ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES & CONCEPTUAL REMEDIAL ACTION PLAN FORMER MASON STATION POWER PLANT WASTEWATER TREATMENT (ASH) PONDS WISCASSET, MAINE REV. 0

Prepared for:

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1.0 INTRODUCTION AND BACKGROUND

Ransom Consulting, Inc. (Ransom) has completed this Analysis of Brownfields Cleanup Alternatives (ABCA) to evaluate various remedial alternatives for the previously identified adverse environmental conditions associated with the former Mason Station Power Plant wastewater (ash) ponds on Birch Point Road in the Town of Wiscasset, Lincoln County, Maine. For the purposes of this ABCA, only the ash ponds and the area immediately surrounding the ash ponds will be considered as the "Site". This report summarizes the evaluation of remedial alternatives for the Site and includes a discussion of each remedial option, a cost estimate, the degree of effectiveness, ease of implementation, the resilience of each option in light of reasonably foreseeable changing climate conditions, and the ability for the remedial option to achieve the site redevelopment goals outlined by the Town of Wiscasset. This report also contains a discussion of the recommended remedial alternative for the Site, as well as a conceptual Remedial Action Plan (RAP) for the selected alternative. This report was prepared for the Town of Wiscasset, Maine using the United States Environmental Protection Agency (U.S. EPA) Brownfield funding under the Town of Wiscasset's Brownfields Cleanup Program (Grant No. BF00A00462).

1.1 Purpose and Scope

The purpose of this report is to screen potential remedial action alternatives to mitigate previously identified adverse environmental conditions associated with the Site, and to decommission the ash ponds in accordance with Maine Department of Environmental Protection (MEDEP) requirements. Based on the information obtained during previous environmental investigations (summarized in Section 2.0), three remediation options were considered for the Site and evaluated based on pre-selected criteria. Key consideration was given to eliminating or reducing, to the extent possible, the risk of exposure for existing and potential future Site occupants and workers to the identified contamination at the Site.

The overall objectives of this ABCA include the following:

1. Evaluating the remedial alternatives against specific evaluation criteria, including: overall protection of human health and the environment; technical practicality; ability to implement; reduction of toxicity, mobility, and volume; time required until remedial action objectives are attained; costs; resiliency to climate change conditions; and ability to meet the redevelopment goals outlined by the Town.

2. Selecting the remedial alternative that best meets the objectives and considerations of the project.

3. Presenting a conceptual RAP for implementing the selected remedial alternative.

Remediation alternatives evaluated in this ABCA include: Alternative #1 - No Action; Alternative #2 - Ash Pond Decommissioning Utilizing Cover Systems; and Alternative #3 –Ash Pond Decommissioning Utilizing Sediment Removal. The alternatives are evaluated on the previously mentioned criteria, and one alternative is recommended for implementation at the Site. The Evaluation of Remediation Alternatives (Section 5.0) discusses the requirements for each alternative. Furthermore, a conceptual RAP is presented in Section 6.0 for the recommended alternative.

1.2 Site Description

The ash ponds are located on a peninsula of land known locally as the Mason Station Peninsula, or Birch Point, which extends into the confluence of the Sheepscot River and Back River. The overall 30.4-acre

Mason Station Site consists of seventy-eight parcels, primarily owned by the Town of Wiscasset, with the exception of the Powerhouse Building lot (Lot 81) which is owned by Mason Station LLC, a CMP-operated switchyard and maintenance facility, and two speculative houses currently occupied by Peregrine Consulting. The Mason Station Site currently contains the former Mason Station Powerhouse Building, four wastewater ash ponds, a railroad spur, various outbuildings, g, and unimproved land in the northern portion of the peninsula. The "Site," as discussed in this ABCA is the ash pond and surrounding areas, located on two parcels of land, identified by the Town of Wiscasset Assessor's Office as Lot 82 and Lot 83 on Tax Map R 7A.

The Mason Station power plant was constructed by Central Maine Power Company (CMP) in approximately 1940. Power generation ceased at the facility in 2003. As part of the plant's cooling and emissions control processes, wastewater was generated and discharged under license to a series of four lagoons or "Ash Ponds" which were constructed for wastewater collection and settling of solids prior to overboard discharge to the Sheepscot River. The asphalt lined Ash Ponds consist of four separate holding ponds known as East Primary, East Secondary, West Primary, and West Secondary. Wastewater was initially discharged from the plant into East Primary and ultimately released out of East Secondary and discharged through Outfall #19 into the Sheepscot River.

Historic sources contributing flow to the Ash Ponds included waters associated with demineralization, the blow-down and metal cleaning neutralization tank, regeneration and backwash waters from water softeners and filters, ash transport, and miscellaneous storm water runoff.

1.3 Surrounding Land Use

The Mason Station Peninsula, as described above, is surrounded on three sides by the Sheepscot River and associated tributaries. Surrounding land use is primarily residential.

1.4 Potential Future Site Use

The Mason Station peninsula is planned for mixed commercial and light industrial development. Although there are no current redevelopment plans in place for the Site, there is an interested party hoping to purchase the property. The Site represent one of the primary access points to deep water moorings, and as such, it is critical for any future redevelopment of the Birch Point Peninsula.

1.5 Site Geology and Hydrology

In general, soils encountered during previous Phase II Investigations varied throughout the Site but consisted of 1 to 10 feet of fill overlaying native, glaciomarine deposits (Presumpscot Formation), till, and bedrock. Accessible soil throughout the Site contained fill, which consisted of brown, fine to coarse sand with varying amounts of silt and gravel. The potentially accessible fill soils south of the Ash Ponds were intermixed with Site-related fill, which contained variable amounts of brick and ash.

Native glaciomarine silts and clays with varying amounts of fine sand and gravel were encountered beneath the Site-related fill at inconsistent depths beginning approximately 2 to 24 feet bgs at the Site. Refusal conditions were encountered at depths ranging from 10 to 22 feet bgs, respectively, at presumed bedrock underlying fill. Groundwater-saturated, native silt and clay soils were encountered at approximate depths ranging from 8 to 16 feet bgs.

1.6 Previous Environmental Investigations

Many investigations and assessments have been completed throughout the entire Mason Station property. The following investigations and assessments pertain to the Ash Ponds (Lots 82 and 83).

"Phase II Environmental Site Assessment Report, Mason Station, Wiscasset, Maine, Volume I," prepared by Jacques Whitford Company, Inc., dated November 10, 2004.

Four Geoprobe soil borings were advanced in the areas surrounding the Ash Ponds, and soil samples were analyzed for polynuclear aromatic hydrocarbons (PAHs), Resource Conservation Recovery Act (RCRA) metals, and diesel range organics (DRO). One groundwater sample was collected and analyzed for PAHs, RCRA metals, and DRO. Four sediment samples, one from each of the four Ash Ponds, were collected and analyzed for PAHs and RCRA metals.

Soil Results: Benzo(a)pyrene was detected near the East Primary Ash Pond at concentrations which exceeded the U.S. Environmental Protection Agency (EPA) Region III Risk-Based Concentrations (RBC); however, were below the Maine Department of Environmental Protection (Maine DEP) Remedial Action Guidelines (RAGs) for the "Residential" exposure scenario. Arsenic was detected at concentrations which exceeded the Maine DEP RAGs for the "Residential" exposure scenario; however, were below the Maine DEP-defined background concentrations for the State of Maine. DRO was detected at concentrations which were below the Maine DEP Decision Tree Baseline 2 Standard (50–100 mg/kg).

Groundwater Results: Concentrations of PAHs were not detected above laboratory detection limits in the groundwater sample tested. Metals (arsenic, chromium, lead, selenium, and silver) were detected above their respective Maine Department of Health Services (DHS) Maximum Exposure Guidelines (MEGs) for drinking water. DRO was not detected above the laboratory reporting limit.

Sediment Results: PAH compounds were not detected at concentrations which exceeded laboratory detection limits; however, the reporting limits for some PAH compounds exceeded the EPA Region III RBC. Arsenic, chromium, and lead were detected at concentrations which exceeded the Maine DEP RAGs and/or the EPA Region III RBCs. Additionally, several metal concentrations exceeded the National Oceanic & Atmospheric Administration (NOAA) Effects Range-Low Guidance for contaminated sediment impacts to the natural marine environment.

Boiler Blow-Down Testing and Discharge, 2004

After Mason Station, LLC's acquisition of the Site in 2003, wastewater received by the Ash Ponds included approximately 75,000 gallons of boiler blow-down water (as well as rainwater/storm water runoff from roof drains, trenches/troughs in the building floor, and drains in an adjacent former bulk oil tank area). The purpose of this boiler blow-down water testing was to verify that the water left in the boilers did not contain contamination that would mask or decrease the quality of the water that existed in the ponds at that time. During the time of the discharge, Mason held a license to discharge boiler water from the boilers into the Ash Ponds.

Approximately 25,000 gallons of boiler blow-down water from each of three onsite boilers was discharged to the Ash Ponds. Prior to discharge, individual samples of water were collected from each boiler for analytical testing. Test results from the three boilers were generally consistent with the facility's Waste Discharge License, and therefore, the water was discharged to the East Primary ash pond in December of 2004.

"Closure Plan for Decommissioning of Wastewater Treatment (Ash) Ponds, Former Mason Station Power Plant, Wiscasset, Maine," prepared by Ransom, dated August 14, 2006.

Ransom prepared a report outlining proposed closure and decommissioning activities of the Ash Ponds pursuant to Maine DEP Chapter 550, Discontinuance of Wastewater Treatment Lagoons. The decommissioning plan generally consisted of the following components: 1) dilution of the lagoon water until effluent parameters are equal to or less than the final discharge parameters; 2) discharge of water to the Sheepscot River in accordance with the 2006 discharge license; 3) removal and off-site disposal of sediment/sludge at the bottom of the lagoons; and 4) final grading and seeding to prevent erosion and leaching of contaminants into surface and ground waters. This work was not completed, and at present, the Ash Ponds have not been decommissioned.

"ASTM Phase I Environmental Site Assessment, Point East Maritime Village, Birch Point Road, Wiscasset, Maine, Rev. 1" prepared by Ransom, dated February 5, 2016.

This ESA was completed for the entire Mason Station property for the Lincoln County Regional Planning Commission (LCRPC) on behalf of the Town of Wiscasset as part of the LCRPC's U.S. EPA Brownfields Assessment Grant No. BF96181901. Ransom identified several Recognized Environmental Conditions (RECs) in connection with the property. The following paragraphs present those RECs and ASTM non-scope considerations which pertain directly to Lot 82 and 83 (the Site).

- The license permitting the operation of the Ash Ponds has expired, and the Ash Ponds are no longer in operation. A plan titled Closure Plan for Decommissioning of Wastewater Treatment (Ash) Ponds (August 14, 2006) prepared by Ransom was approved with conditions by the Maine DEP on September 7, 2006; however, decommissioning activities were not completed by the owner at that time. Decommissioning and closure activities proposed by Ransom include pumping out the remaining water in the Ash Ponds, dewatering and removal of the remaining sediment, offsite disposal of sediment/water waste (disposal characterization testing would likely be required by the accepting disposal facility), excavation and removal of asphalt liners, confirmatory soil sampling beneath the liners for laboratory analysis various parameters. This plan should be updated, approved, and completed in order to properly decommission the Ash Ponds.

- Several PAHs and metals were detected in the marine sediment along the shore adjacent to the Ash Ponds at concentrations above NOAA screening values for marine sediment.

- Based on the age of the Ash Pond Pump House (circa 1980), it is possible that asbestos-containing building materials (ACBM), lead-based paint (LBP), and other potential universal wastes exist at the Site.

Ransom concluded that additional investigation was warranted to address the above-stated RECs, document current Site conditions in relation to current regulatory clean up guidelines, and identify whether remediation or mitigation measures were necessary. Ransom recommended that a Phase II ESA be implemented and that a Hazardous Materials Inventory (HMI) be conducted.

"Hazardous Materials Inventory, Point East Maritime Village, Birch Point Road, Wiscasset, Maine," prepared by Ransom, dated June 21, 2016.

Ransom completed an HMI for all Site buildings present on the entire Mason Station property; however, only results for the Ash Pond Pump House, located on Lot 82, are described herein.

- The Tar and Gravel roof of the pump house (approximately 200 square-feet) was identified as an asbestos-containing building material. This requires abatement prior to building demolition.

- Fluorescent light ballasts and tubes were observed, which may contain PCBs, mercury, ozone-depleting substances, and/or heavy metals. Disposal of each of these items is subject to hazardous and/or universal waste disposal requirements.

"Phase II Environmental Site Assessment, Point East Maritime Village, Birch Point Road, Wiscasset, Maine, Rev. 1" prepared by Ransom, dated June 21, 2016.

To address the RECs identified in Ransom's Phase I ESA, a Phase II ESA was conducted on the entire Mason Station property. Assessment activities completed at the Site (Lot 82 and Lot 83) included collection of one soil vapor sample to the north of the Ash Ponds, one soil boring/soil sample to the south of the Ash Ponds, and one pore water sample along the bank of the Sheepscot River. Conclusions and observations pertaining to Lot 82 and 83 (the Site) are as follows:

- The soil sample (4-8 feet bgs) contained no VOCs, VPH, PAHs, EPH, metals or PCBs at concentrations which exceeded their respective Maine DEP RAGs for the "Excavation/Construction Worker" exposure scenario. It should be noted that several of the contaminant's concentrations would exceed the "Residential" exposure scenario; however, because these soils are at depth, no residential exposure was anticipated. No surficial soils were collected as part of this ESA.

- The pore water sample contained no VOCs, VPH, PAHs, EPH, or RCRA metals at concentrations which exceeded the applicable regulatory limits.

- The soil vapor sample contained no VOCs or APH fractions at concentrations which exceeded their respective calculated Soil Gas Targets for Residential or Commercial exposure scenarios.

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2.0 SITE CHARACTERIZATION AND CLEANUP GOALS

Previous environmental investigations completed at the Site identified residual environmental contamination associated with historical Site operations. The identified contamination and appropriate cleanup goals are summarized below.

2.1 Applicable Remediation/Cleanup Standards

The Mason Station peninsula is planned for mixed commercial and light industrial development; however, residential reuse has not been completely ruled out. As such, the MEDEP RAGs for the "Residential" exposure scenario will be used as the clean-up guideline for impacted soils and soil/sediment mixtures at the Site. Results will also be compared to the MEDEP RAGs for the "Construction Worker" exposure scenario to determine if human exposure risks will be present during future Site redevelopment activities.

Because no drinking water source is present onsite, the MEDEP RAGs for the "Groundwater Construction Worker" exposure scenario was considered to be the most applicable clean-up guideline for groundwater on Site. Soil vapor sample results were compared to Soil Gas Targets for the "Residential" exposure scenarios.

The Town of Wiscasset currently anticipates that the State and Federal standards for the abatement of hazardous building materials including asbestos, lead-based paint, and universal wastes will be used as the cleanup standards for hazardous building material abatement.

2.2 Areas of Concern (AOC), Contaminants, Exposure Risks and Cleanup Goals

<u>AOC 1: Maintenance Building and Ash Pond Pump House</u>

The 300 square-foot Ash Pond Pump House contains hazardous building materials including asbestos in the tar/gravel roof, and universal/hazardous wastes such as fluorescent light ballasts and tubes. The 5,000 square-foot Maintenance Building contains hazardous building materials including asbestos in linoleum flooring, window/ door caulk, window glazing, and roofing caulk, as well as universal wastes such as fluorescent light ballasts and tubes. These buildings are currently in poor conditions and are vacant/unused.

The cleanup goal for the Site, pertaining to the ACM, is to eliminate the risk of human contact to ACM prior to potential building demolition and/or renovation activities. Cleanup actions including removal of ACM should be completed to meet USEPA and MEDEP regulatory requirements and eliminate human exposure through inhalation.

The USEPA universal waste regulations streamline hazardous waste management standards for federally designated "universal wastes," which include batteries, pesticides, mercury-containing equipment, and bulbs (lamps). The State of Maine has expanded the designation of universal waste to include, in addition to those items listed above, automobile mercury switches and totally enclosed non-leaking PCB containing fluorescent light ballasts. The regulations govern the collection and management of these widely generated wastes, thus facilitating environmentally sound collection and proper recycling or treatment. The clean-up goal for universal waste is to prevent these wastes from entering the general waste stream through proper removal, storage, and transport to an appropriate off-Site recycling or disposal facility as universal waste.

AOC 2: Ash Ponds

There are four asphalt-lined ash ponds, which operate in series prior to discharging through Outfall #19 into the Sheepscot River. The East Primary pond is 10,500 square feet; the West Primary pond is 8,300 square feet; the East Secondary pond is 10,400 square feet; and the West Secondary pond is 10,400 square feet. A stated previously, historic sources contributing flow to the Ash Ponds included waters associated with demineralization, the blow-down and metal cleaning neutralization tank, regeneration and backwash waters from water softeners and filters, ash transport, and miscellaneous storm water runoff. In accordance with MEDEP Chapter 550, Discontinuance of Wastewater Treatment Lagoons, because these ash ponds are no longer operational, they must be decommissioned in accordance with a MEDEP-approved closure plan (this plan will be developed as part of the cleanup design process). In general, this will include management/treatment and off-site disposal of water contained within the four ponds; remediation of the sludge present in the bottom of the ash ponds; and site restoration.

Surficial Water Contained Within Ash Ponds: Currently, the water contained within the ash ponds is primarily stormwater; however, waste characterization sampling will be necessary to determine water quality parameters. Because the exact chemical and contaminant concentrations of this material are currently unknown, future contractors must take precautions to prevent direct human contact with the water through best management practices. Ransom also recommends that a Environmental Media Management Plan (EMMP) be prepared prior to start of construction to provide guidance to future excavation/construction workers on the management and handling of potentially contaminated water at the Site. It is anticipated that this water will be treated on-Site through a series of sediment filters and carbon (if determined to be necessary), and will either be transported for off-site disposal, or discharged to the municipal sewer system. The cleanup standards associated with this water will be dictated by the receiving facility permit. Cleanup goals for this material will be to eliminate or reduce the risk of human contact to this water through removal and off-site disposal. Regardless of which remedial alternative is selected, this water must be removed from site; as such, only excavation/construction workers have exposure potential.

Sludge/Sediments: Depending on which remedial alternative is selected, this material will either be excavated and removed from site OR amended and covered with an approved cover system, As such, only excavation/construction workers have exposure potential and the MEDEP RAG for the "Construction Worker" exposure scenario is the most applicable. As part of the 2004 Jacques Whitford investigation, one sediment sample was collected from the bottom of each of the four ash ponds. Full results were not available for review; however, according to the report text, concentrations of arsenic ranged from 14 to 45 mg/kg (these are below the applicable MEDEP RAG of 54 mg/kg); concentrations of chromium ranged from >81 to 320 mg/kg (these exceed the applicable MEDEP RAG of 46 mg/kg for hexavalent chromium); and concentrations of lead ranged from >46.7 to 500 mg/kg (three of the samples are below the MEDEP RAG of 450 mg/kg, and one exceeded the guideline). Because the sediment exceeded certain MEDEP "Construction Worker" RAGs, there is a potential for exposure during construction activities. To address this potential exposure risk, it is recommended that an EMMP be prepared prior to start of construction to provide guidance to future excavation/construction workers on the management and handling of contaminated sediment at the Site. Cleanup goals for this material will be to eliminate or reduce the risk of human contact to this sediment through off-site disposal or approved cover system.

Soils: As part of the 2004 Jacques Whitford investigation, four soil borings were completed in areas surrounding the Ash Ponds, and samples were collected at depths ranging from 0 to 8 feet bgs. No PAH, metals, or diesel range organics were detected at concentrations which exceeded the MEDEP RAGs for the "Construction Worker" exposure. As part of Ransom's 2016 Phase II investigation, one soil sample was collected south of the Ash Ponds at a depth of 4 to 8 feet bgs; this sample contained no VOCs, VPH,

PAHs, EPH, metals or PCBs at concentrations which exceeded their respective MEDEP RAGs for the "Construction Worker" exposure scenario. As such, no soil remediation is required; however, because of the industrial nature of the Site, it is recommended that a Soil (Media) Management Plan be prepared prior to start of construction to provide guidance to future excavation/construction workers on the management and handling of potentially contaminated soils which may be encountered at the Site.

Groundwater: Impacted groundwater is not anticipated to represent an exposure risk to future Site residents due to the fact that municipal potable water is provided to the Site and that deed restrictions are anticipated which will prohibit the extraction of groundwater. As such, no groundwater remediation is required. However, during future excavation and construction activities, there is the potential that workers will come into contact with groundwater. The Phase II investigation performed by Jacques Whitford in 2004 identified that groundwater in the vicinity of the ash ponds contained the following contaminant concentrations: arsenic - 520 ug/L; chromium - 1,600 ug/L; lead – 540 ug/L, selenium – 82 ug/L, and silver – 41 ug/L. Of these, only chromium was detected at a concentration which exceeds the MEDEP RAGs for the "Excavation/Construction Worker" exposure scenario. To address this potential exposure risk, it is recommended that a Groundwater (Media) Management Plan be prepared prior to start of construction to provide guidance to future excavation/construction workers on the management and handling of contaminated groundwater at the Site.

Soil Vapor: Ransom's 2016 Phase II ESA concluded that soil vapor samples contained no VOCs or APH fractions at concentrations which exceeded their respective calculated Soil Gas Targets for Residential or Commercial exposure scenarios. As such, no soil vapor remediation measures are required.

3.0 DESCRIPTION OF EVALUATION CRITERIA

The comparison of the remediation alternatives was conducted using the evaluation and threshold criteria discussed below.

3.1 Overall Protection of Human Health and the Environment

Alternatives must pass this threshold criterion to be considered for implementation as the recommended alternative. The goal of this criterion is to determine whether a remediation alternative provides adequate protection of human health and the environment. It also addresses how identified risks are eliminated, reduced, or controlled. Protection of human health is assessed by evaluating how site risks from each exposure route are eliminated, reduced, or controlled through the specific alternative.

3.2 Technical Practicality

The focus of this evaluation criterion is to determine technical practicality of instituting the specific alternative. This criterion evaluates the likelihood that the alternative will meet project specifications, and the ability of the project to meet the Town's redevelopment goals for the Site.

3.3 Ability to Implement

This criterion analyzes technical feasibility and the availability of services and materials. Technical feasibility assesses the ability to implement and monitor the effectiveness of the alternative. Availability of services and materials evaluates the need for off-site treatment, storage or disposal services and the availability of such services. Necessary equipment, specialists and additional resources are also evaluated.

3.4 Reduction of Toxicity, Mobility, and Volume

This criterion evaluates the ability of the remediation alternative to significantly achieve reduction of the toxicity, mobility, and volume of the hazardous substances present at the Site. This analysis evaluates the quantity of hazardous substances and/or petroleum-impacted media to be removed, the degree of expected reduction in toxicity, the type and quantity of residuals to be reduced, and the manner in which the principle threat is addressed through the remediation alternative.

3.5 Short Term Effectiveness

This criterion addresses the period of time needed to complete the remediation, potential adverse impacts on human health and the environment that may exist until the cleanup goals are achieved, and the time frame for accomplishing the associated reduction in the identified environmental conditions.

3.6 Resiliency to Climate Change Conditions

This criterion evaluates the resilience of the remediation alternative to reasonably foreseeable changing climate conditions, such as: increasing/decreasing temperatures; increasing/decreasing precipitation; extreme weather events; rising sea level; changing flood zones; and higher/lower groundwater tables, among others.

3.7 Preliminary Cost

The preliminary cost criterion for the remediation alternatives evaluates the estimated capital, operation, and maintenance costs of each alternative. Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering, sampling contingencies, and licenses. Costs were developed as a balancing criterion for the remedial alternatives and should not be construed as bid costs or engineer's cost estimates. Cost may be used as a distinguishing factor in the selection of the remedial action. The preliminary costs developed should in no way be construed as a cost proposal, but rather a guide for selecting a remedial action.

4.0 EVALUATION OF REMEDIATION ALTERNATIVES

Based on the evaluation criteria outlined in the previous section and the potential exposure pathways identified for the Site, the remedial actions selected for the Site should accomplish the following objective:

- Minimize the potential for exposure to contaminated water and sediments associated with the ash ponds through decommissioning the wastewater treatment (ash) ponds in accordance with a MEDEP-approved closure plan (to be completed by Ransom during cleanup design);
- Minimize the potential for exposure to hazardous building materials in the maintenance building and pump house, and
- Achieve a reduction of the toxicity, mobility, and volume of the hazardous substances present at the Site.

Additionally, the Town of Wiscasset wishes to redevelop the ash pond parcels and surrounding areas for mixed commercial and light industrial development. The Site represent one of the primary access points to deep water moorings, and as such, it is critical for any future redevelopment of the Birch Point Peninsula. As such, another objective of the cleanup activities is to make the Site ready for redevelopment and attractive to potential Site purchasers.

To achieve these objectives, three remedial options were considered and are discussed in the following subsections. These remedial alternatives include: Alternative #1 - No Action; Alternative #2 - Ash Pond Decommissioning Utilizing Cover Systems; and Alternative #3 – Ash Pond Decommissioning Utilizing Sediment Removal. These alternatives were evaluated using the criteria described in Section 4.0 and are summarized below. The attached Table 1 includes a Summary of the Evaluation and Comparison of the Remedial Alternatives.

4.1 Additional Remedial Activities Performed Regardless of Selected Alternative

In addition to the remediation activities associated with the alternatives discussed above, the following additional remedial activities are proposed to be completed at the Site, regardless of which remediation alternative is selected (with the exception of the No Action alternative):

- Abatement of hazardous building materials/asbestos in the Maintenance Building and Ash Pond Pump House.
- An EMMP shall be prepared prior to start of construction to provide guidance to future excavation/construction workers on the management and handling of contaminated and potentially-contaminated sediments, soil, and groundwater at the Site.
- Deed restrictions and/or institutional controls in the form of a Declaration of Environmental Covenant (DEC) shall be prepared which prohibits the extraction of groundwater without MEDEP notification and consent.

It should also be noted that certain elements of the ash pond decommissioning process would be completed regardless of which remedial alternative is selected. Prior to managing the contaminated sediments, the water contained within the ash ponds will be treated on-Site through a series of sediment

filters and carbon (if determined to be necessary), and will either be transported for off-site disposal, or discharged to the municipal sewer system. The remedial alternatives outlined below are primarily associated with the contaminated sediment present in the ash ponds.

4.2 No Action Alternative

A "No Action" alternative signifies that no remediation activities would be conducted at the Site, that the Ash Ponds would not be decommissioned, and that no hazardous material abatement would be conducted.

The "No Action" alternative does not include a means for mitigating exposure to identified adverse environmental conditions or unacceptable risks remaining from contaminated water and sediments in the Ash Ponds, or from hazardous building materials in the on-Site buildings. Therefore, the potential for human exposure through direct contact, ingestion, and/or inhalation continues to exist for current trespassers and potential future Site occupants, workers, or trespassers. The "No Action" alternative is not protective of human health and the environment and would not achieve reduction of the toxicity, mobility, and volume of the hazardous substances present at the Site.

In addition, if no remediation activities are conducted, the Site and surrounding parcels would likely not be redeveloped. The "No Action" alternative was not selected for implementation or further consideration.

4.3 "Ash Pond Decommissioning Utilizing Cover Systems" Alternative

The second remediation alternative evaluated in this ABCA is the "Ash Pond Decommissioning Utilizing Cover Systems" Alternative. This alternative involves mitigating the potential for human exposure to impacted sediments through installation of a MEDEP-approved cover systems over the impacted sediments. Once the impacted water was removed, the sediments in the ash ponds would be amended with clean fill to bring up to grade, and then soil cover systems would be installed over each of the ash ponds. Based on the results of historic environmental assessments, cover systems would be necessary over the footprint of the four ash ponds (approximately 40,000 square feet). Depending on the Town's selected reuse of the Site, cover systems may include clean fill, seeded loam, structural gravel, or pavement.

Minor re-grading of the Site would likely be necessary prior to placement of the cover system in order to facilitate stormwater runoff, and to match existing grades at the Site periphery. As part of this alternative, no sediment would be removed from Site, and the existing ash pond liners would remain.

Additional remedial activities would be necessary in conjunction with this alternative. An institutional control (deed restriction) would need to be recorded to indicate the need for a Post-Closure Cover System Maintenance Plan and a Post-Closure EMMP in order to prevent future exposure to contaminated sediments on-Site. The EMMP would ensure proper characterization, handling, and management of contaminated sediment which may be encountered and displaced during future redevelopment of the Site.

The evaluation of the "Ash Pond Decommissioning Utilizing Cover Systems" Alternative is discussed below.

<u>Overall Protection of Human Health and the Environment</u>

This alternative provides adequate protection of human health through reducing the risk of human exposure to contaminated sediment via construction of engineered cover systems, the implementation of

institutional controls which prohibit disturbance of the cover systems and underlying sediment/soils without notification, and the preparation of a Post-Closure Cover System Maintenance Plan.

This alternative provides adequate protection of the environment by reducing the amount of storm water and precipitation which come into contact with the impacted media; therefore, reducing contaminated storm water runoff.

Technical Practicality

Cover system activities are technically practical remedial measures. The construction of engineering cover systems could be completed utilizing accepted construction techniques. Contractors with experience with similar projects are readily available in the region.

However, there would be technical challenges associated with long-term stormwater management at the Site. Because the ash pond liners would not be removed as part of this alternative, there is the potential that stormwater would eventually "pool up" in the filled/covered ash ponds, which would create geotechnical issues and potential washout scenarios. The contaminants identified in the sediment on-Site have not been evaluated for their leachability potential; therefore, it would not be prudent to perforate the ash pond liners to allow for stormwater discharge (because contaminants would have the potential to leach through the perforations into the adjacent river). As such, stormwater management infrastructure such as plunge pools or sedimentation basins may be necessary to address potential stormwater concerns and to protect the adjacent river. Alternately, a more impermeable cover system could be constructed to prevent stormwater from infiltrating into the filled/covered ash ponds; however, these types of covers are more technically challenging, are not as common, and would require regulatory approval and additional stormwater runoff design.

Ability to Implement

Covering the impacted sediment is technically feasible and is an effective action for reducing the risk of human exposure. Services and materials necessary to conduct this alternative are readily available. However, issues with stormwater, as discussed in Section 4.3.2, negatively affect the implementability of this alternative.

Reduction of Toxicity, Mobility and Volume

The construction of a cover system would achieve reduction in the mobility of the impacted sediment at the Site by reducing the amount that rainwater/stormwater, humans/animal transport methods, and wind/atmospheric transport methods can come into contact with the impacted sediment.

However, because no contaminated sediment would be removed from Site, this option would not achieve a reduction in toxicity or volume of contaminated sediment at the Site.

Short Term Effectiveness

The remedial action objectives could be attained when the construction of the MEDEP-approved cover systems was complete. Potential adverse impacts to human health from exposure to contaminated sediment may exist until these cover systems have been constructed.

Resiliency to Climate Change Conditions

The primary climate change concerns would be associated with extreme weather, increased rainfall, and rising groundwater tables.

This remedial alternative partially meets the objectives associated with this criterion by preventing impacted sediment from coming into contact with rain/stormwater. A cover/cap system would shed or redirect stormwater run-on and minimize infiltration within the impacted areas. Additionally, because the ash pond liners would remain intact, rising groundwater tables will not have the potential to come into contact with impacted sediment. However, extreme weather and flooding has the potential to cause damage to the cover system, which may result in erosion, potential transport of contaminated media, and human exposure to the impacted media beneath the cover system.

Other Considerations

Redevelopment Potential: If this remedial alternative were selected, redevelopment and Site reuse would be complicated due to the land use restrictions associated with a MEDEP-approved cover system. Additionally, due to the stormwater issues outlined in Section 4.3.2, it is likely that the Site would not be structurally capable of supporting a structure or road.

Regulatory Approval: In August of 2006, Ransom prepared a closure plan for decommissioning the Ash Ponds pursuant to Maine DEP Chapter 550, Discontinuance of Wastewater Treatment Lagoons. The decommissioning plan addressed the contaminated sediment on-Site by proposing removal and off-site disposal of sediment/sludge at the bottom of the lagoons. This plan was approved by the MEDEP; however, no work was performed at that time. Although this plan will be updated as part of Ransom's cleanup design for the Site, it is likely that the MEDEP will expect a revised closure plan which is in-line with the previously-approved 2006 closure plan and includes soil/sediment removal.

Preliminary Cost

The estimated costs associated with this remedial alternative are outlined in the attached Table 2. Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering and sampling contingencies.

The estimated cost for this alternative is approximately $423,200, which does not include future annual costs associated with the necessary annual inspections of the cover system. Please note that costs presented in Table 2 for the chosen alternative do not include programmatic and environmental design costs necessitated by using Brownfields Cleanup Funds. These costs may include, but are not limited to, the following: MEDEP Voluntary Response Action Program (VRAP) Submittals, Community Relations Plan & 30-day Public Comment, and Public Meetings. These costs may range from $20,000 to $30,000.

4.4 "Ash Pond Decommissioning Utilizing Sediment Removal" Alternative

The third remediation alternative evaluated in this ABCA is the "Ash Pond Decommissioning Utilizing Sediment Removal" alternative. This alternative involves mitigating the potential for human exposure to impacted sediment through excavation and off-Site disposal of the sediments contained within the ash ponds. Once the impacted water was removed, the sediments in the ash ponds would be dewatered or amended with clean fill until it has a moisture content which is appropriate for excavation, transport, and off-site disposal. After removal of the soil/sediment mixture, the ash pond liners would also be excavated and removed from Site.

After sediment and liner removal activities were performed, clean backfill would be brought to the Site to backfill the excavation and to be graded to facilitate stormwater runoff, and to match existing grades. Depending on the Town's selected reuse of the Site, this backfill material may include clean fill, seeded loam, or structural gravel.

The evaluation of the "Ash Pond Decommissioning Utilizing Sediment Removal" Alternative is discussed below.

Overall Protection of Human Health and the Environment

This alternative provides protection of human health and the environment through eliminating the risk of human exposure to the contaminated sediment via removal and off-Site disposal. The goal of reducing or eliminating the risk of human exposure to impacted media could be achieved through this alternative.

Technical Practicality

Soil/sediment removal activities are technically practical. These remedial measures could be completed utilizing accepted construction techniques. Both contractors and disposal facilities with experience with similar projects are readily available in the region.

Ability to Implement

Soil/sediment removal is a technically feasible remedial measure and is an effective action for reducing/eliminating the risk of human exposure. Services and materials necessary to conduct this alternative are readily available.

Reduction of Toxicity, Mobility and Volume

The removal of contaminated sediments would achieve a reduction in the toxicity, mobility, and volume of contaminated media at the Site.

Short Term Effectiveness

The remedial action objectives could be attained when removal of the contaminated sediment was complete. Potential adverse impacts to human health from exposure to contaminated media may exist until these remedial measures have been constructed.

Resiliency to Climate Change Conditions

The primary climate change concerns would be associated with extreme weather, increased rainfall, and rising groundwater tables.

This remedial alternative meets the objectives associated with these criteria by removing impacted sediment, thus preventing them from coming into contact with precipitation, stormwater runoff or rising groundwater tables.

Other Considerations

Redevelopment Potential: If this remedial alternative were selected, there would be no land use restrictions associated with the Site; as such, redevelopment and Site reuse potential would be improved.

Regulatory Approval: This remedial alternative is in-line with Ransom's 2006 MEDEP-approved closure plan for decommissioning the Ash Ponds pursuant to Maine DEP Chapter 550, Discontinuance of Wastewater Treatment Lagoons.

Preliminary Cost

The estimated costs associated with this remedial alternative are outlined in the attached Table 3. . Capital costs include direct capital costs, such as materials and equipment, and indirect capital costs, such as engineering and sampling contingencies.

The estimated cost for this alternative is $477,800. Please note that costs presented in Table 3 for the chosen alternative do not include programmatic and environmental design costs necessitated by utilizing Brownfields Cleanup Funds. These costs would include, but are not limited to, the following: MEDEP VRAP Submittals, Community Relations Plan & 30-day Public Comment, and Public Meetings. These costs typically range from $20,000 to $30,000.

4.5 Selection of Proposed Remediation Alternative

Based on the results of the initial screening of each alternative, as shown on Table 1 and discussed in detail above, Alternative 3: the "Ash Pond Decommissioning Utilizing Sediment Removal" Alternative has been selected as the preferred remediation alternative. This alternative is proven to protect human health and the environment; is effective, technically feasible, and practical; meets the redevelopment and reuse objectives set by the Town; and is a remedial technique which has been previously approved by the MEDEP for the decommissioning of the ash ponds on-Site. Although this alternative is more expensive than Alternative 2, it is more technically feasible due to future stormwater and groundwater concerns associated with leaving the liners in-place. Additionally, Alternative 2 does not meet the redevelopment objectives outlined by the Town. For these reasons, Alternative 3 is the best option for the Site.

5.0 CONCEPTUAL REMEDIAL ACTION PLAN

The "Ash Pond Decommissioning Utilizing Sediment Removal" Alternative protects human health and the environment; is effective, technically feasible, and practical; and meets both the Town's redevelopment objectives and the regulatory requirements associated with wastewater treatment pond decommissioning regulations. Because this alternative meets the evaluation criteria and protects human health and the environment, this alternative has been selected for implementation at the Site.

The Ash Pond decommissioning will be completed in general accordance with Ransom's 2006 Closure Plan; however, this plan will be updated as part of the cleanup design phase of the project. In general, the decommissioning process will include the following tasks.

5.1 Ash Pond Water Management

Water within the ash ponds will be treated on-Site through a series of sediment filters and carbon (if determined to be necessary), and will either be transported for off-site disposal, or discharged to the municipal sewer system. Characterization sampling of water will be necessary to determine treatment requirements and to evaluate potential disposal options.

It is assumed that the water will be pumped from each of the four ash ponds; care will be taken to avoid stirring and transfer of sediments during this activity.

The amount of water contained within the ash ponds is seasonal; however, based on observations, we have assumed that approximately 3 feet of water is present in each ash pond. Based on this assumption, there is approximately 900,000 gallons of water contained within the four ash ponds which will require management.

5.2 Sediment Stabilization, Characterization and Off-Site Disposal

Following removal of the water contained within the ash ponds, the sediment will be saturated; as such, the sediment will be either dewatered or amended with clean fill until it has a moisture content which is appropriate for excavation, transport, and off-site disposal. If sediment dewatering occurs, a contractor will construct a lined dewatering pond which will allow dewatering through gravity. Water from this dewatering process will be treated and managed as outlined in Section 5.1, above. Because dewatering is the more cost-effective option, we have assumed that this will be the remedial course of action; however, until final design plans have been completed and the MEDEP has issued approval of the revised decommissioning plan, both sediment management options have been evaluated.

Ransom will collect waste characterization samples of the sediment (or soil/sediment mixture) to facilitate off-site disposal. Based on typical receiving facility requirements, we have assumed that one waste characterization sample will be required for every 500 tons of material. The laboratory analysis parameters will be determined based on the proposed receiving facility's acceptance criteria, but may include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), Resource Conservation and Recovery Act (RCRA), flashpoint/ignitability, corrosivity (pH), and reactivity. Upon receipt of the results of laboratory analysis, an appropriate method of disposal will be determined.

The material will be disposed of at an approved disposal/treatment facility and will be transported offsite under a Bill of Lading or Uniform Hazardous Waste Manifest. The waste material will be transported to

the disposal facility by a licensed transporter. All excavation, transportation and disposal activities will be completed in accordance with local, state and federal regulatory requirements.

5.3 Pond Liner Excavation and Off-Site Disposal

Two of the ash ponds are underlain by asphalt and two are underlain by a flexible poly liner; these liners will be excavated and removed from Site. Based on the type and concentrations of contaminants which were documented in both the water and sediments contained within the ponds, we do not anticipate that the asphalt material is contaminated. As such, provided these liners are pressure-washed or cleaned to remove any contaminated sediment, we anticipate that the liners can be excavated with a backhoe or excavator and disposed of as solid waste. However, it should be noted that the receiving facility may require waste characterization of the asphalt material to determine if contamination is present. If this occurs, waste characterization sampling and management will be conducted in a similar manner as what was described for soil/sediment in Section 5.2, above.

Following removal of the sediment layer from the base of the ponds, the integrity of asphalt liners will be visually inspected/photographed (special attention will be given to areas that are cracked or damaged). These areas will be targeted for confirmatory soil sampling (see Section 5.4, below).

In addition, conduits, pumps, and other components that supplied the discharge system will be removed and recycled or disposed of as solid waste as deemed appropriate.

5.4 Confirmatory Soil Sampling

Following removal of the asphalt liners, a minimum of two soil samples per pond will be collected for confirmatory laboratory analysis. These locations will be biased towards areas where cracks or damage was observed in the liners. Soil samples will be collected using hand tools and will be submitted for laboratory analysis of Extractable Petroleum Hydrocarbons (EPH) including PAHs, Volatile Petroleum Hydrocarbons (VPH), RCRA metals, PCBs, and dioxins. Samples will be analyzed for additional parameters required by Chapter 405, Section 6.C.4, of Maine's Solid Waste Regulations, including chloride, pH, percent carbon, percent moisture, phosphorous, and total vanadium.

The confirmatory sampling will be conducted according to a Sampling and Analysis Plan (Chapter 405, Section 6.B.2 of Maine's Solid Waste Rules) that will be prepared by Ransom and approved by the MEDEP prior to sampling and analysis of the confirmation samples. The sample results will be compared to MEDEP RAGs.

If confirmatory soil sampling results indicate that contaminated sediment and water has impacted the soils beneath the pond liners, additional excavation will be performed to remove soils with contaminant concentrations which exceed the MEDEP RAGs. If at all possible, the excavation will remain open pending acceptable laboratory results.

5.5 Backfill and Site Re-Grading

After excavation activities are performed, and confirmatory sampling results indicate that no additional contamination is present in on-Site soils, clean backfill will be brought to the Site to backfill the excavation. Depending on the Town's selected reuse of the Site, this backfill material may include clean fill, seeded loam, or structural gravel. Final grading plans will be dependent on final redevelopment/reuse plans; if no redevelopment plans exist, the backfill will be graded to facilitate stormwater runoff, and to match existing grades.

5.6 Permitting, Erosion Control and Dust Control Measures

Appropriate local, State, and Federal permitting should be conducted prior to commencing with remediation activities. Erosion control measures are proposed to be implemented and maintained throughout the project in accordance with the Maine Erosion and Sediment Control Best Management Practices (BMPs). Dust control measures are proposed to be implemented in accordance with best management and construction practices.

6.0 SITE CLOSURE AND REPORTING

As part of the proposed cleanup activities, the Site has been entered into the MEDEP VRAP for review of environmental conditions and proposed remedial actions. Upon agreement with the proposed work by the MEDEP, the MEDEP will issue a VRAP No Action Assurance (NAA) letter.

An approved final written completion report summarizing the field activities conducted as part of the remediation of the Site will be submitted to the MEDEP. The final report will include a description of the remedial actions and field methods implemented at the Site. Upon submittal and approval of the completion documentation, the MEDEP VRAP will issue a Certificate of Completion.

7.0 SIGNATURE(S) OF ENVIRONMENTAL PROFESSIONAL(S)

The following Ransom personnel possess the sufficient training and experience necessary to conduct an Analysis of Brownfields Cleanup Alternatives, and from the information generated by such activities, have the ability to develop opinions and conclusions regarding remediation alternatives and a Conceptual Remedial Action Plan, as presented herein, for the Site.

Environmental Professionals:

_____

Jaime L. Madore, P.E.
Project Engineer

_____

Stephen J. Dyer, P.E.
Senior Engineer/Program Manager

TABLE 1 – SUMMARY OF THE EVALUATION AND COMPARISON OF REMEDIAL ALTERNATIVES
MASON STATION ASH PONDS
WISCASSET, MAINE

Remedial Action Alternative (RAA)	Overall Protection of Human Health and the Environment	Technical Practicality	Ability to Implement	Reduction of Toxicity, Mobility and Volume	Short Term Effectiveness	Resiliency to Climate Change Conditions	Estimated Cost	Comments
1) No Action	• Long-term risks to human health by direct contact, incidental ingestion, or inhalation of contaminated onsite sediment will remain. • Long-term risks to the environment by stormwater runoff and/or leaching to groundwater will remain. • Cleanup levels/goals will not be met.	• Not applicable.	• Not applicable	• No reduction in toxicity, mobility or volume of the contaminated media.	• Potential adverse impacts to human health and the environment from exposure to onsite contamination continues to exist	• Impacted sediment and water will remain in contact with stormwater/rainfall and risk overflow to the adjacent river	• This alternative will involve ongoing security measures and maintenance and will cost approximately $1,000 per year.	• This alternative does not address the recognized environmental conditions and contamination stigma at the property. • Because contaminated media will remain onsite, this alternative would require a deed restriction to limit future site use and restrict access to the Site. • The Town's goals for Site redevelopment would not be met; and reuse options for the surrounding parcels would be limited. • The MEDEP has required that the ash ponds be decommissioned in accordance with state regulations; a no action alternative would result in regulatory non-compliance
2) Cover Systems	• Adequate protection of human health by reducing the risk of human exposure to contaminated water and sediment via construction of cover systems, implementation of institutional controls which prohibit disturbance of the cover systems, and the preparation of a Cover System Maintenance Plan. • Exposure risks to the environment by stormwater runoff are reduced by placing clean fill and maintaining vegetation over the impacted material.	• Construction activities associated with soil cover systems utilize standard construction techniques; therefore, this alternative is technically practical. • Institutional controls are becoming a more common and viable alternative; therefore, this remedial alternative is technically practical. • Long-term stormwater management would be challenging and expensive because pond liners would remain	• The necessary services and materials, including construction equipment and contractors, needed to complete the soil cover systems are readily available in this region of Maine. • Institutional controls and long-term maintenance may be difficult to maintain if the property ownership is transferred and future owners of the site are unwilling to abide by the restrictive covenant.	• Cover systems reduce the mobility of contaminated sediment by preventing stormwater runoff from coming in contact with the soil. • No reduction of toxicity or volume of contaminated sediment, due to the fact that no sediment is being removed from Site.	• Remedial objectives would be attained when the cover systems were complete. Potential adverse impacts to human health may exist until cover systems have been constructed.	• Cover systems reduce the risk of storm water/ rainfall coming into contact with impacted soil. • Extreme weather and flooding may cause damage to the cover system, which may result in erosion, transport of contaminated media, and human exposure.	• The estimated cost for this alternative is $423,200 (These cost estimates are for budgetary purposes only and should not be construed as a cost proposal.) • Costs do not include long-term maintenance and inspection of cover systems • Costs do not include future stormwater management which would be necessary due to liners remaining in place.	• This alternative is effective in addressing the recognized environmental conditions and contamination stigma at the property. • This alternative will require a deed restriction to require a Post-Closure Cover System Maintenance Plan and a Soil and Groundwater Management Plan. • The Town's goals for Site redevelopment would not be met; and reuse options for the surrounding parcels would be limited. • The MEDEP previously approved a decommissioning plan which included sediment removal; it is unknown if the MEDEP would approve of a cover system alternative.
3) Sediment Removal	• Protection of human health by eliminating the risk of human exposure to contaminated sediment via removal actions. • Exposure risks to the environment by stormwater runoff are eliminated by removing contaminated sediments.	• Construction activities associated with soil removal activities utilize standard construction techniques; therefore, this alternative is technically practical.	• The necessary services and materials, including construction equipment and contractors, needed to complete this alternative are readily available in this region of Maine.	• Removal of contaminated sediment reduces the toxicity, mobility and volume of contaminated soil onsite.	• Remedial objectives would be attained when the contaminated sediment was removed. Potential adverse impacts to human health may exist until these actions have been completed.	• Impacted sediments are removed from Site, eliminating the risk of direct contact with rising groundwater tables and/or stormwater/rainfall.	• The estimated cost this alternative is approximately $477,800 for sediment removal using dewatering methods (These cost estimates are for budgetary purposes and should not be construed as a cost proposal.)	• This alternative is effective in addressing the recognized environmental conditions and contamination stigma at the property. • The Town's goals for Site redevelopment would be met; and reuse options for the surrounding parcels would not be limited. • This alternative would achieve regulatory compliance when the ash ponds were decommissioned

Table 2: Summary of Estimated Remediation Costs
Alternative 2 - Ash Pond Decomissioning Utilizing Cover Systems

	Number	Units	Unit Cost	Total
Abatement of Hazardous Building Materials & Asbestos				
Maintenance Building	1	LS	$6,600	$6,600
Ash Pond Pump House	1	LS	$1,000	$1,000
Pre-Construction EMMP	1	LS	$6,000	$6,000
Soil Cover Systems				
Water Pumping, Treatment, Discharge (1)	9000	100 Gal	$2	$18,000
Waste Characterization Water Sampling (2)	4	Ea	$1,000	$4,000
Sediment Stabilization (3)	1	LS	$80,000	$80,000
Site Grading	1	LS	$9,000	$9,000
Loam and Seed Engineered Cover System (4)	4600	SY	$35	$161,000
Confirmatory Soil Sampling (Cover System Periphery)	10	Ea	$1,000	$10,000
Erosion and Sedimentation Control, Dust Control	1	LS	$8,000	$8,000
Engineering Design and Revised Decommissioning Plan	1	LS	$19,000	$19,000
Bidding Phase Services	1	LS	$6,000	$6,000
Construction Oversight	1	LS	$12,000	$12,000
VRAP Closure Reporting and Documentation	1	LS	$12,000	$12,000
Subtotal				*$352,600*
Contingency 20%				$70,600
TOTAL				**$423,200**

Notes:

(1) Assumes approximately 3 feet of water is present in the ash ponds

(2) Assumes one water sample collected from each ash pond

(3) Assumes approximately 1 foot of sediment is present (1,500 CY), and that a 2:1 mixing ratio with clean fill ($20/CY) will be necess

(4) Assumes the entire ash pond area (approx. 40,000 square feet) is covered with marker layer, 8-inches of loam, and 4-inches of seede

LS = Lump Sum, Gal = Gallon, Ea = Each, SY = Square Yard

Costs presented in table above do not include programmatic costs required as part of a EPA Brownfield Cleanup Program. These costs may include, but are not limited to, the following: Community Relations Plan, 30-day Public Comment, Public Meetings, ABCA Preparation, SHPO coordination, and EPA reporting. These costs are estimated to range from $20,000 to $30,000.

Table 3: Summary of Estimated Remediation Costs
Alternative 3 - Ash Pond Decomissioning Utilizing Sediment Removal

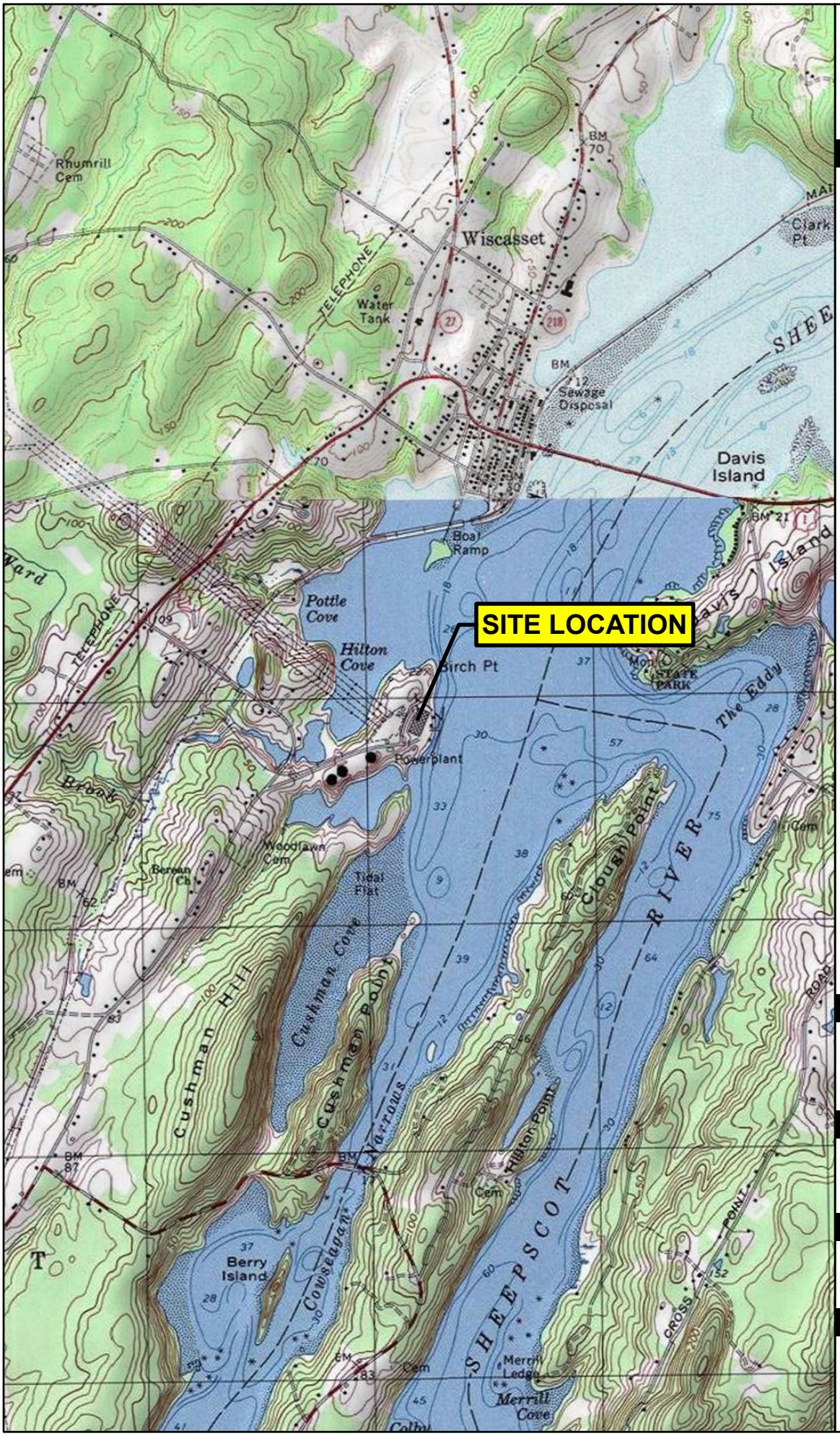
	Number	Units	Unit Cost	Total
Abatement of Hazardous Building Materials & Asbestos				
Maintenance Building	1	LS	$6,600	$6,600
Ash Pond Pump House	1	LS	$1,000	$1,000
Pre-Construction EMMP	1	LS	$6,000	$6,000
Sediment Removal				
Water Pumping, Treatment, Discharge (1)	9000	100 Gal	$2	$18,000
Waste Characterization Water Sampling (2)	4	Ea	$1,000	$4,000
Sediment Dewatering	1	LS	$50,000	$50,000
Waste Characterization Sampling (3)	5	LS	$900	$4,500
Excavation, Transportation, and Disposal of Sediment/Soil (5)	1500	CY	$100	$150,000
Excavation, Transportation, and Disposal of Liners (6)	200	CY	$35	$7,000
Confirmatory Soil Sampling (Beneath Liners)	8	Ea	$1,000	$8,000
Clean Backfill	4000	CY	$20	$80,000
Site Re-Grading	1	LS	$6,000	$6,000
Erosion and Sedimentation Control, Dust Control	1	LS	$8,000	$8,000
Engineering Design and Revised Decommissioning Plan	1	LS	$19,000	$19,000
Bidding Phase Services	1	LS	$6,000	$6,000
Construction Oversight	1	LS	$12,000	$12,000
VRAP Closure Reporting and Documentation	1	LS	$12,000	$12,000
Subtotal				*$398,100*
Contingency 20%				$79,700
TOTAL				**$477,800**

Notes:

(1) Assumes approximately 3 feet of water is present in the ash ponds
(2) Assumes one water sample collected from each ash pond
(3) Assumes one waste characterization for every 500 tons of material removed
(5) Assumes 1 foot of sediment is present in the ash ponds (1,500 CY)
(6) Assumes asphalt liner material is disposed as solid waste

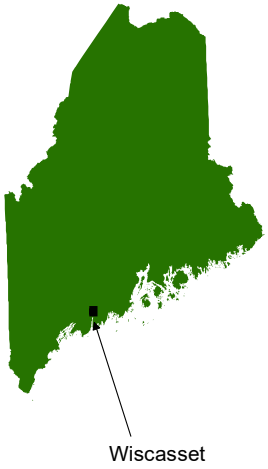
LS = Lump Sum, Gal = Gallon, Ea = Each, SY = Square Yard

***Costs presented in table above do not include programmatic costs required as part of a EPA Brownfield Cleanup Program.



RANSOM Consulting Engineers and Scientists

Regional Locator Map



Notes

1. Data Source: USGS National Map Seamless Server, 24K DRG, 1/3" NED
2. USGS Quad Name(s): Wiscasset and Westport, Maine
3. Latitude: 43° 40' 17"N
   Longitude: 69° 40' 17"W
   UTM Northing: 4871095 mN
   UTM Easting: 446153 mE

Scale and Orientation

0 1,000 2,000

1 inch = 2,000 feet

Prepared For

Town of Wiscasset
51 Bath Road
Wiscasset, Maine

Site Address

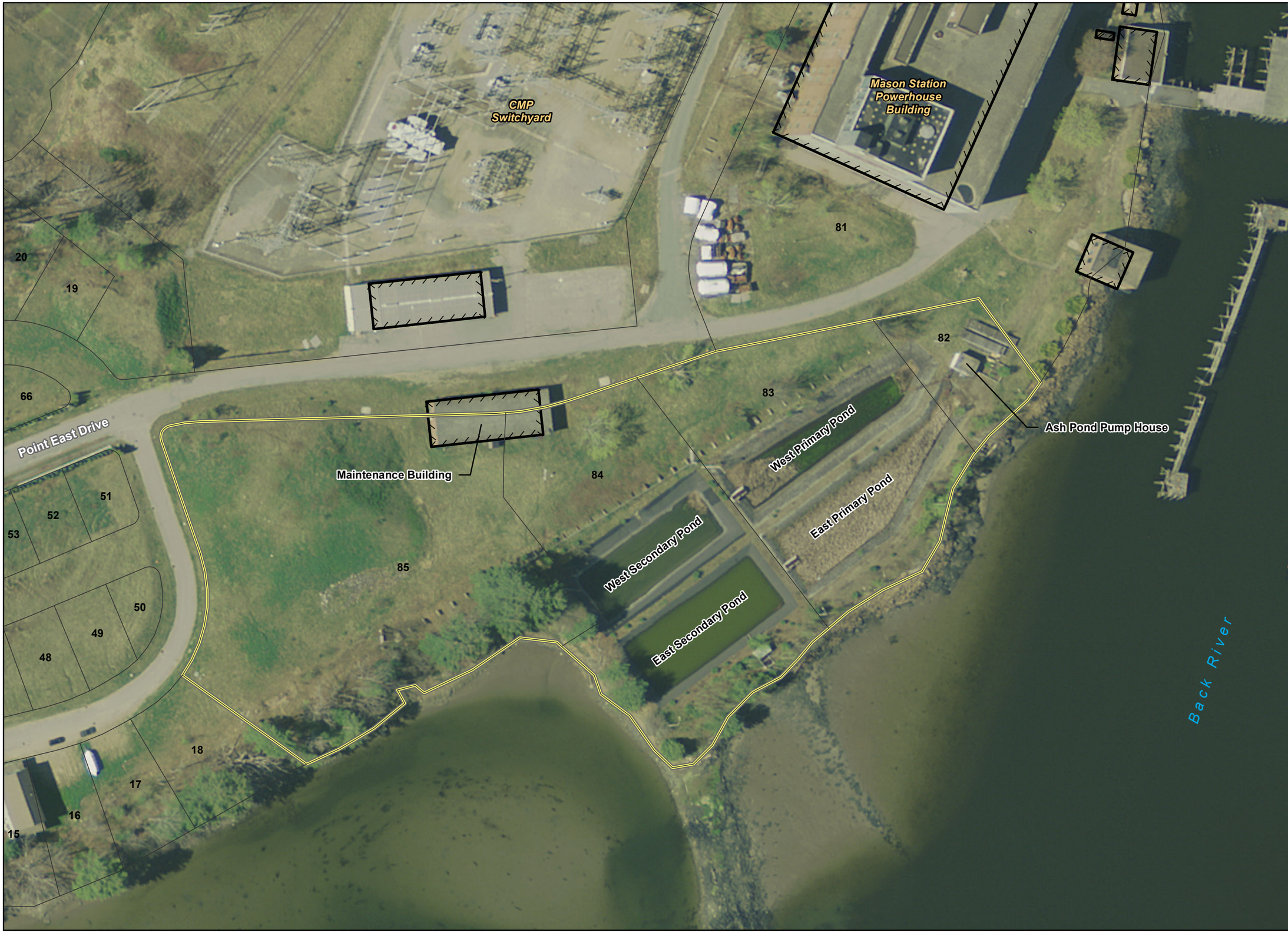
Mason Station
Birch Point Road
Wiscasset, Maine

191.06036 | Nov 2019

Figure 1

Site Location

X:\Ransom_NewEngland\Maine\Wiscasset_ME\MasonStation\MS_Wiscasset_ME_1119_F1_SLM.mxd



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and Scientists

Legend & Notes

Site Boundary

Lot Boundary

Notes

1. Maine GeoLibrary. 2018.
2. Some features are approximate in location and scale
3. This plan has been prepared for The Town of Wscasset. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 40 80

1 inch = 80 feet

Prepared For

Town of Wiscasset
51 Bath Road
Wiscasset, Maine

Site Address

Mason Station
Birch Point Road
Wiscasset, Maine

191.06036 | Nov 2019

Figure 1
Site Plan

X:\Ransom_NewEngland\Maine\Wiscasset_ME\MasonStation\MS_Wiscasset_ME_1119_F2_SP.mxd