYCHLORINATED BIPHENYLS (PCB) CHLOROBENZENE
1,4-DICHLOROBENZENE 1,3-DICHLOROBENZENE

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- sediment

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

The Fish and Wildlife Resources Impact Analysis (FWRIA) for OU 01, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

Nature and extent of Contamination:

Contamination of soil and groundwater with PCBs and evidence of off-site migration of the PCB to sediments in an adjacent wetlands area has been confirmed during the Remedial Investigation and prior investigations. Exceedances of standards, criteria, and guidance include PCBs for soil, sediment and groundwater.

Soil - In shallow soil of up to 1 foot in depth, PCBs were found above the NYSDEC Industrial Soil Cleanup Objective (SCO) of 25 ppm in an approximately 1/2 acre area in the southeast portion of the site, as well as a small area to the northwest. The maximum concentration of PCBs in shallow soil in both areas was approximately 25 ppm. Deeper soils in a small area in the southeast contain PCB at concentrations of up to 226 ppm at a depth of 17 feet. The deepest PCB contamination was 37 ppm at a depth of 25 feet. Those same small areas in the southeast and northwest also exceeded the Protection of Groundwater SCO of 1.8 ppm for 1,4 dichlorobenzene in shallow soils at concentrations up to 130 ppm. The area to the southeast also exceeded the SCO for 1,4 dichlorobenzene of 1.8 ppm with a concentration of 490 ppm.

Groundwater - PCB contamination was found in one of the four monitoring wells. The impacted well is in the southeast portion of the site, near the area of soil contamination at depth. The

maximum PCB concentrations in groundwater was 4.3 ppb, while the groundwater standard is 0.09 ppb. Turbidity in this well exceeded the prescribed level of 50 NTU in both rounds of groundwater sampling with turbidities of 248 NTU and 318 NTU. Groundwater contamination with various chlorobenzenes was found in a well on the northwestern portion of the site. 1,4 dichlorobenzene, with a groundwater standard of 3 ppb, was found at concentrations up to 490 ppb. Chlorobenzene, with groundwater standard of 5 ppb, was found at concentrations up to 98 ppb. 1,3 dichlorobenzene, with a groundwater standard of 3 ppb, was found at up to 75 ppb. Additionally, the well in the southeast portion of the site contained up to 9.7 ppb of chlorobenzene.

Sediment - Concentrations of PCB were found in sediments from the tidal wetland surrounding the site. 13 of 23 sediment samples exceeded 1 ppm PCB but only 5 samples exceeded 5 ppm. The highest concentrations were found immediately adjacent to the backfilled portions of the site, with concentration dropping off quickly with increased distance. Maximum sediment concentrations were 36 ppm at the southwest limit of the backfill and 29 ppm at the southeast limit.

Special Resources Impacted/Threatened:

Fish and Wildlife Impact Analysis (FWIA) - A FWIA conducted at the site included a shellfish evaluation. Only one of eight shellfish samples contained PCB. This sample contained 0.173 ppm of PCB. The FDA safety level for PCB in shellfish is 2 ppm. Field observations identified characteristics of a healthy tidal marsh community, including the area with the highest reported PCB concentrations.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

Based on the location of the site in an industrial area and under the Goethals Bridge, it is unlikely that unauthorized persons could enter the site and come in contact with contaminants present in the soil or in wetland sediments adjacent to the site. However, any bridge related maintenance/construction activities which include excavation would increase the potential for exposure to contaminants present in site soil and sediments. Exposure to site-related contaminants in groundwater is not a concern since the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds (VOCs) in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential exists for exposure to VOCs through soil vapor intrusion for occupants of buildings constructed on or adjacent to this site. However, based on the location of the site under the Goethals bridge and planned construction for a replacement bridge, any future building construction near or at the site is unlikely.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in

Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study (FS) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as Alternative 3: Excavation and Off-site Soil Disposal with Soil Cover and Hot Spot Sediment Excavation with Off-site Disposal.

The estimated present worth cost to implement the remedy is $551,000. The cost to construct the remedy is estimated to be $528,000 and the estimated average annual cost is $1,500.

The elements of the selected remedy, as shown in Figure 2, are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

•Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
•Reducing direct and indirect greenhouse gases and other emissions;
•Increasing energy efficiency and minimizing use of non-renewable energy;
•Conserving and efficiently managing resources and materials;
•Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
•Maximizing habitat value and creating habitat when possible;
•Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
•Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation and Off-Site Disposal

All on-site soils in and beneath upland fill areas to depths of up to 20 feet which exceed industrial SCOs for PCB or protection of groundwater SCOs for 1,4 dichlorobenzene or chlorobenzene, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. This includes two areas to be excavated to 1 foot depth and a small area excavated to a depth of 18 feet. The 37 ppm of PCB found at a depth of 25 feet at boring B-2 will be left in place beneath the cover system due to the impracticality of removal. Approximately 240 cubic yards of soil will be removed from the site. Clean fill meeting the SCOs as set forth in 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site. The site will be re-graded to accommodate installation of a cover system as described in remedy element 3. Soil derived from the re-grading may be used to backfill the excavation beneath the cover system.

3. Sediment Excavation

Contaminated wetlands sediment surrounding hot spots identified by
sample C-1 (29.0 ppm) and sample WT-1 (36 ppm) will be excavated for off-site disposal. The horizontal extent of the focused remediation will begin at the sample locations, extending until either the estimated 5 ppm contour, the hydrologic surface at the edge of the base of the upland fill, or a tidal channel is reached. The vertical extent of the sediment remediation will be limited to removal of sediment from the existing surface to the base of the peat layer. The boundaries will be determined by field/visual observations. Clean fill consisting of sand and meeting the SCOs as set forth in 6 NYCRR Part 375-6.7(d) for protection of ecological resources will be brought in to complete the backfilling of the excavation and establish the design grades at the site.

4. Soil Cover

A site cover will be required to allow for industrial use of the site. The cover will consist either of the structures such as building slabs, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for industrial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d). No soil cover will be placed in the tidal wetlands other than backfill to the original grade in the areas of excavation. A vegetated buffer planted in topsoil would have to remain around the portions of the property in contact with tidal marsh, the dimensions of which would have to be determined in the Remedial Design.

5. Environmental Easement

Imposition of an institutional control in the form of an environmental easement

•requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
•allows the use and development of the controlled property for industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
•restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH and County DOH; and
•requires compliance with the Department approved Site Management Plan.

6. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 4 above.

Engineering Controls: The soil cover discussed in Paragraph 3 above.

This plan includes, but may not be limited to:

•an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination, including adherence to a Community Air Monitoring Plan;
•descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
•a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
•provisions for the management and inspection of the identified engineering controls;
•maintaining site access controls and Department notification; and
•the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

•monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

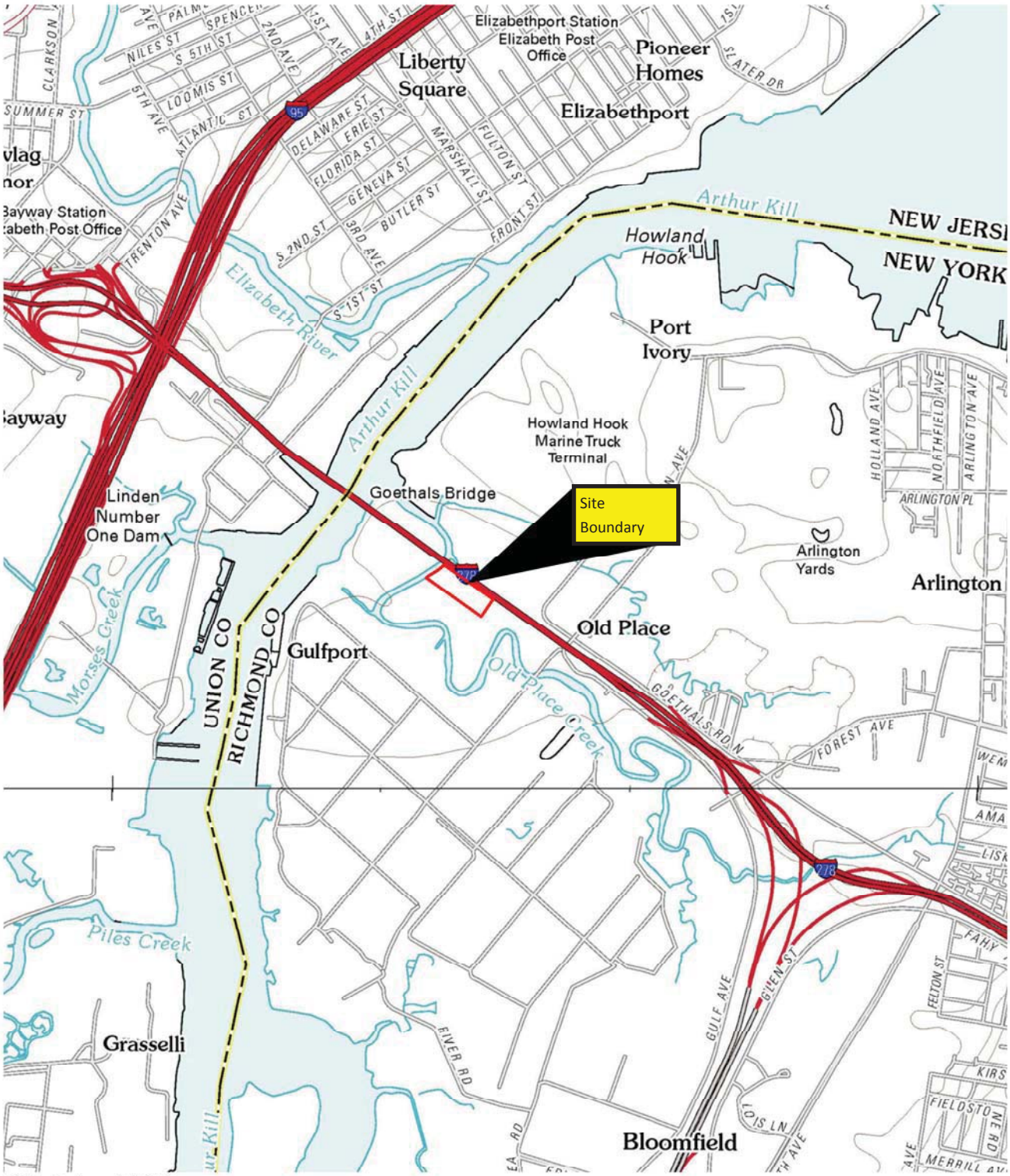

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FIGURE 1 - SITE LOCATION MAP
U.S.G.S. TOPOGRAPHIC ARTHUR KILL & ELIZABETH, NJ QUADS
250 SOUTH WASHINGTON AVENUE
BLOCK 1885, LOT 35
STATEN ISLAND, NEW YORK

DATE: 7/9/13	JOB NO.: 08BR049	SCALE: 1" = 2000'

Figure 2 R. Baker & Son Machinery Dismantlers, Site #243008: Alternative 4 Soil and Sediment Excavation Areas

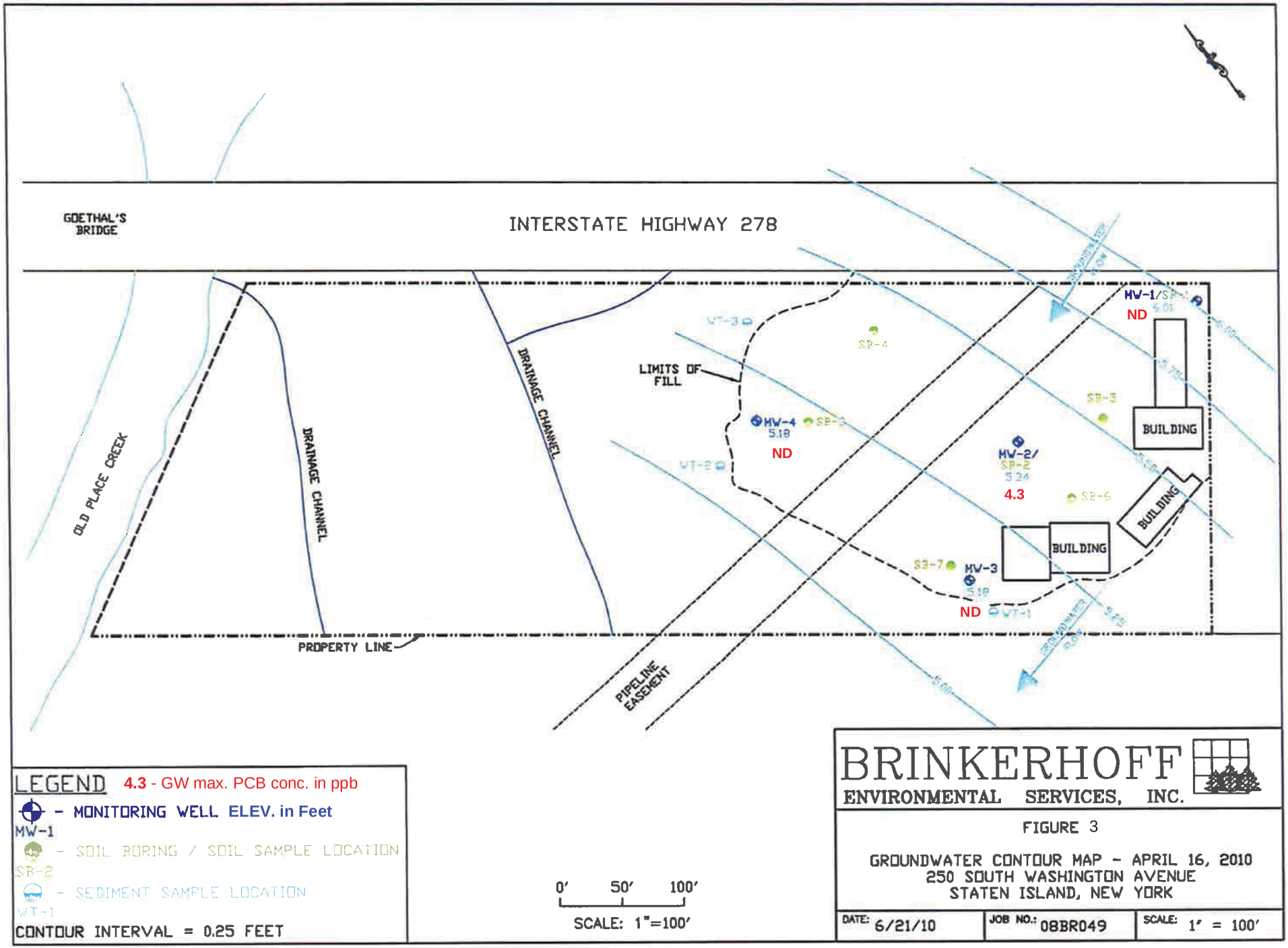
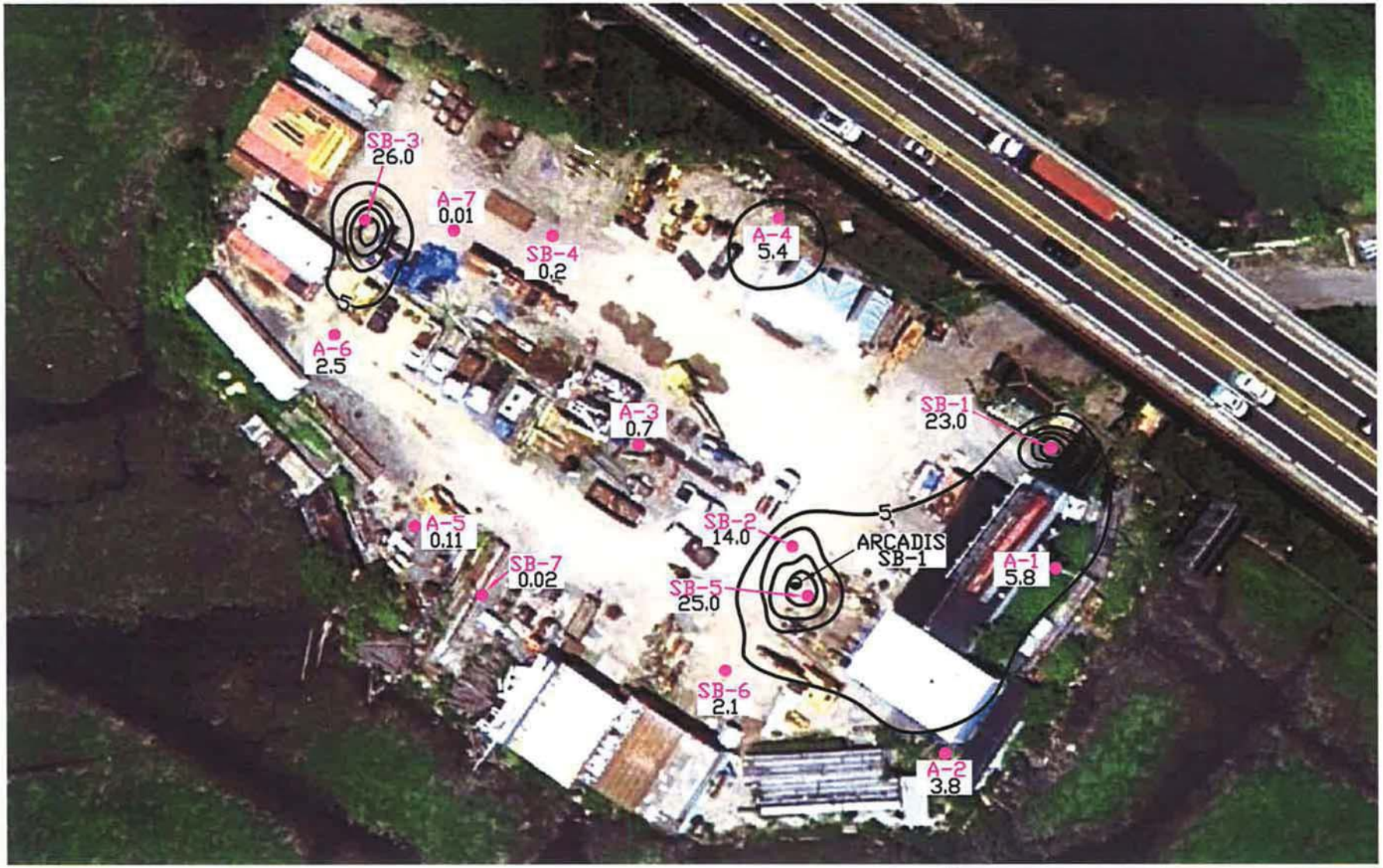


Figure 3 : R. Baker & Son Machinery Dismantlers (Site# 243008) - Groundwater Sampling Results (April 2010 & March 2011)



LEGEND

Results in ppm of PCB

● - BRINKERHOFF SOIL BORING/SAMPLE LOCATION
SB-1

◒ - ARCADIS SOIL BORING/SAMPLE LOCATION
SB-1

CONTOUR INTERVAL = 5ppm PCBs

0′ 30′ 60′

SCALE: 1"=60′

BRINKERHOFF
ENVIRONMENTAL SERVICES, INC.

FIGURE 4 a
SAMPLE LOCATION MAP
250 SOUTH WASHINGTON AVENUE
BLOCK 1885, LOT 35
STATEN ISLAND, NEW YORK

DATE: 12/4/12	JOB NO.: 08BR049	SCALE: 1" = 60′

Figure 4a: R. Baker & Son Machinery Dismantlers (Site# 243008) - Shallow 0.5' to 1.5' PCB Soil Sampling Results

BRINKERHOFF
ENVIRONMENTAL SERVICES, INC.

FIGURE 4h
PCBs IN INTERMEDIATE SOILS 12 - 16 FEET
250 SOUTH WASHINGTON AVENUE
BLOCK 1885, LOT 35
STATEN ISLAND, NEW YORK

DATE:	JOB NO.:	SCALE:
8/15/11	08BR049	1' = 60'

LEGEND
Results in ppm
⊕ - SOIL BORING/SAMPLE LOCATION
SB-1
ND - NON DETECT
CONTOUR INTERVAL = 5ppm PCBs

0' 30' 60'
SCALE: 1"=60'

Figure 4b: R. Baker & Son Machinery Dismantlers (Site# 243008) - Intermediate 12' to 16' PCB Soil Sampling Results

BRINKERHOFF
ENVIRONMENTAL SERVICES, INC.

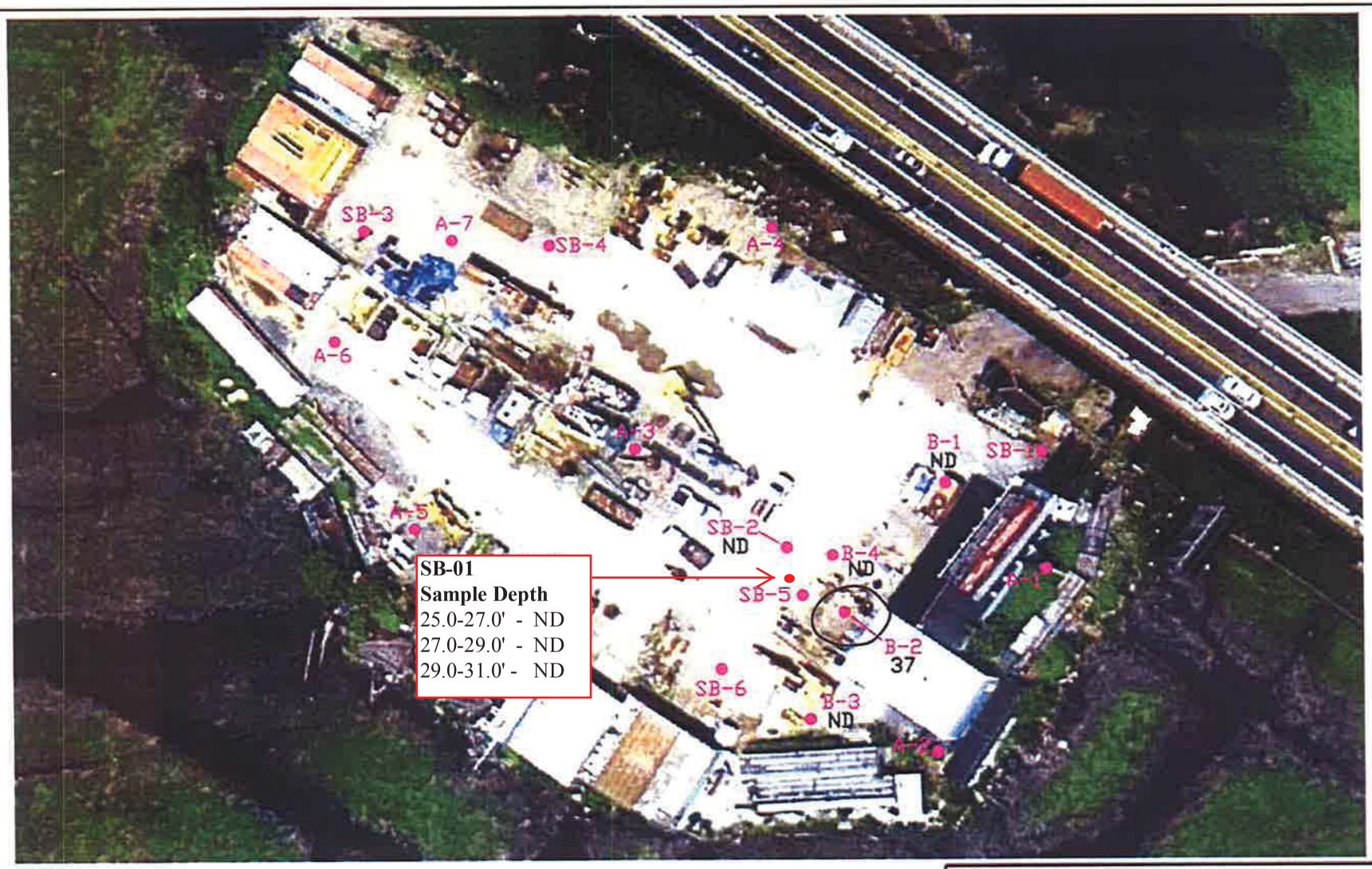
FIGURE 4c
PCBs IN DEEPER SEDIMENTS 16 - 20 FEET
250 SOUTH WASHINGTON AVENUE
BLOCK 1885, LOT 35
STATEN ISLAND, NEW YORK

DATE:	JOB NO.:	SCALE:
8/15/11	08BR049	1" = 60'

LEGEND
- SOIL BORING/SAMPLE LOCATION
SB-1
ND - NON DETECT
RESULTS IN ppm

0' 30' 60'
SCALE: 1"=60'

Figure 4c: R. Baker & Son Machinery Dismantlers (Site# 243008) - Deeper 16' to 20' PCB Soil Sampling Results



LEGEND

● - SOIL BORING/SAMPLE LOCATION
SB-1
ND - NON DETECT
RESULTS IN ppm

0' 30' 60'
SCALE: 1"=60'

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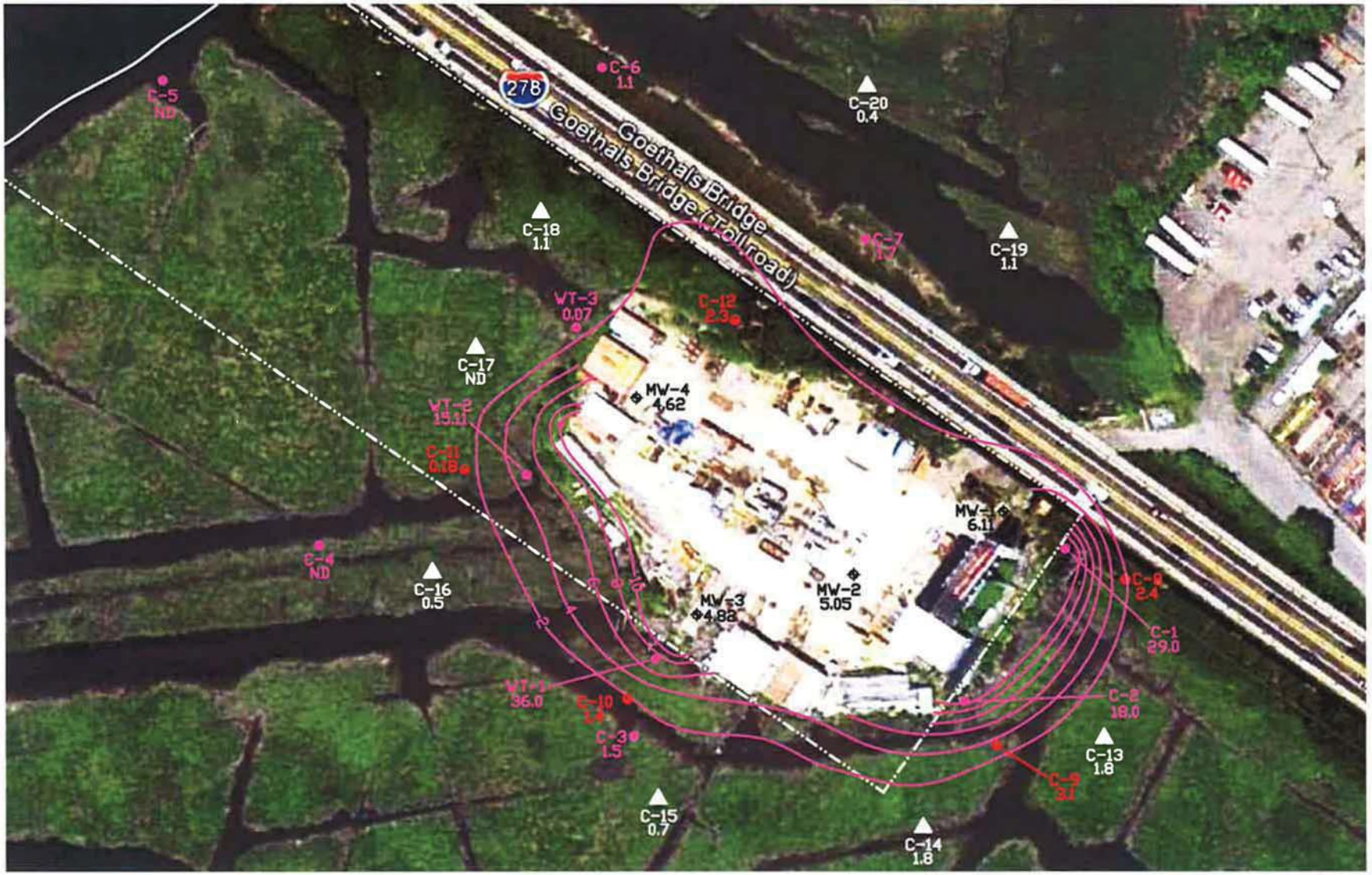
FIGURE 4d
PCBs IN DEEPER SEDIMENTS BELOW 25 FEET
250 SOUTH WASHINGTON AVENUE
BLOCK 1885, LOT 35
STATEN ISLAND, NEW YORK

DATE:	JOB NO.:	SCALE:
8/15/11	08BR049	1' = 60'

Figure 4d: R. Baker & Son Machinery Dismantlers (Site# 243008) - Deeper Below 25' PCB Soil Sampling Results



LEGEND

Results in PPM

- SEDIMENT SAMPLE LOCATION
C-1 SAMPLE COLLECTED IN 2010
- SEDIMENT SAMPLE LOCATION
C-8 SAMPLE COLLECTED JULY 2011
- SEDIMENT SAMPLE LOCATION
C-14 SAMPLE COLLECTED JULY 2012
- MONITORING WELL LOCATION
MW-1 AND GROUNDWATER ELEV.

CONTOUR INTERVAL = 2ppm PCBs

ND = NOT DETECTED

0′ 60′ 120′

SCALE: 1"=120′

BRINKERHOFF
ENVIRONMENTAL SERVICES, INC.

FIGURE 5
PCB IN SEDIMENTS MAP
250 SOUTH WASHINGTON AVENUE
BLOCK 1885, LOT 35
STATEN ISLAND, NEW YORK

DATE: 12/4/12	JOB NO.: 08BR049	SCALE: 1′ = 120′

Figure 5 R. Baker & Son Machinery Dismantlers (Site #243008) PCB Results in Wetlands Sediments

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into four categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Groundwater

Groundwater samples were collected from four shallow overburden monitoring wells located in the upland fill portion of the site to assess groundwater conditions, as shown in Figure 3. The results indicate that contamination in shallow groundwater at the site exceeds the SCGs for PCBs and volatile organic compounds. Turbidity slightly exceeded prescribed levels in the PCB impacted samples.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
1,4 dichlorobenzene	ND – 490	3	2 of 8
1,3 dichlorobenzene	ND – 75	3	2 of 8
chlorobenzene	ND – 98	5	4 of 8
Pesticides/PCBs			
PCB	ND - 4.3	0.09	2 of 8

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

PCB contamination of groundwater in an area of PCB soil contamination is thought to be due to turbidity in the groundwater sample. Contamination from the three types of chlorobenzene appears to be related to site contamination.

Based on the findings of the RI, the presence of 1,4 dichlorobenzene, chlorobenzene, and 1,3 dichlorobenzene has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary

contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are 1,4 dichlorobenzene, chlorobenzene, and 1,3 dichlorobenzene.

Soil

Soil samples were collected from depths ranging from 6 inches to 31 feet. As shown on Figures 4a through 4d, the results indicate the soils exceed the unrestricted SCG for PCBs, volatiles, semi-volatiles, and metals and the industrial SCG for PCBs, semi-volatiles, and metals.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCO	Restricted Use SCG[c] (ppm)	Frequency Exceeding Industrial SCO
VOCs					
benzene	ND – 8.7	0.06	4 of 11	89	0 of 11
acetone	ND - 0.66	0.5	1 of 11	1000	0 of 11
chlorobenzene	ND – 130	1.1	4 of 11	1000	0 of 11
1,4-dichlorobenzene	ND – 3.5	1.8	1 of 11	560	0 of 11
SVOCs					
benzo(a)anthracene	0.12 - 6	1	4 of 10	11	0 of 10
chrysene	0.12 – 5.4	1	5 of 10	110	0 of 10
benzo(b)fluoranthene	0.24 – 6.4	1	5 of 10	11	0 of 10
benzo(k)fluoranthene	0.17 – 5.5	0.8	5 of 10	110	0 of 10
benzo(a)pyrene	0.21 – 4.9	1	4 of 10	1.1	4 of 10
ideno(1,2,3-cd)pyrene	.07 – 1.2	0.5	2 of 10	11	0 of 10
dibenz(a,h)anthracene	ND – 0.51	0.33	1 of 10	1.1	0 of 10
Inorganics					
arsenic	ND – 48.4	13	1 of 10	16	1 of 10
barium	29.6 - 1900	350	3 of 10	10,000	0 of 10
beryllium	ND – 60.9	7.2	4 of 10	2,700	0 of 10
cadmium	0.57 – 4.9	2.5	4 of 10	60	0 of 10
chromium, trivalent	18.1 - 1120	30	6 of 10	6800	0 of 10
copper	195 - 8830	50	10 of 10	10,000	0 of 10
lead	56.2 - 4360	63	9 of 10	3900	1 of 10

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCO	Restricted Use SCG[c] (ppm)	Frequency Exceeding Industrial SCO
manganese	45.2 - 2890	1600	2 of 10	10,000	0 of 10
mercury	ND – 2.04	0.18	3 of 10	5.7	0 of 10
nickel	7.81 - 3640	30	8 of 10	10,000	0 of 10
selenium	ND – 14.6	3.9	3 of 10	6800	0 of 10
silver	ND – 7.25	2	3 of 10	6800	0 of 10
zinc	27.8 – 20,600	109	8 of 10	10,000	2 of 10
Pesticides/PCBs					
PCB	ND - 226	0.1	30 of 50	25	6 of 50
4,4'-DDE	ND - 0.011	0.0033	3 of 13	120	0 of 13
4,4'-DDD	ND - 0.006	0.0033	2 of 13	180	0 of 13
dieldrin	ND – 0.18	0.005	3 of 13	2.8	0 of 13

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Industrial Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

The contaminants of concern are PCBs, 1,4 dichlorobenzene and chlorobenzene. Contamination is thought to have resulted from sloppy handling of solvents and salvaged electrical equipment containing PCBs.

SVOC and inorganic contamination is typical of urban fill and generally below industrial use SCGs. Therefore, SVOCs and inorganics are not considered a site specific contaminant of concern.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminant identified in soil which is considered to be the primary contaminants of concern, to be addressed by the remedy selection process are PCBs and chlorobenzenes.

Neither Walter Baker nor R. Baker & Son All Industrial Services Inc. admit to the DEC's statements concerning the source or cause of the contamination.

Sediments

Sediment samples were collected from the salt water marsh surrounding the upland portion of the site during the RI. The samples were collected to assess the potential for impacts to wetland sediment from the site. The results indicate that sediment in the on-site wetland exceed the Department=s SCGs for sediments for PCB, as well as dichlorobenzenes, several SVOCs, and a number of inorganics.

Table 3 - Sediment

Detected Constituents	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)	Frequency Exceeding SCG
VOCs			
dichlorobenzenes	3.8	0.18 [d]	1 of 1
SVOCs			
benzo(a)anthracene	0.23	0.0021 [c]	1 of 1
benzo(b)flouranthene	0.35	0.0021 [c]	1 of 1
benzo(k)flouranthene	0.29	0.0021 [c]	1 of 1
chrysene	1.0	0.0021 [c]	1 of 1
Inorganics			
antimony	6.9	LEL 2.0	1 of 1
		SEL 25	0 of 1
arsenic	41.6	LEL 6.0	1 of 1
		SEL 33	1 of 1
cadmium	2.56	LEL 0.6	1 of 1
		SEL 9.0	0 of 1
chromium	255	LEL 26	1 of 1
		SEL 110	1 of 1
copper	1160	LEL 16	1 of 1
		SEL 110	1 of 1
iron	98,700	LEL 20,000	1 of 1
		SEL 40,000	1 of 1
lead	601	LEL 31	1 of 1
		SEL 110	1 of 1
manganese	701	LEL 460	1 of 1
		SEL 1100	0 of 1
mercury	2.08	LEL 0.15	1 of 1
		SEL 1.3	1 of 1
nickel	315	LEL 16	1 of 1
		SEL 50	1 of 1
silver	2.72	LEL 1.0	1 of 1
		SEL 2.2	1 of 1
Pesticides/PCBs			
PCB	ND – 36.1	0.00012 [c]	21 of 23

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in sediment;

b - SCG: The Department's "Technical Guidance for Screening Contaminated Sediments." Based on average Total Organic Carbon content of 15% in 8 samples tested.
c – Value is based on Human Health Bioaccumulation
d - Value is based on Benthic Aquatic Life Chronic Toxicity
LEL = Lowest Effects Level and SEL = Severe Effects Level. A sediment is considered contaminated if either of these criteria is exceeded. If the SEL criteria are exceeded, the sediment is severely impacted. If only the LEL is impacted, the impact is considered moderate.

The sediment contaminants of primary concern are PCBs. As shown on Figure 5, PCB concentrations are highest immediately adjacent to the upland fill portion of the site and drop of rapidly further from the fill. The Fish and Wildlife Impact Analysis indicated the wetlands portion of the site, including those areas with the highest PCB contamination, appeared generally healthy. Additionally, sampling of shellfish (rib mussels) in the vicinity of the site showed only 1 of 5 samples with a detection of PCBs at 173 ppb. Finally, there is little or no opportunity of the public coming in contact with these sediments from recreational use. Therefore a remedial action requiring extensive wetland excavation is considered counter-productive. Instead, sediment remedial efforts will be focused on the limited areas with the highest PCB concentrations.

Based on the findings of the Remedial Investigation, the presence of PCB has resulted in the contamination of sediment. The site contaminants that are considered to be the primary contaminant of concern which will drive the remediation of sediment to be addressed by the remedy selection process is PCBs.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Site Management

The Site Management Alternative requires only institutional controls for the site. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site. The easement requires the remedial party or site owner to complete a periodic certification that institutional and engineering controls remain in place, allows industrial use of the property subject to local zoning laws, restricts the use of groundwater as a source of potable or process water, and requires compliance with the Department approved Site Management Plan. The Site Management Plan requires a provision for evaluating the potential for soil vapor intrusion for any buildings developed on the site, as well as a monitoring plan to monitor for soil vapor intrusion in such buildings.

Alternative 3: Excavation and Off-site Soil Disposal with Soil Cover and Hot Spot Sediment Excavation with Off-site Disposal

To the extent feasible all on-site soils in and beneath upland fill areas at depths of up to 20 feet which exceed industrial SCOs for PCB or protection of groundwater SCOs for 1,4 dichlorobenzene or chlorobenzene, as defined by 6 NYCRR Part 375-6.8, will be excavated. Excavated soils will be transported off-site for disposal. As shown in Figure 2 this includes two areas excavated to 1 foot depth and a small area excavated to a depth of 18 feet. The 37 ppm of PCB found at a depth of 25 feet at boring B-2 would be left in place beneath the cover system due to its impracticality of removal. Approximately 240 cubic yards of soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site. The upland fill portion of the site will be re-graded to accommodate installation of a cover system as described in remedy element 3. Soil derived from the re-grading may be used to backfill the excavation beneath the cover system.

A site cover will be required to allow for industrial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for industrial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d). A vegetated

buffer planted in topsoil would have to remain around the portions of the property in contact with tidal marsh, the dimensions of which would have to be determined in the Remedial Design.

Contaminated wetlands sediment surrounding hot spots identified by sample C-1 (29.0 ppm) and sample WT-1 (36 ppm) will be excavated for off-site disposal. The horizontal extent of the focused remediation would begin at the sample location, extending until either the estimated 5 ppm contour, the hydrologic surface at the edge of the base of the upland fill, or the edge of a tidal channel is reached. The vertical extent of the sediment remediation would consist of the removal of sediment from the existing surface to the base of the peat layer. The boundaries would be determined by field/visual observations. Approximately 240 cubic yards of sediment will be removed from the site. Clean fill consisting of sand and meeting the SCOs as set forth in 6 NYCRR Part 375-6.7(d) for protection of ecological resources will be brought in to complete the backfilling of the excavation and establish the design grades at the site.

No action is contemplated for groundwater under this alternative.

This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site. The easement requires the remedial party or site owner to complete a periodic certification that institutional and engineering controls remain in place, allows industrial use of the property subject to local zoning laws, restricts the use of groundwater as a source of potable or process water, and requires compliance with the Department approved Site Management Plan. The Site Management Plan requires a provision for evaluating the potential for soil vapor intrusion for any buildings developed on the site, as well as a monitoring plan to monitor for soil vapor intrusion in such buildings.

Present Worth: *$551,000*
Capital Cost: *$528,000*
Annual Costs: *$1500*

Alternative 4: Excavation and Off-site Soil Disposal with Soil Cover and Sediment Excavation to 5 ppm with Off-site Disposal

This alternative is similar to Alternative 3, with the exception that all sediments within the 5ppm PCB contour line will be excavated and disposed of off-site. To the extent feasible all on-site soils in and beneath upland fill areas at depths of up to 20 feet which exceed industrial SCOs for PCB or protection of groundwater SCOs for 1,4 dichlorobenzene or chlorobenzene, as defined by 6 NYCRR Part 375-6.8, will be excavated. Excavated soils will be transported off-site for disposal. As shown in Figure 2 this includes two areas excavated to 1 foot depth and a small area excavated to a depth of 18 feet. The 37 ppm of PCB found at a depth of 25 feet at boring B-2 would be left in place beneath the cover system due to its impracticality of removal. Approximately 240 cubic yards of soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site. The site will be re-graded to accommodate installation of a cover system as described in remedy element 3. Soil derived from the re-grading may be used to backfill the excavation beneath the cover system.

A site cover will be required to allow for industrial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for industrial use. The soil cover will be placed over a demarcation layer, with the

upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d). A vegetated buffer planted in topsoil would have to remain around the portions of the property in contact with tidal marsh, the dimensions of which would have to be determined in the Remedial Design.

Contaminated wetlands sediment exceeding 5 ppm, as defined by the 5ppm contour line in Figure 2, will be excavated for off-site disposal. The vertical extent of the sediment remediation would consist of the removal of sediment from the existing surface to the base of the peat layer. Approximately 2400 cubic yards of sediment will be removed from the site. Clean fill with similar quality as the removed sediments will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

No action is contemplated for groundwater under this alternative.

This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site. The easement requires the remedial party or site owner to complete a periodic certification that institutional and engineering controls remain in place, allows industrial use of the property subject to local zoning laws, restricts the use of groundwater as a source of potable or process water, and requires compliance with the Department approved Site Management Plan. The Site Management Plan requires a provision for evaluating the potential for soil vapor intrusion for any buildings developed on the site, as well as a monitoring plan to monitor for soil vapor intrusion in such buildings.

Present Worth: *$1,560,000*
Capital Cost: *$1,540,000*
Annual Costs: *$1500*

Alternative 5: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A. This alternative would include: Groundwater extraction and treatment to address all contaminants above SCGs in groundwater. The groundwater extraction system will be designed and installed so that the capture zone is sufficient to cover the areal and vertical extent of the area of concern. The extraction system will create a depression of the water table so that contaminated groundwater is directed toward the extraction wells within the plume area. Groundwater will be extracted from the subsurface over an approximately 400-square foot area located in the western portion of the upland segment of the site where VOCs elevated in groundwater, and another approximately 400-square foot area in the east center portion of the upland site where both VOCs and PCBs were found above SCGs. Further details of the extraction system will be determined during the remedial design.

The extracted groundwater will be treated with liquid phase absorption using activated granular activated carbon (GAC). GAC will be used to remove dissolved contaminants from extracted groundwater by adsorption. The GAC system will consist of one or more vessels filled with carbon connected in series and/or parallel.

The entire upland fill portion of the site of approximately 28,000 c.y. will be excavated back to the original wetlands elevation and transported off-site for disposal.

Wetland sediments would also be excavated and disposed of off-site. The volume of wetlands sediment which would have to be excavated is unknown, since the investigation did not delineate PCB contamination in sediments down to the PCB sediment SCG of 0.000012 ppm. It is likely background PCB concentrations in a

major metropolitan area with a long history of industrial activity such as New York City may exceed the sediment SCG, so defining the limits of contamination exceeding this SCG would be problematic. At a minimum, sediment volumes are expected to be at least 50,000 c.y. under this alternative.

Present Worth: ..... *In excess of $25,000,000*
Capital Cost: ..... *In excess of $25,000,000*
Annual Costs: *$0*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual Costs	Total Present Worth
1. No Action	$0	$0	$0
2. Site Management	$0	$0	$0
3. Excavation and Off-site Soil Disposal with Soil Cover, Hot Spot Sediment Removal	$528,000	$1500	$551,000
4. Excavation and Off-site Soil Disposal with Soil Cover, 5 ppm Sediment Removal	$1,540,000	$1500	$1,560,000
5. Restoration to Pre-Disposal or Unrestricted Conditions	>$25,000,000	$0	>$25,000,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative No. 3, Excavation and Off-site Soil Disposal with Soil Cover and Hot Spot Sediment Excavation with Off-site Disposal as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by removing 240 c.y. of contaminated soils from the site, replacing with clean fill and a 1 foot soil cover, and removal of an additional 240 c.y. of contaminated sediments and restoring to original grade with clean fill of similar quality as the removed sediments. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 2.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The proposed remedy, Alternative 3 would satisfy this criterion by removing the soil containing PCB in excess of industrial SCGs for soils at depth of up to 20 feet and covering any remaining lesser contaminated soils not covered by a building slab, pavement, or asphalt with a one foot soil cover. The most significant threat to the environment is presented by PCB contamination in tidal wetlands. As the Fish and Wildlife Impact Analysis identified a healthy tidal salt marsh with no PCB impacts to ribbed mussels above EPA tolerance levels, only excavation and removal of the highest concentration “hot spots’ is proposed to minimize disturbance to the wetlands while reducing the chance of future impacts. Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further. Alternative 2 is protective of human health and the environment through the implementation of Institutional and Engineering Controls. Alternatives 3 and 4 are protective of human health and the environment through the removal of the greatest concentrations of soil and sediment contamination, a one foot soil cover over upland portions of the site, and implementation of Institutional and Engineering Controls. Alternative 5 would be protective of human health and the environment without Institutional and Engineering Controls by restoring the site to pre-disposal conditions.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 3 complies with SCGs to the extent practicable. It addresses source areas of contamination and complies with the restricted use soil cleanup objectives at the surface through construction of a cover system. Alternatives 2 also complies with this criterion, but to a lesser degree or with lower certainty. Alternatives 4 and 5 also satisfy the threshold criteria. Therefore, the remaining criteria are particularly important in selecting a final remedy for the site.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is best accomplished by those alternatives involving excavation of the contaminated overburden soils (Alternatives 3, 4, and 5). Since most of the contamination is in the western yard and the upper six feet of the east yard, Alternative 3 results in removal of almost all of the PCB contamination exceeding the SCG for the intended industrial future use and is therefore effective in the long-term and permanent. Alternative 4 removes even more of the contaminated sediments and Alternative 5 removes both more contaminated soils and more contaminated sediments, so both alternatives are effective in the long term and permanent. For Alternative 2, site management remains effective, but it will not be as desirable in the long term. Alternative 5 is the only alternative which would not require a groundwater use restriction, though the groundwater at this site is not a significant resource.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 2 would control potential exposures with institutional controls only and will not reduce the toxicity, mobility or volume of contaminants remaining. Alternatives 3, 4, and 5 which each include excavation and off-site disposal, reduce the toxicity and mobility of on-site waste by transferring the material to an approved off-site location. However, depending on the disposal facility, the volume of the material would not be reduced.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative 2 has no additional short term impacts. Alternatives 3 and 4 have short-term impacts, however, Alternative 3 would have the lesser impact. These short term impacts will be minimized by use of engineering controls. Alternative 5 would have a major short-term impact due to the large area of salt march which would need to be excavated. Under Alternatives 3, 4, and 5, the amount of time required for the excavated areas in the salt marsh to naturally return to their current healthy state could be extensive. The area of the marsh disturbed would be smallest under Alternative 3, considerably greater under Alternative 4, and vastly greater under Alternative 5. The time needed to achieve the remediation goals is the shortest for Alternative 2 and longest for Alternative 5.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternatives 2 and 3 are favorable in that they are readily implementable. Alternative 4 is also implementable, but the volume of soil excavated under this alternative makes it slightly more difficult. Due to the large area of sediments to be removed under Alternative 5, implementation would be very difficult.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

Alternative 2 has low cost, but the contaminated soil would not be addressed other than by institutional controls. Alternatives 3 and 4 both meet threshold criteria but Alternative 4 costs roughly three times as much due to its greater volume of wetlands sediment to be removed, making it less cost-effective. With its exceptionally large volume of soil and sediment to be removed, Alternative 5 would have the highest present work cost by a wide margin.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Since the anticipated use of the site is industrial, Alternative 2 would be less desirable because shallow soils with PCB contamination above industrial SCGs would remain on the property. Alternative 3, 4, and 5 would remove contaminated soil permanently. However, the residual contamination would remain with Alternative 3 and 4 and would be controlled by a soil cover which would be inspected annually under a Site Management Plan. With Alternative 5 all contaminated soils and sediments would be removed and restrictions on the site use would not be necessary.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative No. 3 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

R. Baker & Son Machinery Dismantlers, Inc.
State Superfund Project
Staten Island, Richmond County, New York
Site No. 243008

The Proposed Remedial Action Plan (PRAP) for the R. Baker & Son Machinery Dismantlers, Inc. site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on October 17, 2013. The PRAP outlined the remedial measure proposed for the contaminated soil, sediment, surface water, groundwater at the R. Baker & Son Machinery Dismantlers site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on October 23, 2013, which included a presentation of the remedial investigation feasibility study (RI/FS) for the R. Baker & Son Machinery Dismantlers site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on November 16, 2013.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

The public meeting was attended by only the responsible party and their representatives, and no comments were generated.

Beryl A. Thurman, Executive Director/President of the North Shore Waterfront Conservancy of Staten Island, Inc., submitted an e-mail dated October 17, 2013, which included the following comments:

COMMENT 1: Based on the Fact Sheet the site seems to be abandoned? Or is it being used as a open industrial storage area?

RESPONSE 1: The site continues to be used for equipment storage by R. Baker & Son All Industrial Services.

COMMENT 2: If it is abandoned then has it defaulted to the City of New York and is now City owned property and under which agency's jurisdiction?

RESPONSE 2: Walter Baker is the current owner of the site.

COMMENT 3: I do not recall there being residential homes in direct proximity of this site. So the hazard that this remediation must be mitigating must be in relationship to the tidal wetlands that surround it.

RESPONSE 3: There are no known residences within 1/2 mile of the site. Sediment in the adjacent wetland areas will be addressed by the remedy. A summary of the remediation goals can be found in Section 6.5 of the Record of Decision.

COMMENT 4: Since the property has been contaminated since the early 1970s what was the catalyst that prompted this remediation to finally happen?

RESPONSE 4: Though several limited investigations had been overseen by the Department during the intervening years, it wasn't until August 2009 that the Department was able to reach an agreement with the property owner to conduct a remedial investigation and feasibility study.

COMMENT 5: Once the site is remediated how will it be used in the future?

RESPONSE 5: An environmental easement will be imposed limiting future use of the site to industrial uses, subject to local zoning laws.

COMMENT 6: Lastly is there any way that this project's documents can also be housed at the following public library?

The Port Richmond Public Library, 75 Bennett Street, Staten Island, NY 10302

RESPONSE 6: Document repositories have been established at the Todt Hill-Westerleigh Library in Staten Island and the Science, Industry and Business Library in Manhattan. No additional repositories are envisioned at this time.

Beryl A. Thurman, Executive Director/President of the North Shore Waterfront Conservancy of Staten Island, Inc., submitted a letter dated October 26, 2013, which included the following additional comments:

COMMENT 7: It appears that the immediate concern for this property has to do with the upcoming twinning and raising of the Goethals Bridge and the workers and contractors who would come into contact with this property and its contaminants during this project.

RESPONSE 7: At the current time the Department is unaware of any agreement having been reached for the Port Authority of New York and New Jersey to acquire or develop the site. The

selected remedy allows for future industrial use of the property, subject to local zoning laws. Once the remedy is completed it will be available for reuse, subject to compliance with the Site Management Plan.

COMMENT 8: The secondary concern appears to be the affect of the contaminants (PCBs, dichlorobenzene, chlorobenzene, VOCs) on the environment. It seems to be secondary because this site has been contaminated since the 1970s and no action was taken from that period of time until now to pursue the remediation of this property.

RESPONSE 8: As required, the selected remedy is protective of human health and the environment. Also see Response 3.

COMMENT 9: What the Department is proposing in Alternative 3 is a partial remediation of the site. For the record NSWC does not believe in partial remediations when it comes to wetlands and or waterfront properties.

This is of great concern to NSWC as we have residents that frequently fish for shellfish and fish from the West and North Shores waters and consume their catch as a means of adding affordable protein to their families' diet.

We also don't believe in partial remediation of wetlands because of knowing that even though properties may be assumed to not have direct people contact, Staten Islanders have historically paid no attention to barriers of any kind, nor no trespassing signs. People have and probably will continue to frequent this site and others long after the partial remediation is complete.

Because of these known behaviors we have always sought and advocated for full remediations of contaminated sites in order to prevent any future concerns regarding contamination exposures to residents or the environment that sustains them. This property is no exception to this concern.

Therefore on behalf of Staten Island's Environmental Justice communities, we are requesting the New York State Department of Environmental Conservation and the New York State Department of Health seek to have this site completely remediated by using Alternative 5.

RESPONSE 9: The Department and NYSDOH share the NSWC's preference for remedial measures which restore sites to pre-release conditions. In many cases, such as this one, difficulty with the implementation of such remedies makes them technically impracticable or the extent of the impact to the surrounding area makes them less desirable. The Fish and Wildlife Impact Analysis conducted at the site indicated a healthy tidal salt marsh, with little impact on local biota. The fish and wildlife staff believe that excavation of large areas of the tidal salt marsh would be more destructive to the marsh ecosystem, far outweighing any benefit obtained by the removal of additional residual PCB contamination.

NYSDOH concurs with this remedy and has issued extensive advisories on eating fish from the Arthur Kill and Kill Van Kull, based on PCB and dioxin contamination in finfish; and PCB, dioxin and cadmium contamination in crabs. These advisories can be found at the following web address:

http://www.health.ny.gov/environmental/outdoors/fish/health_advisories/regional/new_york_city.htm

or, alternatively, people may contact the NYSDOH at 518-402-7800 or (toll-free) at 1-800-458-1158 to receive a print copy of the NYSDOH fish advisories. Additionally, Department staff have determined that the residual PCB contamination in the wetlands should not result in any substantive increases in Arthur Kill and Kill Van Kull fish and shellfish PCB levels. However, we recommend that people follow the NYSDOH advisories on eating fish and crabs from these waters.

Access to the site will be restricted and the intended re-use of the site is for industrial use. However, if trespassers enter the site after remediation is complete, exposure to residual contamination is not expected unless they dig below the one foot thick soil cover system. In addition, a site management plan (SMP) will be implemented that addresses future site uses and actions to prevent any potential for future exposures. Part of the SMP will be a soil management plan to address any excavations beneath the site soil cover system in the event that future excavations or construction activities are conducted.

COMMENT 10: In addition in looking at Alternatives 3 through 4 we do not believe that the Annual Cost are reasonable, or reflective of the increases that come about through inflation. And that at some point New York State Department of Environmental Conservation will not be able to appropriately monitor this site and its remaining contaminants along with any changes that are taking place - be they natural or manmade.

RESPONSE 10: The present worth cost estimate in Exhibit C includes the annual costs with their value adjusted for time. However, should monitoring and maintenance costs exceed the current cost estimate over the long term, it would in no way eliminate the obligation for that work to be completed as required in the Site Management Plan.

Donald J. Camerson II of Bressler, Amery, & Ross, the law firm representing Walter Baker, submitted a letter dated November 15, 2013, which included the following comments in their entirety:

COMMENT 11: In Section 3, page 3, the PRAP includes the following descriptions of the Property:

• "The R. Baker and Son Machinery Dismantlers site, also referred to as 250 South Washington Avenue in site reports, is a salvage yard located adjacent and beneath the Goethals Bridge in the northwestern corner of Staten Island."
• "The site has been used as a salvage yard since at least the 1970s."

• "It is believed that the site has been used as a salvage yard ever since it was reclaimed from the surrounding wetlands by filling."

As discussed at the public meeting, the “salvage yard" references do not accurately describe Mr. Baker's use of the property. As described in the March 4, 2008 response to DEC's Request for Information ("RFI Response"), the Property has been used to store construction equipment by various companies, including R. Baker & Son Machinery Dismantlers, Inc., which company no longer exists. From approximately 1967 to 1977, demolition equipment was stored on the Property. For a very limited time prior to 1977, R. Baker & Son Machinery Dismantlers, Inc. purchased obsolete transformers at auction from public and/or private entities including, but not limited to, Con Edison, Port Authority of New York and New Jersey, the New York Transit Authority, Long Island Railroad, General Electric, the United States Navy, PSE&G, Exxon, etc. These purchases of transformers were not frequent or numerous. A few of the transformers purchased from the private and/or public entities at auction may have been taken back to the Property for dismantling. Given the above, the Property is not a salvage yard but rather an industrial property used to store construction equipment.

RESPONSE 11: The text of the ROD has been modified from the PRAP to change the above noted references to the site as a salvage yard to “an industrial property used to store construction equipment”.

COMMENT 12: In Section 3, page 3, in the paragraph titled, "Site Features," the PRAP includes the statement "[t]he site consists of approximately 3 acres of filled-in wetlands." As provided in the RFI Response, the 3 acres of filled-in wetlands were filled pursuant to and with the approval of the applicable state and/or regulatory agencies.

RESPONSE 12: The assertion that the wetlands were filled in with the approval of applicable agencies is noted. However, the statement that the wetlands were filled-in is accurate as written and makes no implication as to whether that action was authorized or unauthorized.

COMMENT 13: On two occasions in Section 5, page 4, the PRAP incorrectly refers to the PRPs as "Walter A. Baker & Son All Industrial Services Inc." The signatories to the August 28, 2009 Consent Order are Walter Baker and R. Baker & Son All Industrial Services, Inc.

RESPONSE 13: The correction has been made in the ROD.

COMMENT 14: In paragraph 3 of Section 7 of the PRAP (entitled *Sediment Excavation)* and in Exhibit B (under the selected Alternative 3), the DEC incorrectly provides "The vertical extent of sediment remediation will consist of the removal of sediment found within the limits of the tidal channels, from the existing surface to the base of the peat layer." This is not an accurate statement of the vertical extent of the excavation and this sentence should be deleted from the above cited paragraph.

RESPONSE 14: The text has been modified to read “The vertical extent of the sediment remediation will be limited to the removal of sediment from the existing surface to the base of the peat layer.”

COMMENT 15: In paragraph 4 of Section 7 of the PRAP (entitled *Soil Cap)* and in Exhibit B (under the selected Alternative 3), the DEC refers to a "soil cover" for use in those areas not covered by structures. As discussed at the Public Meeting, a "soil cover" may be susceptible to, among other things, erosion and runoff into ecological receptors, and may not withstand heavy equipment traffic. As such and as further discussed at the Public Meeting and agreed to by the DEC, the selected remedy should not and will not be limited to the use of "soil cover" but will include the use of other acceptable cover material suitable to an industrial/heavy construction yard such as recycled concrete aggregate, gravel, and the like.

RESPONSE 15: The term “soil cover” refers to a cover for the soil. The material actually used as a cover may or may not be soil. The referenced paragraph does specifically allow for pavement and other structures, which would withstand heavy equipment traffic. Additionally, under 6 NYCRR Part 375-6.7(d)(3) the Department may make site specific exemptions based on site conditions such as the use of the site. Under that provision, the use of materials such as those suggested as cover could be evaluated. Paving would not be acceptable in the upland buffer area, nor would the use of recycled concrete aggregate due to the pH of such material. A vegetated buffer planted in topsoil would have to remain around the portions of the property in contact with tidal marsh, the dimensions of which would have to be determined in the Remedial Design. The determination of the appropriate cover material will be made during the Remedial Design.

COMMENT 16: In paragraph 6 of Section 7 of the PRAP (entitled *Site Management Plan)* and in Exhibit B (under the selected Alternative 3), the DEC refers to the need to address vapor concerns in the Site Management Plan (evaluation) and Monitoring Plan (monitoring). However, vapor intrusion is not a remedial concern at the site based on the concentrations of volatile organic compounds detected in the sampling performed at the site. As such, Baker does not anticipate the need for a Monitoring Plan within the Site Management Plan to be developed for the site.

RESPONSE 16: One of the Remediation Objectives for the site, as defined in Section 6.5, is to mitigate impacts to the public health for existing or potential soil vapor intrusion. Note that in this case the provision for evaluation of the potential for soil vapor intrusion would only come into effect in the event of the development of buildings intended for occupancy on the site.

COMMENT 17: The PRAP provides the following on page 3 of Exhibit A:
• "Contamination is thought to have resulted from sloppy handling of solvents and salvaged electrical equipment containing PCBs."
• "Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil."

Baker does not admit and expressly disputes the above statements. To address this comment, either the statements have to be qualified as allegations by the DEC, or a sentence must be added that "Neither Walter Baker nor R. Baker & Son All Industrial Services Inc. admit to the DEC's statements concerning the source or cause of the contract." (It is assumed the writer meant to use the word “contamination” not “contract” in this context.)

RESPONSE 17: The comment is noted.

APPENDIX B

Administrative Record

Administrative Record

R. Baker & Son Machinery Dismantlers, Inc
State Superfund Project
Staten Island, Richmond County} New York
Site No. 243008

1. Proposed Remedial Action Plan for the R. Baker & Son Machinery Dismantlers, Inc site, dated October 2013, prepared by the Department.

2. Order on Consent, Index No. A2-0607-0608, between the Department and R. Baker & Son All Industrial Services. Inc. and Walter Baker, executed on August 27, 2009.

3. "Revised Supplemental Investigation Workplan – 250 South Washington Avenue", December 2009, prepared by Brinkerhoff Environmental Services

4. "Site Investigation Report - 250 South Washington Avenue", November 2010, prepared by Brinkerhoff Environmental Services

5. "Supplemental Remedial Investigation Report - 250 South Washington Avenue", September 2011, prepared by Brinkerhoff Environmental Services

6. "Remedial Site Investigation Report and Supplemental Work Plan" – April 2012, prepared by Brinkerhoff Environmental Services

7. "Remedial Investigation Report - 250 South Washington Avenue", January 2013, prepared by Brinkerhoff Environmental Services

8. "Feasibility Report - 250 South Washington Avenue", August 2013, prepared by Brinkerhoff Environmental Services

9. E-mail dated October 17, 2013 from Beryl A. Thurman of the North Shore Waterfront Conservancy of Staten Island, Inc.

10. Letter dated October 26, 2013 from Beryl A. Thurman of the North Shore Waterfront Conservancy of Staten Island, Inc.

11. Letter dated November 15, 2013 from Donald J. Camerson II of Bressler, Amery, and Ross

APPENDIX B

Baseline Remediation Plan April 2014

Port Authority of New York & New Jersey

Baseline Remediation Plan

Goethals Bridge Replacement Project

Revised April 17, 2014

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Figures

PART 1 – GENERAL

1.01 DESCRIPTION

A. The CONTRACTOR shall furnish all labor, materials, equipment and incidentals necessary to perform impacted material excavation and handling necessary, including an effective dewatering system, for on-site preparation and off-site transportation and disposal of materials from the remediation and associated activities as described in this Baseline Remediation Plan, and in accordance with the CONTRACTOR's approved Excavation and Handling Plan.

B. The Work shall include, without limitation, excavation and potentially temporary storage of impacted soil; segregation of different wastes identified herein and facilitating the collection of post-excavation verification soil samples for chemical analyses.

C. The areas of work identified herein show the extent of contaminated material to be removed and properly disposed off Port Authority of New York & New Jersey (PANYNJ) property in accordance with applicable laws and regulations. Specifically, this Baseline Remediation Plan addresses seven properties in total (Site or Sites). Four of the Sites are located in Elizabeth, New Jersey and are identified as Block 4, Lots 49, 49A, 1470 and 1631. These four Sites, with the exception of Lot 1631, are owned by PANYNJ. Lot 1631 is owned by Public Service Electric and Gas (PSE&G). The remaining three properties are located in Staten Island, New York. These Sites, identified as Block 1885, Lots 35, 50, and 75, are currently owned by W. Baker & Sons, PANYNJ, and the New York City Economic Development Corporation (NYCEDC), respectively. Contaminated material may include, but is not limited to, soil, debris, separate phase product, coal tar, and contaminated ground water. For additional information, refer to available environmental reports.

D. All excavation activities must be completed by workers with the appropriate level of Occupational Safety and Health Administration (OSHA) training in accordance with a Site specific Health and Safety Plan in accordance with 29 CFR 1910.126. All workers will be trained in accordance with 29 CFR 1910.120.

E. CONTRACTOR shall implement appropriate engineering measures to control fugitive dust and VOC emissions during soil excavation and handling activities.

F. The CONTRACTOR shall obtain the services of a New Jersey or New York (as appropriate) licensed Surveyor to document the limits of excavation and existing elevations.

G. The CONTRACTOR shall be responsible for obtaining any and all permits required for offsite transportation of waste in accordance with applicable Federal, State and local regulations.

H. The CONTRACTOR shall identify if a New Jersey Department of Environmental Protection (NJDEP) waste classification letter is required by the proposed disposal facilities prior to excavation. If it is required, CONTRACTOR shall have a state certified lab or qualified environmental professional collect waste characterization samples in accordance with the NJDEP's requirements. The CONTRACTOR shall prepare and submit the waste classification letter request application to the NJDEP.

I. The CONTRACTOR shall prepare and maintain waste shipment records and manifests required by the Resource Conservation and Recovery Act (RCRA), Toxic Substance Control Act (TSCA), US. Federal Department of Transportation (DOT), the New York State Department of Transportation (NYSDOT), and the New Jersey Department of Transportation (NJDOT).

J. The CONTRACTOR shall have a state certified lab or qualified environmental professional perform any and all sampling required for disposal facility acceptance of excavated soil and debris. The CONTRACTOR shall also be required to provide all waste profile information to the disposal facility, per their requirements.

K. The CONTRACTOR shall ensure that all operations for loading and hauling of wastes are in compliance with DOT, NYSDOT and NJDOT regulations, and all other applicable Federal, State, and local requirements.

1.02 REFERENCES

A. New Jersey Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

B. New York Environmental Remediation Programs (6 NYCRR Part 375).

C. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils.

D. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.

E. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.

F. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.

G. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

H. ASTM D2216 - Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.

I. ASTM D2487 - Classification of Soils for Engineering Purposes.

J. ASTM D2922-05 Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

K. ASTM D2974 - Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.

L. ASTM D3017 - Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

M. ASTM D4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

N. ASTM D4972 - Test Method for pH of Soils.

O. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.03 SUBMITTALS

A. Excavation and Handling Plan: The CONTRACTOR shall submit an Excavation and Handling Plan to the PANYNJ for approval prior to beginning any excavation activities. The CONTRACTOR should be prepared for adverse weather conditions (e.g. rain, snow, etc.) during excavation operations and provisions should be made for such events. No work at the Site, with the exception of site inspections and surveys, shall be performed until the plan is approved. At a minimum, the Excavation and Handling Plan shall include all elements listed below.

1. Excavation approach

2. Personnel requirements

3. Equipment and methods of excavation and backfill

4. Excavation and backfill sequence

5. Storage methods and locations for liquid and solid impacted material. Methods for prevention of cross-contamination at the stockpile area.

6. Decontamination procedures

7. Coordinating waste segregation and stockpiling logistics.

8. Handling of impacted material

9. Coordination of haul routes

10. Surveying of excavated areas and determination of excavation quantities.

B. Submit a Health and Safety Plan (HASP) for all activities which include the potential for exposure to contaminated materials. The HASP shall be prepared and signed by a qualified and licensed health and safety professional.

C. The CONTRACTOR shall submit to the PANYNJ a Soil Stockpile Management Plan describing measures for soil containment within the stockpile area and maintenance of stockpile area and a schedule for stockpiling and soil removal off-site, including quantities of soil to be removed per day. The Soil Stockpile Management Plan shall, at a minimum, contain the requirements listed in this specification under Paragraph 3.09 - STOCKPILING.

D. Excavated soil must be handled as contaminated non-hazardous waste or hazardous waste, as appropriate. The non-hazardous soils shall be beneficially reused off-site as restricted fill and shall not be re-used as topsoil or final cover. The non-hazardous soil shall be re-used only at sites that are regulated by a state agency (e.g. Brownfield, landfill) and have a material acceptance protocol for soil or a permit approved by that state agency. Coal tar wastes shall not be beneficially re-used. Soils classified as hazardous waste shall be disposed in accordance with the applicable state and federal regulations, based on the results of soil characterization. The approved protocol shall include application forms, certification forms, sampling requirements and allowable concentration limits for all regulated parameters. The CONTRACTOR shall submit to the PANYNJ the permit or approved material acceptance protocol with the state regulatory agency's approval letter for the protocol, including costs for transportation and disposal of non-hazardous or hazardous soil, to the authority for approval. Contractor must also submit to the PANYNJ soil characterization analytical results on an Excel spread sheet. Disposal or reuse facilities permitted to accept "clean fill" only are not acceptable.

E. The CONTRACTOR shall submit to the PANYNJ information on the transporters of soil materials including current applicable state issued waste transporters permits to the PANYNJ for approval at least 2 weeks prior to the commencement of trucking activities.

F. The CONTRACTOR shall submit to the PANYNJ documentation of reuse or disposal of soil materials detailing execution of manifests or Bills of Lading for all soil material removed and transported from the Site. Documents shall be signed by the CONTRACTOR prior to the removal of soil off-site. Executed manifests or Bills of

Lading shall be signed by the receiving facility and copies shall be provided to the PANYNJ within 72 hours.

G. The CONTRACTOR shall identify and propose appropriate disposal facilities for approval by the PANYNJ. For each proposed disposal facility, identify the facility's locations, capacity, type of wastes permitted to receive and their treatment/destruction method. In addition, the CONTRACTOR shall provide copies of each proposed facility's current Federal or State permits. If requested, the CONTRACTOR shall provide additional information to support their selection. No impacted material or remediation derived wastes shall be transported to any facility that has not received the PANYNJ approval.

H. The CONTRACTOR shall submit for approval from PANYNJ a proposed method for dewatering the excavation, disposing of water, and removing the system, as well as a list of equipment to be used, and standby equipment for emergency use. CONTRACTOR shall provide markups of scaled plan Drawings indicating the location of sumps, pits, and/or drainage points as well as holding tanks.

I. Surveyor Qualifications: The CONTRACTOR shall submit the name, address, New Jersey/New York Land Surveyor registration number, and telephone number of the surveyor to the PANYNJ before starting survey work. The surveyor shall be a qualified and Registered Land Surveyor in the state of New Jersey or New York (as appropriate). The CONTRACTOR's surveyor shall also have a minimum of five (5) years of experience in construction surveying, and layout and maintenance of as-built construction drawings, with a record of performing horizontal and vertical control requirements.

1.04 REGULATORY REQUIREMENTS

A. Permits and Licenses: The administrative requirements and methods of treatment of hazardous wastes, and all other applicable federal, state or local laws, codes and ordinances which govern or regulate hazardous wastes shall apply to the work of this section. The CONTRACTOR shall be responsible for obtaining any and all permits (other than those mentioned herein) necessary for excavation, stockpiling, and any other features of work associated with the excavation of impacted material.

B. Notices of Non-Compliance and Notices of Violation: Notices of non-compliance or notices of violation issued by a Federal, State, or local regulatory agency issued to the CONTRACTOR in relation to any work performed under this contract shall be immediately provided to the PANYNJ by the CONTRACTOR. The CONTRACTOR shall also furnish all relevant documents regarding the incident and any information requested by the PANYNJ, and shall coordinate its response to the notice with the PANYNJ prior to submission to the notifying authority. The CONTRACTOR shall also furnish a copy to the PANYNJ of all documents submitted to the regulatory authority,

including the final reply to the notice, and all other materials, until the matter is resolved.

1.05 DEFINITIONS

A. Hazardous Waste - A waste that meets criteria established in RCRA or specified by the EPA in 40 CFR 261 or which has been designated as hazardous by a RCRA authorized state program. For the purpose of these specifications, any waste that is above either criterion below is considered hazardous:

1. The Toxicity Characteristic Leaching Procedure (TCLP) or,

2. The TCLP plus 10 times the Universal Treatment Standards (UTS).

B. Non-hazardous Waste - Any waste that does not meet the criteria of hazardous waste.

C. Toxic Substance Control Act (TSCA) Waste - A waste containing asbestos, lead-based paint, or polychlorinated biphenyls (PCBs) above 50 ppm is considered TSCA Waste per the United States Environmental Protection Agency (USEPA) Toxics Regulations: 40 CFR (Parts 700-799).

D. Impacted Material - Impacted material is defined as material impacted with Site containments.

E. Remediation Derived Waste - The types of waste to be expected include, but are not limited to, the following:

1. Impacted soils generated from the implementation of the proposed remedial construction activities.

2. Construction debris and tree stumps generated by the implementation of the remedial construction activities;

3. Liquid wastes generated by the implementation of the remedial construction activities;

4. Spent personal protective equipment (PPE) including plastic overboots, gloves, Tyvek coveralls, etc.; and

5. Standard refuse (municipal) trash generated in support of the field operations.

1.06 SURVEYS

A. Surveys shall be performed immediately prior to and after excavation of impacted material. Surveys shall also be performed after backfill showing final grade.

PART 2 – PRODUCTS

2.01 SILT FENCE

A. CONTRACTOR shall provide a silt fence in accordance with either the New York or New Jersey Standards for Soil Erosion and Sediment Control as appropriate.

2.02 GEOTEXTILE FABRIC

A. CONTRACTOR shall provide an orange delineation non-woven geotextile as manufactured by TenCate, or approved equal.

2.03 CERTIFIED CLEAN FILL MATERIALS

A. All material brought on Site shall be sampled and analyzed to fully characterize the chemical constituents present. Submit to the PANYNJ written documentation indicating the concentration of chemical constituents contained in the off-site fill material. For offsite fill material brought on Site in New Jersey, the material must not contain contaminants above the NJDEP , residential direct contact soil remediation standards (7:26d, Remediation Standards). For offsite fill material brought on Site in New York, the material must not contain contaminants above the New York State Department of Environmental Conservation (NYSDEC) Unrestricted Soil Cleanup Objectives (6 NYCRR Part 375). All material brought on Site shall be purchased from a licensed provider of clean fill in New York or New Jersey.

B. The CONTRACTOR shall submit to the PANYNJ analytical results at a rate of one sample for every 2,000 cubic yards of material brought on Site. For Work in New Jersey the laboratory performing the analysis must be certified in the New Jersey Environmental Laboratory Certification Program (ELCP) and in accordance with N.J.A.C. 7:18. For Work in New York the laboratory performing the analysis must be certified in the NYSDOH Environmental Laboratory Approval Program (ELAP) and in accordance with Section 502 of the NY State Public Health laws. Where the offsite fill is being brought on Site, for all analytes associated with all soil regulatory parameters under NJAC 7:26d and 6 NYCRR Part 375, the CONTRACTOR shall provide analytical data in an Excel spreadsheet format that compares the data to the previously referenced state regulatory standards for soil, a chain of custody for the samples, a

sampling plan for the samples collected, certifications of the entity completing the sampling, the source of the material, a statement from a qualified individual that to the best of the affiant's knowledge and belief the fill material being provided does not exceed the appropriate state soil standard and a description of the steps to confirm such.

C. The PANYNJ will perform quality assurance testing at a minimum rate of one sample for every 5,000 cubic yards of material brought to the Site to confirm compliance. Material brought on Site not in compliance shall be removed from the Site and replaced with acceptable material at no additional cost to the PANYNJ.

D. Subsoil Type - Certified Clean Fill:

1. Imported borrow, conforming to ASTM D2487 Group Symbol ML, MH, CH, or CL.

2. No brush, roots, sod or other organic unsuitable materials shall be used as certified clean fill.

3. Free of lumps larger than 3 inches, rocks larger than 3 inches, and debris.

4. Acidity range (pH) of 5.5 to 7.5.

2.04 TOPSOIL MATERIALS

A. Offsite fill material brought on Site must meet the Certified Clean Fill requirements in accordance with Paragraph 2.03 - CERTIFIED CLEAN FILL MATERIALS.

B. Topsoil shall be unfrozen friable silty or sandy loam, free from clay lumps, stones, roots, sticks, stumps, brush, and foreign objects. The topsoil will have a pH ranging between 5.0 and 7.5 and an organic content between 5 and 20%, as determined by laboratory testing of representative samples.

C. In areas where wetlands must be restored in accordance with Bridge Construction Design requirements, the fill material shall be appropriate for the natural re-establishment of wetland vegetation.

2.05 SOURCE QUALITY CONTROL

A. Testing and Analysis of Clean Fill Material: Perform in accordance with ASTM D698, ASTM D2487, ASTM D4318, and ASTM D4318.

B. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D422, ASTM D2487, ASTM 2974, and ASTM 4972.

C. When tests indicate materials do not meet specified requirements, CONTRACTOR shall notify the PANYNJ, change material, retest and resubmit.

D. CONTRACTOR shall furnish materials of each type from same source throughout the Work.

PART 3 – EXECUTION

3.01 STAGING AREA AND DECONTAMINATION FACILITIES

A. The staging area and decontamination facilities shall coordinate with the PANYNJ.

3.02 EROSION AND SEDIMENT CONTROL

A. At a minimum, the CONTRACTOR shall install a silt fence around the entire perimeter of each Contamination Area. Additional measures may be necessary as required by the Erosion and Sediment Control Plan or other requirements.

3.03 EXISTING STRUCTURES AND UTILITIES

A. The CONTRACTOR shall take the necessary precautions to ensure no damage occurs to existing structures (e.g. existing fences to remain, adjacent property items, etc.) and utilities outside the excavation limits that are not part of the scope of Work. Damage to existing structures and utilities outside the scope of Work shall be repaired at no additional cost to the PANYNJ.

B. The CONTRACTOR shall coordinate with the utility owners to field-verify the locations of utility lines and to complete all required utility work to perform the remediation, including disconnection and removal of any remnant service lines. The work shall be completed as required by utility owners.

C. Unexpected active utilities encountered during excavation shall not be disturbed without written approval from the PANYNJ.

3.04 UNDERGROUND BUILDING FOUNDATIONS

A. Underground building foundations may be encountered during excavation. These foundations shall be addressed as required. Various building structures were documented in Area 2 and Area 5 on historical Sanborn maps.

B. If the underground building foundations present an issue with the excavation depth requirements, the CONTRACTOR shall remove, sections of concrete foundation as required to achieve the excavation depth requirements.

1. The CONTRACTOR shall ensure that all demolition work is performed safely in accordance with the safety requirements of the approved HASP; OSHA regulations; and any local codes and ordinances.

2. The CONTRACTOR shall perform dust control and mitigation during demolition activities, both for safety considerations and to prevent a nuisance for the neighboring properties and areas.

3. Existing Site features, including concrete slab and foundation walls, shall be demolished or removed as required prior to or during the Site grading work.

4. The CONTRACTOR shall break up all concrete slabs and foundations as necessary to achieve excavation depth requirements. The CONTRACTOR shall break up all concrete slabs and foundations into manageable sections, for re-use within the backfill.

3.05 SURVEYING REQUIREMENTS

A. The CONTRACTOR shall establish the exact position or location of all work control points. All work shall be referenced to and established from the control points, re-established where necessary and maintained throughout the life of the contract. Any error or apparent discrepancies found in the Baseline Remediation Plan shall be called to the PANYNJ's attention for interpretation prior to proceeding with the Work.

B. The CONTRACTOR shall verify the existing conditions, contours and locations of structures within the limits of the Contamination Areas.

C. The CONTRACTOR shall survey the location of the footprint of the excavation, existing elevations, and representative depths of the excavation prior to any clearing or excavation activities.

D. The CONTRACTOR shall establish lines and levels, and locate and layout by instrumentation and similar appropriate means, all Site features to be constructed or executed.

3.06 CLEARING

A. Clearing includes removal of trees, shrubs, and other plant life, as well as landscaping features and ancillary structures to facilitate excavation activities and surface cover system installation.

B. Clear areas only as required for access to Site and execution of Work.

C. Remove trees to maximum of 3 inches above grade.

D. Remove and dispose of root balls in accordance with the waste disposal requirements of this Specification. Minimize soil in removed root balls

E. Chip all vegetative materials from above grade and disposed of at a PANYNJ approved off-site facility or determine if material can be reused on-site. Dispose of above grade vegetative material in accordance with State and Local regulations.

3.07 DUST CONTROL

A. The CONTRACTOR shall implement strict dust control measures during active construction periods on-site, at storage and stockpile areas, haul roads and public roads.

B. The CONTRACTOR shall maintain the Site in a condition that will not generate dust and airborne particulates during periods of non-work (i.e., evenings, weekends, and holidays).

C. The CONTRACTOR will be notified of objectionable dust and all activities shall be halted until dust control has been applied, to the PANYNJ's satisfaction.

D. If water is to be used for dust control purposes it must come from a "clean" water source approved by the PANYNJ. Arrangements for obtaining water for use in construction and dust control activities shall be made by the CONTRACTOR. All cost associated with collecting, transporting, storing and utilizing the water source shall be the responsibility of the CONTRACTOR.

E. For water application to soil surfaces, the CONTRACTOR shall:

1. Utilize spraying equipment to provide complete coverage of surfaces with water.

2. Apply water without interfering with earthmoving equipment or on-site operations.

3. Keep areas damp without creating nuisance conditions such as ponding or affecting compaction requirements.

4. Apply water spray in a manner to prevent movement of spray beyond Site boundaries.

3.08 EXCAVATION

A. No work shall be performed without on-site oversight of a representative of the Environmental Engineering Division of the PANYNJ.

B. CONTRACTOR shall field verify all excavation dimensions and report any discrepancies to the PANYNJ prior to start of the work.

C. CONTRACTOR shall prevent the migration of odors, vapors, dust and liquids.

D. All equipment shall be delivered to the work Site free of contamination. The PANYNJ's on-site representative may prohibit from the Site any equipment that in his/her opinion has not been thoroughly decontaminated prior to arrival. Decontamination of the CONTRACTOR's equipment prior to arrival at the Site shall be at the expense of the CONTRACTOR. The CONTRACTOR is prohibited from decontaminating equipment on the project Site that is not thoroughly decontaminated prior to arrival.

E. The CONTRACTOR shall be responsible for benching or sloping of the excavation, as necessary in accordance to the CONTRACTOR's approved Excavation and Handling Plan.

F. CONTRACTOR shall obtain permits, provide temporary access roads and restore these areas as necessary to gain access to wetland areas designated for excavation.

G. Blasting shall not be permitted.

H. No excavation shall be performed until Site utilities have been field located. Existing structures, buried or overhead utilities and property survey monuments adjacent to or within excavation areas shall be protected and supported to prevent settlement and damage. Any damage to structures, utilities, and property survey monuments resulting from excavation shall be repaired or replaced immediately by the CONTRACTOR at no additional cost to the PANYNJ.

I. Areas being excavated shall be maintained in a clean condition, free from leaves, brush, sticks, trash, and other debris. Organic materials including stumps, roots, and debris encountered during excavation shall be considered grubbed material and shall be disposed of as an impacted material by CONTRACTOR.

J. All items having any apparent historical or archeological interests which are discovered in the course of any construction activities shall be carefully preserved. The CONTRACTOR shall leave the archeological find undisturbed and shall immediately report the find to the PANYNJ so that the proper authorities may be notified. Historical or archeological finds that might require work stoppages are not anticipated to occur during construction. Impacted finds shall be decontaminated by the CONTRACTOR prior to removal from the Site.

K. Surface water shall be directed away from open excavation and construction areas so as to prevent soil erosion, surface water runoff from coming in contact with impacted material, and the accumulation of surface water in excavation areas. Diversion ditches, dikes, and grading shall be provided as necessary and soil erosion controls shall be in accordance any Erosion and Sediment Control requirements. The CONTRACTOR shall stop work and reduce the exposed surface when heavy rain is predicted.

L. At the completion of both the excavation and backfilling stages of construction, all trapped sediment in the Contamination Areas shall be collected and removed as impacted material.

M. All vehicles and equipment used for excavation shall be decontaminated prior to entering into clean areas in accordance with Paragraph 3.17 – DECONTAMINATION.

N. The CONTRACTOR shall conduct excavation in accordance with the approved Excavation and Handling Plan to the limits shown for the six main Areas of Excavation on Figures 1A, 1B, 1C, 2A, 2B, and 3 and to the depths shown on these figures

O. CONTRACTOR shall remove all ground surface coverings, overburden and petroleum-contaminated material to the depth indicated ion the Figures noted above and as directed by the PANYNJ.

P. The CONTRACTOR shall be responsible for sloping the excavation, as necessary, or for providing other temporary supports to prevent soil slippage alongside slopes and any other slope stability issues. All CONTRACTOR-designed sloping shall comply with the requirements of OSHA 1926, Subpart P. CONTRACTOR shall provide all details relating to sloping and temporary supporting in the Excavation and Handling Plan.

Q. All slopes shall be inspected daily by a qualified staff member for cracks in the soil at the head or along the face of the slopes and other changed conditions such as bulges or sloughs on the slopes. Inspection results shall be documented in a Daily Inspection Log and any unusual or changed conditions shall be brought to the attention of the PANYNJ.

R. The CONTRACTOR shall maintain an excavation of sufficient size to allow workers ample room to complete the work.

S. The ENGINEER shall be notified as soon as possible but no later than 48 hours, if impacted material or visual contamination is discovered that has not been identified on Figures 1A, 1B, 1C, 2A, 2B, and 3 in this Plan. Records of any visible sign of contamination encountered during excavation shall be maintained for each area of excavation. The PANYNJ shall then notify the CONTRACTOR whether this material shall be excavated.

T. Excavated material impacted by petroleum, or other constituents in excess of applicable soil regulatory standards, or with indicators of petroleum or other constituents contamination shall not be used as backfill material. Material that exhibits evidence of petroleum or other constituents contamination, including, but not limited to, sheens, staining, and odors shall be segregated from soil not exhibiting such evidence.

U. CONTRACTOR shall perform post-excavation soil sampling in accordance with Section 3.18. Backfilling will not be permitted until results of the post-excavation soil sampling have been reviewed and approved by the PANYNJ.

V. Upon completion of excavation and approval from the PANYNJ the CONTRACTOR shall place an orange delineation non-woven geotextile on the excavation bottom.

3.09 STOCKPILING

A. Contractor must notify the PANYNJ 48 hours prior to commencement of stockpiling activities. CONTRACTOR shall transport all excavated material to the stockpile/ impoundment area. Any soils that appear to be grossly impacted either by visual observation (presence of petroleum, coal tar, unnatural colorations, odors, etc,) or by screening with a properly calibrated photoionization detector (PID) (readings of greater than 500 ppmv), or which is expected to contain greater than 50 mg/kg of PCBs (from Areas 4-2 and 4-4) must be placed into a plastic-lined secure, covered roll-off container, or equivalent. Excavated material exhibiting non-petroleum discoloration due to contamination shall be stockpiled separately from other excavated material. Soil with more than 10 percent construction and demolition debris (e.g. wood, brick and concrete etc.) shall be stockpiled separately.

B. Excavated materials (other than grossly impacted materials noted above) shall rest on 2 layers of 20-mil polyethylene sheeting and be covered with 1 layer of 20-mil polyethylene sheeting at all times. Polyethylene sheeting shall be overlapped at least 18 inches, and taped at the seams.

C. Hold downs which will not tear the sheeting (i.e. tires or sand bags) shall be used approximately every 15 feet. Piles shall be covered overnight and during inclement weather to divert runoff.

D. Prior to stockpiling soil, surface runoff containment measures as approved by the PANYNJ will be installed around the stockpile perimeter. The runoff containment measures may include silt fencing, hay bales, soil berms, and/or a combination of the three. The stockpile shall be managed by the CONTRACTOR to prevent fugitive emissions, erosion and runoff from the stockpile.

E. Excavated materials will be staged in piles no greater than 250 cubic yards in volume. Only soils with similar contamination levels will be stockpiled together. At a minimum, the soil stockpile area shall be large enough to allow enough space for the expected soil volumes.

F. The CONTRACTOR shall be responsible to perform adequate tilling of the stockpiles in order to facilitate drying of soil prior to offsite disposal. The stockpiles shall be covered prior to any storm events to prevent re-saturation of dried soil. Impacted soil stockpiles shall meet the regulations defined in 40 CFR 264.250.

G. Remove stockpile, leave area in clean and neat condition. Grade Site surface to prevent freestanding surface water. The CONTRACTOR shall cleanup, remove and dispose of all material that is spilled during stockpiling, loading of trucks, or other handling, as directed by the PANYNJ.

H. All material stockpiled for more than 30 days shall be seal coated by the CONTRACTOR. Seal coat for surface treatment shall consist of an acrylic emulsion produced by using soil cement manufactured by Midwest Industrial Supply Co., P.O. Box 8431, Canton Ohio, 44711, Tel. 1-800-321-0699, or approved equal. Any seal coat applied to the stockpiled material shall be applied in accordance with the manufacturer's instructions. All soils must be removed from the Site within 90 days of the first day the stockpile was created or the first day any roll-off has been loaded.

I. A temporary concrete pad shall be construction near Contamination Area 4 for staging and dewatering of sediment from Area 4-1 prior to transport and disposal. CONTRACTOR shall submit to the PANYNJ for approval the proposed location, size, thickness and structural requirements (e.g. concrete strength, reinforcement requirements, etc.) for the proposed concrete pad. The concrete pad must be removed at the completion of the Work and the area restored to existing conditions. In lieu of a concrete pad the CONTRACTOR may submit to the PANYNJ for approval an alternative structure and/or method for dewatering the sediment.

3.10 WASTE HANDLING

A. For excavated material characterized for off-site disposal, the CONTRACTOR shall transport this material to an appropriate disposal facility for treatment and/or disposal. CONTRACTOR shall transport and dispose excavated materials off PANYNJ property

in accordance with federal, state and local laws and regulations that would apply if the PANYNJ were a private corporation.

B. The CONTRACTOR is responsible to provide all labor, equipment, testing and materials needed to legally dispose of all impacted material and remediation derived waste. This work may include but will not be limited to:

1. Conducting all necessary coordination with the PANYNJ.

2. Providing sufficient number of transport vehicles or containers adequately sized to support the proposed remedial construction activities on a daily basis.

3. Providing all labor, equipment materials, transportation, disposal charges, testing and any other activities necessary to dispose of impacted material and remediation derived wastes, including any pre-conditioning of the wastes necessary to assure acceptance by the disposal facility.

4. Management of impacted material, remediation derived wastes and associated containers or transport vehicles.

5. Preparation of transport vehicles as necessary to eliminate problems associated with odor or dust generation.

6. Management of the arrival and departure of transport vehicles to ensure no delays with the implementation of the proposed remedial construction.

7. Inspection of all transport vehicles removing waste from the Site to ensure that the haulers are properly permitted.

8. Characterization of the impacted material and remediation derived waste in accordance with the acceptance criteria of the approved off-site disposal facilities.

9. Preparation of all paperwork (i.e., manifests, Bills of Lading, etc.) to document the off-site disposal of the impacted material and remediation derived waste.

10. Constructing a decontamination pad(s) and provide inspection and decontamination, as necessary, to prevent tracking of liquids and solids off-site.

11. Transportation of the impacted material and remediation derived waste to properly permitted off-site disposal facilities, pre-approved by the PANYNJ,

in a manner consistent with all applicable Federal, State and Local regulatory requirements.

12. Providing of all manifests, Bills of Lading, weigh tickets, Certificates of Destruction and all other documentation regarding the off-site disposal of the impacted material and remediation derived waste.

13. Furnishing a completion letter report including all of the above provisions for inclusion into the project file.

3.11 WASTE MANAGEMENT

A. All wastes generated from the implementation of the remedial construction activities which are required to be placed in a container in accordance with Paragraph 3.09 A shall be placed by the CONTRACTOR in containers provided by the CONTRACTOR.

B. The CONTRACTOR will ensure that a suitable number and type of container(s) are on-Site at all times to so as not to impede the progress of the work. The CONTRACTOR will select the proper containers for each type of waste as approved by the PANYNJ.

C. Roll-off units used to containerize impacted material shall be watertight. A cover shall be placed over the units to prevent precipitation from contacting the stored material. The units shall be placed in locations approved by the PANYNJ. Liquid which collects inside the roll-off units shall be removed and stored in accordance with Paragraph 3.16 – WATER DISPOSAL.

D. Liquid collected from the implementation of the remedial actions, removed from other containers or generated from decontamination operations shall be containerized in approved tanks or drums and as detailed in Paragraph 3.16 – WATER DISPOSAL.

3.12 WASTE CHARACTERIZATION

A. Waste characterization sampling for generated and staged materials shall be performed by the CONTRACTOR. The CONTRACTOR shall perform all waste characterization sampling and transportation and disposal of materials off-site. In addition, the CONTRACTOR will prepare the containerized materials to be transported off-site, as necessary, to meet the acceptance criteria of the selected disposal facility. The CONTRACTOR shall collect waste characterization samples (i.e. parameters, analysis, methodology, frequency, etc) as required by the selected disposal facilities. The CONTRACTOR shall submit all waste characterization analytical results on an Excel spread sheet to the PANYNJ prior to any off-site transportation of materials.

3.13 WASTE TRANSPORTATION

A. The CONTRACTOR shall contract with properly licensed solid waste haulers. All selected haulers must have the necessary number of vehicles with valid permits to accommodate project requirements without causing schedule delays. The PANYNJ shall not be held responsible for any delays or stoppages associated with removal of impacted materials and remediation derived waste from the Site. CONTRACTOR shall transport all material in trucks with valid permits for transportation of waste in all states that trucks traverse.

B. The CONTRACTOR will ensure that all transport vehicles are properly loaded and secured and do not exceed permitted weights. All vehicles must be properly covered, secured, and decontaminated prior to leaving the Site.

C. Transportation shall occur only during normal working hours, between the hours of 7:00 a.m. and 5:00 p.m. Monday thru Friday inclusive, unless otherwise approved by the PANYNJ or further restricted by local ordinance or other governing body. The CONTRACTOR shall submit a schedule for off-site transportation that is acceptable to the PANYNJ prior to any off-site transportation of materials.

D. CONTRACTOR shall notify the PANYNJ a minimum of 48 hours prior to the removal of soil off PANYNJ property.

3.14 DISPOSAL DOCUMENTATION

A. The CONTRACTOR shall manage all disposal documentation including but not limited to all necessary manifests, Bills of Lading and weight tickets.

B. The CONTRACTOR will complete and submit necessary waste profiles to disposal facility(ies) for acceptance using analytical results from the waste characterization activities. The CONTRACTOR will then prepare waste profiles for proposed off-site disposal facilities. Confirm acceptance of waste types and forms with the disposal facilities and advise the PANYNJ as to any restrictions imposed by disposal facility operating hours.

C. All shipping manifests or Bills of Lading will be prepared by the CONTRACTOR and signed by the PANYNJ or its designee.

D. The CONTRACTOR shall manage all disposal paperwork and prepare and supply all necessary manifests or Bills of Lading and provide them to the PANYNJ. CONTRACTOR shall submit documentation of disposal of excavated materials including completed manifests or Bills of Lading for all material removed and transported from the Site. Executed manifests or Bills of Lading shall be signed by the

receiving facility. The CONTRACTOR will manage all weight tickets and submit copies of manifests with attached weigh tickets to the PANYNJ within 72 hours of departure from Site. On a weekly basis and at project completion, a summary report containing daily truck activity, tonnage removed by waste type, completed manifests, and weight tickets will be prepared by the CONTRACTOR for submission to the PANYNJ.

3.15 TEMPORARY DEWATERING

A. CONTRACTOR shall provide a temporary dewatering system, as needed, for the excavation and backfilling.

B. Relief from backfill compaction requirements will not be granted due to inadequate or incomplete dewatering efforts.

C. All required pumps, wells, suction, and discharge lines will be maintained as needed to keep all excavations, pits, trenches, etc. free from accumulation of water during activities covered by this specification.

D. All water pumped from the Site shall be managed in accordance with Paragraph 3.16 – WATER DISPOSAL.

E. CONTRACTOR shall conduct dewatering to minimize interference with adjacent structures and occupancies.

F. CONTRACTOR shall cease operations immediately if any unplanned movement or settlement of adjacent structures or equipment occurs due to changes in soil loading capacity as a result of the dewatering activities.

G. CONTRACTOR shall conduct operations with minimum interference to public or private accesses. Maintain egress and access from work areas at all times.

H. The CONTRACTOR shall keep a daily log of the dewatering activities that is readily available for inspection by the PANYNJ. The log will, at minimum, keep the following information:

1. Daily total gallons generated, stored and disposed of.

2. Cumulative gallons treated.

3. Site-specific daily weather and precipitation records.

I. CONTRACTOR shall provide a vacuum truck to remove any accumulation of free product or sheen on the water table as directed by the PANYNJ. Use only PANYNJ approved facilities for disposal. Ship waste directly to approved disposal facility(ies).

3.16 WATER DISPOSAL

A. Impacted water shall be disposed of in a manner consistent with all applicable local, state, and federal regulations, and as approved by the PANYNJ.

B. Prior to the disposal of impacted water from the Site for off-site treatment/ disposal, CONTRACTOR shall sample the water as necessary to meet the requirements of the selected treatment/disposal facility. The CONTRACTOR shall notify the PANYNJ, and shall provide the name and location of the treatment/disposal facility to be used. Assume one water sample per 6,000 gallons pumped from the excavation will be collected for waste characterization analyses.

C. CONTRACTOR shall be responsible for the storage, transportation, and handling of all impacted water in accordance with all applicable local, state, and federal regulations, and Site requirements.

D. Impacted or potentially impacted water shall not be removed from the Site by the CONTRACTOR without prior notification to, and the approval of, the PANYNJ.

E. CONTRACTOR shall schedule and execute all excavation and backfill activities to minimize the volume of potentially impacted water generated.

F. CONTRACTOR shall prevent impacted water from coming into contact with the clean backfill and “clean” excavation floor areas. If the impacted water comes in contact with the backfill or excavation floor the CONTRACTOR, at no additional cost to the PANYNJ, shall remove backfill and/or floor material until visually clean and sampled for the soil cleanup criteria used for this area.

G. Clean water may be discharged to a catch basin approved by the PANYNJ. Water shall not be discharged through wetlands, pavement or other adjacent areas and shall not cause flooding or ponding on Site or in adjacent areas.

H. When discharging to storm sewer or surface water:

1. Comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) construction dewatering discharges general permit for the appropriate State. The CONTRACTOR shall be the entity authorizing and responsible for the work that results in a discharge authorized by the permit. Submit copies of all submittals required by the permit to the PANYNJ. Dewatering discharge shall not exceed the pollutant limits set in the construction dewatering discharges general permit.

2. Sample initial dewatering discharge for the required parameters in the construction dewatering discharges general permit.

3. Do not discharge to storm sewer or surface water until demonstrated to the PANYNJ that the discharge does not exceed applicable pollutant limits.

I. Ensure that the total rated capacity for all on-line dewatering pumps shall not exceed 100,000 gallons per day.

3.17 DECONTAMINATION

A. All equipment and materials shall be used in a manner to minimize the potential for, and extent of, any unnecessary contamination.

B. Any earthwork equipment that performs intrusive activities in any part of the construction area or is used to handle impacted soils shall be decontaminated prior to leaving the area of contamination. Material that is considered to be impacted includes any material identified to be above the soil cleanup criteria per either the NJDEP Non-Residential Soil Remediation Standards, the NYSDEC Commissioner's Policy 51 or the NYSDEC Unrestricted Soil Cleanup Objectives (6 NYCRR Part 375), as appropriate. Decontamination procedures to be used must include the following steps, at a minimum:

1) Pre-clean the entire piece of equipment to remove all loose dust, dirt, and scale using a stiff brush or a shop vacuum designed for solid material, supplemented by scraping, chipping, and spot cleaning with solvent or detergent to remove encrusted materials.

2) Apply an appropriate cleaning solution to each surface of the equipment via a pump spray mist, aerosol spray, or cloth soaked in the cleaning solution. Control the application so that little or none of the cleaning solution puddles in the equipment decontamination area. Make sure that all surfaces are wetted. Use scrubbing bushes or pads, if necessary, to loosen any visible dirt, stains, or grease and then wipe down all surfaces with clean absorbent towels to clean and dry. For larger items, it may be appropriate to clean the equipment in sections. Place used scrubbers and absorbent pads in an appropriately labeled DOT approved container for future disposal.

3) Rinse the equipment with a high-pressure (1,500 psi) high temperature steam cleaner. Collect and store any rinse liquids in an appropriately labeled DOT approved container for future disposal.

4) Repeat steps 2 and 3. The equipment is ready to be re-used on Site.

5) Personnel leaving the equipment cleaning area must clean and store, or discard all PPE, as appropriate.

C. Site traffic shall be maintained so as to avoid cross-contamination with non-contaminated and contaminated truck traffic.

D. Dry "gross" removal of soils on earthmoving or delivery vehicles within or over the area to be excavated is preferred over a washing approach.

E. CONTRACTOR may construct a temporary decontamination pad if necessary. Design and construction of such pad shall be coordinated with the PANYNJ and must meet all regulatory requirements including Erosion and Sediment Control plans.

F. Thorough brushing down of equipment shall be conducted within the work area. All vehicles and equipment leaving the Site shall be cleaned and rendered free of any visible solids.

G. Equipment washing shall be conducted in a manner to minimize the generation of decontamination waters. The decontamination water shall be collected, transported, and discharged in accordance with Paragraph 3.16 – WATER DISPOSAL.

3.18 POST-EXCAVATION SOIL/SEDIMENT SAMPLING

A. For Area 1, Contractor shall have a state certified lab or qualified environmental professional collect post excavation soil samples along sidewalls at an approximate spacing of 30 ft and along the bottom centerline at approximate 50 ft spacing. The samples must be analyzed at a New Jersey certified laboratory, under chain of custody protocols for RCRA metals, polynuclear aromatic hydrocarbons and PCBs.

B. For Area 2, Contractor shall have a state certified lab or qualified environmental professional collect post excavation soil samples along sidewalls at an approximate spacing of 30 ft and along the bottom centerline at approximate 50 ft spacing. The samples must be analyzed at a New Jersey certified laboratory, under chain of custody protocols for RCRA metals, polynuclear aromatic hydrocarbons and PCBs.

C. For Area 3, Contractor shall have a state certified lab or qualified environmental professional collect post excavation soil samples along sidewalls at an approximate spacing of 30 ft and along the bottom centerline at approximate 50 ft spacing. The samples must be analyzed at New Jersey certified laboratory, under chain of custody protocols for RCRA metals and polynuclear aromatic hydrocarbons.

D. For Area 4, Contractor shall have a state certified lab or qualified environmental professional collect post excavation soil samples along sidewalls at an approximate spacing of 30 feet. Bottom samples will be collected along the excavation centerline at an approximate 50 foot spacing, or at a rate of 1 sample per every 900 square feet of excavation, whichever is greater. A minimum of one bottom sample will be collected from each excavation area.

The samples must be analyzed at a New York certified laboratory, under chain of custody protocols for PCBs.

E. For Area 5, Contractor shall have a state certified lab or qualified environmental professional collect post excavation soil samples along sidewalls at an approximate spacing of 30 feet and along the bottom centerline at approximate 50 foot spacing. The samples must be analyzed at a New Jersey certified laboratory, under chain of custody protocols for VOCs, SVOCs, metals, cyanide and EPH.

F. For Area 6, Contractor shall have a state certified lab or qualified environmental professional collect post excavation soil samples along sidewalls at an approximate spacing of 30 feet and along the bottom centerline at approximate 50 foot spacing. The samples must be analyzed at a New Jersey certified laboratory, under chain of custody protocols for SVOCs, metals, cyanide and PCBs.

3.19 BACKFILLING

A. Prior to backfilling CONTRACTOR shall verify subgrade is properly prepared and in suitable condition to accept backfill.

B. CONTRACTOR shall maintain temporary dewatering systems, as necessary to prepare subgrade.

C. CONTRACTOR shall backfill areas to the pre-excavation elevations with Certified Clean Fill as described herein (Section 2.03) only after receipt of written authorization from the PANYNJ.

D. CONTRACTOR shall employ a placement method that does not disturb or damage other work.

E. Moisture Content Control – If necessary, water may be added and mixed with sufficient energy to evenly distribute the water throughout the soil matrix.

F. Drying – If necessary, the fill shall be dried via spreading the material in a designated area approved by the PANYNJ. The soil shall be spread during weather conducive to effective drying. The CONTRACTOR shall secure the drying operation from the deleterious effects of weather by stockpiling and covering.

G. If, in the opinion of the PANYNJ, the subgrade or fill layer is too wet to achieve proper compaction, the material shall be removed and/or worked with a harrow, scarifier or other suitable equipment in an approved manner satisfactory to the PANYNJ.

CONTRACTOR may propose for approval a substitute, alternate material or method to provide satisfactory moisture content.

H. CONTRACTOR shall make gradual grade changes. CONTRACTOR shall blend slope into level areas.

3.20 TOLERANCES

A. Top Surface of Backfilling: ±2 inches from required elevations.

B. Bottom of Excavation: ±1 inch from required elevations.

3.21 COMPACTION REQUIREMENTS

A. CONTRACTOR shall place and compact Certified Clean Fill in equal continuous layers, not exceeding 12 inches uncompacted depth to 95% of the maximum dry unit weight of the material as determined by ASTM D698.

B. CONTRACTOR shall place topsoil in equal continuous layers, not exceeding 6 inches uncompacted depth. CONTRACTOR shall not compact topsoil.

C. CONTRACTOR shall maintain moisture content of backfill materials at ±3% of the optimum moisture content to attain required compaction density.

3.22 FIELD QUALITY CONTROL

A. Testing: In accordance with ASTM D698 and ASTM D6938.

B. When tests indicate Work does not meet specified requirements, CONTRACTOR shall remove Work, replace and retest at no additional cost to the PANYNJ.

C. Frequency of tests shall be 5 per acre/ lift area or 1 per lift, whichever is greater.

D. CONTRACTOR shall provide copies to the PANYNJ of all compaction testing results performed following the day of testing.

3.23 PROTECTION OF FINISHED WORK

A. CONTRACTOR shall protect the finished Work during construction and repair or replace as required at no additional cost to the PANYNJ.

3.24 SEEDING AND SITE RESTORATION

A. The CONTRACTOR shall perform agricultural soil tests to determine lime and fertilizer requirements for permanent seeding. Agricultural soil tests shall be performed by a recognized commercial laboratory. Test reports shall be submitted to the PANYNJ.

B. All disturbed areas shall be seeded (unless designated for other uses and/or other types of restoration in the Bridge Construction Design requirements) with the following permanent seeding mix:

1. Perennial ryegrass (30 lbs/acre)

2. Crownvetch (25 lbs/acre)

C. Seed shall be of the latest season's crop and shall be delivered in original sealed packages bearing the producer's guaranteed analysis for percentages of mixtures, purity, germination, weed-seed content, and inert material. Labels shall conform to the USDA Federal Seed Act, Rules & Regulations and applicable State of New Jersey and New York seed laws. Wet, moldy, or otherwise damaged seed will be rejected.

D. A manufacturer’s Certificate of Compliance with the specifications shall be submitted by the manufacturer along with each shipment of each type of seed. These certificates shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the CONTRACTOR has submitted the certificates.

E. CONTRACTOR shall apply lime, fertilizer and other necessary soil additives as required by the soil test.

F. Sowing of Grass Seed: Immediately before any seed is sown, the ground shall be scarified, harrowed, raked and broomed until the surface is smooth and of uniformly fine texture. No seeding shall be done during windy weather. Sow seed evenly by hand or with an approved mechanical seeding device in the proportions and at the rate per unit area heretofore specified. Hydro seeding will be acceptable. If seeding completed by mechanical means, the seeding shall be done in two directions at right angles to each other. The sown seed shall be covered with a 1/4 –inch thick layer of topsoil by light raking or other approved method, rolled in both directions with a hand roller weighing not more than 100 pounds per foot of width, and watered with a fine spray. CONTRACTOR shall exercise the necessary precautions to keep the area undisturbed until the grass is established.

G. Mulch shall be straw such as stalks of oats, wheat, rye or other approved crops that are free from noxious weeds. Weight of straw shall be calculated on the basis of the

material having not more than 15 percent moisture content. Straw mulch shall be spread at a rate of 100 lb per 1,000 sq. ft.

H. Wood Fiber Mulch for hydroseeding should be 100% virgin wood fiber and free of inhibitors to growth or germination. For optimum coverage, 1,500 pounds of wood mulch should be distributed per acre.

I. Hydro-Mulch Overspray Tackifier shall be the same as, or equal to, a recycled slick paper (containing wood cellulose and kaolinite clay), shall not contain any growth or germination-inhibiting factors, and shall be dyed an appropriate color to facilitate visual metering during application. Slick paper composition on air-dry weight basis: 8 percent moisture maximum, pH 4.5 to 6.5. When added to water, it shall form a homogenous slurry specifically for use in hydraulic mulching equipment. This material, when sprayed on the straw mulch, shall become a tackifier/binder and provide a stable bed for seed germination.

3.25 MAINTENANCE AND GUARANTEE OF GRASS

A. The CONTRACTOR is responsible for maintaining the restored vegetation through the end of the first growing season (to be determined by the PANYNJ). A proposed water schedule, including specification of a potable water source suitable for vegetation maintenance and details regarding any other planned maintenance, is required.

B. CONTRACTOR shall guarantee grass one year from substantial completion of the project or acceptance of planting, whichever is later. CONTRACTOR shall replace any plant grass or ground cover that is dead or that is, in the opinion of the PANYNJ, in an unhealthy or unsightly condition at no additional cost to the PANYNJ. All replacement planting shall be performed no later than the next planting season from the time at which the PANYNJ directs the CONTRACTOR to replace the planting or during the current season. Planting shall be replaced as often as directed by the PANYNJ within the guarantee period.

C. Inspection to determine completion of the Work will be made by the PANYNJ upon written request by the CONTRACTOR at least 5 days prior to the date of inspection.

D. Prior to requesting a final inspection the CONTRACTOR shall verify that all plant areas shall be weed free, with mulches neat and in proper condition. All specified miscellaneous material shall be in proper order. Work necessary to repair damage to existing areas and to areas of work by others shall be completed.

E. After all necessary corrective work has been satisfactorily completed, the PANYNJ will certify the guarantee termination date.

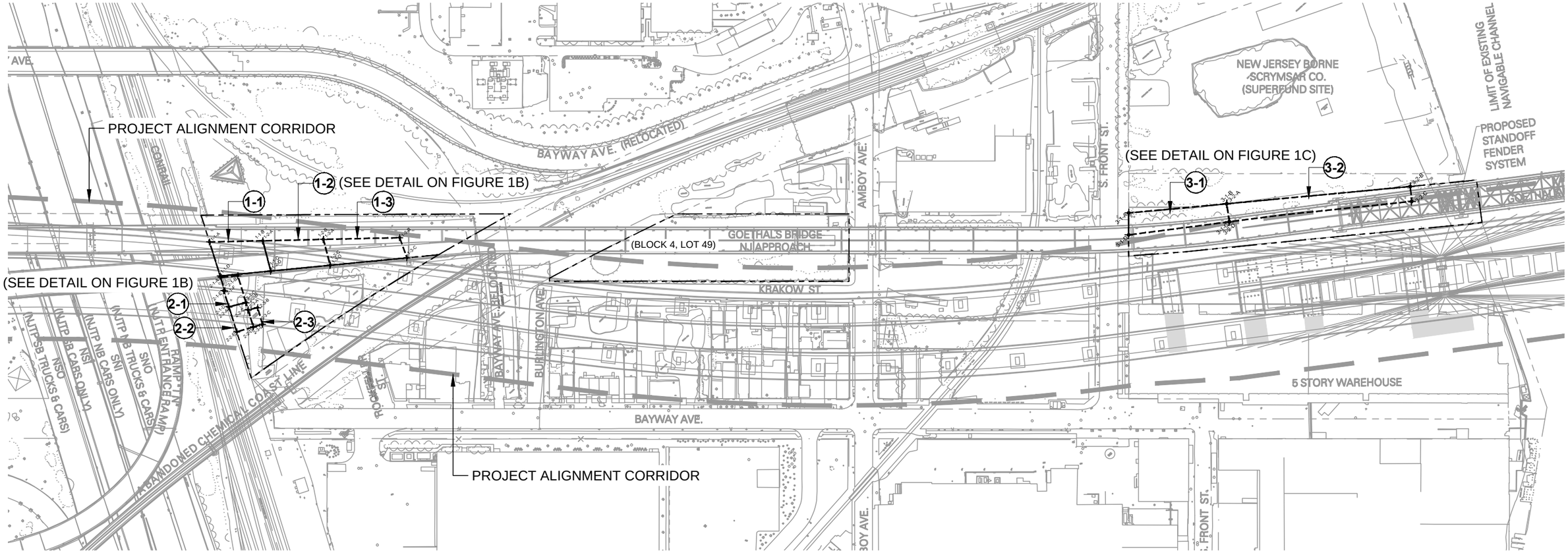
3.26 PROJECT RECORD DOCUMENTS

A. Upon completion of the Work the CONTRACTOR shall submit a Final Report to the PANYNJ. At a minimum the Final Report shall contain:

1. Record Drawings
2. Technical Specifications
3. Addenda
4. Modifications to the Contract
5. PANYNJ directives
6. Written reports of any significant quality assurance problems
7. Progress meeting minutes
8. Daily work activity summary reports, including:
    - DVD videos and photographs
    - Reports on any emergency response actions
    - Reports on all daily Site activities
    - Chain-of-custody documents
    - Construction schedule and progress chart of work
    - Change orders and other modifications to the contract
    - All laboratory analytical results
    - Meteorological records
    - All safety and accident reports
    - All spill incident reports
    - Daily construction quality control reports
    - Truck load tickets or Bills of Lading
    - Records on quantity of impacted and non-impacted material removed from the Site in an electronic and paper format
    - All waste disposal manifests
    - Other items as required by the PANYNJ
9. Copies of all permits.

ARCADIS

Figures



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- LIMIT OF EXCAVATION
- 1-1 AREA REQUIRING REMEDIATION
- SURVEY MARKER

1. BLOCK 4, LOT 49
2. BLOCK 4, LOT 49A
3. BLOCK 4, LOT 1470

0 200' 400'

SCALE IN FEET

GOETHALS BRIDGE REPLACEMENT PROJECT
ELIZABETH, NEW JERSEY
BASELINE REMEDIATION PLAN

NEW JERSEY
PROPOSED AREAS OF EXCAVATION

ARCADIS

FIGURE
1A

CITY:MELVILLE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:AS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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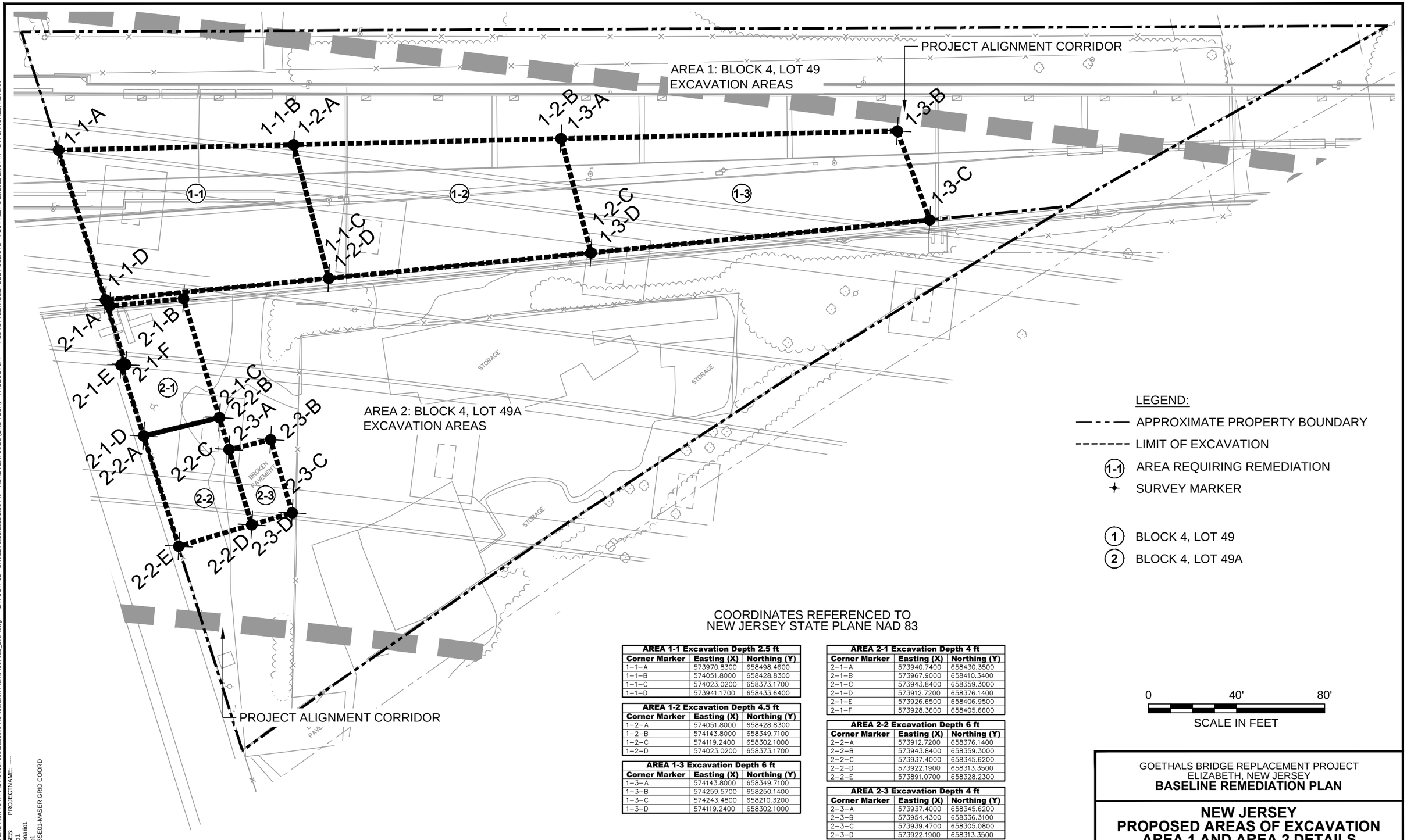

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- LIMIT OF EXCAVATION
- (1-1) AREA REQUIRING REMEDIATION
- SURVEY MARKER

(1) BLOCK 4, LOT 49

(2) BLOCK 4, LOT 49A

COORDINATES REFERENCED TO
NEW JERSEY STATE PLANE NAD 83

AREA 1-1 Excavation Depth 2.5 ft		
Corner Marker	Easting (X)	Northing (Y)
1-1-A	573970.8300	658498.4600
1-1-B	574051.8000	658428.8300
1-1-C	574023.0200	658373.1700
1-1-D	573941.1700	658433.6400

AREA 1-2 Excavation Depth 4.5 ft		
Corner Marker	Easting (X)	Northing (Y)
1-2-A	574051.8000	658428.8300
1-2-B	574143.8000	658349.7100
1-2-C	574119.2400	658302.1000
1-2-D	574023.0200	658373.1700

AREA 1-3 Excavation Depth 6 ft		
Corner Marker	Easting (X)	Northing (Y)
1-3-A	574143.8000	658349.7100
1-3-B	574259.5700	658250.1400
1-3-C	574243.4800	658210.3200
1-3-D	574119.2400	658302.1000

AREA 2-1 Excavation Depth 4 ft		
Corner Marker	Easting (X)	Northing (Y)
2-1-A	573940.7400	658430.3500
2-1-B	573967.9000	658410.3400
2-1-C	573943.8400	658359.3000
2-1-D	573912.7200	658376.1400
2-1-E	573926.6500	658406.9500
2-1-F	573928.3600	658405.6600

AREA 2-2 Excavation Depth 6 ft		
Corner Marker	Easting (X)	Northing (Y)
2-2-A	573912.7200	658376.1400
2-2-B	573943.8400	658359.3000
2-2-C	573937.4000	658345.6200
2-2-D	573922.1900	658313.3500
2-2-E	573891.0700	658328.2300

AREA 2-3 Excavation Depth 4 ft		
Corner Marker	Easting (X)	Northing (Y)
2-3-A	573937.4000	658345.6200
2-3-B	573954.4300	658336.3100
2-3-C	573939.4700	658305.0800
2-3-D	573922.1900	658313.3500

0 40' 80'

SCALE IN FEET

GOETHALS BRIDGE REPLACEMENT PROJECT
ELIZABETH, NEW JERSEY
BASELINE REMEDIATION PLAN

NEW JERSEY
PROPOSED AREAS OF EXCAVATION
AREA 1 AND AREA 2 DETAILS

ARCADIS

FIGURE
1B

CITY:MELVILLE-NY DIV/GROUP-ENV DB:A.SANCHEZ LD:AS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
\\NYJFP1\Data\ENVCAD\Melville-NY\ACTI\04907085\Baseline Remediation Plan\04907085_BRP.dwg LAYOUT: 1B SAVED: 9/19/2012 2:05 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: BBL-FULL.CTB PLOTTED: 9/19/2012 2:06 PM BY: SANCHEZ, ADRIAN
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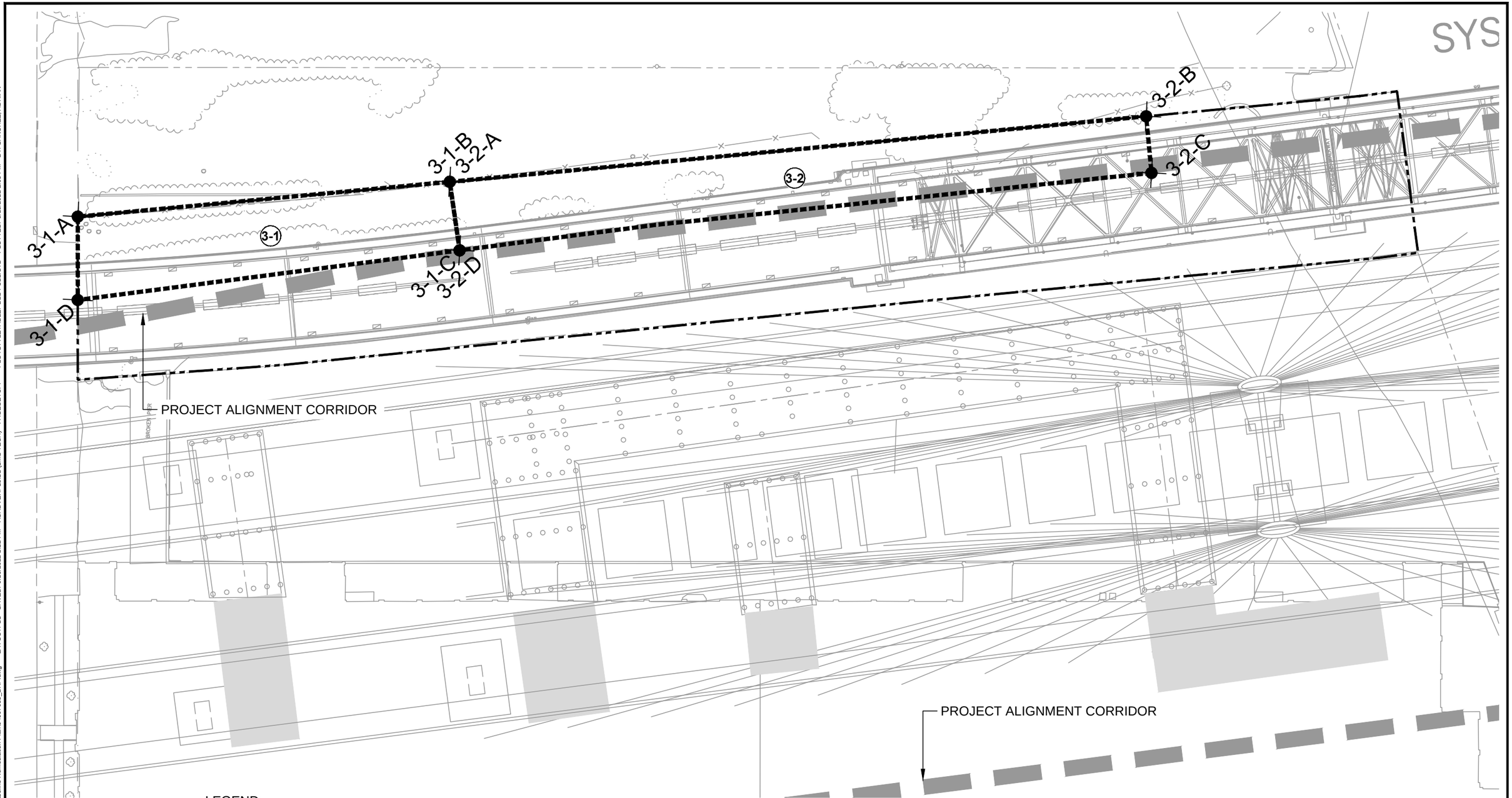
Xref_PUBLISH-Scenario1
Xref_BSE-Scenario1
BSE_C03896002-BSE01-MASER GRID COORD



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- LIMIT OF EXCAVATION
- (3-1) AREA REQUIRING REMEDIATION
- SURVEY MARKER
- (3) BLOCK 4, LOT 1470

COORDINATES REFERENCED TO
NEW JERSEY STATE PLANE NAD 83

AREA 3-1 Excavation Depth 6 ft		
Corner Marker	Easting (X)	Northing (Y)
3-1-A	575377.6400	657310.1100
3-1-B	575535.8600	657192.3900
3-1-C	575515.5400	657162.0200
3-1-D	575348.1900	657277.4300

AREA 3-2 Excavation Depth 14 ft		
Corner Marker	Easting (X)	Northing (Y)
3-2-A	575535.8600	657192.3900
3-2-B	575832.2100	656972.0900
3-2-C	575814.3300	656948.0000
3-2-D	575515.5400	657162.0200

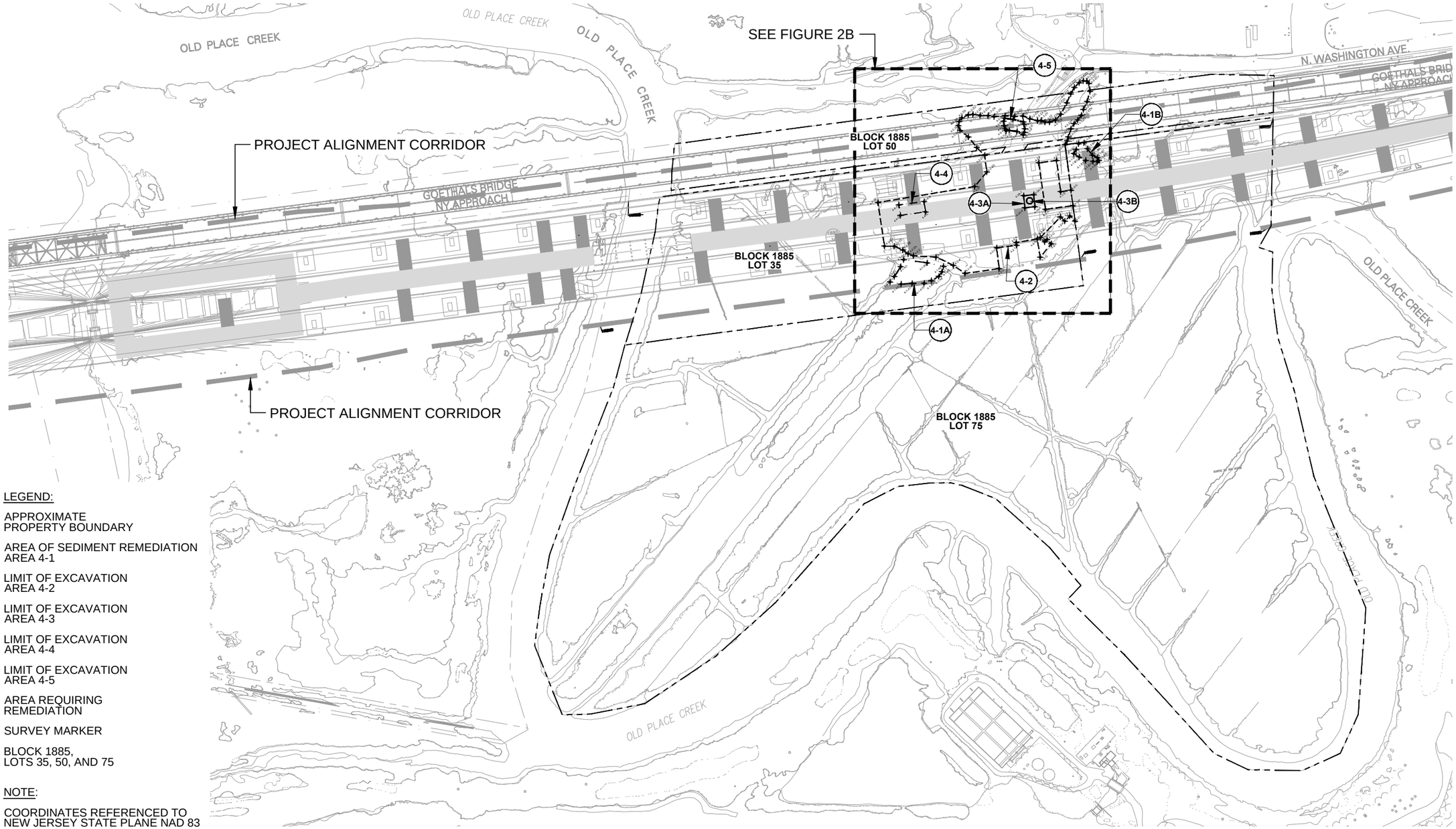
0 50' 100'
SCALE IN FEET

GOETHALS BRIDGE REPLACEMENT PROJECT
ELIZABETH, NEW JERSEY
BASELINE REMEDIATION PLAN

NEW JERSEY
PROPOSED AREAS OF EXCAVATION
AREA 3 DETAILS

ARCADIS

FIGURE
1C



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- AREA OF SEDIMENT REMEDIATION AREA 4-1
- LIMIT OF EXCAVATION AREA 4-2
- LIMIT OF EXCAVATION AREA 4-3
- LIMIT OF EXCAVATION AREA 4-4
- LIMIT OF EXCAVATION AREA 4-5
- (4-1) AREA REQUIRING REMEDIATION
- SURVEY MARKER
- (4) BLOCK 1885, LOTS 35, 50, AND 75

NOTE:

COORDINATES REFERENCED TO NEW JERSEY STATE PLANE NAD 83

0 200' 400'

SCALE IN FEET

GOETHALS BRIDGE REPLACEMENT PROJECT
STATEN ISLAND, NEW YORK
BASELINE REMEDIATION PLAN

NEW YORK
PROPOSED AREAS OF EXCAVATION

ARCADIS

FIGURE **2A**

CITY:MELVILLE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:AS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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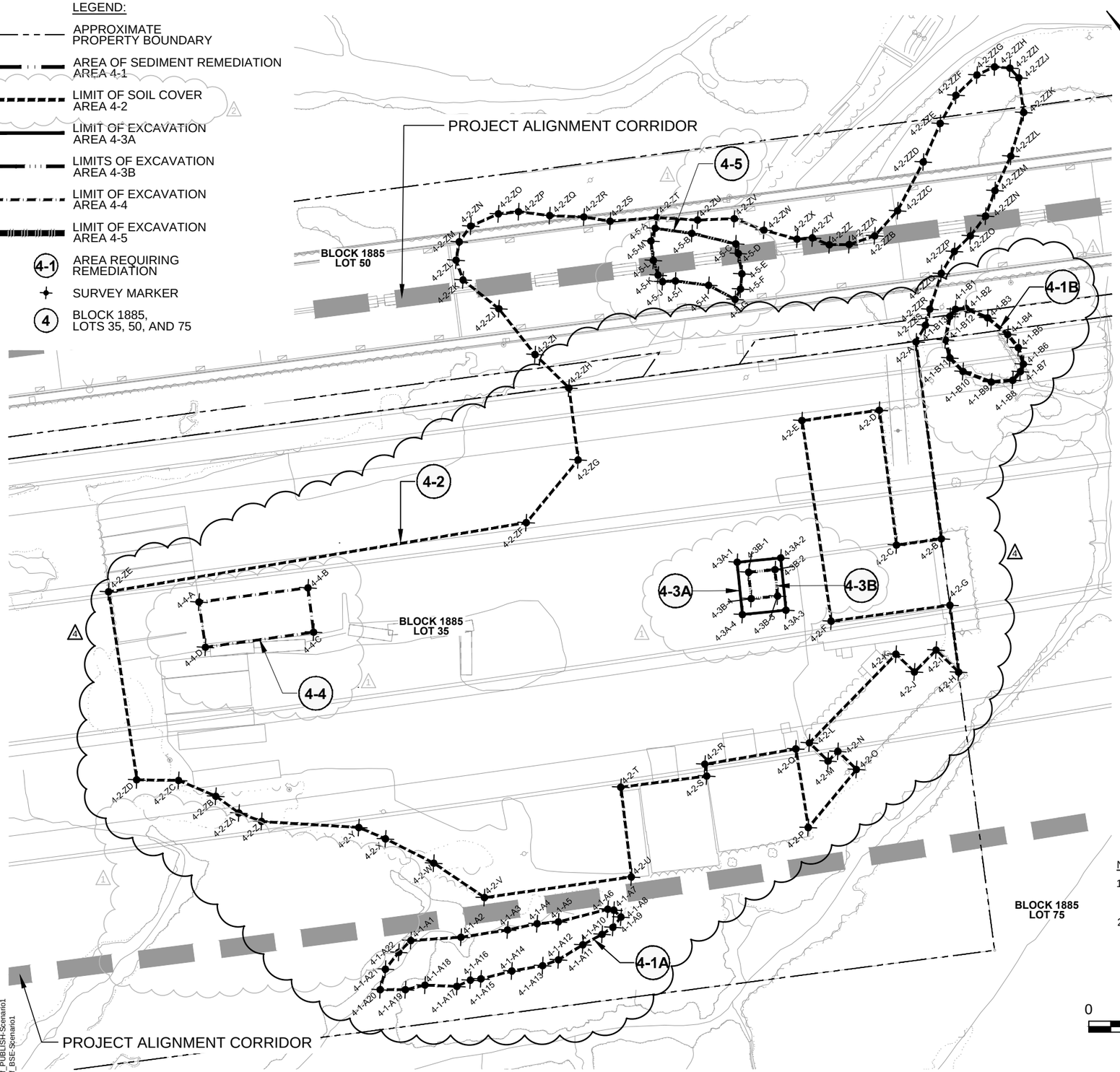
Xref_GEN-Scenario1
Xref_PUBLISH-Scenario1
Xref_BSE-Scenario1
BSE_C03896002-BSE01-MASER GRID COORD

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- AREA OF SEDIMENT REMEDIATION AREA 4-1
- LIMIT OF SOIL COVER AREA 4-2
- LIMIT OF EXCAVATION AREA 4-3A
- LIMITS OF EXCAVATION AREA 4-3B
- LIMIT OF EXCAVATION AREA 4-4
- LIMIT OF EXCAVATION AREA 4-5
- 4-1 AREA REQUIRING REMEDIATION
- SURVEY MARKER
- 4 BLOCK 1885, LOTS 35, 50, AND 75



Area 4-1A Excavation Depth 3ft		
Corner Marker	Easting (X)	Northing (Y)
4-1-A1	577800.2400	655211.5600
4-1-A2	577818.2600	655197.3700
4-1-A3	577836.3300	655185.6100
4-1-A4	577848.2700	655178.6900
4-1-A5	577856.0600	655172.8100
4-1-A6	577876.6900	655162.0100
4-1-A7	577878.4600	655159.8500
4-1-A9	577872.8800	655154.2700
4-1-A8	577878.7600	655155.2900
4-1-A10	577867.0800	655155.2200
4-1-A11	577857.3400	655157.5600
4-1-A12	577844.4500	655159.9200
4-1-A13	577837.3000	655162.7500
4-1-A14	577825.2100	655170.3700
4-1-A15	577812.3300	655177.1200
4-1-A16	577808.3200	655179.9400
4-1-A17	577801.8600	655181.9100
4-1-A18	577791.4100	655192.1100
4-1-A19	577783.3500	655196.5600
4-1-A20	577774.8100	655204.2500
4-1-A21	577782.8300	655209.6500
4-1-A22	577792.5400	655211.2800

Area 4-1B Excavation Depth 3ft		
Corner Marker	Easting (X)	Northing (Y)
4-1-B1	578178.1700	655259.4200
4-1-B2	578181.9700	655256.4900
4-1-B3	578186.4600	655246.6800
4-1-B4	578188.2200	655234.8700
4-1-B5	578187.7700	655227.1400
4-1-B6	578184.4500	655220.0300
4-1-B7	578181.1800	655218.4100
4-1-B8	578175.9200	655217.7900
4-1-B9	578168.0900	655223.7400
4-1-B10	578161.7000	655236.0000
4-1-B11	578161.3900	655244.6100
4-1-B12	578165.3900	655252.1000
4-1-B13	578174.1200	655258.7200

Area 4-3A Excavation Depth 1ft		
Corner Marker	Easting (X)	Northing (Y)
4-3A-1	578026.7200	655240.2500
4-3A-2	578042.8300	655228.4000
4-3A-3	578028.6100	655209.0700
4-3A-4	578012.5000	655220.9200

Area 4-3B Excavation Depth 20ft		
Corner Marker	Easting (X)	Northing (Y)
4-3B-1	578027.5200	655233.3700
4-3B-2	578037.2900	655226.1900
4-3B-3	578030.1000	655216.4200
4-3B-4	578020.3300	655223.6000

Area 4-4 Excavation Depth 1ft		
Corner Marker	Easting (X)	Northing (Y)
4-4-A	577831.7900	655391.3000
4-4-B	577873.1600	655362.7900
4-4-C	577861.5000	655346.0200
4-4-D	577820.1700	655373.9700

AREA 4-5 Excavation Depth 10ft		
Corner Marker	Easting (X)	Northing (Y)
4-5-A	578101.0000	655378.7100
4-5-B	578111.8700	655365.7800
4-5-C	578123.4200	655349.0400
4-5-D	578121.4900	655344.7300
4-5-E	578116.5000	655336.7400
4-5-F	578111.3800	655332.0100
4-5-G	578106.3900	655330.1500
4-5-H	578101.7000	655343.0300
4-5-I	578091.7400	655354.6600
4-5-J	578087.1400	655358.3400
4-5-K	578087.6700	655361.9100
4-5-L	578090.5300	655368.3800
4-5-M	578095.6500	655375.6800

Area 4-2 Soil Coverage Area 12-Inches		
Corner Marker	Easting (X)	Northing (Y)
4-2-A	578154.8100	655260.4000
4-2-B	578103.1800	655185.7900
4-2-C	578086.0600	655197.4000
4-2-D	578121.4200	655248.4100
4-2-E	578092.0100	655268.5800
4-2-F	578040.5900	655191.5100
4-2-G	578085.8100	655160.6200
4-2-H	578068.2700	655135.2300
4-2-I	578067.4000	655149.6300
4-2-J	578053.3400	655148.8400
4-2-K	578052.5000	655160.5200
4-2-L	577995.9900	655156.8600
4-2-M	577996.7600	655144.9500
4-2-N	578003.0900	655145.2600
4-2-O	578003.8200	655133.4200
4-2-P	577969.7300	655128.4500
4-2-Q	577989.5400	655158.9700
4-2-R	577954.0000	655181.5700
4-2-S	577950.9800	655176.9800
4-2-T	577918.3900	655199.4700
4-2-U	577894.5500	655165.7300
4-2-V	577838.3600	655203.6800
4-2-W	577831.6600	655230.8600
4-2-X	577822.7000	655253.8700
4-2-Y	577817.1200	655265.8700
4-2-Z	577785.9400	655297.6600
4-2-ZA	577780.8300	655307.4900
4-2-ZB	577778.1100	655320.2100
4-2-ZC	577770.3100	655336.9500
4-2-ZD	577756.2900	655349.9600
4-2-ZE	577804.2200	655422.4200
4-2-ZF	577967.1700	655318.2000
4-2-ZG	578003.9700	655323.6700
4-2-ZH	578022.8300	655350.8900
4-2-ZI	578021.5700	655372.5900
4-2-ZJ	578023.2900	655399.1900
4-2-ZK	578019.9200	655419.9300
4-2-ZL	578023.6200	655428.7600
4-2-ZM	578030.2900	655434.0300
4-2-ZN	578039.0300	655435.8600
4-2-ZO	578052.1300	655431.5500
4-2-ZP	578059.6500	655426.1200
4-2-ZQ	578069.0200	655415.2800
4-2-ZR	578080.2200	655404.3500
4-2-ZS	578087.8400	655394.9100
4-2-ZT	578104.8700	655381.7800
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4-2-ZV	578130.7800	655357.8200
4-2-ZW	578137.3000	655344.8600
4-2-ZX	578145.8200	655331.6500
4-2-ZY	578151.4100	655327.3900
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4-2-ZZA	578161.8600	655313.9100
4-2-ZZB	578173.2000	655309.0500
4-2-ZZC	578188.6500	655310.5600
4-2-ZZD	578212.2600	655319.2600
4-2-ZZE	578229.8100	655327.1900
4-2-ZZF	578243.7800	655331.9600
4-2-ZZG	578257.1300	655332.4100
4-2-ZZH	578265.5600	655329.7600
4-2-ZZI	578270.3900	655324.6600
4-2-ZZJ	578270.4500	655318.6300
4-2-ZZK	578261.5100	655305.3600
4-2-ZZL	578243.7800	655294.4900
4-2-ZZM	578227.8500	655287.6500
4-2-ZZN	578216.9200	655281.8600
4-2-ZZO	578205.7000	655279.7800
4-2-ZZP	578195.4800	655279.4000
4-2-ZZQ	578184.3100	655275.9200
4-2-ZZR	578169.5100	655267.2700
4-2-ZZS	578163.1200	655263.1900

NOTES:

1. COORDINATES REFERENCED TO NEW JERSEY STATE PLANE NAD 83.
2. SITE AERIAL PHOTOGRAPHY ADOPTED FROM GOOGLE EARTH WITH AN IMAGERY DATE OF 11.05.2012.

0 50' 100'

SCALE IN FEET

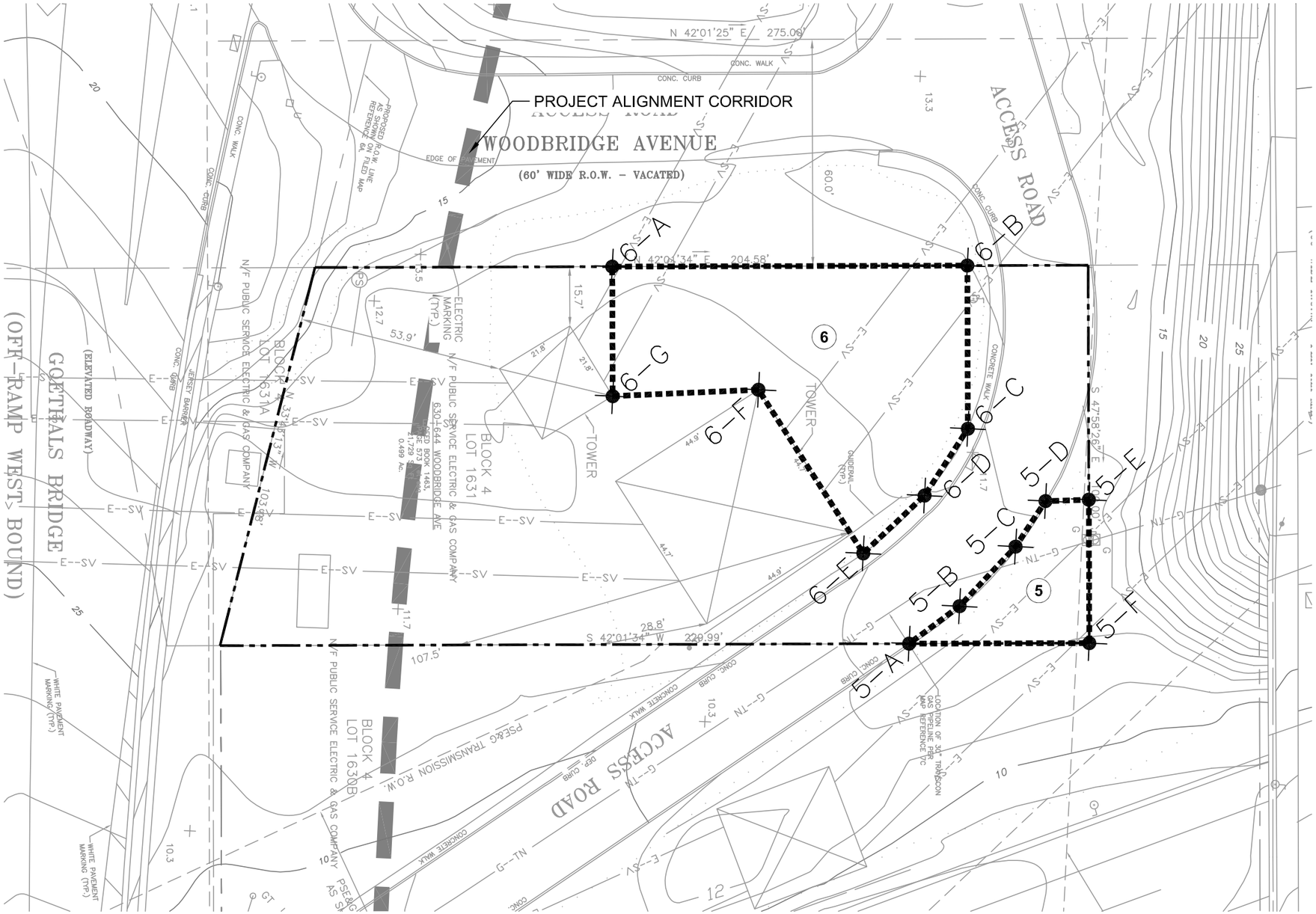
No.	Date	Revisions	By	Ckd
4	11/14	EXCAVATION AREAS 4-1A, 4-1B, AND 4-2 UPDATED	BW	AV
3	5/14	AREA 4-2 SOIL COVER UPDATE PER NYSDEC ROD	BW	AV
2	4/14	SOIL COVER ADDED PER NYSDEC ROD	BW	AV

GOETHALS BRIDGE REPLACEMENT PROJECT
STATEN ISLAND, NEW YORK
BASELINE REMEDIATION PLAN

NEW YORK
PROPOSED AREAS OF EXCAVATION
AREA 4

ARCADIS

FIGURE
2B



COORDINATES REFERENCED TO
NEW JERSEY STATE PLANE NAD 83

AREA 5 Excavation Depth 13 ft		
Corner Marker	**Easting (X)**	**Northing (Y)**
5–A	573645.4646	659113.4741
5–B	573647.0989	659130.0279
5–C	573645.3778	659151.5933
5–D	573641.7642	659165.5453
5–E	573649.2018	659174.2764
5–F	573677.3771	659148.8841

AREA 6 Excavation Depth 5 ft		
Corner Marker	**Easting (X)**	**Northing (Y)**
6–A	573518.8137	659122.3015
6–B	573581.7102	659192.0914
6–C	573613.7839	659163.1857
6–D	573619.1904	659142.8312
6–E	573619.6263	659120.5414
6–F	573568.9327	659129.0728
6–G	573544.2707	659099.3589

0 30' 60'
SCALE IN FEET

LEGEND:
- APPROXIMATE PROPERTY BOUNDARY
- LIMIT OF EXCAVATION
- (6) AREA REQUIRING REMEDIATION
- SURVEY MARKER
- BLOCK 4, LOT 1631

GOETHALS BRIDGE REPLACEMENT PROJECT
ELIZABETH, NEW JERSEY
BASELINE REMEDIATION PLAN

NEW JERSEY
PROPOSED AREAS OF EXCAVATION
AREAS 5 AND 6

Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

FIGURE
3

CITY:MELVILLE-NY DIV/GROUP:ENV DB2:A.SANCHEZ LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* PAGESETUP: --- PLOTSTYLETABLE: --- PLOTTED: 9/18/2012 10:25 AM BY: WYNOHRADNYK, JOHN
C:\pwworking\pitt\d0656096\C-08-NJ-Remedial Action.dwg LAYOUT: 1631-REMEDIAL ACTION SAVED: 9/18/2012 10:21 AM ACADVER: 18.1S (LMS TECH)
XREFS: IMAGES: PROJECTNAME: —
22X34HBRDR-HazMat
00V-BE01-01

APPENDIX C

NYSDEC Wetland Permit Correspondence

NYNJ Link Developer LLC

125 West 55th Street, Level 15, New York, NY 10019

July 10, 2014

James Blackmore, Program Director
The Port Authority of New York and New Jersey
Two Montgomery Street
Jersey City, NJ 07302

NYNJ Link Ref No: L- 001555

GOETHALS BRIDGE REPLACEMENT PROJECT
GBR-KWM-MTG-GC300-00025-00-FD
NYSDEC Wetlands Meeting Minutes 7-8-14

Dear Mr. Blackmore;

Please find attached to the NYNJ Link cover letter, the NYSDEC Wetlands Meeting Minutes from July 8, 2014.

If you have any questions, or require more information, please do not hesitate to contact me on (312) 259-0696.

Regards,

NYNJ Link Developer LLC

Luke Chenery
Authorized Representative

Enclosures: GBR-KWM-MTG-GC300-00025-00-FD

Cc: GBRP Document Control

Kiewit-Weeks-Massman, AJV
Goethals Bridge Replacement Project

SUBMITTAL #: **GBR-KWM-MTG-GC300-00025-00-FD**

DATE: **July 9, 2014**

TO: NYNJ Link Developer (C/O Macquarie)
125 West 55th Street

Level 15
New York, New York 10019

SUBJECT: **NYSDEC Meeting Minutes 7/8/2014 - Wetlands Impacts Review**

PACKAGE #: **GC300 - GC 0.3 - Prosecution and Progress**

REFERENCE SPECIFICATION: **RPW 0.3 - Prosecution and Progress**

ATTN: Mr. Luke Chenery

ADDRESS REPLY TO:
470 Chestnut Ridge Road
Woodcliff Lake, NJ 07677
Phone (201) 571-2500 Fax (201) 571-2600

WE ARE SENDING:
- [x] Attached
- [ ] Under separate cover

- [ ] Drawings
- [ ] Specifications
- [ ] Technical Report
- [ ] Submittal
- [ ] Certificates of Compliance
- [ ] Samples
- [ ] Calculations
- [ ] Quality Documents
- [ ] Change Order
- [ ] Design Report
- [ ] Review Comment Form
- [x] Other: Meeting Minutes

COPIES	PAGES	Reference Spec	DESCRIPTION
5	1	RPW 0.3.1.1	KWM Letter No. LINK-0229 - NYSDEC Meeting Minutes - July 8, 2014
5	1	RPW 0.3.1.1	Minutes from Meeting with Susan Maresca, NYSDEC Marine Resources Program Manager on 08 July 2014; **Re**: GBRP Wetlands Impact Review and update
5	1	RPW 0.3.1.1	Email Copy: Between KWM and NYSDEC

THESE ARE TRANSMITTED AS CHECKED BELOW:
- [ ] Discretionary
- [ ] Non-Discretionary/ For Approval
- [ ] Review and Comment
- [ ] As Requested
- [x] For Information

REMARKS:

Please find attached Minutes from Meeting with Susan Maresca, NYSDEC Marine Resources Program Manager on 08 July 2014; Re: GBRP Wetlands Impact Review and update.

If you have any questions or concerns, please contact this office.

Signature: [signature]

Print Name: FOR Jeremy LaClair

CC: GBRP Doc Control, Maibel Dominguez (PANYNJ),Anthony J. Piechnik (PANYNJ)
Electronic Copy on KWM Sharepoint Site

Kiewit – Weeks – Massman
KWM
Goethals Bridge Replacement

July 9, 2014 Letter No. LINK-0229

NYNJ Link Developer LLC
125 West 55th Street
New York, NY 10019-5369

Attention: Mr. Luke Chenery

Re: Goethals Bridge Replacement Project, Design-Build Contract

Subject: NYSDEC Meeting Minutes – July 8, 2014

Dear Mr. Chenery,

As discussed at our joint meeting with the NYSDEC, Authority, and Kiewit-Weeks-Massman, AJV (KWM) on Tuesday, July 8, 2014, enclosed please find the detailed meeting meetings, provided for the Project record.

Key discussions and resolutions from the meeting include:

1. NYSDEC confirmed the 14-day advance notice was provided in February, and additional 14-day notices for construction activities are not required.
2. KWM may continue to use the paved area under Existing Bridge in NY without impact to the wetlands calculations, as prescribed in the NYSDEC Permit.
3. Provided the cumulative impact to wetlands from KWM remains below 4.929 acres, modifications to the shape of the road or the provision for additional access points are permitted without prior notice or approval of the NYSDEC
4. KWM may cut off timber piles in the access road two (2) feet below the mud line, with further removal not required.
5. KWM may install culverts in the access road at a later date to allow for major settlement/consolidation of the road before installation of same.

If you have any questions, please contact me at (201) 832-0498.

Sincerely,
Kiewit-Weeks-Massman, AJV

Paul Beljan
Project Director

Enclosures: NYCDEC Meeting Minutes – July 8, 2014

Cc: KWM Document Control, PCO File 062 and 065

KIEWIT-WEEKS-MASSMAN, AJV
470 Chestnut Ridge Road, Woodcliff Lake, NJ 07677
P (201)571-2500 F (201)604-7143
Equal Opportunity Employer

Goethals Bridge Replacement Project
NYSDEC

Trent Andres
July 8, 2014 8:00 am

Attendees:	NYSDEC	KWM	Port Authority
	Susan Maresca	Trent Andres	Ricky Chu
		Anne Gothro	
	Langan		
	Kelly McCormick		

- The Goethals project will set up quarterly meetings and others as necessary with the NYSDEC to discuss the project status and any changes to the work in the wetlands.
- The paved Authority road under existing bridge in NY is identified as wetland in the NYSDEC Wetland Boundary Determination – NYSDEC will not amend designation at this time. However, KWM can use the paved road for access, storage and staging throughout the project but the acreage does not count towards wetland impact total (4.929 acres) and is not a violation of the permit to use this area.
- The goal of the NYSDEC permit is to stay under allotted 4.929 acres of wetland impacts permitted by NYSDEC Wetland Permit, location of the disturbance is flexible.
- Timber piles used for the access and construction haul road can be cut off 2' below mud line or removed when no longer needed. NYSDEC is fine with either. The design and contractor's plan is to cut the piles rather then pull them.
- Baker remediation
  - ✓ .108 ac permanent wetland impact
  - ✓ .094 ac temporary wetland impact
  - ✓ Would not need a Tidal Wetlands Permit from NYSDEC for wetland impacts required to remediate the Baker Site, even if the wetland impacts total is over 4.929 acres
  - ✓ Wetland mitigation for the wetland impacts could be completed by making adjustments at Baker site: can trade off for additional wetland impacts at a 1:1 ratio if adjustments (wetland creation) completed onsite; 2:1 if mitigation made offsite
  - ✓ Susan will check with Steve Zahn to confirm
- NYSDEC is building a kayak/canoe launch ramp on OPC near Gulf Avenue; will open soon.
- NYSDEC is OK with the Old Place Creek temporary bypass trestle (pile-supported) leaving 4' clearance at high tide.
- 14 day notice to start construction activities in the wetland has already happened in February. NYSDEC does not need any additional 14 day notices for construction activities. NYSDEC can and will visit the site in the future for compliance inspections. The quarterly meetings will provide additional information to the NYSDEC of any changes or activities in the wetlands.
- Field modifications can be hand markups on the design drawings showing changes to wetlands impacts in the interim, with newly issued sets of wetland impact drawings and calculations as needed but not less than 6 months.
- The culverts that get installed in the access road can be installed after the major initial settlement/consolidation of the road has taken place and do not need to be installed during the initial construction.
- The size of culverts and quantity needs to be verified by Sebastian Zacharias (Department of Water) as it is not a natural resources issue. The size and quantity is not a tidal wetland permit condition. Tidal Wetlands Application had 3 to 4 – 36" culverts but was vague. The current Langan design shows 2 each 30" culverts.
- For the demolition of the existing bridge, KWM will need an Article 15 Protection of Waters Permit and a Tidal Wetlands Permit. Application will need to show the overall plan, including access, schedule, how we minimize impacts, etc. A modification to the existing permit with partial access already in place may also be an option. KWM will set up meeting with Steven Zahn in next 6 months once an initial plan is assembled to determine the permit process going forward.

Henry.Hecht

From: Paul.Beljan
Sent: Thursday, July 10, 2014 2:18 PM
To: Henry.Hecht
Subject: FW: Goethals Bridge Replacement Project - July 8 2014 NYSDEC Wetlands Meeting
Attachments: mime-attachment.png

From: Anne.Gothro
Sent: Thursday, July 10, 2014 10:12 AM
To: Trent.Andres; Paul.Beljan; James.Omalley
Cc: William C.McElwee; Stefan Armington; Kelly.McCormick-PTR; Hopson Coleen
Subject: Fwd: Goethals Bridge Replacement Project - July 8 2014 NYSDEC Wetlands Meeting

FYI

Sent from my iPhone

Begin forwarded message:

> **From:** Susan Maresca <simaresc@gw.dec.state.ny.us>
> **Date:** July 10, 2014, 9:28:57 AM EDT
> **To:** <Anne.Gothro@KWMJV.com>
> **Subject: Re: Goethals Bridge Replacement Project - July 8 2014 NYSDEC Wetlands Meeting**
>
> Anne,
> Looks good.
> Thanks,
> Susan
>
> >>> <Anne.Gothro@KWMJV.com> 7/9/2014 3:02 PM >>>
> Susan,
>
> Attached are the minutes from our meeting on Tuesday morning. Thanks for taking the time to meet with KWM and the Authority and clarify some of the issues we had.
> If there is anything in these minutes that misstates what you recall of the meeting, or if I am missing something please let me know and I will amend as requested.
>
> Regards,

ANNE GOTHRO
Environmental Manager - Goethals Bridge Replacement

167 Bayway Ave., Elizabeth NJ 07202
(571)274-2751 mobile
anne.gothro@kiewit.com

APPENDIX D

Construction Health and Safety Plan for Soil Disturbance June 2015

CONSTRUCTION HEALTH AND SAFETY PLAN
FOR
SOIL DISTURBANCE

R. BAKER & SON MACHINERY DISMANTLERS
BLOCK 1885, LOT 35
STATEN ISLAND, RICHMOND COUNTY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION SITE #243008

PREPARED FOR:
KIEWIT-WEEKS-MASSMAN, AJV
470 CHESTNUT RIDGE ROAD
WOODCLIFF LAKE, NJ 07677

PREPARED BY:
PT CONSULTANTS, INC.
629 CREEK ROAD
BELLMAWR, NEW JERSEY 08031

June 2015

Brad Summerville, P.E.

6/2/15
Date

TABLE OF CONTENTS

1.0 PURPOSE

The site consists of land in Staten Island, New York and generally is located south of the existing Goethals Bridge. The area is known as Remediation Area 4, formerly known as the Baker Site. Located at 250 South Washington Avenue, the site is further identified as Block 1885, Lot 35 in Staten Island, New York and is approximately 5.76 acres in size. A site map with the proposed locations of the eight (8) drilled shafts is provided as **Figure 1**. The project site is located in historically industrial areas. Therefore, the potential exists that excavated soils may be environmentally impacted above applicable regulatory standards.

Excavated soils will be stockpiled on-site for sampling and future off-site disposal.

This Construction Health and Safety Plan (CHASP) has been prepared to describe procedures to be employed to protect workers and to minimize nuisance impacts to adjacent properties during the period when shafts are being drilled (the Work Period). The CHASP is a supplement to the existing project Health and Safety Plan (HASP). All persons working on the site during the Work Period will be given a copy of this CHASP and the project HASP for review prior to beginning excavation work at the Site. The Contractor and his subs shall implement, maintain and enforce these procedures during the Work Period.

The Contractor shall designate a responsible person to act as the Health and Safety Manager (HSM) for implementation of this CHASP. The HSM will conduct initial site specific training and provide support for all health and safety activities as necessary, including upgrading or downgrading the level of personnel protection.

The HSM shall be assigned to the Site on a full time basis and be either the Contractor's employee or a subcontractor who reports to the Contractor in matters pertaining to site safety and health.

The following definitions shall be used throughout this specification:

1. Health and Safety Manager (HSM): The Contractor's employee or agent assigned to the Site on a full time basis for the duration of the Work Period with functional responsibility for implementation of the CHASP.

2. Initial Remedial Action: An action taken to mitigate a health or safety problem so that subsequent work may have a lesser impact on worker safety or the environment.

3. Site: For the purpose of this CHASP, the Site shall be the entire construction site at 250 South Washington Avenue, Block 1885, Lot 35 in Staten Island, New York.

4. Monitoring: Indicates the use of field instrumentation to provide information regarding the levels or organic vapors or dust being released during remedial action. Monitoring required by this HASP shall be conducted to evaluate employee exposures to toxic materials and potential for impacts to adjacent properties.

5. Physician: A licensed physician with experience in the practice of occupational medicine and provided by the Contractor.

2.0 REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

The Site specific CHASP shall be consistent with the requirements of:

1. Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29, Code of Federal Regulations, Parts 1910 and 1926 (29 CFR 1910 and 1926), specifically including 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response".

2. United State Environmental Protection Agency (USEPA) Standard Operating Guidelines Revised November, 1984.

3. Corps of Engineers Accident Prevention and Safety and Health Requirements Manual, EM 385-1-1. Revised October 1984.

4. NIOSH/OSHAIUSCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Site Activities, October 1985, DHHS (NIOSH) Pub. No. 85-115.

5. United States Environmental Protection Agency (USEPA) Standard Operating Procedures and Quality Assurance Manual, Region IV. April 1986.

The CHASP shall address, but not necessarily be limited to, the following components:

1. Names of key personnel and alternates responsible for site safety and health (responsibilities and chain of command)

2. Site Description and Evaluation

3. Site Control Measures (work zones, communication, and security)

4. Safety Training

5. Emergency Equipment and First Aid Requirements

6. Personnel Protective Equipment

7. Personnel Hygiene and Decontamination

8. Air and Noise Monitoring (Environmental and Personnel)

9. Confined Space Entry Procedures

10. Equipment Decontamination

Determination of the appropriate level of worker safety equipment and procedures shall be made by the Contractor as a result of an initial site survey, review of existing data and a continuing safety and health monitoring program performed by the Contractor's HSM in accordance with the requirements specified herein.

Should any unforeseen or site specific safety related factor, hazard, or condition become evident during the performance of work at this Site, the Contractor will bring such to the attention of the Owner both verbally and in writing as quickly as possible, for resolution. In the interim, the Contractor shall take prudent action to establish and maintain safe working conditions and to safeguard employees, the public, and the environment.

3.0 SITE CONTROL

The current site will be locked to prevent unauthorized access during non-working hours. During the Work Period, all construction vehicles will be logged on and off the site by the HSM or his delegate. Temporary controls will be put in place "as/where needed" to ensure safe and secure access for site tenants (defined below).

Communications

Telephone communications will be available via cell phones. Emergency numbers, including police, fire, ambulance, hospital and DEP shall be prominently posted or available on-site.

Security

Site security shall be provided and maintained 24 hours per day for the duration of the work in order to restrict unauthorized access to the site. The Security Office shall be maintained in the Contractor's facilities. Specific components of this security operation are as follows:

1. Vehicular access to the work area shall be restricted to authorized vehicles only.

2. A log of security incidents will be maintained.

3. No visitors shall be allowed on-site without the expressed approval of the Owner.

4. Provisions will be made to ensure that open areas "those areas unable to be locked down" will be secured in a manner approved by owner (IE: temporary fencing or completion of work prior to end of working day).

Environmental Controls

Dust raised by activities will be minimized by spraying water freely on all access ways to and from the site; on all exposed faces of any working pile; on areas traversed by construction equipment; and, at any other area where dust is seen to be created.

4.0 TRAINING

The Contractor shall be required to verify that all of his personnel assigned to or regularly entering the work area have been presented a copy of the HASP and have reviewed appropriate safety training in accordance with 29 CFR 1910.120. All contractor's workers will have received the 40 hour HAZWOPER initial training. They will also have an up-to-date 8 hour refresher course.

A site-specific health and safety briefing will be given to all personnel who will be working in the Work Area during the Work Period to familiarize them with the site safety procedures.

5.0 EMERGENCY EQUIPMENT AND FIRST AID

The Contractor shall be required to develop contingency plans including evacuation procedures and routes to places of refuge or safe distances from the danger area, for the following potential emergencies: chemical exposure, personal injury, potential or actual fire or explosion, and environmental accident (spill or release). In the event of any such emergency, the Contractor shall without delay take diligent action to remove or otherwise minimize the cause of the emergency; alert the Owner and institute whatever measures might be necessary to prevent any repetition of the conditions or actions resulting in the emergency.

Emergency medical care services shall be available at a nearby medical facility with established emergency routes. The staff at the facility shall be advised of any potential unusual medical emergencies that might result.

The Contractor shall establish emergency communications with a health care facility and emergency services if warranted by anticipated site conditions. The name of this facility, name of contact, emergency routes and emergency communications arrangements are provided on the first page of this safety plan. In addition the Contractor shall provide certain equipment:

A fully stocked first aid kit shall be provided and maintained in close proximity to the work, but not inside a hazardous work area. The first aid kit shall be specially marked and provided with adequate supplies necessary to cleanse and decontaminate burns, wounds, or lesions. It shall comply with OSHA 29 CFR 1910.151 Appendix A or ANSI Z308.1-1998 "Minimum Requirements for Workplace First-aid Kits".

6.0 PERSONNEL PROTECTIVE EQUIPMENT

During the Work Period, the Contractor and/or his subs shall be required to provide all on-site personnel with appropriate personnel safety equipment and protective clothing and will ensure that all safety equipment and protective clothing is kept clean and well maintained. "Action levels" for determining the specified minimum levels of protection shall be based upon air monitoring results and direct contact potential. Specific action levels are listed in Table 8.1. The level of personnel protection required at the Site is not expected to exceed Modified Level D. Any changes to the minimum level of protection shall be approved by the HSM and the Owner. At a minimum the following items shall be provided:

Modified Level D Equipment:

Appropriate work clothing for the weather conditions,
(Including a *minimum* of *long pants, work boots, and* a *shirt with sleeves.)*
Safety shoes or boots; chemical-resistant, steel toe and shank,
Hardhat,*
Safety glasses,*
Work Gloves,**
Outer, disposable, chemical resistant boots,**
Face shield.**

* - Required Personal Protective Equipment (PPE) for all on-site personnel shall be furnished by the contractor.
** - refers to optional PPE equipment, if applicable.

If air monitoring Action Levels are exceeded, STOP WORK immediately and contact the project manager.

Level C Equipment: *(For Reference only, Level* C *work is not approved under this plan.)*

Appropriate work clothing for the weather conditions;
Safety shoes or boots; chemical-resistant, steel toe and shank,
Hardhat*
Safety glasses*
Full-face or half-mask air purifying, canister-equipped respirator* (NIOSH approved)
Hooded chemical-resistant clothing*
Face shield**
Gloves, inner, chemical-resistant**
Gloves, outer, chemical-resistant**
Disposable outer, chemical-resistant boot covers**
2 way radios** (worn under outside protective clothing)

* - Required Personal Protective Equipment (PPE) for all on-site personnel performing Level C work shall be furnished by the contractor.

** - refers to optional equipment, if applicable

All on-site personnel shall wear a minimum of: a hardhat, safety shoes/boots, and safety glasses at all times.

This Modified Level 0 shall be the minimum level of protection set for all primary operations performed at the Site, if an upgrade is required in accordance with the provisions set forth in the Air Monitoring program, the Project Manager and Health and Safety Representative must be notified prior to any upgrade in PPE.

- Footwear used on-site shall be steel-toed, steel shank safety shoes or boots, with chemical resistant soles and shall meet ASTM F2412 and F2413.

- All prescription eyeglasses in use on the Site shall be safety glasses. Prescription lens inserts shall be provided for full face respirators.

- If required, all personnel protective equipment worn on-Site shall be decontaminated or properly disposed of at the end of the work day. The HSM is responsible for ensuring all reusable personnel protective equipment is decontaminated and sanitized before being reissued.

- If required and approved, respirators shall be individually assigned and not interchanged between workers for the duration of the project. Respirators shall not be reissued without proper decontamination and disinfection.

- If required, cartridges, canisters and filters shall be changed at least daily. A procedure for assuring periodic cleaning and maintenance of facemasks and change-out of filters shall be provided by the Contractor.

7.0 PERSONAL HYGIENE AND DECONTAMINATION

During the Work Period, all on-site personnel performing or supervising remedial work at this Site, exposed to, or subject to exposure of hazardous chemical vapors, liquids, or contaminated solids, shall observe and adhere to the personnel hygiene-related provisions of this paragraph. The following conditions and procedures shall be followed:

1. The Contractor or his subs shall be required to provide and require use by personnel of all protective clothing including disposable work clothing and safety boots, storage and disposal containers for used disposable outerwear, washing facilities, a facility for changing into and out of and storing work clothing separate from street clothing, a lunch and/or break room, and portable toilets.

2. Disposable outerwear shall not be reused and when removed, shall be placed inside disposal containers provided for this purpose.

3. Smoking is prohibited at the worksite.

4. Employees must wash up before eating in the designated areas.

8.0 AIR AND NOISE MONITORING

Due to the potential for worker exposure to dangerous conditions and adverse impacts to surrounding occupants, air monitoring will be performed during the Work Period. Baseline readings will be taken prior to the start of shaft drilling each day of work.

Air Monitoring will be performed in accordance to the Community Air Monitoring Plan (CAMP) included as **Appendix A**. Air monitoring action levels (Table 8.1) have been established to indicate the chemical concentrations in the breathing zone that require an upgrade in level of personnel protective equipment (PPE). The action levels apply to all tasks performed on this site. Guidelines for frequency of air monitoring are presented below.

If noise complaints are registered, noise measurements will be taken and readings compared against limits set forth in the NYC Zoning Resolution.

Table 8.1 AIR MONITORING ACTION LEVELS			
Instrument	Function	Measurement	Action
Photoionization Detector (PID) Flame Ionization Detector (FID)	Measured total organic vapors	0-5 ppm	Level D Required
		5-500 ppm	Upgrade to Level C
		> 500 ppm	**STOP WORK.** Contact PM and HSR for guidance.
Oxygen/Combustible Gas Meter (O_2/LEL) **NOTE:** Combustible gas meter readings obtained in an oxygen deficient atmosphere will not be accurate.	Measures oxygen level (O_2) and lower explosive limit (% LEL)	O_2 19.5-22%	• Acceptable conditions - Continue normal activity
		O_2 < 19.5%	• Ventilate the space • Notify PM and SSHO if unable to achieve acceptable conditions
		O_2 > 22%	• **Leave area immediately:** this atmosphere is extremely flammable • Notify PM and SSHO
		LEL < 10%	• Acceptable conditions - Continue normal activity
		LEL > 10%	• **Leave area immediately** • Contact PM and SSHO for guidance on venting and other safety measures
*NOTE: Instruments must be calibrated according to manufacturer's recommendations			

Air Monitoring Frequency Guidelines

Periodic monitoring will be conducted during the Work Period when: (1) it is possible that an IDLH condition or a flammable atmosphere has developed or (2) there is an indication that exposures may have risen over permissible exposure limits or published exposure levels since the last monitoring. Look for a possible rise in exposures associated with these situations:

- Change in Site Area - work begins on a different section of the site
- Change in Contaminants - handling contaminants other than those first identified
- Change in On-Site Activity - one operation ends and another begins
- Handling Leaking Drums or Containers
- Working with Obvious Liquid Contamination (e.g., a spill or lagoon)

9.0 CONFINED SPACE ENTRY PROCEDURES AND PERMIT

NO CONFINED SPACE ENTRYIS ANTICIPATED FOR THIS WORK.

No personnel shall enter an area identified as a confined space without using the confined space entry procedures. The purpose of the confined space entry procedure is to protect employees from potentially hazardous environments and to facilitate immediate rescue in an emergency situation. A Confined Space Entry Permit must be posted at the entrance to each confined space.

DEFINITION: A Permit Required Confined Space means an enclosed space which is large enough and so configured that an employee can bodily enter and perform assigned work; has limited or restricted means for entry or exit (some examples are tanks, vessels, silos, storage bins, hoppers, vaults, pits and diked areas); is not designed for continuous employee occupancy; and has one or more of the following characteristics: (A) contains or has a known potential to contain a hazardous atmosphere (including oxygen deficient); (B) contains a material with the potential for engulfment of an entrant; (C) has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross section; or (D) contains any other recognized serious safety or health hazard.

Protocol For Confined Space Entry

- Perform the appropriate air monitoring activity at various depths in the space prior to entry.
  Monitor for: (1) oxygen level, (2) flammable vapors, and (3) toxic vapors.
- Ventilate the atmosphere in the space so that entry may be made safely without respiratory protection. If this is not feasible, appropriate respiratory protection must be worn by authorized entrants and attendants.
- Wear appropriate respiratory protection when ventilation alone cannot achieve acceptable atmospheric levels of oxygen or flammable or toxic vapors. Note: Respirators alone are not sufficient in oxygen deficient atmospheres.
- Provide emergency means of evacuation - lifelines, mechanical hoist, etc.
- Provide at least one attendant to remain outside the confined space entering the confined space who is required to stay at the entrance of the confined space.

10.0 EQUIPMENT DECONTAMINATION

All equipment used in the work area during the Work Period shall be decontaminated prior to leaving the Site. The procedures for decontamination of equipment shall be approved by the Engineer. The Contractor shall be responsible for monitoring all vehicle decontamination prior to exiting the Site, where required.

1. Personnel engaged in vehicle decontamination shall wear protective equipment including disposable clothing and respiratory protection (as necessary) consistent with the requirements of this CHASP.

2. Decontamination will consist only of rinsing with water unless there is an obvious additional need.

FIGURES

OUTSIDE REMEDIATION PLAN (WBP10-N, EBP11-S)

INSIDE 12" CAPPING AREA (WBP10-S, EBP10-N, EBP10-S, EBP11-N)

INSIDE EXISTING STRUCTURE (WBP11-N, WBP11-S)

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- AREA OF SEDIMENT REMEDIATION AREA 4-1
- LIMIT OF SOIL COVER AREA 4-2
- LIMIT OF EXCAVATION AREA 4-3A
- LIMITS OF EXCAVATION AREA 4-3B
- LIMIT OF EXCAVATION AREA 4-4
- LIMIT OF EXCAVATION AREA 4-5
- (4-1) AREA REQUIRING REMEDIATION
- SURVEY MARKER
- (4) BLOCK 1885, LOTS 35, 50, AND 75

PROJECT ALIGNMENT CORRIDOR

BLOCK 1885 LOT 50

BLOCK 1885 LOT 35

BLOCK 1885 LOT 75

4-5 4-1B 4-2 4-3A 4-3B 4-4 4-1A

WBP10-N WBP10-S WBP11-N WBP11-S EBP10-N EBP10-S EBP11-N EBP11-S

PROJECT ALIGNMENT CORRIDOR

Area 4-1A Excavation Depth 3ft

Corner Marker	Easting (X)	Northing (Y)
4–1–A1	577800.2400	655211.5600
4–1–A2	577818.2600	655197.3700
4–1–A3	577836.3300	655185.6100
4–1–A4	577848.2700	655178.6900
4–1–A5	577856.0600	655172.8100
4–1–A6	577876.6900	655162.0100
4–1–A7	577878.4600	655159.8500
4–1–A9	577872.8800	655154.2700
4–1–A8	577878.7600	655155.2900
4–1–A10	577867.0800	655155.2200
4–1–A11	577857.3400	655157.5600
4–1–A12	577844.4500	655159.9200
4–1–A13	577837.3000	655162.7500
4–1–A14	577825.2100	655170.3700
4–1–A15	577812.3300	655177.1200
4–1–A16	577808.3200	655179.9400
4–1–A17	577801.8600	655181.9100
4–1–A18	577791.4100	655192.1100
4–1–A19	577783.3500	655196.5600
4–1–A20	577774.8100	655204.2500
4–1–A21	577782.8300	655209.6500
4–1–A22	577792.5400	655211.2800

Area 4-1B Excavation Depth 3ft

Corner Marker	Easting (X)	Northing (Y)
4–1–B1	578178.1700	655259.4200
4–1–B2	578181.9700	655256.4900
4–1–B3	578186.4600	655246.6800
4–1–B4	578188.2200	655234.8700
4–1–B5	578187.7700	655227.1400
4–1–B6	578184.4500	655220.0300
4–1–B7	578181.1800	655218.4100
4–1–B8	578175.9200	655217.7900
4–1–B9	578168.0900	655223.7400
4–1–B10	578161.7000	655236.0000
4–1–B11	578161.3900	655244.6100
4–1–B12	578165.3900	655252.1000
4–1–B13	578174.1200	655258.7200

Area 4-3A Excavation Depth 1ft

Corner Marker	Easting (X)	Northing (Y)
4–3A–1	578026.7200	655240.2500
4–3A–2	578042.8300	655228.4000
4–3A–3	578028.6100	655209.0700
4–3A–4	578012.5000	655220.9200

Area 4-3B Excavation Depth 20ft

Corner Marker	Easting (X)	Northing (Y)
4–3B–1	578027.5200	655233.3700
4–3B–2	578037.2900	655226.1900
4–3B–3	578030.1000	655216.4200
4–3B–4	578020.3300	655223.6000

Area 4-4 Excavation Depth 1ft

Corner Marker	Easting (X)	Northing (Y)
4–4–A	577831.7900	655391.3000
4–4–B	577873.1600	655362.7900
4–4–C	577861.5000	655346.0200
4–4–D	577820.1700	655373.9700

AREA 4-5 Excavation Depth 10ft

Corner Marker	Easting (X)	Northing (Y)
4–5–A	578101.0000	655378.7100
4–5–B	578111.8700	655365.7800
4–5–C	578123.4200	655349.0400
4–5–D	578121.4900	655344.7300
4–5–E	578116.5000	655336.7400
4–5–F	578111.3800	655332.0100
4–5–G	578106.3900	655330.1500
4–5–H	578101.7000	655343.0300
4–5–I	578091.7400	655354.6600
4–5–J	578087.1400	655358.3400
4–5–K	578087.6700	655361.9100
4–5–L	578090.5300	655368.3800
4–5–M	578095.6500	655375.6800

Area 4-2 Soil Coverage Area 12-Inches

Corner Marker	Easting (X)	Northing (Y)
4–2–A	578154.8100	655260.4000
4–2–B	578103.1800	655185.7900
4–2–C	578086.0600	655197.4000
4–2–D	578121.4200	655248.4100
4–2–E	578092.0100	655268.5800
4–2–F	578040.5900	655191.5100
4–2–G	578085.8100	655160.6200
4–2–H	578068.2700	655135.2300
4–2–I	578067.4000	655149.6300
4–2–J	578053.3400	655148.8400
4–2–K	578052.5000	655160.5200
4–2–L	577995.9900	655156.8600
4–2–M	577996.7600	655144.9500
4–2–N	578003.0900	655145.2600
4–2–O	578003.8200	655133.4200
4–2–P	577969.7300	655128.4500
4–2–Q	577989.5400	655158.9700
4–2–R	577954.0000	655181.5700
4–2–S	577950.9800	655176.9800
4–2–T	577918.3900	655199.4700
4–2–U	577894.5500	655165.7300
4–2–V	577838.3600	655203.6800
4–2–W	577831.6600	655230.8600
4–2–X	577822.7000	655253.8700
4–2–Y	577817.1200	655265.8700
4–2–Z	577785.9400	655297.6600
4–2–ZA	577780.8300	655307.4900
4–2–ZB	577778.1100	655320.2100
4–2–ZC	577770.3100	655336.9500
4–2–ZD	577756.2900	655349.9600
4–2–ZE	577804.2200	655422.4200
4–2–ZF	577967.1700	655318.2000
4–2–ZG	578003.9700	655323.6700
4–2–ZH	578022.8300	655350.8900
4–2–ZI	578021.5700	655372.5900
4–2–ZJ	578023.2900	655399.1900
4–2–ZK	578019.9200	655419.9300
4–2–ZL	578023.6200	655428.7600
4–2–ZM	578030.2900	655434.0300
4–2–ZN	578039.0300	655435.8600
4–2–ZO	578052.1300	655431.5500
4–2–ZP	578059.6500	655426.1200
4–2–ZQ	578069.0200	655415.2800
4–2–ZR	578080.2200	655404.3500
4–2–ZS	578087.8400	655394.9100
4–2–ZT	578104.8700	655381.7800
4–2–ZU	578117.9000	655368.5500
4–2–ZV	578130.7800	655357.8200
4–2–ZW	578137.3000	655344.8600
4–2–ZX	578145.8200	655331.6500
4–2–ZY	578151.4100	655327.3900
4–2–ZZ	578155.0600	655319.8700
4–2–ZZA	578161.8600	655313.9100
4–2–ZZB	578173.2000	655309.0500
4–2–ZZC	578188.6500	655310.5600
4–2–ZZD	578212.2600	655319.2600
4–2–ZZE	578229.8100	655327.1900
4–2–ZZF	578243.7800	655331.9600
4–2–ZZG	578257.1300	655332.4100
4–2–ZZH	578265.5600	655329.7600
4–2–ZZI	578270.3900	655324.6600
4–2–ZZJ	578270.4500	655318.6300
4–2–ZZK	578261.5100	655305.3600
4–2–ZZL	578243.7800	655294.4900
4–2–ZZM	578227.8500	655287.6500
4–2–ZZN	578216.9200	655281.8600
4–2–ZZO	578205.7000	655279.7800
4–2–ZZP	578195.4800	655279.4000
4–2–ZZQ	578184.3100	655275.9200
4–2–ZZR	578169.5100	655267.2700
4–2–ZZS	578163.1200	655263.1900

NOTES:

1. COORDINATES REFERENCED TO NEW JERSEY STATE PLANE NAD 83.
2. SITE AERIAL PHOTOGRAPHY ADOPTED FROM GOOGLE EARTH WITH AN IMAGERY DATE OF 11.05.2012.

0 50' 100'

SCALE IN FEET

No.	Date	Revisions	By	Ckd
4	11/14	EXCAVATION AREAS 4-1A, 4-1B, AND 4-2 UPDATED	BW	AV
3	5/14	AREA 4-2 SOIL COVER UPDATE PER NYSDEC ROD	BW	AV
2	4/14	SOIL COVER ADDED PER NYSDEC ROD	BW	AV

GOETHALS BRIDGE REPLACEMENT PROJECT
STATEN ISLAND, NEW YORK
BASELINE REMEDIATION PLAN

NEW YORK
PROPOSED AREAS OF EXCAVATION
AREA 4

ARCADIS

FIGURE **2B**

CITY:MELVILLE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:AS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(On)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\04907085\01\DI\04907085B01.dwg LAYOUT: 2B (2) SAVED: 11/17/2014 2:15 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: BBL-FULL.CTB PLOTTED: 11/17/2014 2:39 PM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ---
Xref_GEN-Scenario1 Satellite.jpg
Xref_PUBLISH-Scenario1
Xref_BSE-Scenario1

APPENDICES

APPENDIX A

COMMUNITY AIR MONITORING PLAN (CAMP)

COMMUNITY AIR MONITORING PLAN

R. Baker & Son Machinery Dismantlers
Block 1885, Lot 35
Staten Island, Richmond County

NYSDEC Site # 243008

JUNE 2015

Prepared for:

Kiewit-Weeks-Massman, AJV
470 Chestnut Ridge Road
Woodcliff Lake, NJ 07677

Prepared by:

PT Consultants, Inc.
629 Creek Road
Bellmawr, NJ 08031

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1.0 Community Air Monitoring Plan

Real-time air monitoring for volatile organic compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, and auger drilling.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the DEC Project Manager and included in the Daily Report.

2.0 VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using a Rae Systems MiniRae 2000 Photoionization Detector or equivalent equipment appropriate to measure the types of Volatile Organic Contaminants known or suspected to be present. The equipment will be calibrated at least daily with an appropriate surrogate, per the manufactures manual. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings must be recorded and be available for DEC personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

3.0 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level such as the TSI DustTRAK Aerosol Monitor or MIE personal DataRam. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for DEC personnel to review.

APPENDIX B

FORMS

VAPOR MONITORING FORM

Project Name:

Project Number:

Contaminants:

Date	Time	Ionization Detector Reading		Explosimeter Reading		Dust Monitor Reading (μ/m^3)	Location	Purpose	Initials
		FID	PID	%LEL	& O_2				

HEALTH AND SAFETY PLAN AGREEMENT

PT Consultants, Inc. personnel have the authority to stop activities performed by our subcontractors or visitors at this Site if any field activity is not performed in accordance with the requirements of this Construction Health and Safety Plan, and as per directive of the Site Supervisor (SS).

All PT Consultants, Inc. Project personnel, subcontractor personnel, and visitors are required to sign the following agreement.

1. I have read and fully understand the Construction Health and Safety Plan (CHASP) and my individual responsibilities.

2. I agree to abide by the provisions of the Construction Health and Safety Plan (CHASP).

Printed Name: _____

Signature: _____

Company: _____

Date: _____

DAILY FIELD REPORT

R. Baker & Son Machinery Dismantlers
Staten Island, Richmond County

Date: _____ **Prepared By:** _____

APPENDIX E

Cost Estimate Revised September 2014

Remedial Action for Block 1885 Lot 35 and Lot 75 - Opinion of Probable Cost Summary*			
Item	*Item Description*	*Estimated Cost*	
1	**Remediation Contractor Costs**		
	Contractor Costs	$	501,360.05
	Contractor Overhead and Profit (included above)	$	-
	subtotal	**$**	**501,360.05**
2	**Environmental Engineering Services**		
2a	Environmental Engineering Services- Construction Oversight	$	74,000.00
2b	Environmental Engineering Services- Remediation	$	46,500.00
2c	Environmental Engineering Services- Compliance	$	45,000.00
	subtotal	**$**	**165,500.00**
4	**Agency Oversight Costs (10%)**	**$**	**66,686.01**
5	**Contingency (20%)**	**$**	**133,372.01**
	One Time Cost 2014 $US	**$**	**866,918.07**

Block 1885 Lot 35 and Lot 75 - Future Anticipated Compliance Costs			
Item	*Item Description*	*Estimated Cost*	
6	**Future Anticipated Compliance Reporting**		
6a	Annual Inspections and Reporting	$	76,800.00
	Recurring Compliance Cost 2014 $US	**$**	**76,800.00**

Compliance Cost per Year	**$**	**2,560.00**
Total Probable Cost 2014 $US*	**$**	**943,718.07**
Total Present Value	**$**	**907,118.07**

* Based on OMB Cicular A-94, assumes that 2014 dollar value is similar to 2012.

Estimated Environmental Remediation Contractor Costs						
Item Description	*Quantity*	*Units*	*Cost per Unit*		*Extended Cost*	
2a Block 1885 Lots 35 and Lot 75 Sediment Excavation (0 - 3 ft bgs) Areas 4-1A and 4-1B						
Excavation of sediment containing PCBs at concentrations > 5 mg/kg in tidal wetlands using land-based techniques.						
Erosion and sedimentation controls	450	LF	$10.00	$	4,500.00	
Excavation of contaminated materials	310	CY	$70.00	$	21,700.00	
Temp Access Road & Dewatering Pad	1	LS	$15,000.00	$	15,000.00	
Loading of contaminated materials into trucks	465	TON	$5.00	$	2,325.00	721.5
Transportation of contaminated materials	465	TON	$20.00	$	9,300.00	465
Disposal of contaminated materials (<50 ppm PCBs)	465	TON	$150.00	$	69,750.00	
Disposal of contaminated materials - haz waste	0	TON	$250.00	$	-	
Dewatering of sediments	310	CY	$10.00	$	3,100.00	
Storage of contaminated ground water	0	DAY	$200.00	$	-	
Transportation of contaminated ground water	0	DAY	$620.00	$	-	
Treatment/disposal of contaminated ground water	0	Gal	$0.50	$	-	
Import of certified clean backfill material	465	TON	$20.00	$	9,300.00	
Placement backfill material	465	TON	$5.00	$	2,325.00	
Compaction of backfill material	465	TON	$5.00	$	2,325.00	310
Wetland vegetation restoration	2,750	SF	$1.50	$	4,125.00	2744
Geotextile	2,750	SF	$1.11	$	3,052.50	
Personal Protective Equipment (PPE)	1	LS	$5,000.00	$	5,000.00	
HAZWOPER Certification (Haz Waste Ops and Emerg Resp)	1	LS	$4,000.00	$	4,000.00	
Decontamination Area	1	LS	$6,000.00	$	6,000.00	
Surveying - Pre and post excavation	1	LS	$8,000.00	$	8,000.00	
General Conditions (Contractor planning and documents)	1	LS	$12,010.00	$	12,010.00	
Subtotal $				**$**	**181,812.50**	

Note: These costs are for environmental remediation to support site development and do not reflect costs of site re-development itself.

Estimated Environmental Remediation Contractor Costs					
Item Description	*Quantity*	*Units*	*Cost per Unit*		*Extended Cost*
2a Block 1885 Lots 35 Soil Cover Area (0 - 1 ft bgs) Area 4-2 (partial)					
Placement of soil cover in areas not covered by buildings, concrete, or asphalt					
Erosion and sedimentation controls	1,450	LF	$10.00	$	14,500.00
Import of certified clean backfill material	2,975	TON	$20.00	$	59,500.00
Placement cover material	2,975	TON	$5.00	$	14,875.00
Compaction of cover material	2,975	TON	$5.00	$	14,875.00
Demarcation geotextile	53,705	SF	$1.11	$	59,612.55
Personal Protective Equipment (PPE)	1	LS	$5,000.00	$	5,000.00
HAZWOPER Certification (Haz Waste Ops and Emerg Resp)	1	LS	$4,000.00	$	4,000.00
Decontamination Area	1	LS	$6,000.00	$	6,000.00
Surveying - Pre and post excavation	1	LS	$8,000.00	$	8,000.00
General Conditions (Contractor planning and documents)	1	LS	$12,010.00	$	12,010.00
Subtotal $				**$**	**198,372.55**

Note: These costs are for environmental remediation to support site development and do not reflect costs of site re-development itself.

Estimated Environmental Remediation Contractor Costs					
Item Description	*Quantity*	*Units*	*Cost per Unit*	*Extended Cost*	
2a Block 1885 Lots 35 Soil Excavation (1 - 20 ft bgs) Areas 4-3A and 4-3B					
Excavation and disposal of soil in upland areas containing PCBs at concentrations > 25 mg/kg from 0 ft bgs up to 20 ft bgs.					
Erosion and sedimentation controls	0	LF	$4.00	$	-
Excavation of contaminated materials	123	CY	$50.00	$	6,150.00
On-site staging of contaminated materials	0	DAY	$1500.00	$	-
Loading of contaminated materials into trucks	184	TON	$5.00	$	920.00
Transportation of contaminated materials	184	TON	$20.00	$	3,680.00
Disposal of contaminated materials (<50 ppm PCBs)	169	TON	$150.00	$	25,350.00
Disposal of contaminated materials (>50 ppm PCBs)	15	TON	$250.00	$	3,750.00
Dewatering of excavation	1	DAY	$400.00	$	400.00
Storage of contaminated ground water	1	DAY	$200.00	$	200.00
Transportation of contaminated ground water	1	DAY	$620.00	$	620.00
Treatment/disposal of contaminated ground water	28800	Gal	$0.50	$	14,400.00
Import of certified clean backfill material	184	TON	$20.00	$	3,680.00
Placement backfill material	184	TON	$5.00	$	920.00
Compaction of backfill material	184	TON	$5.00	$	920.00
Demarcation geotextile (included in Area 4-2)	0	SF	$1.11	$	-
Personal Protective Equipment (PPE)	1	LS	$4,000.00	$	4,000.00
HAZWOPER Certification (Haz Waste Ops and Emerg Resp)	1	LS	$4,000.00	$	4,000.00
Decontamination Area	1	LS	$4,000.00	$	4,000.00
Surveying - Pre and post excavation	1	LS	$8,000.00	$	8,000.00
General Conditions (Contractor planning and documents)	1	LS	$4,000.00	$	4,000.00
Subtotal $				**$**	**84,990.00**

Note: These costs are for environmental remediation to support site development and do not reflect costs of site re-development itself.

Estimated Environmental Remediation Contractor Costs					
Item Description	*Quantity*	*Units*	*Cost per Unit*	*Extended Cost*	
2a Block 1885 Lots 35 Soil Excavation (1 - 20 ft bgs) Area 4-4					
Excavation and disposal of soil in upland areas containing PCBs at concentrations > 25 mg/kg from 0 ft bgs up to 1 ft bgs.					
Erosion and sedimentation controls	0	LF	$4.00	$	-
Excavation of contaminated materials	38	CY	$50.00	$	1,900.00
On-site staging of contaminated materials	0	DAY	$1500.00	$	-
Loading of contaminated materials into trucks	57	TON	$5.00	$	285.00
Transportation of contaminated materials	57	TON	$20.00	$	1,140.00
Disposal of contaminated materials (<50 ppm PCBs)	51	TON	$150.00	$	7,650.00
Disposal of contaminated materials (>50 ppm PCBs)	6	TON	$250.00	$	1,500.00
Dewatering of excavation	0	DAY	$400.00	$	-
Storage of contaminated ground water	0	DAY	$200.00	$	-
Transportation of contaminated ground water	0	DAY	$620.00	$	-
Treatment/disposal of contaminated ground water	0	Gal	$0.50	$	-
Import of certified clean backfill material	57	TON	$20.00	$	1,140.00
Placement backfill material	57	TON	$5.00	$	285.00
Compaction of backfill material	57	TON	$5.00	$	285.00
Demarcation geotextile (included in Area 4-2)	0	SF	$1.11	$	-
Personal Protective Equipment (PPE)	1	LS	$4,000.00	$	4,000.00
HAZWOPER Certification (Haz Waste Ops and Emerg Resp)	1	LS	$4,000.00	$	4,000.00
Decontamination Area	1	LS	$4,000.00	$	4,000.00
Surveying - Pre and post excavation	1	LS	$8,000.00	$	8,000.00
General Conditions (Contractor planning and documents)	1	LS	$2,000.00	$	2,000.00
Subtotal $				**$**	**36,185.00**

Note: These costs are for environmental remediation to support site development and do not reflect costs of site re-development itself.

Estimated Engineering Costs

Item	*Description*	*Quantity*	*Units*	*Cost per Unit*	*Extended Cost*
	Block 1885 Lot 35				
2a	Environmental Engineering Services- Construction Oversight				
	Construction support	300	Hr	$120.00	$ 36,000.00
	(Environmental sampling -soil and ground water)				
	Laboratory testing -soil stockpiles	12	Ea	$1,000.00	$ 12,000.00
	Laboratory testing -clean fill	12	Ea	$1,000.00	$ 12,000.00
	Laboratory testing -ground water (PCBs, VOCs)	6	Ea	$250.00	$ 1,500.00
	Laboratory testing -soil excavation limits (PCBs)	50	Ea	$250.00	$ 12,500.00
				subtotal	**$ 74,000.00**
2b	Environmental Engineering Services- Remediation				
	Construction work plans and specifications				
	Project Engineer	200	Hr	$120.00	$ 24,000.00
	Senior Project Manager	50	Hr	$200.00	$ 10,000.00
	QA/QC Engineer	50	Hr	$250.00	$ 12,500.00
				subtotal	**$ 46,500.00**
2c	Permitting and Compliance Documents				
	Feasibility Study, Fish and Wildlife Impact Analysis, Remedial Action Work Plan, Deed notice/modifications, one Site Management Plan and one Annual Inspection				
	Project Engineer	200	Hr	$120.00	$ 24,000.00
	Senior Project Manager	80	Hr	$200.00	$ 16,000.00
	QA/QC Engineer	20	Hr	$250.00	$ 5,000.00
				subtotal	**$ 45,000.00**
				Total	**$ 165,500.00**

Estimated Future Compliance Reporting Costs

Item	*Description*	*Number of Events*	*Quantity per Event*	*Units*	*Cost per Unit*	*Biennial Cost*
	Block 1885 Lot 35					
6a	**Annual Inspections***					
	Annual Inspection	30	8	Hr	$120.00	$ 28,800.00
	Annual Certification Report	30	8	Hr	$200.00	$ 48,000.00
					Subtotal	**$ 76,800.00**

*Assumes that only annual certification of no changes in property use from those assumed in the ROD.

Assumptions

Estimated Engineering Costs

Engineering rates are based on industry average/prevailing wage rates

Estimated Construction Costs

Contractor is required to wear tyvek suits, gloves and boots as part of PPE for the duration of the excavation
All contractor personnel will be HAZWOPER certified- assumes 40hr training
Decontamination area will be constructed to wash trucks and equipment prior to leavening the excavation area and site
General Conditions consists of preparation of contractor work plans, Health and Safety plans, and temporary facilities
None of this work considers any of the bridge construction work requirements
Confirmation sample quantities based on 1 per 900 sf for bottom samples and 1 per 50 linear feet for sidewall per DER-10
Site cover calcuation assume that existing building slabs and pavement areas will be left in place.

Assumes that cover material will be suitable for current site use (industrial) and does not include seeding or vegetative maintenance.

Area 4-1

Assumes use of long reach excavator
Assumes gravity drain & water treatment
Assume backfill to current grade with re-vegetation of tidal marshland plants.

Area 4-3, 4-4, and 4-5

Assumes that site clearing is required.
Assumes backfill to current grade

Compliance

Assumes that only annual verification of no changes in property use is required.

Calculations

The excavation and disposal volumes presented were based on preliminary site plans. These volumes should be reviewed during the detailed design and a detailed quantity take-off should be performed
In place soil weight of 1.5 tons per cubic yard
A demarcation geotextile will be placed under all excavation areas prior to backfilling