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Phase II Environmental Site Assessment & Site Assessment for Closure of An Underground Oil Storage Tank Facility

Waterfall Arts
256 High Street
Belfast, Maine

Rev. 1

June 12, 2018

Prepared for:

City of Belfast
131 Church Street
Belfast, Maine
(Using U.S. EPA Brownfields Funding Under Belfast's Assessment Grant No. BF00A00209-0)

On Behalf of:

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256 High Street
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RANSOM
Consulting
Engineers
and Scientists

EXECUTIVE SUMMARY

On behalf of the City of Belfast (the "City") and Waterfall Arts, the following report presents the findings of the Phase II Environmental Site Assessment (ESA) conducted at the Waterfall Arts property located at 256 High Street in the City of Belfast, Waldo County, Maine (the "Site"). This Phase II ESA was performed by Ransom Consulting, Inc. (Ransom) in conjunction with the United States Environmental Protection Agency (U.S. EPA) and the Maine Department of Environmental Protection (MEDEP). The Phase II ESA was conducted using U.S. EPA Brownfield funding under the City of Belfast's FY2016 Brownfields Assessment Grant No. BF00A00209-0. This report also serves as the Site Assessment required under MEDEP's Chapter 691 regulations for closure of an Underground Oil Storage Facility in Maine.

The Site encompasses approximately 1.24 acres of land within a primarily residential area of Belfast. The Site is currently improved with one building (the "Site Building"), which is described herein as the Waterfall Arts Building. Remaining portions of the Site are improved with asphalt-paved driveways/parking areas, maintained lawns and landscaping, and a playground.

Based on available information, the Site was improved with a residence in the early 1900s. Around 1912, this residence was converted to the McClellan Public School, which operated at the Site until it was destroyed by a fire in the early 1930s. A majority of the existing Site building was constructed in 1935 and the southwestern addition was constructed in 1947. The existing Site building was originally utilized as the Governor Anderson School (a public elementary school), until the school vacated the property in 2004. The City of Belfast acquired the Site in 2004 and sold it to the Arts Center of Kingdom Falls in 2005. The Site and building have been utilized as an arts center (Waterfall Arts), since 2005.

The Site Building has been connected to municipal water and sewer services since its construction and has been heated and cooled with an electric heat pump system since 2014. The Site Building was formerly heated with a coal-fired boiler and more recently by a fuel oil-fired boiler system.

On February 27, 2017, Ransom completed a Phase I ESA for the Site. The Phase I ESA identified *recognized environmental conditions* (*RECs*) and environmental concerns in connection with: (1) an inactive fuel oil underground storage tank (UST) at the Site; (2) two former, removed fuel oil USTs at the Site; (3) the potential for granular fill soils at the property to contain anthropogenic fill and/or coal ash with elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) and/or metals; and (4) potential impacts associated with the southern adjoining property's historic use as a picture and postcard factory.

Based on the findings from the Phase I ESA, the Site was targeted for additional investigation through the completion of a Phase II ESA. The objective of the Phase II ESA was to collect sufficient data to confirm or dismiss the *RECs* and environmental concerns identified during the Phase I ESA, to identify potential exposure risks, and to evaluate the suitability of the Site for proposed redevelopment.

Based on the results of this Phase II ESA, granular fill containing bricks and wood debris (i.e., "anthropogenic fill") was observed in accessible soils [shallower than 2 feet below ground surface (bgs)] surrounding the Site Building. Based on the laboratory results, most of these accessible soils were found to contain PAHs and extractable petroleum hydrocarbon (EPH) fractions, but at concentrations below

their respective MEDEP Remedial Action Guidelines (RAGs) for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk. However, one PAH [benzo(a)pyrene] was detected in one accessible soil sample at a concentration that exceeded its MEDEP RAG for Outdoor Commercial Worker exposure but did not exceed its Excavation/Construction Worker RAG and was similar in concentration to its MEDEP "Urban Fill Background" concentration. This soil sample was collected from boring B102, which was advanced to the north of the Site building. The presence of low-level PAH- and EPH-impacted soils identified at the Site during our Phase II ESA are likely associated with anthropogenic fill that was generated during the on-site destructive fire and/or subsequent demolition of the former building at the property in the 1930s. No adverse environmental impacts to the Site were identified in connection with the southern adjoining property's (Starrett Children's Center; 73 Waldo Avenue) historic use as a picture and postcard factory during this Phase II ESA.

To properly evaluate potential impacts to the Site soil and groundwater, Ransom coordinated the removal of the abandoned 3,000-gallon fuel oil UST during this Phase II ESA. Excavation of the tank began during the Phase II ESA mobilization on August 1, 2017. During the initial UST excavation activities and subsurface investigation surrounding the tank area, weathered, petroleum-impacted soil was observed beneath and in the immediate vicinity of the tank. However, it was determined by Ransom and MEDEP, that these weathered, petroleum-impacted soils were not associated with a release from the current tank, but rather associated with a former release from the fuel oil USTs that were removed from the Site in 1994. This determination was supported by evidence that weathered, petroleum-impacted soil was observed beneath a layer of clean soil that was placed beneath the current UST.

Due to the potential for an excavation sidewall collapse and damage to the adjacent cement pad and heat pump system for the Site building, UST removal activities were suspended from August until November 2017. After temporary relocation of the heat pump units was completed, UST removal activities resumed on November 7, 2017. The UST was removed without incident, and no evidence of a fuel oil release was observed in connection with the tank system during its removal. However, due to concerns for the structural integrity of the heat pump's concrete pads, which were not relocated, it was not reasonably feasible to remove a small section of fuel oil product piping under the concrete pads. Therefore, this small section of product piping was abandoned in-place after it was flushed, cleaned, and capped to ensure that no residual fuel oil remained in the piping.

Based on the laboratory results of soil samples collected from the UST excavation and in its vicinity, these soils were found to contain PAHs, EPH fractions and volatile petroleum hydrocarbon (VPH) fractions at concentrations below their respective MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk. The presence of these low-level impacted soils was inferred to be associated with an unknown and/or unreported fuel oil release associated with the USTs that were removed in 1994 and/or anthropogenic fill that was likely generated during the fire and subsequent demolition of the former building at the Site. No contaminants of concern were detected at concentrations above the laboratory reporting limits in the groundwater sample collected in the vicinity of the UST area. Therefore, it is determined that the low-level impacted soils have not adversely impacted groundwater conditions at the Site. Additionally, the low-level impacted soils are not anticipated to adversely impact the indoor air quality of the Site building.

Ransom conducted a Hazardous Building Materials Inventory (HBMI) concurrent with the Phase II ESA investigation. The HBMI identified asbestos-containing materials (ACM) and universal waste items in the Site Building, including fluorescent bulbs and electronic ballasts that may contain polychlorinated

biphenyls (PCBs), lead-acid batteries, and other fixtures/electronics that may contain mercury and heavy metals. Lead-based painted surfaces were also identified inside the Site Building during a prior hazardous building materials inspection. Ransom's full HBMI report has been provided under separate cover.

Based on the information obtained during this Phase II ESA, Ransom recommends the following with respect to Site redevelopment:

1. The Phase I ESA, Phase II ESA, and HBMI completed for the Site should be submitted to the MEDEP Voluntary Response Action Program (VRAP). The MEDEP VRAP is a voluntary program that offers technical review of environmentally-impacted sites and ultimately provides state liability protections for interested parties, including a "No Action Assurance" (NAA) letter, "No Further Action Assurance" (NFAA) letter, and/or a "Certificate of Completion" letter (i.e., no further action required), provided that proper and appropriate environmental assessment and cleanup/remedial actions are completed, as approved by the MEDEP;

2. A Site-specific Soil Management Plan should be developed to define proper handling and characterization procedures to ensure sufficient characterization of each of the detected soil analytes relative to the anticipated off-Site or on-Site reuse/disposal during redevelopment;

3. Since limited UST product piping could not be removed due to the structural integrity of the concrete foundations of the heat pump system, and which currently remains in the ground, the Site owner will be required to record an abandoned UST piping notice with the property deed at the Waldo County Registry of Deeds, in accordance with MEDEP Chapter 691, Section 11(E)(3) regulations; and

4. Hazardous building materials identified in the Site building should be properly abated and/or mitigated prior to and/or concurrent with proposed renovation activities and according to the recommendations provided in Ransom's HBMI report, summarized herein and provided under separate cover.

This summary does not contain all the information that is found in the full report. The report should be read in its entirety to obtain a more complete understanding of the information provided and to aid in decisions made or actions taken based on this information.

RANSOM Consulting, Inc.

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1.0 INTRODUCTION

On behalf of the City of Belfast (the "City") and Waterfall Arts, the following report presents the findings of a Phase II Environmental Site Assessment (ESA) for the Waterfall Arts property located at 256 High Street in the City of Belfast, Waldo County, Maine (the "Site"). The Phase II ESA was performed by Ransom Consulting, Inc. (Ransom) in conjunction with the United States Environmental Protection Agency (U.S. EPA) and the Maine Department of Environmental Protection (MEDEP). This report also serves as the Site Assessment required under MEDEP's Chapter 691 regulations for closure of an Underground Oil Storage Facility in Maine.

1.1 Purpose

A Phase I ESA (dated February 27, 2017) completed by Ransom identified several *recognized environmental conditions (RECs)* and environmental concerns at the Site. These *RECs* and environmental concerns were associated with potential oil and/or hazardous substances (OHS) releases, as a result of the current and former on-Site underground storage tanks (USTs) and the destructive fire in the early 1930s. Ransom also indicated that, as a result of the destructive fires and subsequent construction of the current Site building, the potential for anthropogenic fill soils may also be present at the Site.

Additionally, there was a potential that unknown and/or undocumented OHS releases may have occurred at the southern adjoining property (Starrett Children's Center; 73 Waldo Avenue) during its former use as a postcard and picture factory. Based on the close proximity and inferred upgradient to crossgradient location of this adjoining property relative to the Site, it is possible that unknown and/or undocumented OHS releases may have migrated onto the property and adversely impacted subsurface conditions at the Site.

Based on the findings of our Phase I ESA, Ransom determined that additional investigation was warranted and recommended to address our *RECs* and environmental concerns, document current Site conditions in relation to current regulatory clean up guidelines and evaluate the suitability of the Site property for potential future redevelopment (i.e., proposed renovation and expansion of the Site building).

Specifically, Ransom recommended that a Phase II ESA should be implemented to evaluate current soil and groundwater conditions at the Site. Findings from the additional investigation would be used to evaluate potential health and environmental risks associated with redevelopment of the Site and identify whether remediation or mitigation measures would be necessary to eliminate or mitigate these potential health and environmental risks.

1.2 Special Terms and Conditions

This Phase II ESA was conducted in accordance with our executed Master Services Agreement with the City of Belfast, dated April 27, 2012 and the Contract Amendment No. 1 (Contract Extension), dated June 24, 2013. Authorization to perform this Phase II ESA was provided by the City of Belfast. Furthermore, the Phase II ESA was completed in accordance with Ransom's Site-Specific Quality Assurance Project Plan (SSQAPP, Addendum No. 65, Revision No. 1), dated March 20, 2017.

The Phase II ESA was conducted using U.S. EPA Brownfield funding under the City's FY2016 Brownfields Assessment Grant No. BF00A00209-0, and therefore, is a public document. However, the

services, findings, and conclusions noted herein, and associated documents provided to the client by Ransom are solely for the benefit of the City of Belfast, their affiliates and subsidiaries and their successors, assigns, and grantees. Other than for public informational purposes, reliance or any use of this report by anyone other than the City, for whom it was prepared, is prohibited. Furthermore, reliance or use by any such third party without explicit authorization in the report does not make said third party a third-party beneficiary to Ransom's contract with the City. Any such unauthorized reliance on or use of this report, including any of its information or conclusions, will be at the third party's risk. For the same reasons, no warranties or representations, expressed or implied in this report, are made to any such third party.

1.3 Limitations and Exceptions of Assessment

The Phase II Investigation was executed in accordance with the scope of work proposed in the SSQAPP. Any additional revisions to the scope of work or methodologies outlined in the SSQAPP that were implemented, based on conditions encountered in the field, are discussed in Section 3.0. Furthermore, the findings provided by Ransom in this report are based solely on the information reported in this document and the results of limited explorations and confirmatory laboratory testing. Our findings and conclusions must be considered as our professional opinion concerning the significance of the limited data gathered during the course of the environmental assessments. Ransom does not and cannot represent that the Site contains no OHS or other adverse environmental conditions beyond that observed by Ransom during the environmental assessments and field investigations. Should additional information become available in the future, this information can be reviewed by Ransom and the findings, presented herein, may be modified as a result of the review.

2.0 BACKGROUND

2.1 Site Description, History, and Physical Setting

The Site encompasses approximately 1.24 acres of land located in a primarily residential area of Belfast. The Site is currently improved with one building (the "Site building"), which is described, herein, as the Waterfall Arts building. The building is connected to municipal water and sewer services and is currently heated and cooled with an electric heat pump system. The Site building was formerly heated with a coal-fired boiler and a fuel oil-fired boiler. Remaining portions of the Site are improved with asphalt-paved driveways/parking areas, maintained lawns and landscaped areas, and a playground.

Based on available information, the Site was improved with a residence dating back to the early 1900s. Sometime around 1912, this residence was converted to the McClellan Public School, which operated at the Site until it was destroyed by a fire in the early 1930s. A majority of the existing Site building was constructed in 1935 and the southwestern addition was constructed in 1947. The existing Site building was originally utilized as the Governor Anderson School (public elementary school), until the school vacated the property in 2004. The City of Belfast acquired the Site in 2004 and sold it to the Arts Center of Kingdom Falls in 2005. The Site and building have been utilized as an arts center (Waterfall Arts), since 2005.

2.2 Recognized Environmental Conditions & Environmental Concerns

On February 27, 2017, Ransom completed a Phase I ESA for the Site. The Phase I ESA revealed no evidence of *RECs* in connection with the Site, except for the following:

1. Potential unknown and/or undocumented fuel oil release(s) associated with the former, 3,000-gallon fuel oil UST and/or former, 300-gallon fuel oil UST at the Site. Both former tanks were removed in 1994. No information was provided by Site contacts, municipal offices, or the MEDEP regarding whether soil or groundwater conditions were evaluated for potential contamination during the removal of these USTs from the Site; and

2. Potential unknown and/or undocumented fuel oil release(s) associated with the inactive 3,000-gallon fuel oil UST currently present at the Site.

Although not considered *RECs* by definition, Ransom also identified the following additional environmental concerns in connection with the Site:

1. A fire occurred at the Site in the early 1930s, which destroyed a former school building at the property. Additionally, a former coal-burning furnace was reportedly utilized to heat the Site building and coal-burning furnaces may have also been located in former buildings at the Site. Therefore, limited "anthropogenic fill" soils containing ash, potentially impacted with polycyclic aromatic hydrocarbons (PAHs) and metals, may also be present at the Site; and

2. Potential unknown and/or undocumented OHS releases may have occurred at the southern adjoining property (Starrett Children's Center; 73 Waldo Avenue) during its former use as a postcard and picture factory. Based on the close proximity and inferred

upgradient to crossgradient location of this adjoining property relative to the Site, it is possible that unknown and/or undocumented OHS releases may have migrated onto the property and adversely impacted subsurface conditions at the Site.

Based on the findings from the Phase I ESA, the Site was targeted for additional investigation through the completion of this Phase II ESA. The objective of this Phase II ESA was to collect sufficient data to evaluate and document current Site conditions and to what extent, if any, the identified *RECs* and environmental concerns have adversely impacted environmental conditions at the Site. Additionally, the recommended Phase II investigation will assist in evaluating potential risks to current or future Site users, construction workers, and potential mitigation measures related to managing contaminated soil and/or groundwater or implementing vapor mitigation measures for current or future building(s) at the Site. To adequately evaluate the Site and accomplish the objectives discussed above, the 3,000-gallon fuel oil UST that was previously abandoned in-place at the Site was removed and properly decommissioned in accordance with applicable State regulations in November 2017.

2.3 Areas of Concern and Contaminants of Concern

Based on environmental concerns identified at the Site, four (4) Areas of Concern (AOC) were identified at the Site and are summarized below. Site features are shown on **Figure 2**.

AOC 1: Current and Former Fuel Oil USTs

AOC 1 encompasses the area of the former, removed 3,000-gallon and 300-gallon fuel oil USTs and the existing, inactive 3,000-gallon fuel oil UST, which were/are reportedly located near the northern corner of the Site building, as shown on **Figure 2**. Fuel oil may also have been released to the subsurface via the floor drain and/or sump observed in the former boiler room of the Site Building, for which connections were unknown prior to completion of this Phase II ESA.

To evaluate soil and possibly groundwater conditions surrounding and beneath the existing 3,000-gallon fuel oil UST, the tank and accessible piping was removed by Environmental Projects Inc. (EPI), a MEDEP-approved contractor with observation provided by Ransom. Ransom also coordinated and observed a private utility locating survey during the Phase II field activities, which determined that the floor drain and sump in the boiler room of the Site Building are connected to the municipal sewer system.

The contaminants of concern (COCs) associated with AOC 1 are fuel oil constituents. Specific COC analytical parameters included extractable petroleum hydrocarbon (EPH) fractions, target PAHs, volatile petroleum hydrocarbon (VPH) fractions, and target petroleum volatile organic compounds (VOCs). Potential exposure routes associated with the COCs at the Site include direct contact with impacted soils and/or groundwater and ingestion of contaminated dust, particularly during construction activities at the Site.

Public water is supplied to the Site and vicinity; therefore, ingestion of impacted groundwater does not pose a risk at this time. However, potential contaminant concentrations in groundwater were evaluated for the purpose of assessing risks to construction workers and identifying source areas and potential remediation scenarios.

AOC 2: Potential Urban Fill and/or Coal Ash-Impacted Fill

AOC 2 encompasses the entire Site and includes surficial soils and subsurface fill materials that (1) may have been a disposal area for anthropogenic fill soils, as a result of the destructive fire that occurred at the Site in the early 1930s; (2) coal ash from the former coal-fired boiler in the Site building; and/or (3) from other undocumented sources, prior to or during the original building construction.

COCs associated with the destructive fire and coal ash-impacted fill include semi-volatile petroleum products, combustion by-products (ash), and lead (a metal). Specific analytical parameters associated with COCs resulting from these activities included EPH with target PAHs and lead. Contaminants associated with these activities would have been released to the ground surface and may have been transported laterally or vertically, as a result of site grading and redevelopment activities over the years.

Potential exposure routes associated with the COCs at the Site include direct contact with impacted soils and ingestion of contaminated dust, particularly during construction activities at the Site. Several of these COCs, such as petroleum compounds and lead, will tend to dissolve, become comingled, and migrate with the preferential groundwater flow at the Site. Public water is supplied to the Site and vicinity; therefore, ingestion of impacted groundwater does not pose a risk at this time. However, potential contaminant concentrations in groundwater were evaluated for the purpose of assessing risks to construction workers and identifying source areas and potential remediation scenarios.

AOC 3: Off-Site Sources

AOC 3 includes areas along the southern property boundary, in close proximity to the former postcard and picture factory property (73 Waldo Avenue), which is currently occupied by Starrett's Children Center. Potential unknown/unreported OHS releases originating from this adjoining property may have adversely impacted environmental conditions at the Site. The assertion is based on its close proximity and presumed upgradient to crossgradient location to the Site relative to the inferred groundwater flow direction (northeast).

Based on the date range (1920s through 1940s) that the former postcard and picture factory occupied this adjoining property, it is not anticipated that chlorinated solvents were utilized in postcard or picture production processes. Therefore, specific COCs associated with this AOC include various semi-volatile petroleum products, petroleum-based solvents, and silver. Specific analytical parameters associated with COCs associated with this adjoining property include VPH fractions, target petroleum VOCs, EPH fractions, target PAHs, and silver. If present, the COCs would likely be detected in subsurface soils and groundwater at the Site.

Potential exposure routes associated with the COCs at the Site include direct contact with impacted soils and ingestion of contaminated dust, particularly during construction activities at the Site. If released, several of these COCs will tend to dissolve, become comingled, and migrate with the preferential groundwater flow at the Site. Public water is supplied to the Site and vicinity; therefore, ingestion of impacted groundwater does not pose a risk at this time. However,

potential contaminant concentrations in groundwater were evaluated for the purpose of assessing risks to construction workers and identifying source areas and potential remediation scenarios.

AOC 4: Building Structures/Materials

Since the Site building is proposed to be renovated and a new addition is proposed to be constructed onto the building, redevelopment activities which involve the renovation or demolition of the Site building require an inspection for asbestos containing material (ACM). Other potentially hazardous building materials evaluated during the HBMI include lead-based paint (LBP), polychlorinated biphenyls (PCB)-containing caulking/sealants, paints, and light ballasts, mercury-containing fluorescent lamps, and other "universal" wastes. Identification of potentially hazardous building materials is necessary prior to building renovation or demolition to protect building occupant and worker safety, and to maintain compliance with applicable storage, maintenance, and/or disposal regulatory criteria. Specifically, AOC 4 includes:

1. On-site building materials, including interior and exterior portions of the Site building; and

2. Surficial soils in the "drip zone" of the building (i.e. beneath the eaves, windows, and doors along the edge of the building) that may be impacted with residual LBP applied to exterior portions of the Site building.

Ransom conducted a HBMI concurrent with the Phase II ESA investigation, identified ACM in the Site building and universal waste items at the Site, including fluorescent bulbs and electronic ballasts, and lead-acid batteries that may contain mercury, PCBs, and heavy metals, respectively, inside the building. Lead-based painted surfaces were also identified inside the building during a previous building inspection. Ransom's full HBMI report has been provided under separate cover.

3.0 INVESTIGATION METHODOLOGY

This Phase II ESA was designed to collect sufficient data to characterize the environmental condition of the Site in relation to current risk-based regulatory standards, identify potential exposure risks to future Site occupants, and evaluate the suitability of the Site for proposed renovation/expansion of the current Site building.

The scope of work for the Phase II ESA was based on the conceptual site model presented in the SSQAPP and included advancement of eleven (11) soil borings (B101 through B111), field screening for metals and VOCs in select soil samples, installation of three (3) temporary groundwater monitoring wells, and the collection and chemical analysis of soil and groundwater samples throughout the Site. Sampling locations are shown on **Figure 2**.

Proper decommissioning and removal of the 3,000-gallon fuel oil UST was conducted concurrent with the Phase II investigation. This work was completed to facilitate the collection, field screening, and laboratory analysis of confirmatory endpoint composite soil samples from the UST excavation area in accordance with MEDEP's Chapter 691 regulations. Endpoint sample locations are shown on **Figure 3**.

3.1 Methodology

Dig Safe Underground Utility Clearance and Site Health & Safety Plan

On July 26, 2017, the Site locations were marked, and the applicable utilities were notified for subsurface clearance using the Dig Safe utility clearance system (Ticket Number: 20173004802). This ticket was renewed prior to the UST removal work on October 25, 2017 (Ticket Number 20174307094). In preparation for the field investigation, Ransom also prepared a Site-specific health and safety plan (HASP) in accordance with Occupational Safety and Health Administration (OSHA) regulations.

Floor Drain and Sump Investigation

On August 1, 2017, Ransom observed a floor drain and sump investigation to determine the discharge locations of the sump and floor drain in the boiler room of the Site building. The investigation was performed by Ransom's subcontractor, DigSmart of Maine, Inc. (DigSmart), who traced the piping associated with the floor drain and sump by inducing an electro-magnetic signal on the discharge pipes for these structures. Findings from the investigation determined that the floor drain and sump are connected to the municipal sewer system.

Soil Borings

On August 1, 2017, Ransom observed the advancement of eleven (11) soil borings at the Site, identified as B101 through B111. The soil borings were advanced by Environmental Projects, Inc. (EPI) via direct-push technology using a Geoprobe® rig. The soil borings were advanced to depths ranging from 6 to 20 feet below ground surface (bgs), where presumed bedrock refusal conditions were encountered. Soil samples were collected continuously from each soil boring at 4-foot intervals and were observed for visual and/or olfactory evidence of obvious contamination and field screened as described below.

Soil samples collected from the soil borings were visually classified in the field by Ransom in general accordance with the Burmeister Soil Classification System. Boring logs are provided in **Appendix A**.

Qualitative Field Screening

Soil samples collected during the advancement of each soil boring were screened in the field for the presence of total volatile organic compounds (TVOCs) using a photoionization detector (PID) equipped with a 10.6 electron volt (eV) lamp and calibrated to an isobutylene standard. The surficial soil samples (0-2 feet bgs) collected from each soil boring were also field screened for the presence of metals (specifically, lead and silver) using an X-ray fluorescence (XRF) meter.

Surficial (between 0 and 2 feet bgs) and subsurface (greater than 2 feet below ground surface) soil samples were collected for laboratory analysis from specific boring locations based on observations in the field (visual or olfactory evidence of contamination). Sample locations and organic vapor concentrations (as determined by field screening) are included on the boring logs (**Appendix A**).

Soil Sampling and Analytical Testing

Soil samples were submitted to Alpha Analytical, LLC (Alpha) of Westborough, Massachusetts, for chemical analysis. Soil samples submitted for VPH fractions and target petroleum VOCs were collected directly from the sampling equipment and transferred into laboratory-prepared containers. Non-volatile soil samples (EPH fractions, target PAHs, and metals) were homogenized in the field and transferred into laboratory-prepared containers. The samples were preserved in the field in accordance with applicable protocols and delivered on ice under chain-of-custody protocol for laboratory analysis. Soil samples were submitted for one or more of the following chemical analysis based on the conceptual site model presented in the SSQAPP:

1. VPH fractions, including the target petroleum VOCs, by Massachusetts Department of Environmental Protection (MADEP) Method 98-1;

2. EPH fractions, including target PAHs, by MADEP Method EPH-04-1 and U.S. EPA method 8270D via Selective Ion Monitoring (SIM); and

3. Total lead and/or silver by U.S. EPA Method 6010C.

A duplicate soil sample was collected from the subsurface soil sample from soil boring B109 and submitted for laboratory analysis for quality assurance/quality control (QA/QC) protocols as outlined in the SSQAPP.

Temporary Groundwater Monitoring Well Installation

On August 1, 2017, three (3) soil borings (B101, B103, and B110) were also completed as temporary groundwater monitoring wells (TW101, TW102, and TW103, respectively). The monitoring wells were constructed using 1-inch-diameter Schedule 40 PVC well casing and factory-slotted screen. The temporary monitoring wells were removed from the Site upon the completion of groundwater sampling and groundwater assessment activities.

Groundwater-saturated soils were not observed during the advancement of boring B101 and only limited groundwater-saturated soils were observed during the advancement of boring B110. In accordance with the SSQAPP, temporary monitoring wells (TW101 and TW103) were installed in these borings in an effort to yield groundwater from surrounding soils for sample collection. However, these temporary monitoring wells did not yield groundwater for sample collection and were removed from the Site upon completion of the Phase II investigation.

Groundwater Sampling and Analytical Testing

On August 1, 2017, Ransom collected a groundwater sample from TW102 with a peristaltic pump and dedicated tubing in accordance with MEDEP's Standard Operating Procedure (SOP) 2. The sample was collected directly from the sampling equipment and transferred into laboratory-prepared sample containers. The sample was preserved in the field in accordance with applicable protocols and delivered on ice under chain-of-custody protocol to Alpha for laboratory analysis. The groundwater sample was submitted for the following chemical analysis based on the conceptual site model outlined in the SSQAPP:

1. VPH fractions, including the target petroleum VOCs, by MADEP Method 98-1;

2. EPH fractions, including target PAHs, by MADEP Method EPH-04-1 and U.S. EPA method 8270D via SIM; and

3. Dissolved lead by U.S. EPA Method 6010C.

A duplicate groundwater sample (TWDUP) was collected from temporary well TW102 and submitted for laboratory analysis for QA/QC protocols as outlined in the SSQAPP. Please note that the groundwater samples collected for dissolved lead analysis from the temporary monitoring well (TW102/TWDUP) were field-filtered with a 0.45-micron filter.

Soil Vapor Sample Collection & Analytical Testing

Soil vapor samples were not collected during the Phase II ESA since no evidence of free-phase petroleum product was observed on groundwater and petroleum-saturated soils were not observed within 30 lateral feet from the Site building during soil boring advancement or temporary monitoring well sampling activities, as specified in the SSQAPP.

3.2 Background Data

Ransom used the typical Maine background levels as the most representative at this Site, which will allow potential clean-up required at the Site to meet state cleanup guidelines and typical background levels. Background sample determination is discussed by MEDEP in the RAGs in section VII subsection D. Based on the Conceptual Site Model, Ransom will use the MEDEP "Urban Background" and "Urban Fill Background" levels as applicable, as defined in Table 1 of the 2016 MEDEP RAGs, to determine soil background concentrations at the Site.

4.0 UNDERGROUND STORAGE TANK REMOVAL

To properly evaluate potential impacts to the Site, Ransom coordinated the removal of the abandoned 3,000-gallon fuel oil UST during this Phase II ESA. This work was conducted by EPI with Ransom observation, in accordance with our SSQAPP and MEDEP Chapter 691 regulations. The following is a description of the UST removal activities performed at the Site.

4.1 UST Facility Information

According to the MEDEP Bureau of Remediation and Waste Management (BRWM), the Site (Waterfall Arts) is identified as a Registered UST facility (UST Registration # 17448). Based on information maintained by the MEDEP BRWM, one 3,000-gallon fuel oil UST (UST Registration # 17448-1) and one 300-gallon fuel oil UST (UST Registration # 17448-2) were located in an underground vault near the northern corner of the Site building. These USTs were decommissioned and removed from the Site in 1994. Upon removal of these USTs, another 3,000-gallon fuel oil UST (UST Registration # 17448-3) was installed at the Site in the underground vault near the northern corner of the Site building in 1994. This UST was in use until 2014, then remained inactive and temporarily out-of-service until its removal on November 7, 2017. On June 23, 2017, Ransom facilitated the MEDEP tank registration and removal regulatory document submittals for the 3,000-gallon fuel oil UST, which are described in the following table.

UST Registration Number	Tank Size (gallons)	Tank Type	Contents	Date Installed	Date Removed
17448-1	3,000	Steel – Bare or Asphalt Coated	#2 Fuel Oil	1969[1]	8/1/1994
17448-2	300	Steel – Bare or Asphalt Coated	#2 Fuel Oil	1969[1]	8/1/1994
17448-3	3,000	Jacketed Tank – Double Walled	#2 Fuel Oil	8/12/1994	11/7/2017

Notes:

1. MEDEP uses the year 1969 as their default year for unknown UST installation date.

4.2 UST Decommissioning & Removal Activities

Excavation of the 3,000-gallon fuel oil UST began during the Phase II ESA mobilization on August 1, 2017. Prior to its removal, approximately 73 gallons of residual fuel oil and water were pumped and removed from the tank by EPI. The residual liquids were transported by EPI for off-Site disposal. Disposal documentation is included in **Appendix B**.

Due to the potential for an excavation sidewall collapse and damage to the adjacent cement pad and heat pump system for the Site building, UST removal activities were suspended from August until November 2017. After temporary relocation of the heat pump units was completed, UST removal activities resumed on November 7, 2017. EPI utilized a track-mounted excavator to excavate and remove the UST.

Overburden soils were removed from the top of the UST to a maximum depth of 1.5 feet bgs, and soils surrounding the sides of the UST were removed laterally 3 to 4 feet from the sides and ends of the UST to a maximum depth of 9 feet bgs. Groundwater was not observed in the excavation.

During UST removal activities from August to November 2017, no evidence of petroleum-impacted soils was observed on top or around the sidewalls of the UST, including soils around its fill and vent pipes that were visible beneath the concrete pad. However, Ransom observed evidence of weathered, fuel oil-impacted soils surrounding the bottom of the UST at the northwestern end of the excavation. No evidence of petroleum-saturated soils was observed within the UST excavation. The UST appeared to be in good condition with no visible damage except for that which was caused by the removal activities.

Due to concerns for the structural integrity of the heat pump's concrete pads, which were not relocated during UST removal activities, it was not reasonably feasible to remove a small section of fuel oil product piping under the concrete pads. Therefore, this small section of product piping, as shown on **Figure 3**, was abandoned in-place after it was flushed, cleaned, and capped to ensure that no residual fuel oil remained in the piping.

4.3 MEDEP Spill Response Notification

Due to the observed weathered, fuel oil-impacted soils in the tank excavation, Tom Neilson (Ransom Geologist/Field Lead) and Tracy Kelly (MEDEP Brownfields Project Manager) contacted Ms. Franki Delaney, Oil & Hazardous Materials Responder II of the MEDEP BRWM Division of Response Services. Ransom and MEDEP believed that the weathered, petroleum-impacted soils were not associated with a release from the current tank, but rather associated with a former release from the fuel oil USTs that were removed from the Site in 1994. This determination was supported by evidence that weathered, petroleum-impacted soil was observed beneath a layer of clean soil that was placed beneath the current UST.

MEDEP did not issue an Oil and/or Hazardous Spill Number for the impacted soil observed within the tank excavation and recommended that response activities included collection of endpoint soil samples for laboratory analysis in accordance with MEDEP's Chapter 691 regulations. MEDEP recommended that the endpoint sample results would be summarized concurrent with the results of our Brownfields investigation for the entire Site in order to determine if remedial activities (e.g. excavation and off-Site disposal) were necessary to address fuel oil-impacted soils remaining at the Site associated with the UST area.

4.4 Field Screening & Confirmatory Soil Sampling

Upon removal of the UST from the ground, soil conditions within the UST excavation area were assessed by Ransom in accordance with MEDEP's Chapter 691, "Appendix Q: Determination of the Presence and Concentration of Oil Contaminated Soils by Field and Laboratory Analytical Methods as Part of an Underground Oil Storage Facility Closure Site Assessment," and our SSQAPP. Confirmatory soil sample locations are provided on **Figure 3**.

Ransom collected fourteen (14) composite soil samples for field screening via shake test from the excavation sidewalls at approximate depths ranging from 2 to 9 feet bgs. These Excavation Screening Samples (ESS) were designated as ESS-1 through ESS-14. Based on Ransom's visual and olfactory

observations and oleophilic dye test field screening results, as summarized in the table below, fuel oil-impacted soils were limited to the northwest sidewall of the UST excavation area.

OLEOPHILIC DYE TEST FIELD SCREENING RESULTS FROM EXCAVATION SCREENING SAMPLES & LABORATORY SAMPLES COLLECTED DURING UST EXCAVATION

ESS Sample ID	Location	Depth (feet bgs)	Test Result	Laboratory Sample ID
ESS-1	Northwest- Sidewall	8	Undetected	NS
ESS-2	Northwest- Sidewall	8	Positive	LS108@8’
ESS-3	Northwest- Sidewall	2	Undetected	NS
ESS-4	Northwest- Sidewall	6	Undetected	NS
ESS-5	Northwest- Sidewall	2	Undetected	NS
ESS-6	Northwest- Sidewall	6	Undetected	NS
ESS-7	Northeast- Sidewall	2	Undetected	NS
ESS-8	Northeast- Sidewall	6	Undetected	NS
ESS-9	Northeast- Sidewall	2	Undetected	NS
ESS-10	Southeast- Sidewall	2	Undetected	NS
ESS-11	Southeast- Sidewall	2	Undetected	NS
ESS-12	Southeast- Sidewall	9	Undetected	LS109@9’
ESS-13	Bottom	8	Undetected	LS110@8’
ESS-14	Bottom	8	Undetected	NS

Notes:

1. NS= No sample submitted for laboratory analysis.

To confirm the field screening results, Ransom collected three laboratory confirmation soil samples (LS), designated as LS108@8’, LS109@9’, and LS110@8’ from the UST excavation and submitted them for laboratory analysis of VPH fractions with target petroleum VOCs and EPH fractions with target PAHs. LS108@8’ was a composite sample collected from subsurface/potentially accessible soils (8 feet bgs) from the base at the northern end of the UST excavation. LS109@9’ was a composite sample collected from subsurface/potentially accessible soils (9 feet bgs) from the base at the southern end of the UST excavation. LS110@8’ was a composite sample collected from subsurface/potentially accessible soils (6 feet bgs) from the bottom of the UST excavation beneath the UST. Laboratory analytical results of these confirmatory soil samples collected from the UST excavation are discussed in Section 5 of this report.

5.0 RESULTS

The following subsections document the results of the Phase II ESA. Field screening results for concentrations of total metals (lead and silver) in soil are included in Table 1. Soil sample analytical results are summarized in Table 2. Groundwater sample analytical results are summarized in Table 3. Copies of the laboratory chemical analysis data reports are provided as **Appendix C**.

5.1 Comparison to Regulatory Standards and Guidelines

The analytical results of soil and groundwater samples collected at the Site were compared to the MEDEP Bureau of Remediation and Waste Management's (BRWM's) "*Remedial Action Guidelines (RAGs) for Sites Contaminated with Hazardous Substances,*" dated February 5, 2016.

Soil

Since the Site is currently utilized for commercial purposes as an arts center, the MEDEP RAGs for "Outdoor Commercial Worker" exposure scenario was employed as the guidance standard for surficial/accessible soils (0 to 2 feet bgs). In addition, potential exposure risks to Site workers during future earthwork-related activities and utility work (i.e., subsurface water and sewer lines) exists at the Site and vicinity. Therefore, "Excavation/Construction Worker" scenarios also apply to surficial/accessible soils (0 to 2 feet bgs) and subsurface/potentially accessible soils (2 to 15 feet bgs) to evaluate potentially unacceptable risks to excavation or construction workers during proposed Site redevelopment and/or future subsurface earthwork activities at the Site.

Groundwater

The analytical results of groundwater samples collected at the Site were also compared to the MEDEP RAGs. Since municipal water is available to the Site, the most applicable guidance/standard for comparison of the groundwater analytical results is the "Groundwater Construction Worker" exposure scenario. This comparison will be made in order to assess potential costs for managing contaminated groundwater and potentially unacceptable direct contact and accidental ingestion risks to construction workers during potential future utility work at the Site.

The concentrations of contaminants were also compared to their respective "Groundwater Residential" RAGs and Maine Department of Human Services (DHS), Maine Center for Disease Control (CDC), *Maximum Exposure Guidelines (MEGs)*, dated December 31, 2016, to evaluate possible future land use scenarios and/or restrictions for groundwater withdrawal as a drinking water source at the Site.

5.2 Geology and Hydrogeology

In general, soils encountered during the Phase II ESA were consistent throughout the Site. All soil borings were advanced to presumed bedrock refusal, which varied from approximately 6 to 20 feet bgs across the Site. Native glacial till soils, consisting of sand and silts with varying amounts of gravel were encountered beneath the surficial organic layer to the presumed top of bedrock. Groundwater-saturated soils were observed at depths ranging from 10 to 17 feet bgs. However, groundwater-saturated soils were only observed in five (5) borings (B101, B103, B106, B107, and B110) completed during this investigation. Anthropogenic fill material (e.g., bricks and wood debris) was observed in soils that were

excavated around the 3,000-gallon fuel oil UST that was removed during this investigation. Detailed soil descriptions are provided in the boring logs, included as **Appendix A**.

5.3 Summary of Laboratory Analytical Results

AOC 1: Current and Former Fuel Oil USTs

Soil Sample Analytical Results for AOC 1

As shown in Table 2, one or more of the EPH fractions C_9–C_{18} aliphatics, C_{19}–C_{36} aliphatics, and C_{11}–C_{22} aromatics were detected at concentrations ranging from 10.2 to 349 milligrams per kilogram (mg/kg) in the surficial and subsurface soil samples collected from soil borings B101 and B102, and tank removal excavation sample LS108@8'. These detections of EPH fractions were below applicable MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk.

One or more of the PAHs acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)-fluoranthene, benzo(ghi)perylene, chrysene, dibenzo(a,h)anthracene, fluorene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, 2-methylnaphthalene, phenanthrene, and pyrene were detected at concentrations ranging from 0.003 to 24.3 mg/kg in the surficial and subsurface soil samples collected from borings B101 and B102 and the tank removal excavation samples LS108@8’ and LS109@9’. Only one PAH [benzo(a)pyrene] was detected in one surficial soil sample (B102) at a concentration that exceeded its MEDEP RAG for Outdoor Commercial Worker exposure; however, the concentration of benzo(a)pyrene in B102 did not exceed its Excavation/Construction Worker RAG and was similar in concentration to its MEDEP “Urban Fill Background” concentration.

One or more of the VPH fractions and target VOCs C_5–C_8 aliphatics, C_9–C_{12} aliphatics, C_9–C_{10} aromatics, and naphthalene were detected at concentrations ranging from 2.57 to 209 mg/kg in soil samples collected from borings B101, B102 and the tank removal excavation (LS108@8’). These detections of VPH fractions and target VOCs in the soil samples were below their applicable MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk.

Groundwater Sample Analytical Results for AOC 1

As shown in Table 3, EPH fractions, target PAHs, VPH fractions, and target petroleum VOCs were not detected in the groundwater sample collected from temporary monitoring well TW102 at concentrations above their respective laboratory reporting limits.

Summary of AOC 1 Findings

Ransom observed granular fill containing bricks and wood debris (i.e., “anthropogenic fill”) in surficial/accessible soils (shallower than 2 feet bgs) within and in the vicinity of the fuel oil tank area. Based on the laboratory results, the surficial/accessible soils were found to contain PAHs, EPH fractions and VPH fractions at concentrations below their respective MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk with the

exception of one PAH compound [benzo(a)pyrene] that was detected in a surficial soil sample at a concentration that exceeded its MEDEP RAG for Outdoor Commercial Worker exposure; however, this concentration of benzo(a)pyrene did not exceed its Excavation/Construction Worker RAG and was comparable to its MEDEP "Urban Fill Background" concentration. This soil sample was collected from boring B102, which was advanced to the north of the Site building. The presence of low-level PAH-, EPH-, and VPH-impacted soils identified in the vicinity of the fuel oil tank area are likely associated with residual fuel oil-impacted soil and anthropogenic fill that was generated during the on-site destructive fire and/or subsequent demolition of the former building at the Site in the 1930s.

Since no contaminants of concern were detected in the groundwater sample collected from TW102, it is determined that the low-level impacted soils have not adversely impacted groundwater conditions at the Site. Additionally, the low-level impacted soils are not anticipated to adversely impact the indoor air quality of the Site building.

AOC 2: Potential Urban Fill and/or Coal Ash Impacted Fill

Soil Sample Analytical Results for AOC 2

As shown in Table 2, one or more of the EPH fractions C_9–C_{18} aliphatics, C_{19}–C_{36} aliphatics, and C_{11}–C_{22} aromatics were detected at concentrations ranging from 10.2 to 349 mg/kg in the surficial/accessible soil samples and subsurface soil samples collected from soil borings B101, B102, and B106. These detections of EPH fractions were below applicable MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk.

One or more of the PAHs acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)-fluoranthene, benzo(ghi)perylene, chrysene, dibenzo(a,h)anthracene, fluorene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, 2-methylnaphthalene, phenanthrene, and pyrene were detected at concentrations ranging from 0.004 to 24.3 mg/kg in the surficial and subsurface soil samples collected from borings B101, B102, B103, B106, and B109. As previously discussed, only one PAH [benzo(a)pyrene] was detected in one surficial soil sample (B102) at a concentration that exceeded its MEDEP RAG for Outdoor Commercial Worker exposure; however, the concentration of benzo(a)pyrene did not exceed its Excavation/Construction Worker RAG and was comparable to its MEDEP "Urban Fill Background" concentration.

As shown in Table 2, lead was detected in accessible/surficial and subsurface soil samples collected from borings B101, B102, B103, B106, B109, B110, and SS101 and SS102 at concentrations ranging from 7.21 to 548 mg/kg. Lead concentrations detected in these samples were below their applicable MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk.

Summary of AOC 2 Findings

As previously discussed, Ransom observed granular fill containing bricks and wood debris (i.e., "anthropogenic fill") in surficial/accessible soils (shallower than 2 feet bgs) at various locations throughout the Site. Based on the laboratory results, the surficial/accessible soils were found to

contain PAHs and EPH fractions at concentrations below their respective MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk with the exception of one PAH [benzo(a)pyrene] that was detected in a surficial soil sample at a concentration that exceeded its MEDEP RAG for Outdoor Commercial Worker exposure; however, the concentration of benzo(a)pyrene did not exceed its Excavation/Construction Worker RAG and was comparable to its MEDEP "Urban Fill Background" concentration. This soil sample was collected from boring B102, which was advanced to the north of the Site Building. Other than the residual fuel oil-impacted soils with low-level petroleum constituents identified in the vicinity of the fuel oil tank area (AOC 1), the presence of other low-level PAH- and EPH-impacted soils identified at various locations throughout the Site are likely associated with anthropogenic fill that was generated during the on-site destructive fire and/or subsequent demolition of the former building at the property in the 1930s. The presence of these lead concentrations detected in Site soils is likely associated with flaking exterior lead-based paint from the Site Building (AOC 4) or anthropogenic fill-impacted soils (AOC 2) at the Site.

AOC 3: Off-Site Sources

As shown in Table 2, EPH fractions, PAHs, VPH fractions, target petroleum VOCs, or silver (metal) were not detected at concentrations above their respective laboratory reporting limits in the soil sample collected from boring B110, which was advanced in close proximity to the southern adjoining property. Lead was detected at a concentration of 15.7 mg/kg in the soil sample from B110, which is below its MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risks. Although, a groundwater sample could not be collected from the temporary monitoring well that was installed in boring B110, no evidence of OHS-impacted groundwater-saturated soils were observed during the advancement of this boring. Based on these observations and laboratory results of the soil sample collected from boring B110, it is believed that the former picture and postcard factory operations at the southern adjoining property have not adversely impacted environmental conditions at the Site.

AOC 4: Building Structures/Materials

Ransom conducted a HBMI concurrent with our Phase II ESA investigation, which included interior and exterior inspections of the Site building. The HMI identified ACM and potential PCB-containing fluorescent light ballasts, mercury-containing fluorescent light tubes, and other potentially hazardous materials inside the Site building. These materials will need to be properly abated and/or removed if they will be disturbed during future Site redevelopment including renovation and/or demolition of the Site building, depending on the extent of redevelopment.

As shown in Table 2, lead (metal) was detected in surficial/accessible soils at various locations throughout the Site, but at concentrations that did not exceed its applicable MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risks. As previously discussed, the presence of these lead concentrations detected in Site soils is likely associated with flaking exterior lead-based paint from the Site Building (AOC 4) or fill-impacted soils (AOC 2) at the Site. Results of the HBMI are detailed in the full HBMI report, which is provided under separate cover.

6.0 QUALITY ASSURANCE / QUALITY CONTROL

The contracted laboratory, Alpha Analytical, Inc. (Alpha) of Westborough, Massachusetts, provided Level II analytical data according to U.S. EPA protocols and laboratory data validation guidance included in Ransom's Generic QAPP for Brownfield sites in Maine. Alpha provided the following information in analytical reports:

1. Data results sheets;
2. Method blank results;
3. Surrogate recoveries and acceptance limits;
4. Duplicate results/acceptance limits;
5. Spike/duplicate results/acceptance limits;
6. Laboratory control sample results;
7. Description of analytical methods and results; and
8. Other pertinent results/limits as deemed appropriate.

As outlined in the Generic QAPP, at the completion of the field tasks and receipt of the analytical results, a data usability analysis was conducted to document the precision, bias, accuracy, representativeness, comparability, and completeness of the results. The following sections present this analysis.

6.1 Precision

Precision measures the reproducibility of measurements. The precision measurement is established using the relative percent difference (RPD) between the duplicate sample results. Relative percent differences were calculated for soil and groundwater samples where both sample and duplicate values were greater than five times the Practical Quantitation Limit (PQL) of the analyte. The RPD is calculated as follows:

$$RPD = \frac{(\text{Sample Result - Duplicate Result})}{\text{Mean of the Two Results}} \times 100$$

One duplicate soil sample was collected for laboratory analysis. The duplicate soil sample (B10X-DUP) was collected from the subsurface soil sample (8-12 feet bgs) collected from boring B109 and was submitted for laboratory analysis of EPH fractions, target petroleum-related PAHs, VPH fractions, target petroleum-related VOCs, and lead. One duplicate groundwater sample was collected for laboratory analysis. The duplicate soil sample (TW-DUP) was collected from temporary monitoring well TW102 and was submitted for laboratory analysis of EPH fractions, target petroleum-related PAHs, VPH fractions, target petroleum-related VOCs, and lead. A summary of duplicate sample analytical results and calculated RPDs is presented in the attached **Table 4**.

Soil Sample (B10X-DUP)

No VPH fractions, target petroleum-related VOCs, PAHs, or EPH fractions were detected in the B109 soil sample and its duplicate soil sample (B10X-DUP) above the respective laboratory reporting limits and/or at concentrations greater than five times their practical quantitation limits (PQLs). Therefore, no RPDs were applicable for these COCs. Lead was detected in the B109 soil sample and its duplicate soil sample B10X-DUP at concentrations greater than five time the PQL. The RPD for lead was below the 50 percent guideline. Therefore, the precision of this sample result is acceptable.

Groundwater (TW-DUP)

No VPH fractions, target petroleum-related VOCs, dissolved lead, PAHs, or EPH fractions were detected in the TW102 groundwater sample or its duplicate groundwater sample (TW-DUP) above the respective laboratory reporting limits and/or at concentrations greater than five times their PQLs. Therefore, no RPDs were applicable for these COCs.

6.2 Bias

Bias is the systematic or persistent distortion of a measurement process that causes errors in one direction. Bias assessments are made using personnel, equipment, and spiking materials or reference materials, as independent as possible from those used in the calibration of the measurement system. Bias assessments were based on the analysis of spiked samples, so that the effect of the matrix on recovery is incorporated into the assessment. A documented spiking protocol and consistency in following that protocol are important to obtaining meaningful data quality estimates.

Matrix spike and matrix spike duplicate samples (MS/MSD) were used to assess bias as prescribed in the specified methods. Acceptable recovery values were within the recoveries specified by each of the analysis methods. Control samples for assessing bias were analyzed at a rate as specified in the analytical SOPs and specified analytical methods. The lab provides quality control non-conformance reports that indicate if Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD) and/or MS/MSD had low, failing, or high recoveries, and if the sample result was affected. Likewise, the lab reports any compounds that had failing RPDs in the LCS/LCSD pair or the MS/MSD pair. This indicates the percent difference between the lab sample and its duplicate or the spike and its duplicate.

Volatile Petroleum Hydrocarbons & Target Petroleum-Related VOCs

There were no bias issues identified by the laboratory in the soil or groundwater samples collected and analyzed for VPH fractions and target petroleum-related VOCs.

Extractable Petroleum Hydrocarbons & Polycyclic Aromatic Hydrocarbons

There were no bias issues identified by the laboratory in the soil or groundwater samples collected and analyzed for EPH fractions and target PAHs.

Metals

There were no bias issues identified by the laboratory in the soil or groundwater samples collected and analyzed for metals.

6.3 Accuracy

Accuracy is a statistical measurement of correctness and includes components of random error (variability due to imprecision) and systemic error. Therefore, it reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ from the true value or known concentration of the spike or standard. For volatile and semi-volatile organic compounds, surrogate compound recoveries are also used to assess accuracy and method performance for each sample analyzed. Analysis of performance evaluation samples will also be used to provide additional information for assessing the accuracy of the analytical data being produced. Both accuracy and precision are calculated for each analytical batch, and the associated sample results are interpreted by considering these specific measurements. The lab provides a non-conformance summary that reports if all of the quality control criteria, including initial calibration, calibration verification, surrogate recovery, holding time, and method accuracy/precision for analysis, were within acceptable limits. According to the laboratory, unless noted in the non-conformance summary, all of the quality control criteria for these analyses were within acceptable limits.

6.4 Representativeness

Objectives for representativeness are defined for each sampling and analysis task and are a function of the investigative objectives. Representativeness was accomplished during this project through use of standard field, sampling, and analytical procedures. All objectives for sampling and analytical representativeness, as specified in SSQAPP, were met.

6.5 Comparability

Comparability is the confidence with which one data set can be compared to another data set. The objective for this QA/QC program is to produce data with the greatest possible degree of comparability. Comparability was achieved by using standard methods for sampling and analysis, reporting data in standard units, normalizing results to standard conditions, and using standard and comprehensive reporting formats. Complete field documentation was used, including standardized data collection forms to support the assessment of comparability. Historical comparability shall be achieved through consistent use of methods and documentation procedures throughout the project.

6.6 Completeness

Completeness is calculated by comparing the number of samples successfully analyzed to the number of samples collected. The goal for completeness is 95 percent. The completeness for this project was 100 percent, as there were no samples that could not be analyzed, due to holding time violations, samples spilled or broken, or any other reason.

7.0 CONCLUSIONS

Based on the results of this Phase II ESA, granular fill containing bricks and wood debris (i.e., "anthropogenic fill") was observed in accessible soils (shallower than 2 feet bgs) surrounding the Site building. Based on the laboratory results, most of these accessible soils were found to contain PAHs and EPH fractions, but at concentrations below their respective MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk. However, one PAH [benzo(a)pyrene] was detected in one accessible soil sample at a concentration that exceeded its MEDEP RAG for Outdoor Commercial Worker exposure but did not exceed its Excavation/Construction Worker RAG. Additionally, the detected level of benzo(a)pyrene was similar in concentrations to its MEDEP "Urban Fill Background" concentration. This soil sample was collected from boring B102, which was advanced to the north of the Site building. The presence of low-level PAH- and EPH-impacted soils identified at the Site during our Phase II ESA are likely associated with anthropogenic fill that was generated during the on-site destructive fire and/or subsequent demolition of the former building at the Site in the 1930s. No adverse environmental impacts to the Site were identified in connection with the southern adjoining property's (Starrett Children's Center; 73 Waldo Avenue) historic use as a picture and postcard factory during this Phase II ESA.

Lead was also detected in Site soils, but at concentrations that did not exceed its respective MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk. The presence of lead detected in Site soils is likely associated with flaking exterior lead-based paint from the Site Building or anthropogenic fill-impacted soils at the Site.

To properly evaluate potential impacts to the Site soil and groundwater, Ransom coordinated the removal of the abandoned 3,000-gallon fuel oil UST during this Phase II ESA. Excavation of the tank began during the Phase II ESA mobilization on August 1, 2017 and was completed on November 7, 2017 after the building's heat pump systems were relocated. During the initial UST excavation activities and subsurface investigation surrounding the tank area, weathered, petroleum-impacted soil was observed beneath and in the immediate vicinity of the tank. However, Ransom and MEDEP believed that these weathered, petroleum-impacted soils were not associated with a release from the current tank, but rather associated with a former release from the fuel oil USTs that were removed from the Site in 1994. This determination was supported by evidence that weathered, petroleum-impacted soil was observed beneath a layer of clean soil that was placed beneath the current UST. On November 7, 2017, the UST was removed without incident and no evidence of a fuel oil release was observed in connection with the tank system during its removal. However, due to concerns for the structural integrity of the heat pump's concrete pads, which were not relocated, it was not reasonably feasible to remove a small section of fuel oil product piping under the concrete pads. Therefore, this small section of product piping was abandoned in-place after it was flushed, cleaned, and capped to ensure that no residual fuel oil remained in the piping.

Based on the laboratory results of soil samples collected from the UST excavation and in its vicinity, these soils were found to contain PAHs, EPH fractions and VPH fractions at concentrations below their respective MEDEP RAGs for Outdoor Commercial Worker and Excavation/Construction Worker exposure risk. The presence of these low-level impacted soils was inferred to be associated with an unknown and/or unreported fuel oil release associated with the USTs that were removed in 1994 and/or anthropogenic fill that was likely generated during the fire and subsequent demolition of the former building at the property. No contaminants of concern were detected at concentrations above the

laboratory reporting limits in the groundwater sample collected in the vicinity of the UST area. Therefore, it is determined that the low-level impacted soils have not adversely impacted groundwater conditions at the Site. Additionally, the low-level impacted soils are not anticipated to adversely impact the indoor air quality of the Site Building.

Ransom conducted a HBMI concurrent with the Phase II ESA investigation. The HBMI identified ACM and universal waste items in the Site building, including fluorescent bulbs and electronic ballasts that may contain PCBs, lead-acid batteries, and other fixtures/electronics that may contain mercury and heavy metals. Lead-based painted surfaces were also identified inside the Site building during a prior hazardous building materials inspection. Ransom's full HBMI report has been provided under separate cover.

8.0 RECOMMENDATIONS

Based on the information obtained during this Phase II ESA, Ransom recommends the following with respect to Site redevelopment:

1. The Phase I ESA, Phase II ESA, and HBMI completed for the Site should be submitted to the MEDEP Voluntary Response Action Program (VRAP). The MEDEP VRAP is a voluntary program that offers technical review of environmentally-impacted sites and ultimately provides state liability protections for interested parties, including a "No Action Assurance" (NAA) letter, "No Further Action Assurance" (NFAA) letter, and/or a "Certificate of Completion" letter (i.e., no further action required), provided that proper and appropriate environmental assessment and cleanup/remedial actions are completed, as approved by the MEDEP;

2. A Site-specific Soil Management Plan should be developed to define proper handling and characterization procedures to ensure sufficient characterization of each of the detected soil analytes relative to the anticipated off-Site or on-Site reuse/disposal during redevelopment;

3. Since limited UST product piping could not be removed due to the structural integrity of the concrete foundations of the heat pump system, and which currently remains in the ground, the Site owner will be required to record an abandoned UST piping notice with the property deed at the Waldo County Registry of Deeds, in accordance with MEDEP Chapter 691, Section 11(E)(3) regulations; and

4. Hazardous building materials identified in the Site building should be properly abated and/or mitigated prior to and/or concurrent with proposed renovation activities and according to the recommendations provided in Ransom's HBMI report, summarized herein and provided under separate cover.

9.0 REFERENCES

1. State of Maine Brownfields Assessment Projects Generic Quality Assurance Project Plan (QAPP) RFA #14028, Ransom Consultants, Inc., January 24, 2014.

2. MEDEP; February 5, 2016; Maine RAGs for Sites Contaminated with Hazardous Substances.

3. Phase I Environmental Site Assessment, Waterfall Arts, 256 High Street, Belfast, Maine, Ransom Consulting, Inc., February 27, 2017.

4. Site-Specific Quality Assurance Project Plan Addendum No. 65, Revision No. 1, Phase II Environmental Site Assessment and Hazardous Building Materials Investigation, Waterfall Arts, Belfast, Maine, Ransom Consulting, Inc., March 20, 2017.

10.0 SIGNATURE(S) OF ENVIRONMENTAL PROFESSIONAL(S)

Ransom performed services in a manner consistent with the guidelines set forth in the American Society for Testing and Materials (ASTM) E 1903-97 (Standard Practices for Environmental Site Assessments: Phase II Environmental Site Assessment Process).

The following Ransom personnel possess the sufficient training and experience necessary to conduct a Phase II Environmental Site Assessment, and from the information generated by such activities, have the ability to develop opinions and conclusions regarding *recognized environmental conditions* in connection with the Site.

Primary Author:

Sara L. Roy
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Aaron R. Martin, C.G.
Project Manager / Primary Reviewer

Peter J. Sherr, P.E.
Principal / Senior Project Manager

APPENDIX A

Boring Logs

Phase II Environmental Site Assessment &
Site Assessment for Closure of an Underground Oil Storage Tank Facility
Waterfall Arts
256 High Street
Belfast, Maine

APPENDIX B

Underground Storage Tank Removal Documentation

Phase II Environmental Site Assessment &
Site Assessment for Closure of an Underground Oil Storage Tank Facility
Waterfall Arts
256 High Street
Belfast, Maine

Ransom Consulting, Inc.
Project 111.06134.053

APPENDIX C

Certified Laboratory Analytical Reports

Phase II Environmental Site Assessment &
Site Assessment for Closure of an Underground Oil Storage Tank Facility
Waterfall Arts
256 High Street
Belfast, Maine

Ransom Consulting, Inc.
Project 111.06134.053