



STATEMENT OF BASIS
GENERAL ELECTRIC COMPANY
COLUMBIA, MARYLAND
EPA ID NO. MDD046279311
JUNE 2012

Table of Contents

I.	Introduction.....	1
II.	Facility Background	
	A. Installation Location	2
	B. Environmental Investigation/ Assessment Overview	3
III.	Summary of Environmental Investigations and Interim Measures.....	4
	A. CMS Units 2 & 7	4
	B. CMS Unit 4 Groundwater at UST # 9	7
	C. RFI Unit 6 Groundwater at Warehouse Building Oil/Water Separator and Acid Neutralization Unit	8
IV.	Corrective Action Objectives.....	10
V.	Proposed Remedy	10
	A. No Further Action	10
	B. Soil Vapor Extraction and Groundwater Pump and Treat	11
	C. Groundwater Monitoring	11
	D. Soils Management Plan	11
	E. Institutional Controls	11
VI.	Evaluation of EPA's Proposed Remedy Decision	12
	A. Units Proposed For No Further Action	12
	B. All Other Units.....	13
VII.	Public Participation.....	14

Attachment 1 Table and Figures

Attachment 2 No Further Action (NFA) Unit Summaries

I. INTRODUCTION

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy decision for Corrective Action Units at the former General Electric Appliance Park East (Facility), located in Columbia, Maryland which was owned and operated by the General Electric Company (GE). The Corrective Action Units (units) consist of Solid Waste Management Units and Areas of Concern. EPA's proposed remedy decision consists of operation and maintenance of: the existing groundwater extraction system; monitoring and recovery wells; soil vapor extraction system; and an on-site vapor and groundwater treatment unit. Additionally, EPA is proposing No Further Action for a number of units that have been investigated pursuant to the Corrective Action process and where the investigations revealed that the units posed no unacceptable risk to human health and the environment; these units are explained and detailed in **Attachment 2**. Finally, EPA is proposing the compliance with and maintenance of institutional controls that restrict certain land and groundwater uses at the Facility. This SB highlights key information relied upon by EPA in making its proposed remedy decision.

The Facility is subject to EPA's Corrective Action Program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. §§ 6901 et seq. (Corrective Action Program). The Corrective Action Program is designed to ensure that certain facilities subject to RCRA have investigated and cleaned up any releases of hazardous waste and hazardous constituents that have occurred at their property. Maryland is not authorized for the Corrective Action Program under Section 3006 of RCRA; therefore, EPA retains primary authority in the State of Maryland for the Corrective Action Program.

This document summarizes the information that can be found in the work plans and reports submitted by GE to EPA during the Verification Investigation, RCRA Facility Investigation, and Corrective Measures Study processes. This document explains EPA's rationale for recommending the proposed remedies and the Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which EPA's proposed decision is based. See **Section VII**, Public Participation, for information on how you may review the AR.

Concurrently with this SB, EPA is soliciting comments on a draft Corrective Action Permit (Permit). Pursuant to 40 C.F.R. §124.7, EPA has prepared this SB to describe the background and basis for the draft Permit and the reasons supporting the proposed decision. The draft Permit incorporates the remedies proposed in this SB. The components of EPA's proposed final remedy as described in this SB are contained in the Permit, and will be enforceable thereunder once the Permit is finalized and EPA issues a Final Decision and Response to Comments (FDRTC) in which EPA describes the final remedy that is selected for the Facility.

EPA will make a final decision on the draft Corrective Action Permit after considering any information submitted during the public comment period. If no comments are received during the public comment period on the draft permit, the final Corrective Action Permit will be signed and will become effective upon signature. Otherwise, the final Permit will become effective thirty (30) days after the service of notice of the final decision or upon conclusion of any appeals filed. EPA will issue a Final Decision and Response to Comments (FDRTC) after considering any comments submitted with respect to the Statement of Basis. The FDRTC will be incorporated into the final Corrective Action Permit and made a part thereof.

Information on the Corrective Action program as well as a fact sheet for the Facility can be found by navigating <http://www.epa.gov/reg3wcmd/correctiveaction.htm>.

II. FACILITY BACKGROUND

A. Installation Location

The former Appliance Park East manufacturing facility was constructed in 1969 and 1970 on 1,125 acres of land purchased by GE from Howard Research and Development (HRD) (**Attachment 1, Figure 1**). GE's operations at the Facility consisted primarily of the fabrication, finishing and final assembly of metal components in the manufacture of appliances. Fabrication involved metal cutting, pressing and welding. Finishing involved metal cleaning, electroplating, and the application of paint finishes.

Among wastes generated in the manufacturing operation was sludge from the treatment of electroplating wastewaters. The sludge was disposed in three on-site landfills until November 1982, after which time it was sent off-site for proper treatment and/or disposal at permitted facilities. In October 1987 the State of Maryland approved a final closure plan and issued a RCRA Post-Closure Permit [Controlled Hazardous Substance (CHS) Permit No. A-011] to GE for post-closure care of the three on-site landfills. The CHS Permit is still in effect and was most recently renewed on February 9, 2009, with an expiration date of February 8, 2019.

Between 1985 and 1989, GE sold back to HRD 673 acres of land and two of the buildings located thereon. These buildings and acreage are not part of the Facility covered by the Permit; however, the remaining 452 acres are covered by the Permit.

GE continued manufacturing operations at the Facility until June 1990, at which time all manufacturing equipment, above-grade storage containers and surface wastes were removed and/or decommissioned. On December 28, 1990, the decommissioned Facility, with the exception of the property containing the three closed landfills (approximately 18 acres) was sold to HRD. After purchasing the property in late 1990, HRD put much of the Facility back into productive use. Three public roads: Robert Fulton Drive; Snowden Square Drive; and, Solar Walk have been constructed on the Facility. **Figures 2 and 3 (Attachment 1)** contrast the Facility re-development using aerial photographs from 1988,

which preceded the Permit and re-development, and 2009, which is representative of current conditions.

As shown in **Figure 3**, the entire length of the Facility along Snowden River Parkway has been developed into a shopping plaza known as Snowden Square, and subdivided for sale to the various merchants. This area now includes retail stores (e.g., BJ's Wholesale Club, Marshall's, Staples), restaurants (e.g., Boston Market, Ruby Tuesday's, Bertucci's, Red Lobster), a gas station and a movie theater. The western- and southwestern-most portions of the Facility have been re-developed into townhomes, condominiums, and office space.

Within the interior of the Facility, Parcel A74, which includes the Facility's former Warehouse Building, is leased for warehousing. The former Boiler House is also located on Parcel A74, but is no longer used for steam production. The former Range Building on Parcel A40 has been re-developed into warehousing operations.

Parcel A10 is located immediately south of Parcel A40. Parcel A10 is undeveloped except for remediation systems owned and operated by GE as part of ongoing corrective measures for the former Range Building on Parcel A40. One of the remediation systems currently treats soil vapors extracted from two areas on Parcel A40. The other system treats groundwater extracted on Parcels A10 and A40 to hydraulically control the migration of groundwater downgradient of the former Range Building.

B. Environmental Investigation/ Assessment Overview

The initial requirements for the corrective action process were specified in a RCRA permit issued by EPA to GE in February 1991 (MDD046279311). By letter dated June 30, 2000, EPA determined that the existing Permit would remain fully effective and enforceable until a new Corrective Action Permit was issued by EPA. The EPA Permit currently governs corrective action at the Facility. Numerous investigations and actions have been completed and various reports have been submitted to the EPA since 1991.

All stages of the corrective action process for the solid waste management units (SWMUs) and areas of concern (AOCs) identified in the Permit are completed. **Attachment 1, Table 2** lists the land parcels within the existing Permit boundary, cross referenced to the Permit-designated SWMUs and AOCs addressed under the Verification Investigation (VI), RCRA Facility Investigation (RFI), and/or Corrective Measures Study (CMS) process as appropriate. **Figure 4** shows the general locations of each unit ("unit" and "study area" are used interchangeably herein) relative to the boundaries of the current and proposed Permit.

Multiple SWMUs and AOCs (several of which contained sub-units) were identified by the Permit and have been addressed. Of all of the SWMUs and AOCs addressed under the Permit, corrective action is on-going at only four units. At two of the units on-going work is long-term groundwater monitoring. At the third and fourth units (combined into a single CMS unit), soil and groundwater are being remediated through the operation of a

soil vapor extraction system and a groundwater pump and treat system; groundwater is also being monitored.

At several SWMUs and AOCs, sampling conducted during the VI showed that there were no hazardous constituents in the soils and/or groundwater above Permit-specified Health Based Numbers (HBNs). Moreover, any potential source of future impacts had been removed either through soil excavation performed during the VI pursuant to Permit condition II.C.2.a(1)(p), or as a result of termination of operations at the Facility. In accordance with Permit condition II.C.4.a(1), no further action was recommended at several SWMUs and AOCs, and no further action was recommended for site-wide groundwater¹. A summary of the VI sampling and results are found in **Attachment 2** and a detailed discussion can be found in the VI Report (ERM, 1992a). EPA concurred with the recommendation in letters dated November 20, 1992 and June 29, 1993 (EPA 1992b and 1993a), and through verbal approval which was memorialized in a letter to EPA dated November 1, 1993 (GE, 1993). The areas described in **Attachment 2** have been found by EPA to not pose any unacceptable risk to human health or the environment.

Other units were investigated for potential impacts to media (typically soils and/or groundwater). RFIs were performed; based on the RFI results no further action is warranted for these additional units also summarized in **Attachment 2**. Additionally, corrective measures were conducted at several areas of the Facility. The work was documented in reports and other correspondence to EPA. In each case, EPA subsequently issued approval of the corrective measures that were performed. Based on the completed corrective measures, no further action is warranted for those areas also included in **Attachment 2**.

The four remaining units, CMS Unit 2, CMS Unit 7, CMS Unit 4, and RFI Unit 6, described more fully below in **Section III** of this SB document, were determined to have releases to soil and/or groundwater that exceeded the Permit HBNs. For these units remedies were implemented through the Interim Measures (IMs) provisions of the Permit. The IMs consisted of Soil Vapor Extraction coupled with soil removal, dual phase extraction, soil excavation or groundwater pump and treat.

III. SUMMARY OF ENVIRONMENTAL INVESTIGATIONS AND INTERIM MEASURES

A. CMS Units 2 and 7

1. Unit Description

¹ The term "site-wide groundwater in this context refers to groundwater samples taken across the Facility for general indicator parameters. It does not include the samples that were analyzed to identify the impact on groundwater of specific constituents released from specific SWMUS or AOCs.

CMS Units 2 and 7 consist of soil and groundwater at and downgradient of the former Range Building. The former Exterior Trichloroethene Tank (ETT), former Oil Drum Storage Room (ODSR), and groundwater beneath the former Range Building are designated as CMS Unit 2. The Press Pit in the basement of the former Range Building is designated as CMS Unit 7. Due to proximity and similar contaminants, the corrective measures for CMS Units 2 and 7 were combined.

The ETT was an aboveground storage tank located outside the west wall of the southern portion of the former Range Building. The tank was used to store TCE prior to use. The ETT was piped inside the Range Building to another aboveground tank that was located in the Press Pit. The ETT, piping, and aboveground storage tank in the Press Pit were removed in 1988. The ETT area has been re-developed as truck bays for the warehouse operations currently housed in the former Range Building.

The ODSR area is located on the west side of the former Range Building. The ODSR was a small room inside the building, reportedly used to store lubricating oil. The floor consists of about 12 inches of reinforced concrete. The room was sloped to a floor trench along the inside of the exterior building wall. The floor trench was cleaned, and then backfilled with concrete when the Facility was decommissioned in 1990. There are no underground utilities in the former ODSR. The ODSR area is now part of the warehousing operations at the former Range Building.

The Press Pit consists of an eastern and western wing, and is located in the basement of the former Range Building. The Press Pit is directly below the former fabrication area where presses were recessed through the floor. The Press Pit was used to access the presses for maintenance, to provide drainage and containment of cutting and hydraulic oils, and to collect scrap metal generated as part of the operations. The Press Pit floor consists of approximately eight inches of re-bar reinforced concrete. The western wing formerly contained an aboveground TCE storage tank that was connected to the former ETT. There are no underground utilities in the Press Pit. The Press Pit is maintained but is not currently used.

RFI activities were initiated in 1994 following the EPA-approved RFI/CMS Plan (ERM, 1993d; EPA, 1993; EPA, 1993a; EPA, 1994). The results of the investigation were submitted to EPA in an integrated RFI Report for Units 2 and 7 (ERM, 1995) and the report was partially approved by EPA December 30, 1999.

Additional RFI activities were conducted to further refine the area of affected groundwater migrating from the Range Building. The work was performed in accordance with the EPA-approved RFI Work Plan Addendum (HSI GeoTrans, 1997). The results of the RFI Addendum were submitted in the Interim Corrective Measures Implementation Plan (HSI GeoTrans, 1998), which EPA approved June 26, 2000 (EPA, 2000).

CMS Units 2 and 7 are located on Parcel A40. Parcel A40 has been re-developed into commercial warehousing, and is currently owned by RREEF Engineering. A soil vapor

extraction (SVE) system is operating on Parcel A40 to address contaminated soils at the ETT area and below the western wing of the Press Pit.

Parcel A10 is located immediately south of Parcel A40. HRD is the current owner of Parcel A10. Parcel A10 is undeveloped except for the two remediation systems operated as part of the ongoing corrective measures. One system treats the soil vapors extracted from the ETT area and the western wing of the Press Pit on Parcel A40. The other system treats groundwater extracted from pumping wells on Parcels A10 and A40 to hydraulically control the migration of groundwater downgradient of the former Range Building.

2. Corrective Measures ETT Area

Interim corrective measures were proposed in advance of redevelopment activities planned by Parcel A40 Associates. The interim measures were implemented in two phases. Phase I was designed to remove contaminants from shallow soils targeted for excavation to construct depressed truck bays. Phase II was designed to address the deeper soils in the ETT area.

The Phase I SVE system was started on January 26, 1996 and shut down on July 19, 1996. The SVE system removed approximately 200 pounds of VOCs from the ETT area. Soil vapors were treated by granular activated carbon (GAC) prior to discharge to the atmosphere under MDE air permit 13-9-0175N. In May 1996, soil samples were collected in the ETT area to verify the level of cleanup achieved by the Phase I system, and to collect other data needed to characterize the soils prior to excavation for redevelopment. The results demonstrated that the SVE system reduced VOCs to virtually non-detect levels throughout the affected area. Subsequent to a non-hazardous waste determination by MDE (MDE, 1996) approximately 2,400 cubic yards of soil were excavated from the ETT area.

Phase II is ongoing at the ETT area, and also relies on soil vapor extraction and treatment technology. Phase II targets the deeper soils not addressed by Phase I. The Phase II system was started on September 13, 1999 under the Permit's stabilization provision. As part of the final corrective measures approved by EPA for CMS Units 2 and 7 the Phase II system has been expanded to include SVE wells below the western wing of the Press Pit. The expansion of the SVE system into the western wing of the Press Pit was completed in May 2011. GE provided EPA the Engineering Certification Report and the revised O&M Plan June 7, 2011 and June 16, 2011 (GE, 2011b and June 2011), respectively, for the expanded SVE system.

3. Corrective Measures ODSR Area

Interim corrective measures at the ODSR area also consisted of SVE and treatment technology. The SVE system at the ODSR was not thermally enhanced. The piping used to convey extracted soil vapors from the ODSR and ETT areas were connected by a manifold, and treated by the same system under the same MDE air permit. The interim corrective measures at the ODSR area were also performed in a phased approach. Phase

I was started on January 26, 1996 and the system was shut down on July 19, 1996. The SVE system removed an estimated 2 pounds of VOCs from the ODSR area under Phase I. The results of soil sampling reported that Phase I reduced VOCs to virtually non-detect levels throughout the soil in the ODSR area. MDE concurred with a non-hazardous waste determination (MDE, 1996) and the soil was excavated as part of redevelopment.

The Phase II system at the ODSR area targeted deeper soils below the former ODSR (inside the former Range Building) and relied on the same soil vapor extraction and treatment technology as Phase I. The Phase II system was started on September 13, 1999. Its effectiveness was significantly reduced by shallow water table fluctuations. Although the SVE was effective in removing VOCs to levels below the Permit-specified HBNs from soils within the upper eight feet below the former ODSR, TCE remained above its HBN in soils below this depth.

In 2001, Parcel A40 Associates notified GE that they were going to substantially modify the ODSR area to construct truck bays to meet the needs of a new tenant. Since the modifications required significant design and construction changes to the Phase II SVE system EPA approved the decommissioning of the system (EPA, 2001) and the system was decommissioned on December 20, 2001. It was estimated that about 35 pounds of VOCs were recovered and treated from the ODSR area by the Phase II system (GE, 2002a).

4. Interim Corrective Measures for Groundwater Downgradient from the Former Range Building

A groundwater pump and treat system is being operated as a stabilization measure pursuant to Permit condition II.F.4. (EPA, 1998). The system is located on Parcel A10, an undeveloped parcel of land immediately downgradient of the former Range Building. Groundwater is currently extracted from five recovery wells. The fifth recovery well was recently added to the system as part of the corrective measures. The groundwater is treated in a remediation compound on Parcel A10 by air stripping followed by carbon absorption. The treated water is discharged to a nearby storm sewer under National Pollutant Discharge Elimination System (NPDES) Permit MD0067938 issued by MDE, also known as State Discharge Permit 07-DP-3245. Performance monitoring, including hydraulic head measurements and semi-annual sampling, has shown that the plume is stable, and that the system is effectively containing the VOC-affected groundwater to Parcel A10 and that TCE levels are decreasing in certain wells.

B. CMS UNIT 4 – GROUNDWATER AT UST #9

1. Unit Description

Permit conditions required the investigation of a gasoline leak from a 2,000 gallon UST that was formerly located in the Site Services Area of the Facility. The unit has been designated as CMS Unit 4 UST #9 (Figure 4). The UST was originally an 8,000 gallon tank used to store gasoline. The tank was removed in 1988 after a failed integrity test, and replaced with a 2,000 gallon UST. As part of the decommissioning of the Facility,

the smaller UST was removed in 1992 under the direction of MDE. The soil and groundwater were investigated at UST #9 as outlined in the July 20, 1992 RFI Plan for UST #9 (ERM, 1993a).

2. Corrective Measures

In May 1992 the 2,000 gallon UST was excavated under the direction of MDE for proper off-site disposal. At this same time, 470 cubic yards of gasoline-contaminated soils were excavated and thermally treated on-site to non-detectable petroleum hydrocarbon concentrations. The treated soils were then used as clean backfill for the excavation.

Following the tank removal a CMI Plan specified a clean-up level of 400 µg/L of benzene in groundwater. The clean-up level was determined through fate and transport modeling, which showed that 4,000 µg/L benzene in the groundwater at UST #9 was protective of human health and the environment. A safety measure of a 10-fold safety factor was applied to calculate a clean-up level of 400 µg/L of benzene in groundwater at UST #9. The CMI Plan was approved by EPA September 28, 1995 (EPA, 1995a).

Under a temporary authorization granted by EPA pursuant to 40 CFR § 270.42(e) (EPA, 1996), a dual-phase extraction and treatment system for gasoline-contaminated vapors and groundwater was started December 11, 1996. A second 180-day extension to the temporary authorization was granted by EPA (EPA, 1997), which continued the operation until December 15, 1997. Pursuant to 40 CFR §270.42(e), further extensions could not be granted; as a result the system was shut down. However, performance monitoring showed that the clean-up level specified in the EPA-approved CMI Plan had been attained. Verification sampling performed January 20, 1998 confirmed that the 400 µg/L clean-up level for benzene had been attained. The dual-phase extraction and treatment system was therefore removed from the site.

A post-termination monitoring plan (ERM, 1997d) was submitted to EPA for approval in February 1997. The plan described the means and methods to demonstrate the long-term reliability and effectiveness of the corrective measures in achieving the approved clean-up level at CMS Unit 4. Post-termination monitoring began following EPA's conditional approval (EPA, 1997a). The most current monitoring plan for UST #9 was prepared in January 2005 (ERM, 2005). Since the extraction and treatment system was shut down in late 1997, 16 groundwater monitoring events have been conducted. The groundwater monitoring results demonstrate that groundwater quality continues to improve, with all monitoring wells showing either non-detect levels for BTEX or decreasing concentration trends. During the most recent monitoring event, no wells had toluene, ethylbenzene or xylenes above their respective Permit-specified HBNs, and only one well had benzene above its Permit-specified HBN of 5 µg/L. The next monitoring event is scheduled for October/November 2012.

C. RFI UNIT 6: GROUNDWATER AT WAREHOUSE BUILDING OIL/WATER SEPARATOR AND ACID NEUTRALIZATION UNIT

1. Unit Description

The Oil/Water (O/W) Separator and Acid Neutralization (A/N) Unit were located in the Warehouse Building, which is addressed under the Permit as part of AOC 8. The Warehouse Building is currently an active commercial building, leased to tenants for warehousing. The O/W Separator and A/N Unit were located in the former forklift truck maintenance area of the Warehouse Building (Figure 4). Each unit was a below grade structure, constructed of concrete. Both units were addressed as RFI Unit 6 due to their close proximity to each other.

The units were investigated under the Permit-required VI (ERM, 1992a), and no further action was recommended. However, subsequent to the VI and on behalf of the property owner (HRD, now part of General Growth), soil samples were collected from beneath each unit. The sample results indicated the presence of total petroleum hydrocarbons (TPH). Although not required under the Permit, additional soil samples were collected from the units. The samples indicated the presence of VOCs (primarily TCE) at the O/W Separator and chromium at the A/N Unit above Permit-specified HBNs.

2. Corrective Measures

The concrete structures of the O/W Separator and A/N Unit were dismantled and removed. Soils were excavated and post-excavation samples from the walls and floors of the excavations were collected. Excavation of soils continued until sample results reported that hazardous constituents in the walls and floors were below the Permit-specified HBNs. A total of approximately 805 cubic yards of soil was removed and sent off-site for proper disposal. The excavations were filled and the concrete floor surface within the Warehouse Building was replaced. (A detailed description of these corrective measures is contained in the January 13, 1993 ERM document titled Final Report for Accelerated Remediation of the Oil/Water Separator and Acid Neutralization Unit; ERM, 1993c.)

Investigation activities supporting soil remediation identified groundwater impacts primarily from TCE at the O/W Separator. Groundwater impacts were not identified at the A/N Unit. RFI activities were completed to address groundwater impacts from RFI Unit 6 and provided to EPA in a March 3, 1995 RFI Report and addendum August 21, 1995 (ERM 1995c and 1995d). EPA requested a work plan to perform an additional round of groundwater sampling at RFI Unit 6, which was provided March 19, 2002 (GE, 2002b). The work plan was approved by EPA April 26, 2002 (EPA, 2002c). Additional groundwater samples were collected May 16, 2002 in accordance with the EPA-approved work plan; laboratory analytical results were consistent with the RFI findings (GE, 2002).

EPA requested regular sampling of four monitoring wells at a five-year frequency to verify that groundwater quality is stable, and to monitor progress toward MCLs through time (EPA, 2002b). The long-term groundwater monitoring plan was approved by EPA January 6, 2003 (EPA, 2003). The first monitoring event under the EPA-approved groundwater monitoring plan for RFI Unit 6 was performed in November 2007, the results for which were presented to EPA as part of a project progress report (ERM, 2008b). The groundwater monitoring results showed that groundwater impacts are

stable, and consistent with the historical data collected for RFI Unit 6. The next monitoring event is scheduled for November/December 2012.

IV. CORRECTIVE ACTION OBJECTIVES

EPA has identified the following Corrective Action Objectives for soils and groundwater at the Facility:

A. Soils

The Corrective Action Objective for the Facility soils is to control human and environmental exposure to the elevated hazardous constituents that remain in place until active remediation returns soil below EPA Risk Based Screening Levels (RBSL). EPA has determined that attainment of the RBSL for soils is protective of human health and the environment for individual contaminants at the Facility.

B. Groundwater

The Corrective Action Objectives for contaminated groundwater at the Facility are to control human and environmental exposure to elevated groundwater contaminants and restore the Facility-related groundwater plumes to EPA promulgated Maximum Contaminant Levels (MCLs). EPA has determined that attainment of MCLs for groundwater is protective of human health and the environment for individual contaminants at the Facility.

V. PROPOSED REMEDY

The proposed remedy(s) for individual units can be described using the following terminology:

- No Further Action (NFA)
- Soil Vapor Extraction (SVE) and Treatment
- Groundwater Pump and Treat
- Groundwater Monitoring
- Institutional Controls

A. No Further Action

For several SWMUs and AOCs verification sampling showed that there were no constituents in the soils and/or groundwater above Permit-specified HBNs. It was recommended by GE that no further action was warranted at these SWMUs, AOCs, and site-wide groundwater. The areas described in **Attachment 2, Section 2.0** have been found to not pose any unacceptable risk to human health or the environment and EPA is recommending these units for NFA. Included in **Attachment 2, Section 3.0** are the units where RFIs were performed and no further action was recommended by GE as a result of excavation and verification sampling, or the more involved tank closure conducted under the Maryland Department of the Environment. EPA is recommending these units for NFA. Finally, corrective measures were conducted at several areas of the Facility (**Attachment 2, Section 4.0**) as a result of known contamination or discovered contamination. The work consisting of excavation was documented in reports and other

correspondence to EPA. Based on the completed corrective measures, EPA is recommending NFA for those areas.

The NFA recommendations were memorialized in documents submitted by GE and in letters from EPA to GE concurring with the findings and recommendations of NFA until the decision is presented for public comment in a Statement of Basis.

B. Soil Vapor Extraction and Groundwater Pump and Treat

The environmental conditions for CMS Units 2 and 7 were adequately characterized. In January 2007 the Corrective Measures Study (CMS) Work Plan for CMS Units 2 and 7 was submitted to EPA. The CMS Work Plan was subsequently revised and finally approved January 30, 2008 (EPA, 2008). The CMS Report was submitted to EPA on August 14, 2008. The document was revised on July 17, 2009 (ERM, 2009), and resubmitted to EPA. EPA approved the CMS Report for Units 2 and 7 on August 4, 2010 and selected Corrective Measures Alternative 3A (EPA, 2010). The selected alternative included the expansion and continued operation of the SVE and pump and treat systems, long-term groundwater monitoring, and institutional controls.

C. Groundwater Monitoring

Environmental conditions for CMS Unit 4 and RFI Unit 6 have been adequately characterized. Corrective measures for groundwater were completed at Unit 4 in 1996 and 1997. Since late 1997, 16 groundwater monitoring events have been performed in accordance with EPA-approved sampling and analysis plans. Groundwater monitoring results demonstrate that groundwater quality continues to improve, with all monitoring wells showing either non-detect levels for the constituents of interest or decreasing trends. Corrective measures were completed at RFI Unit 6 in 1993 and long-term groundwater monitoring in accordance with an EPA-approved monitoring plan is being performed.

D. Soils Management Plan

The Permit requires the development and implementation of a soil management plan approved by EPA before any earth moving activities occur in certain areas as identified by the Permit. The soil management plan will detail how the excavated soil from these areas will be characterized, handled and disposed; will include soil stabilization requirements, if appropriate, to minimize contact between storm water runoff and the excavated soils; and will include the requirement that a Health and Safety Plan be prepared prior to implementing the work. The Health and Safety Plan will identify the measures necessary to be protective of the contractors performing the work.

E. Institutional Controls

Institutional Controls (ICs) are non-engineered mechanisms such as administrative and/or legal controls that minimize the potential for human exposure to contamination and/or protect the integrity of a remedy. Under EPA's proposed remedies, some concentrations of contaminants will remain in the groundwater and/or soil at the Facility above levels

appropriate for residential and domestic uses. As a result, those proposed remedies will require the implementation of ICs in order to restrict use of the Facility property and groundwater to prevent exposure to contaminants while such contaminants remain in place.

These ICs may be implemented through State of Maryland and Howard County regulations, ordinances and zoning requirements, and through site-specific controls required for CMS Units 2 and 7 on Parcels A10 and A40 by Permit Conditions. The ICs will restrict land use to non-residential and prohibit the use of groundwater as a source of potable water.

Except for the southeastern-most part of the Facility under the existing Permit boundary, Howard County's master plan indicates that the Facility is and will remain designated as M-1 for light manufacturing. Operations did not occur in this part of the Facility which has been re-developed as townhomes and condominiums; however, groundwater is not used as a potable water source at the Facility or within a half mile radius of the former Range Building. Howard County's municipal water supply area map shows that the Facility and neighboring areas are connected to municipal water. Howard County's ordinance imposes a prohibition on groundwater use as a potable source for areas serviced by the municipality which should eliminate the potential for future groundwater use in the area. Further, all groundwater withdrawals must be permitted by MDE, and COMAR 26.03.01.05. requires that public water and sewerage services be used wherever such services are available, as is the case at the Facility.

VI. EVALUATION OF EPA'S PROPOSED REMEDY DECISION

This section provides a description of the criteria EPA uses to evaluate proposed remedies under the Corrective Action Program. The criteria are applied in two phases. In the first phase, EPA evaluates three criteria, known as Threshold Criteria. In the second phase, EPA sometimes uses seven balancing criteria to select among alternative solutions, if more than one is proposed. The remedies being proposed in this SB meet the threshold criteria established by EPA, as described below. Because EPA is not selecting among alternatives, a complete evaluation of the balancing criteria is not necessary.

The following sections are a summary of EPA's evaluation of the Threshold Criteria. Section A summarizes the Threshold Criteria for the units where the proposed remedy is no further action. Section B, referred to as "All Other Units," summarizes the Threshold Criteria for units where the proposed final remedy falls under the categories of soil removal, engineering controls, institutional controls, monitored natural attenuation, or some combination of the above.

A. Units Proposed for No Further Action

1. Protect Human Health and the Environment - EPA's proposed remedy for the no further action units is protective of human health and the environment because these units either had no releases to the environment, as confirmed by investigation, or

were remediated to Permit-specified, media HBNs and no longer contain contamination above these site specific risk based screening levels.

2. Achieve Media Cleanup Objectives - EPA's proposed no further action remedy achieves media cleanup objectives because these units either had no releases to the environment, or have been remediated and found to contain no contamination above EPA screening levels.

3. Remediating the Source of Releases - In all remedy decisions, EPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. The no further action units do not contain any sources of contamination, and, therefore, remediating the source of releases is not necessary.

B. All Other Units

1. Protect Human Health and the Environment - EPA's proposed remedies protect human health and the environment by adequately eliminating, reducing, or controlling unacceptable risk through a combination of active remedies to remediate contaminated groundwater and soil from the Facility, and through the implementation of institutional controls to prevent potential current and future exposure. These controls prevent the use of impacted groundwater at the Facility and prevent or control the exposure to impacted soil where contamination above residential and/or industrial screening levels remains in place.

2. Achieve Media Cleanup Objectives - EPA's proposed remedies meet the appropriate cleanup objectives based on assumptions regarding current and reasonably anticipated land and groundwater use(s). The anticipated future land use for the areas of the Facility undergoing remediation is industrial. The majority of Facility soils contain contaminant concentrations that are below the EPA residential or industrial screening levels. For those areas where contaminant concentrations are above the EPA residential and/or industrial soil screening levels, ICs will be implemented to control potential direct contact risks until active remedies achieve HBNs. Similarly, the proposed remedies for groundwater meet appropriate cleanup objectives for current and future use until the active groundwater remedy achieves HBNs.

3. Remediating the Source of Releases - In all remedy decisions, EPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Wherever possible and practical at the Facility shallow soils excavation and off-site disposal of contaminated soil has occurred. At units where contamination is left in place, i.e. deeper soils, source areas are undergoing remediation and controls will be in place to control earth moving activities and restrict residential use at these units.

VII. PUBLIC PARTICIPATION

Written comments on this Statement of Basis and the Draft Corrective Action Permit will be accepted during the 45-day public comment period. A final permit decision regarding the remedies proposed for the Facility will not be made until the public comment period has closed and all comments have been evaluated and addressed. Based on new information or comments from the public, EPA may modify the proposed remedies.

Following review of the comments, EPA will respond to comments and finalize the Corrective Action Permit. The proposed remedy in this Statement of Basis is a preliminary determination and should another remedy be selected based upon public comment or new information, any significant differences from this Statement of Basis could cause a reopening of the public comment period and the issuance of a revised Statement of Basis.

The public comment period will last 45 calendar days from the date of the public notice in order to provide an opportunity for public comment and involvement during the evaluation of this proposal. This Statement of Basis provides only a summary description of the investigations and activities performed at this Facility. EPA encourages the public to review the documents in the Administrative Record (AR) in order to gain a more comprehensive understanding of the activities that have been conducted at the Facility and the proposals under consideration. The AR contains all information considered by EPA in reaching this proposed decision. It is available for public review during normal business hours at:

U.S. Environmental Protection Agency Region 3
1650 Arch Street
Philadelphia, PA 19103-2029
Contact: Erich Weissbart
Remedial Project Manager
Office of Remediation (3LC20)
Phone: (215) 814-3284
Email: weissbart.erich@epa.gov

Written comments must be postmarked within 45 calendar days of the public notice. EPA will address all comments received during the public comment period in the Final Decision and Response to Comments and in the Final Permit Decision.

If requested within the 45-day public comment period, EPA will hold a public hearing to accept oral comments on the proposed remedies and the alternatives. Comments made at the hearing will be transcribed, and a copy of the transcript will be added to the Administrative Record. You may request a public hearing or additional information by mailing or e-mailing to the above address.

Attachment 2

Corrective Action Unit Evaluations Fact Sheet No Further Action Units

FACT SHEET – CORRECTIVE ACTION UNIT EVALUATIONS

GE RCRA Corrective Action Permit Number MDD 046279311

1.0 CORRECTIVE ACTION ACTIVITIES UNDER THE PERMIT

Since the issuance of the Permit in 1990, all stages of the corrective action process have been completed for the various solid waste management units (SWMUs) and areas of concern (AOCs) identified in the Permit. Table 2 lists the land parcels within the existing Permit boundary, cross referenced to the Permit-designated SWMUs or AOCs addressed under the Verification Investigation (VI), RCRA Facility Investigation (RFI), or Corrective Measures Study (CMS) process. Figure 4 shows the general locations of each unit (“unit” and “study area” are used interchangeably herein) relative to the current and proposed Permit boundaries.

2.0 NO FURTHER ACTION AS THE RESULT OF THE VERIFICATION INVESTIGATION

At several SWMUs and AOCs, sampling conducted during the VI showed that there were no constituents in the soils and/or groundwater above the Permit-specified Health Based Numbers (HBNs). Moreover, any potential source of future impacts had been removed either through a removal action taken during the VI pursuant to Permit condition II.C.2.a(1)(p), or as a result of termination of operations at the Facility. In accordance with Permit condition II.C.4.a(1) no further action was recommended at several SWMUs and AOCs, and site-wide groundwater. EPA has determined that the areas described in this section do not pose unacceptable risk to human health or the environment and are removed from the obligations of the renewed permit.

2.1 SWMU 1/AOC 5/AOC 8 - Hazardous Waste Storage Building and Asphalt Paved Area and Former UST #2

SWMU 1/AOC 5/AOC 8 consisted of multiple small areas that overlap on the exterior western side of the former Range Building. This unit is located on Parcel A40. Figure 4 shows the general location of these areas of this unit.

SWMU 1 was a fenced-in area that formerly contained the Hazardous Waste Storage Building. AOC 5 was an asphalt paved area that overlapped with SWMU 1. UST #2 was a closed-in-place 6,000 gallon underground storage tank (UST) that was later removed from the Facility.

HRD sold the former Range Building on Parcel A40 to Parcel A40 Associates, LLC (Parcel A40 Associates) in April 1996. Parcel A40 Associates re-developed the former Range Building for general warehousing operations, after substantial changes were made to the building interior and exterior. Subsequently, Parcel A40 Associates sold the parcel to Invesco Real Estate (Invesco) in December 2004. RREEF Engineering (RREEF) purchased the parcel from Invesco in 2007. RREEF currently owns Parcel A40, including the former Range Building.

VI Results

As part of the EPA-approved VI, 14 soil samples and 8 groundwater samples were collected from SWMU 1, AOC 5, and AOC 8. In accordance with the Permit, the soil samples were analyzed for Permit List 1 (metals), Permit List 2 (cyanide), pH, and Permit List 4 volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs)². The groundwater samples were submitted for Permit List 1 metals, Permit List 4 VOCs, total organic carbon (TOC), total organic halides (TOX), specific conductance and pH.

The investigation results were presented in the VI Report (ERM, 1992a). The soil results showed no evidence of a release of hazardous waste or hazardous constituents in this area of the Facility. Groundwater showed evidence of impacts from VOCs, primarily trichloroethene (TCE).

Certain PAHs were detected in two soil samples at levels above the Permit-specified HBNs. No other SVOCs were detected. The presence of PAHs in these two soil samples was not considered to be due to Facility operations but rather from the overlying asphalt pavement. This area was eventually carved out and designated as CMS Unit 8 (for details see Section 4.4 below), PAHs in Soils in AOC 5 (RS-3 and RS-5 Soil Sample Locations). Corrective measures were completed in this area.

The soil results showed no evidence of a release of hazardous waste or hazardous constituents in this area of the former facility, and the UST was removed. The CMS for Unit 8 was completed and no further action was recommended by GE. EPA concurred with the no further action recommendation for CMS Unit 8 in a letter to GE dated 10 June 1999 (EPA, 1999b).

VI samples indicated the presence of TCE at concentrations above its Permit-specified HBN of 5 micrograms per liter (ug/L) in groundwater. The VI recommended that a RFI be performed for groundwater in this study area. This area was eventually combined with the RFI and CMS for Units 2 and 7.

2.2 SWMU 2 - Open Topped Waste Container Storage Areas

SWMU 2 consisted of areas outside the former Range Building where scrap metal containers were maintained. Five open-topped containers were identified in these areas in a 1986 aerial photograph. Figure 4 shows the location of these areas, also located on Parcel A40.

The areas that comprised SWMU 2 were located along the western side of the former Range Building on Parcel A40. As noted previously, the former Range Building and adjoining areas have been re-developed for general warehousing operations.

VI Results

In accordance with the VI, eight soil samples were collected to address SWMU 2. Each sample was analyzed for Permit List 1, Permit List 3 and pH.

² The reader is referred to the Facility's RCRA Correction Action Permit MDD046279311, Attachment B, Hazardous Constituent Sampling List, for a list of the constituents included in each sampling list. Permit List 1 consists of metals, Permit List 2 is cyanide, Permit List 3 is VOCs and SVOCs, excluding PAHs, and Permit List 4 is VOCs and SVOCs, including PAHs.

There were no VOCs or SVOCs detected above Permit-specified HBNs in any of the soil samples. For arsenic the results were below or within the range of concentrations detected in background soil samples³. Soil results showed no evidence of a release of hazardous waste or hazardous constituents in this area of the former facility.

2.3 SWMU 3/AOC 1 (Area 15A)/AOC 6 – Industrial Wastewater Treatment Plant and Adjoining Areas

Unit SWMU 3/AOC 1 (Area 15A)/AOC 6 consisted of the Facility's former Industrial Wastewater Treatment Plant (IWTP) and adjoining areas. The unit excludes the former Emergency Retention Basin (ERB), which was addressed separately as SWMU 4. Figure 4, Parcel A7 shows the location of this study area.

SWMU 3 included holding basins, mix tanks, clarifiers, filters, sludge press, aerators and above ground tanks. AOC 1 was identified by EPA as an area of bare sand and gravel adjacent to a former sulfuric acid tank, while AOC 6 was the sulfuric acid tank.

The former Acid/Alkali Basin (AAB), Chrome Basin (CB) and ERB were used as part of the EPA-approved (EPA 1999) corrective measures implemented by GE for the Storm Water Management Pond (SWMP). Sediments excavated from the SWMP were dried, placed and compacted in these basins, and covered with 18 inches of clean cover soil, which was vegetated. GE maintains the entire area, along with the adjacent closed landfill (i.e., Controlled Hazardous Substances [MDE Permit No. A-011] permitted disposal area 1, which is part of Parcel A7 in Figure 4), as fenced, green space. GE also took title to this area from HRD.

VI Results

Thirty soil samples were collected from SWMU 3/AOC 1 (Area 15A)/AOC 6. The samples were analyzed for a combination of inorganics, VOCs, and SVOCs from Permit Lists 1, 2, and 3. As required by EPA, one of the soil samples was analyzed for arsenic only. Groundwater samples were also collected from four monitoring wells. Each groundwater sample was analyzed for the same parameters as the soil samples, plus pH, TOC, TOX, and specific conductance.

There were no VOCs or SVOCs detected above Permit-specified HBNs in any of the soil or groundwater samples. Regarding the inorganic results, none of the analytes were detected above a Permit-specified HBN in any of the groundwater samples. The only inorganics detected above a HBN in the soil samples were arsenic and beryllium in one sample only. As described in the VI Report (ERM, 1992a), the detection of arsenic and beryllium were not considered to be indicative of a facility release but rather of naturally occurring soil conditions.

The VI Report recommended no further action, other than the collection and analyses of a confirmation soil sample for beryllium. The confirmation sample was subsequently

³ Under the VI, soil samples were collected from locations considered under the Permit to represent background conditions. The samples were analyzed for Permit List 1, Permit List 2, zinc, copper, cobalt, manganese, hexavalent chromium, and aluminum, and Permit List 4. The VI report (ERM, 1992a) presents the background soil sample results.

collected by ERM and the results submitted to EPA. The soil sample results supported the no further action recommendation, to which EPA concurred.

2.4 SWMU 4 – Emergency Retention Basin

SWMU 4 is the former ERB that was part of the IWTP. The ERB was a four million gallon asphalt-lined holding basin used to provide extra temporary storage capacity for the IWTP. The location of the ERB is shown in Figure 4, Parcel A78.

As noted previously, the ERB was used as part of the EPA-approved (EPA 1999) corrective measures implemented by GE for the SWMP. Sediments excavated from the SWMP were dried, placed and compacted in the ERB, and covered with 18 inches of clean cover soil, which was vegetated. GE subsequently took title of the ERB from HRD in 1998. GE maintains the entire area, along with the adjacent closed landfill as fenced, green space.

VI Results

Four soil and two groundwater samples were collected from SWMU 4. The soil samples were analyzed for metals, cyanide, VOCs and SVOCs from Permit Lists 1, 2, and 3. The groundwater samples were analyzed for Permit List 1, pH, TOC, TOX, and specific conductance.

Arsenic was the only inorganic constituent detected in a soil sample above its Permit-specified HBN but it was below or within the range of background values⁴ determined under the VI. All other inorganics detected in the soil samples were below their respective HBNs. VOCs and SVOCs were not detected above their HBNs in any of the soil samples. Regarding groundwater, none of the analytes were detected above their respective HBNs.

2.5 SWMU 7 - Air Pollution Control Units

SWMU 7 was the former air pollution control units for several manufacturing areas that were part of the former Range Building. These manufacturing areas included the processes for barrel plating, rack plating, pickling, porcelain enameling, appearance coating and non-appearance coating. The sample locations were selected to address potential atmospheric deposition from the air pollution control units onto the ground surface.

The four sample locations specified by the Permit were spaced around the former facility, including two at the former Range Building. The locations of the two western-most samples have been re-developed into residential townhouse or condominium units, and Snowden Square Shopping Center. The locations of the other two samples were from Parcel A40, which is leased warehousing.

Results

In accordance with the Permit, four soil samples were collected for analyses of Permit List 1 metals plus zinc, copper, cobalt, and manganese. The only analyte detected above

⁴ Ibid.

its Permit-specified HBN was arsenic. However, the arsenic concentrations were comparable to the background range of values.

2.6 AOC 1 –Potential SWMUs Identified in Historical Photographs

AOC 1 includes three areas that were identified from historic aerial photographs. The location of these areas are depicted in Figure 4. Two areas were located in a small wooded clearing to the west of CHS disposal area 2, which is part of Parcel A8 in Figure 4. Construction debris such as concrete, asphalt, and wood were observed in these areas. The third area was located to the west of the former borrow area - there was no surficial debris observed at this third area (location 6b, Figure 4).

Under current conditions, the former two areas remain wooded and undeveloped and the last area is adjacent to or part of an area that has been re-developed for commercial (office) use.

VI Results

In accordance with the Permit, four soil samples were collected for laboratory analyses from each of the three areas. All soil samples were analyzed for Permit Lists 1, 4, and soil pH.

VOCs were not detected in any of the soil samples. The only metal detected above its Permit-specified HBN was arsenic. However, the arsenic concentrations were similar to the background soil concentrations⁵ determined by the VI and other locations sampled as part of the VI. PAHs were also detected but at concentrations similar to those detected in the background samples collected under the VI. No other SVOCs were detected in any of the soil samples.

The VI Report (ERM, 1992a) recommended that the construction debris at the ground surface in location 6a, Figure 4 be removed. The work was performed in November 1999, and documented in the 5 January 2000 report (ERM, 2000).

2.7 AOC 3 – Area Where Sanitary Sewer Once Overflowed

In 1987, an overflow from the sanitary sewer was observed from the manhole location shown in Figure 4. The overflow was a one-time occurrence. The area outside of the manhole was designated as AOC 3. This area is within the fenced green space constructed at the former IWTP, and is owned and maintained by GE.

VI Sampling and Results

In accordance with the Permit, one soil sample was collected from ACO 3. The sample was analyzed for Permit Lists 1, 2, 4, plus hexavalent chromium, zinc, copper, and aluminum.

None of the analytes were detected above their respective Permit-specified HBNs, other than arsenic. However, the arsenic concentration was below background levels established for the Facility.

2.8 AOC 6 – Two Areas Where Releases from Process Supply tanks Occurred (Two Sulfuric Acid Tanks at the Former IWTP and Former Range Building)

⁵ Ibid.

AOC 6 consists of an area where a release occurred from a former sulfuric acid tank inside the former Range Building and at the Industrial Wastewater Treatment Plant as discussed in Section 2.3. Figure 4, Parcel A40 shows the location of this study area.

VI Results

In accordance with the Permit, two soil samples were collected from the former sulfuric acid tank area at the Range Building. Both samples were analyzed for pH. The soil sample results showed no evidence of a release of hazardous waste or hazardous constituents in this area of the former facility.

2.9 AOC 7 – Manufacturing Building Where Solid Wastes Were Handled

AOC 7 included the Flammable Liquids Room and Paint Mix Room in the former Range Building (Figure 4, Parcel A40, I.D. no. 9). The former Range Building has been re-developed into commercial warehousing.

VI Results

In accordance with the Permit, one soil sample each was collected from the Flammable Liquids Room and Paint Mix Room. Each sample was analyzed for Permit Lists 1, 2, and 3. None of the analytes detected in the samples exceeded their respective Permit-specified HBNs. The areas have been re-developed for commercial warehousing.

2.10 AOC 8 – Other Buildings and Appurtenances on Facility Property

AOC 8 includes multiple areas of the facility. These areas include former UST #1, the former Vehicle Maintenance Building, the Boiler House, the Communications Building, and the Stained Soils Near the Railroad Spur. Figure 4 shows the locations of these areas.

UST #1 was removed from the exterior of the former Range Building. The Vehicle Maintenance Building has been re-developed as part of the Columbia Association's storage park for recreational vehicles (RVs). The Boiler House is not used, and the Communications Building is used to store landscaping equipment. The railroad spur was located just west of the former Range Building. The spur has been removed, and the area is currently green space.

VI Results

In accordance with the Permit, 17 soil samples were collected from AOC 8 (UST #1, the former Vehicle Maintenance Building, the Boiler House, the Communications Building, and the Stained Soils Near the Railroad Spur). The samples were submitted for analysis of a combination of Permit Lists 1, 2, 3, 4, and pH. Nine groundwater samples were collected from monitoring wells. The samples were analyzed for a combination of Permit Lists 1, 2, 3 and TOC, TOX, pH and specific conductance.

VOCs, SVOCs, metals (other than arsenic) and cyanide were not detected in the soil or groundwater samples above their respective Permit-specified HBNs. Arsenic was the only metal that was detected above its HBN, however, at concentrations comparable to background levels.

2.11 Dorsey Creek and Storm Water Runoff

Dorsey Creek receives storm water discharge from the Facility's Storm Water Management Pond. Figure 4, I.D. no. 11 shows the location of Dorsey Creek.

VI Results

The Permit required the collection of four stream sediment samples and two composite surface water samples from Dorsey Creek downstream of the outfall from the SWMP into Dorsey Creek. The sediment samples were analyzed for Permit Lists 1 and 4 (the latter SVOCs only). The surface water samples were analyzed for TOC, TOX, specific conductance and pH.

The analytical results from the surface water samples indicated that the surface waters of Dorsey Creek were not adversely impacted by Facility operations. The analytical results for the sediment samples showed concentrations of chromium, nickel, naphthalene and bis (2-ethylhexyl) phthalate above their respective Permit-specified HBNs. GE recommended that a RFI be performed to address chromium, nickel, bis (2-ethylhexyl) phthalate and PAHs in Dorsey Creek sediments. GE folded the RFI for Dorsey Creek sediments into RFI Unit 1 that addressed the SWMP sediments.

2.12 Site-Wide Groundwater Quality

The Permit required that groundwater samples be collected from monitoring wells upgradient and downgradient of the former facility. The objective of the site-wide groundwater sampling was to assess whether groundwater quality degradation from the Facility occurred.

VI Sampling and Results

Twenty-nine site-wide groundwater monitoring wells were sampled. Each sample was analyzed for pH, specific conductance, temperature, and dissolved oxygen. GE determined from the results of the VI that Facility operations did not impact site-wide groundwater quality. The VI results were corroborated by the groundwater sample results from unit-specific investigations as part of the VI and/or as a RFI.

3.0 NO FURTHER ACTION AS A RESULT OF THE RFI

In accordance with the Permit, RFIs were performed at several areas of the Facility. The RFIs were performed either in response to the VI findings or the Permittee proceeded directly to a RFI without performing a VI. Based on the RFI results, no further action is warranted for the following areas, and they are eliminated from the renewed permit.

3.1 RFI Unit 1: Storm Water Management Pond Groundwater

The SWMP is located in the southeastern part of the Facility. It was constructed in 1969 and 1970. The SWMP is approximately 1,550 feet long and 360 feet wide. Figure 4, I.D. no. 12 shows the location of the SWMP. The SWMP is used to manage storm water runoff from roadways, parking lots, roof drains and the ground surface from throughout the Facility, as well as areas outside and upstream of the Facility. Following the corrective measures that addressed the SWMP sediments HRD transferred ownership of the SWMP to Howard County.

The SWMP was not identified in the Permit as a SWMU or an AOC. After GE investigated the nearby ERB in accordance with the terms of the Permit, it included the SWMP in the corrective action process as SWMU 8.

GE proceeded directly to an RFI to investigate groundwater conditions at the SWMP. The RFI scope of work was presented in the EPA-approved RFI/CMS Plan (ERM, 1993d). The SWMP was designated as RFI Unit 1.

RFI Results

The groundwater conditions beneath the SWMP were investigated following the RFI/CMS Plan (ERM, 1993a). Under the RFI, groundwater samples were collected for a period of one year from four monitoring wells located upgradient, cross gradient and downgradient to the SWMP. The groundwater samples were analyzed for chromium, nickel, lead, and petroleum hydrocarbon constituents.

The RFI results were documented to EPA in the 4 August 1995 RFI Report for RFI Unit 1 (ERM, 1995a). GE determined from the RFI results that the groundwater beneath the SWMP was not impacted, and posed no unacceptable risk to human health or the environment. It was also determined by GE that there was negligible, if any, potential for the SWMP sediments to adversely affect groundwater quality.

1999 No Further Action Determination

Pursuant to Permit condition II.D.5.c, GE recommended no further action in its RFI Report for RFI Unit 1 (ERM, 1995a) for groundwater beneath the SWMP. The groundwater results showed no evidence of a release of hazardous waste or hazardous constituents at the SWMP. By its letter dated 7 December 1999, EPA approved the RFI Report for SWMP groundwater (EPA, 1999).

3.2 RFI Unit 1: Dorsey Creek Sediments

Dorsey Creek sediments were investigated as part of the VI (ERM, 1992a). GE recommended an RFI based on the VI findings to address chromium, nickel, bis (2-ethylhexyl) phthalate and PAHs in Dorsey Creek sediments. The RFI for Dorsey Creek sediments was performed as part of the RFI Unit 1 for sediments in the SWMP.

RFI Results

The results of the RFI showed that chromium, nickel, bis (2-ethylhexyl) phthalate and PAHs were present in sediments in a small area of Dorsey Creek at levels above their respective HBNS. Using the RFI results, GE performed a risk assessment to determine if Dorsey Creek sediments represented an unacceptable risk to human health or the environment. The results were presented in the RFI Report for RFI Unit 1, Storm Water Management Pond and Dorsey Creek Sediments, dated 31 October 1996 (ERM, 1996).

For the human health assessment, the risk assessment evaluated trespasser and construction worker scenarios. For the ecological assessment, it was determined that few wildlife species would be affected due to the physiochemical properties of the constituents of concern. Field observations that were performed as part of the RFI

determined that the overall poor habitat quality would limit wildlife use and therefore the potential for wildlife exposure to Dorsey Creek sediments.

1999 No Further Action Determination

GE concluded in the RFI Report (ERM, 1996) that Dorsey Creek sediments did not pose an unacceptable risk to human health or the environment and recommended no further action for Dorsey Creek sediments. EPA's letter to GE dated 7 December 1999 (EPA, 1999) approved the RFI Report, including the recommendation for no further action for Dorsey Creek sediments.

3.3 RFI Unit 3: Manufacturing Building Plating Area Groundwater

The Manufacturing Building Plating Area (referred to hereinafter as the "Plating Area"), was located in the interior of the former Range Building (Figure 4, Parcel A40, I.D. no. 9). The Permit designated this unit as part of AOC 7. The area has been re-developed as commercial warehousing as part of the former Range Building.

RFI Results

Soil sampling results reported in the Verification Investigation showed nickel in soil above its Permit-specified HBN. Because contamination appeared to be confined to a limited area and removal of soils appeared to be the most feasible remedial option, GE proposed excavation of the impacted soils in a manner that would simultaneously satisfy permit requirements for the RFI and CMS. Groundwater was designated as RFI Unit 3. Soil was designated as CMS Unit 3.

The RFI scope of work was presented in the EPA-approved RFI/CMS Plan (ERM, 1993d). The plan proposed a staged approach with the corrective measures for soil performed first, followed by the groundwater RFI. Additional groundwater investigation was only required if nickel was reported in groundwater above its HBN.

As documented in ERM's February 1994 Report of Corrective Measures for the Manufacturing Building Plating Area (AOC 7), CMS Unit 3 (ERM, 1994a), all soil containing nickel above the Permit-specified HBN was excavated and replaced with clean soils. The excavation was approximately 15 feet by 15 feet and 10 feet deep. The result of the subsequent soil sampling showed that nickel in the remaining soils was well below its HBN. Groundwater was not encountered in the excavation.

1993 No Further Action Determination

The corrective measures consisting of soil excavation and confirmatory sampling removed all soil containing nickel above its Permit-specified HBN. Groundwater was not encountered and therefore EPA agreed there was no need for a groundwater RFI. EPA has determined that no further action for Plating Area soil and groundwater is warranted (GE, 1993).

3.4 RFI Unit 5: Boiler House Tank Farm Groundwater

The Boiler House Tank Farm (BHTF) was located northwest of the former Range Building (Figure 4, Parcel A40, I.D. no. 10b), and was identified as part of AOC 8. The BHTF formerly contained twelve 20,000 gallon USTs used to store diesel fuel oil. In

addition, a 6,000 gallon UST (UST #22) was used to store diesel fuel for a railroad engine.

1992 Tank Closure

The USTs and petroleum-impacted soil were removed by GE in 1992 as documented in ERM's 5 March 1993 Closure and Characterization Report for the Boiler House Tank Farm (ERM, 1993b). UST removal was performed under the direction of the Maryland Department of the Environment (MDE) Oil Control Program (OCP). Currently, the BHTF is a landscaped area and paved road surface to the west of the Range Building.

1993 RFI

Following work in 1992, a RFI was performed on the groundwater conditions at the BHTF, designated as RFI Unit 5 in the RFI/CMS Plan (ERM, 1993a). The RFI scope of work for BHTF groundwater was described in the EPA-approved RFI/CMS Plan (ERM, 1993d). The RFI included the following elements:

1. Utility clearance and delineation to facilitate exploratory drilling and determine the presence of potential migration pathways;
2. Installation and sampling of temporary piezometers and groundwater monitoring wells; and
3. Storm sewer investigation.

GE determined that only non-detect to trace levels of petroleum hydrocarbon constituents existed in the groundwater in the dissolved phase. Although free product was floating on the water table in a limited area, GE suggested that the geologic and hydrogeologic conditions in the area made it unlikely that any appreciable migration of free product would occur in the future. Based upon the conditions and the unlikelihood that any receptors could come in contact with the contamination, EPA has determined that neither the trace levels of petroleum hydrocarbon constituents in the groundwater nor the free product floating on the water table posed a significant threat to human health or the environment. GE concluded in the RFI Report for Unit 5 groundwater at the Boiler House Tank Farm (ERM, 1995b), that it was unnecessary to conduct any further action under the RCRA corrective action process with respect to the groundwater.

To ensure compliance with the State of Maryland's regulations (specifically, COMAR 26.10.09.05), a program was instituted to remove free product from the water table to the extent practicable. In a June 21, 1995 letter, EPA approved GE's recommendations and deferred further corrective action to remediate free phase diesel fuel from Unit 5 to the authority of MDE (EPA, 1995).

A free product recovery system became operational in September 1995, and operated until August 1996. The system was shut down, with MDE's approval, based on the lack of any significant additional free product recovery. In addition to the free product recovery system, the nearby storm sewer was investigated and certain joints were found to be leaking groundwater. Chemical grouting was performed in 1996 to eliminate

groundwater infiltration. Subsequent water level measurements demonstrated that the water levels remained above the elevation of the storm sewer line, indicating that the chemical grouting was successful in sealing the joints.

MDE issued a letter dated 10 July 2007 (MDE, 2007c) indicating MDE's concurrence that free product at the BHTF has been removed to the extent practicable. Prior to case closure, MDE required that the BHTF monitoring wells be abandoned and that documentation of the abandonment be provided to MDE. In a 9 October 2007 letter, documentation was provided to MDE that monitoring wells at the BHTF were abandoned according to regulations. In response, MDE issued its letter dated 6 November 2007 (MDE, 2007b) to GE that closed the BHTF site (soil and groundwater) from further action.

4.0 NO FURTHER ACTION AS A RESULT OF CORRECTIVE MEASURES

Corrective measures have been completed at several areas of the Facility. The work was documented in reports and other correspondence to EPA. EPA subsequently issued approval of the corrective measures that were performed and its recommendation for no further action.

4.1 CMS Unit 1 - Storm Water Management Pond sediments

The SWMP is located in the southern corner of the Facility. The SWMP is used to manage storm water runoff from roadways, parking lots, roof drains and the ground surface throughout the Facility, and from areas outside and upstream of the Facility. HRD took ownership of the SWMP in 1990. HRD transferred ownership of the SWMP to Howard County following GE's completion of the corrective measures for SWMP sediments. The SWMP sediments were designated as CMS Unit 1.

RFI Results

During the RFI, GE identified the concentrations and extent of the constituents of concern in the SWMP, and then evaluated the risks posed by those sediments to both human and ecological receptors under current and reasonable future land use scenarios. Based upon this risk assessment, GE concluded in its RCRA Facility Investigation Report for RFI Unit 1, Storm Water Management Pond and Dorsey Creek Sediments, dated 31 October 1996 (ERM, 1996), that the SWMP sediments posed no unacceptable risks to human health or the environment. However, anticipating a future need, GE proceeded to restore the hydraulic capacity of the SWMP to manage storm water runoff and facilitate re-development of the Facility by others. The restoration served as the corrective measures for the SWMP sediments and involved the removal and proper management of the sediments that had accumulated in the SWMP.

Corrective Measures

Through the RFI, GE determined that approximately 35,000 to 40,000 cubic yards (cy) of sediment had accumulated in the SWMP since its construction (ERM, 1996). As part of the corrective action process, GE submitted to EPA a Corrective Measures Study Plan (ERM, 1997a) designed to evaluate and recommend to EPA the most appropriate method

for restoring the hydraulic capacity of the pond, and ensuring that the excavated sediments were managed appropriately.

Pursuant to Permit condition II.E.2, the CMS evaluated six corrective measures alternatives with respect to the criteria specified in Permit condition II.E.3.b. GE recommended in the CMS Report (ERM, 1997b) that the appropriate corrective measures alternative was sediment excavation and on-site management in the existing nearby asphalt- and concrete-lined basins that were decommissioned as part of the IWTP. The basins were the Emergency Retention Basin, the Acid/Alkali Basin, and the Chrome Basin. The sediments would be placed in the basins and compacted, as appropriate, to a density suitable for maintaining stability, vegetation and maintenance activities.

Following the CMS Report, GE prepared the Corrective Measures Implementation (CMI) Plan (ERM, 1997c), and final design (ERM, 1998) for the SWMP sediments. The CMI Plan and final design were consistent with the recommendations presented in the CMS Report. By its letter dated 24 April 1998, GE (GE, 1998) requested that EPA grant temporary authorization to implement the corrective measures for the SWMP sediments. EPA (EPA, 1998) granted temporary authorization to GE in its letter dated 30 June 1998. GE implemented the corrective measures for the SWMP sediments in summer and fall 1998 under the temporary authorization issued by EPA. Approximately 38,000 cy of sediments were excavated from the SWMP. The sediments were placed and compacted in the ERB, AAB, and the CB. The sediments were covered with clean fill and topsoil from off-site sources, and vegetated. HRD subsequently transferred ownership of the ERB, AAB and CB to GE in 1998. GE maintains the area as open green space, along with the adjacent closed landfill secured by a fence with locking gate. The corrective measures performed by GE were documented in the following two reports:

1. Engineering Certification Report for the Excavation of Sediments as Part of the Corrective Measures for the Storm Water Management Pond Sediments, dated 22 January 1999 (ERM, 1999a); and
2. Engineering Certification Report for Placing and Covering Sediments in the IWTP Basins as Part of the Corrective Measures for the Storm Water Management Pond Sediments, dated 23 February 1999 (ERM, 1999b).

By its letter dated 7 December 1999 (EPA, 1999), EPA approved the CMS Plan, CMS Report, the final design, and the two engineering certification reports for the SWMP sediments.

4.2 CMS Unit 3 - Manufacturing Building Plating Area Soils

The Plating Area was located in the interior of the former Range Building (Figure 4, Parcel A40, I.D. no. 9). The Permit designated this unit as part of AOC 7. The area has been re-developed as commercial warehousing as part of the former Range Building. The corrective measures implemented by GE addressed the Plating Area soils, designated as CMS Unit 3.

RFI Results

Soil sampling results reported in the Verification Investigation showed nickel present in soil above its background concentration⁶ and above its Permit-specified HBN. Because the elevated nickel appeared to be confined to a limited area and removal of soils appeared to be the most feasible remedial option, GE proposed to excavate the affected soils rather than implement a separate RFI.

Corrective Measures

In accordance with the RFI/CMS Plan approved by EPA (ERM, 1993d), the corrective measures activities in this area consisted of the excavation of nickel-impacted soils, followed by post-excavation confirmation sampling. EPA agreed at a meeting on 18 October 1993 (GE, 1993) that the removal of the impacted soils would be complete at the point at which the post-excavation samples showed that nickel concentrations were below its Permit-specified HBN.

GE began the excavation activities by removing the concrete floor, trenches and associated piping from the Plating Area. GE continued excavating soils until the excavation dimensions measured approximately 15 feet by 15 feet and 10 feet deep; groundwater was not encountered by the excavation. At that point, post-excavation confirmation sampling was performed and the results showed that nickel in the remaining soils was well below its Permit-specified HBN. The excavation was backfilled with clean fill material and the concrete floor was replaced. GE transported all excavated soils for proper off-site disposal at a permitted facility.

The corrective measures performed by GE for CMS Unit 3 were documented in the Report of Corrective Measures for the Manufacturing Building Plating Area, CMS Unit No. 3, dated February 1994 (ERM, 1994a). EPA approved the report for CMS Unit 3 by its letter to GE dated 10 June 1999 (EPA, 1999b).

4.3 CMS Unit 5 - Boiler House Tank Farm Soils

The BHTF was located northwest of the former Range Building (Figure 4, Parcel A40, I.D. no. 10b). The BHTF formerly contained twelve 20,000 gallon USTs and a 6,000 gallon UST (UST #22). The USTs and petroleum-impacted soil were removed by ERM in 1992 as documented in ERM's 5 March 1993 Closure and Characterization Report for the Boiler House Tank Farm (ERM, 1993b). UST removal was performed under the direction of MDE, and included the removal of the USTs and 4,407 tons of affected soils. Currently, the BHTF is a landscaped area and paved road surface to the west of the Range Building.

Following its work in 1992, GE elected to split the RFI/CMS process for the BHTF into a RFI for groundwater and corrective measures for soil. The corrective measures for the BHTF soils were designated as CMS Unit 5 (ERM, 1993a).

Corrective Measures

The CMS and its implementation for the BHTF soils are documented in the Report of Corrective Measures for Boiler House Tank Farm, CMS Unit 5, dated August 1994 (ERM, 1994). The project objectives were to remediate soil with benzene, toluene,

⁶ *ibid.*

ethylbenzene, xylenes (BTEX) and Permit-listed PAHs to concentrations below their respective Permit-specified HBNS or, in the case of PAHs, site background⁷ levels. The CMS work elements included the following:

1. Drilling and soil sampling to delineate soil quality conditions;
2. Development of a corrective measures plan (RFI/CMS Plan, ERM, 1993d);
3. Implementation of the corrective measures plan, and confirmation soil sampling;
4. Proper off-site disposal of the excavated soils; and
5. Site restoration.

As documented in the Report of Corrective Measures for the Boiler House Tank Farm Soil, CMS Unit 5 (ERM, 1994), the recommended corrective measures involved the excavation and off-site disposal of petroleum-impacted soil from the BHTF. Excavation included the removal of impacted soil from the vadose zone and the zone of residual saturation (i.e., the “smear zone”). The excavated soils were transported off-site and treated via low temperature thermal desorption (LTTD).

Soils were excavated until verification sampling results confirmed that the BTEX and PAH concentrations in the remaining soils were below their background⁸ levels. In total, GE excavated 5,752 tons of soil under the CMS that were treated off-site at an approved soil treatment facility using LTTD. The excavation was backfilled with clean soil, compacted and vegetated.

EPA approved the Report of Corrective Measures for the Boiler House Tank Farm Soil, CMS Unit 5 (ERM, 1994) by its letter to GE dated 19 October 1999 (EPA, 1999a). In addition, case closure was granted for the BHTF, as documented in MDE’s letter to GE dated 6 November 2007 (MDE, 2007b).

4.4 CMS Unit 8 – PAHs in Soils in AOC 5 (RS-3 and RS-5 Sample Locations)

AOC 5 was the asphalt paved area between the northwest exterior wall of the former Range Building and the former outside hazardous waste storage area (Figure 4, Parcel A40, I.D. no. 1). The area has since been re-developed by Parcel A40 Associates for general warehousing operations. RREEF currently owns Parcel A40, including the former Range Building.

GE initially investigated these soils as part of AOC 5. Based upon sampling conducted in this area during the VI, GE determined that PAHs were present in the soils in a small area at concentrations that exceeded background levels. Under the RFI/CMS Plan (ERM, 1993a), GE elected to proceed directly to corrective action by removing the impacted soil. This area was designated as CMS Unit 8.

⁷ Ibid.

⁸ Ibid.

Corrective Measures

The affected soils were underlying a concrete pad located between the northwest exterior wall of the former Range Building and the former outside hazardous waste storage area. Because the extent of the PAH-affected soil appeared to be confined to a limited area and removal of the soils appeared to be the most feasible remedial option, GE elected to proceed directly with corrective action that would combine any additional investigation needed for the area with corrective measures. GE's approach was presented in the RFI/CMS Plan (ERM, 1993d), and approved by EPA in its letter to GE dated 28 September 1993 (EPA, 1993).

Pursuant to the EPA-approved RFI/CMS Plan (ERM, 1993d), GE removed a portion of the concrete pad and initially excavated soils from an area measuring 81 feet long and 6 to 12 feet wide. The soils were excavated to a depth of two feet below the concrete. At this point, soil samples were collected from the sidewalls and bottom of the excavation.

The results of the soil samples from the excavation showed that PAHs were still present in certain areas of the excavation floor at concentrations above background. Accordingly, an additional three feet of soil was excavated from those areas. The results from additional post-excavation soil samples from the bottom of the excavation confirmed that PAHs were no longer present in soil at levels above background. Based on the results from these confirmation soil samples, no further excavation was performed. After all confirmation samples had been analyzed and results evaluated, the excavation was backfilled with clean fill material and the area was paved with asphalt. GE transported all excavated soils off-site for proper disposal.

The corrective measures performed by GE for CMS Unit 8 were documented in the Report of Corrective Measures for PAHs in Soils (AOC 5), CMS Unit No. 8, dated February 1994 (ERM, 1994b). EPA approved the report for CMS Unit 8 by its letter to GE dated 10 June 1999 (EPA, 1999b).

5.0 NO FURTHER ACTION RECOMMENDATIONS BASED ON DATA OBTAINED FROM OTHER SOURCES AND PURSUANT TO CERTAIN PERMIT CONDITIONS

5.1 No Further Action pursuant to Permit Condition II.H.5

In accordance with Permit condition II.H.5, GE submitted data generated during the O'Brien & Gere Engineers, Inc. (OBG) environmental assessment to fulfill some of the VI requirements.

Data generated from the OBG environmental assessment indicated that there was no evidence of a release of hazardous waste or hazardous constituents in the following areas:

1. SWMU 6 — Porcelain Enamel Frit Waste Pile Areas;
2. AOC 2 — Former Fire Training Area;
3. AOC 4 — Sewer Systems; and
4. AOC 7 — Manufacturing Building Where Solid Wastes Were Handled or Managed (Pickling Area only).

In addition, no source of future contamination remains in these areas because any waste materials were removed from the areas and the Facility is no longer operating.

Accordingly, GE recommended in its Verification Investigation Plan, dated 29 August 1991 (SAK, 1991), that no further action was necessary in these areas. EPA concurred with GE's recommendations in letters dated 14 January 1987 [*sic*, actually 1992] and 14 April 1992 (EPA 1992 and 1992a, respectively).

5.2 No further Action pursuant to Permit Condition II.C.2(a)(1)(f)

Permit condition II.C.2(a)(1)(f) allows GE to demonstrate that no hazardous wastes or hazardous constituents have been released or are being released from the units identified as part of AOC 1 ("potential SWMUs identified in historical photographs"). In conducting a review of historical information, interviews of facility employees and site inspections, GE determined that at least three of the AOC 1 areas consisting of a drainage ditch and cement pipes were not used for solid waste management. Another area was determined to be part of a CHS landfill.

Accordingly, GE recommended in the VI Plan that no further action was necessary in these areas. EPA concurred with GE's recommendation in a letter dated 14 April 1992 (EPA, 1992a).

5.3 No further Action Pursuant To Permit Condition II.H.6

Permit condition II.H.6 allows GE to object to the application of Permit requirements where it believes that the requirements are inappropriate. In conducting a review of historical information, interviews of facility employees and site inspections, GE determined that three "potential" SWMUs identified in historical photographs" (AOC 1) were inappropriately included in the Permit.

GE determined that these areas were located on property that had been conveyed to HRD in 1985 and, therefore, were not properly subject to the Permit. GE determined that a third area consisting of a waste pile should be included as part of SWMU 6 (the Porcelain Enamel Frit Waste Pile Area), rather than an AOC area to be investigated on its own. GE determined that no further action was needed at SWMU 6 based upon previously-gathered information (see Section 8.1). EPA concurred with the recommendation of NFA in a letter dated 14 April 1992 (EPA, 1992a).