SUPPLEMENTAL INVESTIGATION & REVISED CONCEPTUAL REMEDIAL PLAN WITH ASSOCIATED COST ESTIMATES

R&C and C&R Realty Trust Property
Former Bird Property
Marshall and Prentice Streets
Holliston, Massachusetts

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1.0 INTRODUCTION

Coler & Colantonio, Inc. has prepared this document to serve as an update regarding additional assessment and as an estimate of costs associated with the remediation of the former Bird Property located at Prentice and Marshall Streets in Holliston, Massachusetts. An earlier version of this document was completed in May 2005, but additional assessment conducted since that time has enabled a more accurate estimate of remedial costs. The methodology of the recent sampling and a review of the analytical results are included in this report. The information obtained by the additional assessment has not changed any of the basic conclusions of the original *Conceptual Remedial Plan*, but has allowed Coler & Colantonio, Inc. to better determine the nature and extent of the contamination at the Site and to better estimate the volume of fill buried along Marshall Street. The initial estimates for post permitting projected remedial and compliance costs have been revised to reflect the findings of the additional assessment and subsequent meetings with regulatory agencies. Specifically, additional assessment and reporting, which was not included in our initial Conceptual Remedial Plan, was suggested by the Massachusetts Department of Environmental Protection (DEP) Bureau of Waste Prevention (BWP)and the Holliston Zoning Board of Appeals, consultant Haley & Aldrich..

2.0 SUPPLEMENTAL INVESTIGATION

Since the completion of the original *Conceptual Remedial Plan* in May 2005, Coler & Colantonio, Inc. has conducted additional assessment at the former Bird Property. This additional assessment included the excavation of 11 test pits, the advancement of four soil borings, the collection of sediment samples, the installation of two soil/vapor monitoring wells, and the installation of two groundwater/vapor monitoring wells. Seven groundwater samples, three sediment samples, 15 soil samples, and four landfill gas samples have been collected and submitted for laboratory analysis since May 2005. The methodology utilized during the additional assessment activities and a review of acquired data is presented in the following section of this report. All data collected by Coler & Colantonio, Inc. and some of the data obtained from work conducted by previous consultants is summarized in the attached Table 1 through Table 7.

2.1 Methodologies

From June 2005 through September 2005, Coler & Colantonio, Inc. conducted a supplemental investigation to fill some of the data gaps remaining in the original October 2004 through December 2004 environment investigation of the Site. The methodologies utilized by Coler & Colantonio, Inc. to collect all samples are described within this section of the report. All sampling methodologies were completed using dedicated Nitrile® gloves. Gloves were changed between each procedure and sample collection was completed using new gloves at each sampling location and media. Sample collection and field extraction, where applicable for laboratory analysis, was completed in accordance with the appropriate methodology (specifically field extraction EPA Method

5035 for VOCs). All preserved samples were placed directly into laboratory containers. Aqueous samples submitted for analysis of dissolved metals were placed in unpreserved amber containers, placed on ice and transported to the laboratory for filtering.

2.1.1 Test Pit Excavation & Soil Sampling

Test pits were excavated utilizing an excavator to reach depths ranging between three and 12 feet below surface grade (bsg). Soils encountered during excavation were initially inspected for visual and olfactory evidence of contamination. Samples were then screened for total organic vapors (TOVs) using a photoionization detector (PID) calibrated to read as benzene in accordance with the Massachusetts Department of Environmental Protection (DEP) "Jar Headspace Analytical Screening Procedure". Soil samples were also submitted for laboratory analysis using DEP and United States Environmental Protection Agency (EPA) protocols for preservation of soil samples. Following sample collection, all excavations were backfilled to surface grade using the materials originally removed from the excavations. Groundwater was not encountered in any of these activities, therefore no groundwater samples were collected from the test pits.

2.1.2 Groundwater Sampling

Groundwater sampling was conducted in accordance with the appropriate DEP Active Policy: *Standard Reference for Monitoring Wells* WSC #310-91 (July 1994). Prior to well purging, the depth to the groundwater and depth to the bottom of the well was measured using an electronic water level meter – interface probe. The probe was slowly lowered into each monitoring well to determine the depth to groundwater and if free phase product (light non-aqueous phase Liquid (LNAPL)) was present.

Groundwater sampling was conducted after each monitoring well was purged of at least three times the water volume of each well, or after the water in the well was removed and the well was purged dry three times. Wells were purged using a peristaltic, pump, or dedicated bailers. During purging, the intake of the pump was adjusted to create a surge block in order to remove any sediments or colloids in the monitoring wells. Sampling of all monitoring wells was completed using dedicated (disposable) polyethylene bailers. Bailers were lowered slowly into the well to minimize the disturbance of the groundwater and any potential sediment during groundwater sample collection. Samples were transferred directly from the bailers into appropriate laboratory grade containers.

2.1.3 Sediment Sampling

Sediment samples were advanced manually to a depth of approximately one half to one foot in depth below the surface or the sediments or to obstruction. The shallow depth (0.1 - 1.0 feet) and loose nature of the sediments did not allow for recovery of the samples using 1 ¼ inch cellulose acetate butyrate sediment samplers, therefore samples were collected by hand from multiple locations within a few feet of each other. Since the standing water over the sediments was shallow (<1.5 feet in all locations) it was possible

to collect sediments by hand utilizing PVC & Nitrile® gloves and placing the samples directly into sample containers. Sediments samples were initially screened for visual and olfactory evidence of contaminants. The area of the sample with the greatest likelihood of impact was then submitted for analysis. No evidence of impact was observed in any of the samples collected, therefore all samples were collected from surficial sediments to a depth of four-inches below the top of the sediment. If necessary, sediment samples were decanted to appropriate water percentages by the laboratory.

2.1.4 Landfill Gas Sampling

Four vapor monitoring wells were installed in September 2005 along the perimeter of the large area of landfilling located in the central portion of the former Bird Property. The vapor monitoring wells were installed in locations proximal to those recommended by the DEP – BWP. Landfill gas wells were initially screened for volatile organic compounds (VOCs) using a PID and for percent methane (percent Lower Explosive Limit (LEL) calibrated for methane), carbon monoxide (CO), hydrogen sulfide (H_2S), and percent oxygen using a multigas meter. The wells were then purged of approximately four bore volumes using a portable vacuum pump, prior to a second round of PID and multigas meter screening and the collection of landfill gases in "SUMMA Polished" stainless steel canisters.

2.1.5 Sample Handling & Preservation

All samples collected for laboratory analysis were placed in pre-cleaned amber laboratory grade glassware with Teflon lined covers or VOA vials. The samples were then stored on ice and delivered to the laboratory under standard Chain of Custody protocols. Samples were preserved in the field in accordance with EPA and DEP protocol, dependent on the select analytical parameters. The laboratory filtered water samples were submitted for metals analysis within the appropriate (typically 24 hour) holding time. Sediment sample collection for laboratory analysis of VOCs was completed in accordance with *Preservation Techniques for Volatile Organic Compound Soil Sample Analysis*, WSC#99-415 (April 1999) USEPA Method 5035 methanol field extraction.

2.1.6 Laboratory Analysis

A Massachusetts certified laboratory (Alpha Woods Hole Labs of Westborough, Massachusetts) conducted laboratory analysis in accordance with EPA SW 846 or DEP methodologies where applicable. A variety of analytical parameters were analyzed on appropriate samples, specific analysis was based on field screening and results of prior sampling. All analysis was conducted as per EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 1986, 1994, 1997 Third Edition, as appropriate. Appropriate DEP methodologies were implemented for analysis of petroleum constituents (Extractable Petroleum Hydrocarbons, in accordance with Implementation of DEP VPH/EPH Approach Policy #WSC-02-411). Select analysis included:

Total Metals	MCP 6000/7000 series
Volatile Organics	MCP 8260B
	MCP 8260B/5035 – High
	TO-14A
Semivolatile Organics	MCP 8270C
	MCP 8270C-SIM
Hydrocarbon Scan	GC 8100M
Polycholorinated Biphenyls	MCP 8082
Organochlorine Pesticides	MCP 8081A

2.2 Data Review

Coler & Colantonio, Inc. has recently collected seven groundwater samples, three sediment samples, 15 soil samples, and four landfill gas samples. During sampling, samples from all media were field screened for potential contaminants. Soil and sediment descriptions were made in the field and soil samples were screened using the PID. Elevated levels (>5 ppmv) of contaminants were not detected by field screening, therefore Head Space testing was not typically performed. Overall field screening, including visual and olfactory observations, did not detect any evidence of contaminants. The data from laboratory analysis is presented in the following section.

2.2.1 Test Pit Description

In August 2005, Coler & Colantonio, Inc. excavated 11 test pits in the northeastern portion of the former Bird Property (AOC-3) to depths ranging between three and 12 feet bsg. Test pits were performed within the landfill area along Marshall Street to better understand the nature and the extent of the fill material. Test pits were excavated to a depth where native soils were encountered at all locations. Construction debris type fill material was encountered in every test pit excavated within this area with the exception of TP-31. Fill material was encountered to a maximum depth of ten feet bsg and varied in composition. The majority of fill material was construction debris intermixed with sand. Native soils were typically brown colored fine to coarse sand and gravel and minimal percentages of fines (silt and clay) were noted. Test Pit Logs are included in Appendix C. Soil samples from the fill materials were collected as composite samples from various depth ranges while soil samples collected from the underlying native material were collected as discrete samples.

2.2.2 Soil Data Review

Fifteen soil samples were collected during the recent supplemental investigation. All fifteen soils samples were collected from the test pits excavated within the northeastern portion of the Site (AOC-3). Laboratory results for soil samples were compared to DEP Method 1 S-1/GW-1, S-1/GW-2, and S-1/GW-3 Cleanup Standards. Laboratory results for soil are summarized in Table 1.

Total Petroleum Hydrocarbon (TPH) analysis was performed on samples TP-30N (0' – 5') and TP-30S (0' – 4') from within the fill material. TPHs were detected in the samples at concentrations of 1,100 and 2,200 parts per million (ppm); these detections were identified as "Unknown Hydrocarbons". Both of these concentrations exceed the S-1/GW-1 Cleanup Standard of 200 ppm and the S-1 GW-2/GW-3 Cleanup Standards of 800 ppm. The fill material was observed to be construction debris and the elevated levels of TPH are believed to have originated from asphalt compounds within the debris.

Volatile Organic Compound (VOC) analysis was run on samples TP-21 (0' – 8'), TP-21 (8'), TP-25 (0' – 5'), TP-25 (5'), TP-29 (0' – 10'), TP-29 (10'), and TP-30W (3'). Trichloroethene (TCE), which was detected in TP-25 (0' – 5') and TP-29 (10'), was the only VOC detected in any of the soil samples. The detected concentrations of TCE were well below the S-1/GW-1 Cleanup Standard of 5 ppm, the S-1/GW-2 Cleanup Standards of 300 ppm, and the S-1/GW-3 Cleanup Standard of 20,000 ppm.

Samples from TP-21 (0' – 8'), TP-25 (0' – 5'), and TP-30W (3') were submitted for semi-volatile organic compound (SVOC) analysis. No SVOCs were detected in sample TP-30W (3'). The SVOCs acenaphthene, anthracene, benzo [a] anthracene, benzo [b] fluoranthene, benzo [k] fluoranthene, benzo [ghi] perylene, benzo [a] pyrene, chrysene, dibenzo [a,h] anthracene, dibenzofuran, fluoranthene, fluorene, indeno [1,2,3-cd] pyrene, naphthalene, phenanthrene, and pyrene were detected in TP-21 (0' – 8') and TP-25 (0' – 5'). Acenaphthene, benzo [a] anthracene, benzo [b] fluoranthene, benzo [k] fluoranthene, benzo [a] pyrene, chrysene, dibenzo [a,h] anthracene, indeno [1,2,3-cd] pyrene, naphthalene, phenanthrene, and pyrene were present in one or both of the samples at concentrations which exceeded the S-1/GW-1, S-1/GW-2, or S-1/GW-3 Cleanup Standards.

One sample, TP-21 (0' – 8'), was submitted for total metals analysis of antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver, thallium, vanadium, and zinc. Samples from test pits TP-22 (0' – 4'), TP-22 (4'), TP-23 (0' – 4'), TP-25 (0' – 5'), TP-26 (0' – 3'), TP-26 (3'), TP-27 (0' – 4'), TP-29 (0' – 10'), TP-29 (10'), TP-30N (0' – 5'), TP-30S (0' – 4'), and TP-30W (3') were submitted for lead and silver analysis. Silver was not detected in any of the soil samples and lead was detected in all of the soil samples. Lead was detected above the S-1/GW-1, S-1/GW-2, and S-1/GW-3 Cleanup Standards of 300 ppm in samples TP-21 (0' – 8'), TP-22 (0' – 4'), TP-25 (0' – 5'), TP-26 (0' – 3'), TP-27 (0' – 4'), TP-29 (10'), TP-30N (0' – 5'), and TP-30S (0' – 4'). The highest level of lead detected was 2,700 mg/Kg. Antimony, arsenic, barium, cadmium, chromium, lead, mercury, nickel, vanadium, and zinc were also detected in TP-21 (0' – 8'), but at concentrations below S-1/GW-1, S-1/GW-2, and S-1/GW-3 Cleanup Standards.

2.2.3 Groundwater Data Review

In total seven groundwater monitoring wells were sampled by Coler & Colantonio, Inc. during the recent supplemental investigation for a variety of laboratory analytical

parameters. Two samples were collected from deep monitoring wells and the remaining five samples were collected from shallow wells. Analytical parameters were selected based on previous soil and groundwater data, in an attempt to better delineate the extent of previously detected contaminants. Laboratory results for groundwater were compared to DEP Method 1 GW-1, GW-2, and GW-3 Cleanup Standards, although the GW-1 Cleanup Standard in only applicable to the wells within approximately 200 feet of Marshall Street. Recent laboratory results for groundwater are summarized in Table 2.

Samples from wells GZA-1, WE-91-2S, WE-5, and WE-5S were analyzed for dissolved lead and silver. Neither of these metals was detected in any of the wells. The sample collected from monitoring well WE-5 was also analyzed for dissolved antimony, arsenic, barium, beryllium, cadmium, chromium, mercury, nickel, selenium, thallium, vanadium and zinc. Barium and zinc were detected in WE-5, but at concentrations below the GW-1, GW-2, and GW-3 Cleanup Standards.

Samples from wells GZA-1, WE-91-2S, WE-91-2D, WE-5S, WE-2S, and WE-7D were submitted for VOCs analysis. Chloroform was detected in the samples collected from WE-91-2S and WE-91-2D and methyl tert butyl ether (MtBE) was detected in the samples collected from WE-91-2S, WE-91-2D, and WE-5S. Neither of these compounds was present at concentrations which exceeded the GW-1, GW-2, or GW-3 Cleanup Standards.

A sample from well WE-5 was submitted for SVOC analysis, pesticide analysis, and PCB analysis. None of these compounds were detected in the sample.

2.2.4 Sediment Data Review

Three sediment samples were collected during the recent supplemental investigation. Two of these samples were collected from the pond located on the eastern portion of the Site (AOC-1) and the third sample was collected from the wetlands located on the western portion of the Site (AOC-5). Sediment samples were decanted of water and the solids portion of the samples were used for analysis. Sediment samples have been compared to DEP Method 1 S-1/GW-1, S-1/GW-2, and S-1/GW-3 Cleanup Standards as well as to DEP promulgated Threshold Effect Concentrations (TECs). TECs were developed as "benchmark screening values" for freshwater sediments to evaluate risks to benthos organisms. The TEC screening levels are intended to identify contaminant concentrations below which harmful effects on sediment-dwelling organisms are not expected. The DEP Cleanup Standards are used for comparison purposes only and are not meant to reflect acceptable ecological exposure concentrations or relevant cleanup standards. Laboratory results for sediments are summarized in Table 3.

Samples from North Pond, South Pond, and SED-8 were submitted for antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, silver, selenium, thallium, vanadium, and zinc analysis. Nickel was detected in both the pond samples and arsenic, barium, chromium, lead, vanadium, and zinc were detected in all three samples. No metals were detected above TECs or Method 1, S-1 Cleanup Standards in either of the

sediment samples collected from the pond. Lead and mercury were present in SED-8 at concentrations above the TECs, but below the Cleanup Standards. No TECs have been established for barium or vanadium.

SED-8 was submitted for analysis of SVOCs, pesticides, and PCBs and both pond samples were submitted for analysis of VOCs. None of these compounds were detected in the sediment samples.

2.2.5 Landfill Gas

Four landfill gas wells were sampled on September 29, 2005. Landfill gas wells were initially field screened for volatile organic compounds (VOCs) using a PID and for percent methane (percent Lower Explosive Limit calibrated for methane), hydrogen sulfide, and percent oxygen using a multigas meter. The wells were then purged of four bore volumes using a portable vacuum pump, prior to a second round screening and the collection of landfill gases in "SUMMA Polished" stainless steel canisters. Screening results are summarized in Table 4.

Samples from each of the landfill gas wells were submitted for analysis utilizing EPA Method TO-14. Chloroform, detected at a concentration of 3.22 ug/m^3 or 0.66 ppbV in VW-3, was the only compound detected in any of the landfill gas samples. This level of chloroform is well below the DEP Allowable Threshold Concentrations (ATC) of 660 ug/m^3 and approximates the DEP Massachusetts Contingency Plan (MCP) GW-2 background concentrations for indoor air of 3 ug/m^3. Because the chloroform was detected in the soil gas, any extrapolation to indoor air would include significant dilution factors.

2.3 Conclusions of Data Review

The data gathered from the additional investigation does not significantly alter any of the previous conclusions. No contaminants were detected in this more recent round of assessment and sampling at levels of concern that had not already been previously identified and addressed in the initial Conceptual Remedial Plan.

Sediment and groundwater sampling in the pond in AOC-1 document that chlorinated solvents are not impacting the ecology or general condition of the pond. Additional groundwater sampling in AOC-1 further documents the nature and extent of lead, silver, and VOCs, specifically chlorinated solvents, in the groundwater.

The installation and sampling of the Vapor Wells installed in AOC-2 confirm that gases produced from the fill in this area do not represent a potential threat or future threat to the proposed residences. Sampling of the shallow and deep groundwater monitoring wells in AOC-5 at the downgradient side of the major fill area did not detect any contaminants above the most stringent (health protective) DEP Cleanup Standards. This further documents that contaminants are not leaching from the landfill and impacting the groundwater in the area. The volume of fill material in AOC-2 was estimated using a

computer program specifically designed to estimate cut and fill that incorporates existing topography and the basal "cut". The topography of this area is particularly varied and difficult to map due to the prior reworking for aggregate mining in the area. This estimate determined that approximately 8,000 cubic yards of fill material require relocation. This volume of soil is less than our previous "Low Range" of 12,000 cubic yards.

The nature and extent of construction debris or fill in AOC-3 has been confirmed. No previously undetected contaminants were detected in this area and the concentrations of contaminants detected were within the ranges expected based on prior investigations. Specifically the levels of lead silver and chlorinated solvents were similar to the levels previously detected. Sampling of the underlying native soils better documented the basal extent of contaminants and further documented that the underlying soils are not significantly impacted with contaminants. The volume of fill material was estimated using a computer program specifically designed to estimate cut and fill that incorporates existing topography and the basal "cut". Where appropriate, data points and calculations for this program were adjusted to provide a conservative, or an overestimate of the volume of material. This estimate determined that approximately 10,000 cubic yards of fill material was located along Marshall Street. This region was divided into two areas: a smaller southern area with 600 cubic yards of debris and a larger northern area of 9,140 cubic yards. This volume of soil exceeds our previous "High Range" of 9,000 cubic yards, however the conservative nature of our estimate and number of data points used to determine the estimate provide us with a high degree of certainty that the actual volume of fill material will not exceed the 10,000 cubic yard estimate.

Sediment sampling proximal to AOC-5 detected lead and zinc above the TEC sediment screening values but these levels were comparable to previously detected levels. No pesticides, PCBs, or SVOCs were detected in this sediment sample, further documenting that contaminants are not significantly impacting these wetlands.

Overall the supplemental assessment has had minor overall impact on the nature of contamination at the property. The volume of materials in AOC-3 has increased, but the volume of material to be consolidated in AOC-2 has decreased. Our overall certainty of the effectiveness of following Conceptual Remedial Plan has increased.

3.0 CONCEPTUAL REMEDIATION PLAN

Since 2002, Coler & Colantonio, Inc. has conducted a thorough environmental assessment of the former Bird Property. The findings of this assessment have provided a sufficient understanding of the nature and extent of recognized environmental concerns at the subject property to formulate a Conceptual Remediation Plan for the Site and to develop preliminary cost estimates for future remedial and compliance costs. The details of the Conceptual Remediation Plan are discussed in the following sections of this document. The estimated costs of the anticipated remedial activities are presented in the "*Post Permitting - Projected Remedial and Compliance Costs"* spreadsheet which is

attached to this document as Appendix A. Projected costs are presented as "High Range" and "Low Range;" actual costs are anticipated to fall within these ranges, dependent upon outstanding regulatory compliance matters and any unforeseen conditions that have not been anticipated. A 15% contingency has been added to the sub-total to account for any potential unforeseen conditions.

"Post Closure Monitoring" of the landfill is a final line item that will be paid for via a "NET Funded Amount", similar to an annuity. Conversations with the Bureau of Waste Prevention (BWP) indicate that the 30 year post closure monitoring period is adjustable based on contaminant levels and that some post closure monitoring periods have been reduced to three years. Based on the low levels of contaminants detected in the soil gas and groundwater in this area, Coler & Colantonio, Inc. has used conservative (health protective) values of five years and 20 years for our cost estimate. Based on the debris and contaminant levels detected at the Site, Coler & Colantonio, Inc. believes that the actual required period will be closer to the five year period.

3.1 Background

Response Actions have been conducted at the Site from 1983 until 2002 by EPA and the DEP. The EPA and DEP have not been compensated for the response actions conducted and, based on conversations with the DEP, an approximately $4,000,000 lien ($1.2 million in hard costs and the remainder in interest accumulated over the years) has been placed on the property to recover these costs. The remedial activities conducted at the Site did not include a determination of No Significant Risk at the Site or an achievement of a permanent solution; therefore, completion of DEP and possibly EPA, regulatory requirements is necessary prior to bringing the Site into regulatory compliance.

Projected costs outline a variety of reports that are anticipated in order to obtain compliance with the DEP. Included in these costs are "Meetings, negotiating an ACO and Covenant Not To Sue;" this expense is based on prior experiences negotiating Administrative Consent Orders (ACOs) with the DEP. This ACO will outline anticipated reports, associated remedial tasks, and a timeframe for completion of these tasks. In previous meetings the DEP has indicated that it will be accommodating and reasonable in these requirements, in order to secure payment of the outstanding debts of the property while achieving a permanent solution for the property.

A Covenant Not To Sue can also be established with the Attorney General's Office to eliminate third party liabilities against the present and new owners. This legal document will be between the current and future property owner(s) (the developer), the DEP, the Town and abutting property owners and will strictly limit any potential future liability of the new property owner. The Covenant Not To Sue can be coupled with an ACO to require the future owner to cleanup the Site appropriately within a mutually agreed upon timeframe.

3.2 Findings

Coler & Colantonio, Inc. completed an initial assessment reconnaissance in order to evaluate appropriate response actions that would be required by the ACO. Initially, eight Areas of Concern (AOC), identified on the attached Site Plan, were identified by numerous reconnaissance of the property. However, subsequent sampling and analysis eliminated or resolved three of the AOCs identified in the Phase I. Analytical testing of select media (soils, groundwater, sediments, and/or surface water) within the eliminated AOCs did not detect contaminants of concern above applicable regulatory standards. Removal of the materials (empty discarded tanks and drums) that generated the AOC will be necessary and are covered as hard costs associated with site grubbing and clearing in the Comprehensive Project Development Pro-Forma. AOC-4 and AOC-5 were combined into one AOC (AOC-4) because of similar contaminants and relative contiguous location of these two AOCs. Historic and recent data is attached to this document as Table 1 through Table 7. A Site plan of sampling locations and Areas of Concerns is attached as Appendix B. The following AOCs will require assessment and remediation or mitigation of exposures prior to development:

3.2.1 AOC-1 - Eastern Groundwater

Recent and historic groundwater sampling has documented the presence of chlorinated solvents (specifically: trichloroethylene (TCE) and 1,2-dichloroethylene (DCE)) and low concentrations of metals in shallow and deep aquifers in this area of concern. A small portion of AOC-1, roughly 150 feet west of and parallel to Marshall Street, is located within the Zone II of the public water supply. A wide variety of detailed assessment conducted by the DEP was not able to locate the source of the chlorinated solvents. Wehran Engineering Corporation completed a Phase II Comprehensive Site Assessment for the DEP in June of 1992, and thereafter IT Group prepared a Draft Phase III Remedial Action Plan that selected Monitored Natural Attenuation (MNA) as the most feasible solution. A Draft Class C Response Action Outcome Statement was prepared in conjunction with the Phase III Remedial Action Plan.

Additional sampling, risk characterization and remediation are recommended in this AOC to mitigate future exposure and enhance the proposed future development of the property. Recent and historic sampling detected concentrations of chlorinated solvents in several wells that exceed Method 1 GW-2 Cleanup Standards. However, sampling results indicate that levels of impact above the Method 1 GW-2 Standard are isolated proximal to the onsite pond. Proposed development plans do not place structures over this area, therefore the potential exposure associated with the chlorinated solvents is greatly mitigated.

The aggressive remediation of groundwater is proposed to reduce overall contaminant mass and further mitigate any potential risks associated with the chlorinated solvents in the groundwater. In order to more rapidly reduce contaminant levels, Coler & Colantonio, Inc. has proposed an ex-situ activated carbon groundwater treatment system. Simultaneously, the groundwater downgradient of the system can be injected with

nutrients to enhance in-situ anaerobic bioremediation of the chlorinated solvents downgradient of the influence of the treatment system. A pilot study would be conducted prior to the wide scale injection of nutrients to document the effectiveness of the nutrients. The combination of these two remedial technologies initiated at the outset of infrastructural site development will decrease the contaminant mass sufficiently to support residential development as a later phase of the project and minimize potential stigmas while not delaying the project. The combined approach to remediation will mitigate future liabilities by supporting the Brownfields Covenant Not To Sue by means of overall contaminant reduction while enhancing public interest for the project.

Low levels of metals (lead and silver) have also been detected in the groundwater of AOC-1 proximal to Marshall Street. The source of these metals in the groundwater is suspected to be metal and construction debris piles and fill type soils in AOC-2 and -3. Coler & Colantonio, Inc. recommends that the surface debris and contaminated fill material in these areas of concern be removed to reduce potential leaching to the Zone II groundwater and for public safety reasons. The tasks associated with this removal are addressed in AOC -2 &-3. If removal of this material alone is not sufficient to reduce contaminant levels to below applicable standards; Coler & Colantonio, Inc. is confident that the low concentrations detected and the minimal potential human and ecological exposure will allow the previously recommended groundwater modeling and risk characterization to expedite "closure" of the metals in groundwater. The estimated costs associated with relocation of fill material are covered under the remedial actions of AOC-3.

The estimated Low Range includes: the installation of additional monitoring wells to further delineate the extent of the groundwater impact proximal to the proposed new construction; the sampling and laboratory analysis of soils, groundwater, surface water, and sediments; completion of a Stage II Ecological and Method 3 Human Risk Characterization; groundwater modeling; and ex-situ and in-situ groundwater treatment. Operation and maintenance of a pump and treat system for approximately two months and injection of 4,000 pounds of Regenesis® Hydrogen Release Compound (HRC®) or a similar bioremedial additive, dependent upon the results of pilot studies, are covered by the Low Range Estimate. HRC® is a bioremedial additive that is designed to enhance anaerobic bioremediation by providing an available carbon source to the indigenous bacteria. HRC® or a similar product will be injected into the groundwater through the overburden soils along two 700 foot long injection trenches are covered by the Low Range Estimate. The Low Range Estimate for AOC-1 includes pumping and treating approximately 13 gallons per minute for approximately 60 days to remediate the groundwater. Dependent on the successfulness of the remediation, the High Range assumes treatment for an additional 30 days. The Low Range Estimate assumes 1,000 pounds of activated carbon will be utilized in the two month period. This will create a significant mass reduction of contaminants, which will ease regulatory and PIP review while simplifying risk characterization and groundwater modeling for closure of the Site. In order to close AOC-1, a combination of groundwater modeling and risk characterization may also be utilized to document that the contaminants at the Site will not impact the Town of Holliston drinking water supply well located approximately two

miles south of the Site. A Method 3 Risk Assessment is proposed by the Low Range Estimate to support a Condition of No Significant Risk. The estimated costs associated with relocation of fill material are covered under the remedial actions of AOC-3.

The estimated High Range includes: all Low Range tasks with additional sampling and analysis, as necessary. The High Range Estimate also assumes an extended three month operation and maintenance period of a pump and treat system and injection of 8,000 pounds of HRC® (double the amount of the low range estimate)along three 1,000 foot long injection trenches. The High Range Estimate for AOC-1 includes pumping and treating 13 gallons per minute for 90 days to remediate the volume of groundwater estimated to be located within the overburden soils in an area of 200 feet by 240 feet. This area is approximately equal to the area currently impacted above Method 1 GW-2 Cleanup Standards. The High Range Estimate also assumes 1,000 pounds of activated carbon will be utilized in the three month period. Dependent upon the influent concentrations to the system, increased flow and extraction points could be readily implemented, at minimal additional costs, to further enhance the system and reduce contaminant mass. A Method 3 Risk Assessment is proposed to support a Condition of No Significant Risk, but a Method 2 Risk Assessment may be possible, dependent of the effectiveness of the groundwater treatment.

3.2.2 AOC-2 - Access Road Loop Area

Historic documents identify prior filling of a variety of construction debris, including high percentages of asphalt shingles, tarpaper and drums containing roofing tar in AOC-2. Observations made by Coler & Colantonio, Inc. confirm the existence and nature of the construction debris, tarpaper and shingles. The drums previously located in this area were removed with DEP and EPA oversight in the 1990s. The remaining fill material is not structurally suited for construction, without complex structural and geotechnical design. Accordingly, the only proposed construction in this area after installation of an appropriate engineered barrier is for recreational type usage, golf putting areas, tennis courts, gazebos, etc. This limited site usage also minimizes wetland permitting, since the fill material is located within the 200 foot wetland buffer. Presently, a zero to six-inch layer of sand covers this fill material. Coler & Colantonio, Inc.'s discussion with various personnel at the DEP- BWP suggests that a synthetic membrane liner covered by one to two additional feet of clean fill material will provide a engineered barrier to mitigate future exposure and leaching and will enhance stabilization of this fill material. Initial conversations with the DEP indicated that the synthetic membrane liner would not be necessary and the Initial Site Assessment has not been completed at this date; therefore it is uncertain whether the membrane will be required. Nonetheless costs of $250,000 and $300,000 have been used as Low Range and High Range estimates, respectively. In addition a specialist in landfill permitting and design will be contracted to oversee these processes. Our Low Range assumes $25,000 and our High Range assumes $50,000.

Costs associated with slope stabilization are included in the Comprehensive Project Development Pro-Forma under the $1,280,000 allocated for "Site Work – Roadway". In addition, an Activity and Use Limitation (AUL) is anticipated on this area and AOC-4.

Estimates of the volume of construction debris in AOC-2 range between 50,000 and 70,000 cubic yards. The volume of fill material requiring relocation in AOC-2 was estimated using a computer program to estimate the cut and fill. The topography of this area is particularly varied and difficult to map due to the prior reworking for aggregate mining in the area. This estimate determined that approximately 8,000 cubic yards of fill material require relocation. This volume of soil is less than our previous "Low Range" of 12,000 cubic yards. Preliminary estimates indicate that the consolidation of fill from AOC-2 and AOC-3 will add approximately ten feet of fill in height to the existing material, which will be act to level the future recreational area proposed for the tennis courts and putting greens.

Based on the materials, limited concentrations contaminants detected, and volume of fill in this area of concern, it is not necessary, feasible or practical to remove and dispose of this construction debris. Semi Volatile Organic Compounds (SVOCs), pesticides, PCBs, lead, mercury, and silver were detected at levels that require additional assessment including a Stage II ecological screening. Based on the low concentrations of contaminants detected, Coler & Colantonio, Inc. believes that a Risk Characterization, coupled with the covering of the historic fill, and the implementation of an AUL will mitigate risks and potential future exposures sufficiently to complete a Permanent Solution and achieve a Condition of No Significant Risk for this portion of the property.

The estimated Low Range includes: the sampling and laboratory analysis of soils, groundwater, surfacewater and sediments; completion of a Stage II Ecological and Method 3 Human Risk Characterization; relocation of 8,000 Cubic Yards (CY) of construction debris type fill material to consolidate construction material; construction of a one foot thick soil cover using 3,000 tons of clean material from off site sources, at a cost of $12 per ton for the material and delivery; construction of a membrane cap of the landfill; preparation of an Initial Site Assessment for the Massachusetts Bureau of Waste Prevention (BWP); preparation of a Comprehensive Site Assessment for the BWP; employment of a Landfill Permitting contractor, submittal of DEP and BWP compliance fees; wetland permitting; and filing of an AUL.

The estimated High Range includes: all Low Range tasks; with additional sampling and analysis, as necessary; disposal of 1,000 tons of construction debris (assuming a cost for transport and disposal of $92.00/ton); relocation of 8,000 CY construction type fill material to consolidate construction material; plus the installation of a two foot thick soil cover using an estimated 6,000 tons of clean material from off site sources, at a cost of $12/ton for the material and delivery. The 1,000 tons of material being disposed of off site assumes that contaminated material may be encountered during construction and it will be beneficial to dispose of the material off site at a licensed facility. This may or may not be necessary but is used for High Range purposes in order to provide a conservative estimate of clean-up costs.

3.2.3 AOC-3 - Debris Field - Marshall Street

As discussed in AOC-1, historic documents identify prior dumping of a variety of materials, principally construction debris along Marshall Street. Site inspections and test pits in this area have confirmed various mounds of construction debris, empty rusted drums and tanks, and remnants from the former mink farm.

The nature and extent of construction debris or fill in AOC-3 has been confirmed by recent trenching and test pits conducted in this area. No previously undetected contaminants were detected in this area and the levels of lead silver and chlorinated solvents were similar to the levels previously detected or anticipated. The volume of fill material was estimated using a computer program specifically designed to estimate cut and fill that incorporates existing topography and the basal "cut". Where appropriate, data points and calculations for this program were adjusted to provide a conservative, or an overestimate of the volume of material. This estimate determined that approximately 10,000 cubic yards of fill material was located along Marshall Street. This region was divided into two areas: a smaller southern area with 600 cubic yards of debris and a larger northern area of 9,140 cubic yards. This volume of soil exceeds our previous "High Range" of 9,000 cubic yards, however the conservative nature of our estimate and number of data points used to determine the estimate provide us with a high degree of certainty that the actual volume of fill material will not exceed the 10,000 cubic yard estimate.

Total Petroleum Hydrocarbons (TPH), barium, lead, and silver have impacted the soils in this area above the applicable DEP Method 1 Cleanup Standards. The on-site relocation and partial removal of the general debris piles and subsurface debris (approximately 10,000 CY) is recommended throughout AOC-3. This recommendation is based on the potential impact to the environment and the potential risk to public safety but not public health. The costs associated with backfilling this area with 15,000 tons or approximately 10,000 cubic yards of fill is included in both our cost ranges. The Comprehensive Project Development Pro-Forma ($600,000 under "Site Work - Earthwork") includes the costs for additional filling and compaction of this area to an elevation of suitable grade for construction and therefore this expense is not included in the attached cost estimate.

The estimated Low Range includes: the sampling and laboratory analysis of soils and groundwater, completion of a Method 3 Human Risk Characterization; relocation of 8,700 CY fill material and debris to AOC-2; disposal of 2,000 tons of construction debris at an instate licensed landfill (assuming a cost for transport and disposal of $29.00/ton); and the backfilling of the areas of removed debris using an estimated 15,000 tons of material from off site sources, at a cost of $12 per ton for the material and delivery. This Low Range estimate also assumes stabilization of 1,000 tons of lead contaminated soils at a rate of $30/ton. The stabilization is projected to assure that metals in the relocated soils do not leach into the groundwater, once these soils have been relocated.

The estimated High Range includes: all Low Range tasks with the exception of soil stabilization; additional sampling and analysis, as necessary; and the off site disposal of

4,000 tons of soil at an instate landfill (assuming a cost for transport and disposal of $29/ton), the disposal of 1,000 tons of construction debris (assuming a cost for transport and disposal of $92/ton), and the relocation of an additional 5,000 cubic yards of construction debris to AOC-2. A Method 3 Risk Assessment is proposed to support a Condition of No Significant Risk, but a Method 2 Risk Assessment may be possible as a result of additional soil disposal.

3.2.4 AOC-4 & AOC-5 Western Wetlands Debris Field "AOC –4"

AOC-4 and AOC-5 were consolidated into one Area of Concern: AOC-4, because of the nature and extent of contaminants, source materials (fill), topography, and the relative proximity of these AOCs. These areas are made up of multiple debris piles that were emplaced into the western wetlands of the property. Debris material principally consist of demolition debris and general refuse extending as far as 200 feet to the south of the access road along the northwest property line (Holliston & Hopkinton town lines) in the Western Wetlands Area. The metals barium, chromium, lead, mercury, and silver; and PAHs were detected slightly in excess of the applicable DEP Cleanup Standards.

Organic compounds, copper, mercury, lead, PCBs and pesticides were also detected above DEP TEC screening levels but not above Method 1 Cleanup Standards. Accordingly, a Stage II Ecological screening is warranted in these wetlands to address this potential ecological threat. Based on the levels detected, the Stage II Ecological screening (surfacewater analysis did not detect any constituents) will document that the fill materials are not having an adverse effect on the ecology of the area.

Coler & Colantonio, Inc. recommends that additional assessment to better delineate the extent of lead and PAH impact to the soils and sediment be conducted, along with a Stage II Ecological Screening. Recent attempts to collect more sediment and surfacewater samples were not completed because no water was present in these areas. The low levels of petroleum constituents detected represent minimal ecological or human risk, however additional assessment coupled with a Risk Characterization is recommended to properly address these constituents. The nature of the surficial debris observed in these areas represents a public safety or aesthetic issue rather than public health concerns. In addition, fill material containing steel, concrete and rubble represents a public safety issue and should be addressed by removal or by covering of the area with a suitable material and subsequent compaction of this material.

The estimated Low Range includes: the installation of additional monitoring wells; the sampling and laboratory analysis of soils, groundwater, surface water, and sediments; completion of a Stage II Ecological Screening and Method 3 Human Risk Characterization; soil stabilization of 2,000 tons of material at $30/ton; the construction of a two foot thick soil cover using an estimated 1,000 tons of material from off site sources, at a cost of $12 per ton for the material and delivery; restricted access utilizing a fence; appropriate erosion controls; wetlands permitting; wetlands restoration; and filing of an AUL to achieve a Permanent Solution for these areas.

The estimated High Range allows for full access to the area and includes: all Low Range assessment tasks excluding the fence installation; plus additional sampling and analysis, as necessary; disposal of 3,000 tons of material at an instate landfill (assuming a cost for transport and disposal of $29/ton); soil stabilization of 2,000 tons of material at $30/ton, and the construction of a three foot thick soil cover using an estimated 3,000 tons of material from off site sources, at a cost of $12 per ton for the material and delivery. A Method 3 Risk Assessment is proposed to support a Condition of No Significant Risk, but a Method 2 Risk Assessment may be possible as a result of additional soil disposal.

Erosion control assumes 1,500 feet of submerged silt fence or silt fence and hale bales at a cost of $20/foot for AOC-4. Wetlands restoration costs are approximate and would vary dependent upon regulatory requirements or agreements.

3.2.5 AOC-6-Access Road, AOC-7-Eastern Pond Area Drums, & AOC-8 Automobile Gasoline Tanks

Subsurface investigation in these areas of concern did not indicate that remediation or additional assessment was warranted, however the debris in and of itself requires removal for public safety and aesthetic purposes. This debris which includes construction related debris, tires, piping, wood, empty rusted drums, tanks, and metal cages represents a public safety concern, but does not pose a threat to public health. General housekeeping and removal of the debris is included in the Comprehensive Project Development Pro-Forma under the $1,280,000 allocated for "Site Work - Grubbing & Clearing" and costs associated with these tasks are not included in the attached Post Permitting Projected Remedial and Compliance Costs. Environmental assessment of the Site confirms that this is a reasonable estimate. Additional sampling of surficial soils and associated oversight by a qualified environmental professional is necessary during the site improvement and development process. Since environmental scientists will be present at the Site during all the above activities, no additional costs have been assigned for these services.

Tables

Appendix A

Post Permitting Projected Remedial And Compliance Costs – Ranges

Appendix B

Site Plan – Areas of Concern

Appendix C

Test Pit Logs

Appendix D

Vapor Well Logs