UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

REGION III

STATEMENT OF BASIS

JOHNSON CONTROLS BATTERY GROUP, INCORPORATED

MIDDLETOWN, DELAWARE

EPA ID NO. DED 002 353 092

7/15/05

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ACRONYMS

AOC	Area of Concern
CFR	Code of Federal Regulations
DNREC	Delaware Division of Natural Resources and Environmental Control
EPA	Environmental Protection Agency
GPRA	Government Performance and Results Act
IC	Institutional Control
IM	Interim Measure
JCBGI	Johnson Controls Battery Group, Incorporated
MCL	Maximum Contaminant Level
RBC	Risk Based Concentration
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SB	Statement of Basis
SWMU	Solid Waste Management Unit
U.S.C.	United States Code
XRF	X-Ray Fluorescence Technology

I. Introduction

This Statement of Basis ("**SB**") explains EPA's proposal that no further action is required for remediating soil, groundwater, sediments and surface water at the Johnson Controls Battery Group, Incorporated (JCBGI)[1], located in Middletown, Delaware. This document summarizes the Interim Measures/Remedial Actions that United States Environmental Protection Agency ("EPA") and JCBGI have developed and evaluated under an Administrative Consent Order ("Order" or "Consent Order"), entered into between EPA and JCBGI on March 8, 1994, Docket No. RCRA-3-018-AM, pursuant to Section 3013 of the Resource Conservation and Recovery Act ("**RCRA**")[2], as amended, 42 U.S.C. Section 6934.

In accordance with the Order, JCBGI completed the Environmental Investigation ("**EI**") to determine the nature and extent of any release of hazardous wastes or hazardous constituents from Solid Waste Management Units ("**SWMU**s") and Areas of Concern ("**AOCs**") at the Facility, and completed Interim Measures/Remedial Actions **("IMs")** to address soil, sediment and surface water contaminated with lead from the air pollution control baghouse system failure and additional releases identified during the EI. JCBGI completed additional soil and sediment remedial actions under the direction of the Delaware Division of Natural Resources and Environmental Control ("**DNREC**"). JCBGI prepared its Remedial Action Work Plan/CMS that presents corrective measures to address contamination identified during the EI. The evaluation of risk to human health and the environment is contained within the EI Report.

This SB document describes the Interim Measures/Remedial Actions completed to address contamination of groundwater, soil, surface water and sediments at the Facility, and explains EPA's rationale for the proposed corrective measures. This document also summarizes information that can be found in greater detail in the work plans and reports submitted by the Facility to EPA and DNREC during the EI processes. To gain a more comprehensive understanding of the RCRA activities that have been conducted at the Facility, EPA encourages the public to review these documents, which are found in the Administrative Record. The Administrative Record is located at the EPA Region III Office. The SB and Index for the Administrative Record are available for review at the **Appoquinimink Community Library** located as follows:

Appoquinimink Community Library
118 Silver Lake Rd, Middletown DE 19709
Mailing Address: 87 Reads Way, New Castle DE 19720

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[1] From 1961 to 1978, Globe Union, Inc. owned and operated the site. In 1978, Globe Union was acquired by, and subsequently merged into, Johnson Controls, Inc. In 1990, Johnson Controls created a wholly owned subsidiary, Johnson Controls Battery Group, Inc., and transferred the assets of its Battery Division to the subsidiary, which currently owns and operates the site.

[2] Words and abbreviations set forth in **bold** type are further defined in the Glossary attached hereto.

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Manager: Paula Davino

EPA will address all significant comments submitted in response to the proposed remedy described in this SB. EPA will make a final remedy decision and issue a Final Decision and Response to Comments after information submitted during the public comment period has been considered. If EPA determines that new information or public comments warrant a modification to the proposed remedy, EPA may modify the proposed corrective measures or select other alternatives based on such new information and/or public comments. Therefore, the public is encouraged to review and comment on the corrective measures described in this document and/or any additional options not previously identified and/or studied. The public may participate in the remedy selection process by reviewing the Statement of Basis and documents contained in the Administrative Record and submitting written comments to EPA during the public comment period. Public participation is discussed in detail in Section XII.

II. Facility Background

JCBGI owns and operates the Facility located at 700 North Broad Street, Middletown, Delaware. The sixteen (16) acre substantially paved facility consists of the manufacturing building and parking lots. It has been engaged in the manufacture of various size industrial and commercial lead-acid batteries since 1961. On August 15, 1980, EPA received the Facility's notification of hazardous waste activity in which JCBGI identified itself as a generator of lead and barium , EPA hazardous waste Nos. D005 and D008, respectively. On September 29, 1984, the Facility received its hazardous waste storage permit from DNREC. On April 28, 1993, DNREC approved the Facility's closure plan for its permitted hazardous waste storage pad in the SW portion of the Facility.

On March 8 and 9, 1983, a rupture in the Facility's air pollution control baghouse collection system caused a release of approximately 75 pounds of lead from the Facility stack No. 44. The release occurred over a ten-hour period. On March 31, 1983 EPA and DNREC conducted sampling of soil, sediments, surface water of Dove Neck Branch Creek and an adjacent domestic well. The March 31, 1983 inspection revealed that lead was present in soil above EPA standards at the Facility at concentrations up to 2,750 mg/kg.

III. Summary of Environmental Investigation (EI)

As required by the EPA Order, JCBGI submitted its November 17, 1994 Environmental Investigation Work Plan, that presented the planned environmental investigation at the Facility and identified all of the initial SWMUs[3] and Areas of Concern for the Facility. Following the EI preliminary risk assessment, the listing of all interior and exterior SWMUs and AOCs was revised, and all SWMUs and several AOCs were eliminated since there was no indication of a release, and no further action was required at these locations (see Table 1). In 1997, the Facility submitted the Phase I RCRA Environmental Investigation Report (EIR) of the groundwater, surface and subsurface soils, and surface water in the study area. The EI final risk assessment

established 314 parts per million (ppm) as the allowable statistical concentration of lead in soil to ensure protection of human health and the environment on site. EPA further determined that the proposed remedial measures of excavation, chemical fixation and offsite disposal were sufficient to remediate both arsenic and lead contaminants for the Facility. Private domestic wells exist within 3 miles of the site. A nearby residential well was sampled and the inorganics detected were below the EPA MCLs**.**

A. Soil - For the onsite and near site EI soil investigation, sampling locations were biased towards areas that were representative of receiving surface runoff as indicated by drainage features. The EIR documents that arsenic and lead concentrations in the soil exceeded EPA site screening levels. Following further analyses, EPA and DNREC determined that the comparison of the onsite arsenic data to the background data may be unduly influenced by the offsite railroad ties and other influences, and, the appropriate lead and arsenic clean-up levels for the Facility are 400 mg/kg and 5 mg/kg, respectively. The EIR presents lead in soil concentrations that exceeded the EPA residential standard at six primary areas of the facility in three principal locations: (1) Southwest Corner of Site, (2) East Side of Main Building, and (3) eight unpaved roof drain downspout discharge locations. The AOCs for these areas were redefined based upon proximate locations in consideration of remedial action.

B. Groundwater - The initial EI groundwater monitoring data from the hydropunch locations and the monitoring wells indicated that there was no significant impact to the groundwater from the release. However a monitoring well on site was subsequently damaged such that surface runoff entered the ground water, and, additional groundwater monitoring showed lead levels at this monitoring well in excess of EPA standards. Following repair of the well, the groundwater was again sampled and the data showed that the groundwater did not contain contaminants above EPA standards.

C. Surface Water & Sediment - In November/December 1998, Johnson Controls conducted the Sediment Investigation and Ecological Reconnaissance, and, the Supplemental Water Quality Investigation and a Macroinvertibrate Study of the nearby surface water- Dove Neck Branch. The data collected during the sediment investigation of the storm sewer channels and the Dove Nest Branch, and subsequent statistical analysis, demonstrate that sediment downstream of the public stormwater sewer outfall channel does not contain lead at elevated concentrations relative to those found upstream of the outfall channel**.** The analytical data suggest that the lead concentrations in the sediment samples collected from the outfall channel are within the statistically-determined upstream range for public stormwater sewer sediments. This demonstrates that any potential lead contribution from JCBGI's discharge to sediments in the public storm sewer is statistically insignificant. The analytical data also demonstrate that the JCBGI storm water discharge is not contributing significantly to metals in Dove Nest Branch.
Although Dove Nest Branch sediments contain levels of lead contaminant that exceed EPA sediment standards, the analytical results from the supplemental water quality investigation demonstrate that there is no significant difference between the relative bioavailability of lead in upstream and downstream sections of the stream. Therefore, the sediments in Dove Nest Branch have remained stable and do not pose any unacceptable risk.

D. Ecological Reconnaissance - Potential human and ecological receptors and exposure pathways were evaluated as part of the Ecological Assessment. Ecological

reconnaissance was conducted to make observations of the type of habitats and potential receptors located along the Dove Nest Branch. The species observed were typical for the riparian habitat present.

E. Supplemental Water Quality Investigation and Macroinvertibrate Study - The supplemental Macroinvertebrate Study demonstrates that upstream and downstream reaches of Dove Nest Branch support a wide range of macroinvertibrate and other aquatic life. Based on the sediment investigation results, no site related impacts to the stream were identified. For this reason, a screening level Ecological Risk Assessment is not warranted for the site.

IV. Interim Measures/Remedial Action

Following the EI, in December 1998, JCBGI excavated onsite soils, and cleaned its building rooftops, downspout and gutters under an EPA and DNREC approved Remedial Action Work Plan. These areas are identified in Figure1. Confirmatory sampling results in the Environmental Investigation Report Addendum, July 1999, show surface soil contaminants substantially below 314 ppm, the level EPA determined as protective of human health and the environment through the risk assessment. The remedies proposed herein are based on the continued operation of the Facility as a lead acid battery production plant (i.e., future industrial use). The EPA residential lead in soil concentration is 400 ppm. Onsite subsurface soils, however, remain at levels of EPA concern, and, Institutional Controls have been developed for future soil disturbances in these areas.

Nearly all of the stormwater drains into the Facilities stormwater conveyance system and subsequently into its two storm basins before discharging into the public stormwater system. The EI data showed that they were receiving deposits of lead contaminants. These basins have been cleaned and removed from service.

V. Institutional Controls

Institutional Controls ("**ICs**") are non-engineered instruments such as administrative and/or legal controls that minimize potential for human exposure to contamination by limiting land or resource use. On May 8, 2001, EPA approved the Soil Management Plan ("**SMP**") developed as Institutional Controls to ensure long-term control of the site and protection of site remedies. There are onsite locations that contain lead contaminants in subsurface areas, above EPA acceptable standards. These areas are covered by asphalt and/or concrete such that an exposure route does not exist. In the event of any excavation and/or removal of onsite soil in the areas in which the residual lead contamination exceeds the EPA residential lead standard, the Soil Management Plan provides for notification of appropriate regulatory agencies and analyses of soil in location of proposed onsite digging.

VI. Previous Investigations

On December 20, 1983, EPA and DNREC completed a joint site inspection and identified releases to the environment. Onsite sampling data show lead contaminants up to 1,000 ppm and soil samples also showed elevated lead levels; 42 microgram per liter (ug/l) in Dove Nest Branch; and nearby domestic well reveled lead contaminant at 8 ug/L, below the EPA Safe Drinking Water Standard of 50 ug/L. In 1994, the Facility completed ambient air monitoring in the surrounding area and determined that no ambient air standard for lead was exceeded from the release of lead contaminants.

VII. Summary of Facility Risks

A. Potential Receptors in Contact with Soil - Contaminated soil was excavated to below unacceptable EPA standards and the remaining subsurface soils have no exposure pathway to present un unacceptable risk.

B. Potential Receptors in Contact with Groundwater - The initial EI groundwater monitoring data from the hydropunch locations and the monitoring wells indicated that there was no significant impact to the groundwater from the release. However a monitoring well on site was subsequently damaged such that surface runoff entered the ground water, and, additional groundwater monitoring showed lead levels at this monitoring well in excess of EPA standards. Following repair of the well, the groundwater was again sampled and the data showed that the groundwater did not contain contaminants above EPA standards.

C. Potential Receptors for Surface Water and Sediment - The Sediment Investigation and Ecological Reconnaissance was conducted to make observations of the types of habitats and potential receptors located in the riparian habitat along nearby Dove Nest Branch. A Supplemental Water Quality Investigation and Macroinvertibrate Study also demonstrates that upstream and downstream reaches of Dove Nest Branch support a wide range of Macroinvertibrate and other aquatic life. Based on the sediment investigation results, no site related impacts to the Dove Nest Branch were identified.

D. Drinking Water Wells in the Vicinity of the Facility - All potable water in the Middletown De area is supplied by the Middletown Municipal System from the Magothy and Potomac Formation. No other public supply services this area. Outlying private wells generally draw from another formation (Rancocas and Columbian.) Within 3 miles of the JCBGI site, the number of residents relying upon private domestic wells in 1984 was approximately 874. The domestic well near the Facility was sampled and no contaminants were detected above EPA MCLs.

VIII. Environmental Indicators

Under the Government Performance and Results Act (GPRA), EPA set national goals to address high priority RCRA corrective action facilities by the year 2005. EPA has evaluated the two key environmental clean-up indicators for each facility: (1) Current Human Exposures Under Control and (2) Migration of Contaminated Groundwater Under Control. JCBGI is one of Region III's high priority facilities and falls under this initiative. On May 9, 2001, EPA determined that the Facility has met both environmental clean-up indicators.

IX. Scope of Remedial Action/Interim Measures

EPA's proposed corrective measures at JCBGI's Plant are presented in Section IV of this SB. Excavation of contaminated soils provide long-term control of remediation wastes generated during cleanup activities. The initial SWMUs required no further action since no releases were identified there. AOCs have been excavated to their unit boundaries and the contents disposed of in accordance with RCRA. ICs are in place for the AOCs remaining with lead in subsurface soil. Verification samples will be collected from each future excavation to ensure that no further risk is posed based on current conditions at the Facility.

X. Summary of Proposed Corrective Measures/Remedial Action

Pursuant to the Consent Order and consistent with EPA policy discussion provided in the May 1, 1996 Advanced Notice of Proposed Rulemaking (61FR 19446) ("ANPR"), JCBGI prepared a streamlined RAWP/CMS detailing the preferred corrective measures and risk-based cleanup goals for remediation of contamination at the Facility. EPA acknowledges that an evaluation of multiple alternatives is not always necessary, particularly if a desirable remedy can be developed directly from site characterization, application of available engineering technologies, and resolution of regulated unit issues. The JCBGI remedy proposed by EPA is one such case. Since the proposed remedy was identified on the basis of its ability to protect human health and the environment, and because of the likelihood that it can be implemented efficiently, EPA did not find it necessary to develop alternatives. EPA considered the alternatives in the streamlined Remedial Action Work Plan/CMS as the basis for the proposed remedy for the Facility.

XI. Evaluation of EPA's Proposed Remedy Selection

The site-wide soil remedy proposed in this SB best meets the four threshold criteria (overall protection, attainment of media cleanup objectives, source control, and compliance with waste management standards) for corrective measures and the five remedy selection decision factors or balancing criteria (long-term reliability and effectiveness; reduction in toxicity, mobility or volume; short term effectiveness; Implementability; and cost).[3] EPA has reviewed the elements of the preferred corrective measures using these standards, decision factors, and criteria. The following discussion outlines EPA's determination for the remedy proposed at the Facility.

[3]The criteria used to analyze the proposed remedy are set forth in OSWER guidance document, "Guidance on RCRA Corrective Action Decision Documents" Directive Number 9902.6, February 1991, and the May 1, 1996 ANPR.

A. Overall Protection - This overarching standard requires remedies to include those measures that are needed to be protective, but are not directly related to other factors. The proposed corrective measures meet this standard. The risk assessment was used to define the extent of contamination posing a risk to human health and the environment, and that extent was used to derive the corrective measures.

Contaminated soils in AOCs exceeding risk-based levels were removed and properly disposed in accordance with RCRA. Contaminated sediments were analyzed and determined to have no exposure pathway, such that direct contact and contaminant migration to other exposure were unlikely.

B. Attainment of Media Cleanup Standards - JCBGI excavated the contaminated soils, and the confirmatory soil sampling data show lead contaminants below the EPA residential soil standard of 400 ppm and the site specific level of 314 ppm..

C. Controlling Source of Releases - The release of the air contaminant was the result of equipment failure. The equipment has been repaired and, under permitted conditions, a future release of contamination is not indicated

D. Complying with Standards for Management of Waste - The proposed corrective measures for the Facility will comply with regulatory waste management standards set forth in Title 7, Delaware Code, Chapter 63, Delaware Regulations Governing Hazardous Waste, and RCRA. Compliance with standards for management of wastes is met by compliance with all applicable federal, state and local regulations during corrective measures implementation to ensure that the waste is managed in a protective manner. This notice contains the applicable standards and approaches that EPA expects each corrective action project to follow. EPA's review of the Remedial Action Work Plans, and auditing of their implementation, will ensure continued compliance with these standards.

E. Long-Term Reliability and Effectiveness - The long-term reliability and effectiveness standard is intended to address protection of human health and the environment over the long term. Source removal and control approaches that remove and/or consolidate remediation wastes in engineered structures or systems that protect against future releases are more reliable, and therefore preferred over those that offer more temporary, or less reliable controls. The proposed corrective measures meet this criterion because they employ source removal eliminating the contamination. Contaminated soils were excavated and groundwater has returned to below **MCL** concentrations.

F. Reduction of Toxicity, Mobility or Volume of Waste - Reduction of toxicity, mobility, or volume is directly related to the concept of long-term remedies. For this criterion, remedies that employ treatment and/or source removal and containment that are capable of permanently reducing the overall risk posed by the remediation wastes are preferred. The source removal and source controls integral to the proposed corrective measures allow the remedy to meet this criterion because they reduce the mobility and areal extent of contaminated media. Contaminated sediments have been found to have no mobility. Contaminated groundwater has been cleaned up (reduction in toxicity) to MCLs.

G. Short-Term Effectiveness - The short-term effectiveness standard is intended to address hazards posed during the implementation of corrective measures. Short-term effectiveness is designed to take into consideration the impact to site workers and nearby residents during construction. Examples of hazards addressed by this standard include the potential for volatilization of organic contaminants, the spread of contamination through dust generation, and hazardous materials spills resulting from waste loading and transport operations. Facility operating plans such as the health and safety plan, contingency plan, emergency preparedness and prevention plan, and spill prevention control and countermeasures plan will ensure that all short-term hazards are addressed such that any corrective measure is protective of human health and the environment during short-term remedy implementation.

H. Implementability - The Implementability decision factor addresses the regulatory constraints in employing the cleanup approach. Source removal and control are well proven remedial approaches; therefore, no regulatory hurdles are anticipated that would impede implementation of the preferred corrective measures.

I. Cost - EPA's overriding mandate under RCRA is protection of human health and the environment. However, EPA believes that relative cost is a relevant and appropriate consideration when selecting among alternatives that achieve the cleanup requirements. EPA's experience in the Superfund program has shown that in many cases several different approaches will offer equivalent protection of human health and the environment, but may vary widely in cost. EPA has stated its belief that it is appropriate in these situations to allow cost to be one of the factors influencing the decision for selecting among the alternatives. The proposed corrective measures provide a cost-effective approach for the conditions that exist at the Facility.

XII. Public Participation

On November 2, 1998, JCBGI published its notice in the *Wilmington News Journal* Newspaper. The notice discussed their proposed Interim Measures/Remedial Action Plan to remediate lead contamination at its facility. These Interim Measures actions included decontamination of the Facility roof, down spouts, and gutters; decontamination of the stormwater basins; and removal and disposal of contaminated soil. No community responses have been noted. These activities were completed on December 18, 1998 with oversight from EPA. EPA is requesting comments from the public on its proposal that no further corrective action will be required at this Facility at this time. The public comment period will last thirty (30) calendar days from the date that this Statement of Basis is published in a local newspaper. Comments may be sent to EPA in writing at the EPA address listed below.

Mr. William Geiger (3WC23)
U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103
(215) 814-3413
FAX (215) 814 - 3113
Email: geiger.william@epa.gov

After evaluation of the public's comments, EPA will prepare a Final Decision Document and Response to Comments that identifies final selected remedy. The Response to Comments will address all significant written comments and any significant oral comments generated at the public meeting. This Final Decision Document and Response to Comments will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are proposed to be made to the corrective measures identified by EPA in this SB, EPA may seek additional public comments. The final remedy will be implemented using available legal authorities possibly including, but not necessarily limited to, RCRA Section 3013, 42 U.S.C. 6974.

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Date Donald S. Welsh, Regional Administrator
EPA Region III

GLOSSARY

Area of Concern ("AOC") – An area potentially impacted by a release of hazardous waste or hazardous constituents but not a known solid waste management unit.

Government Performance and Results Act ("GPRA") - EPA has established two near-term goals, termed "Environmental Indicators,"for the RCRA Corrective Action program under the GPRA. These goals are that by 2005, the states and EPA will verify and document that 95 percent of the 1,714 RCRA cleanup facilities will have "current human exposures under control," and 70 percent of these facilities will have "migration of contaminated groundwater under control.

Institutional Control ("IC") – action taken to help prevent contact with hazardous constituents, such as security fencing, restrictive covenants, zoning requirements, access restrictions, etc.

Interim Measure/Remedial Action ("IM") - action taken prior to a final remedy decision to help control the spread of a release of hazardous waste or hazardous constituents.

Maximum Contaminant Level ("MCL") - the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. (See Safe Drinking Water Act, 42 U.S.C. Section 300g-l.)

NPDES – Clean Water Act regulations governing wastewater and stormwater management and discharge.

RCRA - Resource Conservation and Recovery Act, which was enacted by the United States Congress in 1976 and amended in 1984, directed EPA to develop and implement a program to protect human health and the environment from improper hazardous waste management practices. The statute is designed to control the management of hazardous waste from its generation to its disposal.

RCRA Facility Investigation ("RFI") – an investigation required under RCRA to sample and analyze potentially impacted media (e.g., air, water, soil, sediment) to determine the nature and extent of any potential releases of hazardous wastes or hazardous constituents at or from a Facility into the environment.

Remedial Action/Corrective Measures Study/ ("RA/CMS") – An assessment required under RCRA to evaluate the applicability and effectiveness of remediation technologies for cleaning up or otherwise mitigating contamination determined to pose an unacceptable risk to human health and the environment.

Risk-Based Concentration ("RBC") – a concentration in air, water, or soil established by EPA Region III as being protective of human health and the environment. These levels are not site-specific, but instead are conservative default values to be used for risk screening purposes.

Solid Waste Management Unit ("SWMU") - includes any unit used for the collection, source separation, storage, transportation, transfer, processing, treatment or disposal of solid waste, including hazardous wastes, whether such unit is associated with facilities generating such wastes or otherwise.