APPENDIX B

South Side Investigation Summary Report

February 27, 2018

Gary Trombly, Jr.
Department of Energy and Environmental Protection
Storage Tank and PCB Enforcement Unit
79 Elm Street
Hartford, Connecticut 06106

Craig Bobrowiecki
Department of Energy and Environmental Protection
Remediation Division
79 Elm Street
Hartford, Connecticut 06106

Re: Partial Consent Order #COWSPCB 15-001
Soil and Groundwater Report – Parcel B (South)

Dear Messrs. Trombly and Bobrowiecki:

Pursuant to the Partial Consent Order (PCO) between the Commissioner of Energy and Environmental Protection (the "Commissioner") and The United Illuminating Company ("UI"), UI is submitting the Soil and Groundwater Report – Parcel B (South) for your review.

Should you have any question regarding any of the above, please don't hesitate to contact Charles Eves at (203) 926-4632 or (203) 535-7461.

UNITED ILLUMINATING COMPANY

Anthony Marone
President and Chief Executive Officer
United Illuminating Company

Charles Eves
Senior Project Manager
United Illuminating Company

CERTIFICATION

I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, that the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information is punishable as a criminal offense under §53a-157b of the Connecticut General Statutes and any other applicable law.

Anthony Marone

Charles Eves

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REPORT

South Side Investigation Summary Report

Former English Station Facility
510 Grand Avenue
New Haven, Connecticut

March 2018

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Weston & Sampson Engineers, Inc. (Weston & Sampson), on behalf of the United Illuminating Company (UI), has prepared this Investigation Summary Report for a portion of the Former English Station facility located at 510 Grand Avenue in New Haven, Connecticut (hereinafter referred to as "the Site"). The Site occupies approximately 9-acres of land located south of Grand Avenue in New Haven. The Mill River borders the Site to the east, west and south. UI operated a former electric power plant (English Station) on the property between 1929 and 1992. Vacant buildings associated with English Station are located on Site. See Figure 1 for Site location and Figure 2 for an aerial view.

As a requirement of the change of control from UI to Iberdrola Electric Utility (Final Decision Docket No. 15-07-38), UI is required to investigate and remediate certain environmental conditions of the Site. TRC Companies Inc. has been retained by UI to provide Licensed Environmental Professional (LEP) services associated with investigation and remediation of the Site. Weston & Sampson has been retained by UI to provide Site investigation services. The Site investigation activities were performed in accordance with the Connecticut Department of Energy and Environmental Protection (CT DEEP) Partial Consent Order COWSPCB 15-001 (PCO) and applicable federal and state regulations.

Weston & Sampson performed Site investigation between July and September 2017. The investigation described in this report included the collection of soil, sediment and porous media (concrete, wood and asphalt) samples for laboratory analysis. The investigation was performed in accordance to with TRC's Scope of Study (SOS), English Station, revised July 2017, which was reviewed and approved by the CT DEEP.

To expedite implementation of potential remedial actions, two separate Investigation Summary Reports have been prepared and the reports have been split roughly by parcels. This report applies to the Areas of Concern (AOCs) within and abutting the South Side of the Site as shown on Figure 3. Specifically, this report applies to results for soil, sediment, and porous media for AOC-3, AOC-7 through AOC-11 and AOC-13. Major findings of the investigation for the above AOCs are provided below:

AOC-3 Former Septic Systems

- AOC-3 includes two former septic system locations within the South Side of the Site. Historic maps depict the locations of the historic septic structures; one located on the western side of the Site (Septic West) and one along the eastern side of the Site (Septic East).
- Weston & Sampson advanced soil borings and collected porous media (concrete and asphalt) samples within the area of Septic West and East. Sediment samples were also collected within each structure. Soil impacts require some remediation in the area of the septic structures, but these impacts may be the result of releases not related to the tanks. Testing of sediments within the structures indicates that they should be removed and disposed offsite.

AOC-7 Former Waste Oil Aboveground Storage Tank (AST) / Oil Pump Room Area

- AOC-7 is located within the southeastern corner of the Site. A former waste oil AST was located adjacent to the southeastern corner of the English Station building. An oil pump house that serviced the building boiler system was also located in this area. Numerous soil borings were advanced throughout AOC-7. Porous media (concrete and asphalt) samples were also collected at boring locations and from concrete pads and pipe trenches. Sediment samples were also collected from manhole structures and pipe trenches.
- Historical and recent data have found evidence of PCB and ETPH releases to this area of the

Site. Remedial actions are anticipated for the PCB and petroleum impacts identified within AOC-7.

AOC-8 Former Fuel Oil ASTs

- AOC-8 is located within the southern portion of the Site. One 50,000-gallon No. 6 fuel oil AST was previously located within a concrete containment berm located in the far southern end of the Site. To the west of the former No. 6 fuel oil tank, there were two 5,000-gallon No. 2 fuel oil ASTs that were formerly located in concrete cradles.
- Weston & Sampson advanced soil borings, collected surficial soil samples, and porous media samples (concrete and asphalt) throughout AOC-8. Sediment samples were also collected from pipe trench and sump structures within the AOC. PCB releases were identified, and remediation of PCB impacts to soil, sediment and porous media is anticipated. Petroleum hydrocarbon impacts were not identified in soil, but releases to sediments within the trenches were identified and will also require remediation.

AOC-9: Transformer Areas

- AOC-9 is located within the southwestern portion of the Site, to the west of the English Station building. Multiple historic transformers and capacitors were located in this area. Numerous soil borings were advanced throughout AOC-9 and porous media (concrete and asphalt) samples were also collected at boring locations and from concrete pads and pipe trenches. Sediment samples were also collected from manhole structures and pipe trenches throughout the AOC.
- Historical and current data have identified releases of PCBs and petroleum hydrocarbons from historical Site operations. As such, these impacts to soil and porous media, as well as sediments, will require remediation.

AOC -10 Former Interior Chemical Storage Areas

- AOC-10 is comprised of outbuildings located within the southwestern and southern portions of the Site associated with former interior chemical storage. Weston & Sampson advanced soil borings, collected numerous porous media (concrete) samples, and one sediment sample within AOC-10.
- Limited impacts to shallow soil beneath the buildings were identified. However, the concrete of these buildings was typically impacted with PCBs and demolition and removal of the concrete and limited soil from beneath the structures is anticipated to remediate these impacts. Identified impacts to concrete and limited impacts to soil will require remediation.

AOC -11 On-Site Fill Material: Evaluation of Tracking

- AOC-11 is fill material located throughout the Site. The fill material has been adequately characterized by others during previous investigatory efforts. This investigation included evaluation of tracking across pads/structures not captured by other AOCs. Weston & Sampson collected 3 porous media (concrete) samples from concrete pad structure P12 located in the southwestern portion of the Site. There was no sediment observed within the manholes of this structure and therefore, samples were not collected.
- Results of the investigation indicate surface concrete at structure P12 is not impacted with PCBs. In fact, data collected across the Site indicate that tracking of PCBs and other COCs across the property is not seen as a potential release mechanism. Additional investigation of the P12 structure within AOC-11 is not required.

AOC -13 Former Wastewater Treatment System

- AOC-13 is located within the southeastern portion of the Site, east of the English Station building and includes remnants of a former wastewater treatment system (primarily concrete pads). The operational history of this former treatment system is not well documented in historic reports. Weston & Sampson advanced soil borings and collected porous media samples (asphalt or concrete) throughout AOC-13. Sediment samples were also collected from pipe trenches in this area.
- Field screening of soil samples and results from the laboratory analysis of the soil samples indicate that releases of petroleum hydrocarbons have occurred during historical Site operations and these impacts will require remediation. PCBs were detected in shallow and deeper soil also indicating that releases have occurred during historical Site operations that will require remediation. Analysis of sediment samples identified PCBs and ETPH in sediments collected from trenches within the area that are likely from releases during historical Site operations and will require remediation as well.

1.0 INTRODUCTION

Weston & Sampson Engineers, Inc. (Weston & Sampson) has prepared this Investigation Summary Report which includes a detailed description of investigation activities, soil, sediment, and porous media data generated, and a summary discussion of remediation options for environmental impacts on the South Side of the parcel 510 Grand Avenue in New Haven, Connecticut also referred to as "English Station" (hereinafter referred to as "the Site"). Figure 1 provides a Site Locus map and Figure 2 is an aerial map showing the area covered under this South Side Investigation Summary Report.

In preparation of this report, Weston & Sampson conducted sampling of soil, sediment, and porous media samples for Areas of Concern (AOCs) located on the South Side of the Site and abutting AOCs as prescribed in the SOS prepared for UI by TRC (attached as Appendix A). The SOS was prepared for UI to execute its obligations under Partial Consent Order (PCO) COWSPCB 15-001, issued by the Connecticut Department of Energy & Environmental Protection (CT DEEP). The CT DEEP reviewed and approved the scope of work in the SOS and TRC oversaw all investigation activities performed by Weston & Sampson.

Weston & Sampson investigations summarized in this report were performed between July and September 2017. The investigation activities described in this report are limited to AOC-3, AOC-7 through AOC-11 and AOC-13. The locations of these AOCs are shown on Figure 3. Other AOCs not discussed in this report are covered in the North Side Investigation Summary Report. The results from the groundwater investigation performed will be discussed in the Groundwater Investigation Summary Report.

Samples collected were analyzed for potential chemicals of concern (COC) at the Site including polychlorinated biphenyls (PCBs), Semi-Volatile Organic Compounds (SVOCs), Volatile Organic Compounds (VOCs), extractable total petroleum hydrocarbons (ETPH), and Connecticut Remediation Standard Regulations (RSR) 15 Metals. Selected analyses for samples collected were determined based on TRC's SOS and field observations made by Weston & Sampson. Select samples were analyzed for leachable concentrations of contaminants using the Synthetic Precipitation Leachate Procedure (SPLP).

The investigation activities were conducted to further characterize areas of the Site not previously investigated, to identify other potential sources of impacts, and to delineate the horizontal and vertical extents of previously identified impacts to the Site. Analytical results were compared to applicable Connecticut remedial criteria found in Section 22a-133k-1 through -3, inclusive, of the RSRs of the Regulations of Connecticut State Agencies (RCSA). Because federal PCB regulations are also applicable, remedial standards contained within Chapter 40 of the Code of Federal Regulations Part 761 (40 CFR Part 761) are applicable. However, for the purposes of this report, the characterization and delineation of Site impacts are compared to criteria from the RSRs. Further discussion and application of the federal PCB regulations found in 40 CFR Part 761 will be included in the remedial action plans to be developed for the Site.

1.1 Location and Description

The Site is located at 510 Grand Avenue in New Haven, Connecticut and is comprised of approximately 9-acres of land located on a man-made island (Ball Island) situated within the Mill River which runs north to south into the Long Island Sound. The Site is comprised of two parcels, Parcels A and B (see Figure 2 for property and parcel boundaries) which are owned by two separate entities. The island is retained via steel bulkhead which encompasses the Site to the east, west and south. The Site can be further located through the following coordinates:

UTM Coordinates:	675239.9 meters North
	4574883.6 meters East
	Zone 18
Latitude/Longitude:	41° 18' 23" North
	72° 54' 24" West

The South Side of the Site, as indicated on Figure 2, is the subject of this report and covers an area of approximately 5.32 acres of land located at the southern tip of Ball Island. Several structures currently stand within this portion of the Site, including the former English Station power generating plant and smaller outbuildings. Of the 5.32 acres of land in the southern portion of the Site, the footprint of the English Station building encompasses approximately 2.29 acres. Other buildings present in this area of the Site include a former assembly hall, a storage building, and what was referred to as the "foam house".

The northern portion of the Site is discussed in a separate Investigation Summary Report. The North Side of the Site covers an area of approximately 3.58 acres and is developed with a two-story former electrical generating plant (also called Station B). In addition to Station B, the North Side of the Site also includes former locations of concern including a coal bin storage area, a stormwater surge basin, cable houses and a subsurface cooling water tunnel which historically operated on Site.

1.2 Site History

As indicated in the SOS prepared by TRC, the Site was first occupied by Enos S. Kimberly and Company in the late 1880s and was utilized as a coal and lumber facility. In 1890, New Haven Electric Company purchased the Site and began the construction of Station B. As part of this construction, Ball Island's footprint was expanded via the filling of the portion of the Mill River south of the Site. Station B reportedly operated as a coal-fired power plant until 1903.

UI purchased the property in 1914 and began the construction of the English Station Power Plant in 1924. The initial construction consisted of a coal-fired, low-pressure boiler and turbine areas which were completed in 1929. Sometime between 1948 and 1952, two additional coal fired, high-pressure boilers and turbines were constructed at the southern end of English Station. At that time, Ball Island was further expanded to the south by the additional filling of the Mill River. English Station power plant operated as a coal-fired power plant until sometime in the mid-1950s when the plant was converted into an oil-fired plant. English Station then operated as an oil-fired plant until 1992 when it was placed on deactivated

reserve status.

In 2000, UI transferred the Site to Quinnipiac Energy, LLC (QE). At that time, an escrow of $1,900,000 was established by UI to support environmental investigation and cleanup of the Site. From 2000 through 2008, Advanced Environmental Interface, Inc. (AEI) performed environmental assessment activities on behalf of QE. Assessment activities were ceased in 2008, when the escrow funds were depleted. In 2006, prior to depleting the escrow funds, QE filed for bankruptcy and divided the property into two parcels (Parcels A and B as shown on Figure 2). Subsequently, QE sold Parcel A to Evergreen and Parcel B to ASNAT.

In 2011, the new Site owners (ASNAT and Evergreen) contracted Grant Mackay Company (Grant Mackay) and Classic Environmental Inc. (Classic Environmental) to demolish the existing structures on-Site with the intention of generating enough money through selling scrap-metal steel to fund the future environmental investigation and eventual cleanup of the Site. The initial focus of this project was at the main English Station power plant building. In 2012, CT DEEP conducted an on-Site inspection which concluded that there was potential for tracking and spreading PCB contamination from source areas to other uncontaminated areas of the Site. In February 2012, CT DEEP issued a Cease and Desist Order (CDOWSUST 12-001) which terminated all on-Site investigation and remedial activities. The Site has remained dormant until the performance of the investigation summarized within this report and others.

1.3 Current Site Conditions

In July 2017, Weston & Sampson was granted Site access to observe current on-Site conditions. The Site is primarily improved with decaying impervious surfaces (asphalt and concrete), as evident by vegetative growth throughout the Site. Brushy vegetation had been allowed to grow in some areas of the Site and the brush was removed from above the ground surface only to allow access to certain areas. The brush removed was collected on poly-sheeting and not allowed to contact potentially PCB-impacted ground surfaces. The brush was then disposed of as clean vegetative debris and the poly-sheeting was disposed as PCB Remediation Waste.

Several large and small debris piles (scrap metal, wood, etc.) were noted throughout the Site and some had to be moved to allow access to investigation areas. None of this debris was removed from the Site and was moved as little as required to gain access to investigation locations.

Directly in front of the English Station power plant building (north of the building) were field trailers, Conex boxes, truck trailers, portable restrooms, an excavator and black contractor bags with asbestos containing material (ACM). Evidence of oil staining on the asphalt directly in front of the English Station power plant was also observed. The equipment and materials observed in front of the power plant building, including those that were oil-stained, have subsequently been properly decontaminated and removed from the Site or properly disposed of by others under contract to UI as prescribed in a work plan approved by CT DEEP.

1.4 Historical Site Filling

On March 27, 2003, the CT DEEP approved a “Widespread Polluted Fill Variance” for the Site based on an application submitted on behalf of Quinnipiac Energy, LLC. The application noted that the Site

subsurface includes widespread polluted fill from historic dredging operations and that:

- Sediments impacted by historical industrial use along the Mill River had been used to construct Ball Island. Prior to 1886, there were sand bars present within the current footprint of Ball Island and that the grade had been raised enough to allow for commercial use after 1886. Grades were subsequently raised to allow for construction of Station B on the northern portion of the Site in 1901 and that fill was placed on the southern portion of the Site to allow for construction of the English Station Power Generation Facility by 1935. Construction of final grades at the Site using sediments appears to have been completed by 1953.
- Sediments in the Mill River had been impacted by historical industrial operations which included coal gasification, storage and burning of coal in electrical generating facilities, metal processing, and lumber storage. These activities had impacted sediment within the Mill River with petroleum hydrocarbons and associated polyaromatic hydrocarbons (PAHs), and metals.
- These impacted sediments were used to construct Ball Island above the mean low water level in the Mill River and placed throughout the Site contained within a steel bulkhead.

The CT DEEP approval of the Widespread Polluted Fill Variance application applies to the entire English Station Site and is based on meeting the following provisions of RCSA 22a-133k-2(f)(1):

- (A) geographically extensive polluted fill is present at such parcel and at other parcels near the subject parcel; There have been no changes in site conditions that might change the Approval;
- (B) such fill is not polluted with volatile organic substances; Weston & Sampson sampling efforts did not identify additional VOC impacts at the Site and there was nothing found that might change the Approval;
- (C) such fill is not affecting and will not affect the quality of an existing or potential public water supply resource or an existing private drinking water supply; There have been no changes in site conditions that might change the Approval;
- (D) the concentration of each substance in such fill is consistent with subsection (b) of this section; There have been no changes in site conditions that might change the Approval;
- (E) the placement of such fill was not prohibited by law at the time of placement. There have been no changes in site conditions that might change the Approval; and
- (c)… whether the person requesting the variance is affiliated with any person responsible for such placement through any direct or indirect familial relationship or any contractual, corporate or financial relationship other than that by which such person's interest in such parcel is to be conveyed or financed; No change from original application.

No changes in Site conditions were observed during the investigation that might affect the applicability and use of the variance and no changes in conditions around the Site (e.g., addition of groundwater supply wells) have occurred. Thus, dredged sediments impacted with metals, PAHs, and total petroleum hydrocarbons that are believed to be present in the fill materials and not because of releases at the Site after the fill was placed are subject to the approved variance request. As such, the pollutant mobility criteria (PMC) are not applicable to these chemicals. However, remediation to address direct

exposure criteria (DEC) is still required.

Weston & Sampson investigation data are discussed in Section 4. As detailed in Section 4, results of the investigation identified PAHs, ETPH, and metals within the AOCs discussed in this report and that some of these analytical results exceeded remedial criteria (i.e., PMC and DEC). As PAHs, ETPH and metals are ubiquitous in fill material at the Site, delineation of exceedances is not considered feasible. Site-wide fill material will be remediated in accordance with the Fill Variance.

1.5 Investigation Objectives

The purpose of this Investigation Summary Report is to present the findings of Weston & Sampson's Site investigation. This Report includes the following items which will be discussed and evaluated:

1. Detailed description of the investigation activities performed.
2. Evaluation relative to the nature and extent of on-Site soil, sediment, and porous media contamination within the AOCs.
3. Update the Conceptual Site Model for each AOC.
4. An evaluation of the Data Quality Objectives (DQOs) to determine if the data obtained from on-Site investigations meet the requirements of the CT DEEP Laboratory Quality Assurance and Quality Control Data Quality Assessment and Data Usability Evaluation (DQA/DUE) Guidance Document dated May 2009 and revised in December 2010 as well as the Revised SOS prepared by TRC.
5. A preliminary evaluation of remedial action alternatives that address on-Site impacts relative to future industrial/commercial (I/C) Site use. Remedial action alternatives are evaluated based on COCs determined within each AOC and the applicable regulations which include:
    a. I/C Direct Exposure Criteria (I/C DEC).
    b. Groundwater Classification "B" Pollution Mobility Criteria (GB PMC)

1.6 Pre-Investigation Activities

In preparation for the Site investigation, Weston & Sampson contracted ACS Underground Solutions from Redding, Connecticut to perform ground penetrating radar (GPR) surveys throughout the Site to locate on-Site utilities and other subsurface structures. In addition to utilities, GPR was also used to locate tie-backs and deadmen that are used to support Ball Island's bulkhead. Obstructions and utilities were marked out utilizing spray paint and flagging, where applicable. The focus of the GPR survey was conducted in areas where soil borings were planned to be advanced. Additional Site utility location was performed by UI in support of the investigation. Call Before You Dig (CBYD) was also notified in advance of the investigation activities to be performed by the drilling contractors.

Prior to the commencement of environmental sampling and generating investigation derived waste (IDW), Weston & Sampson had an anti-tracking pad and IDW drum storage area constructed. An anti-tracking pad was installed within the North Side of the Site between AOC-2 and AOC-12N. The 12-foot-wide by 50-foot-long anti-tracking pad was constructed utilizing synthetic geofabric covered with

angular stone (ASTM C-33 size No 2/3). All equipment that accessed the Site was decontaminated on the anti-tracking pad following procedures specified in 40 CFR Part 761 in §761.79(c)(2)(i) or (ii). The decontamination solvent used was a commercial-grade terpene hydrocarbon solution containing greater than ninety percent terpene hydrocarbon.

The drum storage area was constructed utilizing polyethylene sheeting and orange construction fencing and an M_L mark was placed on the fencing. Open top and Department of Transportation (DOT)-rated 55-gallon drums were utilized to store solid IDW on Site which included personal protective equipment (PPE) and all soil wastes generated from the soil investigation. Closed top and DOT-rated 55-gallon drums were utilized to store all liquid decontamination wastes generated and water removed from the cooling water tunnel during sampling. All drums were properly labeled with M_L marks prior to off-Site disposal arranged for by UI.

Areas of previously identified Significant Environmental Hazards (SEHs) were marked at the Site and barriers established around the perimeters of each SEH area. These demarcation boundaries had to be maintained and reestablished during the investigation and new areas were marked as identified during the course of the investigation.

Anti-tracking measures employed during the soil investigation included removal of dirt from sampling equipment (e.g., treads on drill rig) prior to movement between boring locations. Poly sheeting was installed over areas with oil impacts or known high concentrations of COCs in surficial materials. The poly sheeting was removed and stored as PCB wastes following use. Overall, the investigation of soil was performed by starting at AOCs with lesser impacts to soil and then moving to more heavily impacted AOCs.

2.0 FIELD WORK METHODOLOGY

Weston & Sampson personnel collected environmental media samples including soil and sediment. Porous media samples, including concrete, asphalt, and wood, were also collected to assess the potential for on-Site tracking and deposition of PCBs. Sample collection was performed in accordance with the SOS prepared by TRC and approved by the CT DEEP and sampling activities were conducted under the supervision of an inspector from TRC. Laboratory-provided containers were used to store samples collected and the samples were placed into a cooler with ice upon sample collection. Where VOC analysis was not conducted, samples were homogenized utilizing dedicated mixing spoons and aluminum foil. To reduce the potential for any tracking of contamination, investigation work commenced in areas with less contamination (typically found on the north side of the property) and progressed toward areas previously identified as having more significant impacts.

2.1 Soil Sampling

On-Site soil sampling was performed primarily via GeoProbe® with some surficial soil samples being collected via disposable spoons and/or decontaminated shovels/trowels. Deeper soils were assessed via direct push GeoProbe® Macro-Core methodology. Soil samples were collected continuously, from the ground surface to depths up to 20 feet below ground surface (bgs). A five-foot dedicated acetate Macro-Core® liner was utilized to collect samples. Each soil core was logged with respect to its soil characteristics (i.e., color, grain size, moisture content, fill material, etc.) and were noted for any indications of potential environmental impacts. Each soil core was field screened using a Photo-Ionization Detector (PID) for total volatile organic vapors (TVOVs). At sample locations where VOC analysis was to be performed, the sample was collected from the location that exhibited the highest concentration of TVOVs, and/or that exhibited signs of environmental impacts. In the absence of obvious environmental impacts VOC samples were collected from the water table interface.

Any excess soil, acetate liners, PPE, and polyethylene sheeting generated from soil boring activities were stored within 55-gallon drums properly labeled with M_L marks. All bore holes were backfilled using S-2 silica filtration sand and were compacted as necessary.

Where applicable, the following decontamination procedure, performed in accordance with the requirements of 40 CFR Part 761 Subpart S – Double Wash/Rinse Method for Decontaminating Non-Porous Surfaces, were employed to limit the potential for cross contamination between sampling locations. Outer steel casing of each GeoProbe® and other metal sampling equipment used for sampling were decontaminated between each sample location utilizing the double wash/rinse methodology as follows:

1. Rinse with aqueous detergent solution.
2. Rinse with deionized water.
3. Rinse with aqueous detergent solution.
4. Rinse with deionized water.

All soil sample locations, sample collection depths, and analytical parameters were determined from TRC's SOS, revised in July 2017 and approved by CT DEEP. Minor alterations to the sampling plan were

made based upon observations, in the field which included obstructions, refusal and indications of other potential environmental impacts discovered during investigation.

A soil boring log was created for each GeoProbe® boring conducted on Site. Soil boring logs are included in Appendix B of this report.

2.2 Porous Media Sampling

As part of this investigation, porous media (concrete, wood and asphalt) samples were collected and analyzed for PCBs. Concrete and asphalt samples were collected following the Environmental Protection Agency (EPA) standard operating procedure (SOP) for sampling porous media (Revision 4) using a rotary hammer drill with 1" drill bits. The drill was advanced ½" into the porous media surface and the associated dust/chips generated from the holes were collected for analysis. Weston & Sampson utilized wooden tongue depressors to collect porous media samples from the drill holes. The depressors were disposed of after a one-time use.

Drill bits and other metal sampling equipment were decontaminated between each location using the following methodology in accordance with the EPA SOP referenced above:

1. Rinse with aqueous detergent solution.
2. Rinse with deionized water.
3. Rinse with hexane.
4. Rinse with deionized water.

In addition to the procedures described above, a swab with hexane was included in the decontamination of drill bits and other equipment used in porous media sampling equipment because this is prescribed in the EPA SOP. The PVC pipe was not reused, and the sections of pipe were disposed with waste soils generated during the investigation.

2.3 Sediment Sampling

Sediment sampling was conducted from various AOCs as described above with the addition of the following procedures. Sediment samples consisting of very fine materials were dewatered as necessary using dedicated filters for each sample. Any decanting or straining of excess water was done in a method and manner to maintain the amount of fines present in the sediment.

Collection of sediment samples was completed utilizing a ponar dredge claw and dedicated ¼" PVC piping. After accessing the subgrade structures, the ponar dredge claw was dropped into the structure and, if sediments were collected using this method, a sample was collected, placed in a dedicated sample jar, and analyzed for parameters as specified in the TRC SOS. If sediments could not be collected with the ponar, a section of ¼" PVC piping was advanced into the structure. Samples collected within the PVC was done via the "straw" sampling method. Sediment was collected with the PVC by blocking the top end of the PVC piping as the bottom end is advanced into sediment. This allowed the PVC to retain sediment from within the piping and brought back to the surface where it could be decanted over filter material and a sample collected. Not all of the subgrade structures were determined to contain sediments. However, the two sampling methods described above were employed at each

location prior to determining that a sample could not be collected.

Sections of PVC pipe were not reused and were disposed with other solid PCB wastes generated during the investigation. The Ponar dredge claw was decontaminated using the following methodology:

1. Rinse with aqueous detergent solution.
2. Rinse with deionized water.
3. Rinse with aqueous detergent solution.
4. Rinse with deionized water.

All excess sediment generated was placed directly into an open top 55-gallon drum properly labeled with a M_L mark.

2.4 Sample Nomenclature

Sample nomenclature was applied as described in TRC's SOS. Samples collected were identified first with a distinguishable letter to show what company collected the sample (i.e., WS for Weston & Sampson), followed by the AOC identification number (AOC numbers and boundaries were predetermined by figures provided by TRC), followed by a matrix code to note the sample media (i.e., SO for soil, AS for asphalt, CO for concrete, and SED for sediment). After the sample media ID, a number was used to identify sample location within that AOC. Where applicable, a dash (-) followed by an additional number was applied to display vertical sample depth. At locations where both porous media and soil samples were collected, the porous media sample number matches the soil boring number and it is the matrix code that distinguishes them from one another.

3.0 DATA QUALITY

The following provides a discussion of the data quality for soil, sediment, and porous media sample results. As described below, DQOs for the frequency of the collection and analysis of field and laboratory QA/QC samples were met. In addition, none of the data reported in this Investigation Summary Report exceeded applicable acceptance criteria in a manner that would require that the data be rejected. Thus, the data reported are acceptable for the purposes of this investigation which were the characterization of soil, sediments, and porous materials and the delineation of impacts to these environmental media.

3.1 Data Quality Objectives

For the purposes of this Site investigation, DQOs were established for the evaluation of the accuracy, precision and representativeness of the data generated. These DQOs included the collection of field quality assurance/quality control (QA/QC) samples and the analysis of these field samples and additional laboratory QA/QC samples. The overall quality assurance objective for laboratory analysis of samples was to provide a laboratory QA/QC program that is sufficient to ensure that data quality objectives are achieved. Analytical data for the Site was generated following the Reasonable Confidence Protocols (RCP) (CT DEEP, 2010b).

Each of the analytical data reports were assessed to determine the quality of the data as received. The following summarizes the DQA:

- All data were reported following the CT DEEP RCP. For each analytical method, narration was provided for each analysis or QA/QC sample for which results fell outside of acceptance criteria.
- Method Blanks, trip blanks, and other QA/QC samples used to measure potential contamination were generally free of analytes. Those analytes detected were not detected in samples. Thus, contamination of samples is not an issue with these data and no positive bias in the data set is indicated.
- Laboratory Control Samples and Laboratory Control Sample Duplicates (LCS/LCSDs) were analyzed with each analytical data batch. In general, the recoveries of spiked compounds and the relative percent difference (RPD) between duplicate samples were within acceptance criteria. No trends in the data for LCS/LCSD samples were observed that would indicate a bias in the data set.
- Matrix Spike Samples and Matric Spike Sample Duplicates (MS/MSDs) were analyzed with each analytical data batch. In general, the recoveries of spiked compounds and the RPD between duplicate samples were within acceptance criteria. No trends in the data for MS/MSD samples were observed that would indicate a bias in the data set.
- Samples were received under chain-of-custody protocols and any discrepancies in the documentation were promptly resolved. Samples were received at the appropriate temperature and properly preserved. Samples were extracted and analyzed within specified holding times.
- Required reporting limits were specified on the chain-of-custody forms. Reporting limits were

generally achieved. Some samples contained target analytes at concentrations high enough to require dilution and the reporting limits for other analytes did not always meet requested reporting limits under these circumstances. The interpretation of these data has been modified as needed to account for reporting limits that may exceed remedial criteria. No bias in the overall data set is seen.

3.2 QA/QC Samples and Data Evaluation

QA/QC samples for evaluation of data involve both field-collected samples and laboratory QA/QC. Field QA/QC samples were collected at the frequency prescribed in the SOS prepared by TRC. In addition, a narrative was completed by ConTest Laboratories (ConTest) of East Longmeadow, Massachusetts for each of the analytical data batches. This narrative provides relevant comments, data anomalies and non-conformances with laboratory-related QA/QC. These narratives can be found within each individual laboratory report and work order. All laboratory reports are included in Appendix C.

3.2.1 Precision

Precision is a measurement of the reproducibility of analytical data through analysis of duplicate samples. According to the CT DEEP Laboratory QA/QC Guidance RCP Guidance Document, the precision of the data is measured by the following calculation to determine the RPD:

$$RPD = \frac{|A-B|}{((A+B)/2)} \times 100$$

Where:

A = Analytical results from the first duplicate measurement
B = Analytical results from the second duplicate measurement.

For this investigation, the goal for RPD was less than or equal to 50% for solid samples, and less than or equal to 30% for aqueous samples. Duplicate samples can be found adjacent to their parent sample within the data summary tables for each AOC.

Field duplicates were collected during sampling and these data are used to evaluate effects of field sampling and laboratory analytical procedures on data reproducibility. Additional duplicate samples are analyzed by the laboratory and include matrix spike/matrix spike duplicates (MS/MSDs) and laboratory control spikes/laboratory control spike duplicates (LCS/LCSDs). The MS/MSDs are used to evaluate the effect of Site matrices and laboratory procedures on the reproducibility of analytical data. The LCS/LCSD samples are used to evaluate the effect of laboratory procedures only on data precision.

3.2.2 Accuracy

Accuracy is a measurement of the analytical data versus known concentrations. For this investigation program, accuracy is evaluated using spiked samples which include MS/MSDs and LCS/LCSDs. The MS/MSDs are used to evaluate the effect of Site matrices and laboratory procedures on the accuracy of analytical data. The LCS/LCSD samples are used to evaluate the effect of laboratory procedures only on data accuracy.

3.2.3 Representativeness

Data representativeness is a determination of the data collected and the ability to use the data set to

characterize the Site.

3.3 Field QA/QC

The following is a description of the field QA/QC samples collected to date.

3.3.1 Equipment Blanks

The purpose of the collection of equipment blanks is to assess the adequacy of the decontamination process conducted on Site. Additionally, it is used to assess the potential contamination from dedicated sampling items like the Macro-Core® acetate liners. Equipment blanks were collected using laboratory-provided, high performance liquid chromatography grade ASTM Type II water being poured over sampling equipment collected into a laboratory provided container.

For purposes of this investigation, equipment blanks were collected each day samples were collected, for each media type and parameter analyzed for. In total 71 equipment blanks were collected throughout the entirety of the project (North Side and South Side investigations) completed to date. Equipment blanks were collected from the following sampling devices:

1. Ponar Dredge Claw
2. ¼" PVC
3. Macro Core® Acetate Liners
4. 1" Rotary Hammer Drill Bit
5. Breaker Bar

Analytes detected in equipment blanks are compared to samples associated with that equipment blank to determine if contamination is present in a sample because of improper equipment decontamination.

A review of equipment blank data obtained reveals that detections of COCs were found in two of the equipment blank samples submitted (EB-23 and EB-67). The analytes detected in the equipment blanks were not found in sample analyses so there is no effect on data quality.

3.3.2 Field Duplicates

Field duplicates were collected during the on-Site investigation to assess accuracy of sample methodology and laboratory analysis. Field duplicates were collected as replicate or split samples and submitted to the laboratory without indication to the duplicate's partner sample. For the purposes of this investigation, field duplicates were collected per twenty samples collected, for each sample media, for each parameter analyzed as prescribed in CT DEEP Laboratory QA/QC and DQA/DUE Evaluation Guidance Document, Appendix B-3 (revised December 2010).

Duplicate samples can be found adjacent to their parent sample within the data summary tables. The following summarizes the numbers of duplicate samples collected by analysis:

- PCBs, 1215 soil samples with 60 duplicates, 89 sediment samples with 4 duplicates, and 426 porous media samples with 21 duplicates.
- ETPH, 32 sediment samples with 1 duplicate and 242 soil samples with 12 duplicates.
- VOCs, 22 sediment samples with 1 duplicate.
- Metals, 22 sediment samples with 1 duplicate and 27 soil samples with 2 duplicates.
- SVOCs, 20 sediment samples with 1 duplicate and 18 soil samples with 1 duplicate.
- PAHs, 12 sediment samples with 1 duplicate and 18 soil samples with 1 duplicate.

Duplicate samples were collected at a frequency of approximately 1 duplicate for every 20 samples collected. The RPD for the sample results were typically less than 50% and no systematic bias was indicated by the results. Thus, the duplicate sample results indicate that the analytical data are acceptable.

3.3.3 Matrix Spike and Matrix Spike Duplicate (MS/MSD)

The purpose of MS/MSD samples is to determine if the sample matrix effects accuracy and bias in the analytical results. MS/MSD samples are collected as duplicate or split samples, the pair is then spiked by the laboratory with a known quantity of target analytes. Through MS/MSD analysis one can evaluate precision and accuracy of laboratory analysis methodology.

MS/MSD samples were collected per 20 samples collected, per sample media, per parameter analyzed for as prescribed in CT DEEP Laboratory QA/QC and DQA/DUE Evaluation Guidance Document, Appendix B-3 (revised December 2010) and the TRC SOS.

Like field duplicate samples, MS/MSDs were compared to their partner samples to determine precious of sampling, handling, shipping, storage, preparation and analysis. Precision of the data was measured by evaluating the sample's RDP (see Field Duplicate section above).

The goal RDP was less than or equal to 50% for solid samples, and less than or equal to 30% for aqueous samples. The following summarizes the numbers of duplicate samples collected by analysis:

- PCBs, 1215 soil samples with 60 MS/MSDs, 89 sediment samples with 4 MS/MSDs, and 426 porous media samples with 21 MS/MSDs.
- ETPH, 32 sediment samples with 1 MS/MSD and 242 soil samples with 12 MS/MSDs.
- VOCs, 22 sediment samples with 1 MS/MSD.
- Metals, 22 sediment samples with 1 MS/MSD and 27 soil samples with 2 MS/MSDs.
- SVOCs, 20 sediment samples with 1 MS/MSD and 18 soil samples with 1 MS/MSD.
- PAHs, 12 sediment samples with 1 MS/MSD and 18 soil samples with 1.

MS/MSD samples were collected at a frequency of approximately 1 duplicate for every 20 samples collected. The RPD for the sample results were typically less than 50% and spike recoveries were within lab specific limits. No systematic bias was indicated by the results for the MS/MSDs. Thus, the MS/MSD sample results indicate that the analytical data are acceptable.

3.3.4 Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD)

The purpose of LCS/LCSD samples is to determine if the laboratory procedures effect accuracy and bias in the analytical results. LCS/LCSD samples are is prepared by the laboratory by spiking a blank matrix with a known quantity of target analytes. Through LCS/LCSD analysis one can evaluate precision and accuracy of laboratory analysis methodology.

LCS/LCSD samples were analyzed with each analytical batch which did not exceed 20 samples, per sample media, per parameter analyzed for as prescribed in CT DEEP Laboratory QA/QC and DQA/DUE Evaluation Guidance Document, Appendix B-3 (revised December 2010).

Like the other duplicates, LCS results were compared to its partner LCSD to determine accuracy and

precision of the analysis. Precision of the data was measured by evaluating the sample's RPD and accuracy was measured by comparison to the know value. Accuracy and precision limits for LCS/LCSD samples are established by the analytical laboratory.

LCS/LCSD samples were analyzed at the required frequency and the accuracy and RPDs were typically within laboratory established acceptance criteria and no systematic bias in the date are indicated. Thus, the LCS/LCSD sample results indicate that the analytical data are acceptable.

3.3.5 Trip Blanks

Trip blanks are laboratory provided sample containers that have been filled with analyte free reagent (water, methanol, etc.) that are held with samples collected. The purpose of the trip blank is to assess if sample containers may be releasing contamination during sample transportation and storage. For the purposes of this investigation trip blanks were collected and submitted for analysis whenever VOC soil samples were collected. Trip blanks accompanied VOC soil samples inside the same cooler. Trip blank vials submitted for analysis consisted of one methanol 40milli liter (mL) vial, and two deionized water 40mL vials. No COCs were detected in the trip blanks and no bias in the data are indicated.

3.3.6 Temperature Blanks

Temperature blanks are used to determine that proper preservation of samples has been maintained during sample storage and shipment. Temperature blanks must be 4° Celsius +/- 2° to demonstrate preservation of submitted samples. All temperatures noted on the chains- of-custody upon sample receipt were within this acceptable range. Thus, no biases in the data are indicated.

3.4 DQA/DUE Conclusions

QA/QC samples were collected at the frequencies established in the DQOs for the site. Analysis of these QA/QC samples were generally within established acceptance criteria. For those QA/QC samples that did exceed acceptance criteria, no systematic bias was indicated. Thus, the data collected during this field investigation are considered to be acceptable for their intended purpose which is characterization of the Site.

4.0 INVESTIGATION RESULTS

Weston & Sampson performed Site investigation activities between July and September 2017. The investigation included the collection of soil, sediment and porous media (concrete, wood and asphalt) samples for laboratory analysis. The investigation was performed in accordance to with TRC's SOS, English Station, October 2016 and revised July 2017, which was reviewed and approved by the DEEP. For further historical details please see TRC's SOS which is attached electronically in Appendix A.

In this Section, the following is provided for each AOC:

1) Conceptual Site Model (CSM) developed for each AOC prior to sampling;
2) Sampling performed within each AOC to delineate impacts;
3) Evaluation of the delineation of impacts within each AOC; and
4) Evaluation of the CSM based upon most recent sampling data.

Generally, the sampling was conducted as indicated in TRC's SOS and sample parameters and depths were followed. However, modifications to the sampling program in the SOS were made based upon field observations and prescribed sample collection depths may have been changed. Additionally, at some locations where refusal was encountered, the original prescribed sample total may have been reduced because the prescribed sample depth could not be reached. It is noted that concrete obstructions up to 24-inches thick were penetrated to collect samples beneath the concrete so occasions where refusal limited collection of additional samples are limited.

The 2017 investigation sample locations are provided on Figures 4 through 12 along with historical sample locations. Interpretation of sample results at each soil boring location are provided in the same manner as that which was shown in the TRC SOS. Specifically, each soil boring location has color-coding indicating the sample result for any analytical parameter collected at that boring location. This data presentation gives a representation of the extent of impacts to the media sampled in the horizontal. Multiple figures are provided for each AOC to depict the depths of impacts identified and to provide information regarding vertical delineation. South Side data interpretation is provided in Figures 12-1 through 12-3.

A summary of analytical results is provided in Tables 1 through 7. Porous media sample results at each location where they were collected are included with the soil data at the same location. Grouping data in this manner allows for an evaluation of impacts to porous media and soil at each location in the vertical.

Soil boring logs for locations included in this report are provided electronically in Appendix B. Laboratory analytical reports for data included in this report are provided electronically in Appendix C.

4.1 Investigation Goals

The goals of the investigation program were to characterize areas of the Site where data gaps exist and to delineate the extent of releases to the environment. Characterization of impacts to soil, sediments, and/or porous media were performed within AOC-3, AOC-7 through AOC-11 and AOC-13. Sampling within these areas was performed on grid patterns with multi-depth sampling and for analytical

parameters specified in the TRC SOS. Sampling was also performed to delineate the extent of releases or the effectiveness of previous remedial efforts. Extensive sampling of surface cover materials (i.e., concrete, asphalt, and soil) was also performed to determine if tracking of PCB impacts from one area to another had occurred at the Site.

Delineation of Site impacts is judged against two criteria. The first is a determination of whether or not releases to the environment have been delineated to the extent where remedial criteria are no longer exceeded. This level of delineation is sufficient to allow for the design of remedial actions. The second is a determination of whether or not the entire release area has been defined; which is the requirement of the CT DEEP Site Characterization Guidance Document (CT DEEP, September 2007 and Revised December 2010). This second level of delineation for non-naturally occurring COCs (e.g., PCBs) is typically performed until PCBs are non-detect in the samples analyzed. However, this level of delineation may not be possible for naturally occurring COCs (e.g., metals) or COCs that may be widespread in fill (e.g., metals, ETPH, and PAHs).

Remedial criteria included in the data summary tables and used to judge the level of delineation for this report include:

- I/C DEC – Use of this criteria assumes that an industrial/commercial environmental land use restriction (ELUR) will be applied to the Site as part of the overall remedial efforts. The criteria used are those provided in Appendix A of the CT RSRs.
- GB PMC – The criteria used are those provided in Appendix B of the RSRs. Where SPLP extraction and analysis was performed, the leachate concentration is compared to: (1) ten times the Groundwater Protection Criteria (GWPC) for organic chemicals, excluding PCBs given that no non-aqueous phase liquid (NAPL) is present in the soils; or (2) the listed GB PMC for inorganic chemicals and PCBs.

The industrial/commercial volatilization criteria were potentially applicable for determination of delineation. However, VOCs were typically non-detect or detected at very low concentrations and these criteria were not listed in the tables as VOCs will not require remediation on Southern Side of the Site.

The Federal PCB remedial standards specified in §761.61(a)(4) of 40 CFR Part 761 are also applicable. The Federal high occupancy standard of 1 mg/kg is used to determine the need for remediation and locations with PCBs less than 10 mg/kg may be left in place with a cap.

For chemicals detected at the Site that do not have established remedial criteria in the RSRs, remedial criteria were selected from "Technical Support Document: Recommended Numeric Criteria for Common Additional Polluting Substances and Certain Alternative Criteria," CT DEEP December 10, 2015 and Revised January 27, 2017. Use of these remedial criteria will require application to and approval from the CT DEEP.

4.2 AOC-3: Former Septic Systems

AOC-3 includes two former septic system locations within the Southern Side of the Site. Historic maps depict the locations of two historic septic structures; one located on the western side of the Site (Septic West) and one manhole along the eastern side of the Site (Septic East). The vicinity of the structure

located within Septic West has been partially investigated in that a sludge sample from the structure was previously collected and analyzed for PCBs.

TRC's SOS indicates chemicals of concern for AOC-3 included VOCs, SVOCs, ETPH, PCBs, and metals. The primary release mechanisms are identified as direct dumping of material to septic structures or manholes and carrying of surficial contaminants by storm waters in through manholes into structures. Secondary release mechanisms are identified as potential releases from a buried septic structure directly to the subsurface. Releases directly to the subsurface would be entrapped in the soil pore spaces in the vadose zone. Any product that infiltrated into the subsurface would be subject to migration to the groundwater through the infiltration of rainwater and the fluctuating water table.

4.2.1 AOC-3 (Septic West)

Weston & Sampson documented the advancement of three soil borings (AOC-3-1 through AOC-3-3) within the area of AOC-3 – Septic West as prescribed in the TRC SOS. The borings were advanced around the structure to depths ranging from 6 to 15 feet below ground surface (bgs). Soil samples were collected from three sample intervals; shallow (0-0.5' bgs), intermediate (ranging from 2.5-8' bgs); and deep (11-12' bgs). Two porous media (concrete) samples were also collected from the top of the structure and one sediment sample was collected from the interior of the structure. The samples were submitted for laboratory analysis of PCBs, VOCs, SVOCs, ETPH and/or metals. See Figures 4-1 through 4-3 for sample locations and Table 1 for a summary of analytical results.

The following summarizes the findings of the AOC-3 (Septic West) investigation:

- Field screening of soil samples did not identify evidence of impacts.
- PCBs were detected in four of 12 soil samples at concentration below 1 mg/kg. Three of the samples were collected from 0-0.5 ft bgs and the other was at 2.5-4 ft bgs.
- The VOC carbon disulfide was detected in one soil sample at a concentration less than 120 mg/kg and well below applicable remedial criteria.
- ETPH was detected in seven of nine soil samples at concentrations less than the applicable remedial criteria.
- PAHs were detected in one duplicate soil sample (but not the parent), AOC-3-2 (3-4'), at concentrations above the GB PMC. However, it is suspected that the PAHs at this depth are more likely due to fill and not a release and the PMC is not applicable.
- SPLP lead was detected in soil sample (AOC-3-2 3-4') above the GB PMC. However, it is suspected that the lead at this depth is more likely due to fill and not a release and the PMC is not applicable. None of the lead sample results exceeded the I/C DEC.
- Analysis of the sediment sample (AOC-3-SE-6) collected from within the septic structure identified PAHs, PCBs above 1 mg/kg, and the VOCs chloroethane, 1,4-dichlorobenzene, and 1,1-dichloroethane. Sediments should be removed from this structure to remove a potential source of impacts to the subsurface.

- Analysis indicated that the two concrete samples were non-detect for PCBs.

Results of the investigation in AOC-3 – Septic West generally support the previous CSM for this area except for no evidence of tracking of PCBs were identified. Soil in the area is impacted with PAHs and lead above the GB PMC, however, these detections are likely associated with widespread polluted fill material and the PMC is not applicable under the Widespread Polluted Fill Variance. Sediment within the structure is impacted with PAHs and PCBs above remedial criteria and should be removed to eliminate this potential source material.

ETPH and VOCs were detected at low levels and therefore do not appear to be chemicals of concern for AOC-3. Based on the results of the investigation, additional investigation is not required to assess the horizontal and vertical extent of COCs in this AOC.

4.2.2 AOC-3 (Septic East)

Soil borings advanced within this AOC were designated as AOC-13 in the SOS in the sample identifier as the Septic East location is within AOC-13. The borings described below are included in this section as they are applicable to characterization of AOC-2 (Septic East).

Weston & Sampson documented the advancement of three soil borings (AOC-13-21 through AOC-13-23) within the area of AOC-3 – Septic East as prescribed in the TRC SOS. The borings were advanced around the structure to depths of 10 feet bgs. Soil samples were collected from three sample intervals; shallow (0 to 0.5' bgs), intermediate (ranging from 0.5 to 2' bgs); and deep (5 to 6' bgs). One porous media (asphalt) sample was collected from boring location AOC-13-21 and two sediment samples (AOC-3-SE-6 and AOC-13-SE-31) were collected from the interior of the structure and an adjacent manhole structure. The samples were submitted for laboratory analysis of PCBs, VOCs, SVOCs, ETPH and/or metals. See Figures 5-1 through 5-3 for sample locations and Table 1 for a summary of analytical results.

The following summarizes the findings of the AOC-3 (Septic East) investigation:

- Field screening of soil samples did not identify evidence of impacts.
- PCBs were detected in soil sample AOC-13-19 (0.5-1') above 1 mg/kg but below 10 mg/kg. As shown on Figure 5-1, other PCB impacts are present within the area and the source of the PCBs in this sample is probably likely to a release not associated with the septic structure.
- PAHs were detected in soil sample AOC-13-21 (1-1.5') at concentrations above applicable remedial criteria and arsenic was detected above remedial criteria in soil sample AOC-13-19 (5.5-6'). These detections are believed to be associated with fill material at the Site.
- ETPH was detected in the one soil sample analyzed at a concentration less than the applicable remedial criteria.
- Analysis of the sediment samples identified PCBs and PAHs above remedial criteria. PCBs were also detected above 1 mg/kg in the samples but below 10 mg/kg.
- Analysis of sediment sample AOC-13-SE-31 also identified ETPH and arsenic above applicable

remedial criteria.

- Analysis of the asphalt sample did not identify detectable concentrations of PCBs.

Results of the investigation in AOC-3 - Septic East generally support the previous CSM for this area. Although soil impacts above remedial criteria were not identified at depth, PCB impacts above criteria were identified in shallow soil. Sediment is impacted with PCBs, PAHs, ETPH and arsenic above remedial criteria. Based on the results of the investigation and review of historic data, additional investigation is not required in the area of AOC-3-Septic East to delineate the nature and extent of impacts.

4.3 AOC-7 Former Waste Oil AST / Oil Pump Room Area

AOC-7 is located within the southeastern corner of the Site. A former waste oil AST was located adjacent to the southeastern corner of the English Station building. An oil pump house that serviced the building's boiler system was also located in this area. Previous investigations in AOC-7 identified elevated concentrations of petroleum hydrocarbons, SVOCs, lead and PCBs in soil. Elevated concentrations of PCBs were also previously identified in asphalt and concrete.

TRC's SOS indicates that the primary release mechanisms identified for AOC-7 are leakage from oil-filled equipment being brought out of the building through the nearby overhead door onto the ground surface (asphalt/gravel or soil) and leakage from the tank and/or associated piping and fittings to the ground surface. Secondary release mechanisms are identified as seepage into the surrounding soil from infiltration through the asphalt and into an associated concrete pipe trench. Tracking is a concern due to amount of surficial impacts identified and the demolition activities which have taken place.

Weston & Sampson documented the advancement of 26 soil borings (AOC-7-1 through AOC-7-26) within AOC-7. The borings were advanced to depths ranging from 10 to 12 feet bgs. Soil samples were collected from the surface, intermediate and deeper depths and submitted for laboratory analysis of PCBs, PAHs, VOCs, ETPH and/or metals. Porous media (asphalt or concrete) samples were also collected from each boring location, where identified, and from concrete pads and pipe tunnels within the area of AOC-7. Sediment samples were also collected from manhole structures and pipe tunnels. See Figures 6-1 through 6-3 for sample locations and Table 2 for a summary of analytical results.

The following summarizes the findings of the AOC-7 investigation:

- Field screening of soil samples did not identify elevated PID readings; however, visual and olfactory evidence of petroleum impacts were identified in soil samples collected from borings AOC-7-2, 3, 4, 5, 9, 17, 20, 23 and 26. Soil with petroleum odors and sheen were observed in samples collected at depths ranging from 5 to 15 feet within the borings. A sheen was observed in soil sample AOC-7-20 (5-8') as well.
- PCBs were identified in soil samples AOC-7-1 (5.5-6'), 2 (8-8.5'), 3 (5-6'), 7 (0.5-1'), 7 (5.5-6'), 8 (0.5-1'), 8 (2.5-3'), 13 (0-0.5'), 13 (0.5-1') and 13 (4-4.5') above remedial criteria and at concentrations ranging from 12 to 330 mg/kg. Total PCB concentrations in samples 7 (5.5-6'), 13 (0.5-1' and 13 (4-4.5') were greater than 50 mg/kg. Additionally, PCBs were detected above 1 mg/kg and less than 10 mg/kg in soil samples AOC-7-6 (5.5-6'), AOC-7-7 (2.5-3'), 7 (5.5-6'),

8 (0-0.5'), 13 (0-0.5'), 14 (1-1.5'), 14 (4-4.5'), and 15 (2-2.5') and in sediment samples SE-27 and 28. SPLP PCB analysis did not identify exceedances of remedial criteria in soil samples.

- ETPH was detected above remedial criteria in soil samples AOC-7-2 (8.5-9'), 3 (6-6.5'), 4 (12.5-13'), 7 (5.5-6'), 9 (6-6.5'), 20 (8-9') and 20 (16-17'); and in sediment samples SE-26, 27 and 28. SPLP ETPH analysis identified an exceedance of remedial criteria in sample AOC-7-3 (6-6.5'). ETPH in this AOC is believed to be due to releases from site operations and not due to the presence of polluted fill.
- PAHs were detected above remedial criteria in soil samples AOC-7-5 (12.5-13'), 9 (6-6.5'), and 15 (5-5.5'); and in sediment samples SE-26, 27 and 28.
- Vanadium (leachable) was detected above remedial criteria in a duplicate soil sample AOC-7-2 (8.5-9') but not the parent. The presence of vanadium in this sample is believed to be from the fill that constitutes the Site and not from a release.
- VOCs were not identified above remedial criteria in any of the samples analyzed.
- Analysis of porous media samples (asphalt and concrete) did not identify concentrations above remedial criteria.

Results of the investigation in AOC-7, in general, support the previous CSM for this area. However, the investigation did not identify impacts to porous media which indicates that tracking of PCBs is not an issue. PAH and vanadium impacts may be associated with fill material on-Site but the extensive and deeper detections of PCBs and ETPH in this area make that determination difficult to make in this area of the Site. Based on investigation results and review of historic data, additional investigation is not required to delineate the extent of PCBs and petroleum impacts. Further, remedial measures are anticipated to address the PCB and petroleum impacts identified within AOC-7.

4.4 AOC-8 Former Fuel Oil ASTs

AOC-8 is located within the southern portion of the Site. One 50,000-gallon No. 6 fuel oil vertical tank was previously located within a concrete containment berm located in the far southern end of the Site. Following the cessation of the use of coal in the 1950s, No. 6 fuel oil was used as the fuel source for the plant. To the west of the former No. 6 fuel oil tank, there were two 5,000-gallon No. 2 fuel oil ASTs that were formerly located in concrete cradles.

TRC's SOS indicates that the chemicals of concern for AOC-8 included VOCs, PAHs, ETPH and PCBs. The primary release mechanisms identified for this AOC are incidental spills from filling operations, leaks from valves, piping, fittings to the ground surface or subsurface (relative to the appurtenances). Secondary release mechanisms included seepage into soils underlying concrete or asphalt through infiltration through cracks, seams or other breaches. Tracking of surficial contamination was also a concern particularly due to the fact that previously identified impacts include PCBs at concentrations greater than 50 mg/kg in shallow soils along the bulkhead where it is not paved.

Weston & Sampson documented the advancement of 6 soil borings (AOC-8-1 through 6) within AOC-8. Soil samples were selected at varying depth intervals within each boring for laboratory analysis. Ten

(10) surficial soil samples (AOC-8-7 through 16) were also collected. Additionally, 13 porous media (asphalt or concrete) were collected and seven (7) sediment samples were collected from pipe trenches and sumps associated with the former secondary containment structures. See Figures 7-1 through 7-3 for sample locations. The samples were submitted for varying analyses including: PCBs, VOCs, PAHs, ETPH, and metals. See Table 3 for a summary of analytical results.

The following summarizes the findings of the AOC-8 investigation:

- Field screening of soil samples did not identify evidence of impacts.
- PCBs were detected above 1 mg/kg and below 10 mg/kg in soil samples (AOC-8-4 (0-0.5'), 4 (0.5-1'), and 4 (2-2.5').
- PAHs were detected above remedial criteria in soil samples (AOC-8-2 (1-1.5'), 8 (1-2'), 9 (1-2'), 10 (1-2'), and 15 (1-2').
- ETPH was not detected above remedial criterial in any of the soil samples analyzed.
- PCBs were identified above 1 mg/kg in concrete samples AOC-8-CO-16B (0-0.5") and CO-17 (0-0.5"). A maximum concentration of 1,800 mg/kg total PCBs was identified in sample CO-16B (0-0.5").
- Analysis of sediment samples identified PCBs, PAHs, ETPH and metals (arsenic and lead) above remedial criteria. A maximum concentration of 2,300 mg/kg of total PCBs was identified in sample SE-16.

Results of the investigation in AOC-8 generally support the previous CSM for this area. However, this investigation did not identify significant petroleum impacts to soil which indicates that releases from the ASTs were not an issue. PAHs detected in soil are likely associated with fill material. Elevated concentrations of PCBs were identified in surficial soil and appear to be from releases of PCBs due to the concentrations detected and not as a result of tracking. Analysis of concrete and sediment samples identified significant PCB impacts to concrete and sediment in the trenches within the area, as well as indicating releases within the trenches. Sediment within the pipe trench is also impacted with elevated concentrations of ETPH, PAHs and metals which indicates releases directly to the sediments as these impacts are not identified in soil. Based on the above data and review of historic data, additional investigation is not required to further define the extent of soil with elevated PCB impacts or to further assess the extent of impacted concrete and sediment within the pipe trenches. Remediation of PCB impacted soil, sediments, and porous materials is anticipated within this AOC.

4.5 AOC-9: Transformer Areas

AOC-9 is located within the southwestern portion of the Site to the west of the English Station building. This area is the former location of multiple historical transformers and capacitors. There is one large pad-mounted transformer (identified as Transformer G) located adjacent to the northwestern corner of English Station. This transformer is located on a concrete pedestal within a concrete containment dike. Three pad-mounted transformers (identified as Service Transformers 1-3) were previously located

adjacent to the western exterior wall of the English Station building. Two transformers (identified as 7A and 37A) were previously located within a containment "tub" located within this AOC as well.

TRC's SOS indicates that chemicals of concern for AOC-9 included PCBs, ETPH and PAHs. The primary release mechanisms identified for this AOC are surface releases from oil-filled electrical equipment (e.g., transformers and capacitors) to concrete pads and dikes and absorption into concrete surfaces. Secondary release mechanisms included seepage/migration through concrete via cracks, breaches or sumps into the underlying soil, migration with precipitation into adjacent paved (asphalt) and unpaved surfaces and seepage into underlying soils. Tracking of surficial contamination was also considered a concern.

Weston & Sampson documented the advancement of 48 soil borings (AOC-9-1 through 48) within AOC-9. Soil samples were selected at varying depth intervals within each boring for laboratory analysis. Porous media samples (asphalt or concrete) were collected at boring locations when encountered. Additionally, 36 porous media (concrete or asphalt) were collected to characterize structures and potential impacts from tracking. Six (6) sediment samples were collected from manhole structures and a sump. See Figures 8A-1 through 3, 8B-1 through 3, and 8C-1 through 3 for sample locations. The samples were submitted for varying analyses including: PCBs, VOCs, PAHs, ETPH, and metals. See Table 4 for a summary of analytical results.

The following summarizes the findings of the AOC-9 investigation:

- Field screening of soil samples did not identify elevated PID readings. Solvent odors were observed in soil samples collected from borings AOC-9-9, 11, and 14 at depths ranging from 4 to 10 feet bgs. Petroleum odors were observed in soil samples collected from borings AOC-9-18, 30, 32, 35 and 36 at depths ranging from 4 to 10 feet bgs.
- PCBs were detected at or above 1 mg/kg and at or below 10 mg/kg in 40 soil samples. Analysis of soil samples AOC-9-6 (0.5-1'), 6 (1-1.5'), 7 (0.5-1'), 9 (0.5-1'), 13 (0.5-1'), 13 (1.5-2'),16 (1.5-2'), 23 (1.5-2'), 27 (0-0.5'), 28 (0.5-1'), 29 (0-0.5'), 31 (0.5-1'), 31 (2-3') and 48 (5.5-6') identified PCBs above 10 mg/kg. PCBs were detected above 50 mg/kg in samples AOC-9-6 (0.5-1'), 6 (1-1.5'), 29 (0-0.5') and 48 (5.5-6').
- PAHs were detected above remedial criteria in soil samples AOC-9-6 (1-1.5'), 11(8-9.5', 18 (8-9.5'), 30 (9-9.5'), 32 (6-7.5'), 35 (4-5'), 37 (4-5'), 40 (0-0.5'), 41 (9.5-10') and 47 (12-12.5').
- ETPH and VOCs were not detected above remedial criterial in any of the samples analyzed.
- PCBs were identified above 1 mg/kg in asphalt samples AOC-9-AS-4 (0-0.5'), AS-21 (0-0.5') and AS-30 (0-0.5').
- Analysis of concrete samples collected to characterize structures and potential impacts from tracking did not identify PCBs above 1 mg/kg.
- Analysis of sediment samples identified PCBs above 1 mg/kg but below 10 mg/kg. PAHs and lead were also identified above remedial criteria in 1 sediment sample.
- A single sample of oil found in a subsurface structure (see Figure 8C-1 for location) was found

to contain 5 mg/kg Aroclor 1260. There were no sediments in the structure and the thickness of the oil was approximately two inches.

Results of the investigation in AOC-9 generally support the previous CSM for this area. Significant PCB impacts to soil and asphalt have been identified and the source appears the former use of transformers in the area and potential localized tracking of contaminants. PAHs detected in soil are likely associated with fill material. Sediment within manhole structures is also impacted with PCBs, PAHs and lead above remedial criteria. Based on the above data and review of historic data, additional investigation is not required to further define the extent of soil and asphalt with elevated PCB impacts and further assess potential petroleum impacts.

4.6 AOC -10 Former Interior Chemical Storage Areas

AOC-10 is located within the southwestern and southern portions of the Site and is associated with former interior chemical storage in outbuildings located adjacent to the main English Station building. The buildings include a former Assembly Hall Building and Storage and Shop Building located west of English Station and a Foam House building located to the south.

TRC's SOS indicates that the chemicals of concern for AOC-10 included: VOCs, SVOCs, ETPH, PCBs and metals. The primary release mechanisms identified for this AOC are direct releases to the floors of the buildings and tracking of contaminants into the buildings from outside areas. Secondary release mechanisms included potential seepage through cracks, seams or other breaches in the floors to the underlying soils. Tracking of surficial contamination both into and out of the building was also a concern.

Weston & Sampson documented the advancement of 19 soil borings (AOC-10-1, 2, 7, 8, 10, 11, 13, 16, 17, 20, 25, 30, 31, 41, 42, 43 and 45) within AOC-10. Soil samples were selected at varying depth intervals within each boring for laboratory analysis. Additionally, 45 porous media (concrete) samples and one sediment sample were collected. See Figures 9A-1 through 3, 9B-1 through 3, and 9C-1 through 3 for sample locations. The samples were submitted for varying analyses including: PCBs, PAHs, ETPH, and metals. See Table 5 for a summary of analytical results.

The following summarizes the findings of the AOC-10 investigation:

- Field screening of soil samples did not identify evidence of impacts.
- Analysis of soil samples did not identify PCBs, PAHs, EPTH or metals above remedial criteria, with the exception of soil sample AOC-10-8 (0.5-1') where arsenic was identified above criteria. However, the detection is likely associated with fill material at the Site.
- As shown in Table 5, PCBs were detected at or above 1 mg/kg and at or below 10 mg/kg in 24 of the concrete samples. PCBs were detected above 10 mg/kg in nine concrete samples (AOC-9-CO-10, 11, 14, 19, 24, 25, 26, 27 and 28). PCB were detected above 50 mg/kg in concrete samples AOC-9-11, 14, 24, 25, 26 and 27 with concentrations ranging from 62 mg/kg to 11,000 mg/kg.
- Analysis of the sediment sample (AOC-10-SE-15) collected from a sump within the Shop Building identified total PCBs at 430 mg/kg which is above the remedial criteria.

Results of the investigation in AOC-10 generally support the previous CSM for this area. PCB-impacted concrete was identified within each of the buildings. However, this investigation did not identify significant impacts to soil beneath the buildings. The arsenic detected in the single soil sample above remedial criteria is likely associated with fill material. Sediment within the sump of the Shop Building is also impacted with PCBs above remedial criteria. Based on the above data and review of historic data, additional investigation is not required to further define the extent of PCB-impacted concrete for remedial planning purposes.

4.7 AOC -11 On-Site Fill Material: Evaluation of Tracking

AOC-11 is fill material located throughout the Site. The Site exists on Ball Island, a land mass that was created within the Mill River. As documented in historic reports for the Site, the island was created from spoils generated from dredging operations performed from the 1800s to 1900s in the Mill River to maintain navigable waters. As the Mill River was the receiving water body for many discharges emanating from industrial operations over the years, the spoils that comprise the island and fill material at the Site are inherently impacted with petroleum hydrocarbons, PAHs and metals.

TRC's SOS indicates that the chemicals of concern for AOC-11 include: PCBs (from tracking and not historical releases), PAHs, ETPH and metals. The COCs PAHs, EPTH, and metals are found in the fill materials that comprise the island on which English Station and Station B are located. The SOS indicates that the fill material has been adequately characterized by others during previous investigatory efforts. As such, the SOS for AOC-11 included evaluation of tracking across pads/structures not captured by other AOCs.

Weston & Sampson collected three porous media (concrete) samples (AOC-11-CO-1 through 3) from concrete pad structure P12 located on the southwestern portion of the Site. See Figures 10-1 through 10-3 for sample locations. There was no sediment observed within the manholes of the structure and therefore, sediment samples were not collected. The concrete samples were submitted for PCB analysis. See Table 6 for a summary of analytical results.

As shown in Table 6, the analysis did not identify detectable concentration of PCBs in the concrete samples. Results of the investigation indicate surface concrete at structure P12 is not impacted with PCBs. Additional investigation of the structure from potential impacts from tracking are not required.

4.8 AOC -13 Former Wastewater Treatment System

AOC-13 is located within the southeastern portion of the Site, to the east of the English Station building and includes remnants of a former wastewater treatment system (primarily concrete structures). The operational history of this former treatment system is not well documented in historic reports associated with the Site.

TRC's SOS indicates that the chemicals of concern for AOC-13 include: VOCs, SVOCs, ETPH, PCBs and metals. The primary release mechanisms identified for this AOC are leakage or spillage onto the concrete pads on which former treatment system components were located or to asphalt surfaces in the area and direct discharge to the ground surface. Secondary release mechanisms include infiltration

through the asphalt or concrete or through cracks, to the underlying soils. Tracking of surficial contamination was also considered a concern.

Weston & Sampson documented the advancement of 22 soil borings (AOC-13-1 through 18 and 22 through 25) within AOC-13. Soil samples were selected at varying depth intervals within each boring for laboratory analysis. A total of 27 porous media samples (asphalt or concrete) were collected at boring locations, where encountered, and from concrete pads and piping trenches. Six (6) sediment samples were collected from pipe trenches in this area. See Figures 11-1 through 3 for sample locations. The samples were submitted for varying analyses including: PCBs, VOCs, PAHs, ETPH, and metals. See Table 7 for a summary of analytical results.

The following summarizes the findings of the AOC-13 investigation:

- Field screening identified petroleum / fuel oil odors in soil samples collected from borings AOC-13-8, 9, 10, 11, 24, and 25 at depths ranging from 7.5 to 20 feet bgs. PID screening identified TOVs ranging from 1 to 15 part per million by volume (ppmv) in the soil samples collected from these borings.
- PCBs were detected above 1 mg/kg and below 10 mg/kg in soil samples AOC-13-6 (0.5-1'), 19 (0.5-1'), 22(0.5-1'), 22 (1.5-2'), 23 (0.5-1'), 23 (1.5-2'), 23 (5-5.5'), 24 (7.5-8'), 25 (7.5-8') and 37.
- Analysis of soil samples AOC-13-22 (0.5-1'), 22 (5-5.5'), 24 (0-0.5'), 24 (0.5-1'), 24 (1.5-2'), 25 (0-0.5'), 25 (0.5-1'), 25 (1.5-2'), and 25 (7.5-8') identified PCBs above 10 mg/kg.
- PCBs were detected above 50 mg/kg in soil samples AOC-13-24 (0-0.5'), 25 (0.5-1'), 25 (1.5-2'), and 25 (7.5-8').
- PAHs were detected above remedial criteria in soil samples AOC-13-5 (8-8.5'), 9 (8.5-9.5'), 17 (11-12'), and 21 (1-1.5'). The PAH detections appear to be associated with fill material at the Site. The PAH detection in sample AOC-13-9 (8.5-9.5') may also be associated with petroleum impacts identified during field screening.
- ETPH and VOCs were not detected above remedial criterial in any of the soil samples analyzed.
- Arsenic was detected in the soil sample from AOC-13-19 (5.5-6') at a concentration of 37 mg/kg. At this depth, the arsenic is believed to be from fill and not a release at the Site.
- PCBs were not identified above laboratory detection limits in any of the asphalt samples.
- Analysis of concrete samples identified PCBs above 1 mg/kg and below 10 mg/kg in samples AOC-13-CO-26 (0-0.5") and CO-29 (0-0.5").
- Analysis of sediment samples identified PCBs above 1 mg/kg but below 10 mg/kg. PAHs, ETPH and metals (arsenic and lead) were also identified above remedial criteria in sediment samples.

Results of the investigation in AOC-13 generally support the previous CSM for this area. Significant PCB impacts to soil at depth have been identified and these impacts are believed to be from releases during historical Site operations. Petroleum impacts were also identified at discrete sample locations and are also believed to be from releases during historical Site operations. PCB impacts to asphalt were not

identified and tracking is not seen as a potential release mechanism. PAHs and metals detected appear to be associated with fill material as they are typically at depth and are not likely due to surface releases during historical Site operations. Sediment within the pipe trenches is impacted with various COCs including PCBs and will require remediation. Based on the above data and review of historic data, additional investigation is not required to further define the extent of elevated PCB impacts and soil identified with petroleum impacts.

4.9 Conceptual Site Model Summary

The following is a summary of modifications to the AOC CSMs following the evaluation of Site investigation data:

- AOC-3 Former Septic Systems: PAHs, lead and arsenic identified in soil above remedial criteria appear to be associated with fill and are not from historic use of the septic systems/structures. ETPH and VOCs were detected at low levels and therefore do not appear to be COCs for AOC-3. Sediments within the septic structures exhibit concentrations greater than the I/C DEC for some COCs and should be removed as they present a potential source of COCs.
- AOC-7 Former Waste Oil AST / Oil Pump Room Area: PAHs and vanadium identified in soil above remedial criteria appear to be associated with fill and are not from a release from the former AST or pump room. Impacts to porous media were not identified and tracking is not seen as an issue for this AOC. PCBs and ETPH were identified in soil to depths of eight to ten feet below the ground surface and the source of these impacts are believed to be from releases from historical Site operations.
- AOC-9 Transformer Areas: The investigation did not identify significant petroleum impacts to soil and PAHs detected in soil are likely associated with fill material. However, historical data and that obtained during this investigation indicate areas where PCBs have been released to the surface.
- AOC-10 Former Interior Chemical Storage Areas: This investigation did not identify significant impacts to soil beneath the buildings from historical operations within AOC-10. Arsenic detected in the single soil sample above remedial criteria is likely associated with fill material. However, the concrete of the buildings was significantly impacted with PCBs and demolition of the concrete pads is anticipated as being necessary to remediate the concrete.
- AOC -11 On-Site Fill Material: Evaluation of Tracking: Results indicate surface concrete at structure P12 is not impacted with PCBs. Analytical data collected from across the Site generally indicate that tracking of PCBs and other COCs at the site is not a release mechanism of concern.
- AOC -13 Former Wastewater Treatment System: PCB impacts to asphalt were not identified and tracking of PCBs is not seen as a potential release mechanism for this AOC. PAHs and metals detected are likely associated with fill material used to construct the island. However, releases of PCBs and petroleum hydrocarbons during historical Site operations were identified

as well as releases of these COCs to sediment samples and these impacts will require remediation.

- South Side: Figures 12-1 through 12-3 show the entire South Side of the property with all of the historical and current PCB data as well as recently collected ETPH. There are areas of PCB impacts identified (e.g. AOC-7, AOC-9, trenches in AOC-8) but evidence of tracking of these impacts was not identified. In general, the extent of these PCB impacts have been delineated and no additional investigation is required to delineate these impacts. Remediation will be required to comply with the RSRs.

5.0 REMEDIAL ALTERNATIVES

The following is a discussion of the chemicals of concern at the Site, the applicable regulations, and how these regulations will affect remedial decision making.

5.1 Chemicals of Concern

Chemicals of concern at the Site include PCBs, ETPH, PAHs, and metals. These COCs are present at the Site either due to historical releases or, in the case of PAHs, metals, and some petroleum hydrocarbons, are present in widespread polluted fill used to construct and expand Ball Island.

Typical remediation processes used to treat these COCs along with their applicability for these COCs are:

- Biological Treatment – In-situ or ex-situ reduction of contaminants by enhancing natural biodegradation with addition of oxygen and/or nutrients or reliance on naturally-occurring conditions.
    - PCBs – Biodegradation of PCBs is an inefficient process that requires a transition between aerobic and anaerobic conditions to achieve complete degradation. This remedial process is not typically employed for this COC.
    - ETPH and PAHs – Biodegradation of these COCs is a proven technology but heavier PAHs (3-, 4-, or 5-ring) are degraded slowly. Biodegradation occurs best under aerobic conditions and could be employed at the Site for these COCs.
    - Metals – The oxidative state of metals may be altered during biodegradation. However, this method is typically employed only if metals are dissolved in groundwater and is not typically used for treating metals in soil.
- Chemical Oxidation – In-situ or ex-situ reduction of contaminants by treating with chemical oxidants.
    - PCBs – PCBs are readily degraded by chemical oxidation. However, this is not a typically employed remediation for this COC for reasons discussed in Section 5.2.
    - TPH and PAHs – Chemical oxidation of these COCs is a proven technology for these COCs.
    - Metals – The oxidative state of metals may be altered using chemical oxidation. However, this method is typically employed only if metals are dissolved in groundwater and is not typically used for treating metals in soil.
- In-Situ Stabilization – In-situ stabilization of contaminants to either reduce their solubility or to prevent direct exposure.
    - PCBs – PCBs can be stabilized in the environment and this is a technology that has been employed. However, this is not a typically employed remediation for this COC for reasons discussed in Section 5.2.

- TPH and PAHs – These COCs can be stabilized in-situ but this process is typically applied if COCs are deep below the surface or if there are other factors that render other treatment processes technically infeasible.
- Metals – In-situ stabilization is a technology that is used for these COCs. However, this method is typically employed only if metals are dissolved in groundwater and is not typically used for treating metals in soil.

- Excavation with off-Site disposal – A commonly employed remedial technology that offers permanent solutions in a short timeframe. However, costs for implementation can be significant and these costs could drive evaluation of other alternatives.
  - PCBs – PCBs can be excavated and disposed off-Site and this technology is typically employed for PCBs.
  - TPH and PAHs – These COCs can be excavated and disposed off-Site and this technology is typically employed.
  - Metals – These COCs can be excavated and disposed off-Site and this technology is typically employed.

5.2 Applicable Regulations

Chemicals of concern at the Site are regulated under the RSRs. The remedial criteria applicable to the Site for these COCs under the RSRs include the:

- I/C DEC – Soil with concentrations of COCs exceeding the I/C DEC may be treated in-situ or ex-situ to reduce concentrations, removed from the Site, or capped in a manner that renders the soil inaccessible as per the definition in the RSRs. The exception is PCBs which must be remediated to a concentration less than the I/C DEC down to a depth of fifteen feet below ground surface. Application of the I/C DEC will require an ELUR restricting site use to industrial and commercial purposes be placed on the parcel.
- GB PMC – Soil with concentrations of COCs exceeding these criteria or with SPLP leachate results that exceed the GB PMC above the seasonal high groundwater table must be reduced in concentration or the leachability of the COC reduced. This may be done by removing soil or treating the soil in-situ or ex-situ. The widespread polluted fill variance exempts COCs from application of the GB PMC. This variance is applicable to PAHs, metals, and petroleum hydrocarbons that were in the fill material used to construct the island and not due to a release after the fill materials were placed.

PCBs at the Site are regulated under the federal PCB regulations found in 40 CFR Part 761 as PCB Remediation Waste. Under the federal PCB regulations, disposal is defined as:

> *Disposal* means intentionally or accidentally to discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items. Disposal includes spills, leaks, and other uncontrolled discharges of PCBs as well as actions related to

containing, transporting, destroying, degrading, decontaminating, or confining PCBs and PCB Items.

Thus, both the release of PCBs to the environment and any process that involves removal, destroying or containing PCBs are defined as a disposal. Federal regulations for the storage and disposal of PCB-containing materials are found in 40 CFR Part 761 Subpart D. The technologies allowed for disposal of PCB remediation wastes under Subpart D include excavation and removal from the Site with either incineration (§761.70), disposal in an appropriately permitted landfill (§761.75), or capping PCB remediation waste soil and disposal in place. Other remedial technologies, such as soil washing, ex-situ thermal treatment, chemical oxidation, or in-situ stabilization may be employed but must be approved on a Site-specific basis. These approvals can be difficult to obtain so excavation and removal is typically employed. PCB-impacted materials may also be capped and disposed in place.

5.3 Remedial Implications

PCBs are the most common COC on the property and are driving remedial actions in many areas. For areas where PCBs are found with other COCs, the disposal requirements for PCBs control remedial selection.

As such, excavation and off-Site disposal of soil where PCB concentrations are greater than the I/C DEC for PCBs (10 mg/kg) will be the preferred remedial alternative because it can be implemented in a timely manner, is permanent, and acceptable to the regulators. However, this alternative is costly and other alternatives will be evaluated where applicable. For locations where PCB concentrations are less than the I/C DEC, these soils may be rendered inaccessible with a combination of soil and asphalt or concrete caps.

5.4 Anticipated Remedial Alternatives

The anticipated remedial alternatives for soil on the southside of the property is a mix of excavation to remove PCBs greater than 10 mg/kg and ETPH impacts due to releases that also exceed the GB PMC and rendering remaining soil inaccessible where implementable. However, grades will need to be maintained at the buildings and the bulkhead surrounding the island. Capping of impacts near the bulkhead and the buildings will be combined with excavation of two feet of soil with asphalt or concrete placed over the surface of the clean materials used to backfill or excavation of four feet of soil with backfilling with clean materials. The limited space between the building and the bulkhead make changing grades even more difficult on the southside when considering drainage. Thus, it is considered likely that grades will be maintained on the southside of the property.

Application of the I/C DEC requires that soil with total PCB concentration greater than 10 mg/kg be excavated and leaving soil with greater than 10 mg/kg total PCBs in place would require an engineered control variance which is not seen as being administratively implementable and would take extended timeframes to receive. Thus, excavation and offsite disposal of soil with PCB concentrations greater than 10 mg/kg is likely but an engineered control may be employed if necessary given site conditions.

Releases of petroleum hydrocarbons during historical site operations have been found and where these soil impacts exceed the GB PMC, excavation and offsite disposal is considered to be the likely remedial

alternative. These impacts could be treated in-situ, but they are typically collocated with PCBs which cannot be treated in-situ with going through a lengthy permitting process.

PCBs at concentrations less than 10 mg/kg and PAHs, metals, petroleum hydrocarbons that are present in the fill materials and not due to releases may be rendered inaccessible to comply with the I/C DEC. This can be done by constructing a cap. However, given that surface elevations at the bulkhead and around the buildings may not be raised, this capping will likely be combined with excavation so that the required thickness of a cap may be constructed.

6.0 LIMITATIONS

This report was prepared for use by United Illuminating exclusively. The findings provided by Weston & Sampson in this report are based solely on the information reported in this document. Future investigations and/or information that were not available to Weston & Sampson at the time of the investigation may result in a modification of the findings stated in this report.

Should additional information become available concerning this Site or neighboring properties that could directly impact the Site in the future, that information should be made available to Weston & Sampson for review so that, if necessary, conclusions presented in this report may be modified.

The conclusions of this report are based on conditions observed by Weston & Sampson personnel at the time of the investigation, information provided by United Illuminating, and samples collected and analyzed on the dates shown or stated in this report. This report has been prepared in general accordance with generally accepted engineering and geological practices. No other warranty, express or implied, is made.

7.0 REFERENCES

"Scope of Study, English Station, 510 Grand Avenue, New Haven, Connecticut," TRC, October 2016, Revised July 2017.

State of Connecticut v. The United Illuminating Company, Partial Consent Order Number COWSPCB 15-001.

"Remediation Standard," Title 22a, Environmental Protection, §§22a-133k-1 through -3, inclusive, Regulations of Connecticut State Agencies, Revised August, 9, 2017.

"PCBs – Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions," Title 40 Code of Federal Regulations, Chapter 1, Part 761, July 1, 2010 edition.

"Request for Widespread Polluted Fill Variance," Advanced Environmental Interface for Quinnipiac Energy LLC, January 10, 2003.

"Approval of Widespread Polluted Fill Variance," CT DEEP, March 27, 2003.

"Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCS)," Office of Environmental Measurement and Evaluation, EPA Region 1, Revision 4, May 5, 2011.

"Technical Support Document: Recommended Numeric Criteria for Common Additional Polluting Substances and Certain Alternative Criteria," CT DEEP, December 10, 2015, Revised January 27, 2017

"Laboratory Quality Assurance and Quality Control Guidance, Reasonable Confidence Protocols Guidance Document," CT DEEP, November 2007, Revised December 2010.

"Laboratory Quality Assurance and Quality Control Guidance, Data Quality Assessment and Data Usability Evaluation Guidance Document," CT DEEP, May 2009, Revised December 2010.

FIGURES

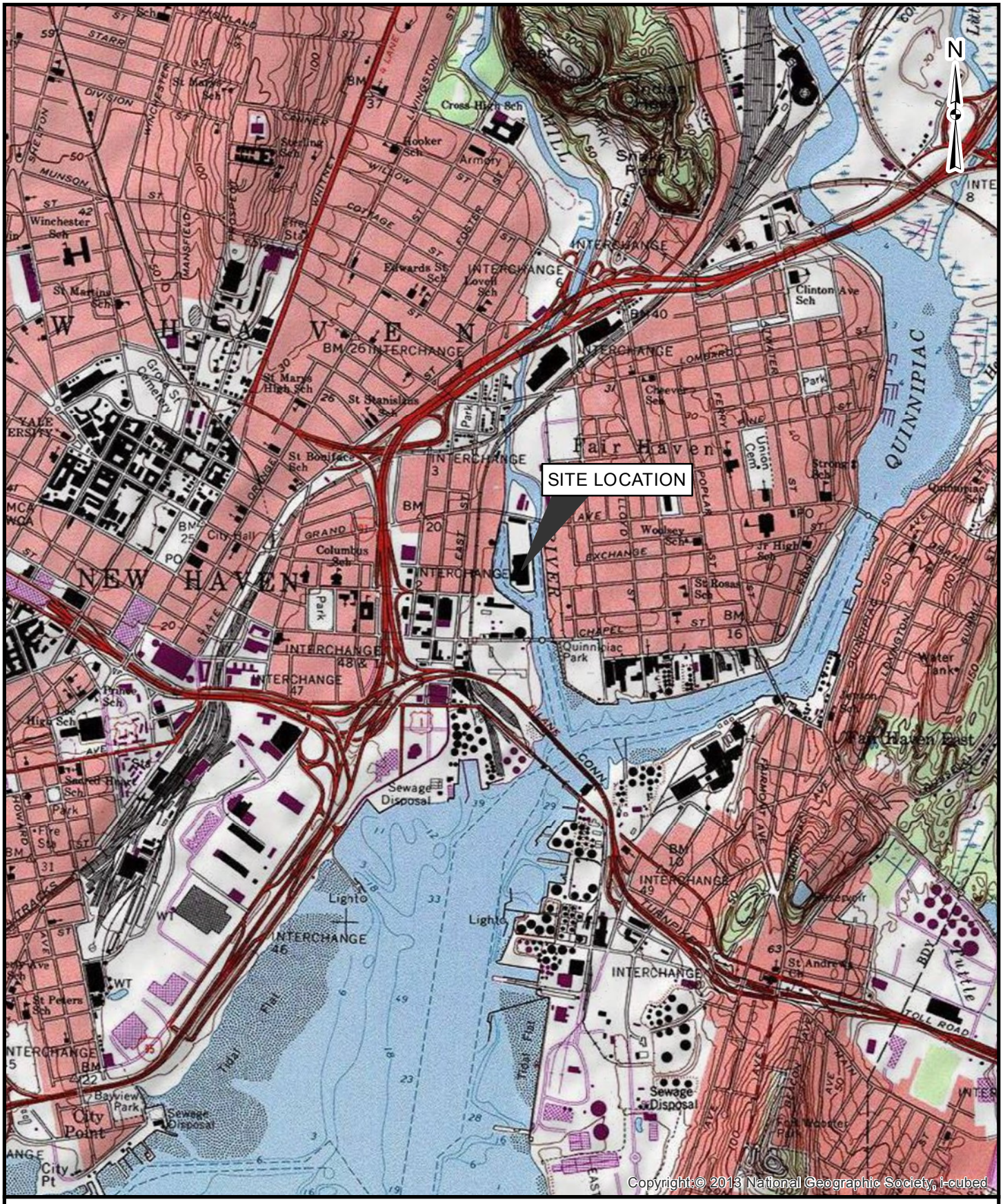


FIGURE 1
United Illuminating English Station Power Plant
510 Grand Avenue, New Haven, Connecticut

SITE LOCUS

2,000 0 2,000

Feet

Weston & Sampson

NOTES:

1. REVISION 4 INCLUDES A PROPERTY LINE ADJUSTMENT BASED ON THE 11/28/16 SURVEY BY GODFREY–HOFFMAN & ASSOC.
2. ADAPTED FROM PLAN TITLED "SITE PLAN AND APPROXIMATE PARCEL BOUNDARIES" DATED 10/07/2016 BY TRC COMPANIES, INC..
3. AERIAL IMAGE FROM GOOGLE EARTH PRO, DATE OF IMAGE: 04/20/2016

PROPERTY BOUNDARY

PARCEL BOUNDARY

REPORT AREA BOUNDARY

N

100 50 0 100 200

SCALE: 1"=100'

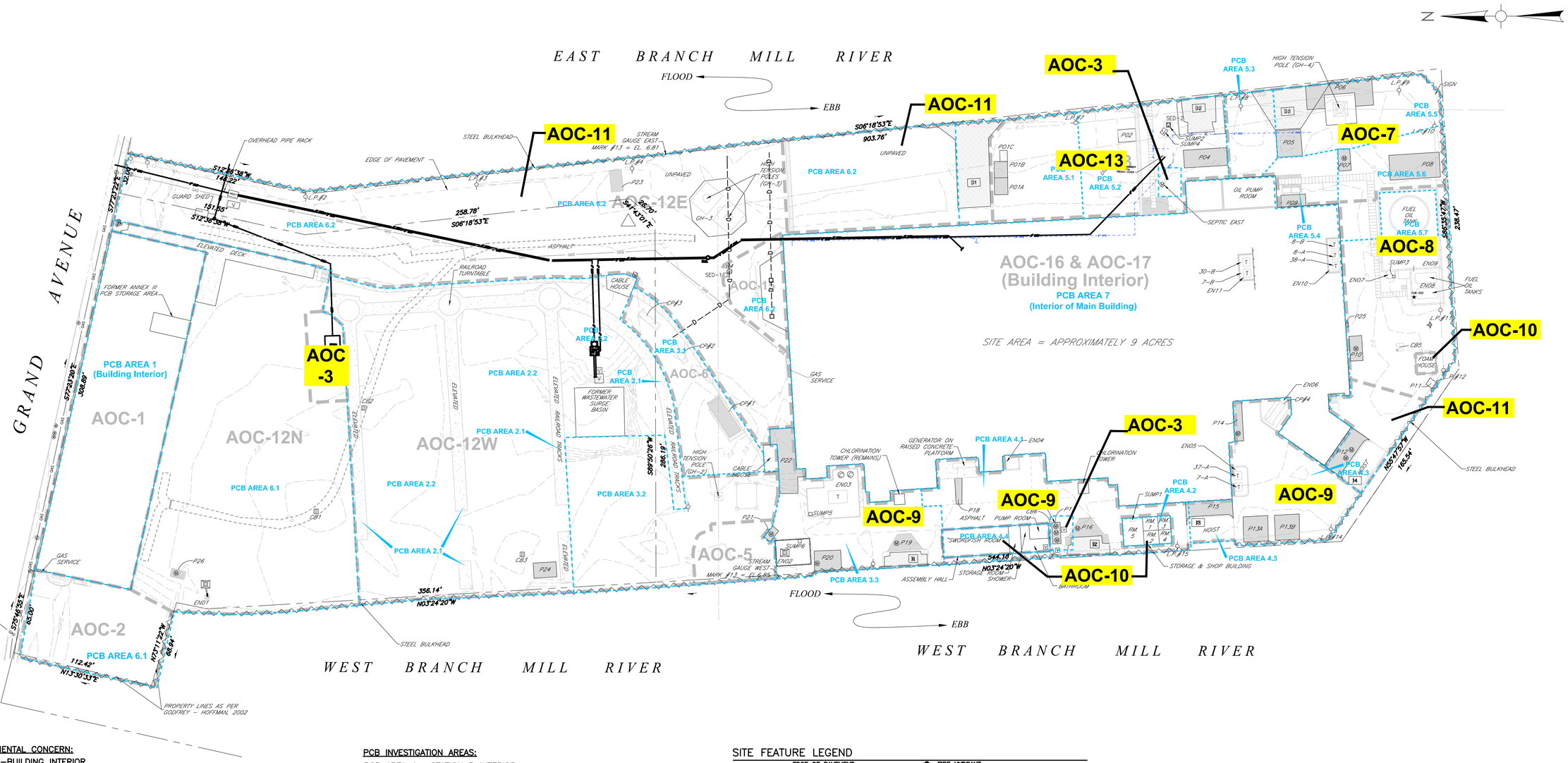
FIGURE 2

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

SITE PLAN WITH PARCEL BOUNDARY

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

Weston & Sampson℠



AREAS OF ENVIRONMENTAL CONCERN:

AOC-1 STATION B-BUILDING INTERIOR
AOC-2 STATION B UNDERGROUND STORAGE TANK AREA
AOC-3 FORMER SEPTIC SYSTEM
AOC-4 PAST SPILLS UNSPECIFIED LOCATIONS
AOC-5 BULKHEAD PCB REMEDIATION AREA
AOC-6 CAPACITOR RELEASE AREA/OUTDOOR CAPACITOR BANKS
AOC-7 FORMER WASTE OIL AST AND OIL PUMP HOUSE
AOC-8 FORMER FUEL OIL STORAGE ASTS
AOC-9 TRANSFORMER AREAS
AOC-10 INTERIOR CHEMICAL STORAGE AREAS EXCLUDING ENGLISH STATION
AOC-11 ON-SITE FILL MATERIAL SITE WIDE
AOC-12E COAL STORAGE, HANDLING, AND WASTE DISPOSAL AREAS
AOC-12N COAL STORAGE, HANDLING, AND WASTE DISPOSAL AREAS
AOC-12W COAL STORAGE, HANDLING, AND WASTE DISPOSAL AREAS
AOC-13 FORMER WASTEWATER TREATMENT FACILITY
AOC-14 FORMER COOLING WATER DISCHARGE TUNNEL
AOC-15 CATCH BASIN RELEASE & OIL STAIN AREA
AOC-16 ENGLISH STATION INTERIOR
AOC-17 DRAINAGE STRUCTURES ASSOCIATED WITH/BENEATH ENGLISH STATION

GENERAL NOTES:

1. ADAPTED FROM PLAN TITLED "SITE FEATURES, AOCs, AND PCB AREAS" DATED 10/07/2016 BY TRC COMPANIES INC..
2. NOT ALL STRUCTURAL DETAILS HAVE BEEN SHOWN WITHIN BUILDINGS AND ENCLOSURES.
3. ENCLOSURES EN01 THROUGH EN11 ARE ENCLOSED EITHER BY FOUR CONCRETE WALLS, OR BY THREE CONCRETE WALLS AND A BUILDING WALL. ENCLOSURE IS NOT SYNONYMOUS WITH CONTAINMENT.
4. FOUR CONCRETE PADS FORMERLY HELD CAPACITORS: CP#1, CP#2, CP#3, CP#4. CP#1 IS AT GRADE; THE OTHERS ARE ELEVATED.
5. IN A SURVEY OF MONITORING WELLS ON 13 APRIL 2004, AEI COULD NOT FIND THE FOLLOWING WELLS, AND THEY ARE PRESUMED EXCAVATED OR OTHERWISE DESTROYED: MW-01, MW-02, MW-13, MW-20, MW-N, AND MW-O.
6. GODFREY-HOFFMAN ASSOCIATES, LLC SUPPLIED A GENERAL LOCATION SURVEY BASE MAP: PROJECT 01-182; JANUARY 4, 2002 WITH REVISIONS TO NOVEMBER 28, 2016; SCALE 1 INCH = 40 FEET.
7. THIS FIGURE IS NOT INTENDED FOR CONSTRUCTION PURPOSES.

PCB INVESTIGATION AREAS:

PCB AREA 1: STATION B INTERIOR
- AREA 1.1 MEZZANINE AND FIRST FLOOR, EXCEPT ANNEX III
- AREA 1.2 FORMER ANNEX III
- AREA 1.3 BASEMENT

PCB AREA 2: FORMER COAL YARD
- AREA 2.1 ELEVATED RAILROAD TRACKS AND FOUNDATIONS
- AREA 2.2 REMAINDER OF FORMER COAL YARD

PCB AREA 3: ELECTRICAL INFRASTRUCTURE AND EXCAVATION
- AREA 3.1 FORMER CAPACITOR AREA
- AREA 3.2 UNITED ILLUMINATING REMEDIATION AREA
- AREA 3.3 TRANSFORMER AND CAPACITOR AREA

PCB AREA 4: SOUTHWEST CORNER
- AREA 4.1 FORMER TRANSFORMER AREA
- AREA 4.2 STORAGE AND SHOP BUILDING INTERIOR
- AREA 4.3 TRANSFORMER AND FORMER CAPACITOR AREA
- AREA 4.4 ASSEMBLY HALL INTERIOR

PCB AREA 5: SOUTHEAST CORNER
- AREA 5.1 FORMER DUMPSTER AREA
- AREA 5.2 FORMER WASTEWATER TREATMENT AREA
- AREA 5.3 OIL PUMP HOUSE AREA
- AREA 5.4 FORMER WASTE OIL TANK AREA
- AREA 5.5 TOWER GH-4 AREA
- AREA 5.6 FORMER STORAGE BUILDING AREA
- AREA 5.7 FUEL OIL TANK AREA

PCB AREA 6: BALANCE OF SITE, EXCEPT ENGLISH STATION
- AREA 6.1 FORMER STATION B AREA
- AREA 6.2 MILL RIVER EAST BRANCH AREA

PCB AREA 7: ENGLISH STATION INTERIOR

SITE FEATURE LEGEND

EDGE OF PAVEMENT	FIRE HYDRANT
PROPERTY / STREET LINE	MANHOLE
CHAIN LINK FENCE	VAULT
GUARDRAIL	HATCHWAY
NEW BULKHEAD	INTAKE CHANNEL
GAS LINE	DISCHARGE CHANNEL
OVERHEAD WIRE	TRANSFORMER
CONCRETE WALL	CIRCUIT BREAKER
APPROXIMATE EXTENT OF HISTORICAL EXCAVATION	CATHODIC BULKHEAD PROTECTION DEVICE
PCB AREA BOUNDARY	4AS-007 ASPHALT SAMPLE POINT
AOC BOUNDARY	3CO-040 CONCRETE SAMPLE POINT
PIPE TRENCH	CS-1 CONCRETE SAMPLE POINT – COLLECTED BY GEI
EXISTING BUILDING	4CO-078 CONCRETE SAMPLE POINT FROM WALL
CONCRETE PAD	3HX-004 HEXANE WIPE SAMPLE POINT
CONCRETE PAD (ELEVATED)	4XX-001 MISCELLANEOUS SAMPLE POINT
ASPHALT APRON	3SD-001 SEDIMENT SAMPLE POINT
RECENT FILL	PCB-05 SEDIMENT SAMPLE POINT – COLLECTED BY GEI
WATER GATE	4HA-513 SOIL SAMPLE POINT
GAS GATE	TB-XXX SAMPLE LOCATION WHERE BOTH POROUS MEDIA (ASPHALT OR CONCRETE) AND SOIL SAMPLES WHERE COLLECTED
ROUND CATCH BASIN	HA-1 SOIL SAMPLE POINT – COLLECTED BY OTHERS
RECTANGULAR CATCH BASIN	3SW-001 SURFACE WATER SAMPLE POINT
UTILITY POLE	MW-H / TB-W SOIL SAMPLE FROM GROUND WATER MONITORING WELL
	MW-01 SOIL SAMPLE FROM GROUND WATER MONITORING WELL – INSTALLED BY OTHERS

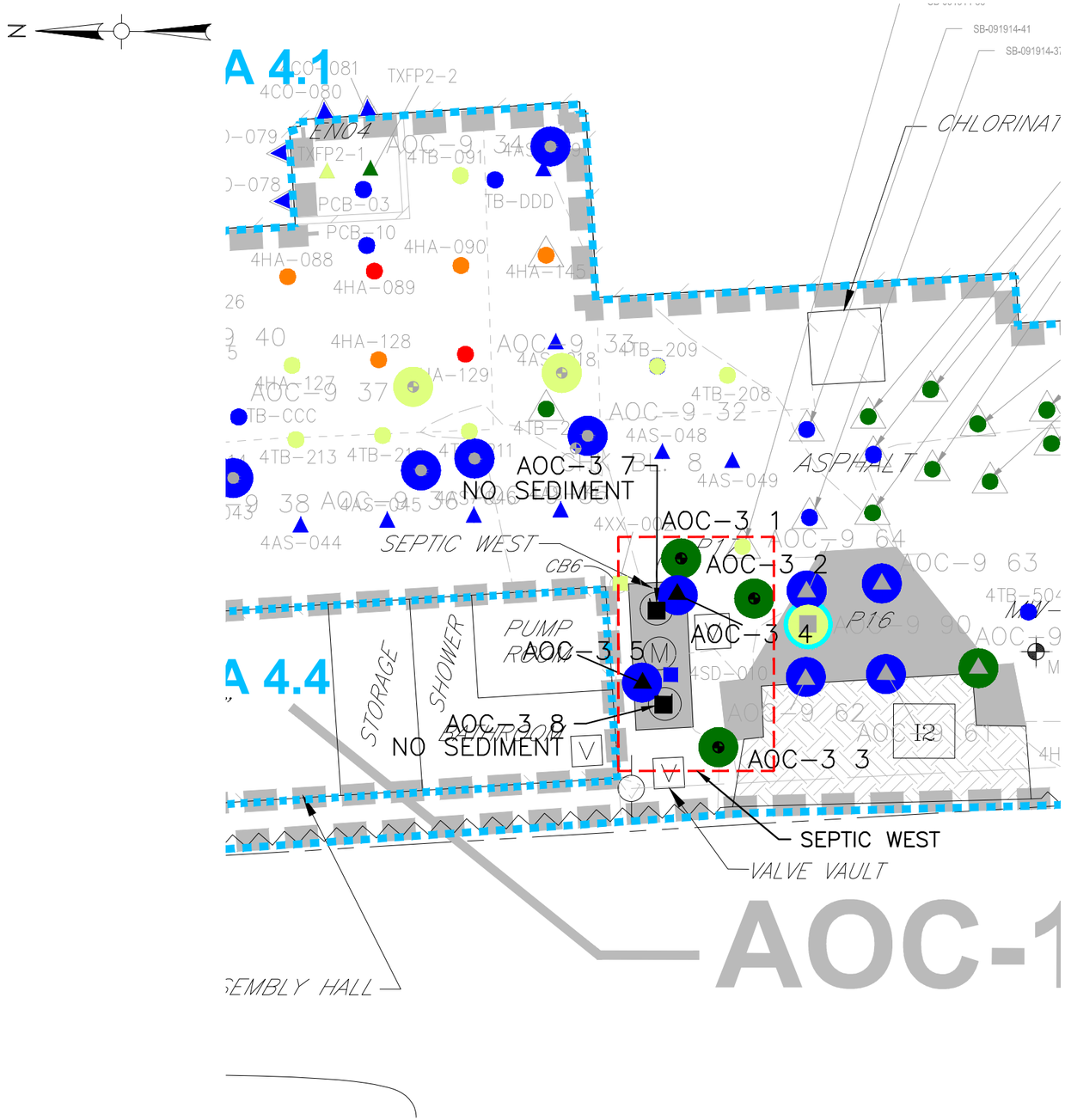
FIGURE 3
UNITED ILLUMINATING ENGLISH STATION POWER PLANT

510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

SOUTHSIDE SITE FEATURES, AOCs, AND PCB AREAS

OCTOBER, 2017 SCALE: 1" = 40'

Weston & Sampson
Weston & Sampson Engineers, Inc.
273 Dividend Road, Rocky Hill, CT 06067



LEGEND:

- SAMPLE LOCATION WITH PCB CONCENTRATIONS < 1.0 MG/KG
- SAMPLE LOCATION WITH NON-DETECT PCB CONCENTRATIONS
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS > I/C DEC
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS < I/C DEC
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 10.0 MG/KG, BUT < 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 10.0 MG/KG
- SEDIMENT SAMPLE LOCATION
- POROUS MEDIA SAMPLE LOCATION
- W&S 2017 BORING/SOIL SAMPLE LOCATION
- W&S 2017 BORING/SOIL AND POROUS MEDIA SAMPLE LOCATION

NOTES:

1. SEE FIGURE 3 FOR NOTES, LEGEND AND LOCATION.
2. SHADED DATA POINTS REPRESENT HISTORICAL SAMPLE POINTS AND/OR SAMPLE LOCATIONS OUTSIDE OF FIGURE'S AOC.
3. HISTORICAL SAMPLE POINTS WHERE DETECTIONS/ EXCEEDANCES OCCURRED ARE HIGHLIGHTED. NO SAMPLE SYMBOL IS USED.

15 7.5 0 15 30

SCALE: 1"=15'

FIGURE 4-1

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

AOC-3 (SEPTIC WEST)
2017 SAMPLE LOCATIONS: 0-2 FEET DEPTH

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

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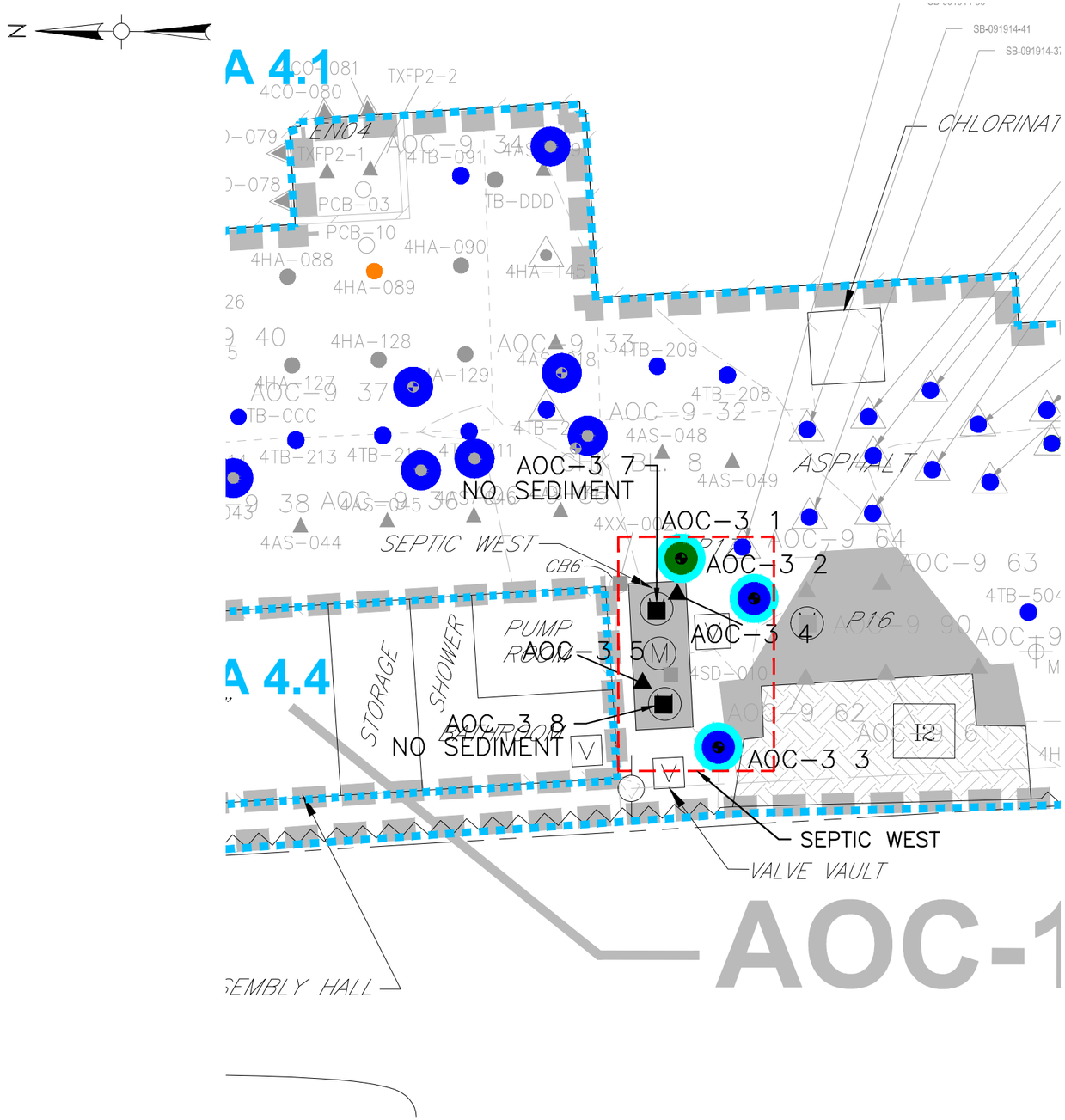

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- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 10.0 MG/KG
- SEDIMENT SAMPLE LOCATION
- POROUS MEDIA SAMPLE LOCATION
- W&S 2017 BORING/SOIL SAMPLE LOCATION
- W&S 2017 BORING/SOIL AND POROUS MEDIA SAMPLE LOCATION

NOTES:

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3. HISTORICAL SAMPLE POINTS WHERE DETECTIONS/ EXCEEDANCES OCCURRED ARE HIGHLIGHTED. NO SAMPLE SYMBOL IS USED.

15 7.5 0 15 30

SCALE: 1"=15'

FIGURE 4-2

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

AOC-3 (SEPTIC WEST)
2017 SAMPLE LOCATIONS: 2-4 FOOT DEPTH

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

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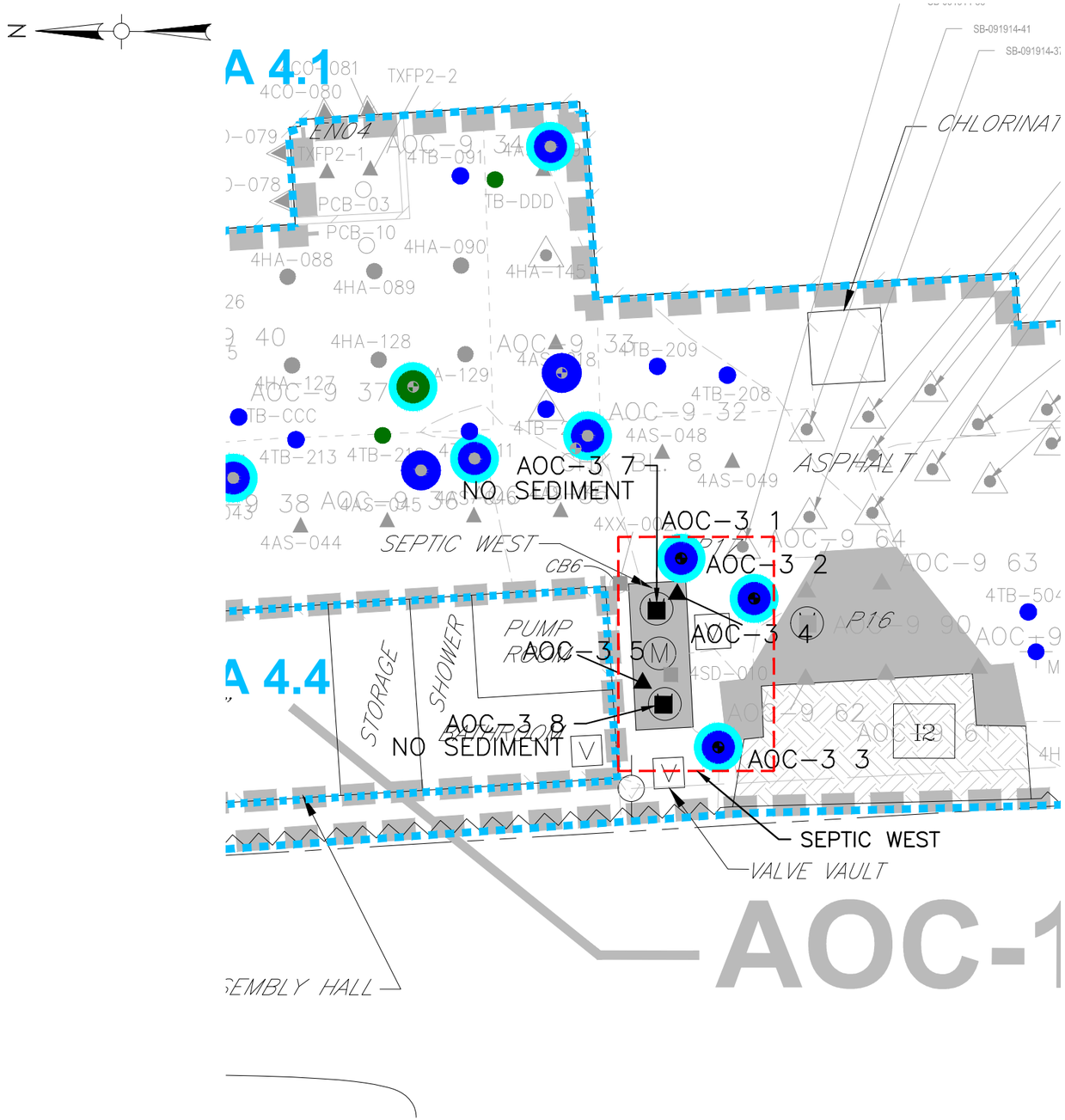

LEGEND:

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- SAMPLE LOCATION WITH NON-DETECT PCB CONCENTRATIONS
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS > I/C DEC
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS < I/C DEC
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 10.0 MG/KG, BUT < 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 10.0 MG/KG
- SEDIMENT SAMPLE LOCATION
- POROUS MEDIA SAMPLE LOCATION
- W&S 2017 BORING/SOIL SAMPLE LOCATION
- W&S 2017 BORING/SOIL AND POROUS MEDIA SAMPLE LOCATION

NOTES:
1. SEE FIGURE 3 FOR NOTES, LEGEND AND LOCATION.

2. SHADED DATA POINTS REPRESENT HISTORICAL SAMPLE POINTS AND/OR SAMPLE LOCATIONS OUTSIDE OF FIGURE'S AOC.

3. HISTORICAL SAMPLE POINTS WHERE DETECTIONS/ EXCEEDANCES OCCURRED ARE HIGHLIGHTED. NO SAMPLE SYMBOL IS USED.

15 7.5 0 15 30

SCALE: 1"=15'

FIGURE 4-3

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

AOC-3 (SEPTIC WEST)
2017 SAMPLE LOCATIONS: > 4 FOOT DEPTH

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

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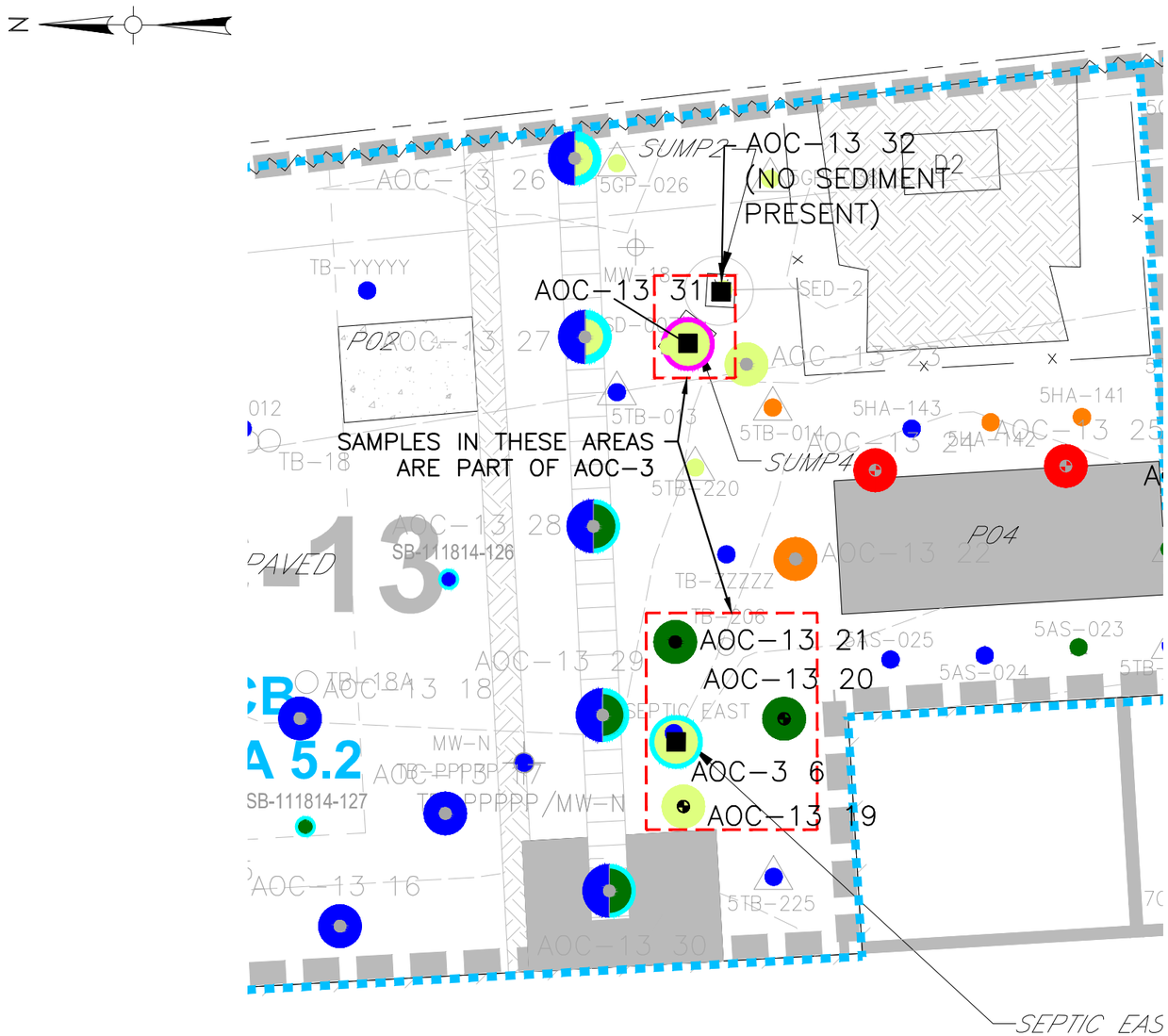

LEGEND:

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- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS < I/C DEC
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 10.0 MG/KG, BUT < 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 10.0 MG/KG
- SEDIMENT SAMPLE LOCATION
- POROUS MEDIA SAMPLE LOCATION
- W&S 2017 BORING/SOIL SAMPLE LOCATION
- W&S 2017 BORING/SOIL AND POROUS MEDIA SAMPLE LOCATION
- W&S 2017 POROUS MEDIA/ SEDIMENT SAMPLE. LEFT SIDE REPRESENTS POROUS MEDIA, RIGHT SIDE REPRESENTS SEDIMENT.

15 7.5 0 15 30

SCALE: 1"=15'

NOTES:

1. SEE FIGURE 3 FOR NOTES, LEGEND AND LOCATION.
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3. HISTORICAL SAMPLE POINTS WHERE DETECTIONS/ EXCEEDANCES OCCURRED ARE HIGHLIGHTED. NO SAMPLE SYMBOL IS USED.

FIGURE 5-1

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

AOC-3 (SEPTIC EAST) 2017 SAMPLE LOCATIONS: 0-2 FOOT DEPTH

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

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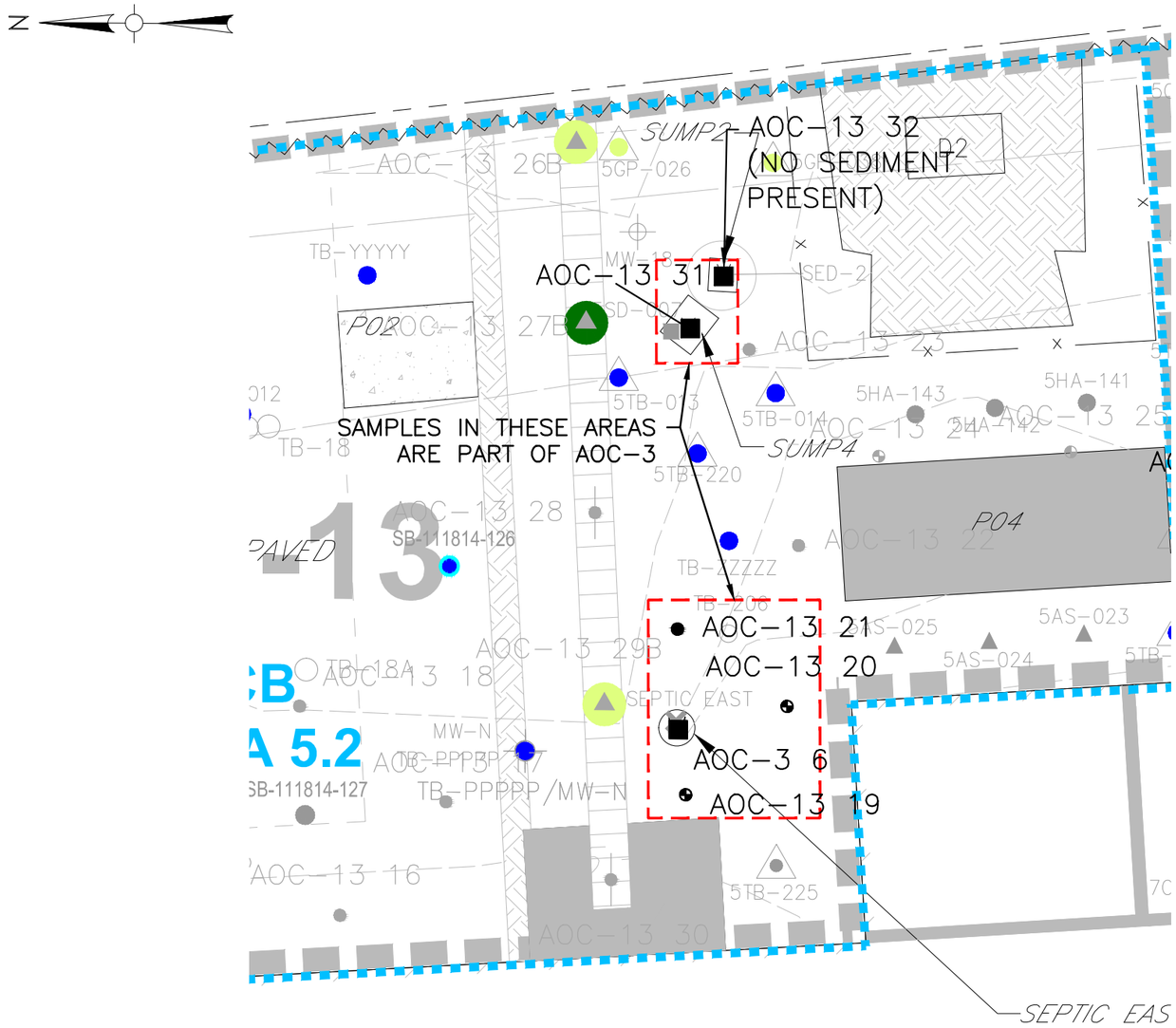

LEGEND:

- SAMPLE LOCATION WITH PCB CONCENTRATIONS < 1.0 MG/KG
- SAMPLE LOCATION WITH NON–DETECT PCB CONCENTRATIONS
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS > I/C DEC
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS < I/C DEC
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 10.0 MG/KG, BUT < 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 10.0 MG/KG
- SEDIMENT SAMPLE LOCATION
- POROUS MEDIA SAMPLE LOCATION
- W&S 2017 BORING/SOIL SAMPLE LOCATION
- W&S 2017 BORING/SOIL AND POROUS MEDIA SAMPLE LOCATION
- W&S 2017 POROUS MEDIA/ SEDIMENT SAMPLE. LEFT SIDE REPRESENTS POROUS MEDIA, RIGHT SIDE REPRESENTS SEDIMENT.

15 7.5 0 15 30

SCALE: 1"=15'

NOTES:

1. SEE FIGURE 3 FOR NOTES, LEGEND AND LOCATION.

2. SHADED DATA POINTS REPRESENT HISTORICAL SAMPLE POINTS AND/OR SAMPLE LOCATIONS OUTSIDE OF FIGURE'S AOC.

3. HISTORICAL SAMPLE POINTS WHERE DETECTIONS/ EXCEEDANCES OCCURRED ARE HIGHLIGHTED. NO SAMPLE SYMBOL IS USED.

FIGURE 5-2

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

AOC-3 (SEPTIC EAST)
2017 SAMPLE LOCATIONS: 2-4 FOOT DEPTH

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

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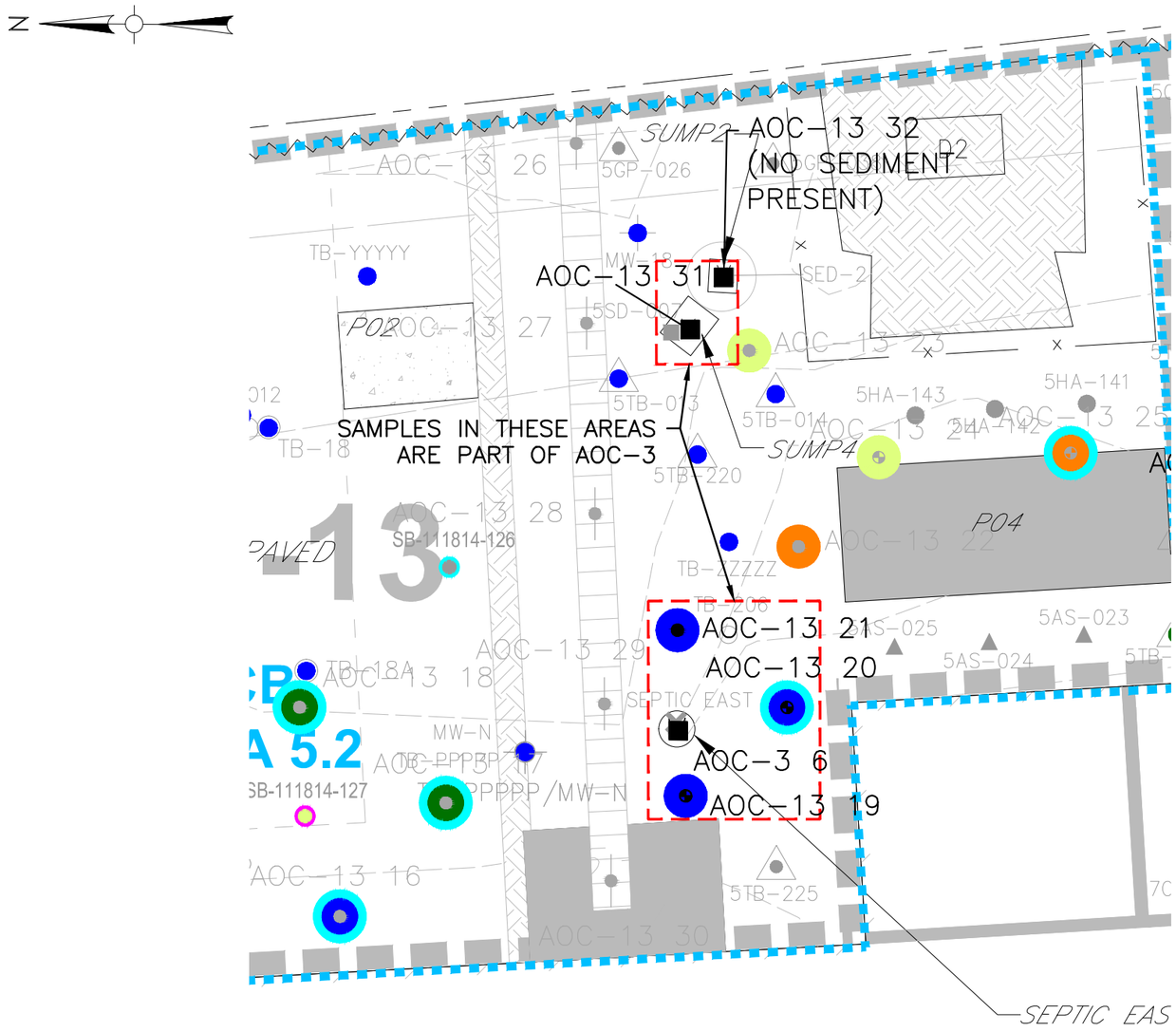

LEGEND:

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- SAMPLE LOCATION WITH NON–DETECT PCB CONCENTRATIONS
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS > I/C DEC
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS < I/C DEC
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 10.0 MG/KG, BUT < 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 10.0 MG/KG
- SEDIMENT SAMPLE LOCATION
- POROUS MEDIA SAMPLE LOCATION
- W&S 2017 BORING/SOIL SAMPLE LOCATION
- W&S 2017 BORING/SOIL AND POROUS MEDIA SAMPLE LOCATION
- W&S 2017 POROUS MEDIA/ SEDIMENT SAMPLE. LEFT SIDE REPRESENTS POROUS MEDIA, RIGHT SIDE REPRESENTS SEDIMENT.

15 7.5 0 15 30

SCALE: 1"=15'

NOTES:

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3. HISTORICAL SAMPLE POINTS WHERE DETECTIONS/ EXCEEDANCES OCCURRED ARE HIGHLIGHTED. NO SAMPLE SYMBOL IS USED.

FIGURE 5–3

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

AOC–3 (SEPTIC EAST) 2017 SAMPLE LOCATIONS: > 4 FOOT DEPTH

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

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PCB AREA 5.3

PCB AREA 5.5

PCB AREA 5.6

PCB AREA 5.4

PCB AREA 5.7

AOC 7

AOC-8

POLE (GH-4)

APPROXIMATE EXTENT OF EXCAVATION

OIL PUMP ROOM

FUEL OIL TANK

EAST

AOC-7 1 | AOC-7 2 | AOC-7 3 | AOC-7 4 | AOC-7 5 | AOC-7 6 | AOC-7 7 | AOC-7 8 | AOC-7 9 | AOC-7 10 | AOC-7 11 | AOC-7 12 | AOC-7 13 | AOC-7 14 | AOC-7 15 | AOC-7 16 | AOC-7 17 | AOC-7 18 | AOC-7 19 | AOC-7 20 | AOC-7 21 | AOC-7 22 | AOC-7 23 | AOC-7 24 | AOC-7 25 NO SEDIMENT | AOC-7 26 | AOC-7 27 | AOC-7 28 | AOC-7 29 | AOC-7 30 | AOC-7 31 | AOC-7 32 | AOC-7 33 | AOC-7 34 | AOC-7 35 | AOC-7 36 | AOC-7 37 | AOC-7 38 | AOC-7 39 | AOC-7 40 NO SEDIMENT

LEGEND:

- SAMPLE LOCATION WITH PCB CONCENTRATIONS < 1.0 MG/KG
- SAMPLE LOCATION WITH NON-DETECT PCB CONCENTRATIONS
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS > I/C DEC
- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS < I/C DEC
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 10.0 MG/KG
- SEDIMENT SAMPLE LOCATION
- POROUS MEDIA SAMPLE LOCATION
- W&S 2017 BORING/SOIL SAMPLE LOCATION
- W&S 2017 BORING/SOIL AND POROUS MEDIA SAMPLE LOCATION
- APPROXIMATE LIMIT OF HISTORICAL EXCAVATION
- W&S 2017 POROUS MEDIA/ SEDIMENT SAMPLE. LEFT SIDE REPRESENTS POROUS MEDIA, RIGHT SIDE REPRESENTS SEDIMENT.

NOTES:
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15 7.5 0 15 30

SCALE: 1"=15'

FIGURE 6-1

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

AOC-7 (PCB AREAS 5.3, 5.4, 5.5 & 5.6)
2017 SAMPLE LOCATIONS: 0-2 FOOT DEPTH

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

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PCB AREA 5.3

PCB AREA 5.4

PCB AREA 5.5

PCB AREA 5.6

PCB AREA 5.7

AOC 7

AOC-8

POLE (GH-4)

APPROXIMATE EXTENT OF EXCAVATION

P05 P06 P07 P08

D3

OIL PUMP ROOM

FUEL OIL TANK

EAST

8-B

NO SEDIMENT

AOC-7 1 AOC-7 2 AOC-7 3 AOC-7 4 AOC-7 5 AOC-7 6 AOC-7 7 AOC-7 8 AOC-7 9 AOC-7 10 AOC-7 11 AOC-7 12 AOC-7 13 AOC-7 14 AOC-7 15 AOC-7 16 AOC-7 17 AOC-7 18 AOC-7 19 AOC-7 20 AOC-7 21 AOC-7 22 AOC-7 23 AOC-7 24 AOC-7 25 AOC-7 26 AOC-7 27 AOC-7 28 AOC-7 29 AOC-7 30 AOC-7 31 AOC-7 32 AOC-7 33 AOC-7 34 AOC-7 35 AOC-7 36 AOC-7 37 AOC-7 38 AOC-7 39 AOC-7 40

LP#8 LP#9 LP#10

LEGEND:

- SAMPLE LOCATION WITH PCB CONCENTRATIONS < 1.0 MG/KG
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- SAMPLE LOCATION WITH TPH/ETPH CONCENTRATIONS > I/C DEC
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- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 50.0 MG/KG
- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 10.0 MG/KG
- SEDIMENT SAMPLE LOCATION
- POROUS MEDIA SAMPLE LOCATION
- W&S 2017 BORING/SOIL SAMPLE LOCATION
- W&S 2017 BORING/SOIL AND POROUS MEDIA SAMPLE LOCATION
- APPROXIMATE LIMIT OF HISTORICAL EXCAVATION
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NOTES:
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3. HISTORICAL SAMPLE POINTS WHERE DETECTIONS/ EXCEEDANCES OCCURRED ARE HIGHLIGHTED. NO SAMPLE SYMBOL IS USED.

15 7.5 0 15 30

SCALE: 1"=15'

FIGURE 6-2

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

AOC-7 (PCB AREAS 5.3, 5.4, 5.5 & 5.6)
2017 SAMPLE LOCATIONS: 2-4 FOOT DEPTH

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

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PCB AREA 5.3

POLE (GH-4)

APPROXIMATE EXTENT OF EXCAVATION

PCB AREA 5.5

PCB AREA 5.6

PCB AREA 5.4

PCB AREA 5.7

AOC 7

AOC-8

OIL PUMP ROOM

FUEL OIL TANK

EAST

AOC-7 1 | AOC-7 2 | AOC-7 3 | AOC-7 4 | AOC-7 5 | AOC-7 6 | AOC-7 7 | AOC-7 8 | AOC-7 9 | AOC-7 10 | AOC-7 11 | AOC-7 12 | AOC-7 13 | AOC-7 14 | AOC-7 15 | AOC-7 16 | AOC-7 17 | AOC-7 18 | AOC-7 19 | AOC-7 20 | AOC-7 21 | AOC-7 22 | AOC-7 23 | AOC-7 24 | AOC-7 25 NO SEDIMENT | AOC-7 26 | AOC-7 27 | AOC-7 28 | AOC-7 29 | AOC-7 30 | AOC-7 31 | AOC-7 32 | AOC-7 33 | AOC-7 34 | AOC-7 35 | AOC-7 36 | AOC-7 37 | AOC-7 38 | AOC-7 39 | AOC-7 40 NO SEDIMENT

LEGEND:

- SAMPLE LOCATION WITH PCB CONCENTRATIONS < 1.0 MG/KG
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- SAMPLE LOCATION WITH PCB CONCENTRATIONS ≥ 1.0 MG/KG, BUT < 10.0 MG/KG
- SEDIMENT SAMPLE LOCATION
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15 7.5 0 15 30

SCALE: 1"=15'

FIGURE 6-3

UNITED ILLUMINATING ENGLISH STATION POWER PLANT
510 GRAND AVENUE, NEW HAVEN, CONNECTICUT

AOC-7 (PCB AREAS 5.3, 5.4, 5.5 & 5.6)
2017 SAMPLE LOCATIONS: > 4 FOOT DEPTH

DESIGNED BY: PML	CHECKED BY: MB	DATE: OCTOBER 2017

Weston & Sampson℠

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