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Remedial Action Work Plan

Unoccupied Warehouse
50 Kirby Avenue
Somerville, Somerset County, NJ 08876
Block: 1, Lot: 4.01

NJDEP PI # 805633
NJDEP Case # 19-04-23-1332-05

PREPARED FOR:

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Table of Contents

1.0	INTRODUCTION	1
1.1	Physical Setting	4
1.1.1	Topography / Physiography	4
1.1.2	Geology	5
1.1.3	Soils	5
1.1.4	Hydrogeology	5
1.2	Site / Remedial Investigation / Remedial Action (Partial) Summary	5
1.2.1	AOC-1: Transformer Pad Area	6
1.2.2	AOC-2: PCB Impacted Historic Fill.....	8
1.2.3	AOC-3: Historic Fill Material.....	9
1.2.4	AOC-4: Diffuse Anthropogenic Pollutants (DAP)	10
1.2.5	AOC-5: PCB Containing Building Material (Concrete Expansion Joints & Exterior Caulk) 12	
1.2.6	Virtual Classification Exception Area (CEA)	13
2.0	REMEDIAL ACTION WORK PLAN	15
2.1	Remedial Timeframe	17
2.2	Remedial Action Selection.....	18
2.2.1	Remedial Action Objectives & Technology Evaluation.....	18
2.2.2	Qualitative Remedial Action Objectives	18
2.2.3	Achievement of Response Action Outcome (RAO).....	18
2.2.4	Technology Screening Process & Criteria	19
3.0	PROPOSED REMEDIAL ACTION	22
3.1	<i>Building Demolition Plan – Concrete Characterization.....</i>	22
3.2	<i>Soil Remediation Plan.....</i>	24
3.2.1	Excavation Plan	24
3.2.2	Engineering Controls – Capping.....	25
3.2.3	Building Slab/Concrete Slab Cap.....	26
3.2.4	Hot Mixed Asphalt (HMA) Parking Area Cap	27
3.2.5	Other Impervious Cover Cap.....	27

3.2.6	Landscaped Area Cap.....	27
3.2.7	Soil Erosion and Sediment Control and Monitoring.....	28
3.2.8	Dust Monitoring and Control.....	28
3.2.9	Institutional Controls	28
3.3	<i>Groundwater Remediation Plan</i>	29
4.0	QUALITY ASSURANCE REQUIREMENTS.....	29
4.1	<i>Quality Assurance Project Plan (QAPP)</i>	30
4.1.1	Project Scope and Complexity	30
4.1.2	Data Quality Objectives	30
4.1.3	Certified Laboratory Information.....	30
4.1.4	Project Personnel.....	31
4.1.5	Analytical Methods/Quality Assurance Summary Table	31
4.1.6	Site Specific Sampling Methods.....	31
4.1.7	Calibration and Preventative Maintenance Procedures for Field Instruments.....	31
4.1.8	Duplicate Sampling Procedures	31
4.1.9	Chain-of-Custody Procedures	32
4.1.10	Sample Storage Procedures.....	32
4.1.11	Laboratory Data Deliverables Formats	32
4.2	<i>Reliability of Analytical Data</i>	32
5.0	SITE SPECIFIC HEALTH AND SAFETY PLAN.....	33
6.0	SITE RESTORATION PLAN	33
7.0	COST ESTIMATE.....	33
8.0	SCHEDULE OF IMPLEMENTATION.....	34
9.0	CONCLUSIONS.....	36

FIGURES

- Figure 1: Site Location Map (USGS)
- Figure 2: Current Site Plan Map with Elevations
- Figure 3: Proposed Site Plan
- Figure 4: Current Site Plan with Grid & AOC Locations
- Figure 5: Proposed Site Plan with Grid & AOC Locations

APPENDICES

- Appendix A: Environmental Protection Agency (EPA) Self Implementation Plan (SIP) - PCBs
- Appendix B: Site-Specific Health & Safety Plan (HASP)
- Appendix C: EMG Site / Remedial Investigation Report – March 2021

1.0 INTRODUCTION

Environmental Management Group (EMG) is submitting this Remedial Action Work Plan on behalf of CT-CT07 50 Kirby LLC in accordance with New Jersey Department of Environmental Protection (NJDEP) requirements. The Site is identified as Block 1, Lot 4.01 and consists of an unoccupied warehouse and is addressed as 50 Kirby Avenue, Somerville, New Jersey ("site" or "property"). A book distribution company by the name of Baker & Taylor operated at the subject site until 2002. Since 2002, the subject property has remained vacant with no ongoing operations.

This Remedial Action Workplan (RAWP) documents the proposed remedial action strategy to address the below areas of concern (AOCs). The following AOCs were identified by EMG and others during various due diligence and environmental investigation activities at the property between 2014 and 2020.

- AOC-1: Transformer Pad Area
- AOC-2: PCB Impacted Historic Fill
- AOC-3: Historic Fill Material
- AOC-4: Diffuse Anthropogenic Pollutants (DAP)
- AOC-5: PCB Containing Building Material (Concrete Expansion Joints & Exterior Caulk)

The initial site investigation for AOC-1, Transformer Pad Area were conducted during a due diligence by another consultant in 2014 and PSE&G in 2019. The consultant reported PCB impacted soils adjacent to an out-of-service and damaged transformer at the northeast corner of the vacant building. As a result, PSE&G removed the transformer and the associated pad in April 2019. PSE&G also excavated soil around the transformer pad and collected a series of post excavation and background soil samples on April 2, 2019. The results of the PSE&G sample analyses showed PCB concentrations above the NJDEP Soil Remediation Standards (SRS) in both the post-excavation samples from the transformer pad area excavation and background samples away from the excavation. PSE&G sampled and analyzed the remaining dielectric fluid

from within the transformer. The results of the transformer fluid analysis were Not Detected (ND) for PCBs. Based on the analytical results for the dielectric fluid sample, PSE&G concluded that the former pad mounted transformer was non-PCB containing. PSE&G notified the NJDEP Hotline regarding a release from an unknown source and NJDEP incident # 19-04-23-1332-05 was assigned.

Subsequently, the property owner initially retained Licensed Site Remediation Professional (LSRP) Rakesh Ganta (License #591596) to address AOC-1. During the investigation of AOC-1, and subsequent to others conducting due diligence activities the other four (4) AOCs were defined and remedial investigations conducted for the preparation of this submittal.

This report was prepared in accordance with the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation, N.J.A.C. 7:26E-5.5 Remedial Action Workplan Requirements. As required, the person responsible for conducting the remediation shall prepare and submit to the Department prior to implementation, a remedial action work plan for each area of concern requiring a remedial action, unless a final remediation document for unrestricted use is filed with the Department within one year after the earliest applicable requirement to remediate, pursuant to N.J.A.C. 7:26C-2.2. Additionally, this report also presents the information required in N.J.A.C. 7:26E-1.6 General Reporting Requirements including the NJDEP Field Sampling Procedures Manual, August 2005.

The following documents are included as part of this RAW submittal:

- Case Inventory Document (CID)
- Remedial Action Work Plan Report Form (via online portal)

The Licensed Site Remediation Professional (LSRP) Notification of Retention Form, Annual Remediation Fee Form, Initial / Updated Receptor Evaluation Form, Confirmed Discharge Notification Form, Alternative or New Remediation Standard and/or Screening Level Application Form, Site Investigation Report Form (via online portal), Remedial Investigation

Report Form (via online portal) and Classification Exception Area (CEA) Fact Sheet Form were previously provided to the NJDEP.

Based on the results of the analyses and visual observations, the soils have been fully delineated for all AOC-1 through AOC-4. The PCB impact to soils associated with AOC-1 and AOC-2 are surficial, since PCB contaminants were only reported in soils between zero (0) and two (2) feet below grade. No groundwater was observed in the area of AOC-1 and hence a groundwater evaluation was not required. For AOC-3, historic fill material was observed on portions at the west of the property encompassing an area of approximately 3.1 acres at varying depths between 1 and 6 feet below grade. Mapped historic fill material partially extends on the site along the south side of the property attributed to an active rail line but it is not included in AOC-3. Additionally, groundwater associated with AOC-2 & AOC-3 will be addressed with a Virtual Classification Exception Area (CEA) since historic fill contaminants in groundwater are assumed and sampling is not required. For AOC-4, DAP, the Polycyclic Aromatic Hydrocarbon (PAH) and Target Analyte List Metals (TAL Metals) soils area in areas at the north, east, and southeast portions of the property encompassing approximately 1.7 acres. Lastly, to complete the PCB related investigations, building material (i.e., concrete, concrete expansion joints, and exterior caulk) sampling for AOC-5 was conducted and PCB contaminants were reported in the concrete expansion joints and the exterior caulk and in the building material samples adjacent to the expansion joints and exterior caulk.

While some remedial action activities have been completed for AOC-1 and portions of AOC-2, this remedial action work plan was prepared to fully address the proposed remedial actions for the site for all identified AOCs. An EPA approved Self-Implementation Plan to address the handling of the PCB containing soils is included in Appendix A and incorporated into this work plan. A Site Location Map is provided as Figure 1 and additional figures depicting current and future conditions and the identified AOC are also included in the Figures section of the RAWP.

This physical setting and project background information is presented below, followed by remedial action work plan, the quality assurance project requirements and findings/recommendations and conclusions.

1.1 Physical Setting

The site is identified as Block 1, Lot 4.01 with a street address of 50 Kirby Avenue, Somerville, Somerset County, New Jersey. The site has an area of approximately 11.23 acres located in a residential/commercial area of Somerville, NJ. The site location is shown in Figure 1 on a portion of USGS 7.5-minute topographic quadrangle base map for Bound Brook, New Jersey.

The property supports a single-story 155,926 square foot slab on grade masonry building in the southeastern portion of the site. Other improvements on the property include asphalt paved driveways, parking areas, and former loading areas; lawn and landscaped areas; lighting and utility infrastructure including a stormwater management collection system. This structure formerly housed a book storage warehouse and distribution facility. The site has been vacant since 2002.

The site is bordered by to the north by Kirby Avenue with residential properties beyond; to the south by active rail lines; to the east by Quarry Lane and residential / commercial lots; and to the west by a commercial property.

1.1.1 Topography / Physiography

The site location on the U.S. Geological Survey (USGS) 7.5-Minute Series Topographic Quadrangle Map of Bound Brook, New Jersey. The topographic gradient for the property is generally to the southeast. The ground surface elevation at the site is between approximately 60 feet above the mean sea level (MSL) and 80 feet above MSL and slopes to the southeast. The USGS 7.5-minute topographic quadrangle base map for Bound Brook NJ showing the site location is included as Figure 1 in the Figures section.

The property is situated within the Newark Basin of the New Jersey Piedmont Physiographic Province. The Piedmont physiographic province is described as a broad lowland interrupted by long, generally northeast-southwest trending ridges and uplands (New Jersey Geological Survey, 1984).

1.1.2 Geology

The site is located within the Passaic Formation which consists of predominantly reddish-brown to brownish-purple and grayish-red siltstone and shale. Ground water is generally encountered within the systems of faults and fractures which are present in the Passaic Formation.

1.1.3 Soils

The USDA Soil Survey of Somerset County maps the site property as a combination of Penn and Rowland silt loam. Such soil is commonly associated with prime farmland local or state importance, on hills, and on flood plains. In most areas the soils are well to moderately well drained. The Rowland portions of the site are likely subject to frequent flooding. Penn slopes range from 2 to 12 percent with Rowland slopes ranging between 0 and 2 percent.

1.1.4 Hydrogeology

Groundwater flow is expected to be generally south towards the Raritan River. The Raritan River is located approximately 2,000 feet south of the site. The site is a part of the Lower Raritan River (Millstone to NB/SB) Watershed and the Lower Raritan, South River, and Lawrence Watershed Management Area. The groundwater at the site property was present at approximately 10 feet below grade during the due diligence activities.

1.2 Site / Remedial Investigation / Remedial Action (Partial) Summary

The site presently supports an unoccupied warehouse building. For the period from 1966 through 2002, the property operated as a wholesale book warehouse and distributor by the

name of Baker and Taylor. Site operations generally involved receiving warehouse storage and shipping/distribution of books to public libraries and schools.

The remedial investigations and action for this project were discussed in the previously submitted site / Remedial Investigation Report (SI/RIR). Excerpts from this report is included in Appendix C. The sections below present and discuss a summary of the findings based on the results and present recommendations for the AOCs. The summarized analytical data are tabulated in the Tables section of the attached SI/RIR in Appendix C. Additionally, since sample concentrations exceeded the NJDEP Default Impact to Groundwater Soil Screening Level (DIGWSSL), site specific Impact to Groundwater Soil Remediation Standards IGWSRS were derived via SPLP and are listed below. Future soil sampling requiring potential evaluation of groundwater impact will be evaluated to the current Soil Remediation Standard Migration to Groundwater.

Contaminants	NJDEP Residential DCSRS (mg/Kg)	NJDEP DIGWSSL (mg/Kg)	Site-Specific IGWSRS (mg/Kg)
PCB – Aroclor (Total)	0.2	0.2	NA
Benzo[a]pyrene (BAP)	0.5	0.2	10
Benzo[a]anthracene (BAA)	5	0.8	8
Benzo[b]fluoranthene (BBF)	5	2	10
Dibenzo[a,h]anthracene (DahA)	0.5	0.8	1.3
EPH Category 2 (Action Level)	2300	NA	**
Beryllium	16	0.7	0.91
Lead	400	90	140
Mercury	23	65	NA

Note: Sample specific compliance determined using EPH Soil Remediation Criterion Calculator

Also, no groundwater investigations were conducted by EMG since the remedial investigations were largely surficial; no groundwater was encountered up to 10 feet below grade; the IGW pathway was cleared or is expected to be cleared for contaminants of concern except PCBs; and PCB contaminants were vertically delineated below the NJDEP RSRS and DIGWSSL at 1 to 2 feet below grade.

1.2.1 AOC-1: Transformer Pad Area

AOC-1, Transformer Pad Area was identified during investigations by other environmental consultants and PSE&G. The transformer pad area is located at the northeast corner of the vacant building. The investigations by others included the surficial soil sampling in this area and the removal of one (1) transformer. All sampling events by others reported PCB concentrations above the NJDEP SRS.

For this AOC, EMG collected twenty-three (23) remedial samples during four (4) sampling events conducted between March 22, 2019 and July 2, 2019. The purpose of these samples was to delineate the PCB impacted soils in the transformer pad area. The samples were submitted for PCB, EPH Category 2 analyses with contingency for PAH. The EPH Category 2 results were compliant with the NJDEP RSRS or the sample specific EPH soil remediation criterion (SRC) using the EPH SRC calculator. However, PCB and PAH concentrations were detected above the NJDEP RSRS. The PCB concentrations above the NJDEP RSRS of 0.2 ppm ranged from 0.25 to 4.5 ppm. The PAH concentrations, specifically benzo[a]pyrene (BAP) above the NJDEP RSRS of 0.5 ppm ranged from 0.63 to 1.3 ppm. Benzo[a]anthracene (BAA) concentrations ranging from 0.88 – 1.4 ppm were detected above the DIGWSSL of 0.8 ppm but were cleared with the site-specific IGWSRS. No other PAH compounds were detected above the NJDEP RSRS or DIGWSSL.

Since primarily PCB and limited PAH contaminant concentrations were detected above the NJDEP RSRS, on August 28, 2019, EMG directed the excavation of approximately 300 tons of surface soils to 2 feet below grade. These soils were subsequently disposed on a later date. Additionally, during the remediation, another concrete pad was encountered and removed from the southwest corner of the AOC-1 excavation. This concrete pad was also stockpiled on-site. This could have been a possible former transformer pad location. Twenty (20) post remediation soil samples were collected for PCB, EPH Category 2 analyses with contingency for PAH analyses. All samples detected EPH Category 2 concentrations below the NJDEP RSRS. All PCB sample concentrations were below the NJDEP RSRS of 0.2 ppm except for samples 50-R1A at 0.24 ppm, 50-R6 at 0.61 ppm, and 50-R10 at 0.27 ppm. All the PAH, specifically BAP concentrations, were below the NJDEP RSRS of 0.5 ppm except for sample 50-R14A at 0.65 ppm. NJDEP DIGWSSL exceedances for PAH compounds were cleared by site-specific IGWSRS.

Based on the August 2019 post remediation sample results, EMG conducted two (2) post excavation delineation events in October 2019 for samples 50-R1A, 50-R6, and 50-R10 for PCBs

and 50-R14A for PAH BAP contaminants. The thirteen (13) additional samples delineated the above samples. The PCB contamination at sample locations 50-R6 and 50-R10 remain but were further delineated by samples 50-R6-1, 50-R6B, 50-R10-1, and 50-R10B. The PCB contamination is considered residual based on limited concentration and extent. No PCB concentrations detected in these four (4) samples above the NJDEP RSRS or DIGWSSL. The post remediation sample 50-R1A and the two (2) post excavation delineation samples 50-R16 and 50-R17 are located in the AOC-2, PCB Impacted Historic Fill area along the east side building foundation. The PCB concentrations range from 0.24 to 3.0 ppm for these three (3) samples and remain above the NJDEP RSRS of 0.2 ppm. However, sample 50-R1A was vertically delineated by sample 50-R1B to 1.5 feet below grade. AOC-2 is further discussed in section 5.1.2 below. Also, based on analytical results, EMG determined that the PAH contaminants of concern at post excavation sample 50-R14A and the seven (7) additional delineation samples collected in October 2019 are associated with AOC-4, Diffuse Anthropogenic Pollutants (DAP) and are discussed below in section 5.1.4. The limited PCB contamination in the area of the soil samples 50-R6 and 50-R10 will be capped and/or further remediated in the RAR phase.

Subsequently, the staged soils and concrete materials totaling 269.63 tons were disposed off-site at an approved facility on June 25, 2021.

However, the soils in the area of samples 50-R6 and 50-R10 will be remediated further by an additional 6 inches to 2.5 feet based on the vertical clearance samples in those areas. These soils will be properly disposed at an approved recycling facility to conclude the investigations and action for AOC-1, Transformer Pad Area.

1.2.2 AOC-2: PCB Impacted Historic Fill

For AOC-2, the PCB impacted historic fill was encountered during the remedial activities conducted for AOC-1, discussed above. Even though both AOCs involve PCB impacted surface soils, the AOC-2 is distinguishable by the profile of the materials in this area. The materials are characterized by pea gravel from 0 – 2 inches, plastic sheeting followed by light brown fine sand and silt with some gravel and fine crushed glass from 2 – 6 inches. Also, these materials were only observed along the east and south building exterior foundation walls in the top 0 – 6

inches of soil. As discussed above, post remediation sample 50-R1A and the two (2) post excavation delineation samples 50-R16 and 50-R17 are located in the AOC-2 area.

Additionally, during five (5) subsequent AOC-2 related sampling events between November 2019 and January 2021, fifteen (15) delineation soil samples were collected for PCB analyses. PCB contaminants of concern above the NJDEP RSRS of 0.2 ppm were detected in eleven (11) of these samples with concentrations ranging from 0.21 to 8.1 ppm.

In summary, for AOC-2, the highest PCB concentrations were detected along the east exterior building foundation wall. All of the surface samples at 0 – 6 inches along this east side were reported above the NJDEP NRSRS of 1 ppm with the highest concentration detected at sample location 50-B7 at 8.1 ppm. Along the south exterior building foundation PCB concentrations were primarily above the NJDEP RSRS of 0.2 ppm with highest at sample location 50-B8 at 1 ppm. Also, based on the visual observations and laboratory results these PCB impacted soils are limited to the surficial soils.

Remedial action via removal of PCB impacted soils was started by excavating and stockpiling the PCB impacted soils and collecting post remediation soil samples. Post remediation soil samples frequency is one (1) bottom sample and one (1) sidewall surficial sample for every linear 25 feet. No sidewall sample along the building is being collected because of building foundation. The remediation of the soils for this AOC is also being conducted conforming to the approved EPA SIP.

No groundwater investigations were conducted by EMG since the PCBs are mostly in the surficial soils and no groundwater was encountered up to at least 10 feet below grade.

1.2.3 AOC-3: Historic Fill Material

The SI/RIR reported that historic fill material, AOC-3 was identified by EMG and others along the western portion of the site property. EMG also observed historic fill material underneath the southwest portion of the site building from 1 to 2.5 feet below the concrete slab. The extent of the historic fill material, as depicted on Figure 3 in the RIR, is based on the available

data from others and the sampling conducted by EMG. EMG sampling events for AOC-3 were conducted in May and June 2020 and January 2021. The historic fill material visually observed consisted of incinerator residue, demolition debris with glass & metal fragments in the exterior location and concrete debris with metal and wood pieces underneath the building.

A total of twenty-eight (28) samples were collected for AOC-3; all analyzed for PCB, PAH, and TAL Metals and twenty (20 of the twenty-eight (28) for EPH Category 2. The laboratory results showed that no PCB or EPH Category 2 concentrations were detected above the respective NJDEP RSRS or the DIGWSSL. PAH concentrations in the historic fill area detected BAP ranging from 0.58 – 8.0 ppm, BAA at 10 ppm, BBF at 9.9 ppm and Dibenzo [a,h]anthracene (DAHA) at 1.3 ppm for sample 50-35 B. No other PAH concentrations were detected above the NJDEP RSRS. The DIGWSSL exceedances were cleared by the IGWSRS. The TAL Metal contaminants of concern detected above the health based DIGWSSL were mercury, beryllium, and Lead. All of the health based DIGWSSL exceedances for Lead at 98 and 140 ppm and all of the beryllium concentrations except at sample 50-B28B at 1.4 ppm were cleared by site-specific IGWSRS using SPLP. However, no Beryllium concentrations were reported above the NJDEP RSRS. The beryllium concentrations ranged from 0.83 to 1.4 ppm. The IGWSRS for Lead and beryllium is 140 ppm and 0.91 ppm, respectively. Also, the mercury DIGWSSL was not improved by the site-specific IGWSRS since only a limited number of samples was analyzed using SPLP. Additionally, no other TAL Metal contaminants of concern were detected above the RSRS or the IGWSRS during these sampling events.

In summary, historical fill material exists at the site from 1 to 6 feet below current grade as depicted in Figure 3. Both visual observation and laboratory analyses confirm its presence. No remedial actions were conducted for AOC-3, Historic Fill Material, however, the remedial investigations are complete. Lastly, since no groundwater investigations were conducted by EMG for historic fill related contaminants, the groundwater associated with AOC-3 will be addressed with a Virtual Classification Exception Area (CEA) since the historic fill material will remain on-site.

1.2.4 AOC-4: Diffuse Anthropogenic Pollutants (DAP)

For AOC-4, seven (7) EMG sampling events contained samples that demonstrated the presence of Diffuse Anthropogenic Pollutants (DAP). The sixteen (16) soil samples for this AOC were from soils in the top 18 inches of surface materials. The PAH, PCB, EPH Category 2 and TAL Metals analyses reviewed, showed contaminants, specifically, PAH BAP above the NJDEP RSRS ranging from 0.58 to 3.1 ppm.

In summary, the primary contaminant of concern remaining above the NJDEP RSRS and DIGWSSL in the AOC-4, Diffused Anthropogenic Pollutants area is Benzo[a]pyrene (BAP). No remedial actions were conducted or requires for AOC-4, Diffused Anthropogenic Pollutants, and the remedial investigations are complete.

The Brownfield and Contaminated Site Remediation Act (Brownfield Act) at N.J.S.A. 58:10B-12 provides that the property owner or person responsible for conducting remediation is not responsible for remediating contamination from off-site sources. This provision applies to the remediation of DAP because DAP results from off-site sources. However, contaminants present in DAP still may represent a public health or ecological risk. Therefore, the person responsible for conducting remediation may choose to document the presence of DAP in the Response Action Outcome (RAO) for the site.

The NJDEP Diffuse Anthropogenic Pollution (DAP) Administrative Guidance requires that the Licensed Site Remediation Professional (LSRP) document the finding of DAP in remedial phase reports and the RAO letter, for the subject site by using the following RAO notice:

Soil contamination from an off-site source – Diffuse Anthropogenic Pollution

“Please be advised that contamination in the soil at this site exists above the Department’s applicable soil Remediation Standards, N.J.A.C. 7:26D-4. Based on an evaluation of data and the Department’s “Diffuse Anthropogenic Pollution (DAP) Guidance,” it has been determined that surficial contamination that was identified during the evaluation of the site is consistent with DAP. This impact to soils at the site was not required to be reported to the Department’s Hotline and therefore no incident number was generated. Development or redevelopment on this site should take into consideration the potential for direct contact soil exposure to contaminants in soil caused by DAP.”

1.2.5 AOC-5: PCB Containing Building Material (Concrete Expansion Joints & Exterior Caulk)

The investigations for AOC-5, PCB Containing Building Material (Concrete Expansion Joints & Exterior Caulk) was initiated since the redevelopment plan for subject site includes the proposed reuse of portions of the building in crushed form as backfill for the subject site. Sampling of building materials was conducted on December 9, 2020, January 22, 2021, October 15th, 20th and 25th of 2021 and February 11th and 16th of 2022. The laboratory analyses conducted for the December 2020 samples were TCL/TAL+30, as required. Only PCB contaminants of concern were detected above the NJDEP RSRS of 0.2 ppm in two (2) of the three (3) samples collected during this event. All the samples were collected from concrete materials near slab joints/seams. The PCB concentrations above the NJDEP RSRS were detected 0.58 ppm and 2.4 ppm. No other contaminants of concern were detected above the NJDEP RSRS, or health based DIGWSSL for any of the samples.

To confirm that the PCB concentrations previously detected in the concrete were limited to the concrete expansion joints, EMG collected three (3) additional concrete samples on January 22, 2021 from areas clear of any seams/joints. These three (3) samples were only analyzed for PCBs since only PCB contaminants of concern were detected above the NJDEP RSRS or health based DIGWSSL in the December 2020 sampling for this AOC. The results of the January 2021 laboratory analyses did not show any PCB concentrations above the NJDEP RSRS or DIGWSSL of 0.2 ppm in the three (3) additional concrete flooring samples. Additionally, during the January 2021 sampling, EMG observed a caulk material in the exterior seams of the site building. One (1) sample, 50-CLK, was collected for PCB analyses. PCB concentrations were detected at 720 ppm which is significantly above the NJDEP RSRS and DIGWSSL of 0.2 ppm.

Analysis of the building material samples collected on February 11th and 16th of 2022 revealed PCB concentrations in exterior masonry wall samples ranging from non-detectable (ND) to 7.0 ppm.

PCB levels in exterior wall caulking samples ranged from non-detectable (ND) to 27,000 ppm.

Samples of interior floor joint/seam caulking ranged from 0.92 ppm to 9,700 ppm.

Concrete floor material samples PCB levels ranged from non-detectable (ND) to 0.13 ppb.

Information obtained from the EPA website states that the EPA believes that there was potentially widespread use of PCB-containing building materials in schools and other buildings built or renovated between about 1950 and 1979. The EPA study showed that PCBs were widely used in caulking and elastic sealant materials, particularly between about the 1950s through the 1970s. These materials were primarily used in or around windows, door frames, stairways, building joints, masonry columns, and other masonry building materials.

The site building was constructed in the late 1960s. Therefore, based on the sampling results and the age of the building, EMG believes that PCB containing concrete expansion joints and the exterior caulking materials were used in the construction of the site building.

Additional in situ sampling and analysis of the building materials prior to structural demolition will be conducted to find which portions of the on-site building may be considered for reuse on-site. Further sampling of these building materials will be required prior to planned for reuse as on-site backfill. Concrete materials containing contamination entirely below the Department's Residential Direct Contact Soil Remediation Standards (RDCSRS) shall be considered eligible for transfer: 1) to a Class B Recycling Center holding a General or Limited Approval for recycling, 2) for recycling per the recycling site approval exemption requirements at N.J.A.C. 7:26A-1.4(a)2, 7, or 20, or 3) for direct unrestricted use on or off site in compliance with all other requirements. Compliance with any Federal, State, and local requirements is still required for all uses of concrete materials.

Materials containing any contaminant above the Department's RDCSRS are considered solid wastes and must be managed in accordance with all statutory and Department regulatory requirements including, but not limited to, the full requirements for solid waste pursuant to the Solid Waste Regulations at N.J.A.C. 7:26 et seq. including classification as hazardous waste as necessary, or at specific Class B recycling centers authorized to accept the material, or beneficial use in accordance with Department requirements.

1.2.6 Virtual Classification Exception Area (CEA)

The objective of the Classification Exception Area (CEA) is to accurately define the contaminants and boundaries of the CEA for groundwater contamination. RLG used NJDEP's Classification Exception Area/Well Restriction Area Fact Sheet Form Instructions Version 1.8 03/19/18 to guide preparation of this section and supporting materials.

If it is determined or assumed that the ground water is contaminated the investigator must establish a CEA pursuant to N.J.A.C. 7:26C-7 and the Department's "Final Guidance on Designation of Classification Exception Areas". The extent of the CEA may be based on the property boundaries of the site and the duration of the CEA may be identified as indeterminate because it is presumed that the historic fill material will remain in place.

Due to the presence of historic fill material, it was assumed that the groundwater was contaminated above the NJDEP Groundwater Quality Standard (GWQS) pursuant to N.J.A.C. 7:26C-7 and the Department's "Final Guidance on Designation of Classification Exception Areas".

The CEA extents were defined by the property boundary pursuant to N.J.A.C. 7:26C-7 and the Department's "Final Guidance on Designation of Classification Exception Areas". Due to the presence of historic fill material the overall projected term for the CEA is indeterminate. The CEA is included in the previously submitted SI/RIR dated March 2021 and is included in Appendix C which included the following:

- Figure 1 shows the site location on a USGS 7.5-minute quadrangle map and represents "Exhibit A" for the CEA.
- Figure 5 shows the CEA boundaries, predicted extent of ground water contaminants, location of the AOC that caused the groundwater contamination (i.e., source-areas), and location of any structures or buildings. The horizontal extent of the CEA is 11.18 acres.
- Figure 6 shows a cross-section view and approximate plume centerline. As shown, the vertical boundary of the CEA is 20 feet below grade, which equates to approximately 49.25 feet mean sea level.

Figures 5 and 6 of the RIR represent "Exhibit B" for the CEA.

2.0 REMEDIAL ACTION WORK PLAN

This Remedial Action Work Plan (RAWP) was prepared pursuant to the NJDEP Technical Requirements for Site Remediation, N.J.A.C. 7:26E, last amended May 7, 2012. Included with this submission are a Case Inventory Document (CID) and an authorization to Submit the Remedial Action Work Plan through NJDEP Online form.

The soils remediated in the portion of the site for AOC-1: Transformer Pad Area and the concrete materials resulting from the planned building demolition associated with AOC-5: PCB Containing Building Material will be disposed off-site at an approved recycling facility and documented in the remedial action report (RAR).

Portions of the site covered with historic fill material were visually observed during the previous and current investigations at the site. Additionally, portions of the site are contaminated with PCB impacted historic fill material above the NJDEP SRS.

The PCB impacted historic fill material is associated with AOC-2: PCB Impacted Historic Fill. AOC-3: Historic Fill, has visible historic fill material and contaminant concentrations, specifically TAL Metals, were above the NJDEP SRS, DIGWSSL and/or the site-specific IGWSRS. Since a proposed Virtual CEA was submitted for the presumed historic fill impacted groundwater, no remedial action of groundwater is planned. These two (2) historic fill AOCs will be addressed during the remedial action via the excavation and proper off-site disposal of any excess soils as part of the Unoccupied Warehouse Building redevelopment project. The remedial actions to address the contamination at the site will be protective of human health, safety, and the environment. Lastly, no remedial action is proposed for AOC-4: Diffuse Anthropogenic Pollutants (DAP). However, these materials, if moved will need to be within the designated DAP areas.

Since a presumptive remedy is required based on the planned future residential use, any soils / material not disposed off-site from designated AOC areas will be capped and subject to institutional controls, as outlined in Section 3.1. The contaminant of concern exceeding the applicable NJDEP Remediation Standard at the site property are PCBs, PAH, & TAL Metal compounds. The presumptive remedy chosen for these contaminants of concern is capping or off-site disposal.

PCBs are regulated under the Toxic Substances Control Act (TSCA). TSCA became effective on January 1, 1977 and authorized the EPA to secure information on all new and existing chemical substances, as well as to control any of the substances that were determined to cause unreasonable risk to public health or the environment. The PCB regulations within TSCA are found at 40 CFR 761.

The PCB remediation at the site will be performed in accordance with the requirements of TSCA. Section 761.61 provides cleanup and disposal options for PCB remediation waste. In accordance with this section, the self-implementing on-site cleanup and disposal of PCB remediation waste will occur in AOC-2 only.

According to Section 761.61, the cleanup level for bulk PCB remediation waste in high occupancy areas is less than or equal to 1 ppm without further conditions. In high occupancy areas where bulk PCB remediation waste remains at concentrations greater than 1 ppm and less than or equal to 10 ppm, the areas shall be covered with a cap meeting the requirements of paragraphs (a)(7) and (a)(8) of Section 761.61. For PCB remediation under TSCA, the site development in AOC-2 will be conservatively considered a high occupancy area.

All soils designated for removal were/will be excavated and transported off-site for disposal to a fully approved nonhazardous waste soil disposal facility. All soil removal activities were/will

be conducted in compliance with 40 CFR 751.61 and in accordance with all NJDEP guidance governing site remediation.

The blue outlined detail box shown in Figure 2 documents the excavation limits from the transformer pad area along the northeast side of the site property. The excavated soils from this area were staged on-site as noted on Figure 2 and later disposed on July 25, 2021 at Pure Soil Technologies, Jackson, NJ.

As discussed, in section 3.1, additional PCB impacted soils are planned for removal and off-site disposal from the PCB impacted historic fill material along the remainder of the east side of the building and along the entirety of the south side of the building. These soils will be disposed in the same manner as the previous on-site soils.

2.1 Remedial Timeframe

As of August 15, 2021, the NJDEP Data Miner Database listed the following remediation timeframes:

Task	Timeframe
Date Remediation was Required to be Initiated	4/23/19
Remedial Action Regulatory Timeframe	7/20/2026

For the planned remedial action events, as previously indicated soil sampling will be conducted as per the approved SIP and in accordance with the NJDEP Field Sampling Procedures Manual, August 2005. Additionally, all remedial activities will continue to be conducted under the oversight of LSRP, Rakesh Ganta.

Previously, as required, EMG submitted a Self-Implementation Plan (SIP) to the Environmental Protection Agency (EPA) initially in January 2020 and amended in September 2020 for the PCB contamination under Toxic Substances Control Act (TASCA). A copy of the SIP is included in Appendix A.

Approval of the SIP was issued by the US EPA on January 27, 2022. A copy of the approval letter is included with the SIP in Appendix A.

2.2 Remedial Action Selection

The Remedial Action Selection provides the analyses of long- and short-term effectiveness, implement ability, timeliness, cost differential of permanent and nonpermanent remedies (if applicable), and community concerns.

2.2.1 Remedial Action Objectives & Technology Evaluation

Quantitative response action objectives are typically defined as promulgated numerical criteria that have been developed to be protective of human health or ecological receptors for a particular medium (i.e., soil, groundwater). NJDEP has promulgated soil remediation standards for residential and nonresidential exposure. No treatment technologies were evaluated due to the nature of the contaminants of concern (i.e., PAH, TAL Metals & PCBs) and their mobility.

2.2.2 Qualitative Remedial Action Objectives

In addition to the quantitative response action objectives above, the following qualitative remedial action objectives will apply in order to be additionally protective of any receptors:

- Protect the PCB impacted soils /material from disturbance during all phases (i.e., demolition, construction, occupation, & maintenance) of site redevelopment and reoccupation.
- Maintain or reduce the extent of the historic fill or DAP impacted areas. As well, restrict to movement of impacted materials to other areas with different or no specific contaminants of concern.

2.2.3 Achievement of Response Action Outcome (RAO)

The Response Action Outcome (RAO) objective for this project is restricted use with a remedial action permit for soil and a virtual Classification Exception Area (CEA) for assumed historic fill

impacted groundwater. Since the proposed property use is planned as residential, presumptive remedy measures will be employed to ensure protectiveness of human health and the environment.

2.2.4 Technology Screening Process & Criteria

Remedial Technologies Screening

The remedial alternatives presented below are being evaluated for the RAO limit:

- Alternative 1: Deed restriction with engineering controls-capping of all AOC locations and off-site disposal of all contaminated building materials and any excess soils/historic fill materials from impacted AOC areas.
- Alternative 2: Removal and off-site disposal of all materials disturbed (i.e., concrete building materials, soil, & historic fill) in AOC-2, AOC-3, AOC-4, & AOC-5.

In all instances, the remedial alternative will be evaluated relative to the RAO specific objectives defined in Section 2.2.3.

2.2.4.1 *Effectiveness – Short Term & Long Term*

Short-Term Effectiveness and Impacts

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their short-term effects during the remedial action on public health and the environment during implementation of the remedial action, including protection of the community, protection of on-site workers and environmental impacts.

Both Alternative 1 and 2 have similar short-term effectiveness during their implementation, as each requires excavation of historic fill and DAP material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short-term impacts could potentially be higher for Alternative 2 since excavation of greater amounts of historical fill and/or DAP material would take place. However, focused attention to means and methods during the removal action, including community air monitoring and appropriate truck routing, would minimize the overall impact of these activities.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives are increased truck traffic. Because of the extent of the AOC impacted areas on-site, the impact of truck traffic would be more significant with Alternative 2 during site development and remediation. Also, Alternative 2 will require significantly more imported clean fill material to bring the site to final grade. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flag persons will be used to protect pedestrians at site entrances and exits.

The potential adverse impact to the community, workers and the environment for both alternatives would be minimized through implementation of control plans including the Health and Safety Plan, a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-site soil disturbance activities and would minimize the release of contaminants into the environment. Both alternatives provide short-term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-site contaminants. Construction workers operating under appropriate management procedures and a Health and Safety Plan (HASP) would provide protection from on-site contaminants by using personal protective equipment would be worn consistent with the documented risks within the respective work zones.

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of engineering / institutional controls that may be used to manage contaminant residuals that remain at the site and assessment of containment systems and institutional control that are designed to eliminate exposures to contaminants, and long-term reliability of the engineering controls.

Alternative 1 would provide long-term effectiveness by removing limited contamination and attaining restricted use; and establishing a presumptive remedy to ensure long-term management of the institutional control and the engineering controls. The maintenance and monitoring plan would ensure long-term effectiveness of all engineering controls and the

institutional control by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended, assuring that protections designed into the remedy continue to provide the required level of protection. Alternative 2 would achieve long-term effectiveness and more permanence related to on-site contamination by permanently removing all impacted soil/fill/DAP/Concrete in the AOC-3, AOC-4, AOC-5. Limiting the engineering controls to the PCB impacted historical fill area (AOC-2) and a minimal quantity of residual materials from the AOC-3 thru AOC-5 locations.

2.2.4.2 *Implement ability*

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g., obtaining permits for remedial activities), and availability of services and materials.

The techniques, materials and equipment to implement both Alternatives 1 and 2 are readily available and have been proven to be effective in remediating the contaminants present on the site. They use standard equipment and technologies that are well established in the industry. The reliability of each remedy is also high. There are no special difficulties associated with any of the activities proposed.

Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

Costs associated with Alternative 2 will be substantially higher than Alternative 1 due to the disposal of a significant amount of soil / historic fill / DAP materials and import of clean soil for backfill. Long-term costs for Alternative 1 & 2 are essentially similar based on the implementation of a Site Management Plan.

The remedial plan would couple the remedial action with the redevelopment of the site, lowering total costs. The remedial plan will also consider the selection of the most appropriate disposal facilities to reduce transportation and disposal costs during cleanup and redevelopment of the site.

Community Acceptance

This evaluation criterion addresses community opinion and support for the remedial action. Observations may be supplemented by public comment received on the RAWP. Under both alternatives, the overall goals of the remedial program, to protect public health and the environment and eliminate potential contaminant exposures, have been broadly supported by Somerville communities to improve the underutilized property.

2.2.4.3 Natural Resource Injury

No known natural resource injury has occurred at the site since no wetlands, endangered species, or natural habitats are located on the property.

3.0 PROPOSED REMEDIAL ACTION

3.1 Building Demolition Plan – Concrete Characterization

All sampling, including in situ sampling, will be biased toward concrete seams and expansion joints will be sampled due to the presence of previously identified PCB contamination in these areas. All concrete samples will be collected from a 1-inch core unless contamination is below that depth. Confirmatory sampling is required of material intended for recycling if suspected contaminated sections of material are removed.

The in-situ sampling frequency is dependent on the number of areas of biased sampling and whether contamination is found at sampling locations. In situ samples will be discrete samples and not composited. During four (4) sampling events a total of twenty-nine (29) building materials were collected and submitted for analysis.

Impacted concrete areas / material will be identified prior to demolition and segregated from clean materials after demolition. For any post-demolition sampling areas, such as accumulated concrete material in individual staged stockpiles, the sampling frequency will be as summarized below. Additionally, as with in situ sampling the concrete material used for an individual sample will not exceed 1- inch maximum in size, and depth. Also, each composite sample must include 1 sample for each 20 yds³.

Quantity	Number of Composite Samples
Less than 400 yds ³	1/100 total yds ³
400 yds ³ – 2000 yds ³	1/200 total yds ³ + 2
Over 2000 yds ³	1/500 total yds ³ + 8

(Example: 5,000 total yds³ project requires: (5000/500) + 8 = 18 samples.)

The concrete sample will be analyzed for PAH and PCB contaminants of concern. Previous concrete samples were analyzed for TCL/TAL+30 and no VOC, SVOC, Pesticides, or TAL Metal compounds were detected above the NJDEP RSRs. Based on the results of the analyses, the concrete material will be disposed as specified below:

Concrete materials containing contamination entirely below the NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS) shall be considered eligible for transfer: 1) to a Class B Recycling Center holding a General or Limited Approval for recycling, 2) for recycling per the recycling site approval exemption requirements at N.J.A.C. 7:26A-1.4(a)2, 7, or 20, or 3) for direct unrestricted use on or off-site in compliance with all other requirements. Compliance with any Federal, State, and local requirements is still required for all uses of concrete materials.

Materials containing any contaminant above the NJDEP RDCSRS are considered solid wastes and must be managed in accordance with all statutory and Department regulatory requirements including, but not limited to, the full requirements for solid waste pursuant to the Solid Waste Regulations at N.J.A.C. 7:26 et seq. including classification as hazardous waste as necessary, or at specific Class B recycling centers authorized to accept the material, or beneficial use in accordance with Department requirements.

Since the uncontaminated portion of the on-site building is proposed for unrestricted use on-site, Clean Building Self Certification Compliance will be provided in accordance with the *Guidance for Characterization of Concrete and Clean Material Certification for Recycling*.

The self-Certification process with sampling specifies that all of the concrete and concrete materials contain contamination of PCBs and PAHs, and other contaminants based on site-specific factors or as directed by the SRP's Case Manager, below the Department's Soil Remediation Standards. The site owner shall base the self-Certification on analytical data from the testing of the concrete in accordance with this Guidance and certify that the concrete was fully characterized and also managed according to the requirements of this Guidance. The owner of the site is responsible for compliance with this Guidance, maintaining all documentation related to the demolition and material characterization process including demolition and sampling plans, analytical testing documentation and material disposition after self-Certification and filing self-Certification documents with the Department.

The owner of the property where the concrete sampling was conducted shall complete the Certification in Addendum 2 of this Guidance, which the owner shall have notarized and retain with the characterization documentation on site for a minimum of five (5) years. The owner of the property is responsible for submitting a copy of the executed Certification to the SRP Case Manager for the site.

3.2 Soil Remediation Plan

3.2.1 Excavation Plan

The project involves construction of a residential apartment complex. The proposed construction will support fifty-eight (58) 1-bedroom and one-hundred and twelve (112) 2-bedroom apartment units with a community center, swimming pool, and other outdoor recreation areas. Other open space at the site is mostly paved parking/driveway areas with other features (e.g., retaining wall and landscaped areas). The project involves the movement of fill, predominantly for installation of footings/slab/foundations for the proposed buildings. The proposed construction plan for the building is shown in Figure 3.

Figure 5 shows the proposed building construction footprints in relation to the on-site area of concerns (AOCs). Both of these figures are included in the Figure section of this Report.

The general plan for earth movement is as follows:

- Prior to any soil movement at the site, survey markers corresponding to the Box designations need to be established to ensure proper identification of the historic fill / DAP impacted areas.
- No historic fill material / soils from areas denoted with the red diagonal lines (AOC-3) can be moved to any area outside the AOC-3 area as depicted on the Figure 5. Mapped historic fill material depicted in green on Figure 5 shall be handled similarly. No historic fill will be moved between areas with the red diagonal lines and the green areas.
- Soils / historic fill material in area shaded blue (AOC-2) on Figure 5 will be excavated and properly disposed off-site at a NJDEP approved disposal facility as per the EPA TSCA Self-Implementing PCB Cleanup & Disposal Plan dated May 3, 2021 included in Appendix A.
- DAP impacted soils designated as AOC-4 are depicted as magenta on Figure 5. Any on-site box areas that contain magenta shading should also be capped or properly disposed off-site. For example, the entirety of the on-site areas for boxes 1D thru 1Q should be capped or disposed. DAP impacted soils from the center of the property can be moved to other DAP areas as long as the footprint of the DAP in these areas is not increased.
- Based on the available information from previous investigations and soil samples collected by EMG, the soils/material underneath the existing site building can be moved throughout the site. The exception to this is the historic fill impacted soils /material beneath a portion of the west side of the site building. Additionally, if during the concrete sampling or during post demolition earthwork impacted material is identified, appropriate restrictions will apply as directed by the consultant.

3.2.2 Engineering Controls – Capping

The remedial actions include excavation and engineering and institutional controls. The engineering control will consist of capping systems that are protective and durable. The cap will be comprised of durable surface materials or a clean fill layer that will serve as physical barriers preventing direct human contact to the contaminated materials. Beneath the cap in the

majority of the site, a demarcation layer will be present. All capping requirements will be incorporated in the final As-Built drawing for the site. For presumptive remedy, the following tables provides the general required capping specifications for historic fill and PCB impacted materials:

For Non-PCB Impacted Historic Fill Material & Diffuse Anthropogenic Pollutants (DAP)

Contamination type	Subcategories/Scenarios	Presumptive Remedy/ Remediation Goal	Remedial Action-Schools, Child Care Centers, and Type II Residential
Historic Fill and/or all other discharged contaminants not otherwise excluded in N.J.A.C.7:26E-5.3	2) Concrete or Asphalt Surfaces: e.g., Driveways, Roadways, Parking, Walkways, Bicycle Paths, etc.	Restricted Use	<i>Barrier - Minimum of four (4) inches of concrete or asphalt; Buffer Minimum of four (4) inches of subbase; Demarcation - Visible contamination boundary marker; and Inspection - Annual</i>
Historic Fill and/or all other discharged contaminants not otherwise excluded in N.J.A.C.7:26E-5.3	3) Building Footprint - New Construction	Restricted Use	<i>Option #1 Barrier - Minimum of four (4) inches of concrete; Buffer - Minimum four (4) inches of subbase; Demarcation - Visible contamination boundary marker; and Inspection - Annual Option #2 (for crawl spaces) Barrier - Minimum of one (1) foot clean fill; Buffer - Minimum of one (1) foot clean fill; Demarcation - Visible contamination boundary marker; and Inspection - Semi-annual</i>
Historic Fill and/or all other discharged contaminants not otherwise excluded in N.J.A.C.7:26E-5.4	4) Vegetative Cover e.g., Lawn Areas	Restricted Use	<i>Barrier - A vegetative cover and a minimum of six (6) inches of clean fill; Buffer - Minimum of six (6) inches of clean fill; Demarcation - Visible contamination boundary marker; and Inspection - Semi-annual</i>
Historic Fill and/or all other discharged contaminants not otherwise excluded in N.J.A.C.7:26E-5.3	5) Landscaped Areas	Restricted Use	<i>Option #1. Barrier - Minimum of one (1) foot clean fill; Buffer - Minimum of one (1) foot clean fill; * Demarcation - Geotextile fabric; and Inspection - Semi-annual Option #2. Barrier - Minimum of two (2) feet of clean fill; Buffer - Minimum of two (2) feet clean fill; *Demarcation - Visible contamination boundary marker; and Inspection - Semi-annual * Tree and/or shrub can be planted within barrier and/or buffer layer(s), but must maintain a minimum of one (1) foot clean fill on all sides and below the extent of planted root ball of larger plant materials.</i>
Historic Fill and/or all other discharged contaminants not otherwise excluded in N.J.A.C.7:26E-5.3	7) Underground Utility Corridors:	Restricted Use	<i>Piping & Conduits Placed in Trenches: Barrier - Clean fill from surface down to utility (minimum of one (1) foot); Buffer - Minimum of one (1) foot of clean fill below and around the sides of the utility; Demarcation - Visible contamination boundary marker along the bottom and sides of the trench; and Inspection - Annual Direct Burial Cable can be installed within barrier and/or buffer layer(s) but must maintain a minimum of one-foot clean fill on sides and below installation.</i>

3.2.3 Building Slab/Concrete Slab Cap

The building slabs will consist of a cap as defined above under the presumptive remedy as noted in the above table.

3.2.4 Hot Mixed Asphalt (HMA) Parking Area Cap

The asphalt parking in an AOC-1, AOC-2, AOC-3, AOC-4 area will consist of a cap as defined above under the presumptive remedy for parking areas as noted in the above table. For parking areas located in AOC-5 not designated as an AOC, the cap may be constructed following the presumptive remedy for Historic Fill and/or all other discharged contaminants not otherwise excluded in N.J.A.C.7:26E-5.3 for Concrete or Asphalt Surfaces (e.g., Driveways, Roadways, Parking, Walkways, Bicycle Paths). This cap construction requires a barrier of a minimum of four (4) inches of HMA asphalt with a buffer of a minimum of four (4) inches of subbase, and a visible demarcation contamination boundary marker.

However, the developer may elect to construct the cap for all the parking areas to the most stringent requirements discussed above using the presumptive remedy.

3.2.5 Other Impervious Cover Cap

The other impervious area (e.g., sidewalls, curb lines retaining wall, trash enclosure, generator pad) at the site will follow the same cap construction as defined in section 3.1.4 using HMA asphalt or concrete, as appropriate.

3.2.6 Landscaped Area Cap

Any landscaped areas in non-PCB impacted historic fill / soils locations, will employ the cap construction as specified in the presumptive remedy for Historic Fill and/or all other discharged contaminants not otherwise excluded in N.J.A.C.7:26E-5.3 for Landscaped Areas using Option #1- A barrier of a minimum of one (1) foot clean fill with a buffer of a minimum of one (1) foot clean fill and demarcation using a geotextile fabric; or Option #2 – A barrier of a minimum of two (2) feet of clean fill with a buffer of a minimum of two (2) feet clean fill and a visible demarcation contamination boundary marker. Also, for either option, trees and/or shrub can

be planted within barrier and/or buffer layer(s) but must maintain a minimum of one (1) foot clean fill on all sides and below the extent of planted root ball of larger plant materials.

3.2.7 Soil Erosion and Sediment Control and Monitoring

A Soil Erosion and Sediment Control plan was prepared for this project in accordance with the Soil Erosion and Sediment Control Act, Chapter 251, P.L. 1975 as amended (N.J.S.A. 4:24-39 et seq.) and the publication, The Standards for Soil Erosion and Sediment Control in New Jersey, adopted January 2014. The objective of the soil erosion and sediment control plan is to retain soil on the site and minimize delivery of sediment off-site. The application for soil erosion and sediment control plan will be prepared and submitted to the Somerset Union Soil Conservation District, if required.

All soil erosion and sediment control practices will be installed prior to any major soil disturbance and will be maintained until permanent protection is established. The soil erosion and sediment control practices will include silt fence, temporary hay bale barriers, stone berms and/or hay bale inlet protection. A vehicle wheel-cleaning blanket will also be installed at the exit point(s) of the site.

3.2.8 Dust Monitoring and Control

The perimeter air monitoring and action plan designed to monitor particulates will be conducted in accordance with N.J.A.C. 7:26E-5.5(b)7. Perimeter air monitoring will be conducted for dust levels prior to start of the construction to obtain baseline dust concentrations. During commencement of construction activities, if there is a significant increase in dust levels, mitigation measures such as spraying water will be utilized to keep the dust levels to meet the pre-construction baseline readings.

3.2.9 Institutional Controls

As presented in this report, most of the site property contains a contaminated AOC (i.e., historic fill, PCB containing historic fill, DAP), it is suspected that the site construction is a net

“import” site (i.e., requiring clean fill material). However, if historic fill is leaving site, it will be characterized and disposed as per the requirements of the disposal facility. The rest of the area will be capped. The engineering controls will act as physical barriers between the contamination and human contact and the environment.

Additionally, a Deed Notice as an institutional control is required due to the presence of contaminated AOC areas. The final deed restricted areas will be outlined post redevelopment. As specified in N.J.A.C. 7:26E-5.4, there is a rebuttable presumption pursuant to N.J.S.A. 58:10B-12h that the remedial action for soil contamination associated with historic fill and DAP material is the establishment of engineering and institutional controls pursuant to N.J.A.C. 7:26C-7.

A copy of the recorded Deed Notice, including all exhibits, will be provided in the RAR submittal following the remediation. A Remedial Action Permit – Soil (RAP-Soil) application will also be included in the RAR.

The required activities presented in the NJDEP RAWP-Soil will be completed. As the remedial action is considered a non-permanent remedy and the Property will have restricted use, as the property owner, will complete the monitoring and maintenance and biennial certifications requirements. The land-use is planned as residential.

3.3 Groundwater Remediation Plan

To address the presumed groundwater contamination due to Historic Fill material, a virtual Classification Exception Area (CEA) with indeterminate longevity was submitted as part of the RIR and will be established once approved by the NJDEP. The boundaries of the CEA will be defined by the property boundary of the site. No future groundwater monitoring will be performed relating to the Historic Fill CEA.

4.0 QUALITY ASSURANCE REQUIREMENTS

Quality Assurance requirements are outlined in the NJDEP Tech. Regs at N.J.A.C 7:26E-2.2 and are presented in the following sections.

4.1 Quality Assurance Project Plan (QAPP)

4.1.1 Project Scope and Complexity

A summary of the planned additional remedial action scope is as follows:

1. Excavation and disposal off-site of PCB impacted soils associated with the former transformer pad area and any other historic fill / DAP material to be removed.
2. Submittal of the approved EPA Self-Implementation Plan for PCB handling
3. Collection of additional concrete / concrete expansion joints / caulking samples
4. Demolition and management of the disposal of the concrete building structure
5. Implementation of engineering controls
6. Preparation and recording of the deed notice as the institutional control
7. Completion of remedial action reporting requirements.

Level of complexity is considered low.

4.1.2 Data Quality Objectives

The soil data were intended to determine whether contaminants are present on the Property at concentrations in excess of applicable NJDEP Standards and to document the remediation of PCB impacted soils from the AOC-1, Transformer Pad Area.

4.1.3 Certified Laboratory Information

Soil analyses were performed at Hampton-Clarke, Inc. / Veritech Laboratory (HCV), Fairfield, NJ (NJDEP Certified Laboratory #14622) in accordance with Reduced Laboratory Deliverables, Non USEPA/CLP Methods.

4.1.4 Project Personnel

- LSRP: Rakesh Ganta, RLG Environmental – (201) 509-8333
- Project Management: Pete Ritchings, Environmental Management Group – (732) 282-2222
- Concrete sampling activities and QA/QC: Rakesh Ganta & Raja Tottempudi, RLG Environmental – (201) 509-8333
- Site Redevelopment Personnel

4.1.5 Analytical Methods/Quality Assurance Summary Table

A summary of the Analytical Methods and Quality Assurance for the sampling is tabulated below:

4.1.6 Site Specific Sampling Methods

The concrete samples will be collected in accordance with Guidance for Characterization of Concrete and Clean Material Certification for Recycling. Concrete related samples will be visually examined, screened with a PID, and characterized. Samples submitted for laboratory analysis will be preserved with ice in coolers and documented on Chain-of-Custody forms immediately after collection. Bottle and sample shuttles will be utilized within one day of receipt on-site and were delivered to the lab the following day. Samples will be analyzed within holding times. Concrete related samples will be collected in accordance with the sample summary table above.

4.1.7 Calibration and Preventative Maintenance Procedures for Field Instruments

The PID will be calibrated and maintained in accordance with manufacturer's instructions.

4.1.8 Duplicate Sampling Procedures

No duplicate concrete samples will be collected.

4.1.9 Chain-of-Custody Procedures

The Chain-of-Custody will be recorded in the field for quality control purposes. Information such as sample ID, date, time of collection, analysis, laboratory report format, sample turnaround time, client contact information is documented on the chain-of-custody for all samples. Chain-of-custody forms accompanied all samples, and when the samples are exchanged with another party, the person relinquishing the chains and the person receiving the chains signed and dated the time of transfer. Prior to laboratory pickup, the chain-of-custody will be verified against the actual samples collected to allow for accurate collection and analysis of site data and samples.

4.1.10 Sample Storage Procedures

Samples collected in the field will be stored in coolers on ice to assure that they are kept at temperature that is suitable for the laboratory to be able to process and analyze the samples. This assures the accuracy of the data collected and the analysis performed. Sample bottles are dropped off directly at the site by laboratory courier. Following sample collection, the samples will be stored in secure coolers on ice and picked up by laboratory courier under strict chain of custody procedures. Storage at the certified laboratory prior to analysis is in accordance with the laboratory's Quality Assurance Manual and Laboratory Manual.

4.1.11 Laboratory Data Deliverables Formats

All laboratory data deliverables are provided in both New Jersey Reduced format and Hazsite format for electronic deliverables.

4.2 Reliability of Analytical Data

All field and laboratory work and subsequent reporting will be performed as required by the NJDEP Technical Requirements for Site Remediation, N.J.A.C. 7:26E (Tech. Regs.). Soil samples will be collected in accordance with the Tech. Regs. and the NJDEP Field Sampling Procedures Manual, dated August 2005 and updated April 2011. The analytical parameters for the concrete samples were selected based on the Guidance for Characterization of Concrete and Clean Material Certification for Recycling and the results of the previously conducted concrete

samples. All samples will be submitted to Hampton Clarke, Inc., Fairfield, NJ, a NJDEP certified laboratory.

The Hazsite electronic data submission for the samples will be emailed to NJDEP to obtain SRP Catalog IDs. NJDEP's Electronic Data Submittal Application (EDSA 7.1.5) will be used to check the electronic data files prior to submittal. Also, the geographic information system (GIS) submittal will be emailed for each AOC.

5.0 SITE SPECIFIC HEALTH AND SAFETY PLAN

A site-specific HASP was developed following the Occupational Safety and Health Standards (OSHA) 29 CFR 1910.120. The purpose of the HASP is to define the requirements and designate protocols to be followed during remedial activities at the site for the protection of site workers, the general public, and the environment. All personnel, on-site contractors, and sub-contractors will be informed of the emergency response procedures and any potential health or safety hazards of the operations. A copy of the HASP is included in Appendix B.

6.0 SITE RESTORATION PLAN

As presented in Section 3.1 above, the remedial techniques to address the impacted AOC areas that will involve capping and off-site disposal of contaminated materials, if required. The proposed as built is presented on Figure 3 and Figure 5 and will be refined and finalized after the construction is completed. The final as built will be included in the RAR.

7.0 COST ESTIMATE

The table presented below provides a summary of the estimated cost for implementation of the proposed remedial action presented in this work plan.

- | | |
|--|---|
| • Additional Concrete Sampling & Characterization | \$20,000.00 |
| • Perimeter Air/Dust Sampling (Baseline & During Construction) | \$10,000.00 |
| • Removal and Disposal – PCB Impacted Soils | \$150,000.00 |
| • Engineering Controls | \$Included in Construction Phase |

- Institutional Control – Deed Notice \$50,000.00
- Disposal of Concrete Building Material & Excess Soils \$200,000.00
- Oversight – LSRP & Engineers \$50,000.00
- Remedial Action Permit – Soil Application \$10,000.00
- Reporting \$25,000.00

8.0 SCHEDULE OF IMPLEMENTATION

The proposed residential complex, consisting of Block 1, Lot 4.01 encompassing approximately 1 acre, was assigned an NJDEP PI Number (PI# 805633) in February 2019 and Rakesh Ganta of RLG Environmental, Inc. was retained by CT-CT07 50 Kirby LLC in May 2019 as the Licensed Site Remediation Professional (LSRP) for the site. Environmental Management Group (EMG) submitted a Preliminary Assessment Report (PAR) to NJDEP on July 5, 2020 and a Site / Remedial Investigation Report (SI / RIR) in March 2021.

After submittal of this RAW and receipt of any required local/county permits, the proposed construction at the site is anticipated to commence in Summer 2022.

An RAR documenting the remedial activities and providing all required documentation, figures, and applications will be submitted to the NJDEP following completion of the engineering and institutional controls. Upon receipt of NJDEP Remedial Action Permits, a Restricted Use Response Action Outcome (RAO) will be issued for the site.

Five (5) Areas-of-Concern, including assumed historic fill impacted groundwater, were identified at the site Property. The AOCs were adequately investigated and remedial action strategies that are protective of public health and safety and the environment have been developed to address the contamination. The proposed remedial action involves capping of a large portion of the site (i.e., AOC identified areas) with presumptive remedy capping guidance. Any soils that cannot be used at the site within the boundaries previously discussed will be properly disposed at a NJDEP approved disposal facility.

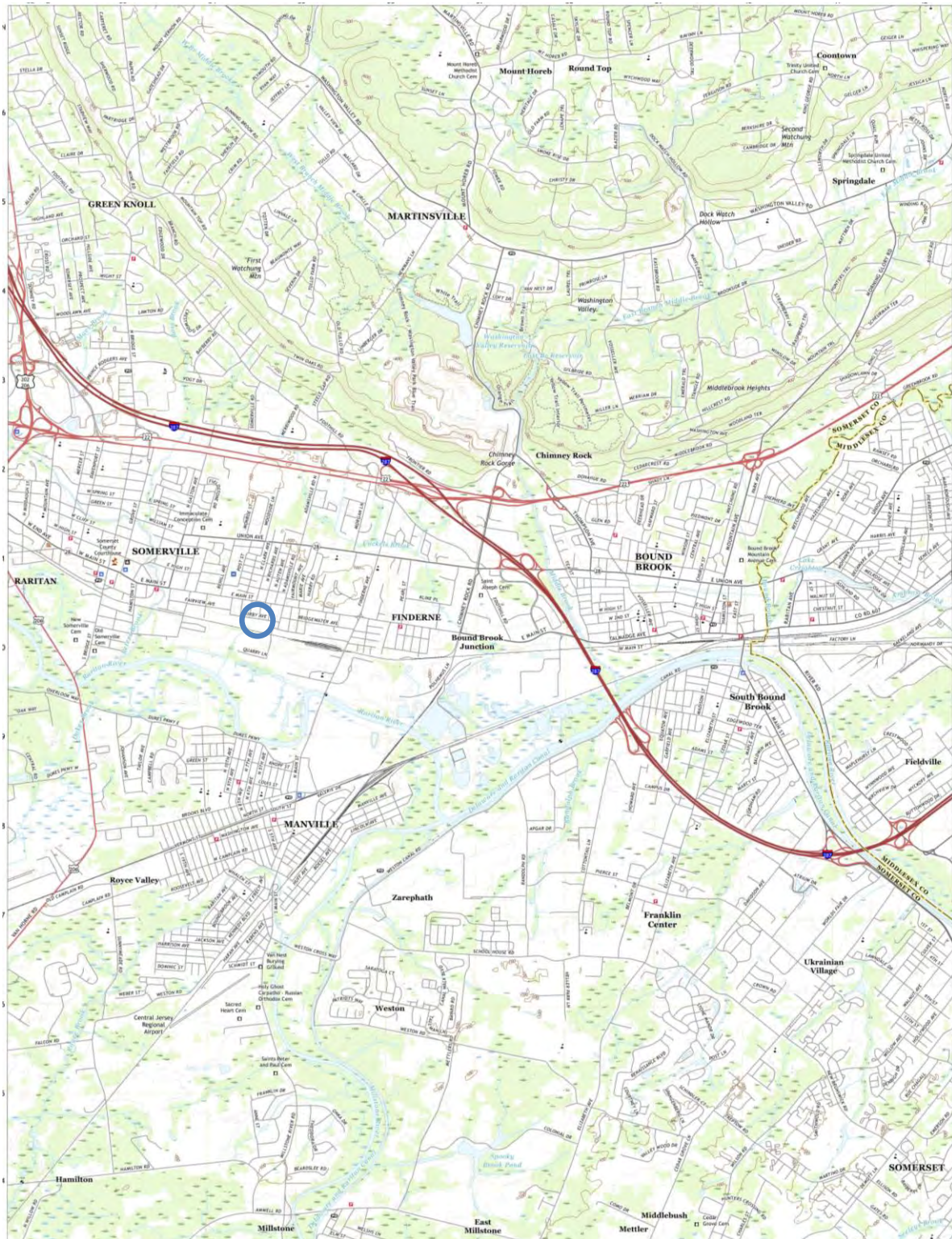
The engineering controls preventing public exposure to contaminants will be comprised of impervious materials. A Deed Notice will be filed with the Somerset County Registrar and a

Remedial Action Permit – Soil (RAP-Soil) will be obtained from the NJDEP. To address the historic fill impacted groundwater contamination, a Classification Exception Area (CEA) was previously proposed for NJDEP approval.

9.0 CONCLUSIONS

The Site / Remedial Investigation Report documents the activities completed by EMG in relation to the five (5) AOCs listed below for the former book distribution facility located at 50 Kirby Avenue, Somerville, Somerset County, New Jersey. The site is identified as Block 1, Lot 4.01 and is currently an unoccupied warehouse.

Based on the results of the analyses and visual observations, the soils have been fully delineated for AOC-1 through AOC-4. The PCB impact to soils associated with AOC-1 and AOC-2 are surficial, since PCB contaminants were only reported in soils at up to two (2) feet below grade. For AOC-3, historic fill material was observed on portions at the west side of the Property encompassing an area of approximately 3.1 acres at varying depths between 1 and 6 feet below grade. Groundwater associated with AOC-2 & AOC-3 will be addressed with a Virtual Classification Exception Area (CEA). The Polycyclic Aromatic Hydrocarbon (PAH) and Target Analyte List Metals (TAL Metals) concentrations along the north and northeast portions of the site are considered DAP, AOC-4. Lastly, for AOC-5, concrete expansion joints and exterior caulk which detected elevated PCBs, PCB Containing Building Material will be disposed off-site at an approved recycling facility and documented in the remedial action report (RAR). All AOC areas are depicted on Figure 4 and Figure 5.

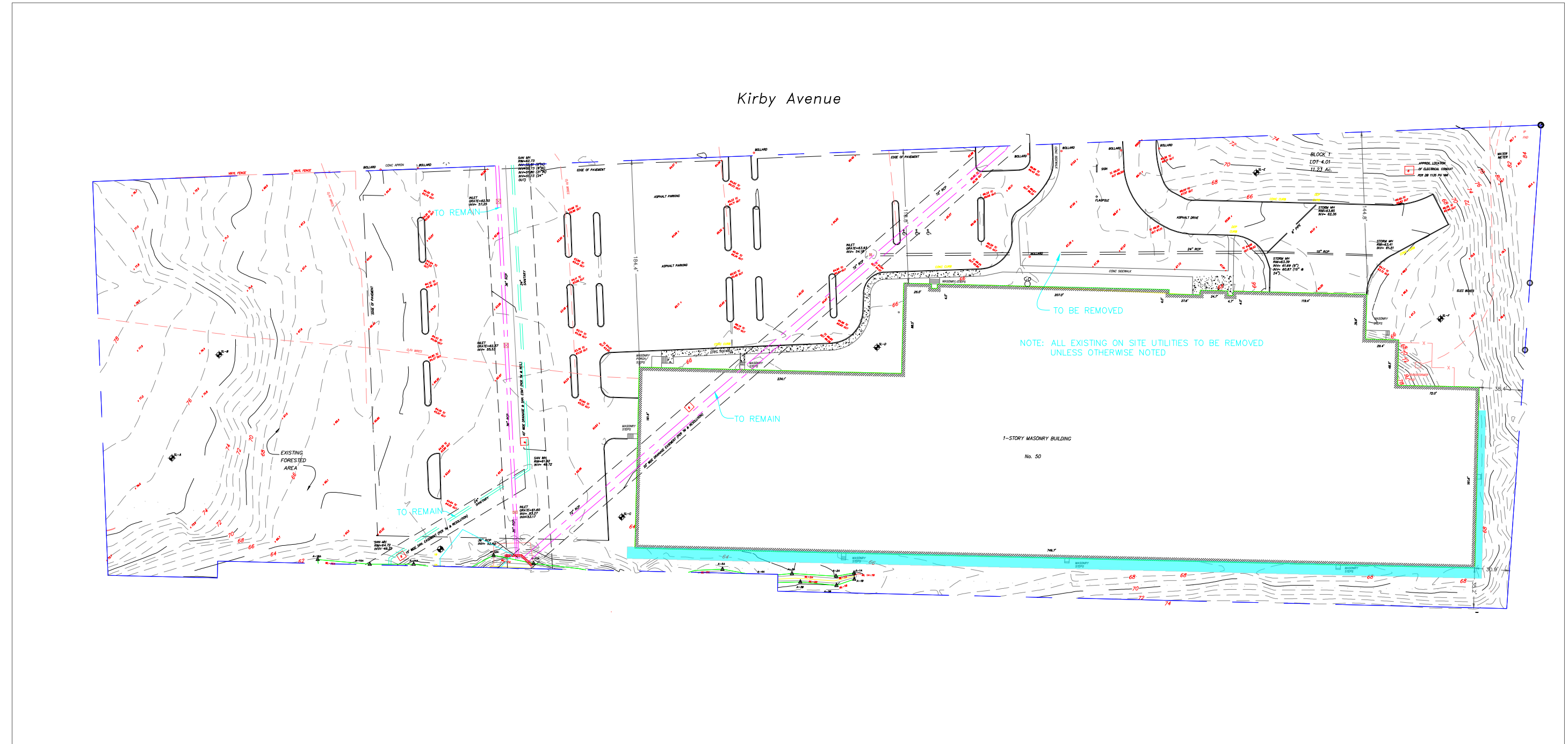


Scale: 0  0.25 Mi

Coordinate System: Universal Transverse Mercator. Datum: WGS-84
Image courtesy of the U.S. Geological Survey

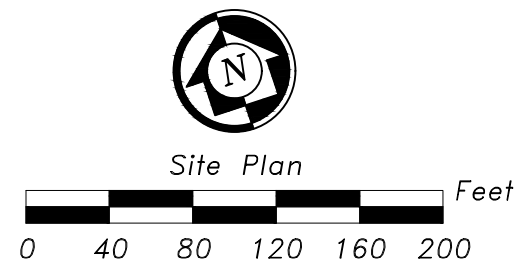
Figure 1 **Site Location Map**

Unoccupied Warehouse Property
50 Kirby Avenue
Somerville, Somerset County, NJ



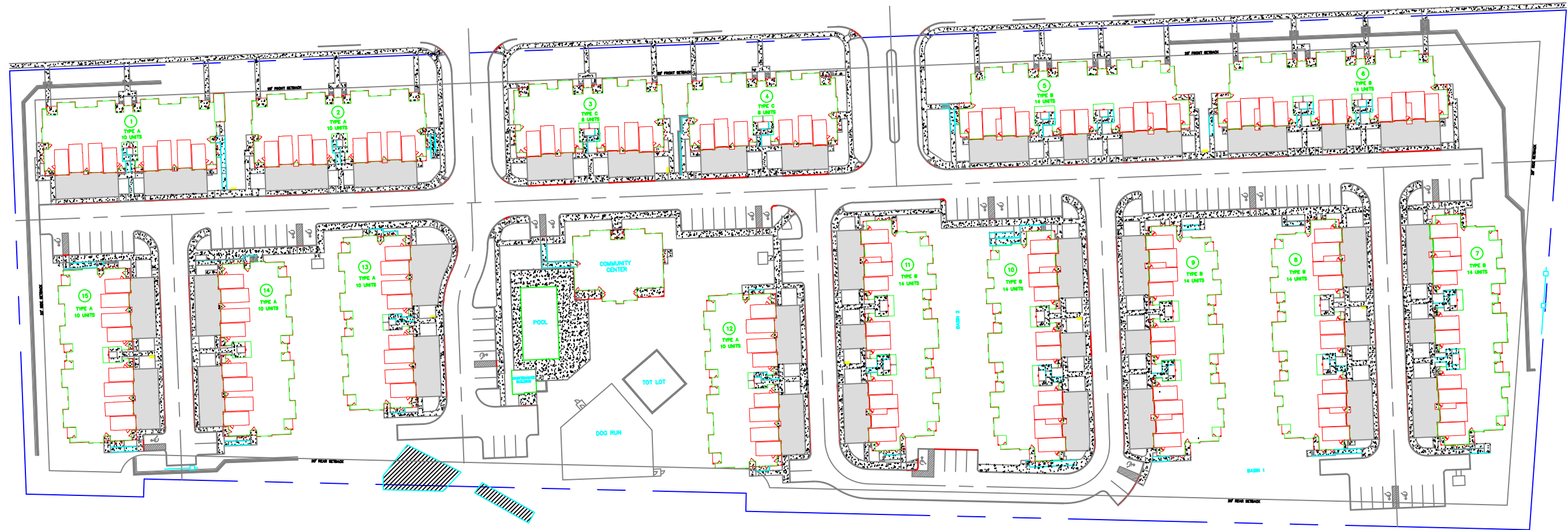
Original Current Site Conditions Drawing Prepared by Daniel P Hundley
Crest Engineering Associates INC, March 23, 2018

Figure 2



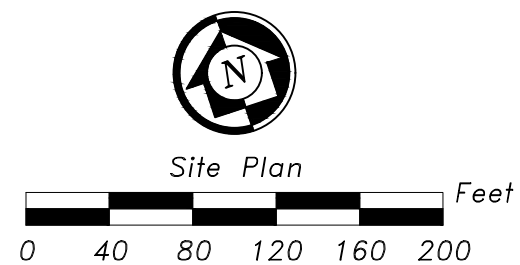
ENVIRONMENTAL MANAGEMENT GROUP 1705 BAY AVENUE, POINT PLEASANT, NJ 08742	
Existing Site Conditions Plan w Elevation	
Unoccupied Warehouse Property 50 Kirby Avenue Somerville, Somerset County, NJ	SCALE: AS NOTED DRAWN BY: KNG JOB: DWG. NO.
	DATE: 8/12/2021 CHKD BY: RLG

Kirby Avenue



Original Proposed Site Development Drawing Prepared by Daniel P Hundley
Crest Engineering Associates INC, March 23, 2018

Figure 3

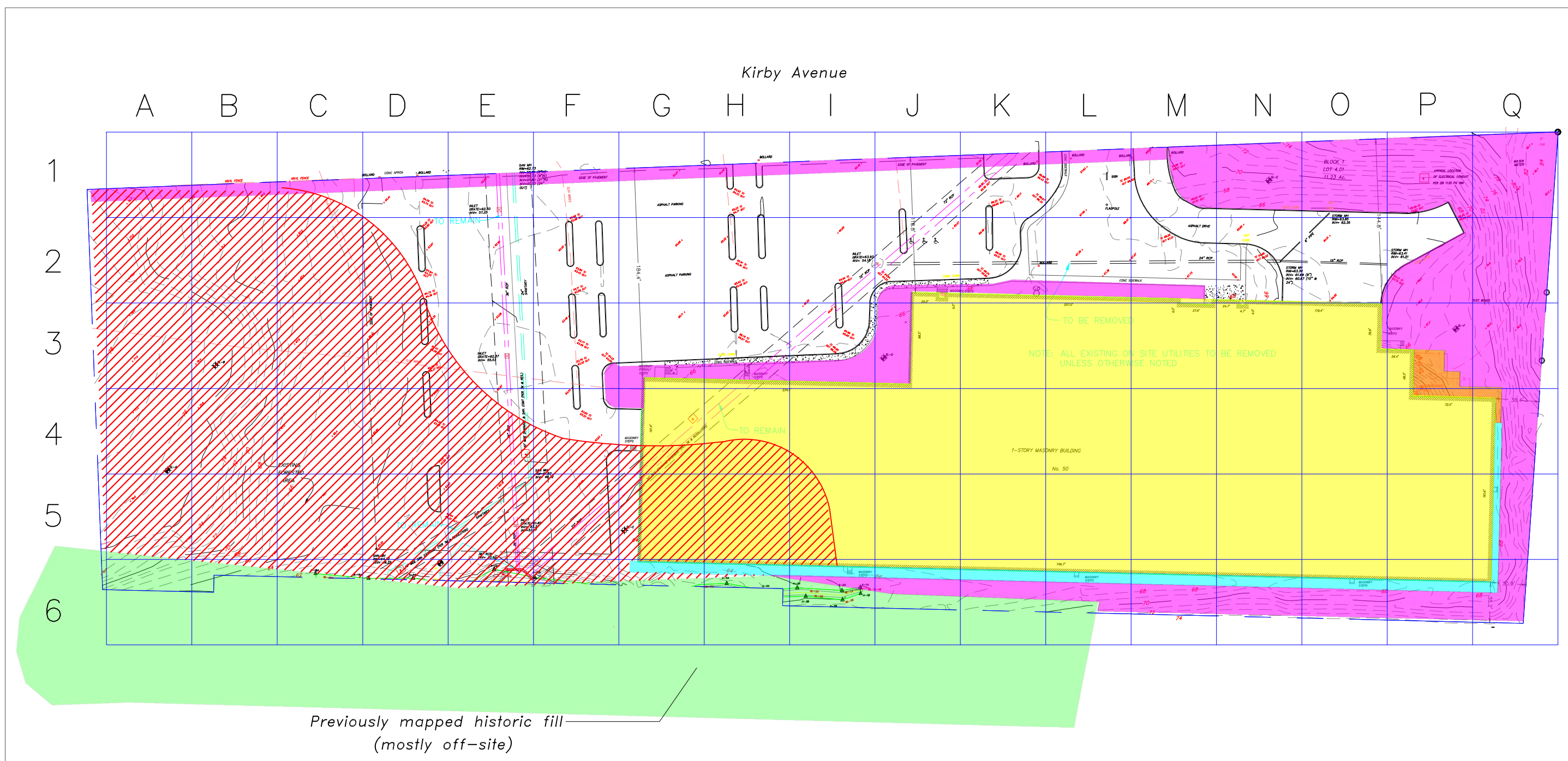


ENVIRONMENTAL MANAGEMENT GROUP
1705 BAY AVENUE, POINT PLEASANT, NJ 08742

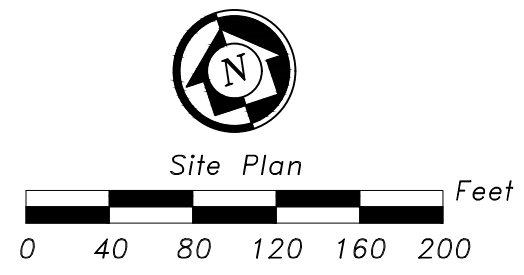
Proposed Site Development Plan

Unoccupied Warehouse Property
50 Kirby Avenue
Somerville, Somerset County, NJ

SCALE: AS NOTED	DATE: 8/12/2021
DRAWN BY: KNG	CHKD BY: RLG
JOB:	
DWG. NO.	



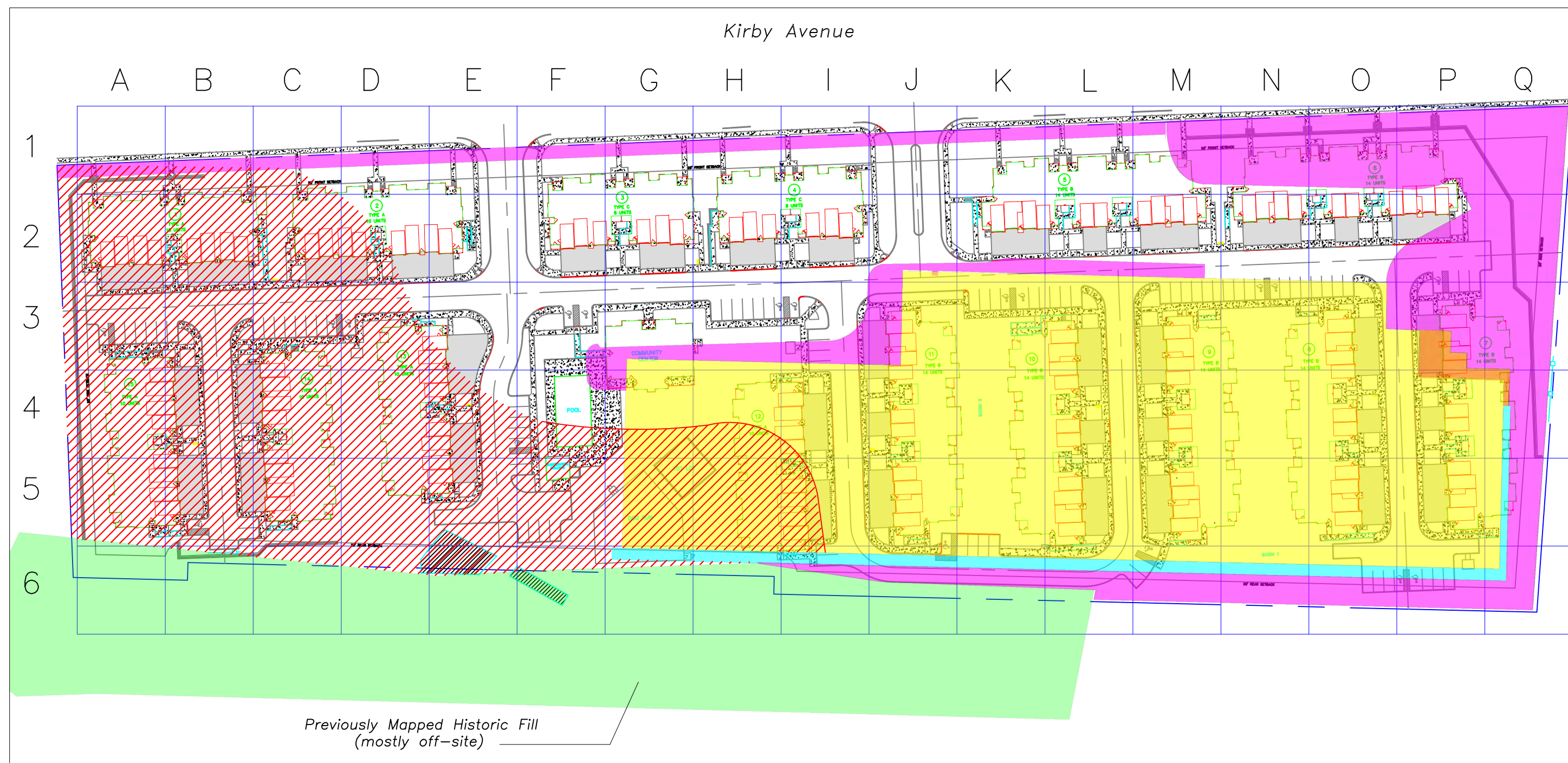
Original Current Site Conditions Drawing Prepared by Daniel P Hundley
Crest Engineering Associates INC, March 23, 2018



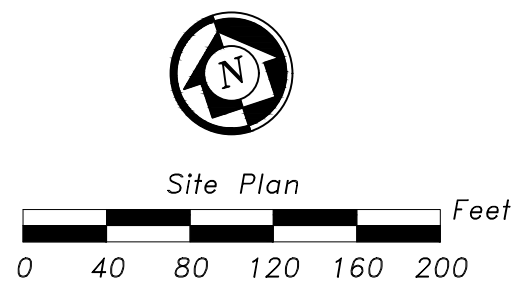
Area of Concern (AOC)	AOC Description	AOC Color
AOC-1	Transformer Pad Area	Orange
AOC-2	PCB Impacted Historic Fill	Cyan
AOC-3	Historic Fill Material	Red Hatched
AOC-4	Diffuse Anthropogenic Pollutants (DAP)	Magenta
AOC-5	PCB Containing Building Material (Concrete Expansion Joints & Exterior Caulk)	Yellow

Figure 4

ENVIRONMENTAL MANAGEMENT GROUP	
1705 BAY AVENUE, POINT PLEASANT, NJ 08742	
AOC Locations with 75x75 grid – Current Site Conditions	
Unoccupied Warehouse Property 50 Kirby Avenue Somerville, Somerset County, NJ	SCALE: AS NOTED DATE: 8/12/2021 DRAWN BY: KNG CHKD BY: RLG JOB: DWG. NO.



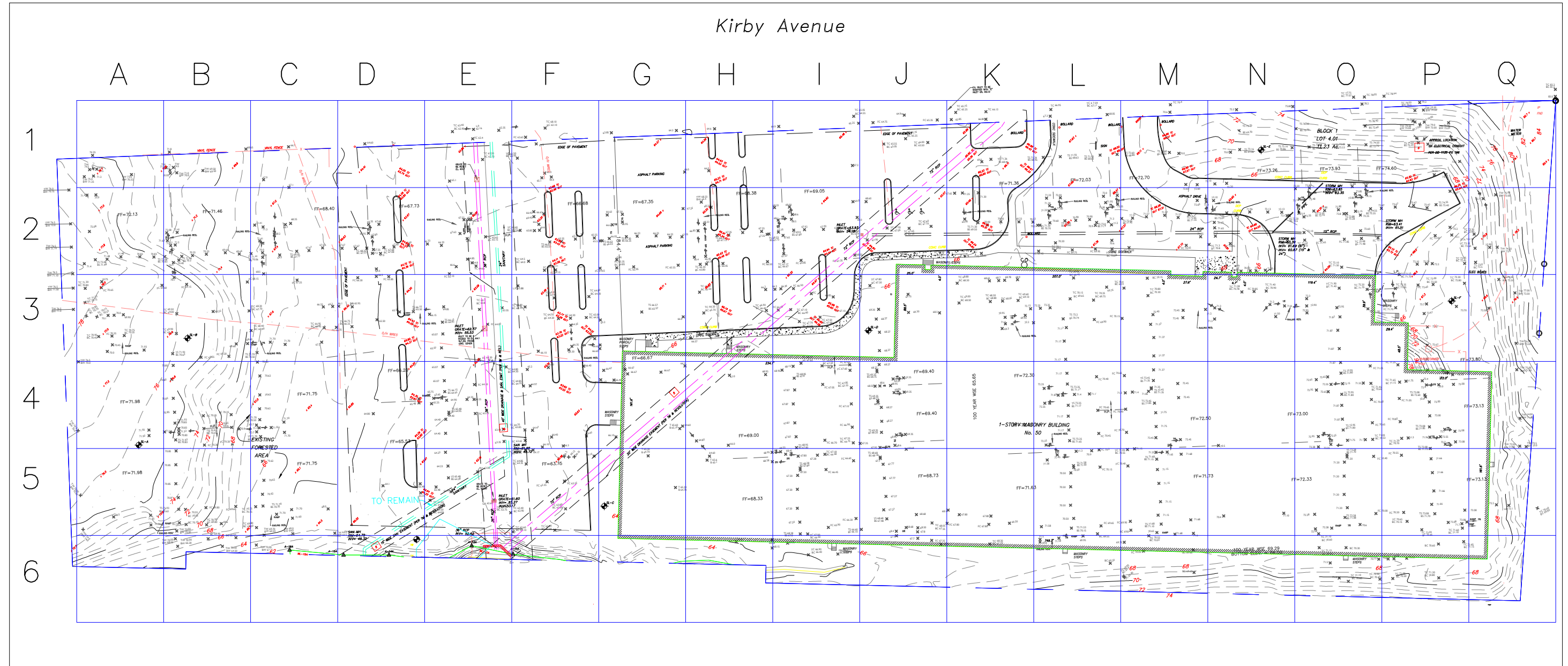
Original Proposed Development Drawing Prepared by Daniel P Hundley
Crest Engineering Associates INC, March 23, 2018



Area of Concern (AOC)	AOC Description	AOC Color
AOC-1	Transformer Pad Area	Orange
AOC-2	PCB Impacted Historic Fill	Cyan
AOC-3	Historic Fill Material	Hatched
AOC-4	Diffuse Anthropogenic Pollutants (DAP)	Magenta
AOC-5	PCB Containing Building Material (Concrete Expansion Joints & Exterior Caulk)	Yellow

Figure 5

ENVIRONMENTAL MANAGEMENT GROUP	
1705 BAY AVENUE, POINT PLEASANT, NJ 08742	
AOC Locations with 75x75 grid – Proposed Development	
Unoccupied Warehouse Property 50 Kirby Avenue Somerville, Somerset County, NJ	
SCALE: AS NOTED	DATE: 8/12/2021
DRAWN BY: KNG	CHKD BY: RLG
JOB:	
DWG. NO.	



Original Site Drawings Prepared by Daniel P Hundley
Crest Engineering Associates INC, March 23, 2018

Current Site Spot Elevations presented in red
Post Development Spot Elevations presented in black



Site Plan



Figure 6

ENVIRONMENTAL MANAGEMENT GROUP
1705 BAY AVENUE, POINT PLEASANT, NJ 08742

Spot Elevations Current & Post Development

Unoccupied Warehouse Property
50 Kirby Avenue
Somerville, Somerset County, NJ

SCALE: AS NOTED	DATE: 8/12/2021
DRAWN BY: KNG	CHKD BY: RLG
JOB:	
DWG. NO.	



**ENVIRONMENTAL
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1705 Bay Avenue, Suite 6
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Phone: (732) 282-2222
E-mail: Info@EMG-Environmental.com



January 3, 2020

**REGIONAL ADMINISTRATOR
US ENVIRONMENTAL PROTECTION AGENCY
REGION II
290 BROADWAY
NEW YORK, NY 10007-1866**

**REGARDING: NOTIFICATION OF SELF-IMPLEMENTING ON-SITE CLEANUP
AND DISPOSAL PLAN
50 KIRBY AVENUE
BLOCK 1, TAX LOT 4.01
BOROUGH OF SOMERVILLE
SOMERSET COUNTY, NJ
DEP PROGRAM INTEREST (PI) # 19-04-23-1330-05
EMG FILE: 16-125**

To Whom It May Concern:

On behalf of the owner of the above referenced property, CT-CTO 750 Kirby LLC, Environmental Management Group, Inc. (EMG) submits this Self-Implementing On-site Cleanup and Disposal Plan (SIP) as per 40 CFR, Part 761.6 183.

This plan was prepared and is submitted to detail the proposed excavation and off-site disposal of soils classified as PCB contaminated waste present at the above referenced property.

Please direct any questions or comments that you may have regarding this plan to my attention.

VERY TRULY YOURS,

ENVIRONMENTAL MANAGEMENT GROUP, INC.

**PETER RITCHINGS
PRESIDENT**

PR:LSS

CC: CAREY TAJFEL, FRANCINE TAJFEL, DEENA MANN - CT-CT07 50 KIRBY LLC
RAKESH GANTA - RLG ENVIRONMENTAL, INC.

COMPREHENSIVE ENVIRONMENTAL CONSULTING SERVICES



**ENVIRONMENTAL
MANAGEMENT
G R O U P**

1705 Bay Avenue, Suite 6
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Phone: (732) 282-2222
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**SELF-IMPLEMENTING ON-SITE CLEANUP
AND DISPOSAL PLAN**

**50 KIRBY AVENUE
BLOCK 1, TAX LOT 4.01
BOROUGH OF SOMERVILLE
SOMERSET COUNTY, NEW JERSEY**

PREPARED ON BEHALF OF

**CT-CT07 50 KIRBY LLC
399 MONMOUTH STREET
EAST WINDSOR, NJ 08520**

PREPARED BY

**ENVIRONMENTAL MANAGEMENT GROUP, INC.
1705 BAY AVENUE, SUITE 6
PT. PLEASANT, NEW JERSEY 08740**

**DATE: JANUARY, 2020
EMG FILE: 16-125**

COMPREHENSIVE ENVIRONMENTAL CONSULTING SERVICES

TABLE OF CONTENTS

SECTION	PAGE
1.0 INTRODUCTION	1
1.1 BACKGROUND	1
1.2 PLAN ORGANIZATION	2
2.0 SITE CHARACTERIZATION	2
2.1 SAMPLE COLLECTION	3
2.2 DATA USABILITY ASSESSMENT	4
2.3 SITE CHARACTERIZATION RESULTS	5
2.3.1 SOILS	5
3.0 REMEDIATION PLAN	6
3.1 GENERAL OVERVIEW OF PROPOSED REMEDIATION	6
3.2 SITE PREPARATION AND CONTROLS	6
3.3 SOIL REMOVAL	7
3.4 VERIFICATION SAMPLING	7
3.5 STORAGE AND DISPOSAL	8
3.6 SITE RESTORATION	8
3.7 RECORDKEEPING AND DOCUMENTATION	8
4.0 SCHEDULE	8

LIST OF APPENDICES

APPENDIX A	FIGURES
	FIGURE 1 – SITE LOCATION
	FIGURE 2 – PCB DELINEATION AND DATA TABLES
APPENDIX B	WRITTEN CERTIFICATION

1.0 INTRODUCTION

Environmental Management Group, Inc. (EMG) was retained by the property owner, CT-CTO7 50 Kirby LLC to conduct a Site Investigation/Remedial Investigation in connection with the apparent release from a pad mounted electrical transformer formerly located near the northeast corner of the vacant commercial building present at the subject property. The Site Investigation/Remedial Investigations revealed the PCB impacted soil above the Impact to Groundwater Soil Screening Level (IGWSSL), Residential Direct Contact Soil Remediation Standard (RDCSRS) of 0.2 and the Nonresidential Direct Contact Soil Remediation Standard (NDCSRS) of 1.0.

Throughout the Site Investigation, Remedial Investigation and Remedial Actions, field consulting services were provided by RLG Environmental, Inc. as subcontracted by EMG.

To comply with the U.S. Environmental Protection Agency (EPA) requirements for notification, a **Self-Implementing On-Site Cleanup and Disposal Plan (SIP)** per 40 CFR Part 761.61(a)(3) follows. This plan details the proposed excavation and off-site disposal of soils classified as PCB contaminated waste. A Site Location Map is included as Figure 1 and a Site Plan including sample locations and proposed excavation limits is depicted in Figure 2.

1.1 BACKGROUND

The subject property has been vacant since 2002. For the period 1966 through 2002, the subject property operated as a wholesale book distributor by the name of Baker and Taylor. Site operations generally involved receiving, warehouse storage and shipping/ distribution of books from the subject location. Baker and Taylor primarily distributed books to public libraries and schools.

PCB impacted soil in the area of a former pad mounted electrical transformer was first detected during a Limited Phase II Environmental Investigation performed in connection with the subject property by the firm of Environmental Consulting, Inc. (ECI) in November 2014. ECI Soil Sample B-14 registered PCBs at 0.22 parts per million (ppm).

On behalf of the property owner, EMG reported the apparent transformer release to Public Service Electric and Gas (PSE &G), the owner of the transformer. A Service Removal Request Form was submitted to PSE&G.

In response to the reported release, PSE&G remove the transformer in April 2019. PSE&G also excavated an area of apparently impacted soil around the transformer pad and collected a series of post excavation and background soil samples on April 2, 2019. A sample of the remaining dielectric fluid was collected from within the transformer and analyzed.

The results of the transformer fluid analysis were non-detect for PCBs. Based on the analytical results for the dielectric fluid sample, PSE&G concluded that the former pad mounted transformer was non-PCB containing.

The transformer was reportedly installed in 1970. Post excavation soil samples collected by PSE&G did reveal soils in the vicinity of the former pad mounted transformer impacted by both

PCBs and Polycyclic Aromatic Hydrocarbons (PAHs). The background soil sample collected by PSE&G outside of the transformer enclosure also revealed PCB at 0.3 ppm and benzo(a)pyrene (BAP) 0.42 ppm.

On the basis of the analytical results from the transformer fluid analysis, PSE&G indicated that they would take no further action in connection with the former pad mounted transformer.

In April 2019, a Confirmed Discharge Notification (CDN) was submitted on behalf of the property owner by Licensed Site Remediation Professional (LSRP) Rakesh Ganta (License #591596). On May 14, 2019, the Bureau of Case Assignment and Initial Notice provided written verification of the receipt of the CDN and the subject property was assigned Case Tracking #175615, Program Interest (PI) #805633, Communication Center #19-04-23-1332-05 and Activity Reference #CDN190001.

1.2 PLAN ORGANIZATION

This Remediation Plan is organized into the following sections:

Section 2: Site Characterization

The site characterization section provides a summary of the soil characterization data collected to date and delineates the nature and extent of PCBs. This section also includes analytical summary data tables.

Section 3: Remediation Plan

The remediation plan includes a discussion of the remedial objectives and cleanup levels, the remediation approach for PCB-affected media, and a verification sampling approach. This section includes a map depicting the initial excavation limits, the areas proposed for remediation and the locations for post-remediation verification sampling.

Section 4: Schedule

The implementation and reporting schedule is provided in Section 4. Additionally, the written certification signed by the owner of the property and required per 40 CFR 761.61(a) is provided in Appendix A.

2.0 SITE CHARACTERIZATION

This section provides a discussion of the nature and extent of PCB affected soils at the subject property consistent with the requirements of 40 CFR 761.61(a)(3). Accordingly, PCB affected

soils are identified, described and depicted on Figure 2 of this report that identifies sample locations to provide a cross reference to the Data Summary Tables provided.

In addition to the soil sample collection and analysis conducted by ECI on October 30, 2014 and the April 2, 2019 PSE&G post excavation and background soil sample collection and analysis, EMG collected soil samples from the area of concern on the following dates:

- March 22, 2019 – four (4) delineation soil samples collected from four (4) boring locations;
- May 7, 2019 – ten (10) delineation soil samples collected from five (5) boring locations
- June 12, 2019 – seven (7) delineation soil samples collected from five (5) boring locations;
- July 2, 2019 – two (2) delineation soil samples collected from two (2) boring locations;
- August 28, 2019 – twenty (20) post remediation soil samples collected from fifteen (15) boring locations (limited remediation was conducted and soils were placed on plastic onsite, pending disposal);
- October 2, 2019 – five (5) delineation soil samples collected from five (5) boring locations;
- October 30, 2019 – four (4) delineation soil samples collected from three (3) boring locations;
- November 8, 2019 – five (5) delineation soil samples collected from five (5) boring locations; and
- December 5, 2019 – five (5) samples collected from five (5) boring locations

The following sections describe the selection of sample locations, sample collection methods, and the results of the characterization data. A map depicting the locations of all soil samples collected by EMG is presented as Figure 2.

2.1 SAMPLE COLLECTION

The first sampling event conducted by EMG for samples designated B-16 to B-19 were collected at a depth of 0.0 to 0.5 feet. The samples were concentrated in the area of the former pad mounted transformer.

On April 2, 2019, a total of seven (7) soil samples were collected (00-1 through 00-7) at various depths ranging from approximately 0.5 feet to 2.3 feet.

On May 7, 2019, total of ten (10) soil samples were collected from five (5) individual boring locations. Sample depths range from 0.5 feet to 1.5 feet.

An additional seven (7) soil samples were collected on June 12, 2019, and two (2) soil samples were collected on July 2, 2019. All sample depths range from 0.5 to 1.5 feet below grade.

The August 28, 2019 sampling event involved the collection of twenty (20) soil samples ranging in depth from 0.5 to 2 feet. These samples were collected upon a minor remediation event. All

soils are stockpiled onsite for disposal at an approved facility. Upon additional delineation and remediation efforts, all stockpiled soils will be properly disposed at an EPA approved disposal facility.

On October 2, 2019, a total of five (5) delineation soil samples were collected.

The October 30, November 8 and December 5, 2019 sampling events involved the collection of a combined total of nineteen (19) delineation soil samples.

All soil sampling was conducted in accordance with generally accepted procedures for collecting surface soils for the purpose of environmental analysis. All samples were collected from specified interval by stainless steel hand auger. Soils were then placed into laboratory supplied containers. All equipment was decontaminated between each sampling location to limit the potential for cross-contamination. All samples were entered in the project field book, logged on a standard chain of custody form, and stored on ice for delivery to the laboratory.

Analysis of all samples collected by EMG was performed by Hampton-Clarke Veritech Laboratories, Fairfield, NJ (NJDEP Certified Laboratory #14622. All samples were analyzed for PCBs using USEPA Method 8082. Laboratory analytical data sheets and QA/QC information are provided in Appendix C of this report.

2.2 DATA USABILITY ASSESSMENT

A data quality assessment was conducted to evaluate the usability of the site characterization data. The results were validated by a review of sample custody, holding times, surrogates, method blanks, matrix spike/matrix spike duplicates, laboratory control samples, and field duplicates. The assessment was performed in general conformance with USEPA Region 2 Guidelines and the Quality Control Guidelines. No duplicate samples were collected.

Representativeness of the data was evaluated qualitatively utilizing site use information and sampling data. Consistent procedures and laboratory analysis of the data were achieved. Sample containers were packed on ice and were accompanied by complete chain of custody forms from the time of sample collection until laboratory delivery. All samples were analyzed within the allowable holding time for their respective analyses. No analytes were detected in the laboratory batch blank analysis, indicating that there were no interferences introduced at the laboratory during sample analysis. All quality control criteria for initial calibration and calibration verification were within acceptable limits.

The data packages were evaluated to ensure that all sample and associated quality assurance results were available. The completeness review indicated that all collected samples were analyzed and all quality control results were available to complete the data validation process.

Based on review of the existing site data, the data adequately represents the materials tested, and the samples collected to date are considered usable for the purposes of characterizing PCB-affected media in accordance with 40 CFR Part 761.

2.3 SITE CHARACTERIZATION RESULTS

As previously noted, the subject property is presently vacant. Commercial operations ceased at the subject property in 2002.

The future intended use of the subject property is multi-family residential.

2.3.1 SOILS

As defined by the EPA, the Site is considered a Low Occupancy Area. **Low Occupancy Area** - Any area where PCB remediation waste has been disposed of on-site and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: less than 840 hours (an average of 16.8 hours per week) for non-porous surfaces and less than 335 hours (an average of 6.7 hours per week) for bulk PCB remediation waste.

TSCA Self-Implementing Criteria In Defined Low Occupancy Areas - Where occupancy will not exceed an average of 6.7 hours/week, PCBs up to 25 ppm may remain without engineering or institutional controls. PCBs may remain at between 25 and 50 ppm when access is restricted by fencing and warning signs are provided. PCBs may remain at levels between 25 and 100 ppm when appropriately capped (note no fencing required). 40 CFR 761.61(a)7 defines a cap as being a minimum of 6" of asphalt or concrete (or similar material), or 10" of compacted soil. The TSCA cap requirements may be different than that required by the NJDEP Site Remediation Program (SRP) in terms of other geotechnical properties. Additionally, NJDEP SRP policy does not recognize these occupancy and concentration based scenarios and requires a deed notice above 0.2 ppm and a cap when PCBs exceed 0.2 ppm or 1 ppm residential/non-residential scenarios, respectively. Where post-excavation sampling is being conducted to assure attainment of NJDEP SRS/TSCA soil cleanup criteria, the guidance provided in NJDEP Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil.

Therefore, the soil characterization data was compared to the unrestricted use NJDEP SRP clean-up level of 0.2 ppm which meets the allowable concentration levels under 40 CFR 761.61(a) for bulk PCB remediation waste. The data indicate that PCBs are present in the soils in the area of the former pad mounted electrical transformer at the northeast corner of the vacant building and along the northerly side of the vacant building from non-detect to 8.1 ppm. Generally, most of the soil samples collected showed concentrations of PCBs to be below 1 ppm.

A summary of the analytical results is presented on Table 1 and sample locations are shown on Figure 2.

The soil characterization results are sufficient to draw conclusions regarding the horizontal and vertical extent of PCBs in Site soils. The highest concentrations of PCB contamination were detected in surface soils, 0-0.5 feet in the area of the former transformer enclosure and near the southeast building corner and along the building perimeter.

Further details regarding the remediation plan for the contaminated soils are provided in Section 3.0

3.0 REMEDICATION PLAN

3.1 GENERAL OVERVIEW OF PROPOSED REMEDIATION

The work described in this plan is limited to the remediation activities to be conducted for onsite soils. The proposed remediation activities will include the following:

- Removal and off-site disposal of PCB-impacted soil as bulk PCB remediation waste;
- Collection of verification samples for PCB analysis

Backfilling of the shallow excavations is not proposed. Following the successful remediation of the impacted soils, the on-site building will be completely demolished to facilitate the redevelopment of the subject property.

Prior to the remedial activities, site preparation and controls will be established and implemented. PCB-impacted soils will be excavated and transported off-site for disposal at an approved facility. Based upon the levels of PCBs detected in the soils of the subject property, the excavated contaminated soil will be transported to a non-hazardous waste disposal facility.

The clean-up activities are proposed to be conducted under a self-implementing cleanup and disposal plan per 40 CFR 761.61(a). Given building conditions and use, the applicable cleanup goal for residual PCBs in adjacent soils is the most stringent NJDEP SRP standard of 0.2 ppm.

3.2 SITE PREPARATION AND CONTROLS

Prior to initiating the soil excavation, the following site controls will be implemented:

- A Health & Safety Plan will be developed specific to the work activities. All workers will follow applicable Federal and State regulations regarding the work activities, including but not limited to OSHA regulations, respiratory protection, personal protective equipment, etc.;
- Additional notifications and plans required for the work activities will be prepared and submitted for approval, as needed;
- Prior to any work, the boundaries of the excavation area will be marked, properly secured, and a mark out will be called to confirm the presence of any underground utilities;
- Access to the active work areas will be controlled through fencing with controlled access points;
- Water misting will be used as a dust suppressant, as appropriate;

- No air monitoring is proposed, since the dust levels are minimal based on the type of soils encountered. The soils are generally red brown fine sand with silt and clay and thereafter some fractured shale starting at 3 to 4 feet below grade. However, if during the remediation event dust levels are high, then air monitoring within the support zone and perimeter to this zone will be conducted during the active remediation event.

3.3 SOIL REMOVAL

All soils designated for removal will be excavated and transported offsite for disposal to a fully approved nonhazardous waste soil disposal facility. Soil removal activities will be conducted in compliance with 40 CFR 751.61 and in accordance with all NJDEP guidance governing site remediation. The remediation goal is to remove contaminated soils and verify that remaining soil concentrations are less than the NJDEP Residential Direct Contact Soil Remediation Standard (RDCSRS) of 0.2 ppm. Post-removal verification sampling will be conducted in all soil excavation areas to demonstrate that the clean-up goals have been achieved.

The red dashed line shown in Figure 2 documents the current known excavation limits. The bulk of the material to be removed is located on the northwest side of the Site structure. This area is approximately 5,000 square feet. Based on the collected data the average depth of the excavation will be 1-2 feet. Based on this data, it is expected that approximately 500 tons of impacted material will be removed from the property and transported offsite for proper disposal.

3.4 VERIFICATION SAMPLING

Following completion of the initial soil excavation, post-excavation samples will be collected in accordance with the NJDEP Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil and 40 CFR 761.280 (Subpart O). Based on the conceptual site model for the release and transport pathway, the defined extent of PCB-affected soils and excavation areas, and the existing data, a verification sampling frequency of one sample per 30 linear feet along the excavation perimeter is proposed. Additional samples will be collected from the base of the excavation at equal intervals. The proposed verification sampling plan is shown on Figure 2.

Additional details regarding the verification sampling plan are provided below:

- All samples will be transported to the laboratory under standard chain of custody procedures, extracted using USEPA Method 3540C (Soxhlet extraction), and analyzed for PCBs using USEPA Method 8082.
- Upon receipt of the analytical results, the sample data will be compared to the clean-up levels:
 - If less than 0.2 ppm, the clean-up will be considered complete;

- If *greater than 0.1 ppm*, additional soil excavation activities will be performed in the respective grid areas and verification samples collected at the frequency indicated above using offset sampling locations. This process will be repeated until a cleanup level is less than 0.2 ppm is achieved.

3.5 STORAGE AND DISPOSAL

The following activities will be completed with regard to the proper storage and disposal of PCB remediation waste:

- **At the end of each work day, any open excavations will be secured by temporary fencing;**
- **The excavated soil will be placed on 6 ml plastic on an asphalt paved surface and covered with 6 ml plastic;**
- Upon completion of the work, the stockpiled soils will be transported off-site under manifest or bills of lading for disposal at an approved disposal facility. Soil disposal is planned for one of the following approved facilities:
 - Clean Earth of North Jersey

Copies of all manifests, waste shipment records, bills of lading, and certificates of disposal will be collected and provided as part of the final report to EPA.

3.6 SITE RESTORATION

Following the successful remediation of the PCB impacted soil, the shallow excavated area will not be backfilled. This is due to the fact that the on-site commercial building will be completely demolished to facilitate new construction. The demolition and development activities will include earthwork such as filling, grading and excavating. The site controls will be dismantled and all wastes will be transported off-site for proper disposal.

3.7 RECORDKEEPING AND DOCUMENTATION

Following completion of the work activities, records and documents per 40 CFR Part 761 will be generated and maintained at one location. These documents will be made available to EPA upon request. A final report documenting the completion of the work activities and including but not limited to a description of the work activities, verification analytical results, volumes of disposed materials, and waste disposal documentation will be prepared and submitted to EPA. Additionally, any NJDEP Site Remediation Program reporting requirements or submittals will also be completed.

4.0 SCHEDULE

Remediation activities will be initiated within 30 days from the submittal of this plan. Based on the PCB delineation results, the remediation and verification sampling is expected to be

completed in 20 days. Following the receipt of required disposal and backfill documentation and the final laboratory reports, the soil removal activities described in this plan will be documented in accordance with any EPA approval conditions and the NJDEP reporting requirements for issuance of a Response Action Outcome by the Licensed Site Remediation Professional (LSRP) of record for this case. All remediation and reporting requirements will be completed prior to the NJDEP Remedial Action Regulatory Timeframe of April 2022.

APPENDIX A
FIGURES



Figure 1 – Site Location Map

BLOCK: 1
LOT: 4.01
MUNICIPALITY: BOROUGH OF SOMERVILLE
COUNTY / STATE: SOMERSET COUNTY / NEW JERSEY



JOB NO: 16-125

SOURCE: NJDEP GEO-WEB MAPPING PROGRAM
SCALE (APPROX.) 1" = N.T.S.

ENVIRONMENTAL MANAGEMENT GROUP, INC.
 1705 Bay Avenue – Suite 6 Phone: (732) 282-2222
 Point Pleasant, NJ 08742-4505 Fax: (732) 282-2225

Email: Info@EMG-Environmental.com



COMMERCIAL BUILDING
50 KIRBY AVENUE

TPH & PCB Results

Sample	Date	Depth	Time	PCBs - Aroclor (total) mg/kg	TPH (C9-C40) mg/kg
B16	3-22-19	0-0.5'	11:35	0.25	280
B17	3-22-19	0-0.5'	11:30	0.15	620
B18	3-22-19	0-0.5'	11:35	0.19	350
B19	3-22-19	0-0.5'	11:40	0.33	330
001	4-2-19	1.9-2.3'		ND	120
002	4-2-19	0.5-1.0'		2.8	320
003	4-2-19	0.5-1.0'		1.1	2,500
004	4-2-19	0.5-1.0'		0.47	240
005	4-2-19	0.5-1.0'		0.076	200
006	4-2-19	0.1-0.6'		0.38	NA
007	4-2-19	0.1-0.6'		4.2	98
50-1A	5-7-19	0-0.5'	12:05	4.5	88
50-2	5-7-19	0-0.5'	12:15	0.13	ND
50-2A	5-7-19	1.0-1.5'	12:20	0.082	ND
50-3	5-7-19	0-0.5'	12:25	ND	ND
50-3A	5-7-19	1.0-1.5'	12:30	ND	130
50-4	5-7-19	0-0.5'	12:45	0.48	5,700
50-4A	5-7-19	1.0-1.5'	12:50	ND	ND
50-5	5-7-19	0-0.5'	13:05	1.5	4,100
50-5A	5-7-19	1.0-1.5'	13:10	0.25	91
50-5B	6-12-19	0-0.5'	10:15	0.73	170
50-6	6-12-19	0-0.5'	11:30	0.17	130
50-7	6-12-19	0-0.5'	11:00	ND	130
50-7A	6-12-19	1.0-1.5'	11:15	ND	71
50-8	6-12-19	0-0.5'	10:35	0.06	330
50-8A	6-12-19	1.0-1.5'	10:45	ND	240
50-8B	6-12-19	0-0.5'	11:40	0.45	250
50-8C	7-2-19	1.0-1.5'	7:30	0.077	340
50-8D	7-2-19	0-0.5'	7:40	0.24	550

TPH & PCB Results (Cont.)

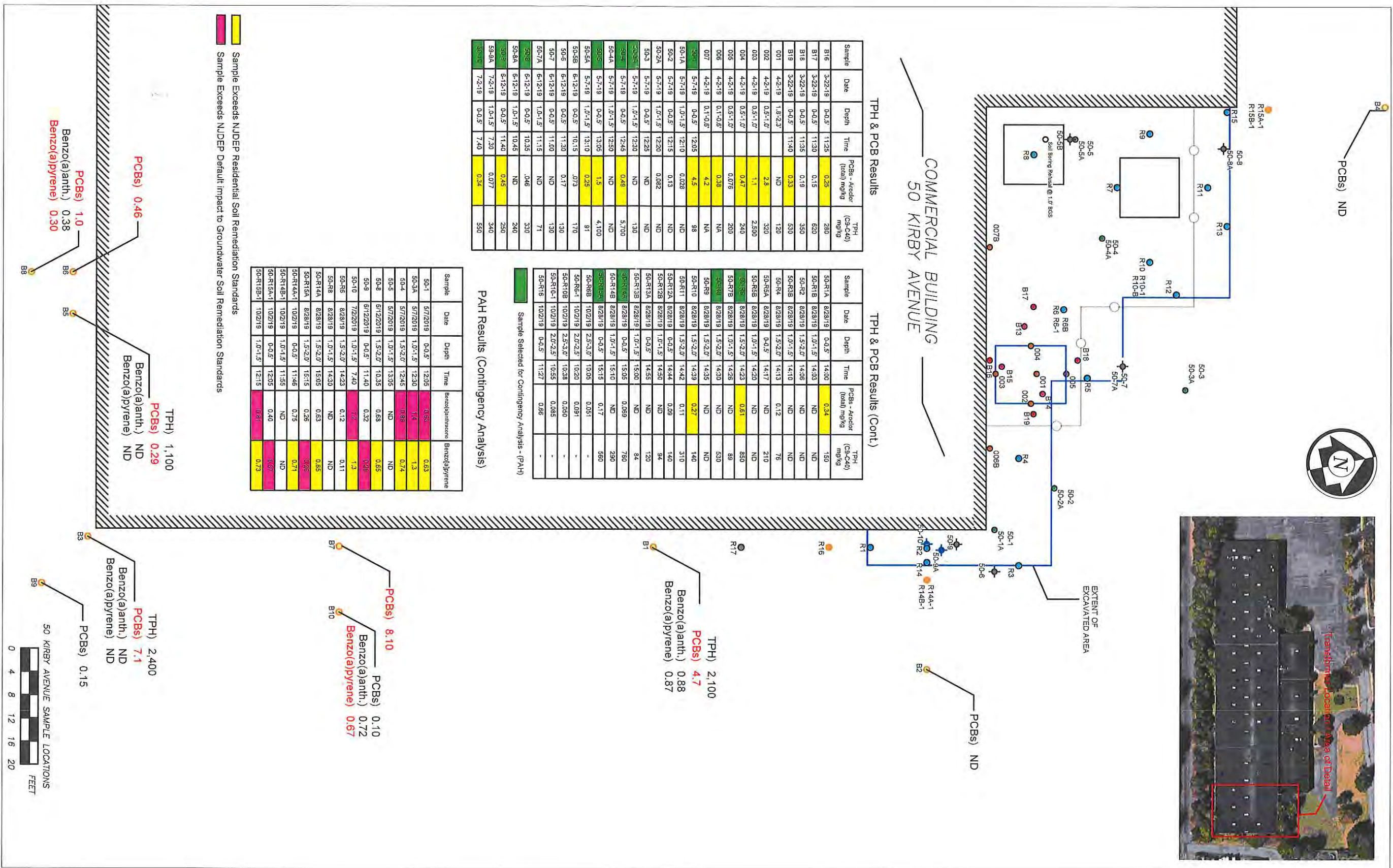
Sample	Date	Depth	Time	PCBs - Aroclor (total) mg/kg	TPH (C9-C40) mg/kg
50-R1A	8/28/19	0-0.5'	14:00	0.34	150
50-R1B	8/28/19	1.0-1.5'	14:03	ND	ND
50-R2	8/28/19	1.5-2.0'	14:06	ND	ND
50-R3B	8/28/19	1.0-1.5'	14:10	ND	ND
50-R4	8/28/19	1.5-2.0'	14:13	0.12	76
50-R5A	8/28/19	0-0.5'	14:17	ND	210
50-R5B	8/28/19	1.0-1.5'	14:20	ND	ND
50-R6	8/28/19	1.5-2.0'	14:23	0.61	850
50-R7B	8/28/19	1.0-1.5'	14:30	ND	88
50-R8	8/28/19	1.5-2.0'	14:30	ND	520
50-R9	8/28/19	1.5-2.0'	14:35	ND	ND
50-R10	8/28/19	1.5-2.0'	14:39	0.27	140
50-R11	8/28/19	1.5-2.0'	14:42	0.11	310
50-R12A	8/28/19	0-0.5'	14:44	0.09	140
50-R12B	8/28/19	1.0-1.5'	14:50	ND	94
50-R13A	8/28/19	0-0.5'	14:55	ND	126
50-R13B	8/28/19	1.0-1.5'	15:00	ND	84
50-R14B	8/28/19	0-0.5'	15:05	0.069	760
50-R14C	8/28/19	1.0-1.5'	15:10	ND	290
50-R14D	8/28/19	0-0.5'	15:15	0.17	560
50-R14E	10/2/19	2.5-3.0'	10:05	0.051	-
50-R14F	10/2/19	2.0-2.5'	10:20	0.091	-
50-R10B	10/2/19	2.5-3.0'	10:38	0.050	-
50-R10-1	10/2/19	2.0-2.5'	10:55	0.085	-
50-R16	10/2/19	0-0.5'	11:27	0.66	-

Sample Selected for Contingency Analysis - (PAH)

PAH Results (Contingency Analysis)

Sample	Date	Depth	Time	Benzo(a)anthracene	Benzo(a)pyrene
50-1	5/7/2019	0-0.5'	12:05	0.530	0.63
50-3A	5/7/2019	1.0-1.5'	12:30	1.4	1.3
50-4	5/7/2019	1.5-2.0'	12:45	0.88	0.74
50-5	5/7/2019	1.0-1.5'	13:05	ND	ND
50-8	6/12/2019	1.5-2.0'	10:35	0.68	0.65
50-8	6/12/2019	0-0.5'	11:40	0.32	0.26
50-10	7/2/2019	1.0-1.5'	7:40	1.2	1.3
50-R6	8/28/19	1.5-2.0'	14:23	0.12	0.11
50-R8	8/28/19	1.0-1.5'	14:30	ND	ND
50-R14A	8/28/19	1.5-2.0'	15:05	0.63	0.65
50-R14A	8/28/19	1.5-2.0'	15:15	0.26	0.676
50-R14A-1	10/2/19	0-0.5'	11:46	0.75	0.71
50-R14B-1	10/2/19	1.0-1.5'	11:55	ND	ND
50-R15A-1	10/2/19	0-0.5'	12:05	0.40	0.27
50-R15B-1	10/2/19	1.0-1.5'	12:15	0.81	0.73

Sample Exceeds NDEP Residential Soil Remediation Standards
Sample Exceeds NDEP Default Impact to Groundwater Soil Remediation Standards



ENVIRONMENTAL MANAGEMENT GROUP
1705 BAY AVENUE, POINT PLEASANT, NJ 08742
PCB Delineation - 50 Kirby Avenue

Commercial Property,
50 Kirby Avenue
Somerville, Somerset County, NJ

SCALE: AS NOTED DATE: 12/30/2019
DRAWN BY: KVG CHKD BY: RLG
JOB: DWG. NO.

PCBs - Aroclor (total) NDEP Residential Standards: 0.2 mg/kg
NDEP Non-Res Standards: 1.0 mg/kg
NDEP Impact to Groundwater Remediation Standard: 0.2 mg/kg

Benzo(a)anthracene NDEP Residential Standards: 5 mg/kg
NDEP Non-Res Standards: 17 mg/kg
NDEP Impact to Groundwater Remediation Standard: 0.8 mg/kg

Benzo(a)pyrene NDEP Residential Standards: 0.5 mg/kg
NDEP Non-Res Standards: 2.0 mg/kg
NDEP Impact to Groundwater Remediation Standard: 0.2 mg/kg

APPENDIX B
WRITTEN CERTIFICATION

Certification

The undersigned owner of the property where the cleanup site is located and the party conducting the cleanup certify that all sampling plans, sampling collection procedures, sample preparation procedures, extraction procedures and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at the cleanup site are on file at the location indicated below and are available for EPA inspection, as set forth below.

Document Location

50 Kirby Avenue
Somerville, NJ 08876

Property Owner and Party Conducting the Cleanup

Authorized Signature

Date

Francine E. Tajfel, Esq._____

Name of Authorized Representative (Print)

General Counsel_____

Title

HEALTH & SAFETY PLAN (HASP)

Environmental

For

UNOCCUPIED WAREHOUSE

50 KIRBY AVENUE

SOMERVILLE, SOMERSET COUNTY, NJ 08876

BLOCK: 1, LOT:4.01

PREPARED BY:

ENVIRONMENTAL MANAGEMENT GROUP

1705 BAY AVENUE

SUITE 6

POINT PLEASANT, NJ 08742

August 2021

TABLE OF CONTENTS

SECTION	PAGE NO.
1.0 INTRODUCTION	1
1.1 Purpose of Plan	1
1.2 Site Location	1
1.3 Project Management - Environmental	1
1.4 Potential Exposure	1
1.5 Emergency Telephone Numbers	2
1.6 Emergency Response	2
2.0 SITE HISTORY, DESCRIPTION, AND HAZARD ANALYSIS	2
2.1 Project Work Description	4
3.0 PERSONNEL PROTECTIVE CLOTHING AND EQUIPMENT	8
3.1 Introduction	8
3.2 Levels of Protection	8
3.3 Criteria for Personal Protective Level Determination	8
3.4 Personal Protective Equipment	8
4.0 SAFETY EQUIPMENT	9
5.0 PERSONAL HYGIENE	10
6.0 DECONTAMINATION	11
6.1 Field Sampling Decontamination	11
6.2 Heavy Equipment Decontamination	11
6.3 Personnel Decontamination	12
7.0 POTENTIAL HAZARDS AND CONTROL	13
8.0 GENERAL SAFETY PROCEEDURES	24
APPENDICES	
Appendix A Site Plan	
Appendix B Properties of Potential Chemical Contaminant	
Appendix C Directions to Hospital	

1.0 INTRODUCTION

1.1 Purpose of Plan

This Health and Safety Plan (HASP) was prepared to address the potential risks associated with the proposed activities to be conducted at this site which includes the following:

- Construction of Residential Apartment Units
- Capping of PCBs, PAHs and TAL Metals in surficial and subsurface soils
- Possible disposal of Diffuse Anthropogenic Pollutants (DAP) and Historic Fill Material
- Asphalt/Concrete Capping of the Site – Pre & Post Construction, as appropriate

It is the responsibility of all companies conducting operations on this site to comply with all applicable OSHA regulations. This HASP is to serve as a guidance document and is not intended to replace any regulatory requirements.

1.2 Site Location

Vacant Land (Proposed Chemed Health Center)

50 Kirby Avenue
Somerville, NJ 08742

1.3 Project Management – Environmental

Site Supervisor

Peter Ritchings
Office: 732.282.2222

Alternate Site Supervisor

Rakesh Ganta, LSRP
Office: 201.509.8333

Health and Safety Coordinator

Peter Ritchings
Office: 732.282.2222

Site Contact:

Francine Tajfel
Office: 609.944.4050

1.4 Potential Exposure

Potential exposure of contaminants of concern associated with onsite soils at this Site includes:

- **Polychlorinated Biphenyls (PCBs)**
- **Target Analyte List (TAL) - Metals**
- **Polycyclic Aromatic Hydrocarbons (PAH)**

See Appendix B for properties of hazards.

1.5 Emergency Telephone Numbers

Police Department	911
Fire Department	911
Ambulance	911
RWJ University Hospital (Emergency No.)	908.685.2200
Rakesh Ganta (LSRP)	732.803.3078
Peter Ritchings (Project Manager)	732.979.1559
NJDEP	877.927.6337
CT-CT07 50 Kirby LLC	
Francine Tajfel	609.944.4050

1.6 Emergency Response

In the event of a medical emergency, the nearest hospital is the RWJ University Hospital located at 110 Rehill Avenue, Somerville. If the injury is minor, the victim will be transported via automobile. If the injury is deemed serious, emergency medical personnel will be summoned to the site by calling 911 and the victim will be transported to the hospital via ambulance.

Directions and map from 50 Kirby Avenue to RWJ University Hospital is included in Appendix C.

2.0 SITE HISTORY, DESCRIPTION, AND HAZARD ANALYSIS

This Health & Safety Plan addresses the environmental related hazards related to the Site property. The Site presently supports an unoccupied warehouse building. For the period from 1966 through 2002, the Property operated as a wholesale book binder and distributor by the name of Baker and Taylor. Site operations generally involved book binding, receiving, warehouse storage and shipping/distribution of books. Baker and Taylor primarily distributed books to public libraries and schools.

As a part of another due diligence effort, several environmental entities conducted Phase I/PA and Phase II investigations at the Site. Additionally, EMG completed a Site Investigation Report (SIR) and Remedial Investigation Report (RIR) and submitted to the NJDEP in March 2021. The SIR/RIR generally identified five (5) areas of concern as shown below:

- AOC-1: Transformer Pad Area
- AOC-2: PCB Impacted Historic Fill
- AOC-3: Historic Fill Material
- AOC-4: Diffuse Anthropogenic Pollutants (DAP)
- AOC-5: PCB Containing Building Material (Concrete Expansion Joints & Exterior Caulk)

The reported recognized environmental conditions/areas of concern (RECs/AOCs) were identified and delineated throughout the Site property. Based on the results of the analyses and visual observations, the soils have been fully delineated for all AOC-1 through AOC-4.

The PCB impact to soils associated with AOC-1 and AOC-2 are surficial, since PCB contaminants were only reported in soils between zero (0) and two (2) feet below grade. No groundwater was observed in the area of AOC-1 and hence a groundwater evaluation was not required. This area has been completely delineated.

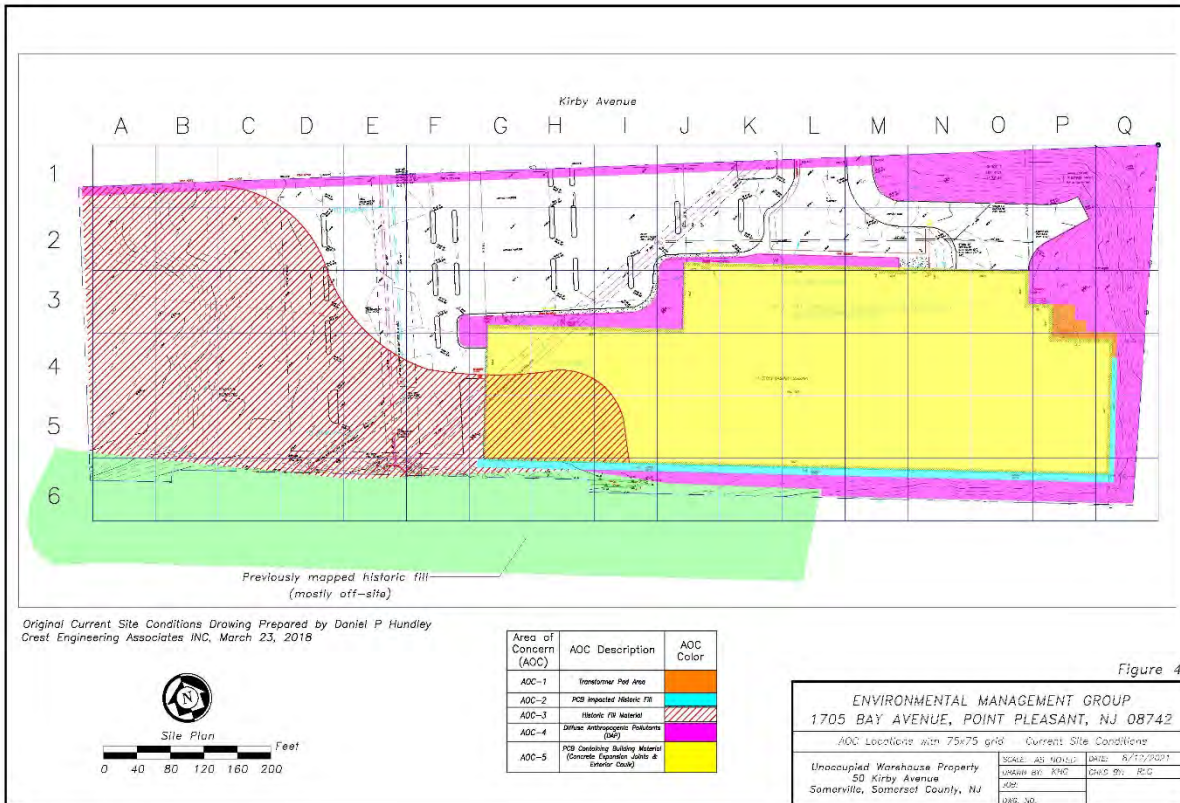
For AOC-3, historic fill material was observed on portions at the west of the Property encompassing an area of approximately 3.1 acres at varying depths between 1 and 6 feet below grade. Mapped historic fill material partial extends on the Site along the south side of the Property attributed to an active rail line but it is not included in AOC-3. Additionally, groundwater associated with AOC-2 & AOC-3 will be addressed with a Virtual Classification Exception Area (CEA) since historic fill contaminants in groundwater are assumed and sampling is not required.

For AOC-4, DAP, the Polycyclic Aromatic Hydrocarbon (PAH) and Target Analyte List Metals (TAL Metals) soils area in areas at the north, east, and southeast portions of the Property encompassing approximately 1.7 acres. Lastly, to complete the PCB related investigations, building material (i.e., concrete, concrete expansion joints, and exterior caulk) sampling for AOC-5 was conducted and PCB contaminants were reported in the concrete expansion joints and the exterior caulk but not throughout the concrete material.

Remedial action was completed for AOC-1 and portions of AOC-2 completed in 2019, EMG directed the remediation of soils and the collection of post excavation soil samples for AOC-1. Approximately 300 tons of surface soils to up to two (2) feet below grade were excavated from the AOC-1 area along the northeast corner of the Site building. The irregular shaped excavation encompassed approximately 1,800 square feet. The soils were eventually disposed at a licensed facility. Subsequently, the remedial action work plan (RAWP) has been prepared for any additional remedial action required as part of the NJDEP requirements and this HASP is part of the RAWP.

In summary, Tal metals, PAH and PCB exceedances have been fully delineated to be within the property boundary. However, they are still included in this HASP for general contaminants of concern at the Site property. Currently, only PCBs are exceeding the Residential and Non-Residential Direct Contact Soil Remediation Standard (RSRS/NRSRS). Additionally, Bulk asbestos building material may be present in the soils, even though, the soil samples collected for asbestos were negative.

The figure in the following page shows the AOCS and their relative locations at the Site property.

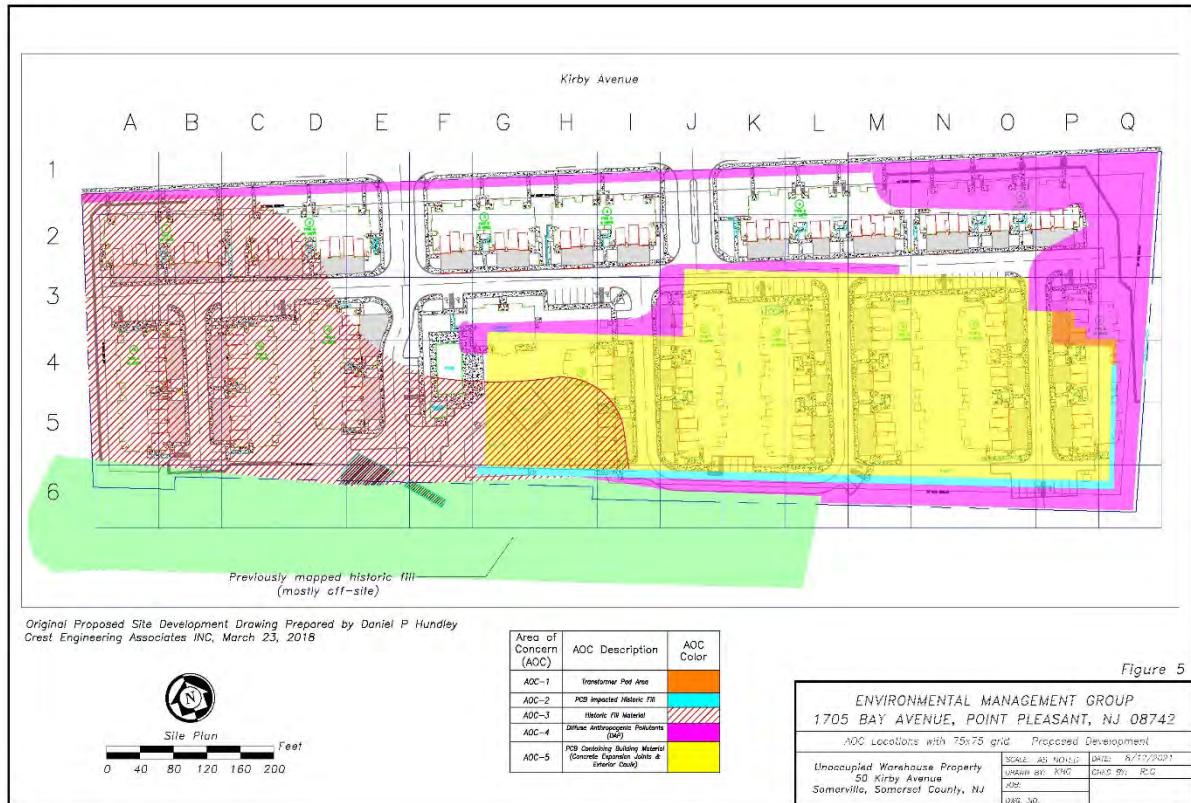


2.1 Project Work Description

The project involves construction of a residential apartment buildings. The proposed construction involves several residential apartment buildings. The project involves moment of fill, predominantly for installation of footings/slab/foundations for the proposed building.

Beside the building footprint, most of the Site property will be finished asphalted parking/driveway. The proposed building construction foot print in relation to the onsite AOCs. For the construction phase the following protocol will be followed for movement of site soils within the Site property. Since the only contaminant of concern are associated with onsite mostly surficial soils containing PCBs, PAHs and TAL Metals, they are being capped as a remedial remedy. Additionally, the PCB remediation is covered under the provisions of the Toxic Substances Control Act (TSCA), 40 CFR 761.61 and a USEPA Approval for Cleanup and Disposal of PCB Remediation Waste under 40 CFR 761.61(a) and Approval for Characterization and Verification Sampling Under 40 CFR 761.61(c) is required. A Self Implementing Plan was submitted to the EPA Region 2 as required. However, the objective of the site cleanup and/or remediation of impacted soils is limited to making way for construction of the building and associated parking and related.

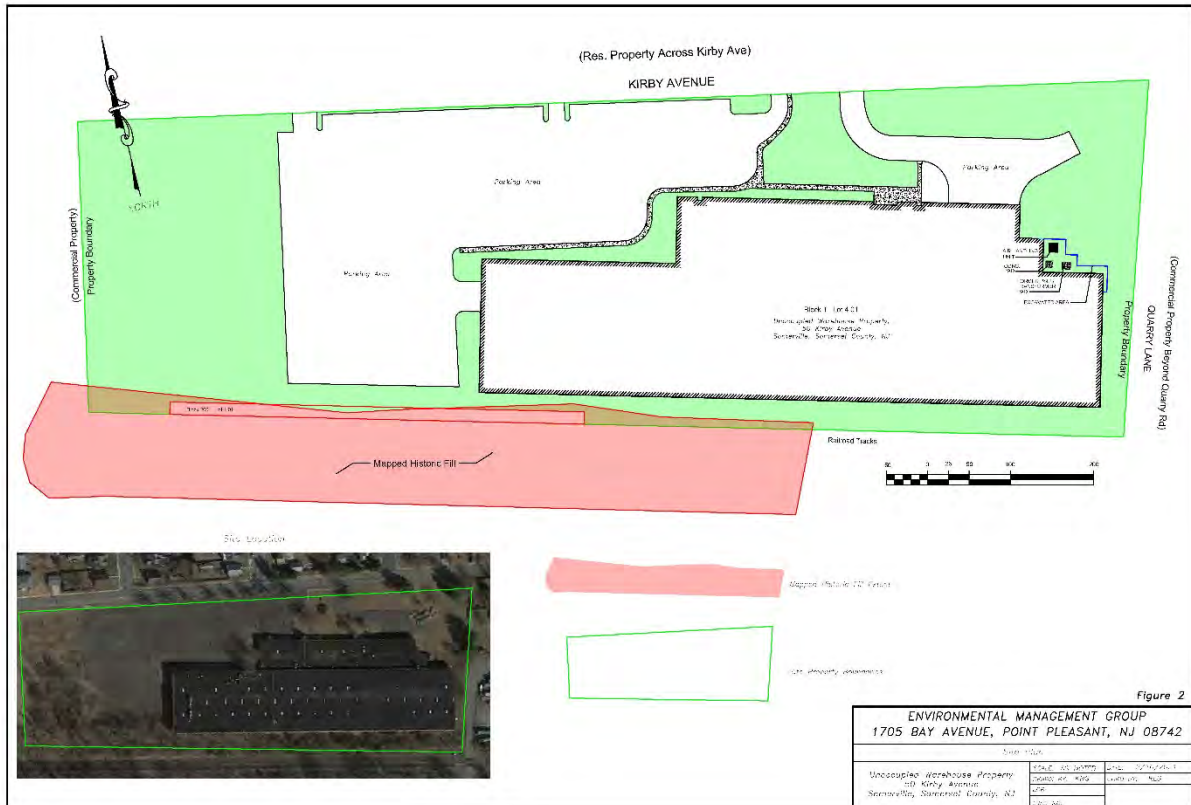
The general plan for earth material movement during construction is described in detail in RAWP. The figure in the following page shows the proposed construction of the residential apartment buildings as related to the AOCs at the Site.



All the proposed work can be accomplished in Level D PPE, unless excessive dust is created during construction activities, then field evaluation/determination will be made for mitigation measures and probable modified Level D to include Tyvek suits for full body coverage from direct contact.

The Health and Safety Coordinator may make changes to PPE requirements on a daily basis based on visual observations and readings using direct-reading instruments. Health and Safety protocols will be evaluated based upon the type of work being completed in specific areas of the Site and the worst known contaminant concentrations present in the aforementioned areas.

Perimeter air monitoring will be conducted for dust levels prior to start of the construction to obtain baseline dust concentrations. During commencement of construction activities, if there is a significant increase in dust levels, mitigation measures such as spraying water will be utilized to keep the dust levels to meet the pre-construction baseline readings.



3.0 PERSONNEL PROTECTIVE CLOTHING AND EQUIPMENT

3.1 Introduction

Personnel Protective Equipment (“PPE”) is intended to protect workers on the site. A minimum of Level D PPE will be worn, as appropriate, during work performed on-site. PPE will be upgraded if action levels are exceeded. Employees may choose to wear additional PPE beyond that required in this HASP; however, under no circumstances should an employee enter a site without first donning the minimum required PPE.

3.2 Levels of Protection

3.3 Criteria for Personal Protective Level Determination

Hazardous waste sites are classified by level of personal protection. The criterion for the determination of the personal protective level of a site and specific level is given below:

LEVEL D

Level D PPE will be utilized during the tasks associated with this project. The following criteria determine Level D protection:

- No known hazardous air pollutants.

- No potential for splash of, immersion in or unexpected inhalation of chemicals during work operations.

LEVEL C, LEVEL B and LEVEL A PPE is not required for tasks associated with this Project. However, employees/contractors may choose to wear additional PPE beyond that required in this HASP.

3.4 Personal Protective Equipment

Suggested list of personal equipment for each level of personal protection follow:

LEVEL D

- Coveralls or other appropriate clothing
- Gloves
- Leather or chemical resistant boots or shoes with steel toe and shank
- Hard hats
- Hearing protection (when necessary)
- Eye protection (during excavation and loading activities) Safety vests (during earthwork activities)

The PPE for other levels, even though not required for this project are as follows:

LEVEL C

- Full-face air-purifying canister equipped respirator (OSHA/NIOSH approved)
- Coveralls
- Chemical resistant clothing
- Hooded two-piece splash suit
- Chemical resistant inner and outer gloves
- Chemical resistant boots
- Disposable outer boots, chemical resistant
- Hard hat

LEVEL B

- Full-face air-purifying canister equipped respirator (OSHA/NIOSH approved)
- Chemical resistant clothing
- Coverall
- Hooded two-piece splash suit
- Hooded one-piece splash unit
- Overalls and long sleeved jacket
- Chemical resistant boots with steel toe and shank
- Chemical resistant inner and outer gloves
- Chemical resistant boots
- Disposable outer boots, chemical resistant

- Hard hat

LEVEL A

- Pressure demand, self-contained breathing apparatus (OSHA/NIOSH approved)
- Fully encapsulating chemical resistant suit
- Disposable protective suit, gloves and boots
- Chemical resistant inner and outer gloves
- Chemical resistant boots with steel toe and shank

4.0 SAFETY EQUIPMENT & ON-SITE MONITORING

Safety equipment necessary for on-site monitoring and emergency response will be kept at the site during excavation and sampling operations.

In addition, safety equipment will include, at a minimum, the following:

1. ABC type fire extinguisher
2. First aid kit
3. Portable Organic Vapor Meter (OVM)

4. Dust Monitor: As previously stated, onsite perimeter air monitoring will be conducted for dust levels prior to start of the construction to obtain baseline dust concentrations. During commencement of construction activities, if there is a significant increase in dust levels, mitigation measures such as spraying water will be utilized to keep the dust levels to meet the pre-construction baseline readings.

5.0 PERSONAL HYGIENE

The following personal hygiene procedures and practices shall be adhered to during all on-site activities:

1. No eating, drinking, smoking, cosmetic application, gum or tobacco chewing allowed in the work area.
2. Wash hands and face before leaving work area.
3. Contact with contaminated surface or surfaces suspected of being contaminated should be avoided while unprotected.
4. Personnel using respirators must be fit tested, clean shaven and trained in respiratory protection.

6.0 DECONTAMINATION

All personnel and field equipment used in the exclusion zone must be thoroughly decontaminated prior to exiting. The equipment and supplies required for the decontamination process will vary depending upon the level of protection designated for the particular area of the site.

6.1 Field Sampling Decontamination

All sampling and personal protective equipment used and exposed to hazardous substances shall be decontaminated according to the following steps:

- a. Wash with non-phosphate detergent and tap water to remove visible contamination.
- b. Rinse with tap water to remove detergent.
- c. Rinse with distilled water.
- d. Rinse with a ten percent nitric acid solution diluted with distilled water (if heavy metals are present).
- e. Rinse with distilled water.
- f. Rinse with methanol or acetone (reagent grade).
- g. Allow to completely air dry.
- h. Rinse with distilled water.

6.2 Heavy Equipment Decontamination

Heavy equipment, such as drill rigs, well casings, auger flights and backhoes, can be decontaminated by steam-cleaning with a steam generator or manual scrubbing using a non-phosphate soap solution. Heavy equipment must be decontaminated before undertaking activities at different locations or at the end of the day, whichever is sooner.

6.3 Personnel Decontamination

A decontamination layout for personnel decontamination is included in Appendix E. The layout will be used for Level C PPE if required. Also, a description of each station step is listed on the drawing. Site-specific modifications to the decontamination procedures may be warranted based on the contaminants of concern at the site.

Below is a table summarizing general decontamination procedures:

Item	Examples	Procedure
Field equipment	Bailers, interface probes, hand tools, drill augers, and miscellaneous sampling equipment	Decontaminate with a solution of detergent and water; rinse with water prior to leaving the site. Protect from exposure by covering with disposable covers such as plastic to minimize required decontamination activities.
Disposable PPE	Tyvek suits, inner latex gloves, respirator cartridges	Dispose of according to the requirements of the client and state and federal agencies. Change out respirator cartridges on a daily basis and dispose accordingly.
Non-disposable PPE	Respirators	Wipe out respirator with disinfecting pad prior to donning. Decontaminate respirator on-site at the close of each day based upon extent of contamination. This procedure could include disassembling the respirator and cleaning, rinsing, sanitizing, and drying all parts with approved powders and solutions.
	Boots and gloves	Decontaminate outside with a solution of detergent and water, rinse with water prior to leaving the site. Protect from exposure by covering with disposable covers such as plastic to minimize required decontamination activities.

All water used in decontamination procedures should be stored in portable storage tanks until sufficient amount are stockpiled to facilitate disposal treatment. Disposable sampling and PPE will be placed in plastic bags and temporarily stored in designated drums. These drums shall be disposed of according to regulatory guidelines.

7.0 POTENTIAL HAZARDS AND CONTROL

Below is a table listing the potential hazards that could occur during the excavation and sampling activities at the subject site. Also shown is the method of controlling each potential hazard.

Potential Hazard	Control
Exposure to Chemical Products	<ol style="list-style-type: none"> 1. Stand up-wind of chemical products whenever possible. 2. Minimize direct contact time with contaminated media to prevent exposure. 3. Avoid walking through discolored areas, puddles, leaning on drums, or contacting anything that is likely to be contaminated, unless wearing the appropriate PPE. 4. Do not eat, drink, smoke, and/or apply cosmetics in the hot or warm zones. 5. Wear appropriate PPE when it is required to come in contact with contaminated media or surfaces. 6. Level C PPE must be worn as a minimum when on project site. 7. If unknown materials are encountered, call the Health and Safety Coordinator.
Exposure to OSHA Defined Hazardous Materials	<ol style="list-style-type: none"> 1. All chemicals brought on-site by Reach Associates or other subcontractors' personnel, such as pipe glues, solvents, reagents, decontamination solutions, or any other OSHA defined hazardous material must be adequately labeled and the Material Safety Data Sheets (MSDSs) available on-site. 2. MSDSs brought on-site can be attached in the MSDS binder that is kept with the Health and Safety Coordinator or designated person. 3. Training on OSHA defined hazardous materials must be completed and documented, The Daily Safety Tailgate Meeting Form must be used to record training attendance.
Exposure to Surface and Subsurface Airborne Dust	<ol style="list-style-type: none"> 1. Stand up-wind whenever intrusive activities occur and generate visible signs of airborne dust. 2. Utilize wet methods (spraying ground, wet drilling, etc.) when visible signs of airborne dust are generated. 3. As required by the Health and Safety Coordinator, monitor air for airborne soil dust (surface or subsurface soil) with portable aerosol dust-direct reading instrument. A Thermo Scientific 'personalDataRAM' (pDR)-1000AN aerosol monitor that measures in real time, mass concentrations of dust, smoke, mist and fume has been selected for use. 4. > 2.5 mg/m³ in breathing zone requires upgrade to level C. 5. > 5.0 mg/m³ in breathing zone requires stop work, Contact Health and Safety Coordinator for further guidance.

Potential Hazard	Control
Vehicular Traffic	<ol style="list-style-type: none"> 1. Wear traffic safety vest when vehicle hazard exists. 2. Use cones, flags, barricades, and caution tape to define work area, 3. Use vehicle to block work area. 4. Engage police detail for high-traffic situations.
Fall Protection	<ol style="list-style-type: none"> 1. Assess the work to determine if there is a potential for falling. 2. Make a determination of the distance of the potential fall. 3. A fall protection system must be used for potential falls greater than six (6) feet. 4. Consult a competent person, such as the Health and Safety Coordinator, regarding the applicability requiring fall protection and what type of protection systems should be used. 5. Inspect all fall protection equipment and anchoring points prior to their use. 6. Ensure Fall Protection training for applicable employees is completed prior to initiating work activities.
Confined Space Entry (CSE)	<ol style="list-style-type: none"> 1. Ensure personnel assigned meet CSE training requirements. 2. Comply with CSE procedures. 3. Ensure pre-entry CSE, safety meeting is conducted. 4. Remove vault cover using proper lifting techniques. 5. Promote natural ventilation by opening the space to fresh air, if needed utilize mechanical purge ventilation. 6. Conduct remote air monitoring prior to entry. 7. Attendant can act as CSE Supervisor and must be present at CSE entry point all times when entrant is in CSE. 8. Access work for fall hazards and ensure provisions for non-entry rescue have been met. 9. Enter only when safe; conduct continuous air monitoring.
Inclement Weather	<ol style="list-style-type: none"> 1. Stop outdoor work during electrical storms and other extreme weather conditions such as extreme heat or cold temperatures. 2. Take cover indoors or in vehicle. 3. Listen to local forecasts for warning about specific weather hazards such as tornado, hurricane, and flash floods.
Drum Excavation, Handling, and Staging	<ol style="list-style-type: none"> 1. Assess scope of work to determine field personnel capabilities. Utilize subcontractors who specialize in unknown drum excavation when in doubt. 2. Initial activities for unearthing buried drums must be conducted in Level B PPE. Downgrade PPE based on air monitoring results and/or site assessment conditions. 3. Do not approach or disturb bulging drums - allow heavy equipment to handle, 4. Enter excavated area only after assessment by competent person

Potential Hazard	Control
	<p>and/or approval by Health and Safety Coordinator.</p> <p>5. Follow safe lifting guidelines and use mechanical aids when</p>
Compressed Gas Cylinder Excavation, Handling, and Staging	<ol style="list-style-type: none"> 1. Assess scope of work to determine field personnel capabilities. Utilize subcontractors who specialize in compressed gas cylinder excavation/removal when in doubt. 2. Initial activities for unearthing buried compressed gas cylinders require Level B PPE. Downgrade in PPE based on air monitoring results and/or site assessment conditions. 3. Exhibit caution around compressed gas cylinders that are bent, dented, or severely corroded. 4. Leave an area immediately if signs of gas release occur, such as hissing sounds or visible signs of gas release such as vapor clouds. 5. Use safe lifting techniques and mechanical equipment to move compressed gas cylinders.
Utility Lines Contact	<ol style="list-style-type: none"> 1. Contact all utility agencies to mark all utilities prior to excavation/trenching. 2. Refer to site drawings or customer interviews if on plant site or private property for utility locations. 3. Consider hand digging three (3) to five (5) feet down and five (5) feet each side of utility marker to avoid breaking utility lines.
Excavation/ Trenching	<ol style="list-style-type: none"> 1. A competent person must be designated and show proof of training. 2. Follow the project's procedure outlined in 3. Communicate all findings to project team members on a daily basis.

Potential Hazard	Control
Noise	<ol style="list-style-type: none"> 1. Wear hearing protection when equipment such as drill rig, jackhammer, cut saw, air compare Health and Safety Coordinator, blower, or other heavy equipment is operating on the site, 2. Wear hearing protection whenever you need to raise your voice above normal conversational speech due to a loud noise source; this much noise indicates the need for protection. 3. Hearing protection is required when measured sound pressure levels exceed 85 dB(A) where employees stand or conduct work or as required by the Health and Safety Coordinator or designated person. 4. Conduct noise monitoring of suspected high noise operations at the beginning of the workday or start up of new operations to verify noise control/hearing protection requirements.
Electric Shock	<ol style="list-style-type: none"> 1. Maintain appropriate distance from overhead utilities; 20-foot minimum clearance from power lines required; 10-foot minimum clearance from shielded power lines. 2. Use ground-fault circuit interrupters as required. 3. Perform LO/TO procedures. 4. Use three-pronged plugs and extension cords. 5. Contact your local underground utility-locating service. 6. Follow code requirements for electrical installations in hazardous locations.
Physical Injury	<ol style="list-style-type: none"> 1. Wear hard hats and safety glasses when on-site. 2. Maintain visual contact with the equipment operator and wear orange safety vest when heavy equipment is used on-site. 3. Avoid loose-fitting clothing (driller and driller's helper). 4. Prevent slips, trips, and falls; keep work area uncluttered. 5. Keep your hands away from moving parts (i.e. augers). 6. Test the emergency shut-off switch on the drill rig daily.
Back Injury	<ol style="list-style-type: none"> 1. Use a mechanical lifting device or a lifting aid where appropriate. 2. If you must lift, plan the lift before doing it. 3. Check your route for clearance. 4. Bend at the knees and use leg muscles when lifting. 5. Use the buddy system when lifting heavy or awkward objects. 6. Do not twist or jerk your body while lifting.

Slip/Trip/Fall	<ol style="list-style-type: none">1. Inspect each work area for slip/trip/fall potential prior to each work task.2. Slip/trip/fall hazards identified must be communicated to all personnel. Hazards identified shall be corrected or labeled with warning signs to be avoided.3. All personnel must be aware of their surroundings and maintain constant communication with each other at all times,
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Potential Hazard	Control
Heat Stress	<ol style="list-style-type: none"> 1. Increase water intake while working. 2. Minimize and/or avoid alcohol intake the night before working in heat stress situations. 3. Increase number of rest breaks and/or rotate workers in shorter work shifts; take breaks in shaded areas. 4. Watch for signs and symptoms of heat exhaustion and fatigue. 5. Plan work for early morning or evening during hot months. 6. Use ice vests when necessary. 7. Rest in cool, dry areas. 8. In the event of a heat stroke, bring the victim to a cool environment and initiate first aid procedures.
Cold Stress	<ol style="list-style-type: none"> 1. Take breaks in heated shelters when working in extremely cold temperatures. 2. Remove the outer layer of clothing and loosen other layers to promote evaporation of perspiration upon entering the shelter. 3. Be aware of cold stress symptoms such as shivering, numbness in the extremities, and sluggishness. 4. Drink warm liquids to reduce the susceptibility to cold stress.
High Crime Areas	<ol style="list-style-type: none"> 1. Be aware of surroundings. 2. Use the buddy system. 3. Request police detail when appropriate.
Insects	<ol style="list-style-type: none"> 1. Tuck pants into socks. 2. Wear long sleeves. 3. Use insect repellent. 4. Avoid contact by always looking ahead to where walking, standing, sitting, leaning, grabbing, or reaching-in-to. 5. Check for signs of insect/spider bites, such as redness, swelling, and flu-like symptoms. 6. Use buddy system to check each other for signs of insect/spider bites. 7. Remove ticks immediately with fine tipped tweezers by grasping the tick as close to your skin as possible and gently pulling straight out. Do not squeeze the tick's body as this may inject fluids into you. Wash the bite area of skin and apply antiseptic.

Potential Hazard	Control
Poisonous Plants (such as Poison Ivy, Oak, or Sumac)	<ol style="list-style-type: none"> 1. Do not enter areas infested with poisonous plants. 2. Immediately wash any areas that come into contact with poisonous plants. 3. Protect exposed skin area with gloves and Tyvek suits. 4. Be aware that the oil from the plant can be carried on hoots, clothes, and equipment. Always protect skin from contact. 5. If you have known or suspected allergies, carry an "Epi-Pen" at all times and notify co-workers and the Health and Safety Coordinator that you are allergic.
Poisonous Snakes	<ol style="list-style-type: none"> 1. Avoid walking in areas where snakes may nest or hide. Always look ahead to where walking for signs of snakes. 2. Use extreme caution when moving or lifting objects which could be used by snakes as cover. 3. Never reach under or behind objects or into other areas where snakes may hide. 4. Wear sturdy leather boots.
Ladders	<ol style="list-style-type: none"> 1. Assess work areas for fall hazards. 2. Make sure ladder rungs are sturdy and free of cracks. 3. Use ladders with secure safety feet. 4. Pitch ladders at a 4:1 ratio. 5. Secure ladder at the top of have another person at the bottom to help stabilize it. 6. Do not use ladders for access to air stripper towers. 7. Use non-conductive ladders near electrical wires.
Fire Control	<ol style="list-style-type: none"> 1. Smoke only in designated areas. 2. Keep flammable liquids in closed containers, 3. Keep site clean; avoid accumulating combustible debris such as paper. 4. Follow Hot Work Safety Procedures when welding or performing other activities requiring open flame. 5. Isolate flammable and combustible materials from ignition sources. 6. Ensure fire safety integrity of equipment installations.
Static Electricity	<ol style="list-style-type: none"> 1. Do not create static discharge in flammable atmospheres. 2. Electrically bond and ground pumps transfer vessels, tanks, drums, bailers, and probes when moving liquids. 3. Electrically bond and ground vacuum trucks and the tanks they are emptying. 4. Do not splash fill containers with flammable liquids.

Potential Hazard	Control
Drilling/Boring Operations	<ol style="list-style-type: none"> 1. Driller and helper must be present during all active operations. 2. Driller helper and other site personnel must know location of emergency shut off switch. Testing of the switch is required before each startup. 3. Ensure jewelry is removed, loose clothing is buttoned, and loose PPE is secured close to the body to avoid getting caught in moving parts. 4. Unauthorized personnel must be kept clear of drilling rig. 5. Area of drilling operation must be cordoned off/barricaded. 6. When hazardous conditions are deemed present, operation must be shut down. 7. Do not allow drillers to climb mast while it is erected, 8. Pipe, drill rods, casing, augers, and similar drilling tools should be orderly stacked on racks or sills to prevent spreading, rolling, or sliding. 9. Work areas, platforms, and walkways should be kept free of materials, debris, and obstructions such as ice, grease, or oil that could cause a surface to become slick or otherwise hazardous. 10. Shut down drill rig to make repairs or adjustments to drill rig or to lubricate fittings. Release all pressure on the hydraulic systems, the drilling fluid system, and the air pressure systems of the drill rig prior to performing maintenance. 11. For start-up, all gear boxes must be in neutral, all hoist levels are disengaged, all hydraulic levers are in the correct non-actuating positions and the cathead rope is not on the cathead before starting a drill rig engine. 12. Do not drive the drill rig from hole to hole with the mast in the raised position. Before raising the mast, check for overhead obstructions. 13. If it is necessary to drill within an enclosed area, make certain that exhaust fumes are conducted out of the area. 14. Clean mud and grease from your boots before mounting a drill platform. Watch for slippery ground when dismounting from the platform. 15. Should the rope grab the cathead, it could become tangled in the drum. Release the rope and sound an appropriate alarm for all personnel to rapidly back away and stay clear. 16. Always maintain a minimum clearance of eighteen (18) inches between the operating hand and the cathead drum when driving samplers, casing, or other tools with the cathead and rope method. 17. Use a long handle shovel to move auger cuttings away from the auger.

Potential Hazard	Control
<p>Reacting to Drill Rig Contacting Electricity</p>	<ol style="list-style-type: none"> 1. Under most circumstances, the operator and other personnel on the seat of the vehicle should remain seated and not leave the vehicle. Do not move or touch any part of the vehicle. 2. If it is determined that the drill rig should be vacated, then all personnel should jump clear as far as possible from the rig. Do not step off, and do not hang on to the vehicle when jumping clear. 3. If on the ground, STAY FAR AWAY FROM THE VEHICLE AND THE DRILL RIG, DO NOT LET OTHERS GET NEAR THE VEHICLE AND THE DRILL RIG AND SEEK ASSISTANCE FROM LOCAL EMERGENCY PERSONNEL. 4. When the victim is completely clear of the electrical source and is unconscious and a heartbeat cannot be detected, begin CPR immediately.
<p>Off-Road Movement of Drill Rig</p>	<ol style="list-style-type: none"> 1. Before moving a drill rig, walk the route of the travel, inspecting for depressions, stumps, gullies, ruts, and similar obstacles. 2. Check the complete drive train of a carrier at least weekly. 3. Discharge all passengers before moving a drill rig on rough or hilly terrain. 4. Engage the front axle for 4x4, 6x6, etc. when traveling off highway or hilly terrain. 5. Use caution when traveling side-hill. 6. Cross obstacles such as logs and erosion channels or ditches squarely. 7. Use a spotter when lateral or overhead clearance is close. 8. After drill rig has been moved to a new spot, set the brake and/or locks. When grades are steep, block the wheels.
<p>Safety During Rotary and Core Drilling</p>	<ol style="list-style-type: none"> 1. Check water swivels and hoisting plugs for frozen bearings prior to use. 2. The capacities of hoist and sheaves should be checked against the anticipated weight to the drill rod string plus other expected hoisting loads. 3. Only the operator of the drill rig should brake or set a manual chuck so that rotation of the chuck will not occur prior to removing the wrench from the chuck, 4. Drill rods should not be braked during lowering into the hole with drill rod check jaws. 5. Do not lower drill rods into the hole using pipe wrenches. 6. Do not use your hands to catch a falling rod in the hole. 7. In the event of a plugged bit or other circulation problem, the high pressure in the piping and hose between the pump and the obstruction should be relieved or bled before braking the first tool joint. 8. Do not use your hands to clean drilling fluids from rods.

	<p>9. Secure the ends of drill rod sections for safe vertical storage or lay the rods down.</p>
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Potential Hazard	Control
Well Installation/Development , Well Gauging, Soil and Groundwater Sampling	<ol style="list-style-type: none"> 1, Wear appropriate PPE to avoid skin, eye, and inhalation contact with contaminated groundwater and/or soil. 2. Stand upwind when conducting tasks and minimize possible inhalation exposure; especially when first opening monitoring wells. 3. Conduct air monitoring to determine level of respiratory protection. 4, Utilize engineering controls such as portable venture air movers to draw away or blow away chemical vapors.
Rapid Response	<ol style="list-style-type: none"> 1. Ensure emergency response activities have been completed prior to beginning rapid response field activities. 2. Conduct hazard assessment of project site and communicate findings through a Daily Tailgate Safety Meeting to all employees and subcontractors prior to beginning rapid response field activities. 3. Communicate applicable health and safety programs to other contractors on site that may be impacted and coordinate field activities with them.
Welding, Cutting, Brazing	<ol style="list-style-type: none"> 1. Conduct fire safety evaluation. 2. Complete Hot Work Permit procedures. 3. Ensure flammable materials are protected from hot work and sources of ignition. 4. Ensure fire watch/fire extinguisher is on standby by hot work location.
Cleaning Equipment	<ol style="list-style-type: none"> 1. Wear appropriate PPE to avoid skin and eye contact with isopropyl alcohol, Alconox, or other cleaning materials. 2. Stand up-wind to minimize any potential inhalation exposure. 3. Dispose of spent cleaning solutions and rinses accordingly.
<p><i>First aid kit, blood borne pathogen kit, emergency eye wash/shower station, fire extinguisher, and absorbent pads must be provided by the contractor and located on-site either in the decontamination zone or with the Health and Safety Coordinator.</i></p>	

8.0 GENERAL SAFETY PROCEDURES

<p>Eye Protection</p>	<p>Approved safety glasses with side shields must be worn during working hours. Safety glasses must have ANSI — Z87 stamped on the temple of the frames. Employees who wear prescription glasses that are not approved safety glasses must wear goggles or visitor safety glasses over their glasses until they get approved safety glasses. Safety glasses with tinted lenses cannot be worn before sunrise, after sundown, or in any buildings.</p> <p>A full face shield must be worn over your safety glasses whenever you are chipping, grinding, blowing out from work, shooting a hilti gun, or cad welding. Goggles must be worn over safety glasses whenever overhead drilling, using a skill saw, or working with or near chemicals.</p> <p>Safety glasses must be worn under welding shields when welding is being performed. Burning goggles must be worn over safety glasses when using a torch. Dark safety glasses cannot be used as burning goggles.</p> <p>Contact lenses are not allowed.</p>
<p>Head Protection</p>	<p>Approved hard hats must be worn during working hours. Hard hats must have the ANSI 789I or 789-2 sticker on the inside of the hat. Hard hats must be worn with the bill forward except for welders who are welding. Welders when not engaged in welding must wear their hard hats with the bill forward.</p>
<p>Hair and Jewelry</p>	<p>Long hair must be contained in some manner, either under hard hat or by the use of a hair net, so it will not cause a danger from fire or entanglement in moving machinery. If you have any questions about the length of your hair, ask your supervisor.</p> <p>No beards, handle bars mustaches, or long side burns are allowed. You have to be able to wear a respirator. Beards and such will not allow a snug fit if you have to use an escape respirator. A well groomed mustache is acceptable.</p> <p>Rings and other jewelry should be removed while using power tools or while climbing.</p>
<p>First Aid</p>	<p>Report all injuries <i>no matter how minor</i> to your foreman and to first aid (Site Safety Officer). All accidents, injuries, and near misses must be investigated and reported to Regional Safety within 24 hours.</p> <p>If you cause, or if you are involved in an accident resulting in a doctor case,</p>

	you will be required to submit a drug test.
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Fall Protection	<p>Safety belts are not allowed on this project. A full body harness is required for all protection. Inspect the harness before each day's use.</p> <p>Any time the fall distance exceeds six (6) feet, you must have a safety harness on and be tied off. Tie off overhead, not below your feet. Make sure that the tie-off anchor is capable of supporting 5400 pounds of dead weight (i.e. do not tie off to a piece of copper tubing and expect it to support you if you fall). Shock absorbent lanyards are required.</p> <p>Walking the top flange of a beam without being tied off, sliding down or climbing columns, or being over six (6) feet and not tied is a class "A" violation and is subject to disciplinary action up to immediate termination.</p>
Tools	<p>Electrical tools must be used with a GFCI or an assured grounding program. If the assured grounding program is used, the cord will have a color code taped on it. Make sure it is the proper color for the quarter, then make a visual safety inspection before using the tool. Never carry a tool by the cord. When electrical tools are not in use, unplug them. Two (2) employees should be holding a half inch drill motor when in use.</p> <p>Any saw not in use must have the blade covered to protect employees from being cut. File handles must be on when using a file. Do not carry pointed tools in pockets. Use tool holders when hammering stakes, wedges, and star drills.</p>
Housekeeping	<p>You are expected and required to keep your work area clean. A clean work area is a safe work area. Order and arrangement of materials is a very important part of good housekeeping.</p> <p>Cords and hoses must be routed in a manner that will not present a tripping hazard, preferably a minimum of seven (7) feet overhead. A safe access must be maintained to all work areas, emergency exits, firefighting equipment, emergency showers, eye stations, and all rescue equipment.</p>
Pedestrians	<p>Always work on the left side of the road facing traffic. Pedestrians have the right of way and should use walkways where provided. Shortcuts must not be taken through operating areas or unfamiliar areas.</p>
Vehicles	<p>Operators of vehicles and construction equipment shall observe all site traffic signs. Always shut off engine, set the emergency brake, and leave keys in the ignition before leaving your vehicle.</p> <p>Blow your horn three (3) times before backing your vehicle. This will let pedestrians know you are backing up. Pedestrians always have the right of way. Wear seat belts.</p>

Construction Equipment	<p>All construction equipment shall be operated only by operators who have been trained in the safe operations of the equipment. Employees are not permitted to ride in the back of pick-up trucks, flatbeds, dump trucks, or farm wagons.</p> <p>Seat belts are required on all equipment that provides roll over protection. Equipment must be shut off before refueling.</p> <p>No more than three (3) people may ride in the front seat of a truck. Craft, office personnel and engineers shall not operate or flag construction equipment unless they have been trained by a competent employee.</p> <p>Dozer blades, end loader buckets, and forklift forks must be lowered to the ground before the operator leaves the equipment. Construction equipment must have back-up alarms.</p>
Tobacco Products	<p>There is no smoking in vehicles anywhere on site. Smoking is allowed only in designated areas. "Strike Anywhere" matches and butane lighters are not allowed.</p>
Excavations	<p>All excavations must have a permit prior to the excavation being dug. A competent person who has been trained in the recognition of trenching and excavation hazards must inspect the excavation each day prior to anyone going into it. Excavations must be monitored for gas and chemical hazards, as many are considered confined spaces.</p> <p>No one is permitted in an excavation when equipment is working next to the edge. Excavations must be provided with a ladder for access and egress at intervals of twenty-five (25) feet. The ladder must extend three (3) feet above the edge of the excavation and be secured.</p> <p>Spoil dirt from the excavation must be placed three (3) feet from the edge. All excavations must be barricaded during the day. Flashing lights must be used at night.</p>
Ladders	<p>All ladders must be tied off or someone must be holding the ladder while work is being performed from the ladder.</p> <p>Every ladder must be equipped with a tie-off rope and non-skid safety feet. Do not take extension ladders apart to use either section separately.</p> <p>Never stand or sit on the top of a step ladder. Metal, trussel, or A-frame ladders are not allowed.</p>

Rigging	<p>A load should never be raised or swung over people or an occupied building. Tag lines must be used to control all loads. The tag line must not be wrapped around the hands or body. Use a shackle to hold two (2) or more eyes of choker on a hook.</p> <p>Make sure hooks have a safety latch. Do not load chain-hoists beyond their rated capacity. Chain-hoists are designed so that one (1) person can operate the hand chain to lift the maximum load for the hoist. Do not wrap the load chain around the load.</p> <p>Do not leave unsecured and unattended loads suspended. Every chain hoist should be inspected before making a lift. Your visual check should include the hooks for any irregularities, the chain for wear or damage, and the housing and sheaves for any sign of damage from abusive treatment.</p>
Compressed Gas	<p>Inspect all hoses, gauges, and torches before each use. Do not use matches or cigarette lighters to light a torch. Use an approved spark lighter. Only thoroughly instructed employees may use a torch. Never leave a torch in a vessel, tank, or other closed container because of the potential hazard of leakage.</p> <p>Place cylinders and hoses where they are not exposed to sparks and slag from a burning operation. Anti-Flashback arrestors must be installed on all cutting rigs.</p> <p>Do not use compressed gas to clean your clothing, blow out cinch anchor holes, or to clean your work area. Secure all compressed gas cylinders upright to an adequate support while they are in storage, transit, or use. Break down all burning rigs at the end of the shift or when the job is completed, removing the regulators and screwing the protective caps down hand tight.</p>

Scaffolds	<p>Scaffolds must be erected properly with handrail, mid-rail, toe boards, and ladder must be complete decked. Employees who are erecting, disassembling, or inspecting a scaffold must be trained by a competent person.</p> <p>Employees who perform work from a scaffold must be trained to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards by a qualified person.</p> <p>An employee cannot work on a scaffold while it is being moved. The employee must come down each time it is moved. Make sure scaffold wheels are locked prior to climbing the scaffold. Do not climb a scaffold with tools and materials in your hands — use a tag line. A competent person will inspect and tag the scaffold prior to work being performed from the scaffold. Safety harnesses are required on all incomplete scaffolds.</p> <p><u>Competent Person</u>: One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.</p> <p><u>Qualified Person</u>: One, who, by possession of a recognized degree, certificate, or professional standing or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work or the project.</p>
Barricades	<p>Yellow and black barricade tape or chain means caution. The barricade should have yellow caution tags on all four (4) sides with the date, the hazard that is inside the barricade, and the employee's name that erected the barricade. If you can walk around a yellow and black barricaded area, do so. If not, read the tag, see what the hazards are, and enter with caution.</p> <p>Red and black barricade tape or chain means DANGER — KEEP OUT. Only foremen and above have access to this tape. The Site Safety Officer must be notified when red barricade tape is to be erected. It must be tagged with a danger tag. Only the employees who are doing the work inside a red barricaded area are allowed. Anyone that goes into a red barricaded area without permission from the supervisor who erected it is subject to disciplinary action, including termination.</p>
Permits	<p>There are several types of permits: safe work permit, confined space permit, line break permit, hot work permit, excavation, etc. Permits are required in all areas; check with your foreman before starting to work. All hot work permits require a fire extinguisher and fire watch.</p>

Lockout	<p>No work will be done on any equipment (electrical, steam, air, etc.) until it has been locked, tagged, tested, and tried. If you have any questions about a piece of equipment being locked out, notify your supervisor.</p> <p>Employees must be trained on electrical lockout procedures.</p>
Hazard Communication	<p>Any time you work with or around any chemical, you have the right to see a Material Safety Data Sheet (MSDS). These Material Safety Data Sheets will tell you what kind of personal protective equipment (PPE) you need to wear while working with or around a chemical, what to do in case of a spill or fire, and what type of first-aid procedures you need to follow if you come into contact with the chemical.</p> <p>MSDSs are kept with the health and safety coordinator. A list of chemicals you may be exposed to will be made available to employees, upon request.</p>
Evacuation	<p>If you hear the chemical release siren for the site or the fire alarm in your work area, stop all work, put out all open flames, cut all machines off, and go directly to the assembly area. A head count will be taken and instructions given on where and what to do.</p> <p>If you are in a vehicle, pull off the road, stop, shut the engine off, set the emergency brake, leave the keys in the vehicle, and walk to the assembly area.</p>
Assignments	<p>Before you start any job, your foreman should give you a safety task assignment (STA). If your foreman forgets to give you a STA, ask for it. If you do not understand your STA, ask your foreman to explain it in more detail. Remember to never start a job until you have received and understand your STA for the job you have been asked to do.</p>

Cranes	<p>All crane operators must be licensed per APS 7-4 for each make and model of crane operated. The operator must inspect his/her assigned machine before each shift. The operator is solely responsible for the safe operation of his/her machine. The operator has full responsibility for the safety of a lift and may not make a lift until safety is assured.</p> <p>A copy of the manufacturer's Operator's Manual must be located on the project site. This manual should be reviewed by the crane operator and understood by him/her. The crane operator must understand and be able to determine the crane's capacity. The swing radius of the counterweight must be barricaded off at all times.</p> <p>Crane outriggers must be leveled and fully extended when making a lift. No part of the crane, load, hoist lines, or boom shall come within fifteen (15) feet of energized electrical lines.</p>
Electrical	<p>All existing electrical switches must be de-energized by appropriate personnel first, then construction will put their locks and tags on the switch. Before entering or doing any work in any transformer station, electrical substation, switch gear room, receiver house, electrical motor control room, or any electrical converter room, authorization from Reach Associates and NJSCC must be obtained. There is no hot electrical work permitted.</p> <p>All high voltage lines 440 volts or over must be properly grounded before work starts. Any electrician working on such equipment or in the vicinity of it must be accompanied by another electrician or the Site Supervisor.</p> <p>Before energizing any high voltage switches, the switch must be completely barricaded off. The electrician energizing the switch will have an electrically approved face shield, lineman's rubber gloves, and wear Nomex coveralls. Anyone who enters the barricade must have the same PPE.</p> <p>Prior to working on any type of elevator, the main switch will be locked and tagged out in the manner referred to above. In addition, a standard safety block must be installed under the platform and where an open shaft exists, a standard safety bar and sign must be placed on the open door or gateway.</p>

Process Safety	<p>Employees must be educated and trained in the work practices necessary to safely perform the assigned work. Employees will be instructed in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, and the applicable provisions of the emergency action plan.</p> <p>Employees must let their immediate supervisor know if they encounter any unique hazards. The supervisor will notify the Site Supervisor.</p>
Confined Space	<p>Confined space means a space that is large enough and configured that an employee can bodily enter and perform work, It has limited or restricted means for entry or exit. A confined space is not designed for continuous employee occupancy.</p> <p>All employees required to enter confined space will be trained on the nature of the hazards involved, the necessary precautions to be taken, and the use of required protective and emergency equipment, particularly respiratory equipment. Before employees are permitted to enter any confined space, the atmosphere within the confined will be tested to determine the oxygen level and concentrations of flammable vapors, gases, and toxic contaminants. These readings will be posted on the confined space entry permit. The permit must be posted next to the man way of the confined space.</p> <p>A stand-by person must be stationed outside the confined space. They must have visual, voice, or signal communication with the person inside the confined space. The stand-by person must be trained in emergency procedures. The employee inside the confined space must have a safety harness on with a lifeline run to the outside of the confined space. This will allow the stand-by person to pull them in case of an emergency.</p>

APPENDIX A

SITE PLAN

APPENDIX B

**PROPERTIES OF POTENTIAL CHEMICAL CONTAMINANTS
MSDS**

Issuing Date 23-Feb-2016

Revision Date 23-Feb-2016

Revision Number 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING**Product identifier**

Product Name PCBs in Oil - 1260 Low
Product Number 824
Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Laboratory use only
Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier ERA a Waters Company
Supplier Address 16341 Table Mountain Parkway, Golden, CO 80403 USA
Non-Emergency Telephone Number +1-303-431-8454
E-mail address sdsinfo@eraqc.com

Emergency telephone number


Company Emergency Phone Number In case of EMERGENCY call CHEMTREC Day or Night
Within USA and Canada: 800-424-9300
International Call Collect: +1-703-527-3887

2. HAZARDS IDENTIFICATION**Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Carcinogenicity	Category 1A
Reproductive Toxicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 2

GHS Label elements, including precautionary statements**Emergency Overview**

Signal word	Danger
Hazard Statements May cause cancer Suspected of damaging fertility or the unborn child May cause damage to organs through prolonged or repeated exposure	
	
Appearance Amber	Physical state Liquid
	Odor Slight

Precautionary Statements - Prevention

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Do not breathe dust/fume/gas/mist/vapors/spray

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity

0 % of the mixture consists of ingredient(s) of unknown toxicity

Other information

Causes mild skin irritation

Interactions with Other Chemicals

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Note: only the components contributing to the product's GHS hazard classification are listed in this section.

Chemical name	CAS No	Weight-%
Transformer Oil	64742-53-6	99
Hexane	110-54-3	1.1

4. FIRST AID MEASURES

First aid measures

General Advice

Show this safety data sheet to the doctor in attendance.

Eye contact

Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin contact

Wash with soap and water.

Inhalation

Remove to fresh air.

Ingestion

Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects

No information available.

Indication of any immediate medical attention and special treatment needed

Notes to Physician

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

No information available.

Uniform Fire Code Combustible Liquid: III-B

Hazardous Combustion Products

Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge No.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with eyes. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers. Soak up with inert absorbent material.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

Conditions for safe storage, including any incompatibilities

Storage Keep container tightly closed. Store locked up.

Incompatible Products None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Hexane 110-54-3	TWA: 50 ppm S*	TWA: 500 ppm TWA: 1800 mg/m ³ (vacated) TWA: 50 ppm (vacated) TWA: 180 mg/m ³	IDLH: 1100 ppm TWA: 50 ppm TWA: 180 mg/m ³

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits NIOSH IDLH Immediately Dangerous to Life or Health

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations

Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/face protection	No special protective equipment required.
Skin and body protection	Wear protective gloves and protective clothing.
Respiratory protection	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical state	Liquid	Odor	Slight
Appearance	Amber	Odor Threshold	No information available
Color	No information available		

<u>Property</u>	<u>Values</u>	<u>Remarks Method</u>
pH	no data available	None known
Melting / freezing point	no data available	None known
Boiling point / boiling range	no data available	None known
Flash Point	no data available C / 201 F no	None known
Evaporation Rate	data available	None known
Flammability (solid, gas)	no data available	None known
Flammability Limit in Air		
Upper flammability limit	no data available	
Lower flammability limit	no data available	
Vapor pressure	no data available	None known
Vapor density	no data available	None known
Specific Gravity	0.87	None known
Water Solubility	Insoluble in water	None known
Solubility in other solvents	no data available	None known
Partition coefficient: n-octanol/water	no data available	None known
Autoignition temperature	no data available	None known
Decomposition temperature	no data available	None known
Kinematic viscosity	no data available	None known
Dynamic viscosity	no data available	None known
Explosive properties	no data available	
Oxidizing properties	no data available	

Other Information

Softening Point	no data available
VOC Content (%)	no data available
Particle Size	no data available
Particle Size Distribution	

10. STABILITY AND REACTIVITY

Reactivity

no data available.

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

None known based on information supplied.

Incompatible materials

None known based on information supplied.

Hazardous Decomposition Products

Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	Specific test data for the substance or mixture is not available.
Eye contact	Specific test data for the substance or mixture is not available.
Skin contact	Specific test data for the substance or mixture is not available.
Ingestion	Specific test data for the substance or mixture is not available.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Hexane 110-54-3	= 25 g/kg (Rat)	= 3000 mg/kg (Rabbit)	= 48000 ppm (Rat) 4 h

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.

Mutagenic Effects No information available.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Transformer Oil 64742-53-6	A2	Group 1		X

ACGIH (American Conference of Governmental Industrial Hygienists)

A2 - Suspected Human Carcinogen

IARC (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

Reproductive toxicity Contains a known or suspected reproductive toxin.

STOT - single exposure No information available.

STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).

Chronic toxicity No known effect based on information supplied. Contains a known or suspected carcinogen. Contains a known or suspected reproductive toxin. Possible risk of irreversible effects. Avoid repeated exposure. Prolonged exposure may cause chronic effects.

Target Organ Effects Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Reproductive system.

Aspiration Hazard No information available.

Numerical measures of toxicity Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)

1,363,636.00

ATEmix (inhalation-vapor)

15,347.54 ATEmix

12. ECOLOGICAL INFORMATION**Ecotoxicity**

The environmental impact of this product has not been fully investigated.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Transformer Oil 64742-53-6		96h LC50: > 5000 mg/L (Oncorhynchus mykiss)		48h EC50: > 1000 mg/L
Hexane 110-54-3		96h LC50: 2.1 - 2.98 mg/L (Pimephales promelas)		24h EC50: > 1000 mg/L

Persistence and Degradability

No information available.

Bioaccumulation

No information available

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS**Waste treatment methods****Disposal methods**

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging

Dispose of contents/containers in accordance with local regulations.

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical name	California Hazardous Waste
Hexane 110-54-3	Toxic Ignitable

14. TRANSPORT INFORMATION**DOT****Proper Shipping Name**
Hazard ClassNot regulated
NON REGULATED
N/A**TDG**

Not regulated

MEX

Not regulated

ICAO

Not regulated

IATA**Proper Shipping Name**Not regulated
NON REGULATED

Special Provisions	None
IMDG/IMO	Not regulated
Special Provisions	None
Marine Pollutant	Not applicable
RID	Not regulated
Special Provisions	None
ADR	Not regulated
Special Provisions	None
ADN	Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	All components are listed either on the DSL or NDSL.
ENCS	Contact supplier for inventory compliance status
KECL	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AICS	Contact supplier for inventory compliance status

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	CAS No	Weight-%	SARA 313 - Threshold Values %
Hexane - 110-54-3	110-54-3	1.1	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Hexane 110-54-3	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

International Regulations

Mexico

National occupational exposure limits

Component	Carcinogen Status	Exposure Limits
Hexane 110-54-3 (1.1)		Mexico: TWA 50 ppm Mexico: TWA 176 mg/m ³

Mexico - Occupational Exposure Limits - Carcinogens

Canada

WHMIS Hazard Class

Not determined

16. OTHER INFORMATION

NFPA	Health Hazards 0	Flammability 1	Instability 0	Physical and Chemical Hazards - Personal Protection X
HMIS	Health Hazards 1*	Flammability 1	Physical Hazard 0	

Chronic Hazard Star Legend * = Chronic Health Hazard

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Issuing Date 23-Feb-2016

Revision Date 23-Feb-2016

Revision Note No information available

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text



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End of Safety Data Sheet

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 5.0 Revision Date 29.10.2012

Print Date 19.04.2017

GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**1.1 Product identifiers**

Product name : Arsenic

Product Number : 267961
Brand : Aldrich
Index-No. : 033-001-00-X
CAS-No. : 7440-38-2**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheetCompany : Sigma-Aldrich Israel Ltd.
3 PARK RABIN, PLAUT
7670603 REHOVOT
ISRAELTelephone : +972 8948-4222
Fax : +972 8948-4200**1.4 Emergency telephone number**

Emergency Phone # : +972 (8) 948-4222

2. HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]**Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Oral (Category 3)**Classification according to EU Directives 67/548/EEC or 1999/45/EC**

Toxic by inhalation and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements**Labelling according Regulation (EC) No 1272/2008 [CLP]**

Pictogram



Signal word : Danger

Hazard statement(s)

H301 : Toxic if swallowed.
H331 : Toxic if inhaled.
H410 : Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P261 : Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273 : Avoid release to the environment.
P301 + P310 : IF SWALLOWED: Immediately call a POISON CENTER or doctor/

P311 physician.
 Call a POISON CENTER or doctor/ physician.
 P501 Dispose of contents/ container to an approved waste disposal plant.
 Supplemental Hazard Statements none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)



R-phrase(s)

R23/25

Toxic by inhalation and if swallowed.

R50/53

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

S20/21

When using do not eat, drink or smoke.

S28

After contact with skin, wash immediately with plenty of soap and water.

S45

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S60

This material and its container must be disposed of as hazardous waste.

S61

Avoid release to the environment. Refer to special instructions/ Safety data sheets.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : As
 Molecular Weight : 74,92 g/mol

Component	Concentration
Arsenic	
CAS-No. 7440-38-2	-
EC-No. 231-148-6	
Index-No. 033-001-00-X	

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

4.3 Indication of any immediate medical attention and special treatment needed

no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Arsenic oxides

5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information

no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses

no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Immersion protection

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: > 480 min

Material tested: Dermatril® (Aldrich Z677272, Size M)

Splash protection

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: > 30 min

Material tested: Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | |
|---|------------------------------------|
| a) Appearance | Form: powder
Colour: grey |
| b) Odour | no data available |
| c) Odour Threshold | no data available |
| d) pH | no data available |
| e) Melting point/freezing point | Melting point/range: 817 °C - lit. |
| f) Initial boiling point and boiling range | 613 °C - lit. |
| g) Flash point | not applicable |
| h) Evaporation rate | no data available |
| i) Flammability (solid, gas) | no data available |
| j) Upper/lower flammability or explosive limits | no data available |
| k) Vapour pressure | no data available |
| l) Vapour density | no data available |
| m) Relative density | 5,727 g/mL at 25 °C |
| n) Water solubility | no data available |
| o) Partition coefficient: n-octanol/water | no data available |

- p) Autoignition temperature no data available
- q) Decomposition temperature no data available
- r) Viscosity no data available
- s) Explosive properties no data available
- t) Oxidizing properties no data available

9.2 Other safety information

no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

no data available

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

no data available

10.4 Conditions to avoid

Heat. Exposure to air may affect product quality.

10.5 Incompatible materials

Oxidizing agents, Halogens, Palladium undergoes a violent reaction with arsenic, Zinc, Platinum oxide, Nitrogen trichloride, Bromine azide

10.6 Hazardous decomposition products

Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - rat - 763 mg/kg

Remarks: Behavioral:Ataxia. Diarrhoea

LD50 Oral - mouse - 145 mg/kg

Remarks: Behavioral:Ataxia. Diarrhoea

Inhalation: no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

IARC: 1 - Group 1: Carcinogenic to humans (Arsenic)

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure

no data available

Specific target organ toxicity - repeated exposure

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	Toxic if inhaled. May cause respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

Additional Information

RTECS: CG0525000

12. ECOLOGICAL INFORMATION**12.1 Toxicity**

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 9,9 mg/l - 96,0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 3,8 mg/l - 48 h

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

no data available

12.6 Other adverse effects

Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods****Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION**14.1 UN number**

ADR/RID: 1558

IMDG: 1558

IATA: 1558

14.2 UN proper shipping name

ADR/RID: ARSENIC

IMDG: ARSENIC

IATA: Arsenic

14.3 Transport hazard class(es)			
ADR/RID: 6.1	IMDG: 6.1		IATA: 6.1
14.4 Packaging group			
ADR/RID: II	IMDG: II		IATA: II
14.5 Environmental hazards			
ADR/RID: yes	IMDG Marine pollutant: yes		IATA: no
14.6 Special precautions for user			
no data available			

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
no data available

15.2 Chemical Safety Assessment
no data available

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.



Material Safety Data Sheet

Benzo[a]pyrene, 98%

MSDS# 37175

Section 1 - Chemical Product and Company Identification

MSDS Name: Benzo[a]pyrene, 98%
Catalog Numbers: AC105600000, AC105600010, AC105601000, AC377200000, AC377200010, AC377201000
Synonyms: 3,4-Benzopyrene; 3,4-Benzpyrene; Benzo[def]chrysene.

Company Identification: Acros Organics BVBA
Janssen Pharmaceuticaaan 3a
2440 Geel, Belgium
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410
Company Identification: (USA)
For information in the US, call: 800-ACROS-01
For information in Europe, call: +32 14 57 52 11
Emergency Number, Europe: +32 14 57 52 99
Emergency Number US: 201-796-7100
CHEMTREC Phone Number, US: 800-424-9300
CHEMTREC Phone Number, Europe: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#: 50-32-8
Chemical Name: Benzo[a]pyrene
%: >96
EINECS#: 200-028-5

Hazard Symbols:



Risk Phrases:

T N



45 46 60 61 43 50/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Danger! May cause allergic skin reaction. Cancer hazard. May cause harm to the unborn child. May impair fertility. May cause eye, skin, and respiratory tract irritation. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May cause heritable genetic damage. Target Organs: Reproductive system, skin.

Potential Health Effects

Eye: May cause eye irritation.
Skin: May cause skin irritation. May be harmful if absorbed through the skin. May cause an allergic reaction in certain individuals.
Ingestion: May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated. May be harmful if swallowed.
Inhalation: May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated. May be harmful if inhaled.

Chronic: May cause cancer in humans. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Autoignition Temperature: Not available.

Flash Point: Not available

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: 2; flammability: 0; instability: 0;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Benzo[a]pyrene	0.2 mg/m3 TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m3 TWA	0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches).

OSHA Vacated PELs: Benzo[a]pyrene: 0.2 mg/m3 TWA (benzene soluble fraction) (listed under Coal tar pitches)

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Personal Protective Equipment

- Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
- Skin: Wear appropriate protective gloves to prevent skin exposure.
- Clothing: Wear appropriate protective clothing to prevent skin exposure.
- Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Powder

Color: yellow to brown

Odor: faint aromatic odor

pH: Not available

Vapor Pressure: Not available

Vapor Density: Not available

Evaporation Rate: Not available

Viscosity: Not available

Boiling Point: 495 deg C @ 760 mm Hg (923.00°F)

Freezing/Melting Point: 175 - 179 deg C

Decomposition Temperature: Not available

Solubility in water: 1.60x10⁻³ mg/l @25°C

Specific Gravity/Density:

Molecular Formula: C₂₀H₁₂

Molecular Weight: 252.31

Section 10 - Stability and Reactivity

- | | |
|--|---|
| Chemical Stability: | Stable under normal temperatures and pressures. |
| Conditions to Avoid: | Dust generation. |
| Incompatibilities with Other Materials | Strong oxidizing agents. |
| Hazardous Decomposition Products | Carbon monoxide, carbon dioxide. |
| Hazardous Polymerization | Has not been reported. |

Section 11 - Toxicological Information

RTECS#: CAS# 50-32-8: DJ3675000

LD50/LC50: RTECS: Not available.

Carcinogenicity: Benzo[a]pyrene - ACGIH: A1 - Confirmed Human Carcinogen (Coal tar pitches). California: carcinogen, initial date 7/1/87 NTP: Suspect carcinogen IARC: Group 1 carcinogen

Other: The toxicological properties have not been fully investigated.

Section 12 - Ecological Information

Not available

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

US DOT

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOL (Benzo{a} pyrene)

Hazard Class: 9

UN Number: UN3077

Packing Group: III

Canada TDG

Shipping Name: Not available

Hazard Class:

UN Number:

Packing Group:

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T N

Risk Phrases:

R 45 May cause cancer.

R 46 May cause heritable genetic damage.

R 61 May cause harm to the unborn child.

R 43 May cause sensitization by skin contact.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R 60 May impair fertility.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 50-32-8: Not available

Canada

CAS# 50-32-8 is listed on Canada's DSL List

Canadian WHMIS Classifications: D2A, D2B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 50-32-8 is listed on Canada's Ingredient Disclosure List

US Federal

TSCA

CAS# 50-32-8 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date: 9/02/1997

Revision #8 Date 7/20/2009

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

MSDS# 12510

Section 1 - Chemical Product and Company Identification

MSDS Name: Lead
Catalog Numbers: S71957, S719571, S75257, S80049, L18-500, L246-500, L27-1LB, L27-1RL
Synonyms: Lead metal.

Company Identification: Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410

For information in the US, call: 201-796-7100
Emergency Number US: 201-796-7100
CHEMTREC Phone Number, US: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#: 7439-92-1
Chemical Name: Lead
%: 99.8
EINECS#: 231-100-4

Hazard Symbols:



Risk Phrases:

T N



61 20/22 33 50/53 62

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Warning! May cause central nervous system depression. May be absorbed through intact skin. May cause kidney damage. May cause adverse reproductive effects. Causes eye and skin irritation. May cause fetal effects. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Possible cancer hazard. May cause cancer based on animal data. Target Organs: Kidneys, central nervous system, blood forming organs.

Potential Health Effects

Eye: Causes eye irritation.

Skin: Causes skin irritation. May be absorbed through the skin.

Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea. Ingestion of lead compounds can cause toxic effects in the blood-forming organs, kidneys and central nervous system. Symptoms of lead poisoning or plumbism include weakness, weight loss, lassitude, insomnia, and hypotension. It also includes constipation, anorexia, abdominal discomfort and colic.

Inhalation: May cause respiratory tract irritation. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause effects similar to those described for ingestion.

Chronic: Possible cancer hazard based on tests with laboratory animals. Chronic exposure may cause reproductive disorders and teratogenic effects. Chronic exposure to lead may result in plumbism which is characterized by lead line in gum, headache, muscle weakness, mental changes.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get

medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing in a manner which limits further exposure.

Ingestion: Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:

Antidote: The use of Dimercaprol or BAL (British Anti-Lewisite) as a chelating agent should be determined by qualified medical personnel. The use of d-Penicillamine as a chelating agent should be determined by qualified medical personnel. The use of Calcium disodium EDTA as a chelating agent should be determined by qualified medical personnel.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use extinguishing media appropriate to the surrounding fire. Substance is noncombustible. Dust can be an explosion hazard when exposed to heat or flame.

Extinguishing Media: For small fires, use water spray, dry chemical, carbon dioxide or chemical foam. Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

Autoignition Temperature: Not available.

Flash Point: Not available

Explosion Limits: Lower: Not available

Explosion Limits: Upper: Not available

NFPA Rating: health: 2; flammability: 0; instability: 0;

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Wash clothing before reuse.

Storage: Store in a cool, dry place. Keep from contact with oxidizing materials. Keep containers tightly closed.

Section 8 - Exposure Controls, Personal Protection

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Lead	0.05 mg/m3	0.050 mg/m3 TWA 100 mg/m3 IDLH	50 æg/m3 TWA; 50 æg/m3 TWA (as Pb); 30 æg/m3 Action Level (as Pb, Poison - see 29 CFR 1910.102 5)

OSHA Vacated PELs: Lead: None listed

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure

limits.

Exposure Limits

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves and clothing to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Color: bluish white, silvery gray

Odor: none reported

pH: Not applicable

Vapor Pressure: 1.3 mm Hg @ 970C

Vapor Density: Not available

Evaporation Rate: Not applicable.

Viscosity: Not applicable.

Boiling Point: 1740 deg C (3,164.00°F)

Freezing/Melting Point: 327.4 deg C (621.32°F)

Decomposition Temperature: Not available

Solubility in water: Insoluble in water.

Specific Gravity/Density: 11.3

Molecular Formula: Pb

Molecular Weight: 207.2

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Dust generation, excess heat.

Incompatibilities with Other Materials: Not available

Hazardous Decomposition Products: Lead/lead oxides.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#: CAS# 7439-92-1: OF7525000

LD50/LC50: RTECS: Not available.

Carcinogenicity: Lead - ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans California: carcinogen, initial date 10/1/92 NTP: Suspect carcinogen IARC: Group 2B carcinogen

Epidemiology: Not available

Teratogenicity: Not available

Reproductive: Not available

Neurotoxicity: Not available

Mutagenicity: Mutagenic effects have occurred in humans.

Other: See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity: Not available

For more information, see "HANDBOOK OF ENVIRONMENTAL FATE AND EXPOSURE DATA."

LC50 Japanese quail (*Coturnix japonica*), males or females, 14 days old, oral (5-day ad libitum in diet) >5,000 ppm;

Other: at 1000, 2236 & 5000 onset of toxic signs began at 7, 7 & 7 days and remitted at 11, 11 & 12 days, respectively, no mortality was observed; control references were dieldrin & dicrotophos; corn oil diluent was added to diet at ratio of 2:98 by wt; (extreme concentrations: 1,000-5,000 ppm) /Lead metal, 100%.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification. RCRA P-Series: None listed. RCRA U-Series: None listed.

Section 14 - Transport Information

US DOT

Shipping Name: Not regulated

Hazard Class:

UN Number:

Packing Group:

Canada TDG

Shipping Name: Not regulated as a hazardous material

Hazard Class:

UN Number:

Packing Group:

USA RQ: CAS# 7439-92-1: 10 lb final RQ (no reporting of releases of this hazardous substance)

Section 15 - Regulatory Information

US Federal

TSCA

CAS# 7439-92-1 is listed on the TSCA Inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 7439-92-1: 10 lb final RQ (no reporting of releases of this hazardous substance is required)

SARA Section 302

Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 7439-92-1: acute, chronic.

Section 313

This material contains Lead (CAS# 7439-92-1, 99.8%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS# 7439-92-1 is listed as a Priority Pollutant under the Clean Water Act. CAS# 7439-92-1 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

STATE

Lead can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act: WARNING: This product contains Lead, a chemical known to the state of California to cause cancer. WARNING: This product contains Lead, a chemical known to the state of California to cause birth defects or other reproductive harm.

California No Significant Risk Level:

CAS# 7439-92-1: 15 µg/day NSRL (oral)

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T N

Risk Phrases:

R 61 May cause harm to the unborn child.

R 20/22 Harmful by inhalation and if swallowed.

R 33 Danger of cumulative effects.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R 62 Possible risk of impaired fertility.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 7439-92-1: Not available

Canada

CAS# 7439-92-1 is listed on Canada's DSL List

Canadian WHMIS Classifications: D2A

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 7439-92-1 is listed on Canada's Ingredient Disclosure List

Section 16 - Other Information

MSDS Creation Date: 4/29/1999

Revision #5 Date 5/22/2007

Revisions were made in Sections: 2, 3

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

APPENDIX C

DIRECTIONS TO HOSPITAL

50 Kirby Avenue, Somerville, NJ

1. Head west on Kirby Ave toward S Richards Ave
2. Turn right onto S Clark Ave
3. Turn left onto E Main St
4. Turn right onto Rehill Ave.,

RWJ University Hospital Somerset

110 Rehill Ave, Somerville, NJ 08876
