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SITE INSPECTION
OF
BLACK AND DECKER, INCORPORATED
PREPARED UNDER

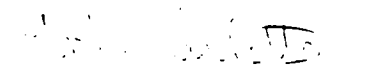
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FOR THE
HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

OCTOBER 9, 1991

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY



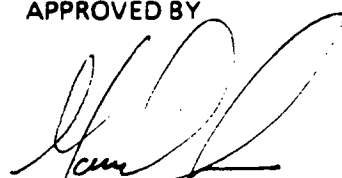
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SECTION 1

1.0 INTRODUCTION

1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract No. 68-01-7346. This specific report was prepared in accordance with Technical Directive Document No. F3-9101-19 for the Black and Decker, Incorporated site, located in Hampstead, Carroll County, Maryland.

1.2 Scope of Work

NUS FIT 3 was tasked to conduct a site inspection of the subject site.

1.3 Summary

The 286-acre Black and Decker facility is located directly south of Hampstead, Carroll County, Maryland. The major environmental concern at the site is contamination of groundwater by trichloroethene (TCE) and tetrachloroethene (PCE).

The plant, which is owned by Black and Decker (U.S.), Incorporated, currently functions as the principal distribution center on the East Coast for Black and Decker tools and appliances. A small portion of the on-site activities involves steel sintering using heat-treating furnaces and degreasing tool components utilizing TCE, 1,1,1-trichloroethane (1,1,1-TCEA), and other solvents. On-site sewage and wastewater treatment plants discharge effluent into two on-site lagoons.

From 1952 until 1987, the Black and Decker facility manufactured power hand tools. Numerous oils and solvents utilized in the manufacturing processes were stored on site in above-ground and underground storage tanks. Allegedly, several areas on the subject property were used for disposal of waste materials and off-specification tool products.

In April 1984, TCE and PCE contamination was detected in the groundwater at the Black and Decker facility during a sampling investigation of a local gasoline spill. The Maryland Department of Health and Mental Hygiene (MD DHMH) inspected the facility and conducted sampling several times in 1984. On September 17, 1984, Black and Decker entered into a Consent Order with MD DHMH. In compliance with this order, the company performed an investigation of groundwater conditions at the facility. Twenty-one monitoring wells were installed on Black and Decker's property by Geraghty and Miller (consultants) in April 1985. Further evaluation of the contaminated groundwater was recommended by the consultant. MD DHMH conducted home well sampling in the area surrounding the subject facility. Varying levels of PCE and TCE contamination were detected in several wells.

As a result of PCE contamination, Black and Decker installed filters in a downgradient dairy barn well in 1987.

A soil investigation was requested by MD DHMH and performed by BCM Eastern, Incorporated in August 1986. BCM installed an air stripper for on-site potable water treatment in December 1986.

Black and Decker contracted Roy F. Weston, Incorporated (consultants) in 1987 to perform an environmental investigation of the facility. Weston installed 17 monitoring wells on the property as part of this investigation. Seven areas were identified as possible sources of groundwater and/or soil contamination: the previous storage tank areas, a past plant landfill area, two past heat-treating residue and waste deposition areas, a past off-specification product disposal area, an area of past used-product burning, and the on-site lagoons. An underground storage tank area was determined to be a continuing source of groundwater contamination. The investigation also identified separate plumes of groundwater contamination: TCE was determined to be the primary groundwater contaminant in the eastern half of the plant, and PCE was the predominant groundwater contaminant in the western section of the plant. A work plan for soil and groundwater remediation was submitted to Maryland Department of the Environment, Hazardous and Solid Waste Management Administration (MDE HSWMA) in December 1989 by Weston. Information indicates that this work plan has not yet been approved by MDE.

Residents within a four-mile radius of the facility obtain their drinking water from a public supplier or domestic wells. The City of Hampstead Water Department obtains its potable supply from 10 wells located around the city and within the study area. The supplier serves about 2,800 people. Residents not served by the public supplier are assumed to maintain private domestic wells. Approximately 750 employees at Black and Decker depend on 5 on-site production wells for their potable water supply. These wells are connected to an air stripper for groundwater treatment. A total population of about 9,475 people depends on groundwater from within the study area for its potable supply. The nearest home well is about 100 feet northeast of the site.

Surface water drainage from the site is mainly toward a tributary of Deep Run west and southwest of the facility. Deep Run enters the North Branch of the Patapsco River. A small northeastern portion of the site drains eastwardly into a tributary of Piney Run. Piney Run flows southeastwardly into Western Run. Piney Run and Western Run are natural trout streams; Deep Run and the North Branch of the Patapsco River are recreational stocked trout streams.

FIT 3 conducted a site inspection of Black and Decker on February 26 and 27, 1991. Activities included sampling on-site soils, sediment, groundwater, and surface water and off-site groundwater, surface water, and sediment. A detailed Quality Assurance Review and a Toxicological Evaluation of the sample results from this inspection can be found in sections 7.0 and 8.0, respectively.

SECTION 2

2.0 THE SITE

2.1 Location

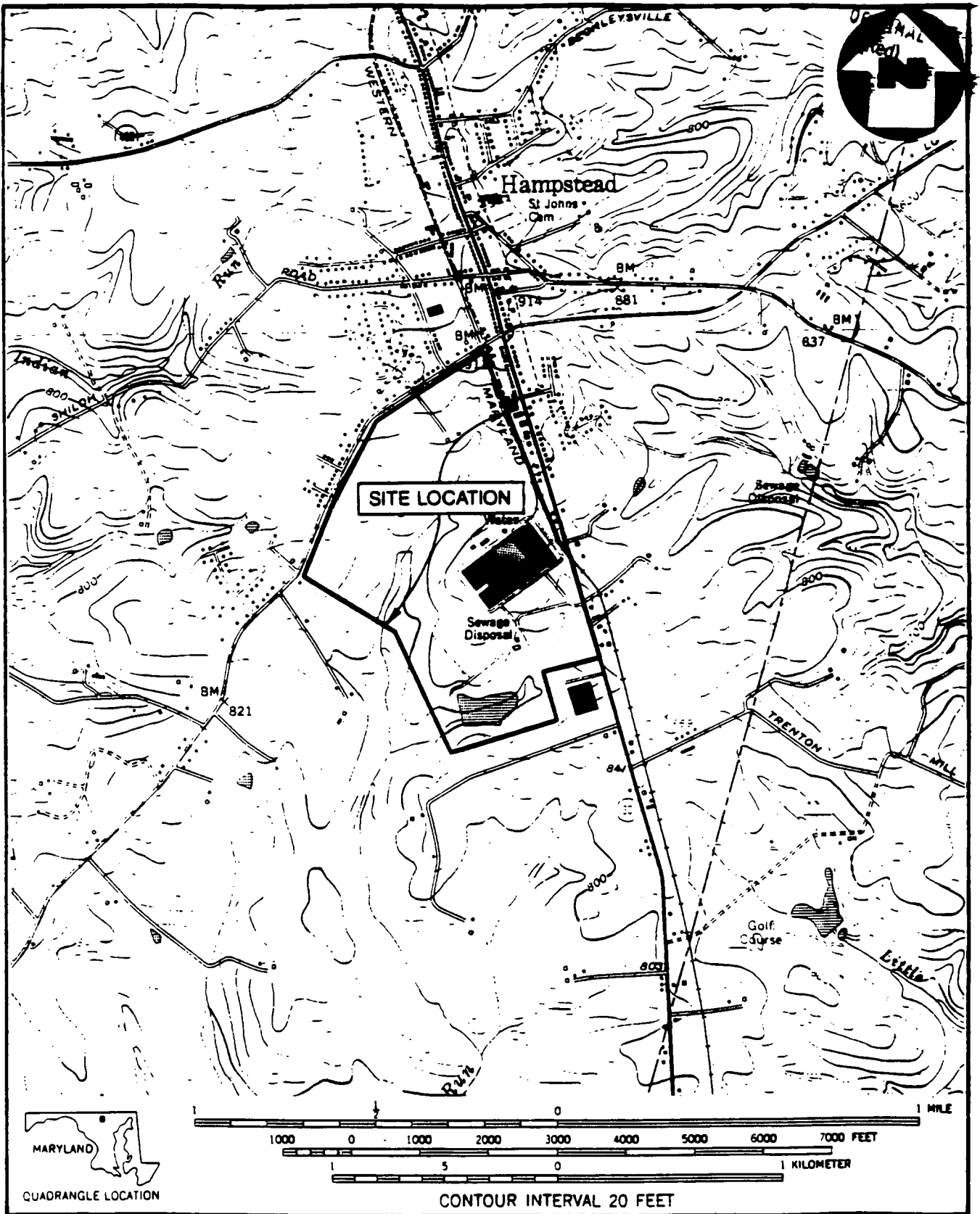
The Black and Decker site is located in Carroll County, Maryland (see figure 2.1, page 2-2). The site can be found at the intersection of 39° 35' 36" north latitude and 76° 50' 58" west longitude on the Hampstead, Maryland 7.5 minute series United States Geological Survey (U.S.G.S.) topographic quadrangle map. As measured from the northwestern corner of the Hampstead, Maryland topographic map, the site is 3.56 inches east and 5.75 inches south.¹

2.2 Site Layout

The 286-acre Black and Decker property is located directly south of the town of Hampstead, Maryland, directly west of Route 30. Approximately 140 acres of the northern and western sections of the property are leased to local dairy farmers for pasture land. The main facility is situated on the remaining 146 acres.^{1,2}

The major feature of the main facility is a 17-acre rectangular building; its length is oriented in a northeastern to southwestern direction (see figure 2.2, page 2-3). It is secured by fencing and guarded gate. Hanover Road (Route 30) is directly east of the building. Access to the facility is through the monitored gate that is off Hanover Road and southeast of the building. Parking areas are also within the fenced portion of the property, immediately south and southeast of the building. A railroad leads into the northernmost corner of the building.^{1,2,3}

Several significant areas are located around the Black and Decker building. The former location of tank farm no. 1 is adjacent to the northwestern edge of the building. The tank farm consisted of 13 underground storage tanks that contained oils and solvents. Tank farm no. 2 was east of the northernmost corner of the building and consisted of five underground storage tanks that contained various oils used in Black and Decker's manufacturing process. An above-ground tank farm is west of the northernmost corner of the building. A liquid nitrogen storage tank and a methanol storage tank can be found in this tank farm. TCE storage tanks were previously located in this area; all of these tanks have been removed. A hazardous waste storage area is located southwest of tank farm no. 1, along the northwestern edge of the building, according to LaVere Grimes, Black and Decker's facilities manager. An area of possible past disposal of heat-treating residues is adjacent to the westernmost corner of the building. An air-stripping tower is located northwest of the building.^{1,2,3,4,5,6,7}



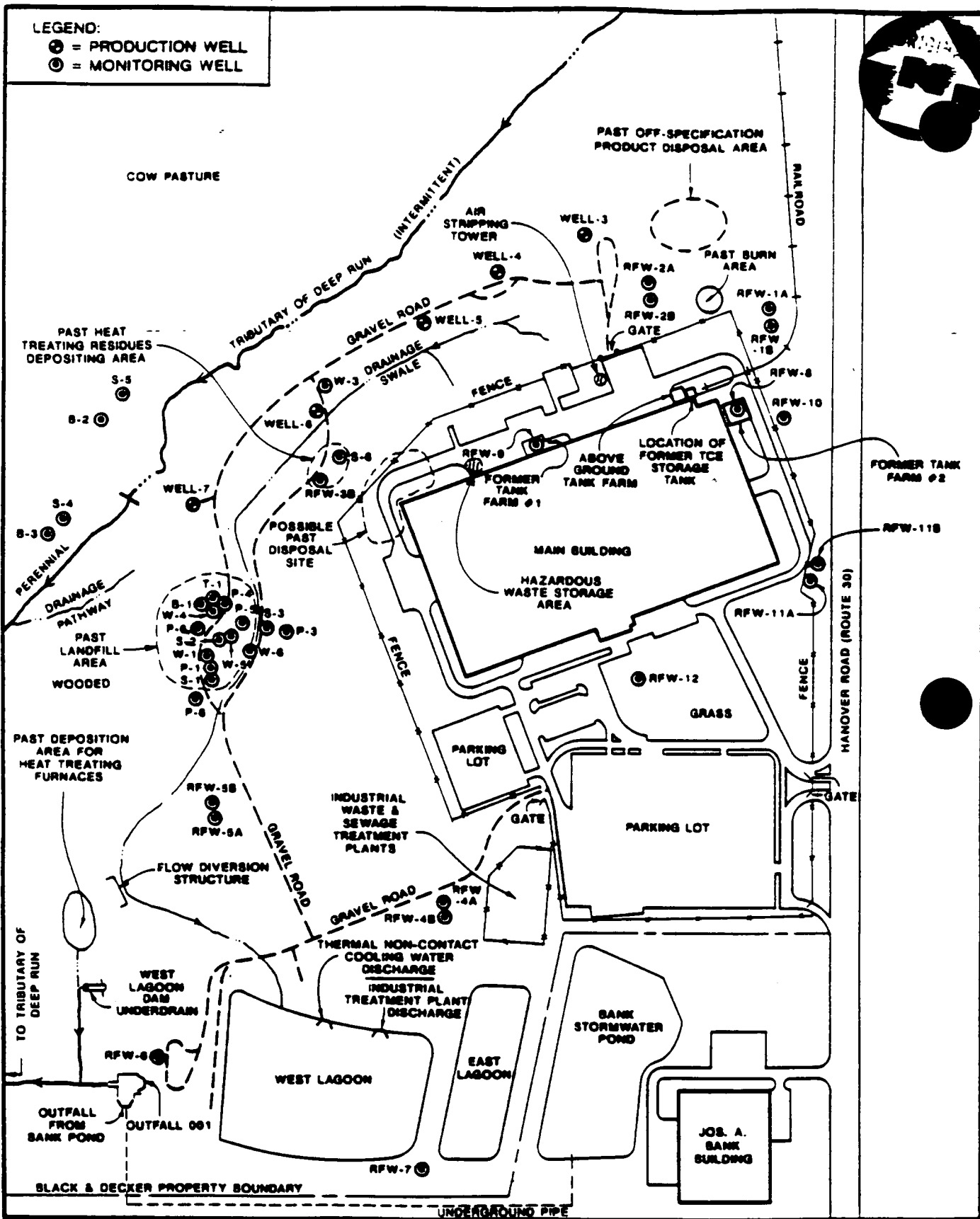
SOURCE: (7.5 MINUTE SERIES) U.S.G.S. HAMPSTEAD, MD., QUAD.

SITE LOCATION MAP
BLACK & DECKER

SCALE 1: 24000

FIGURE 2.1





SITE SKETCH
BLACK & DECKER
 (NO SCALE)

FIGURE 2.2



Wooded land surrounds the Black and Decker main facility on the northern, western and southwestern sides. Access to these areas is unrestricted. A gravel road, exiting from a gate northwest of the facility building, travels through the wooded areas and re-enters the fenced portion of the property through a gate south of the building. Five water supply wells (nos. 3, 4, 5, 6, and 7) are located at intervals along the northwestern section of the road. Well nos. 1 and 2 are sealed and no longer used by the facility. Black and Decker's industrial waste and sewage treatment plants are located within a fenced area directly south of the entry point of the gravel road into the southern gate and several hundred feet south of the facility building.^{2,3,5}

Two lagoons are located about 1/4 mile south of the main facility; access to the lagoons is unrestricted. The easternmost lagoon (east lagoon) is approximately two acres in size and six feet deep. The westernmost lagoon (west lagoon) is about 8 acres in size and 13 to 14 feet deep. Effluent from the industrial treatment plant and thermal non-contact cooling water from the facility discharge into the west lagoon via two separate discharge pipes. The east lagoon is clay lined, and the west lagoon is partially clay lined. A clay liner is between the two lagoons; an overflow pipe that is continuously open connects the east lagoon to the west lagoon. Effluent from the west lagoon flows into a concrete culvert via outfall no. 001. An underdrain for the west lagoon dam is located northwest of the culvert; the underdrain releases seepage coming through the west lagoon dam. An area previously used for the deposition of heat-treating furnaces is directly north of the dam underdrain. Surface water runoff from this area joins drainage from the underdrain; the resulting stream flows into the outfall discharge stream coming from the concrete culvert.^{2,3,4,5,6}

Several other significant features are located on Black and Decker's property outside the restricted main building area. Two areas of concern are several hundred feet north of the building: an area used in the past for burning off-specification products, plastic parts, and other materials and a second area used for disposal of off-specification products. Heat-treating residues were allegedly buried in an area between the building and water supply well no. 6. In the past, off-specification products were disposed in a landfill located west of the facility building in addition to the disposal areas mentioned previously.^{2,3,4,5,6}

A drainage swale originates directly north of the Black and Decker building and flows in southwestward direction. The swale continues west of the facility, flowing southwardly. The swale then makes a 90-degree angle at a flow diversion structure and flows southeastwardly into the west lagoon. The flow diversion structure controls the direction of water flow in the swale toward the west lagoon.^{2,3,4,5,6,7,8}

Thirty-eight monitoring wells are on Black and Decker's property at various locations.2.3.4

A tributary of Deep Run flows in a southwestward direction northwest and west of the main facility. A drainage pathway, several hundred feet in length, flows from the past landfill area into this tributary.2.3

A clothier warehouse, the Joseph A. Bank building, is located off the southeastern corner of the Black and Decker property on Hanover Road. A storm water pond located behind this building discharges via an underground pipe into the concrete culvert below the west lagoon. This effluent combines with the outfall no. 001 discharge (which is in the same culvert) to form a small stream.2.3.4.5

2.3 Ownership History

The subject site is solely owned by Black and Decker (U.S.), Incorporated. The northern and western sections of the property (140 acres) are leased to dairy farmers for pasture land.4.5

Black and Decker purchased the property in separate tracts at various times. The first tract of property, 185 acres, was purchased in 1951 from Charles J. Miller. A second tract was purchased in 1952 from Herbert R. Wooden, and a third tract was bought from Ada and Nellie B. Wooden in 1960. According to Mr. Grimes, the second and third purchases were probably small parcels of land northeast of the facility between the railroad tracks and Hanover Road. A fourth purchase was made in 1967 of 138 acres north of the facility. This tract was purchased from Olin Henry Hoffman, according to the Maryland preliminary assessment report.4.5.9

The Black and Decker facility building was built on the first tract of land in 1952. Several other buildings were constructed on this tract after 1952. Thirty-nine acres of the original 185 acres, a building, and a storm water pond were sold to Joseph A. Bank in 1986.4.5.9

Information concerning ownership before Mr. Miller, the Woodens, and Mr. Hoffman is unavailable.4.5

2.4 Site Use History

The subject facility currently functions as the principal distribution center on the East Coast for Black and Decker, Incorporated. About 80 percent of the activities at the Hampstead facility relate to the distribution of Black and Decker products (i.e., power hand tools and small electrical appliances). A small portion of the activities involves light assembly packaging and the manufacture of gears, according to Mr. Grimes. Heat-treating furnaces are used in the sintering of steel to form gear components. Cleaning and treatment of power tool accessories for rust prevention are also conducted at the plant. TCE, 1,1,1-TCEA, and various other solvents are used as degreasers in manufacturing and cleaning processes.^{4,5}

The Black and Decker facility was originally constructed in 1952 for the manufacture of power hand tools. Additions to the main building and several other buildings were built in later years. Numerous oils, solvents, and paints utilized in Black and Decker's manufacturing processes were stored on site in above-ground and underground storage tanks. MDE information from the early to mid-1980s indicates that waste products from the manufacturing processes were shipped off site as hazardous waste during this specific time period (see appendix M for hazardous waste reports). Waste disposal practices before 1982 are unknown. The use of most of these oils and solvents was discontinued when the facility changed its emphasis from manufacturing to distribution. The underground tanks have been excavated, cleaned, and filled with sand. The above-ground tanks are no longer used; TCE and 1,1,1-TCEA are stored in drums on site, according to Mr. Grimes.^{4,5,6,9}

A phase-out of tool manufacturing began in 1983 at the facility. Plant activities were refocused on product distribution; the conversion from manufacturing to distribution was completed in July 1987.⁶

According to a report by Roy F. Weston, Incorporated, Black and Decker's consultant, Black and Decker employees recall that several areas on the subject property were used for disposal of debris and off-specification tool products during the history of manufacturing operations. The manufacturing processes involved the utilization of numerous paints, solvents, and oils.⁶

Two lagoons on Black and Decker's property have been used by the facility since 1978 for wastewater treatment. The east lagoon is currently utilized as a surge basin for contact cooling water from manufacturing processes at the facility. Boiler blow-down water and effluent from the sewage treatment plant are also discharged into this lagoon. An overflow pipe that is continuously open connects the east lagoon to the west lagoon. When the level reaches a certain depth in the east lagoon, the wastewater is pumped into the industrial chemical treatment plant. Effluent from this plant is discharged into the west lagoon. Thermal non-contact cooling water and drainage from the on-site swaleway also flow into the west lagoon. Water from the west lagoon is recycled for use as non-contact cooling water in the Black and Decker facility, according to the Weston report. The west lagoon also functions as a source of fire-protection water for the facility in emergencies. Excess water from the west lagoon is discharged via NPDES-permitted outfall no.001.4.5.6

In the past, industrial sewage from various manufacturing operations was piped into the east lagoon for subsequent treatment. These operations included cleaning and etching aluminum castings with phosphoric acid, paint stripping using a caustic solution (pH, 12), metal treating with an acid solution, application of a dry coating with heat treatment, and metal grinding using a water-soluble lubricant.¹⁰

Information concerning wastewater disposal before 1978 is unavailable.

Sludge produced from sewage and industrial treatment processes is currently removed off site as nonhazardous waste. The sludge was generated as hazardous waste in the past; modifications to the treatment system enabled the facility to classify the sludge as nonhazardous. Sludge in the lagoons has not reached a level necessitating removal, according to Mr. Grimes.^{4.5}

The storm water pond, located south of the facility on the Bank property, receives surface runoff from the surrounding area, in addition to rainwater from Black and Decker's southern roof drains and surface runoff from Black and Decker's parking areas and driveways. The pond currently functions as a water source for fire protection for the Bank property. Black and Decker constructed the pond sometime after 1978 to prevent overflow of the west lagoon due to storm runoff.^{4.5}

Before Black and Decker's purchases, the site was utilized as dairy farming land.^{4.5}

2.5 Permit and Regulatory Action History

Black and Decker filed a Notification of Hazardous Waste Activity in September 1980 listing the following as the wastes handled: F001 (halogenated solvents), F010 (bath residues from heat-treating operations with cyanide used in the process), F011 (spent cyanide solutions), F012 (wastewater treatment sludge from heat-treating operations with cyanide used in the process), F017, F018, U002 (acetone), U054, U080 (dichloromethane), U123 (methanoic acid), U220 (toluene), U226 (1,1,1-TCEA), U228 (TCE), and U239 (xyliene).¹⁰

Several of these waste codes have been deleted from the hazardous waste listing; substance descriptions for these codes are unavailable in recent editions of the CFR. The facility was assigned EPA I.D. No. MDD003065877 (see appendix C).^{11,12}

Black and Decker submitted a Part A Hazardous Waste Permit Application to EPA in November 1980. A complete description of the facility's water recycle system was included with this application (see appendix C). Process codes S04 (surface impoundment) and T04 (treatment other than tank, surface impoundment, or incinerator) were listed on the application at capacities of 4,000,000 gallons and 1,000,000 gallons, respectively. The facility's NPDES Permit No. MD-0001881, Oil Operations Permit No. 79-OP-0185, and Water Appropriation Permit No. CL66GAP029 were also listed on the application. No waste codes were identified on the application. On June 4, 1981, EPA informed Black and Decker that the Part A application did not demonstrate that the facility required a federal permit and returned the application. Information indicates that the company kept its generator I.D. No. MDD003065877.^{13,14}

A Notice of Violation and corrective order were issued to Black and Decker by MD DHMH in February 1978 for minor air emission violations. According to Mr. Grimes, the company developed a line of water-based paints to use on its products within the following year in order to comply with the order.^{5,15}

On November 16, 1978, MD DHMH issued an order to Black and Decker requesting information concerning the facility's waste disposal methods and emergency plans. According to Mr. Grimes, Black and Decker provided a Preparedness, Prevention, and Contingency (PPC) Plan to MD DHMH in compliance with this order.^{5,16,17}

In July 1979, Metcalf and Eddy, Incorporated, environmental consultants for Black and Decker completed a report concerning the sludge generated in the facility's wastewater treatment system. Analysis of the sludge indicated chromium levels up to 4,380 ppm and lead levels up to 13,500 ppm. Sampling of water mixed with bottom sludge from one of the Black and Decker lagoons in December 1979 revealed concentrations of chromium at 18.9 ppm and lead at 93.3 ppm (see appendix D for report and analysis results). Metcalf and Eddy recommended modification of the treatment system producing the sludge. Available information indicates that modifications were made, enabling the facility to dispose the sludge as nonhazardous waste.^{18,19}

In April 1984, the Carroll County Health Department sampled the five production wells at Black and Decker to determine the impact of a gasoline spill at a Hampstead service station. Elevated levels of TCE (up to 72 ppb), PCE (up to 1900 ppb), and other chlorinated hydrocarbons were detected in the groundwater at the facility (see appendix E). As a result, MD DHMH inspected the facility on May 2, 1984 and filed a site complaint against Black and Decker for water pollution and controlled hazardous substances violations including leaking hazardous waste containers, lack of a hazardous waste containment structure, and potential drainage of hazardous wastes into surface runoff. MD DHMH also conducted a compliance monitoring inspection on May 7, 1984. Sampling was conducted by state representatives during each of these May inspections. Analysis results indicated volatile organic compound (VOC) contamination in soils and surface water at various locations on the Black and Decker property, including concentrations of PCE at 72 ppb in underdam drainage from the west lagoon (see appendix F for MD DHMH reports and appendix G for the Geraghty and Miller, Incorporated consultant report, which includes MD DHMH sampling results).^{7,20,21}

Sampling of the wells at several residences downgradient of the subject facility was conducted in May and November 1984 by county representatives. The Leister dairy barn well, which is about 110 feet deep, was found to contain up to 4 ppb PCE. The Richards dairy farm well was found to contain 15 ppb 1,2-dichloroethane (1,2-DCEA). Several nearby homes and a shallow dug well (60 feet deep) used in the Leister farmhouse contained no significant levels of VOCs (see appendix H).^{22,23}

In June 1984, samples collected from potable water supplies for employees at the Black and Decker facility revealed up to 6ppb TCE and 3ppb PCE, in addition to several other VOCs (see appendix I).²⁴

22-32

On September 17, 1984, Black and Decker entered into a Consent Order with MD DHMH. In compliance with the order, the company performed an investigation of groundwater conditions at its Hampstead facility. Phase I of this investigation, completed by Geraghty and Miller, Incorporated in March 1985, involved a compilation of past sampling data and included a summary of the geology and hydrogeology at the facility and the construction details of the production wells (see appendices G and J).^{22,25}

A RCRA Compliance Evaluation Inspection was conducted at the facility on August 16, 1985. A containment structure for hazardous waste storage had been constructed since the MD DHMH inspection. RCRA inspectors noted storage of hazardous waste over 90 days in an inspection report (see appendix K). The report included November 1984 sludge sample results from Black and Decker's holding pond revealing lead concentrations of 330 ppm.²⁶

In September 1985, Phase II of the groundwater investigation was completed by Geraghty and Miller. The investigation focused primarily on the area south of PW-7 as a source of PCE contamination. Information collected from Black and Decker employees indicated that this area was used by the company as a disposal area in the past. Three source areas of buried substances (allegedly off-specification equipment) were identified utilizing geophysical surveys (see appendix L for report). Twenty-one monitoring wells were installed by Geraghty and Miller in April 1985 on Black and Decker's property. The majority of the wells were located in the vicinity of the three identified source areas (see appendix L, figure 4). Groundwater sampling of the wells revealed levels of PCE up to 1,400 ppb in MW B-1 and W-4; PCE concentrations were found to increase with the groundwater depth. Geraghty and Miller also collected samples from three seeps west of the landfill disposal area. PCE levels up to 310 ppb were detected. Further evaluation of the source areas and a recovery system for contaminated groundwater were recommended by Geraghty and Miller.²⁷

On September 5, 1985, MD DHMH performed an inspection at Black and Decker to determine compliance with Toxic Substances Control Act (TSCA) regulations. Three non-leaking transformers with PCB-contaminated oils were identified at the facility. Information from Mr. Grimes and from 1988 and 1989 hazardous waste reports indicates that the electrical transformers were drained of PCB-contaminated oil and replaced with non-PCB oil (see appendix M for hazardous waste reports).^{5,28,29,30}

MD DHMH conducted home well sampling in the areas surrounding Black and Decker on several occasions in 1985 and 1986 (see appendix N). Varying levels of PCE and TCE were detected in several wells. The Leister dairy barn contained up to 9 ppb PCE. A TCE level of 2 ppb was detected in wells at 4321 Hampshire Road and at the Mosner and Harner residences. MD DHMH also collected surface water samples downstream of the subject facility on Deep Run; no contaminants were identified (see appendix O).^{31,32,33}

In August 1986, BCM Eastern, Incorporated (consultants) performed a soil boring investigation at Black and Decker; the investigation was requested by MD DHMH. The purpose of the study was to determine whether contaminant sources could be detected in the source areas identified by Geraghty and Miller in 1985 and whether groundwater remediation could be expedited by excavation and/or treatment of the soil in the landfill source areas. Soil borings and subsurface sampling were conducted in each of the three source areas identified by Geraghty and Miller and verified by BCM with geophysical surveys. No significant levels of TCE or PCE contamination were found in any of the areas (see appendix P for report and results). BCM installed an air-stripper tower at the facility in December 1986.^{34,35}

Black and Decker contracted Weston in 1987 to perform an environmental investigation of the subject facility. The first phase was conducted in November and December 1987 and utilized environmental sampling, test pit excavations, and geophysical surveying in an effort to identify potential sources of groundwater contamination.^{6,9}

According to an April 1989 Weston report, seven areas were identified as possible sources of groundwater and/or soil contamination based on discussions with Black and Decker employees and previous investigations (see figure 2.3, page 2-12, and appendix Q).⁶

Zone A, the storage tank areas, consisted of tank farm no. 1, tank farm no. 2, and the above-ground storage tank area. Tank farm no. 1 consisted of 13 underground tanks containing oils and solvents; tank farm no. 2 consisted of 5 underground tanks that contained processing oils and waste oils (see appendix Q, table 3-1, for inventories of tank farm nos. 1 and 2). The above-ground storage tank area consisted of two 5,000-gallon above-ground tanks containing TCE and a solvent called UCAR. The underground tanks in the tank farms were excavated, cleaned, and backfilled, according to the Weston report. No further information is available on the closure of the underground tanks. The old TCE storage tank was also removed; a new diked TCE storage tank and tanks for methanol and liquid nitrogen were located in this area at the time of the Weston investigation.⁶