



Environment

Submitted to :
City of Meriden
Community Development
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Meriden, CT 06450

Submitted by
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Remedial Action Plan

177 State Street
Meriden, Connecticut



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Table of Contents

1.0	Introduction	1-1
1.1	Site Setting and History	1-1
1.2	Surrounding Properties	1-1
1.3	Site Geology and Hydrogeology	1-1
1.4	Applicable Regulatory Criteria	1-1
1.5	Previous Investigations	1-2
1.6	Conceptual Site Model	1-3
1.7	Conceptual Remedial Approach	1-3
2.0	Remediation Planning.....	2-1
2.1	Health and Safety	2-1
2.2	Permits and Approvals	2-1
2.3	Public Notification	2-2
2.4	Waste Management	2-2
2.5	Sedimentation and Erosion Control	2-3
2.6	Dust Control and Air Monitoring	2-3
2.7	Decontamination	2-3
2.8	Site Security and Traffic Control.....	2-3
2.9	Site Restoration	2-3
3.0	Remediation Activities.....	3-1
3.1	Project Planning, Design and Permitting	3-1
3.2	Remedial Design Investigation	3-1
3.3	Soil Excavation and Management	3-1
3.4	Administrative Controls	3-2
3.5	Project Closure	3-2
4.0	Sampling and Analysis Plan.....	4-1
4.1	On-site Soil Quality Evaluation Sampling	4-1
4.2	Clean Fill Sampling	4-1
4.3	Waste Characterization Sampling	4-1
4.4	Sampling Protocol	4-1
4.5	Laboratory Analysis.....	4-2
4.6	Quality Assurance/Quality Control.....	4-3
5.0	Documentation and Reporting	5-1
5.1	Field Documentation	5-1
5.2	Post-Remediation Reporting	5-1
6.0	Post Remediation Conceptual Site Model.....	6-1
7.0	Schedule	7-1
8.0	References	8-1

List of Appendices

- Appendix A. Previous Investigation Data Summary Tables
- Appendix B. Conceptual Site Model Summary Table

List of Figures

- Figure 1 Site Location Plan
- Figure 2 Site Plan
- Figure 3 Distribution of Soil Impacts and Remedial Actions

1.0 Introduction

On behalf of the City of Meriden (the City), AECOM, Inc. (AECOM) has prepared this soil Remedial Action Plan (RAP) for the property located at 177 State Street in Meriden, Connecticut (the site). The objective of this RAP is to determine a remedial alternative to address soil impacts identified during previous environmental investigations at the site. Pertinent site details are summarized in the following sections.

1.1 Site Setting and History

The subject property is owned by the City of Meriden and consists of a 1.24-acre parcel currently used as a parking area. A fence is located on the site, partitioning the site into two separate parking areas. There are no other structures located on the site. The site slopes gently to the south, toward Harbor Brook. A Site Location Map is included as **Figure 1**. Pertinent site features are depicted on **Figure 2**, the Site Plan.

The site has reportedly been used as a parking area since approximately 1963. Prior to 1963, the site included four separate parcels having various uses dating back to the late 1800's. The former northern and eastern parcels included residential properties. The former western and southwestern parcels included a newspaper publishing company, an automotive repair business, a painting and carpentry shop, a blacksmith, and a carriage works.

1.2 Surrounding Properties

The site is located in a mixed residential and commercial area of Meriden. The site is abutted to the north and east by Cedar Park, a recreation area, beyond which are Park Street to the North and Cedar Street to the East. The site is abutted to the west by State Street, beyond which are commercial properties. The site is abutted to the south by a paved parking area and multi-family residential properties, beyond which is Mill Street. Based on information provided in previous environmental reports, two public water supply wells, owned by the Meriden Water Division, are located within a 1-mile radius of the site. The Columbus Park Well is located approximately 0.5 miles northwest of the site, and the Britannia Street Well is located approximately 0.85 miles north-northwest of the site. These wells are discussed further in **Section 1.4**.

1.3 Site Geology and Hydrogeology

According to the Bedrock Geological Map of the Meriden Quadrangle of Connecticut (USGS, 1985), bedrock beneath the site consists of the New Haven Arkose, a poorly sorted reddish arkose sandstone. According to maps available on the Connecticut Environmental Conditions Online (CT ECO) website, surficial materials in the area of the site include sands overlying fine-grained sediments, indicated as proximal stream meltwater deposits.

Based on previous investigations, overburden materials at the site consist of fine to coarse-grained sand and silt from grade to approximately 12 feet below the ground surface (bgs). Urban fill materials, described as fine to coarse-grained sand and silt with gravel and brick fragments, were also observed in soil borings across the site from grade to approximately 5 feet bgs, with well graded sand and gravel observed from approximately 5 to 12 feet bgs.

Groundwater was encountered at approximately 6 feet bgs on the southeastern portion of the site and approximately 9-feet bgs on the northwestern portion of the site. Based on local topography and surface water features in the area of the site, groundwater flow is expected to be to the south or southeast towards Harbor Brook.

1.4 Applicable Regulatory Criteria

The Regulations of Connecticut State Agencies (RCSA), Sections 22a-133k-1 through 22a-133k-3, inclusive, comprise the Remediation Standard Regulations (RSRs). These regulations are applicable to various sites in Connecticut including those undergoing investigation and remediation under the Property Transfer Program, under an administrative order from the Connecticut Department of Energy and Environmental Protection (CTDEEP), or enrolled in the CTDEEP Voluntary

Remediation Program (VRP). Although none of the above conditions are currently applicable, AECOM anticipates that the site will be enrolled in the VRP prior to commencing remediation. Therefore, the RSRs will be applicable to remedial activities at the site. Applicable RSR criteria are summarized below.

Groundwater at the site has been designated as GB quality, indicating that it is not suitable for consumption without prior treatment. Applicable remediation criteria for groundwater at the site include the Surface Water Protection Criteria (SWPC) for protection of surface water resources which are potential receptors for groundwater and the Residential or Industrial/Commercial Volatilization Criteria (RVC or I/C VC) for protection of indoor air quality from volatile constituents in groundwater beneath buildings.

Applicable soil remediation criteria for the site include the GB Pollutant Mobility Criteria (PMC) to prevent degradation of groundwater quality from soil impacts, and the Residential or Industrial/Commercial Direct Exposure Criteria (R DEC or I/C DEC) to prevent exposure to soil impacts which are potentially accessible. Note that the R DEC and R VC are the default criteria, and remediation to the I/C DEC and I/C VC would require application of an ELUR at the site.

The CT RSRs include a requirement to remediate to GA criteria in GB areas where groundwater is a drinking water resource (i.e. used for drinking). Because the nearest water supply wells are located greater than 500 feet from the site and public utility water is available in the area of the site, this requirement is not applicable for this site.

1.5 Previous Investigations

Environmental investigations have been conducted at the site by AECOM and others. The results of the previous investigations are summarized below. Data summary tables from previous investigations are included in **Appendix A**.

Phase I Environmental Site Assessment, Lenard Engineering, Inc., August 2013

Lenard Engineering, Inc. (Lenard) conducted a Phase I Environmental Site Assessment (ESA) at the site in August 2013. The objective of the Phase I ESA was to determine the environmental condition of the site and to identify the presence of any Recognized Environmental Conditions (RECs) and/or Areas of Concern (AOCs) associated with a release, historical release, or threat of release of a hazardous substance at the site. The Phase I ESA included a review of current and historical site uses, general description of site features and an environmental records review. Lenard concluded in the Phase I ESA that one AOC (AOC-1) was present at the site associated with the former use of portions of the site for newspaper publishing, automotive service, paint and carpentry services, blacksmithing, and carriage works. Lenard recommended that a Phase II ESA be conducted at the site.

Phase II Environmental Site Assessment, AECOM, November 2013

AECOM conducted a Phase II ESA at the site in November 2013 to further investigate AOC-1. The Phase II ESA included collection and laboratory analysis of soil and groundwater samples from AOC-1. Contaminants of concern (COCs) including extractable total petroleum hydrocarbons (ETPH), select polycyclic aromatic hydrocarbons (PAHs), and select metals were reported at concentrations above RSR criteria for soil samples. Select PAHs and metals were reported at concentrations above RSR criteria in groundwater samples collected from temporary groundwater sampling locations. Based on the results of the Phase II ESA, a Phase III ESA was recommended to further evaluate and delineate the extent and degree of soil and groundwater impacts at the site.

Phase III Environmental Site Assessment, AECOM, February 2014

AECOM conducted a Phase III ESA at the site in February 2014 to further evaluate the nature, extent, and degree of soil and groundwater impacts. The Phase III ESA included collection and laboratory analysis of soil and groundwater samples from AOC-1. ETPH, PAHs, and select metals were reported at concentrations above RSR criteria in soil samples and metals and PAHs were reported at concentrations above RSR criteria in groundwater samples collected during the investigation. During the Phase III ESA, AECOM identified a second AOC present at the site (AOC-2), which included urban fill present in soils outside of AOC-1. The following soil analytical results were obtained during both the Phase II and Phase III ESAs:

- Arsenic and lead concentrations above the I/C DEC and R DEC, respectively, were reported in soil samples collected from AOC-1;
- ETPH concentrations above the R DEC were reported in soil samples collected from AOC-1 and AOC-2;

- PAH concentrations above the R DEC, I/C DEC, and GB PMC were reported in soil samples collected from AOC-1 and AOC-2.
- Antimony concentrations above the R DEC were reported in soil samples collected from AOC-2 and in soil samples collected from beneath the urban fill.

Groundwater results from the Phase II and Phase III ESAs showed that groundwater impacts above RSR criteria were identified in samples collected from site monitoring well locations. Groundwater samples collected from wells on the property contained concentrations of COCs above the SWPC. However, the nearest downgradient surface water body is located approximately 150 feet to the south and groundwater impacts would likely not exceed the SWPC at this potential discharge location. Groundwater will be further evaluated following completion of the remedial activities described in this soil RAP.

Note that during the both the Phase II and Phase III ESAs, phenanthrene was the only PAH reported at concentrations above groundwater remediation criteria (SWPC). The current SWPC for phenanthrene is 0.077 micrograms per liter ($\mu\text{g/L}$) and is incorrectly calculated in the current RSRs. As of August 2013, the CTDEEP has been accepting requests to use the 2008 proposed SWPC for phenanthrene, which was 23 $\mu\text{g/L}$. The reported phenanthrene concentrations in groundwater samples collected from the site are less than 23 $\mu\text{g/L}$.

1.6 Conceptual Site Model

The Conceptual Site Model (CSM) defines what is known about the source(s) of chemical impacts, mechanisms of release, impacted media, migration pathways, and potential receptors. The CSM for the site was developed and refined during Phase II and Phase III investigation activities and is described in detail in the Phase III ESA. The CSM for the site includes two AOCs resulting from historical site operations and urban development. Release mechanisms associated with these AOCs include releases to soil and groundwater from historical operations (AOC-1) and urban fill placed at the site during initial development of the property (AOC-2). COCs detected in soil and groundwater are not likely to migrate offsite to surface water receptors and are not volatile. In addition, the planned soil remedial actions will reduce further degradation of groundwater quality by removal of impacted soil and/or reducing water infiltration through impacted soil. Therefore, this RAP is designed to address COCs in soil and thereby achieve compliance with RSR criteria. Groundwater remediation is not anticipated as part of this RAP. The CSM is further summarized in **Appendix B**.

1.7 Conceptual Remedial Approach

Soil impacts identified during the Phase II and Phase III ESAs will require remediation in accordance with the RSRs following enrollment of the site in the VRP. Due to the use of Housing and Urban Development (HUD) funds for environmental assessment of the site, remediation will be finalized prior to certification of occupancy for the redevelopment in accordance with 24 CFR 58 (Environmental Review Procedures for Entities Assuming HUD Environmental Responsibilities). AECOM understands that the planned redevelopment of the site currently includes paved parking areas and multi-family residential dwellings. The conceptual remedial approach to address soil impacts includes the following elements:

1. **Project planning, design and permitting.** These activities include any necessary revisions to the remedial plan based on updated redevelopment information, remedial design, permitting, enrollment in the VRP and public notification of remediation activities.
2. **Remedial design investigation.** Prior to remedial design, additional investigation is planned to further refine soil impacts. The remedial design investigation would incorporate any updated redevelopment plans and include additional soil sampling and analysis.
3. **Soil excavation and management.** AECOM understands that redevelopment of the site includes potential construction of a residential building. Excavation and management of impacted soil would occur prior to construction activities. Any activities conducted where impacted soils are expected to be encountered would be conducted in accordance with this RAP and a site-specific Soil Management Plan. The Soil Management Plan will address handling of polluted soil that will be generated as part of redevelopment and remediation.
4. **Administrative controls.**
 - a. *Application of an ELUR at the site to render any remaining impacted soils inaccessible.* Soil impacts at concentrations above the R DEC are currently located beneath a paved surface and are inaccessible, as defined by the RSRs. An ELUR would prevent the disturbance of impacted soils and prevent exposure to

impacted soils via excavation, demolition, or other activities that would disturb impacted soil areas. An ELUR would also require that the existing barrier (pavement) be maintained in good condition. Preparation and submittal of an ELUR for CTDEEP approval is planned for this project. The ELUR application and submittal will require a survey of the site that conforms to the requirements of a Class A-2 survey.

- b. *Application of an ELUR to render soils beneath the planned building environmentally isolated.* Soil impacts at concentrations above the GB PMC are currently located beneath an area where the proposed building may be constructed. Construction of a building would prevent infiltration of water through soils where the PMC are exceeded, precluding further degradation of groundwater due to soil impacts. Preparation and submittal of an ELUR for CTDEEP approval is planned for this project. The ELUR application and submittal will require a survey of the site that conforms to the requirements of a Class A-2 survey.
5. **Project Closure.** Following completion of the activities described above, a soil remediation action report (RAR) will be prepared and submitted to the CTDEEP. The report will describe remediation activities that were completed and include documentation such as laboratory analytical results, field notes, photographs, field screening results and soil volumes.

2.0 Remediation Planning

The following sections describe the remediation planning tasks that will be performed prior to and/or in conjunction with the implementation of this soil RAP. As stated previously, planned remediation activities are expected to occur in conjunction with the redevelopment of the site. The activities described below pertain to soil excavation and management activities conducted during construction of the planned building at the site.

2.1 Health and Safety

AECOM has prepared a HASP for activities previously conducted at the site which meets the requirements of 29 CFR 1910.120. Prior to initiating remediation activities, the existing HASP will be updated to include activities described in this RAP. AECOM employees will conduct activities in accordance with the HASP. Remediation service providers will likewise be required to develop and follow their own HASP during all remediation activities. All remediation activities will be conducted by personnel that have completed 40-hour OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) training.

The objective of the HASP will be as follows:

- To protect the health and safety of on-site personnel.
- To protect the public from exposure to materials generated during remediation activities.

The updated HASP will include the following elements:

- Brief Site Description
- Summary of Site Safety Hazards
- Task Hazard Analysis
- Description of Chemicals of Concern
- Project Personnel
- Site Training/Medical Surveillance Requirements
- Personnel Protective Equipment (PPE) Requirements
- Air Monitoring Requirements
- Decontamination Procedures
- Work Zone Delineation Procedures
- Remediation Derived Waste Handling Procedures
- Emergency Response Protocols
- Special Operations Safety Requirements
- Emergency Resources
- Generic First Aid

2.2 Permits and Approvals

As this project will be conducted under the direction of a Connecticut Licensed Environmental Professional (LEP) and all work will be conducted in accordance with the Connecticut General Statutes 22a-133x or 22a-133y. CTDEEP approval of the proposed activities is not required. An ELUR will be required as part of the self-implementing remedial options to render the

materials beneath the site inaccessible and environmentally isolated, as well as to prohibit disturbance of the underlying impacted materials.

The CTDEEP General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer) may be required during performance of the proposed remedial activities and/or redevelopment of the site. This permit is required when the volume of impacted material stockpiled on site exceeds 1,000 cubic yards for a period of 45 days or greater, or if construction activities require the staging of greater than 10 cubic yards of impacted soil excavated from the property on some other parcel. In addition, permits and/or approval may be required from the local inland wetlands and planning and zoning commissions, as well as a Connecticut Department of Economic and Community Development (DECD) Flood Management Certification.

2.3 Public Notification

In accordance with the RSRs, public notification of the proposed remedial activities is required. The public notification process will be conducted in accordance with CGS Section 22a-133x or 22a-133y. This process includes a requirement for public notice of remediation activities to be placed in appropriate local newspapers a minimum of 45 days prior to the start of the soil remediation activities and notification to the Director of Public Health for the City. Additionally, either a notice of the planned remediation activities must be mailed to each owner of record of property which abuts the parcel or a sign must be placed at the site which is visible from the road which states that an environmental clean-up is in progress at the site. In accordance with the referenced General Statute, if a sign is posted at the site, it will not be less than six feet by four feet, clearly visible from the road, and include a name and telephone number of a person who can provide additional information about the project.

2.4 Waste Management

Several waste streams will be generated during remedial activities at the site. The following presents a summary of the anticipated waste streams and the proposed management processes:

1. Impacted soil excavated during remedial activities will be disposed of at an off-site facility. Excavated soil will be temporarily stockpiled on-site, characterized, and subsequently loaded into transport vehicles for shipping off-site to a disposal facility permitted to accept this waste or for use of polluted soil, in accordance with RCSA 22a-133k-2(h)(3), at a location where applicable RSR criteria will not be exceeded by COCs in the excavated soil. Any stockpiles of impacted soil to be disposed will be covered with weatherproof tarps and secured with sand bags and hay bales. Soil will be managed in accordance with the applicable provisions of the CT DEEP General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer), if applicable.
2. Groundwater at the site is located between approximately 6 and 9 feet bgs and may not be encountered during the planned redevelopment and remediation activities. However, if groundwater is encountered, it will be containerized pending either treatment and discharge subject to an applicable CT DEEP permit (e.g., General Permit for the Discharge of Groundwater Remediation Wastewaters Directly to Surface Water) or transport off-site for treatment and/or disposal. If contaminated groundwater is transported off-site, the groundwater will be characterized, prior to shipment to an appropriate off-site disposal facility permitted to accept this waste.
3. All decontamination media (see **Section 2.7**) will be collected, characterized, and transported for off-site disposal at a facility permitted to accept these wastes. Liquid materials will be segregated from solid materials, and will be temporarily containerized on-site subsequent to disposal at an off-site facility.
4. Other solid materials (e.g., plastic sheeting, hay bales, personal protective equipment, etc.) used during the remediation activities will be segregated from other waste streams. If solid materials become impacted with contaminated materials, the solid materials will be disposed of along with the contaminated materials. If the solid materials do not come into contact with contaminated materials, they will be disposed of as municipal solid waste.

Prior to being transported off-site, wastes will be properly characterized and profiled for disposal when necessary. Waste disposal will be approved as required and the intended facility will confirm their acceptance of the waste prior to transport. Wastes will be disposed at facilities permitted to accept such wastes.

Waste shipped from the site will be documented and accompanied by a waste manifest or bill of lading. The City of Meriden will be named as the generator of the waste, and a representative of the City will sign waste profile forms and manifests. The

waste disposal subcontractor will prepare disposal manifests or bills of lading and documentation for the City's use. The disposal documentation will be included in a post-remediation summary report.

2.5 Sedimentation and Erosion Control

Prior to performing any activities expected to disturb impact soil during redevelopment or remediation activities (e.g., asphalt demolition, soil excavation, loading, etc.), an erosion and sedimentation control system (e.g., hay bales and/or silt fence and catch-basin protection) will be installed. Site erosion and sedimentation controls will be installed and maintained in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control. To prevent off-site migration of materials, all equipment will be decontaminated prior to leaving the site and work will not be performed during heavy precipitation events.

2.6 Dust Control and Air Monitoring

To minimize the potential for the COCs at the site to be released in particulate form during site activities, dust control measures will be implemented if dust is observed during remedial activities. Throughout the remediation activities, air monitoring will be performed by the contractor, in conjunction with project health and safety requirements to monitor the total dust and particulate emissions at the site during remedial activities. The dust control monitoring data will be used to establish both health-based action levels and to document their attainment for site workers and occupants of adjacent parcels. Further details on air monitoring will be included in the remediation project site HASPs.

It is anticipated that dust control will be performed more frequently than required for maintenance of health-based levels, as visible dust can be a potential nuisance condition in and of itself. Dust control measures will include the use of water to pre-wet soil to prevent airborne migration. Water will also be sprayed, where necessary, onto active work areas and other areas of the site that may be subject to the release of dust as a preventative measure. Water may also be used in high-traffic areas to minimize dust emissions caused by vehicular traffic. Water used for dust control will be applied sparingly to limit the potential for stormwater run-off.

2.7 Decontamination

Decontamination of on-site heavy equipment will be performed as necessary to minimize the potential spreading of impacted materials. Brushing, pressure washing and/or steam cleaning will be used for equipment decontamination, with decontamination fluids collected for infiltration back onto the site.

All vehicular traffic entering and leaving the site will utilize the established construction entrance where an anti-tracking pad will be installed to inhibit tracking of material from the site onto the surrounding streets.

2.8 Site Security and Traffic Control

Temporary fencing will be used to provide security during remediation activities. Signage will be used to alert the public to the site conditions, the nature of the project activities, and to provide contact information. Traffic control will be accomplished via local police details employed during anticipated times of high activity affecting public streets.

2.9 Site Restoration

Following the completion of remediation activities, site restoration will include removal of project control features such as erosion controls and site security fencing and demobilization of all remediation and contractor-owned equipment and cleaning up.

3.0 Remediation Activities

Soil remediation will be initiated prior to site redevelopment. The planned redevelopment of the site includes construction of a building on portions of the site, with the remainder of the site being paved. As per Planning & Zoning requirements, 10% of the site will be open space (i.e., landscaped areas). The remedial approach for the site includes soil excavation and management and use of administrative controls. The general approach is as follows:

1. Project planning, design and permitting;
2. Remedial design investigation;
3. Soil excavation and management;
4. Administrative Controls; and
5. Project closure

3.1 Project Planning, Design and Permitting

The proposed remedial action is based on the understanding that the site will be developed as a multi-family residential property. Remedial planning will incorporate additional property development details as well as data obtained during a remedial design investigation (**Section 3.2**). Project planning will consist of enrollment of the site into the CTDEEP VRP and completing required pre-remediation public notifications. Any required permits will also be identified and obtained during the remedial planning phase. Anticipated permits and/or approvals may include, but are not limited to, local Inland Wetland and Watercourses Commission (IWWC) approval, local Planning and Zoning (P&Z) Commission approval, CTDEEP General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer), and a DECD Flood Management Certification.

3.2 Remedial Design Investigation

A remedial design investigation will be conducted to further refine the nature and extent of soil impacts and potentially obtain soil waste characterization data. The remedial design investigation will incorporate additional development plans to further evaluate soil impacts that can remain on-site following development, or will have to be excavated and removed. Specifically, additional testing of soil where PMC impacts have been identified will be conducted. The additional testing will be used to refine the extents of PMC impacts and determine the leaching characteristics of soil impacts using the Synthetic Precipitation Leaching Procedure (SPLP) analysis. The RSRs allow for compliance with the PMC using comparison of soil SPLP data to groundwater criteria.

3.3 Soil Excavation and Management

Soil impacts at the site include PAHs, ETPH, and metals detected at concentrations above R DEC and/or GB PMC. While COCs present at concentrations in excess of the R DEC can be addressed by rendering soil inaccessible, COCs present at concentrations exceeding the GB PMC will need to be excavated or rendered environmentally isolated. Because the development plans are not finalized, the extent to which building construction and areas of GB PMC exceedances overlap. The distribution of soil impacts is depicted on **Figure 3**. Where they do not overlap, it is anticipated that polluted soil will be excavated and disposed off-site. . Polluted soil includes soil containing COCs in excess of RSR criteria applicable to the site and soil containing detectable levels of COCs. For the purposes of this RAP, construction of the planned building is expected to require soil excavation to varying depths between 1 and 4 feet bgs to allow for placement of footings. Based on the assumed size of the building footprint, slab construction, and excavation of a portion of the PMC impacted soil, approximately 1,500 cubic yards of soil would need to be excavated and/or managed during remediation and development activities. Excavated soils will be managed in accordance with the RAP, or a site-specific Soil Management Plan.

3.4 Administrative Controls

Following completion of redevelopment of the site and any associated remedial actions, an ELUR will be applied to the site. The ELUR will render soils not excavated during redevelopment having impacts above the R DEC inaccessible (beneath a paved surface) and any remaining soils having impacts above the PMC as environmentally isolated (beneath the planned building). Once in place, the ELUR will restrict any future disturbance of impacted soil, require maintenance of pavement, and prohibit demolition of the building to ensure that impacted soils will not be accessible to potential receptors and will not be a potential source for groundwater impacts via leaching of COCs from impacted soils. Any activities expected to violate the above conditions (e.g., future site construction) would require CTDEEP approval to release the ELUR.

3.5 Project Closure

Following completion of the items describe above, it is anticipated that the soil conditions at the site will be in compliance with the RSRs. A RAR will be prepared summarizing pertinent investigation and remediation activities at the site and submitted to the CTDEEP. The RAR will include the final CSM for the site including pertinent findings, confirmation that investigation activities were completed in accordance with prevailing standards, including the CTDEEP Site Characterization Guidance Document, a discussion of receptors, and a description of all means and methods used to determine compliance with the RSRs. The RAR will also include plans for post-remediation groundwater monitoring and any monitoring or maintenance activities associated with the ELUR for the site.

4.0 Sampling and Analysis Plan

Sampling during remediation activities will include sampling of clean fill materials prior to their delivery to the site and waste characterization sampling.

4.1 On-site Soil Quality Evaluation Sampling

On-site soil quality evaluation sampling will be conducted as necessary during remediation activities. As the planned administrative controls and self-implementing remedial options will leave impacted soils in-place, only limited post-excavation soil sampling is expected. Soil impacts at the site have been sufficiently characterized and any remaining impacts will either be deemed inaccessible or environmentally isolated in accordance with the RSRs.

4.2 Clean Fill Sampling

Any fill materials imported to the site during redevelopment and/or remediation activities will be subject to the actions described in this section. Prior to delivery of off-site materials to the site, representative samples of each will be collected and analyzed. The sampling frequency for clean fill materials to be brought on site will be one sample per every 2000 cubic yards of material. As an alternative, the suppliers may issue recent analyses for materials from the same source. All data will be reviewed prior to delivery of off-site materials to the site. Soil must meet GB PMC and R DEC; otherwise an alternative source will be obtained that does meet the specified RSR criteria. If compounds are detected at concentrations below GB PMC and R DEC, then a request will be made to the CT DEEP for reuse.

4.3 Waste Characterization Sampling

Waste characterization sampling will be performed when necessary to supplement existing information and data for the purposes of satisfying the requirements of the disposal facility. Sampling frequency and analytical parameters/procedures will be in accordance with the disposal facility requirements. Waste characterization samples will be submitted under chain of custody for laboratory analysis.

4.4 Sampling Protocol

The typical equipment requirements and collection procedures used to sample soil are described below.

Equipment

- Stainless Steel (SS) Trowels, Spoons, or Scoops
- SS Spade or Hand Auger
- SS Bowls
- Sample Containers (provided by the laboratory)

Sample Collection Procedures

Soil samples will be collected according to the following procedure. Changes to these procedures must be justified and recorded in the field logbook.

1. Decontaminate sampling equipment.
2. Record the weather conditions and other notable site conditions.
3. Sketch and record the sampling conditions on the site map and in the field notebook.
4. Photograph the sampling location and conditions.
5. Collect the fill sample in a manner that is appropriate for the depth of the samples and the physical access.
6. Samples for the analysis of volatile organic compounds (VOCs) should not be composited or mixed. These samples should be placed into sample containers as quickly as possible with minimal disturbance. Sample containers should be filled to minimize headspace.
7. Mix the remainder of the sample. Fill containers at least $\frac{3}{4}$ full for all parameters.
8. Immediately label and refrigerate/ice the sample.
9. Stake location and record in logbook.
10. Submit the samples to the laboratory under chain of custody protocol.

Documentation

The following information is typical of that documented and reported in the field logbook when collecting confirmatory samples:

- Description of the sample that is being submitted to the laboratory including the physical characteristics of the sample (e.g., color, odor, and texture), and unusual characteristics.
- Type of sample (grab).
- Sample designation and location.

4.5 Laboratory Analysis

All proposed laboratory analyses will be performed by a laboratory certified to perform such analyses in the State of Connecticut. Detection limits will be selected to be below the applicable RSR and/or disposal criteria. The SOP laboratory protocols specific to the laboratory subcontractor will be applied.

Clean fill material (if needed) will be analyzed for the following parameters: volatile organic compounds (VOCs) by USEPA methods 5035/8260, semi-volatile organic compounds (SVOCs) by USEPA Method 8270, ETPH by CTDPH methods, pesticides by USEPA Method 8082, chlorinated herbicides by USEPA Method 8150, PCBs by USEPA method 8081, and CT RSR metals by USEPA Method 6000 and 7000 series. Synthetic precipitation leaching procedure (SPLP) analyses will also be conducted on certain samples based on the total mass analytical results.

As indicated above, waste characterization samples will be dependent upon the disposal facility's criteria.

4.6 Quality Assurance/Quality Control

The analytical laboratory will be required to perform all of the internal quality control procedures that are specified in the analytical methods. These include, but are not limited to:

- Blanks – The laboratory will analyze method blanks prepared and analyzed with each set of samples. These are a check of the accuracy of the system and indicate if there are positive biases.
- Calibration Checks – These are standards, generally from a different source than the calibration standards that are analyzed along with the samples. The purpose of the calibration checks is to determine if the analytical equipment is functioning accurately.

Field QA/QC samples will be submitted along with the laboratory samples. A description of each of the sample QC types is described below:

- Field duplicates – Field duplicates provide an indication of the overall precision of the field sampling and analytical method. Approximately one field duplicate will be collected for every 20 samples analyzed.

All methods will be performed in accordance with CT DEEP Reasonable Confidence Protocol (RCP) specifications as available. Upon receipt of the laboratory data, AECOM will perform a review of the data to evaluate its usability. This will include checking of such items as:

- Holding times;
- Field and laboratory blanks;
- Field and laboratory duplicates;
- Surrogate recoveries, if applicable;
- Calibration checks;
- Spike recoveries, if applicable, and
- Analytical method detection limits (MDLs).

Items such as GC/MS tuning, initial calibrations, calculations, and raw data will be checked by the laboratory.

The SOP laboratory protocols for the project laboratory subcontractor will be applied.

5.0 Documentation and Reporting

The City or its designated agent will oversee remediation activities and prepare and maintain a record of the activities performed. The City or its agent will be responsible for documenting that the project is completed in accordance with the specifications of this RAP, and generally accepted industry/engineering standards.

5.1 Field Documentation

The following list identifies the specific documentation and reporting requirements that will be required for this project.

- Maintaining an accounting of materials entering and leaving the site, including waste soils and other materials;
- Collecting photographic documentation of completed excavations, previously unknown areas of contamination (if identified), completed remediation areas and other pertinent observations;
- Documenting segregation, storage, and accounting of wastes that may be stockpiled at the site;
- Documenting and reporting of any spills, leaks, or other discharges occurring at the site;
- Documenting and reporting of any disruption/damage to utility structures;
- Documenting that erosion control and site security measures are adequately maintained throughout the project;
- Maintaining transportation/disposal documentation; and
- Documenting decontamination prior to demobilization.

5.2 Post-Remediation Reporting

Following completion of remediation activities, a RAR will be prepared and submitted to the CT DEEP. The report will describe the completed work at the site, and will contain the following specific items:

- Project narrative;
- Record site plans(s) showing the vertical and horizontal limits of the site contaminated soil relocation / reuse on-site as well as the final grades (A-2 survey);
- Sample analytical data in tabular form;
- Complete laboratory reports;
- Waste disposal documentation (manifests, bills-of-lading, certificates of disposal, etc.);
- Waste disposal summary indicating the weights, volumes, and disposition of excavated materials;
- Documentation of all materials incorporated into the project (clean fill, topsoil, etc.);
- Photographs of remediation activities; and
- Recommendations for future actions, including post-remediation groundwater monitoring, site inspections, and establishing an ELUR.

6.0 Post Remediation Conceptual Site Model

Upon completion of the soil remediation and redevelopment of the site, the significant exposure and migration pathways described in this RAP will be eliminated. This includes the potential direct exposure pathways of dermal contact, ingestion, and inhalation by rendering such soils inaccessible and the potential pollutant mobility pathway caused by precipitation infiltrating through soil by the removal of soil from the site that exceeds GBPMC and/or rendering soils inaccessible by constructing a building over them.

An ELUR will be recorded on the land records to provide an administrative mechanism to prevent disturbance of soils beneath the pavement and maintain the proposed building over environmentally isolated soils to prevent water infiltration. If site disturbance is required, the City will request a temporary release of the ELUR and will provide soil management plans to CT DEEP.

7.0 Schedule

Remedial actions and redevelopment of the site are intended to begin during 2015/2016 and be integrated into the overall flood control, site remediation and redevelopment project. However the schedule is dependent upon several factors including funding, availability of final redevelopment concepts, design and permitting.

8.0 References

AECOM. 2013a. Phase II Environmental Site Assessment. Parking Lot, 177 State Street, Meriden, Connecticut. December 2013.

AECOM. 2013b. Final Phase III Environmental Site Assessment. Parking Lot, 177 State Street, Meriden, Connecticut. March 2014.

Lenard Engineering Inc. 2013. Phase I Environmental Site Assessment. Parking Lot, 177 State Street, Meriden, Connecticut. August 2013.

**Appendix A.
Previous Investigation Data
Summary Tables**

**Appendix B.
Conceptual Site Model Summary
Table**

Figures

**Appendix A.
Previous Investigation Data
Summary Tables**

Table 1
Soil Summary Table
Parking Lot
177 State Street
Meriden, Connecticut

Parameter	RSR DEC		RSR PMC	SAMPLING LOCATION			
	I/C DEC	RES DEC	GBPMC	SB-1 (6-8')	SB-2 (4-6')	SB-3 (2-4')	SB-4 (10-12')
Sampling Date				11/7/2013 11:00:00 AM	11/7/2013 12:00:00 PM	11/7/2013 1:00:00 PM	11/7/2013 2:00:00 PM
Sample Depth				6-8 Feet	4-6 Feet	2-4 Feet	10-12 Feet
Laboratory Report Number				13K0344	13K0344	13K0344	13K0344
CTDEP ETPH (mg/Kg)							
ETPH	2500	500	2500	500	79	570	44
Percent Solids							
% Solids	~	~	~	79.6	76.3	86.9	80.6
Metals (mg/Kg)							
ANTIMONY	8200	27	~	28	NT	NT	NT
Arsenic	10	10	~	ND (2.9)	14	ND (2.7)	6.2
Barium	140000	4700	~	120	350	130	87
BERYLLIUM	2	2	~	0.46	NT	NT	NT
Cadmium	1000	34	~	2.0	2.1	1.2	ND (0.30)
Chromium	~	~	~	11	16	14	13
COPPER	76000	2500	~	870	NT	NT	NT
LEAD	1000	500	~	340	790	370	690
Nickel	7500	1400	~	23	NT	NT	NT
Silver	10000	340	~	4.1	1.2	120	21
THALLIUM	160	5.4	~	ND (2.9)	NT	NT	NT
Vanadium	14000	470	~	28	NT	NT	NT
Zinc	610000	20000	~	1500	NT	NT	NT
Metals (µg/L)							
Arsenic	~	~	500	7.4	NT	NT	NT
Barium	~	~	10000	120	NT	NT	NT
Cadmium	~	~	5	ND (2.5)	NT	NT	NT
Chromium	~	~	500	ND (5.0)	NT	NT	NT
LEAD	~	~	150	8.5	NT	NT	NT
Selenium	~	~	500	ND (25)	NT	NT	NT
Silver	~	~	360	ND (2.5)	NT	NT	NT
Mercury (mg/L)							
Mercury	~	~	0.002	ND (0.00010)	NT	NT	NT
Mercury (mg/Kg)							
Mercury	610	20	~	3.4	2.9	20	4.4
PCBs (mg/Kg)							
Total PCBs	10	1	~	ND	ND	ND	ND
VOCs (mg/Kg)							
1,2,4-TRIMETHYLBENZENE	1000	500	7	0.0029	ND (0.0020)	ND (0.0019)	ND (0.0016)

Table 1
Soil Summary Table
Parking Lot
177 State Street
Meriden, Connecticut

Parameter	RSR DEC		RSR PMC	SAMPLING LOCATION			
	I/C DEC	RES DEC	GBPMC	SB-1 (6-8')	SB-2 (4-6')	SB-3 (2-4')	SB-4 (10-12')
Sampling Date				11/7/2013 11:00:00 AM	11/7/2013 12:00:00 PM	11/7/2013 1:00:00 PM	11/7/2013 2:00:00 PM
Sample Depth				6-8 Feet	4-6 Feet	2-4 Feet	10-12 Feet
Laboratory Report Number				13K0344	13K0344	13K0344	13K0344
SVOCs (mg/Kg)							
ACENAPHTHENE	~	~	~	1.6	NT	NT	NT
ANTHRACENE	~	~	400	3.4	NT	NT	NT
BENZO(A)ANTHRACENE	7.8	1	1	4.8	NT	NT	NT
BENZO(A)PYRENE	1	1	1	3.6	NT	NT	NT
BENZO(B)FLUORANTHENE	7.8	1	1	4.0	NT	NT	NT
BENZO(G,H,I)PERYLENE	~	~	~	2.0	NT	NT	NT
BENZO(K)FLUORANTHENE	78	8.4	1	1.4	NT	NT	NT
CARBAZOLE	~	~	~	1.5	NT	NT	NT
CHRYSENE	~	~	~	4.5	NT	NT	NT
DIBENZ(A,H)ANTHRACENE	~	~	~	0.72	NT	NT	NT
DIBENZOFURAN	~	~	~	1.5	NT	NT	NT
FLUORANTHENE	2500	1000	56	10	NT	NT	NT
FLUORENE	2500	1000	56	2.0	NT	NT	NT
INDENO(1,2,3-CD)PYRENE	~	~	~	2.3	NT	NT	NT
2-METHYLNAPHTHALENE	~	~	~	0.64	NT	NT	NT
NAPHTHALENE	2500	1000	56	0.83	NT	NT	NT
PHENANTHRENE	2500	1000	40	12	NT	NT	NT
PHENOL	2500	1000	800	ND (0.42)	NT	NT	NT
PYRENE	2500	1000	40	8.6	NT	NT	NT
PYRIDINE	~	~	~	ND (0.42)	NT	NT	NT
PAHs (mg/Kg)							
ACENAPHTHYLENE	2500	1000	84	NT	0.29	0.57	ND (0.21)
ANTHRACENE	2500	1000	400	NT	0.54	0.57	ND (0.21)
BENZO(A)ANTHRACENE	7.8	1	1	NT	1.8	4.0	ND (0.21)
BENZO(A)PYRENE	1	1	1	NT	1.8	4.2	ND (0.21)
BENZO(B)FLUORANTHENE	7.8	1	1	NT	2.2	5.2	ND (0.21)
BENZO(G,H,I)PERYLENE	~	~	~	NT	1.2	4.0	ND (0.21)
BENZO(K)FLUORANTHENE	78	8.4	1	NT	0.79	2.0	ND (0.21)
CHRYSENE	~	~	~	NT	1.9	3.8	ND (0.21)
DIBENZ(A,H)ANTHRACENE	~	~	~	NT	0.35	1.2	ND (0.21)
FLUORANTHENE	2500	1000	56	NT	5.1	6.7	ND (0.21)
FLUORENE	2500	1000	56	NT	0.23	ND (0.39)	ND (0.21)
INDENO(1,2,3-CD)PYRENE	~	~	~	NT	1.4	4.6	ND (0.21)
NAPHTHALENE	2500	1000	56	NT	0.33	ND (0.39)	ND (0.21)
PHENANTHRENE	2500	1000	40	NT	4.1	2.7	ND (0.21)
PYRENE	2500	1000	40	NT	3.4	5.8	ND (0.21)

NOTES:

- Results compared to 1996 Remediation Standard Regulations (RSR) Criteria
- An asterisk (*) following a detection limit indicates that the minimum laboratory reporting limit exceeds one or more of the regulatory criteria.
- NT = Not tested.
- ~ = No Standard available
- For soil samples shaded values exceed the RSR Residential Direct Exposure Criteria (DEC) for the parameter.
- For soil samples shaded values exceed the RSR I/CDirect Exposure Criteria (DEC) for the parameter.
- For soil samples bolded values exceed the GM Pollutant Mobility Criteria (PMC) for the parameter.
- RSR criteria are in the same units as the analyte.
- Only those analytes which were detected above laboratory reporting limits are shown.

Table 2
 Groundwater Summary Table
 Parking Lot
 177 State Street
 Meriden, Connecticut

Parameter	SAMPLING LOCATION			
	SWPC	Trip Blank	TW-1	TW-2
Sampling Date		11/7/2013	11/7/2013 11:30:00 AM	11/7/2013 12:30:00 PM
Laboratory Report Number		13K0344	13K0344	13K0344
CTDEP ETPH (mg/L)				
ETPH	~	NT	0.13	0.11
SW-846 8082A (µg/L)				
Total PCBs	0.5	NT	ND	ND
VOCs (µg/L)				
Total VOCs	Various	ND	ND	ND
PAHs (µg/L)				
PHENANTHRENE	0.077	NT	0.20	ND (0.050)
Metals (µg/L)				
Arsenic	4	NT	9.0	9.4
Barium	~	NT	280	280
Mercury (mg/L)				
Mercury	0.0004	NT	ND (0.00010)	ND (0.00010)

NOTES:

1. Results compared to 1996 Remediation Standard Regulations (RSR) Criteria
2. An asterisk (*) following a detection limit indicates that the minimum laboratory reporting limit exceeds one or more of the regulatory criteria.
3. NT = Not tested.
4. ~ = No Standard available
5. RSR criteria are in the same units as the analyte.
6. SWPC = surface water protection criteria
7. For groundwater samples shaded values exceed the RSR SWPC for the parameter.
8. Only those analytes which were detected above laboratory reporting limits are shown.

Table 1
Soil Summary Table
Parking Lot
177 State Street
Meriden, Connecticut

Parameter	RSR DEC		RSR PMC	Sampling Location									
	I/C DEC	RES DEC	GBPMC	SB-100 (6-8)	SB-100 (10-12)†	SB-101 (4-6)	SB-101 (8-10)†	SB-102 (4-6)	SB-102 (10-12)†	SB-103 (2-4)	SB-103 (10-12)†	SB-104 (4-6)	SB-104 (6-8)
Sample Location				SB84992-01	SB84992-02	SB84992-05	SB84992-06	SB84992-07	SB84992-08	SB84992-09	SB84992-10	SB84992-03	SB84992-04
Laboratory ID				2/19/2014	2/19/2014	2/19/2014	2/19/2014	2/19/2014	2/19/2014	2/19/2014	2/19/2014	2/19/2014	2/19/2014
Sample Date													
ETPH (mg/Kg)													
Total Petroleum Hydrocarbons	2500	500	2500	152	539	149	58.7	616	261	107	<31.0	285	238
Percent Solids													
% Solids	~	~	~	72.3	91.4	91.2	74.3	87.8	75.9	90.4	83.3	88.7	74.9
Metals (mg/Kg)													
Antimony	8200	27	~	78.1	<5.22	<4.80	<6.24	NT	NT	<5.21	<5.55	6.42	9.73
Arsenic	10	10	~	NT	NT	3.43	2.75	NT	NT	3.15	2.61	5.39	9.24
Lead	1000	500	~	NT	NT	164	27.5	408	458	65.5	9.85	335	235
VOCs (mg/Kg)													
Total VOCs	Various	Various	Various	NT	NT	NT	NT	NT	NT	ND	NT	NT	NT
SVOCs (µg/Kg)													
Anthracene	~	~	400000	<229	<181	<182	<221	307	506	248	<199	205	<223
Benzo (a) anthracene	7800	1000	1000	<229	<181	504	<221	1160	1980	977	<199	1520	900
Benzo (a) pyrene	1000	1000	1000	<229	<181	658	<221	1230	1780	948	<199	1540	946
Benzo (b) fluoranthene	7800	1000	1000	<229	<181	585	<221	1170	2200	931	<199	1540	852
Benzo (g,h,i) perylene	~	~	~	<229	<181	334	<221	556	767	568	<199	753	488
Benzo (k) fluoranthene	78000	8400	1000	<229	<181	595	<221	892	899	763	<199	807	679
Chrysene	~	~	~	<229	<181	511	<221	1180	1810	1040	<199	1490	860
Dibenzo (a,h) anthracene	~	~	~	<229	<181	<182	<221	<188	269	189	<199	248	<223
Fluoranthene	2500000	1000000	56000	<229	<181	768	<221	2210	4130	2620	<199	2270	1450
Indeno (1,2,3-cd) pyrene	~	~	~	<229	<181	359	<221	536	906	645	<199	849	610
Phenanthrene	2500000	1000000	40000	<229	<181	277	<221	1460	1360	1660	<199	522	585
Pyrene	2500000	1000000	40000	<229	<181	805	<221	1740	2730	1760	<199	1870	1090

NOTES:

- Results compared to 1996 Remediation Standard Regulations (RSR) Criteria
- An asterisk (*) following a detection limit indicates that the minimum laboratory reporting limit exceeds one or more of the regulatory criteria.
- NT = Not tested.
- ~ = No Standard available
- For soil samples shaded values exceed the RSR Residential Direct Exposure Criteria (DEC) for the parameter.
- For soil samples shaded values exceed the RSR I/C Direct Exposure Criteria (DEC) for the parameter.
- For soil samples bolded values exceed the GM Pollutant Mobility Criteria (PMC) for the parameter.
- RSR criteria are in the same units as the analyte.
- Only those analytes which were detected above laboratory reporting limits are shown.
- ND = not detected above laboratory reporting limits.
- † = nSample collected from below the water table; therefore the PMC does not apply.

Table 2
Groundwater Summary Table
Parking Lot
177 State Street
Meriden, Connecticut

Parameter	SWPC	Sampling Location	
Sample Location		MW-SB-100	MW-SB-102
Laboratory ID		SB84874-01	SB84874-02
Sample Date		2/19/2014	2/19/2014
<i>CTDEP ETPH (mg/L)</i>			
Total Petroleum Hydrocarbons	~	<0.2	<0.2
<i>Mercury (mg/L)</i>			
Mercury	0.0004	<0.00020	0.00090
<i>Metals (mg/L)</i>			
Arsenic	0.004	<0.0040	0.0448
Barium	~	0.304	0.379
Lead	0.013	0.0132	0.0544
<i>PAHs (µg/L)</i>			
Benzo (a) anthracene	0.3	<0.050	0.153
Benzo (a) pyrene	0.3	<0.050	0.206
Benzo (b) fluoranthene	0.3	<0.050	0.147
Benzo (g,h,i) perylene	~	<0.050	0.094
Benzo (k) fluoranthene	0.3	<0.050	0.139
Chrysene	~	<0.050	0.155
Fluoranthene	3700	<0.050	0.295
Indeno (1,2,3-cd) pyrene	~	<0.050	0.164
Phenanthrene	0.077	<0.050	0.105
Pyrene	110000	<0.050	0.294

NOTES:

1. Results compared to 1996 Remediation Standard Regulations (RSR) Criteria
2. ~ = No Standard available
3. RSR criteria are in the same units as the analyte.
4. SWPC = surface water protection criteria
5. For groundwater samples shaded values exceed the RSR SWPC for the parameter.
6. Only those analytes which were detected above laboratory reporting limits are shown.

**Appendix B.
Conceptual Site Model Summary
Table**

**Table 3
CSM Table
177 State Street
Parking Lot
Meriden, CT**

REC Number and Name	REC Description	Soil Sampling Locations	Groundwater Sampling Locations	COCs Investigated	Deepest Sample Collected	Depth to Groundwater	RSR Compliance Issues	Soil Analytical results	Groundwater Monitoring Results	Status	Data Gaps
AOC-1 - Former Commercial/Industrial Property Use	Between the later 1800's and 1963 the southwest portion of the site was occupied by a newspaper publishing company, an automotive service and accessory business, a paint shop, a carpentry shop, a blacksmith shop, and a carriage works business.	SB-1(6-8), SB-2(4-6), SB-3(2-4), SB-4(10-12), SB-101(4-6), SB-101(8-10), SB-102(4-6), SB-102(10-12), SB-103(2-4), SB-103(10-12).	SB/TW-1, SB-TW-2, MW-SB-100, MW-SB-102	VOCs	10'-12'	8'	ETPH, PAHs, Pb, As, Hg	ETPH detected above R DEC in the unsaturated zone AOC-1. Pb was detected in the saturated and unsaturated zone above the R DEC in the northern and southern portion of AOC-1. PAHs were detected above I/C DEC, R DEC, and GB PMC in the southern and western portion of REC-1. PCBs not detected above laboratory reporting limits. VOCs were detected above laboratory reporting limits but below the R DEC, I/C DEC and GB PMC.	PAHs, As, Pb and Hg detected above SWPC. VOCs and PCBs not detected above laboratory reporting limits. ETPH detected; however there are no RSR criteria for ETPH in groundwater.	ETPH, PAHs, As, Pb present above RSR criteria. Based on the groundwater analytical results phenanthrene, arsenic, lead, and mercury are present above SWPC in groundwater at the likely upgradient portion of the property. Likely downgradient well, SB-MW-100 did not contain any COCs above SWPC. Additionally, surface water is not present within 150-feet of the property boundary; therefore, SWPC will likely not exceed at the point of compliance.	Phase III ESA provided sufficient information for preliminary planning of future property use and preliminary remedial design.
				SVOCs/PAHs							
				PCBs							
				Metals							
				ETPH							
AOC-2 - Urban Fill	Urban Fill was observed in soil borings advanced during the Phase II ESA and Phase III ESA outside the footprint of AOC-1 and along the western property line at depths from grade to approximately 5 feet below grade.	SB-1(6-8), SB-100(6-8), SB-100(8-10), SB-101(4-6), SB-101(8-10), SB-102(4-6), SB-102(10-12), SB-104(4-6), SB-104(6-8)	SB/TW-1, SB-TW-2, MW-SB-100, MW-SB-102	VOCs	10'-12'	8'	ETPH, PAHs, As, Pb, Sb, Hg	ETPH detected above R DEC with AOC-2 and soils deeper than the limits of AOC-2. Pb and Sb was detected above the R DEC in the southern portion of AOC-2. PAHs were detected above I/C DEC, R DEC, and GB PMC in AOC-2 and in soils deeper than the limits of AOC-2. PCBs not detected above laboratory reporting limits. VOCs were detected above laboratory reporting limits but below the R DEC, I/C DEC and GB PMC.	PAHs, As, Pb and Hg detected above SWPC. VOCs and PCBs not detected above laboratory reporting limits. ETPH detected; however there are no RSR criteria for ETPH in groundwater.	ETPH, PAHs, Pb, Sb present above RSR criteria in urban fill and in soils below urban fill. Based on the groundwater analytical results phenanthrene, arsenic, lead, and mercury are present above SWPC in groundwater at the likely upgradient portion of the property. Likely, downgradient well, SB-MW-100 did not contain any COCs above SWPC. Additionally, surface water is not present within 150-feet of the property boundary; therefore, SWPC will likely not exceed at the point of compliance.	The Phase III ESA provided sufficient information for preliminary planning of future property use and preliminary remedial design.
				SVOCs/PAHs							
				PCBs							
				Metals							
				ETPH							

Notes:

Abbreviations:

SVOCs - Semi-Volatile Organic Compounds

PAHs - Polycyclic aromatic hydrocarbons

COCs - Constituents of Concern

CSM - Conceptual Site Model

GB PMC - GB Ground Water Classification Pollutant Mobility Criteria

I/C DEC - Industrial/Commercial Direct Exposure Criteria

I/VC - Industrial/Commercial Volatilization Criteria

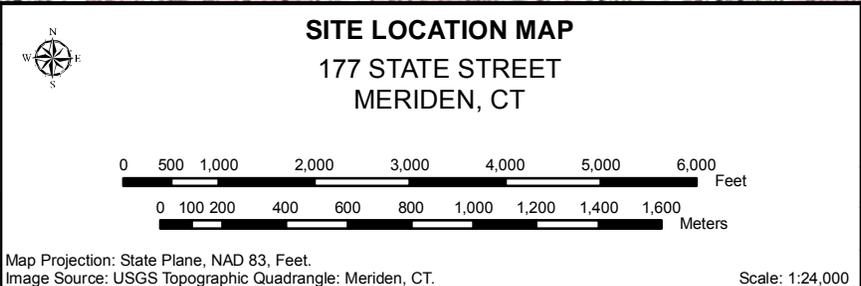
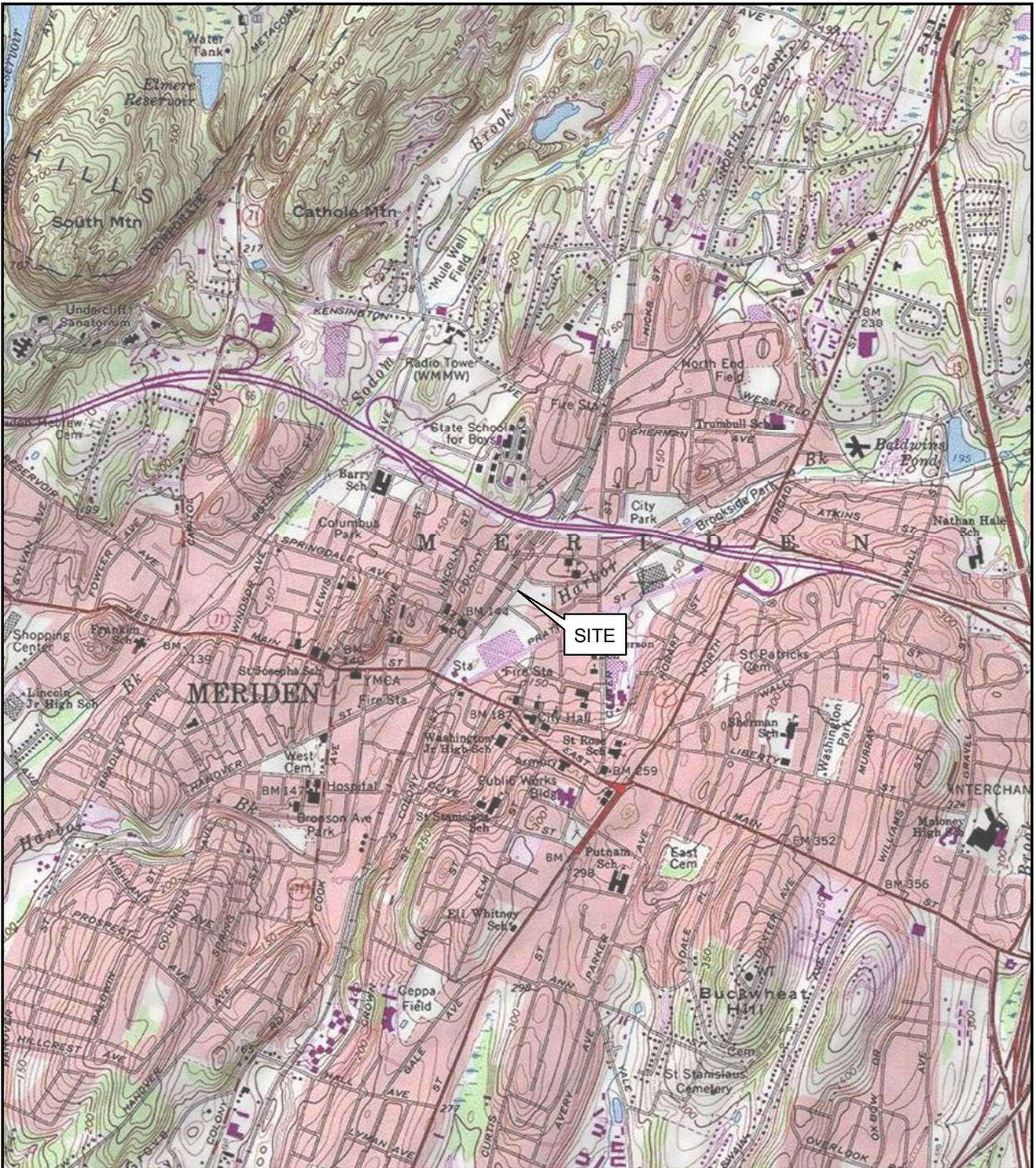
R VC - Residential Volatilization Criteria

PCBs - Polychlorinated Biphenyls

SWPC - Surface Water Protection Criteria

VOCs - Volatile Organic Compounds

Figures



AECOM

Figure 1

Date: June 2014

Project #: 60323240.1



AOC-1: Former newspaper publishing company, automotive service and accessory business, paint shop, carpentry shop, blacksmith shop, and carriage works business

AOC-2: Urban Fill (eastern and western portions of site)

Legend

- Phase II Boring
- ⊕ Phase II Boring/Temporary Well
- Phase III Boring
- ⊕ Phase III Boring/Temporary Well
- Limits of AOC-1
- Subject Property Line

Note: Boring locations are approximate.

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Figure 2
 Site Plan
 177 State Street
 Meriden, Connecticut



REMEDIAL ACTION NOTES:

1. THE SITE WILL BE ENTERED INTO THE VOLUNTARY REMEDIATION PROGRAM UNDER CONNECTICUT GENERAL STATUTES (CGS) 22A-133X OR 22A-133Y.
2. THE REMEDIATION OF THE SITE WILL BE INTEGRATED INTO THE REDEVELOPMENT WITH HARD SCAPES BEING USED TO RENDER CONTAMINATED SOIL ENVIRONMENTALLY ISOLATED AND INACCESSIBLE. PLANNING AND ZONING REQUIREMENTS FOR MULTI-FAMILY DEVELOPMENTS ALLOW FOR 75% BUILDING, 15% PARKING AND 10% LANDSCAPING, WITH SET-BACK REQUIREMENTS OF 25 FEET FROM FRONT AND REAR PROPERTY LINES AND 10 FEET ON THE SIDES. THE SOUTHERN PORTION OF THE SITE IS LOCATED WITHIN A FEMA 100-YEAR FLOOD ZONE.
3. SOIL WITH CONCENTRATIONS OF CONTAMINANTS EXCEEDING CT REMEDIATION STANDARD REGULATIONS (RSR) POLLUTANT MOBILITY CRITERIA (PMC) REMAINING ON-SITE AND WILL BE PLACED UNDERNEATH THE PROPOSED BUILDING(S). SOILS UNDER BUILDINGS WILL BE RENDERED ENVIRONMENTALLY ISOLATED. AN ELUR WILL BE PLACED ON THE PROPERTY DEED AND WILL PROHIBIT DISTURBANCE OF IMPACTED SOIL BENEATH THE BUILDING(S) OR DEMOLITION OF THE BUILDING. EXCESS SOILS NOT PLACED UNDER THE BUILDING WILL BE STOCKPILED AND TRANSPORTED OFF-SITE FOR DISPOSAL AT AN APPROVED FACILITY.
4. SOIL WITH CONCENTRATIONS OF CONTAMINANTS EXCEEDING RSR DIRECT EXPOSURE CRITERIA (DEC) WILL BE RENDERED INACCESSIBLE UNDER PAVEMENT. SEE STANDARD DETAIL. AN ELUR WILL BE PLACED ON THE PROPERTY TO CONFIRM THAT THESE SOILS ARE INACCESSIBLE, PROHIBIT DISTURBANCE OF THESE SOILS AND CONFIRM THAT INTEGRITY OF THE PAVEMENT IS MAINTAINED SUCH THAT IMPACTED SOILS REMAIN INACCESSIBLE. SOILS WHERE DEC EXCEEDANCES HAVE BEEN IDENTIFIED WILL NOT BE BENEATH LANDSCAPED AREAS.
5. CONFIRMATION SAMPLING WILL BE PERFORMED AS NECESSARY AS PART OF THE SOIL REMEDIATION/SITE REDEVELOPMENT WORK.
6. EXCESS SOIL GENERATED DURING REDEVELOPMENT ACTIVITIES WILL BE PROPERLY STOCKPILED AT THE SITE OR ANOTHER APPROVED LOCATION, CHARACTERIZED AND PROPERLY DISPOSED AT A FACILITY LICENSED TO ACCEPT SUCH MATERIAL. BASED ON THE AMOUNT OF EXCESS SOIL, A CTDEEP GENERAL PERMIT FOR CONTAMINATED SOIL AND/OR SEDIMENT MANAGEMENT (STAGING AND TRANSFER) MAY BE REQUIRED.
7. GROUNDWATER DEWATERING IS NOT ANTICIPATED FOR THIS PROJECT.
8. ALL APPLICABLE LOCAL, STATE & FEDERAL PERMITS WILL BE OBTAINED.
9. SITE SECURITY WILL INCLUDE FENCING AND SIGNAGE AS NECESSARY.
10. VOCs WERE DETECTED IN ONE SOIL SAMPLE COLLECTED FROM THE SITE AT A CONCENTRATION BELOW APPLICABLE CTDEEP REMEDIATION CRITERIA.
11. A PRE-REMEDIAL INVESTIGATION WILL BE CONDUCTED AND WILL FOCUS ON REFINING THE EXTENT OF PMC IMPACTED MATERIALS.
12. PAVEMENT SPECIFICATIONS SHALL CONFORM TO THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 816.

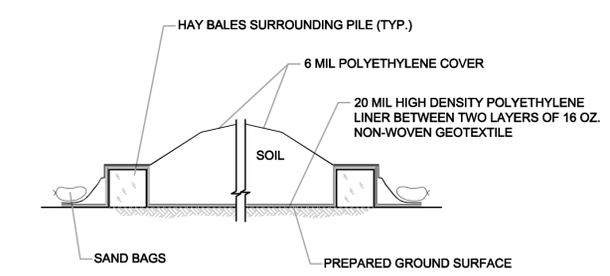
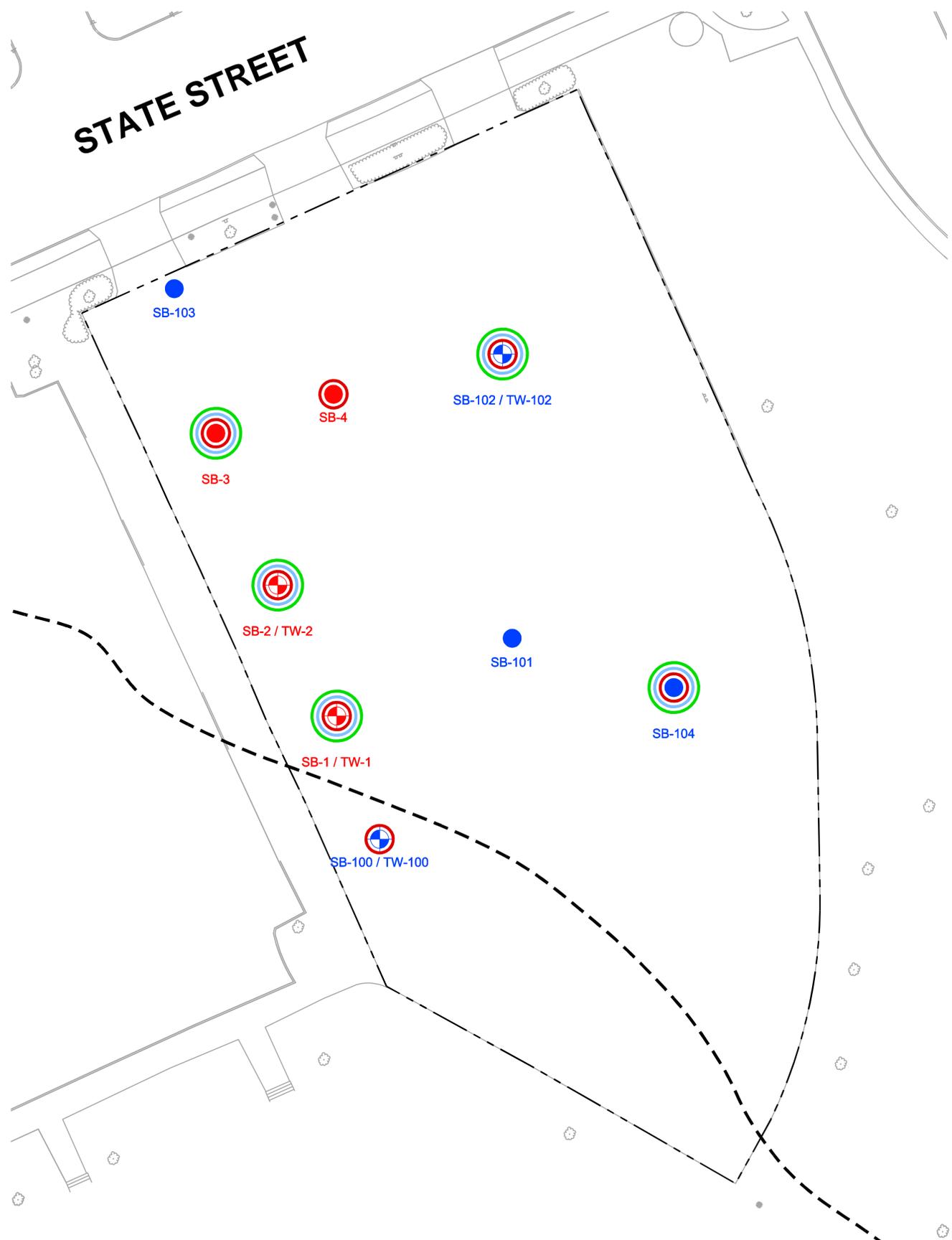
MAP REFERENCE:

BASEMAP REFERENCE PROVIDED BY MILONE & MACBROOM ENTITLED "2012-05-10-HUB-MP1" FOR THE MERIDEN HUB SITE.

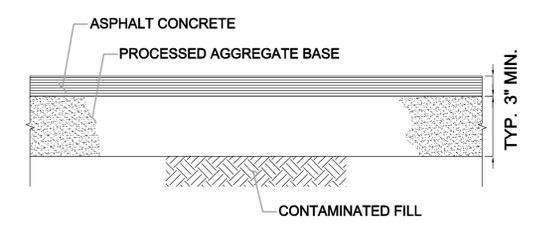
THE PROPERTY BOUNDARY FOR THE 177 STATE STREET PARCEL IS APPROXIMATE BASED ON THE EDGE OF PAVEMENT LIMITS AND SHOULD NOT BE USED IN PLACE OF SURVEYED DRAWINGS.

LEGEND:

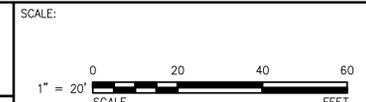
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|-----------------------|---------------------------|--------------------|---|
| PHASE II SOIL BORING | PHASE II MONITORING WELL | R DEC EXCEEDANCE | PROPERTY BOUNDARY |
| PHASE III SOIL BORING | PHASE III MONITORING WELL | I/C DEC EXCEEDANCE | FEMA 100 YEAR FLOOD LINE BASED ON FEMA DFIRM MAP FOR MERIDEN, CONNECTICUT |
| GB PMC EXCEEDANCE | | | |



CONTAMINATED STOCKPILE MANAGEMENT
NOT TO SCALE



PAVEMENT DETAIL
NOT TO SCALE



177 STATE STREET
MERIDEN, CONNECTICUT

FIGURE 3
DISTRIBUTION OF SOIL IMPACTS AND REMEDIAL ACTIONS

JOB 06323240
FILE NO. _____
CAD FILE _____
SHEET _____

P:\0156175-HUB\PROJECT\2\MERIDEN.DWG
 LAST UPDATE: Monday, June 30, 2014 12:06:24 PM
 PLOT DATE: Monday, June 30, 2014 12:08:39 PM
 ARCH D - 3-7-05