Response Action Outcome Statement

Former Bird Machine Company
100 Neponset Street
Walpole, Massachusetts
Release Tracking Number 4-3024222

Prepared for:

Baker Hughes Incorporated
Houston, TX

Prepared by:

AMEC Earth & Environmental, Inc.
2 Robbins Road
Westford, Massachusetts 01886
(978) 692-9090

November 2011

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

ACBM	Asbestos-Containing Building Material
AMEC	AMEC Earth & Environmental, Inc.
AUL	Activity and Use Limitation
bgs	below ground surface
BHI	Baker Hughes Inc.
BMC	Bird Machine Company
BWSC	Bureau of Waste Site Cleanup
bwt	below water table
CAM	Compendium of Analytical Methods
CMR	Code of Massachusetts Regulations
CSA	Comprehensive Site Assessment
CSM	Conceptual Site Model
cVOC	chlorinated volatile organic compounds
CY	cubic yard
DCB	1,4-dichlorobenzene
dioxin	chlorinated dioxins and furans
DDA	Demolition Debris Area
EPC	Exposure Point Concentration
EPH	extractable petroleum hydrocarbon
ft	feet
IRA	Immediate Response Action
ISI	Phase I Initial Site Investigation Report
LRA	Lead Release Area
LSP	Licensed Site Professional
MCP	Massachusetts Contingency Plan
mg/kg	milligrams per kilogram
NAPL	Non-aqueous phase liquid
ND	Not Detected by laboratory analysis
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	perchloroethylene, aka tetrachloroethylene
RAM	Release Abatement Measure
RC	Reportable Concentration
RTN	Release Tracking Number
SVOC	semivolatile organic compound
TCB	1,2,4-trichlorobenzene
TCE	trichloroethylene
UCL	upper concentration limit
USGS	U.S. Geological Survey
VC	vinyl chloride
VOC	volatile organic compound
VPH	volatile petroleum hydrocarbon
Weston	Weston Solutions, Inc.

1.0 INTRODUCTION

AMEC Earth and Environmental Inc. (AMEC) has prepared this Class C-2 Response Action Outcome (RAO) on behalf of Baker Hughes, Inc. (BHI) for portions of the former Bird Machine Company (BMC) Property located in Walpole, Massachusetts (the Site). Release Tracking Number (RTN) 4-3024222 is assigned to this Disposal Site under the Massachusetts Contingency Plan (MCP).

The Site includes the Demolition Debris Area (DDA), the Manufacturing Building Area (MBA), the Lead Release Area 3 (LRA3), and the South Rail Spur (SRS) portions of the property. A Draft Phase II CSA Addendum for the DDA is being provided in conjunction with this RAO, as an update to a July 2007 Phase II CSA (Weston 2007). The Addendum presents the data collected at the DDA from June 2007 to the present, and updates to the Phase II CSA as a result of the additional data collected, including an updated risk characterization (AMEC 2011a). A Phase II CSA addressing the three other areas included in this RTN was finalized on October 18, 2011 (AMEC 2011b). These two Phase II CSAs together characterize the single unclosed RTN (4-3024222) at the property.

The following RTNs on the BMC property have been closed:

- RTN 4-3023575 included a portion of the Neponset River impacted by oil releases outside the subject Site. A Class A-2 RAO was submitted for the Neponset River Site in January 2010 (Weston, 2010).
- RTN 4-3003310 included a #6 Fuel Oil Spill Area located within the MBA. A Completion Statement for this Waiver Site was filed in April 1992.
- RTN 4-3017485 included a release of petroleum hydrocarbons in a waste Reclamation Area within the MBA. A Class A-2 RAO was submitted for the Site in February 2002.
- RTN 4-3024883 included a Non-Aqueous Phase Liquid spill located within the MBA. An IRA Completion Statement was filed for this Site in July 2005.
- RTN 4-3002469 included an area of fill along a Cart Path located approximately 400 ft to the west of the Site. A Waiver Completion Statement was submitted in June 1993.

This RAO Statement was prepared in accordance with the MCP requirements listed at 310 CMR 40.0000 *et seq,* to document that No Substantial Hazard exists at the Site in its current condition and to document steps needed to achieve a Permanent Solution. The MassDEP Bureau of Waste Site Cleanup (BWSC) Response Action Outcome Statement (BWSC-104) will be attached to the final version of this document in Appendix A.

1.1 Site Description

The Site is located in the central portion of the 134-acre Property. The approximate universal transverse mercator coordinates for the Site are 4,664,600 North and 312,700 East (World Geodetic System 1984/North American Datum 1983), based on a 1987 United States Geological Survey Franklin Quadrangle Map. The Site Location Map, Figure 1, shows the regional location of the Site. The Neponset River flows around the Site from the south to the

northeast; and Ruckaduck Pond is located to the west. Access to the Site is obtained via Neponset Street, which is shown on Figure 2.

The Property is zoned Limited Manufacturing, which allows a wide range of commercial, institutional, and residential uses. The Property is also grandfathered for industrial use. The surrounding area is a mixture of residential and recreational (undeveloped forests and wetlands) uses. There are 273 residences with an estimated 743 residents located within ½-mile of the Site. There are presently no inhabited houses within 500 ft of the Site, and no schools, daycare centers, playgrounds, or parks within 500 ft. The 1987 USGS Franklin, Massachusetts quadrangle also depicts the Boyden School located approximately 0.35 mile southeast of the Property, and 0.5 miles southeast of the Site.

The Town of Walpole water supply Zone II boundary is more than 500 ft from the Site, near the confluence of Cedar Swamp Brook and the Neponset River at the northeast end of the property. The Town of Walpole Zoning Bylaws include a Water Resource Protection Overlay District which defines and maps four aquifer "areas" within the Town:

- Area 1 is the area of pumping influence of the existing water supply wells.
- Area 2 designates potentially productive aquifer areas that may be appropriate for the installation of future water supply wells.
- Area 3 is designated as the primary recharge area for the Town of Walpole aquifer, and is defined as areas of buried stratified drift deposits with less than 40-ft thickness located upgradient of Areas 1 and 2. According to the Zoning Bylaws, Area 3 is expected to collect precipitation and directly transmit it to aquifers or areas of pumping influence through groundwater flow.
- Area 4 designates secondary recharge areas. Precipitation recharging groundwater in Area 4 would be expected to discharge to surface water bodies, which potentially contributes to the Town of Walpole aquifer in downstream locations.

The BMC Property is located in a designated Area 3, Primary Recharge Area in the Water Resource Protection Overlay District. On 25 October 2007, the Town of Walpole Board of Sewer and Water Commissioners issued a letter stating that the Town had determined that the entire BMC Property was located in a Potential Drinking Water Supply Area (Walpole, 2007). Based on this letter, it is the opinion of the current LSP-of-Record that the appropriate groundwater categories for the Site are GW-1, GW-2, and GW-3.

Manufacturing operations at the Property were discontinued in 2004, and most buildings associated with the former BMC have been demolished. There is typically one worker at the Property, a security guard. Current receptors at the Site are limited to occasional trespassers.

1.2 Disposal Site History

Manufacturing operations have occurred at the property since at least 1832, probably due to the availability of water power from the Neponset River which was dammed to create a mill pond. Industries have included a shingle mill, woolen mill, emery mill, and rag sorting plant, prior to the beginning of operations by BMC in 1920. BMC primarily manufactured and repaired industrial centrifuges on the Property. BHI acquired BMC in 1989, when it became an operating unit

within Baker Process, Inc., a wholly-owned subsidiary of BHI. Baker Hughes Process Systems, Inc. is the present owner of the Property. Histories of the four areas that comprise the Site are provided below.

Manufacturing Building Area (MBA)

The manufacturing facility developed as part of BMC starting in 1920 was comprised of several buildings utilized for metal casting and machining, including lathing, welding, milling, drilling, cutting, grinding, and sheet metal fabrication. The metal working machines were situated in sumps, which collected machining oil, lube oils, and metal cuttings, that accumulated as a result of everyday use. Some of this oil may have been released through the floor of the sumps and into the ground beneath. Degreasing operations were also conducted in these buildings using various solvents. Portions of the MBA were built on filled land as indicated in Section 2.1 of the CSA (AMEC 2011b). Based on review of aerial photographs and site maps, the most recent building expansion and filling of land occurred prior to 1974. Fill including wood debris, glass bottles and jars, cans, pails, metal, and a few crushed waste drums were observed in the MBA during an IRA initiated in 2003. Soil also appeared to contain waste paint pigment. Manufacturing operations at the Site were discontinued in 2004.

Lead Release Area 3 (LRA3)

LRA3 is located north of the MBA and was identified from test pit investigations performed in December 2004 and May 2005. The date(s) of filling in this area are unknown but are believed to predate 1974, based on review of topographic maps. The fill material in LRA3 is similar to fill material described for MBA: primarily sandy soil, with pockets of waste materials and oil-stained soils, and characterized as containing MCP-reportable concentrations of lead, nickel, zinc, and petroleum hydrocarbons. Buried asbestos-containing building materials consisting of Transite sheets were also discovered in a portion of LRA3. Fill depth in LRA3 was generally up to six feet bgs. Fill materials have been treated and removed as described further in Section 2.

South Rail Spur (SRS)

A geophysical survey was conducted at portions of the BMC Property including the SRS area in May 2006, and two areas of subsurface anomalies were identified. Test pits and soil borings were advanced in the SRS area in June 2006 to investigate these geophysical anomalies. Waste materials, including what appeared to be black abrasive material and metal shavings, were observed with other sandy fill at depths of 2 to 5 feet (ft) below the ground surface in the test pits. Samples of the fill and underlying soils were collected for analysis, and metals exceeding reportable concentrations included antimony, chromium III, lead, nickel, and zinc. The date(s) and origin(s) of fill deposited in this area are unknown.

Demolition Debris Area (DDA)

Placement of fill at the DDA or in the vicinity is believed to have started in the late 19th century coincident with the construction of the railroad and industrial development of the property. Filling in this area is believed to have ended in the 1970s based on aerial photography. The types of materials found in fill in the DDA include demolition debris, machining waste, and

testing waste. Some wastes were disposed in containers including 55-gallon drums. The types of contaminants found in wastes and environmental media include metals, PAH, EPH, dioxins, and asbestos. The fill at the Site was placed directly on the native soil surface, generally in depths of less than eight feet.

2.0 SUMMARY OF RESPONSE ACTIONS

Detailed chronologies of the investigations in each area of the Site are presented in the CSA reports (AMEC 2011a, AMEC 2011b). The Phase II investigations included test pitting, soil borings, well installations, and the sampling and analysis of soil and groundwater between 2004 and 2011. Release Abatement Measures (RAMs) and Immediate Response Actions (IRAs) were performed during this time and documented in status reports and completion reports for the RTNs included in the Site, before these RTNs were linked in the 2008 Tier IB permit. The removal actions throughout the Site are summarized below.

Manufacturing Building Area

RAM activities for the MBA specifically targeted lead and extractable or volatile petroleum hydrocarbons (EPH/VPH), with the goal of removing soils above the Upper Concentration Limits (UCLs) and S-1/GW-2 and -3 standards, when possible. A brief summary of soil removal and other remediation activities in the MBA is presented below:

- In July 2005 two excavations were conducted to remove metals-impacted soils associated with lead release areas (LRA1 and LRA2) north and east of Buildings 7-7C. The objectives of the RAM were to remove pockets of waste materials and affected soils and to restore the site to grade.
- In August 2005 a 15,000-gallon #6 fuel oil Underground Storage Tank (UST) located north of Manufacturing Building 6 was removed. Analytical results from the tank grave samples did not indicate the presence of reportable concentrations of EPH or VPH fractions.
- In April 2006 a stormdrain pipe replacement was conducted underneath former Building 6A to remove a potential migration pathway between the location of reportable concentrations of Oil or Hazardous Material (OHM) in soil (i.e., in the vicinity of MB-GP-2 and MB-B6) and the Neponset River, and to reduce the mass of OHM at the Site by removing impacted soils. Approximately 338 tons of contaminated soil and debris deemed unsuitable for reuse onsite was transported off-site for disposal.
- Between November 2007 and February 2008, 11 excavations (A01-A06 and A08-A12) were performed to reduce the mass of OHM underneath the former Manufacturing Buildings (i.e., elevated concentrations of metals and EPH). Existing drain, sewer, and fire protection lines encountered were removed or capped.

Excavation areas were backfilled to re-establish existing grades in the MBA.

Lead Release Area 3

Remediation activities for three areas within LRA3 specifically targeted lead and nickel, with the goal of removing soils above the UCLs and S-1/GW-3 standards, when possible. Remediation activities for the fourth area specifically targeted Asbestos-Containing Building Material (ACBM) found at the site. The following RAM activities were conducted in LRA3:

- Between July and October 2005 approximately 1,508 tons of ACBM–contaminated soils were removed from an area approximately 80 ft by 100 ft. The depth of excavation was

not documented but fill material in this area appeared to extend up to six feet bgs based on the adjacent test pits LR-TP-35, -36, and -37, and this depth is consistent with other fill in LRA3. A native silty layer was encountered at the bottom of the excavation.

- Between July through October 2005 in-situ soil treatment using a phosphate-based chemical fixation technology was performed in 13 stabilization cells within LRA3 and east of the ACBM removal activities.
- Between January and February 2006 approximately 1,937 tons of the phosphate-treated soil were excavated from LRA3 and transported off-site for re-use as daily cover. Note that treatment and excavation activities were conducted up to a pre-determined boundary (soil serving as a berm) so as not to impact the adjacent wetlands. Soil was excavated to approximately 5 ft bgs in this area.
- In July 2007 approximately 2,500 yards of overburden soil material were excavated from the berm that was located between the Neponset River wetlands and the prior excavations, to a maximum depth of 8 ft bgs.
- In October 2007 an additional 800 yards of surface soil (approximately 0 to 2 ft bgs) were excavated northwest of the 2005 excavation area.

Excavation areas were backfilled to re-establish existing grades in the LRA3 area.

No RAM or IRA activities were performed in the SRS area, considering the relatively lower levels of OHM in that area.

Demolition Debris Area

Waste source materials in drums and soils were transported off-site during RAM activities beginning in 2005. Approximately 2,191 tons of soil and debris were removed. The excavation ranged from 8-10 feet in depth in the western and eastern clearings and 13 feet in depth in the central clearing. All of the excavations were above the water table. Post excavation contaminants in soil included metals, dioxin, and petroleum compounds. Concentrations in the depth interval of 0-5 ft bgs were higher than in the depth interval of 5-15 ft bgs.

Asbestos-Containing Material (ACM) was encountered within the limits of the DDA fill, typically three feet in depth. Based on laboratory results, visible fibrous material was used as an indicator of ACM and excavation of soil continued until no visible ACM was observed. Approximately 1,106 tons of ACM and soil were transported off-site during an IRA performed in 2005. The excavation area was lined with geotextile and backfilled to surrounding grade.

3.0 NATURE AND EXTENT OF RELEASE

The nature and extent of remaining soil contamination at MBA includes metals (primarily antimony, mercury, nickel, and zinc) and extractable petroleum hydrocarbon (EPH) compounds at depths of up to eight feet bgs. The concentrations of metals and semivolatile organic compounds (SVOCs) have been reduced significantly by the soil excavation RAMs. The remaining elevated concentrations in soil are under and around the former locations of manufacturing buildings. Groundwater sampling indicates contaminant concentrations above drinking water standards in several areas: arsenic and chlorinated volatile organic compounds (cVOCs) in the area adjoining the river downgradient of the former manufacturing buildings, and chlorobenzenes in a single well in the North Parking Area. Based on the Phase II CSA (AMEC, 2011b), these groundwater contaminants do not represent a significant source of contamination to river sediment or surface water.

The nature and extent of remaining soil contamination at LRA3 includes metals (especially lead, nickel, and antimony) and EPH. The highest concentrations of soil contaminants are generally found between two and four feet bgs, or below the depths of RAM excavations. The RAM excavation boundary generally delineates the elevated concentrations remaining under the area. Groundwater sampling indicates an increase in concentrations of nickel in the downgradient well adjoining the river compared to upgradient locations, though concentrations are still below drinking water standards. The most recent sampling round in this area was May 2008, less than a year after the final soil RAM excavation. Therefore, the downgradient detections of nickel in groundwater may not reflect expected improvements in the aquifer from the cleaner fill materials recently emplaced in this portion of LRA3. Based on the Phase II CSA (AMEC, 2011b), nickel in groundwater does not represent a significant source of contamination to river sediment or surface water.

The nature and extent of soil contamination at SRS includes metals (especially antimony, barium, chromium, lead, nickel, silver, and zinc) and EPH at up to five feet bgs. The highest concentrations of soil contaminants are generally found in fill materials, which include a black abrasive grit. The lateral extent of fill material was visually confirmed in the field. Groundwater sampling indicates an increase in concentrations of nickel in the downgradient well adjoining the river compared to the upgradient well, though concentrations are still below drinking water standards. Based on the Phase II CSA (AMEC, 2011b), nickel in groundwater does not represent a significant source of contamination to river sediment or surface water.

The nature and extent of remaining soil contamination at DDA includes metals (primarily barium, cadmium, chromium, mercury, nickel, vanadium, and zinc), dioxin, and EPH, primarily at depths of less than five feet bgs within the Western and Central Clearing Area. Asbestos is present in surface and subsurface soil at the Site. The lateral extent of contamination coincides with the observed extent of fill in the area. Groundwater sampling indicates concentrations of metals and EPH above background, though still below drinking water standards, in downgradient wells between the DDA and Cedar Swamp Book. Surface water and sediment sampling in Cedar Swamp Brook indicate that potential contaminant migration pathways from surface runoff or groundwater discharge to surface water and/or sediment are not complete pathways.

4.0 SUMMARY OF COMPREHENSIVE SITE ASSESSMENT

The Phase II investigations included test pitting, soil borings, well installations, and the sampling and analysis of soil and groundwater between 2004 and 2011. Due to the discovery of various releases at the property, the Site includes multiple RTNs which have been linked together to facilitate administrative compliance with MCP requirements. Comprehensive Site Assessments have been completed for RTN 4-3024222, which is comprised of the DDA, MBA, LRA3, and SRS areas. The nature and extent of contamination in each area has been identified as described in Section 3 above. Source materials have been removed from DDA, MBA, and LRA3 by RAM and IRA activities completed between 2005 and 2011, as indicated in Section 2. The remaining contaminants in soil are primarily metals and EPH, and for DDA also dioxin and asbestos. Site groundwater contains metals and EPH above background, and downgradient of MBA contains metals, 1,4-dichlorobenzene, and cVOCs at concentrations above drinking water standards. Surface water and sediment surrounding the Site are not significantly impacted. Human health and environmental risk characterizations were performed for the Site based on the remaining levels of soil and groundwater contamination, in accordance with the MCP.

The results of the human health and environmental risk characterization indicate that the Site achieves a condition of No Significant Risk of harm to health, safety, public welfare, and the environment, with one exception. Based on the exceedances of drinking water standards in MBA groundwater and considering the location of the Site in a Potential Drinking Water Supply Area, the Site does not achieve a condition of No Significant Risk to human health (AMEC 2011a, AMEC 2011b). A Draft Phase III Remedial Action Plan (RAP) to select a permanent solution for groundwater contamination in the MBA was submitted for public comment on October 6, 2011 (AMEC 2011c). Responses to comments on the RAP are currently being developed. A final version of the RAP is expected to be submitted in December 2011.

5.0 PERMANENT SOLUTION IDENTIFIED IN PHASE III RAP

Based on the findings of the detailed evaluation in the Phase III RAP, Monitored Natural Attenuation (MNA) was selected as the remedial action alternative for Site groundwater (AMEC, 2011c). This alternative consists of active monitoring of natural processes to ensure attainment of cleanup goals. Natural processes that affect contaminant transport include dilution, dispersion, and sorption for all contaminants, and also biodegradation and volatilization for organic contaminants. Progress is monitored closely to ensure that cleanup objectives are met in a reasonable timeframe, and to assess the need for a contingent remedy if progress is not timely. MNA is expected to achieve a Permanent Solution and a condition of No Significant Risk at the Site within 5-10 years of implementation. MNA has already produced significant reductions in arsenic and cVOC concentrations at individual wells over the past four years of groundwater monitoring. This alternative appears capable of achieving or approaching background for cVOCs -- which are expected to require the greatest reductions in groundwater concentrations – and for the other contaminants. The particular areas in which MNA will be performed are shown on Figure 3.

Three remedial alternatives were evaluated in the RAP that are reasonably likely to be feasible Permanent or Temporary Solutions for the Site. These three alternatives are (1) MNA for all contaminants; (2) In Situ Chemical Oxidation for organic contaminants and MNA for arsenic; and (3) Pump & Treat for organic contaminants and MNA for arsenic. A detailed evaluation of the alternatives was performed using the eight criteria described in 310 CMR 40.0858. The three alternatives had the same relative rankings for the Effectiveness, Benefits, and Non-Pecuniary criteria. Alternative 1 (MNA) was ranked highest for Implementability, Cost, and Risks, and was ranked lowest for Timeliness. Alternative 2 was ranked highest for Timeliness and co-ranked highest (with Alternative 3) for Reliability, and was ranked lowest for Cost. Alternative 3 was co-ranked highest for Reliability, was ranked between the others for Cost, and was ranked lowest for Implementability and Risks. Considering these rankings Alternative 1 was selected as the most feasible alternative.

6.0 RAO STATEMENT

The RAO statement presented below has been formatted in accordance with the requirements of 310 CMR 40.1056.

40.1056(1)(a) Site Name, Address And MassDEP Release Tracking Number

Former Bird Machine Company
100 Neponset Street
Walpole, Massachusetts
Release Tracking Number 4-3024222

40.1056(1)(b) Class Of Response Action Outcome

In accordance with 310 CMR 40.1051(2), the conditions of a Class C-2 RAO have been achieved for this Site:

- A Draft Phase III evaluation performed pursuant to 310 CMR 40.0850 is expected to be completed in December 2011;
- A condition of No Substantial Hazard exists as documented in Appendix B;
- Sources of oil and/or hazardous materials (OHM) have been identified, characterized and to the extent feasible, eliminated; and
- Response actions to achieve a Permanent Solution are feasible and are to be conducted.

40.1056(1)(c) Method Of Risk Characterization

Method 3 Risk Characterizations have been performed as indicated in the Phase II Reports (AMEC 2011a, AMEC 2011b).

40.1056(1)(d) Relationship To Other Response Action Outcome Statements

Permanent Solutions have been achieved for other release tracking numbers associated with the former Bird Machine Company property, as summarized below.

- RTN 4-3023575 included a portion of the Neponset River impacted by oil releases outside the subject Site. A Class A-2 RAO was submitted for the Neponset River Site in January 2010 (Weston, 2010).
- RTN 4-3003310 included a #6 Fuel Oil Spill Area located within the MBA. A Completion Statement for this Waiver Site was filed in April 1992.
- RTN 4-3017485 included a release of petroleum hydrocarbons in a waste Reclamation Area within the MBA. A Class A-2 RAO was submitted for the Site in February 2002.
- RTN 4-3024883 included a Non-Aqueous Phase Liquid spill located within the MBA. An IRA Completion Statement was filed for this Site in July 2005.
- RTN 4-3002469 included an area of fill along a Cart Path located approximately 400 ft to the west of the Site. A Waiver Completion Statement was submitted in June 1993.

The RAO Statement present herein pertains to the only remaining release tracking number assigned to the property that has not yet been closed.

40.1056(1)(e) Post RAO Active Operation And Maintenance

Monitored Natural Attenuation represents a feasible Permanent Solution for the Site and will be implemented. Therefore, an Active Remedial Monitoring Program will be implemented to advance the Site from a Temporary Solution to a Permanent Solution.

40.1056(1)(f) Implementation Of Activity And Use Limitation

An AUL is not required to maintain the Class C-2 RAO.

40.1056(1)(g) Opinion From Licensed Site Professional

It is the opinion of the LSP that the requirements of a Class C-2 RAO as specified in 310 CMR 40.1051 (4) have been met. A condition of No Substantial Hazard exists at the Site. As documented in the Phase III evaluation, a Permanent Solution, Monitored Natural Attenuation, is feasible and will be conducted. The Tier I Permit for the Site, effective on February 28, 2008, will not expire until 2013. Future response actions will be conducted under this valid permit or, if response actions extend beyond February 28, 2013, extensions to this permit.

40.1056(1)(h) Certification Of RAO Statement

Certification of the RAO Statement is provided in the BWSC-104 transmittal form, to be included as Appendix A.

40.1056(1)(i) Comparison Of OHM Concentrations To Upper Concentration Limits

For all four areas of the Site (the MBA, LRA3, SRS and DDA), exposure point concentrations in soil and groundwater are all below Upper Concentration Limits (UCLs).

40.1056(1)(j) Indication as to Whether Analytical Data used to Support RAO were Generated Pursuant to MassDEP's Compendium of Analytical Methods

For all four areas of the Site (the MBA, LRA3, SRS and DDA), analytical data were collected after 2003 when the MassDEP issued the Compendium of Analytical Methods (CAM) and established data enhancement requirements as defined in "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data" (BWSC-CAM-VIIA, rev. 3.1 dated May 22, 2003).

40.1056(2)(a) Location And Boundaries Of The Site

The boundaries of the Disposal Site to which this RAO Statement applies are shown on Figure 2.

40.1056(2)(b) Demonstration That Uncontrolled Sources Have Been Eliminated Or Controlled

As documented in the Phase II CSA (AMEC, 2011b) and the Phase II CSA Addendum for the DDA (AMEC, 2011a), there are no uncontrolled sources.

40.1056(2)(c) Information Supporting That A Level Of No Significant Risk Exists

Not applicable for a Class C-2 RAO.

40.1056(2)(d) Information Documenting That No Substantial Hazards Remain

A Substantial Hazard Evaluation is presented in Appendix B.

40.1056(2)(e) Information Documenting The Extent To Which Levels Of OHM Have Been Reduced To Background

Not applicable for a Class C-2 RAO.

40.1056(2)(f) Achievement Of Upper Concentration Limits In Soil At Depths Greater Than 15 Feet

Not applicable for a Class C-2 RAO.

40.1056(2)(g) Copy Of Activity And Use Limitation Implementation

An AUL is not required for a Class C RAO.

40.1056(2)(h) Activity And Use Limitation Opinion

An AUL is not required for a Class C RAO.

40.1056(2)(i) Description Of Any Operation, Maintenance, And/Or Monitoring Required

An Active Remedial Monitoring Program will be implemented to advance the Site from a Temporary Solution to a Permanent Solution.

40.1056(2)(j) Steps To Be Taken To Achieve A Permanent Solution

Monitored Natural Attenuation, implemented as an Active Remedial Monitoring Program, will be conducted to achieve a Permanent Solution.

40.1056(2)(k) Data Usability Assessment and Representativeness Evaluation

A Representativeness Evaluation and Data Usability Assessment (REDUA) of the data used to support this RAO Statement is presented in the each of the following documents:

- Section 7.0 of the Phase II CSA (AMEC, 2011b) for the MBA, LRA3 and SRS; and
- Section 11.0 of the Phase II CSA Addendum for the DDA (AMEC, 2011a).

7.0 PUBLIC NOTIFICATIONS

Pursuant to the Public Involvement Plan (PIP) for the Site, a copy of a summary of this RAO Statement and a notice of its availability will be provided to members of the PIP mailing list, including the Walpole Department of Public Health and the Chief Municipal Officer. A copy of the entire RAO Statement will be provided to the PIP repository at the Walpole Public Library. A copy of the public notification letter is provided in Appendix C

8.0 REFERENCES

AMEC 2011a. Phase II Comprehensive Site Assessment Addendum for DDA, RTN 4-3024222, Former Bird Machine Company Site. Prepared by AMEC Earth & Environmental Inc. for Baker Hughes Inc. Draft, November 16, 2011.

AMEC 2011b. Phase II Comprehensive Site Assessment Report for RTN 4-3024222, Former Bird Machine Company Site. Prepared by AMEC Earth & Environmental Inc. for Baker Hughes Inc. Final, October 18, 2011.

AMEC 2011c. Phase III Remedial Action Plan for RTN 4-3024222, Former Bird Machine Company Site. Prepared by AMEC Earth & Environmental Inc. for Baker Hughes Inc. Draft, October 6, 2011.

Walpole 2007. Letter from John Spillane, Chairman, Town of Walpole Board of Water & Sewer Commissioners, to Dina Kuykendall, BHI. October 25, 2007.

Weston 2007. Phase II Comprehensive Site Assessment Report, Demolition Debris Area, RTN 3-3023105. 30 July

Weston, 2010. Response Action Outcome Statement for Release of Hydrocarbons to the Neponset River Site, RTN 4-3023575. 25 January.

Figures

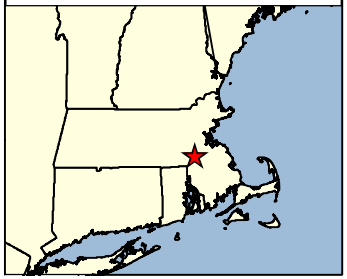
FIGURE 1

SITE LOCATION MAP

Bird Machine Inc. Company

100 Neponset Street
Walpole, MA

Location of Site



Source: Topo quad provided by National Geographic TOPO! Series: 2008

0 2,000 Feet

AMEC Earth & Environmental, Inc.
2 Robbins Road
Westford, MA 01886
(978) 692-9090

H:\BirdMachineCo\Task12\MXD\SiteMap.mxd H:\BirdMachineCo\Task12\Export\SiteMap.pdf February 15, 2011 DWN: JDP CHKD: KW

CEDAR SWAMP BROOK

Demolition Debris Area

Lead Release Area 3

Manufacturing Building Area

RUCKADUCK POND

South Rail Spur Area

NEPONSET RIVER

Neponset Street

Figure 2

Site Features and Disposal Site Boundary
Bird Machine Company

- Property Boundary
- Manufacturing Building Area
- Lead Release Area 3
- South Rail Spur Area
- 100-Year Flood Elevation
- River Banks
- Demolition Debris Exposure Area
- RTN 4-3024222 Boundary

N

Source: Imagery provided by MassGIS, 2008.

0 175 350
Feet

AMEC Earth & Environmental, Inc.
2 Robbins Road
Westford, MA 01886
(978) 692-9090

H:\BirdMachineCo\Task16_DDAPhaseIIRiskCharacterization\MXD\Figure2_ExposureAreas.mxd November 10, 2011 DWN: jonathan.penney CHKD: AKN

BUILDING #	BUILDING USE
1	OFFICE
3	BOILER HOUSE
4	LABORATORY
4A	DEVELOPMENT CENTER
5	STORES
6	MANUFACTURING OFFICE/LATHE
6A	BORING MILL
6B	BORING MILL
6C	BORING MILL
6D	MILLS & DRILLS INSPECTION
7	SHEET METAL
7A	FABRICATION
7B	WELDING
7C	WELDING
7D	WELDING
7E	MATERIAL STORAGE
8	ASSEMBLY
8A	ASSEMBLY
12	RESEARCH & DEVELOPMENT
15	HOUSE
19	GARAGE
20	MICREX BUILDING
22	INDUSTRIAL WASTE & RECLAMATION CENTER
23	METAL WAREHOUSE

DD-MW-208
DD-MW-207
DD-MW-203
DD-MW-201
DD-MW-206
DD-MW-001
DD-MW-002
DD-MW-204
DD-MW-003
DD-MW-007
DD-MW-205
LR-MW-130
LR-MW-127R
LR-MW-127
LR-MW-126
LR-MW-128
NP-MW-603
NP-MW-602
NP-MW-601
SL-MW-012
CP-MW-105
CP-MW-103
CP-MW-101
CP-MW-107
CP-MW-102
CP-MW-104
CP-MW-106
MB-MW-371
MB-MW-370
MB-MW-361
LR-MW-122
LR-MW-121
LR-MW-123
MB-MW-360
LR-MW-124
LR-MW-129
MB-MW-366
LR-MW-125
MB-MW-301
LR-MW-105
MB-MW-364
MB-MW-367
MB-GP-002
MB-MW-363
MB-MW-362
MB-MW-365
MB-MW-305
LR-MW-106
MB-MW-374
MB-MW-375
RA-MW-013
MB-GP-011
MB-MW-368
SR-MW-406
SR-MW-412
RA-MW-003

Boiler House

RUCKADUCK POND

Figure 3

Nature and Extent of Groundwater Contamination

- Monitoring Well Location
- Historic Building
- Topo Contours (ft AMSL)
- Property Boundary
- River Banks

Extent of Contamination Lines
- DCB > MMCL
- Arsenic > MMCL
- cVOCs > MMCL

Source: Imagery provided by MassGIS, 2008.

N

0 75 150 Feet

AMEC Earth & Environmental, Inc.
2 Robbins Road
Westford, MA 01886
(978) 692-9090

Appendix A

Copy of BWSC Transmittal Form 104

Appendix B

Substantial Hazard Evaluation

B.1 INTRODUCTION

This Substantial Hazard Evaluation is a component of the Class C-2 Response Action Outcome (RAO) prepared by AMEC Earth and Environmental Inc. (AMEC) on behalf of Baker Hughes, Inc. (BHI) for portions of the former Bird Machine Company (BMC). The BMC property, located in Walpole, Massachusetts (the Site), has been assigned Release Tracking Number (RTN) 4-3024222 under the Massachusetts Contingency Plan (MCP). The Site includes the Demolition Debris Area (DDA), the Manufacturing Building Area (MBA), the Lead Release Area 3 (LRA3), and the South Rail Spur (SRS) portions of the property.

According to the MCP (310 CMR 40.1050), the application of a Class C RAO (Temporary Solution) requires that the Site meet a condition of No Substantial Hazard. This Substantial Hazard Evaluation was prepared in accordance with the MCP requirements listed at 310 CMR 40.0956 to document that No Substantial Hazard exists at the Site in its current condition.

Comprehensive Site Assessments have been completed for the DDA, MBA, LRA3, and SRS areas of the Site. The nature and extent of contamination in each area has been identified as described in Section 3 of the main body of the RAO. Source material removal activities completed between 2005 and 2011 have left contaminants in soil consisting primarily of metals and extractable petroleum hydrocarbons (EPH), and for DDA also traces of dioxin and asbestos. Site groundwater contains metals and EPH above background, and downgradient of MBA contains metals, 1,4-dichlorobenzene, and chlorinated volatile organic compounds (cVOCs) at concentrations above drinking water standards. Surface water and sediment surrounding the Site are not significantly impacted.

As part of the CSA activities, quantitative human health and environmental risk characterizations were performed for the Site based on the existing levels of soil, groundwater, surface water and sediment contamination. Although the Site is currently unoccupied and intended to remain so, trespassers were assumed to be potential receptors in both the upland and Neponset River areas of the Site. A condition of No Significant Risk of harm to human health was determined for a trespasser in all Site areas evaluated. No Significant Risk was also concluded for ecological receptors (AMEC 2011a, AMEC 2011b). Because the Site is in a Potential Drinking Water Supply Area and the groundwater is classified as GW-1, an overall conclusion of No Significant Risk to human health cannot be reached.

B.2 SUBSTANTIAL HAZARD EVALUATION REQUIREMENTS

A Substantial Hazard Evaluation is a form of risk characterization that considers exposure to human and environmental receptors under current Site use conditions. The Exposure Period is equal to or greater than the time from Notification to the date that the Substantial Hazard Evaluation is conducted, plus five years. Based on notification in January 2004, the Exposure Period under consideration for this Site is up to 13 years.

In order to demonstrate No Substantial Hazard, the following conditions must be met:

- Excess Lifetime Carcinogenic Risk (ELCR) and Noncancer Hazard below the MCP limits specified in 310 CMR 40.0993(6) (one in one hundred thousand and one, respectively) for the relevant Exposure Period.
- No evidence of stressed biota attributable to the release at the disposal site.
- No ecological risk or harm such that recovery would be substantially more difficult or would require more time if conditions were to remain unremediated for even a short period of time.
- No visible oil, tar or other non-aqueous phase hazardous material in soil within three feet of the ground surface over an area equal to or greater than two acres, or over an area equal to or greater than 1000 square feet in sediment within one foot of the sediment surface.
- No Significant Risk associated with discharge of contaminated groundwater to surface water where surface water and/or sediment concentrations exceed Massachusetts Surface Water standards, nor potential for such in the future.

Site conditions relative to these criteria are discussed below.

B.3 SUBSTANTIAL HAZARD EVALUATION

As discussed in Section B.1, the upland and Neponset River areas of the Site were evaluated and meet a condition of No Significant Risk to trespassers. These risks were estimated assuming an adolescent trespasser over a seven-year exposure period. Although the time course of the Substantial Hazard Evaluation for a long-term receptor (such as a resident, if present) would be greater than seven years, this time frame is typically assumed for this receptor and would not be affected by a greater overall Exposure Period for the Site.

Activity and Use Limitations (AULs) will be placed on the Site to prevent future development and, in the case of the DDA, prevent disturbance of the surficial layer (which could dislodge or suspend asbestos). Under current and reasonably foreseeable (next five-year) conditions, however, these AULs are not required, as no activities are likely to occur. Therefore, the AULs are not required as part of the Substantial Hazard Evaluation because there is no unacceptable risk associated with current conditions.

The Site could not meet an overall condition of No Significant Risk in the Phase II CSA risk characterizations because groundwater is classified as GW-1. The use of Site groundwater as a water supply is not likely to occur at any foreseeable time, as the Site will not be developed and the area is served by public water. Nonetheless, the classification requires consideration of water supply-related human health exposures and comparison to Suitably Analogous Standards (drinking water quality standards), which are exceeded in the MBA area. However, the Substantial Hazard Evaluation process only requires consideration of Site conditions that have occurred since notification and are anticipated to continue over the next five years. These conditions do not include development of groundwater supplies. Furthermore, no comparison to Suitably Analogous Standards is required. Therefore, for the purposes of this Substantial Hazard Evaluation, the Site meets a condition of No Significant Risk for human health pathways that need to be considered for evaluating Substantial Hazard.

Similarly, the risk characterizations did not identify Significant Risk to ecological systems. The Neponset River was evaluated because of a reported historic spill; this condition does not represent an ongoing discharge. There are no visibly stressed communities nor residual oil. Overall, the entire Site meets a condition of No Substantial Hazard.

Appendix C

Public Notification Letter

November 16, 2011

Mr. Gerard Martin
Massachusetts Department of Environmental Protection
Southeast Regional Office
Bureau of Waste Site Cleanup
20 Riverside Drive, Lakeville, Massachusetts 02347

Dear Mr. Martin:

Re: Public Comment Drafts
Phase II Comprehensive Site Assessment Addendum
and Response Action Outcome Statement
Former Bird Machine Company
100 Neponset Street
Walpole, Massachusetts
RTN 4-3024222

On behalf of Baker Hughes, Inc. (Baker Hughes), AMEC Earth and Environmental (AMEC) is providing this Public Comment Draft of the Phase II Comprehensive Site Assessment (CSA) Addendum and the Response Action Outcome (RAO) Statement for the Bird Machine Company Site. The Site has been assigned Release Tracking Number (RTN) 4-3024222 and is located at 100 Neponset Street in Walpole, Massachusetts. The attached CSA Addendum updates the nature and extent of contamination for the Demolition Debris Area (DDA) portion of this RTN, based on data collected since the original 2007 CSA for this area. The Addendum includes an updated risk characterization based on the latest data, which finds that a condition of No Significant Risk applies to the DDA portion of the Site.

A Draft Phase III Remedial Action Plan (RAP) for areas of groundwater contamination associated with this RTN was submitted on October 6, 2011. The groundwater contamination is not related to the DDA, and the conclusions of the CSA Addendum do not necessitate revisions to the Draft RAP. A response to public comments on the Draft RAP is being prepared and will be provided shortly. The RAP concludes that a Permanent Solution is feasible through design and implementation of Monitored Natural Attenuation (MNA) for groundwater contaminants. A Final RAP is expected to be completed in December 2011.

The attached Draft RAO Statement indicates that a Temporary Solution (Class C-2 RAO) has been achieved. A Phase III evaluation is nearing completion, a condition of No Substantial Hazard exists, sources of contamination have been identified and eliminated to the extent feasible, and response actions to achieve a Permanent Solution are feasible and will be conducted. MNA will be designed and implemented as an Active Remedial Monitoring Program to advance the Site from a Temporary Solution to a Permanent Solution. MNA is expected to achieve a condition of No Significant Risk at the Site within 5-10 years of implementation. MNA

AMEC Earth & Environmental, Inc.
2 Robbins Road
Westford, MA 01886
Tel +(978) 692-9090
Fax +(978) 692-6633
www.amec.com

has already produced significant reductions in contaminant concentrations at individual wells over the past four years of groundwater monitoring. This alternative appears capable of achieving or approaching background for all contaminants that exceed drinking water standards.

The public comment period for the Draft CSA Addendum and Draft RAO Statement will begin on November 16, 2011 and will extend through December 12, 2011. Comments can be submitted to Chris Clodfelter of Baker Hughes at the following address:

Chris Clodfelter
Senior HS&E Specialist
Baker Hughes Incorporated
2929 Allen Parkway
Suite 2100
Houston, Texas 77019-2118
Office: 713.439.8329 | Fax: 713.439.8383

Copies of the Draft CSA Addendum and Draft RAO Statement will be available at the MassDEP Southeast Regional Office (File Review Telephone Number: 508-946-2718) and at the Walpole Public Library (Telephone Number: 508-660-7341). A copy of the executive summary of the Draft CSA Addendum, which summarizes the findings and conclusions presented in the document, is attached to this letter. A copy of this letter including the summary is being sent via US Mail to the Public Involvement Plan (PIP) Mailing List for the Site.

Baker Hughes will present a summary of the attached documents and be available to answer questions at a public meeting scheduled for Tuesday December 6, 2011, in the Main Meeting Room at Walpole Town Hall. The legal notice for this meeting will be published this week and a copy is attached to this letter. Please contact me if you have any questions regarding the Public Involvement process for this document.

Sincerely,

Kim M. Henry
LSP No. 7122

cc:

Mr. Michael Boynton, Walpole Town Administrator
Ms. Robin Chapell, Walpole Health Agent
Ms. Landis Hershey, Walpole Conservation Agent
Ms. Deborah Burke, Key Petitioner
Public Involvement Plan Mailing List

Enclosures:

1. Copy of Draft Phase II CSA Addendum – Executive Summary
2. Notice of a Public Involvement Plan Meeting for the Former Bird Machine Site

AMEC Earth & Environmental, Inc.
2 Robbins Road
Westford, MA 01886
Tel +(978) 692-9090
Fax +(978) 692-6633
www.amec.com

COPY OF DRAFT PHASE II CSA ADDENDUM - EXECUTIVE SUMMARY

On behalf of Baker Hughes, Inc. (BHI), AMEC Earth and Environmental, Inc. (AMEC) has completed a Phase II Comprehensive Site Assessment (CSA) Addendum for the portion of the former Bird Machine Company (BMC) Property located in Walpole, Massachusetts known as the Demolition Debris Area (DDA). The DDA is an exposure area and a portion of the site assigned Release Tracking Number (RTN) 4-3024222 under the Massachusetts Contingency Plan (MCP). This Phase II CSA Addendum serves as an update to a July 2007 Phase II CSA (Weston 2007). It presents the data collected at the DDA from June 2007 to the present, updates to the Phase II CSA as a result of the additional data collected, and an updated risk characterization. A Phase II CSA addressing three other exposure areas, the manufacturing building area (MBA), the lead release area 3 (LRA3), and the south rail spur (SRS) was finalized on October 18, 2011. These two Phase II CSAs together characterize the "Site," which is represented by the single unclosed RTN (4-3024222) at the property.

The Phase II CSA Addendum addresses volatile organic constituents (VOCs), semi-volatile organic constituents (SVOCs), extractable petroleum hydrocarbons (EPH), polycyclic aromatic hydrocarbons (PAHs), dioxin/furan congeners, and various metals detected in soil and groundwater samples collected from the DDA. The Phase II CSA also includes evaluations of asbestos in soil (AIS) identified within this exposure area.

Data from site investigations completed by AMEC, site assessment activities completed by Weston Solutions, Inc. of Concord, New Hampshire (Weston), and information from other sources (e.g., Massachusetts Department of Environmental Protection [MADEP] and United States Environmental Protection Agency [U.S. EPA] guidance documents), were used to complete the CSA.

In accordance with the requirements of 310 CMR 40.0000 Subpart I of the MCP, a Method 3 risk characterization (RC) of harm to human health, public welfare, safety, and the environment was completed. This RC replaces a Method 1 RC that was prepared by Weston. The Method 1 RC addressed soil and groundwater at the DDA and was not able to conclude NSR. Additionally, Weston determined that a Method 3 RC would eventually be necessary to support a response action outcome (RAO) statement due to the presence of dioxins (which are bioaccumulative) in the top two feet of soil, and the presence of asbestos. This Method 3 RC has been conducted assuming that an Activity and Use Limitation (AUL) will be implemented at the Site prohibiting disruption of the ground surface. The risk characterization therefore does not evaluate any Site use or development other than incidental trespassing.

The Phase II investigations presented in this Phase II CSA Addendum consisted of ground water sampling in and around the DDA and soil sampling for asbestos within the DDA.

AMEC Earth & Environmental, Inc.
2 Robbins Road
Westford, MA 01886
Tel +(978) 692-9090
Fax +(978) 692-6633
www.amec.com

The nature and extent of soil contamination at the DDA was previously documented in Weston's 2007 Phase II CSA. Additional asbestos sampling has demonstrated that asbestos could be present within the footprint of the DDA fill area both horizontally and vertically. Groundwater sampling results are consistent with Weston's characterization in the 2007 Phase II CSA. Groundwater contains metals and sporadic PAH detections. Weston's 2007 Phase II CSA determined that these groundwater contaminants do not represent a significant source of contamination to river sediment or surface water.

The results of the human health and environmental risk characterization indicate that a condition of No Significant Risk (NSR) of harm to health, safety, public welfare, and the environment has been achieved at the DDA.

AMEC Earth & Environmental, Inc.
2 Robbins Road
Westford, MA 01886
Tel +(978) 692-9090
Fax +(978) 692-6633
www.amec.com

Notice of a Public Involvement Plan Meeting for the Former Bird Machine Site, 100 Neponset Street, Walpole, MA, RTN 4-3024222

A public meeting will be held on Tuesday December 6, 2011 at 7:00 p.m. in the Main Meeting Room at Walpole Town Hall, 135 School Street. This meeting will present the results of the Draft Phase II Addendum and Response Action Outcome (RAO) Statement prepared by AMEC Earth and Environmental, Inc. (AMEC) for the Former Bird Machine Site located at 100 Neponset Street in Walpole, MA.

This meeting is being conducted in accordance with the Public Involvement Plan (PIP) prepared for the Bird Machine Site. Baker Hughes Incorporated (the Responsible Party) received a petition from 10 Walpole townspeople requesting that all Massachusetts Contingency Plan (MCP) Sites at the Property be designated PIP sites. In accordance with Massachusetts General Laws Chapter 21E (M.G.L. c. 21E) these sites have therefore been designated as PIP sites.

Under M.G.L. c. 21E, the Massachusetts Department of Environmental Protection (MassDEP) is responsible for ensuring the public is informed of response actions at sites at which oil or hazardous materials have been released to the environment. In addition, the response action process provides opportunities to ensure that the public is both informed of and involved in planning for response actions. Interested parties are encouraged to attend the public meeting on Tuesday December 6 and may view related reports at the information repositories established by the PIP. These include the MassDEP Southeast Regional Office (20 Riverside Drive, Lakeville, 508-946-2718) and the Walpole Public Library (65 Common Street, 508-660-7340). Many reports are also available on the Town of Walpole website for this property: http://walpole-ma.gov/BirdMachine.htm.

Questions pertaining to the Bird Machine Site at 100 Neponset Street may be directed to Kim M. Henry, AMEC Earth and Environmental, Inc., 2 Robbins Road, Westford, MA 01886, 978-392-5334, kim.henry@amec.com.