ATTACHMENT D

RCRA Record of Decision, dated September 30, 1991.

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

RCRA RECORD OF DECISION
FOR
COOPER INDUSTRIES, INC.
EARLYSVILLE, VIRGINIA

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STATEMENT OF BASIS FOR PROPOSED CORRECTIVE MEASURES
UNDER SECTION 3008(h) OF RCRA
COOPER INDUSTRIES, INC.
EARLYSVILLE, VIRGINIA

I. PURPOSE OF EPA's STATEMENT OF BASIS

On March 9, 1990, the U.S. Environmental Protection Agency, Region III (EPA) and Cooper Industries, Inc. (Cooper) entered into a Unilateral Administrative Order, Docket No. RCRA-III-022-CA (Unilateral Order) pursuant to Section 3008(h) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6928(h). Under the terms of this Unilateral Order, Cooper was required to complete a RCRA Facility Investigation (RFI) in order to determine the nature and extent of onsite and offsite contamination emanating from its Earlysville, Virginia, site (hereinafter referred to as "Facility") and to conduct a Corrective Measure Study (CMS) to evaluate various clean-up alternatives.

Cooper has completed and EPA has reviewed and approved both the RFI and CMS Reports. The Corrective Measure Study Report evaluated five (5) Corrective Measure Alternatives (CMAs or Alternatives) for contaminant remediation.

This document describes these Alternatives and presents EPA's justification for making a proposal regarding the preferred Corrective Measure Alternative. These CMAs were developed by Cooper and provided to EPA in the CMS report. This document will summarize the findings of the RFI and the CMS conducted by Cooper as well as EPA's rationale for its proposal regarding the selection of the EPA preferred Corrective Measure.

This document highlights certain information presented in the RFI Report and the Corrective Measure Study Report but does not serve as a substitute for these documents. Persons desiring more complete sources of information regarding these reports should consult the EPA Project Coordinator, Thomas J. Buntin, at the address/telephone number given at page 30 of this document, and the Administrative Record, a copy of which is available for review at the offices of EPA Region III, 841 Chestnut Building, Philadelphia, Pennsylvania. Comments on this document may be sent to the attention of Mr. Buntin.

EPA welcomes public comment on all of the alternatives described and on any additional options not previously identified and/or studied. Public input on all potential alternatives, and on the information that supports the alternatives, is an important contribution to the Corrective Measure selection process. Public comments can influence EPA's final selection of a corrective measure(s). If new and/or substantive information or arguments are presented to EPA through public comments, EPA may integrate these comments and so modify the proposed CMA. The final Corrective Measure Alternative selected by EPA will be implemented either through a Corrective Measure Implementation (CMI) Administrative Consent Order, Administrative Unilateral Order or civil judicial enforcement action.

II. PROPOSED REMEDY

The remedy proposed to be implemented at Cooper's Facility requires the recovery of contaminated groundwater from both shallow and deep wells located on-site. No off-site recovery wells are proposed since no off-site migration of contamination has occured. However, groundwater sample results indicate that the Drum Heller residential well, which lies immediately northwest of the Cooper Facility, is contaminated with 1,1,1 - Trichloroethane (1,1,1 - TCA) at levels below 20 parts per billion (ppb). The Maximum Contaminant Level (MCL) for 1,1,1 - TCA is 200 ppb. MCLs are federally enforceable drinking water standards developed under the Safe Drinking Water Act. See 40 C.F.R. Part 141. Cooper reportedly never used 1,1,1 - TCA at its Facility, nor is 1,1,1 - TCA a chemical, physical or biodegradation product of the volatile organic compounds (VOCs) known to exist within on-site groundwater. However, Cooper has installed a two stage granular activated carbon (GAC) system at this residential well. Cooper provides periodic sampling of the water after it passes through the two stage GAC system and 1,1,1 - TCA has never been detected.

The pumping of the on-site recovery/production wells will not only result in the recovery of contaminated groundwater but will also contain any potential future off-site migration of contaminants. Treatment of the VOCs (tetrachloroethylene (PCE)) and associated biodegradation products such as trichloroethylene (TCE) and 1,2 - dichloroethylene (1,2 - DCE)) found in the recovered groundwater will be accomplished via Cooper's onsite waste water treatment plant. The waste water treatment plant utilizes a biologically activated sludge which degrades PCE and other volatile organic compounds into carbon dioxide and water. Therefore, the waste water treatment plant converts these VOCs into harmless compounds.

Finally, the medium of soil has not been significantly impacted as documented in the EPA-approved risk assessment for on-site soils. The RFI confirmed that no contaminants exist in surface water, sediments and air at the Facility. Therefore, no remediation of the media of soil, surface water, sediments or air are proposed.

III. FACILITY BACKGROUND

The Cooper Facility, which is operated by Cooper's Distribution Equipment Division, is located in the rural community of Earlysville, Virginia, seven (7) miles north of the City of Charlottesville, Virginia. A site map is provided as Attachment A. The Earlysville Facility has been in operation since 1962. Arrow Hart, Inc. - Murray Division owned and operated the Facility from 1962 until the plant was purchased by the Crouse-Hinds Company in 1975. Cooper purchased the Facility from Crouse-Hinds in 1982.

From 1962 to present, various types of electrical distribution equipment have been manufactured at the Facility. The manufacturing process includes stamping, grinding, welding, painting and plating operations. These manufacturing processes resulted in the generation of various hazardous wastes and/or hazardous constituents as defined in 40 C.F.R Part 261. These wastes include wastewater treatment sludges from electroplating and painting operations (F006 hazardous waste as defined in 40 C.F.R Part 261). The hazardous constituents from the electroplating operation are metal hydroxides, primarily aluminum, copper, tin, zinc and cyanide while the hazardous constituents from the painting operation are metal hydroxides, principally chromium and phosphates. Finally, Cooper used tetrachloroethylene in its parts deburring machine as well as a demister in its automatic press room. Tetrachloroethylene used for this purpose, once spent, is defined in 40 C.F.R Part 261 as an F001 hazardous waste.

In September of 1984, Cooper discovered the existence of VOCs in the onsite production wells. On September 13, 1984 Cooper began treating water from these production wells, which was being used by facility personnel, with GAC units.

IV. ENVIRONMENTAL SETTING

1. Physiography and Climate

Albemarle County, Virgnia is within the Piedmont and Blue Ridge Physiographic Provinces. About 80 percent of the county (including the Cooper Facility) is situated within the Piedmont Physiographic Province. This region is characterized by broad, flat uplands and hills which are separated by numerous, small winding streams generally flowing southeastward. Elevations range from 500 to 1,500 feet above mean sea level (msl), with an average of 700 feet msl.

The western edge of the county is within the Blue Ridge province. The boundary between the two provinces is located about seven miles west of the Cooper facility. Rounded, elongated ridges with steep eastern facing slopes and broad valleys characterize this region. Elevations range from 800 to 3,300 feet msl.

Warm, humid summers and mild winters characterize the climate of Albemarle County, Virginia. Average summer temperature is 75°F, and the average winter temperature is 37° F. Total annual precipitation is around 46 inches. Of this precipitation, around 24 inches occur from April through September as showers or thunderstorms. Average seasonal snowfall is around 23 inches.

2. Soils and Geology

The geology at the Cooper facility generally consists of 15 to 50 feet of residuum-saprolite overlying Precambrian bedrock. The bedrock in this area is the Precambrian Lovingston Formation (Nelson 1962).

The residuum-saprolite consists of red-brown, micaceous, clayey silt with occasional lenses of sand and clay. The lower part of this unit is mottled, reflecting intermittent saturation, and contains highly weathered bedrock (saprolite).

The Lovingston Formation consists of granitic gneiss and quartz monzonite. Regional data indicate the upper 100 to 300 feet of the bedrock are fractured with the greatest amount of fracturing occurring within the upper 100 feet. Onsite borehole data indicate the upper ten to 20 feet of bedrock is weathered and highly fractured. Based on the response of the drill rig used onsite, weathering and fracturing decreased with depth.

Depth to bedrock varies throughout the site. Attachment B shows bedrock topography. In general, the bedrock surface slopes to the south following the land surface topography. Borehole data suggest a bedrock trough trending north-south, near monitoring well 12d, north of the plant. This may be associated with greater fracture occurrence in this area.

3. Hydrogeology

Two hydrogeologic units, residuum-saprolite and granitic bedrock, occur at the Cooper facility. These units are in hydraulic communication and basically respond as one unit. The residuum-saprolite is usually considered to be the unit where most groundwater occurs. Groundwater pumping from the bedrock is mainly from stored groundwater in the overlying residuum-saprolite (Heath 1980).

Groundwater at the Cooper facility generally occurs at a depth of 15 to 35 feet below the land surface. In most areas of the site, the lower three to thirty feet of the residuum-saprolite are saturated. North of the site, the residuum-saprolite may be only intermittently saturated.

Shallow groundwater flow within the residuum-saprolite in the vicinity of the plant generally follows topography with groundwater basins approximately coinciding with surface-water basins. Groundwater recharge occurs principally along the uplands with discharge to the local stream channels or the facility supply wells. Attachment C depicts shallow groundwater flow at the facility. As the plant site occurs along a groundwater divide, flow is somewhat radial. Except for the area north of the main plant building, groundwater flow is generally from the groundwater divide southwest toward Camp Faith Creek, and its tributary stream channels. Groundwater discharge to the surface-water system is evidenced by the seeps along the lower reaches of the surface-water drainages. Shallow flow is also influenced by the facility supply wells and groundwater recovery wells.

Deeper groundwater flow in the bedrock also generally follows topography with recharge mainly along the divide and discharge to the major drainages and the facility supply wells. Attachment D depicts deep groundwater flow at the facility. At the site, most deep groundwater flow is from the groundwater divide southwest toward the onsite active production wells WS 2 and WS 4, Camp Faith Creek, and its tributary stream channels located in the southern part of the plant property.

Groundwater flow in the bedrock is controlled by fractures. Significant fractures are generally limited to the upper 100 to 300 feet in this geologic terrain (Sterrett and Hinkle 1980). Logs of nearby private wells indicate significant water producing fractures are generally limited to within 200 feet of the ground surface. These logs are consistent with data presented in LeGrant (1960) which indicated the well yields do not significantly increase below a depth of about 200 feet. The upper part of the bedrock is sufficiently fractured so that the hydraulic regime approaches that of a porous media. The deep wells at the site are completed in the upper bedrock, as this zone probably has the highest hydraulic conductivity, and therefore, the greatest groundwater flux.

Shallow horizontal hydraulic gradients average about 0.05 ft/ft. Horizontal gradients in the bedrock part of the flow system range from 0.1 ft/ft near the plant to 0.3 ft/ft in downgradient areas. During the period of June through August 1988, water levels decreased at most wells in response to the low precipitation. Over the past two years, water levels have fluctuated in response to variable precipitation.

Vertical hydraulic gradients are generally downward near the main plant building. The vertical gradients are generally low indicating most flow is horizontal rather than downward. Data from shallow/deep well pairs in the vicinity of Camp Faith Lake demonstrate an upward vertical gradient. This is important, as an upward vertical gradient effectively limits the extent of groundwater impacts within the bedrock aquifer beneath Camp Faith Lake.

Attachment E depicts the cross-sectional view of the groundwater regime at the Cooper facility. These cross sections show the downward gradients near the plant and at the supply wells. Note the potentiometric contours are projected to extend to a depth of about 300 feet, the probable maxium depth of fracturing. It is believed a no-flow hydraulic boundary exists at the maximum depth of fracturing because the hydraulic conductivity would approach zero. All flow would be parallel to the hydraulic boundary (mainly horizontal). The decrease in hydraulic conductivity with depth will limit the depth of groundwater impacts. Attachment E also shows the groundwater divide at the creek. Groundwater flow from both directions is discharged to the creek indicating a hydraulic boundary that prevents contaminant migration across Camp Faith Creek.

4. Aquifer Hydraulic Properties

The hydraulic properties of the geologic units at the site were determined by conducting 24-hour constant discharge tests on water supply wells 1 and 5 and an eight day test on well 26d in August of 1988.

The data for wells 1, 5, and 26d indicate a bedrock transmissivity ranging from 21 to 610 ft^2/day with an average of 72 ft^2/day. The average storage coefficient of 3.7×10^{-4} indicates semi-confined conditions. No evidence of delayed yield was present in the data indicating good hydraulic connection between the bedrock and overburden. No significant bedrock anistropy is evident in the data.

Assuming the upper part of the bedrock is sufficiently fractured so the hydraulic regime approaches that of a porous media, anisotropy is low, and Darcy's Law is valid, the average linear flow velocity (V) may be estimated from the equation:

$$V = \frac{ki}{n}$$ where
k = hydraulic conductivity (ft/day)
i = hydraulic gradient (ft/ft)
n = porosity

Using the data from monitoring well 26d, and assuming a saturated thickness of about 75 feet, a hydraulic conductivity of approximately one ft/day can be estimated. This is a typical value for fractured granite (Heath, 1980). Based on this hydraulic conductivity value, a hydraulic gradient ranging from 0.03 to 0.1 ft/ft, and a porosity of 0.10, the average linear groundwater flow velocity is estimated to range from 0.03 to 1.0 ft/day.

5. Groundwater Use

Cooper has five onsite water supply wells with three wells currently supplying water to the plant (wells 2, 3, and 4). These wells supply the plant's daily water usage of about 32,00 gallons per day (gpd). A reverse osmosis system was installed in January 1990 at the water treatment plant so that about 50 percent of the process water is recycled for plant use. Water from well 3, which has never shown contamination, is used as a potable supply. Water from wells 2 and 4 is treated through two activated carbon cells connected in series prior to use. Water from wells 1 and 5, along with wells 2d, 20d and 26d which are operating purely for the ongoing groundwater remediation program, goes directly to the water treatment plant. The wells have been used extensively for groundwater recovery and treatment since September of 1988. The facility wells are completed as open holes in the bedrock with total depths ranging from 198 feet to 555 feet.

Landowners in the vicinity of the Cooper plant are supplied by domestic wells, because no public water supply systems serve the area. A search of the State Water Control Board files identified records for twenty seven (27) domestic wells within a two-mile radius of the plant. Twenty four (24) of these domestic wells are located in the Graemont subdivision which is located immediately beyond the southern boundary of the Facililty.

Completion data indicate most private wells in the area are less than 300 feet deep; one-half are less than 200 feet deep. Furthermore, the deeper wells have the lowest yield which is additional evidence indicating the rapid decrease in fracturing and water occurrence with depth.

Analysis of Attachments B, C, D and E demonstrates that groundwater from the Graemont subdivision flows to the northwest toward Camp Faith Creek. Groundwater flow from the plant and the Graemont subdivision conveges along Camp Faith Creek and is the source of the baseflow in the creek. The low water consumption typical of domestic wells in the Graemont subdivision would not alter the discharge pattern to Camp Faith Creek. That is, the Graemont wells are located on the side of Camp Faith Creek which is opposite of the Facility and, therefore, the Graemont wells are not affected by Cooper's ongoing groundwater recovery operation. Finally, none of the proposed CMAs, as discussed later in this Statement of Basis, would affect the Graemont wells.

B. Previous Investigations

The overall objective of the Facility investigation was to determine not only the lateral and vertical distribution of VOC contaminants in both onsite and offsite groundwater but also to chemically characterize and determine the distribution of contaminants in the media of soil, sediment, surface water and air. The activities at the Facility progressed in a phased, interative manner with each activity providing improved focus for the subsequent actions.

The following phases have been completed to date:

- Phase I: Preliminary Site Evaluation (May - June 1988)
- Phase II: Additional Site Characterization and Identification of Potential Response Alternative (July - August 1988)
- Phase III: Final Site Characterization and Response Action (March - November 1989)
- Phase IV: Site Characterization and Response Action Study (March - November 1989)
- Phase V: East Drain Pit and Final Pond Closure (December 1989 - July 1990)
- Phase VI: RCRA Facility Investigation, Groundwater and Treatment System Monitoring (September 1990 - April 1991)

Attachment F presents the chronological listing of all previous facility investigation reports.

The objectives of Phase I were to provide a preliminary evaluation of existing and former waste management practices and to collect initial data on the physical setting of the Facility. Phase I was completed in May and June of 1988.

Phase I included a review of available Facility information on the Facility waste management and past investigations. Eleven shallow auger borings were drilled around the sludge trenches, drain pits, concrete tanks, and sanitary lagoon to provide data on the subsurface materials. A groundwater investigation plan was implemented. This plan included the installation of six shallow and seven deep wells. The shallow wells were installed in the saturated overburden. The deep wells were completed in the upper part of the bedrock. Water levels were routinely measured to determine groundwater occurrence and flow.

The main objectives of Phase II were to provide additonal data on specific waste management units, potential soil and groundwater impacts, local hydrogeology, and to identify appropriate response alternatives. Phase II was completed in July and August of 1988.

The sludge trenches, concrete tanks and drain pits were investigated by hand auguring and organic vapor surveys. Samples of background and final pond soils were collected and analyzed for EP Toxicity and total RCRA metals, total nickel, cyanide, pH, percent solids, and VOCs. Constant discharge pump tests were conducted on water supply wells WS 1 and WS5. Samples from nine of the wells were collected and analysed for volatiles, RCRA metals, nickel, and major ions.

Phase III provided for further characterization of onsite conditions and implemetation of specific response activities. Phase III was mainly completed from September to December of 1988. This phase included the installation of additional monitoring wells and recovery wells. The initial wells (1a, 2a, and 3a) were decommissioned and replaced with 2-inch wells for sampling purposes. Four shallow perimeter wells were sampled and analyzed for VOCs. Another round of sampling at all wells and the five facility water supply wells was performed in October 1988. The samples were analyzed for VOCs. A third round of sampling was performed at selected locations to evaluate the previous sampling data.

The concrete tanks, which had received discharges from both the paint line and the Facility sanitary waste line, were cleaned and excavated. The impacted material from the concrete tanks was disposed at a RCRA hazardous waste facility.

Soils at the east drain pit were found to contain tetrachloroethene (PCE.) The impacted drain pit material was excavated and incinerated at a RCRA hazardous waste facility. Implementation of additional groundwater recovery and treatment was initiated.

Phase IV, which was completed by November of 1989, included installation of the additional monitoring wells between the Facility and the nearest private wells to the south and southeast. Sampling and analysis of groundwater, surface water, and sediment as well as in-situ aeration of the east drain pit subsoils was also performed.

In Phase V, the east drain pit and final pond were closed-out as described in Section III (C) (2-3) of this Statement in accordance with plans approved by Region III of the U.S. EPA and the Virginia Department of Waste Management (VDWM), respectively. Documentation of these activities provided in the Administrative Record.

Phase VI included the development and submittal of the RCRA Facility Investigation (RFI) (September 1990 - April 1991), and the ground water and treatment system monitoring data. A Quality Assurance Project Plan for the Groundwater Monitoring Program (QAPjP) at the Facility was submitted to EPA in September of 1990. The first round of sampling under the EPA-approved QAPjP was performed in December of 1990, and submitted to the EPA in April of 1991 with full data validation. The treatment system monitoring has consistently showed no detection of VOCs in the effluent samples.

C. Summary of the Remedial Investigations

Two hydrogeologic units, residuum-saprolite and bedrock, occur at the Cooper facility. These units are in hydraulic communication and basically respond as one unit. The residuum-saprolite is usually considered to be the unit where most groundwater occurs. Groundwater pumping from the bedrock is mainly from stored groundwater in the overlying residuum-saprolite.

Shallow groundwater flow in the vicinity of the plant generally follows topography with groundwater basins approximately coinciding with surface-water basins. Groundwater recharge occurs principally along the uplands with discharge to the local stream channels, the recovery wells or the facility supply wells. As the plant site occurs along a groundwater divide, flow is somewhat radial. Except for the small area north of the main plant building, groundwater flow is generally from the divide southeast toward Camp Faith Creek and its tributary stream channels. Groundwater discharge to the surface-water system is evidenced by the seeps along the lower reaches of the surface-water drainages. Surface-water flow measurements along Camp Faith Creek, taken during periods of time in which there was no precipitation, indicate increasing flow downstream, confirming groundwater discharge to the creek.

Thirty-two monitoring wells, both shallow and deep, have been installed at EPA-approved locations. The monitoring wells and the five water supply wells have all been sampled numerous times over the past three years for an extensive list of possible contaminants.

Tetrachloroethene (PCE) is the predominant volatile organic compound found. Chloroform, 1, 2 - DCE, 1,1,1 - TCA and TCE were found in several groundwater samples. These compounds, with the exception of chloroform, are probably degradation products of PCE.

The horizontal and vertical extent of groundwater impacts is well defined and contained within the plant property boundaries. A map depicting the horizontal extent of the groundwater contaminant plume is provided as Attachment G. No contamination was detected in the wells at the plant boundaries. To the south of the facility, there is 900 feet between the area of known detection and the facility boundary. Groundwater from the Graemont subdivision flows to the northwest toward Camp Faith

Creek. Groundwater flow from the plant and the subdivision converges along Camp Faith Creek and is the source of the baseflow in the creek. The Graemont wells are located on the opposite side of a hydraulic boundary, i.e., Camp Faith Creek. Consequently, the Graemont wells are not affected by the Cooper plant, the ongoing groundwater recovery operation or the proposed groundwater recovery program as discussed later in this Statement of Basis document.

The area of existing groundwater impacts is strongly influenced by the ongoing recovery system. Impacted groundwater is being drawn to the various recovery wells as shown in Attachment H. The ongoing groundwater pump and treat system assures capture and hydraulic control of the onsite groundwater contaminant plume. Consequently, significant reductions in the concentration of VOCs are evident in groundwater data collected over the last three years. The aerial extent of groundwater impacts has been reduced by about 50 percent since the initiation of the present pump and treat program. The volatile organic concentrations have generally decreased in a steady manner since groundwater collection has been performed in conjunction with the remediation of the principal source area for PCE, i.e., the east drain pit.

D. Summary of Contaminant Stabilization Activities Completed to Date

Cooper has carried out extensive stabilization activities at the Earlysville facility. The following summarizes these activities in two categories, solid waste management units (hereinafter referred to as "SWMUs") and groundwater.

1. SWMUs

Seventeen SWMUs at the Facility have been identified and closed-out. Those land based units which received hazardous waste and/or hazardous constituents are the three concrete tanks, the final pond, the east drain pit, the two sludge pits and the ten sludge trenches. The sanitary lagoon reportedly never received hazardous waste or hazardous constituents. The following summarizes the remedial efforts associated with each unit.

a. Concrete Tanks

Initial investigation of the Facility in late 1987 revealed three concrete tanks associated with the paint line and the Facility sanitary waste disposal system. During the week of July 11, 1988, Cooper's consultant sampled the contents of the tanks as well as surrounding soils. Based upon the sampling results which showed contamination, Cooper removed the tanks and contaminated soil. These removal activities were observed by personnel of the VDWM. The tanks, tank contents and soil, were manifested as non-hazardous waste and transported to a RCRA-regulated landfill in Pinewood, South Carolina. EPA approved the plan for excavation and removal of the tanks and in February of 1989, based on the finding that the residual hazardous waste constituents found in the soil beneath the excavated tanks did not pose a threat to human health and the environment. Cooper received certification of closure via a registered professional engineer in March of 1989.

b. Final Pond

From 1970 to 1985, effluent from the waste water treatment plant, which contained hazardous waste, was discharged to the final pond. The final pond was used by Cooper as a firewater retention basin.. Discharge from the final pond was to a surface-water drainage ditch which flowed into Camp Faith Creek. In August of 1987, the VDWM proposed a draft enforcement order for closure of the final pond under the Virginia Hazadous Waste Management Regulations (VHWMR). A closure plan was submitted by Cooper and approved by the VDWM. Approved closure activities occurred in June of 1990. Quarterly groundwater compliance monitoring is currently being implemented according to a VDWM-approved sampling and analysis plan.

c. East Drain Pit

From the early 1960s to the late 1970s, a parts deburring machine and a demister in the automatic press room discharged to the east pit on the south side of the main plant at the Cooper Facility. Initial site investigations indicated that the soil in and around the east drain pit was a potential source of volatile organic compounds (VOCs) to the groundwater. Pit materials and impacted soil were excavated, manifested as F002 hazardous waste, and transported to a RCRA hazardous waste incinerator in Calvert City, Kentucky. Excavation of the east drain pit was completed in June, 1990 in accordance with VDWM-approved plans which required that subsoils in the pit be treated via an in-situ vapor extraction system. Subsoil sampling following completion of the in-situ vapor extraction operation demonstrated that no residual VOCs remained in the subsoil.

d. Sludge Pit

Cooper completed excavation of the sludge pit as well as 12 to 18 inches of the underlying subsoil on July 11, 1983. The sludge and subsoils were disposed of at a RCRA hazardous waste landfill in South Carolina. A total of 31 subsoil samples were taken to a depth of 6 inches on all the sides and bottom of the excavated sludge trenches. Analyses of these samples are provided in Volume I of the Administrative Record. EPA's review of these data, as set forth in the RFI Report, revealed that no significant levels of hazardous constituents were found in the subsoil and, therefore, the subsoil is not a threat to human health or the environment.

e. Sludge Trenches

In 1981 Cooper's consultant conducted an investigation of the sludge trenches used in connection with the WWTP. There were ten (10) trenches each of which has the approximate dimensions of 100 feet long, two feet wide and four to five feet deep. These trenches were investigated by taking soil samples up to 15 feet in depth and installing four observation or monitoring wells. Analyses of soil and groundwater analytical data demonstrates that no VOCs exist in the sludge trenches or soils beneath the trenches and that only low concentrations of cadmium, copper, iron, tin and zinc were found in the soil. Based upon the analyses of these soils, the soils were classified as non-hazardous. Since these soils were non-hazardous, the trenches were not excavated. Finally, none of the above-mentioned metals were found in groundwater beneath these trenches at concentrations exceeding the MCLs for these various metals.

f. Sanitary Lagoon

Useage of the sanitary lagoon was discontinued by Cooper in 1984. According to Cooper, hazardous waste and/or hazardous constituents never entered the sanitary sewer system and, therefore, the sanitary lagoon. Sampling data, as provided in the Administrative Record, confirmed that no hazardous waste or hazardous constituents exist in the soil beneath the sanitary lagoon.

2. Groundwater

The aquifer beneath and surrounding the Facility is classified as a II B aquifer . That is, the aquifer is a viable source of drinking water but many wells in the aquifer are low yielding as opposed to a II A aquifer which has high yielding wells. Cooper has initiated a progressive remedial action plan for the aquifer, which has been contaminated with VOCs. Water supply wells WS 2 and WS 4, both of which are contaminated with VOCs, have been routed through a new granulated activated carbon system that replaced existing smaller GAC units. WS 3, which has never had detectable VOC contamination, was also used for the water supply.

Making use of additional onsite wells, Cooper initiated groundwater recovery and treatment by routing water supply wells WS 1 and WS 5 to the onsite facility waste water treatment plant. In early 1989, wells 26d and 20d were added to the recovery system and treated at the onsite waste water treatment plant. In early 1990, well 2d was added to the recovery system. Facility wide groundwater monitoring was initiated, monitoring both the deep and shallow groundwater flow zones.

Potable water is used in the headquarters office building, drinking fountains, and safety showers in the production plant itself. Commodes in the process plant utilize recycled process water. The treatment plant discharges 14,000 gpd into Camp Faith Creek under a Virginia Pollutant Discharge Elimination System (VPDES) Permit (Permit No. 0027065.) Monitoring of the effluent is regulated by the Virginia State Water Control Board (SWCB), and to date no detections have been recorded.

In the last three years, over 15 million gallons of groundwater have been recovered and treated. An estimated 111 pounds of volatile organics have been removed from the groundwater. A groundwater monitoring program has been approved by EPA which has confirmed the effectiveness of the ongoing groundwater recovery program.

IV. Summary of Facility Risks

EPA Region III performed a risk assessment as part of its review of the plans for closing-out the concrete tanks and east drain pit. A risk assessment for the final pond was performed by Cooper's consultant and approved by EPA. These risk assessments are provided in the Administrative Record.

A baseline risk assessment for groundwater at the Facility was performed by Cooper's consultant and approved by EPA. EPA required this baseline risk assessment in order to provide criteria for evaluating the effectiveness of the ongoing groundwater recovery and treatment program in terms of reducing potential threats to human health and the environment, and to provide a measure of the overall protectiveness for the corrective measure alternatives evaluated in the CMS.

This baseline risk assessment evaluates potential risk to human health given no action in remediating groundwater at the facility based on two different "worst case" exposure scenarios. The first assessment is based on a worst case scenario of future residential use. The second assessment is a worst case industrial use scenario where the activated carbon cells, currently treating all water used at the facility, catastrophically fail and are not repaired, thereby potentially exposing Cooper employees to contaminated water.

The current risk to humans presented by groundwater at the Facility is zero. Risk is a function of exposure and harm. For there to be risk there must be exposure to a source of harm such as a toxic chemical. If there is no exposure or the chemical is not harmful, there is no risk. At the Cooper facility there is, under current conditions, no harm to facility personnel as all water is carefully treated and monitored. All process and potable water is treated through two in-series activated carbon cells. Also, the results of the RFI demonstrate that there is no exposure of potential offsite receptors to contaminated groundwater. Potential exposure at the Drum Heller residence is eliminated by the GAC filter system. Therefore, there is currently no risk to the facility personnel or to potential offsite receptors. In addition, the ongoing groundwater recovery and treatment program is effectively reducing the potential risk.

The residential use risk assessment was based on a "worst case" scenario in which there would be potential exposure to individuals living for a lifetime at the facility. Ingestion is the main exposure route. However, other exposure routes including inhalation of vapors during showering, use of water on homegrown plants, use of water in cooking, and dermal contact with the water are evaluated.

In order to provide a worst case assessment, only historical data from the three most contaminated wells (recovery wells WS 1 and 2d, and monitoring well 1d) were used. These three wells are located near the east drain pit, the principal source of the groundwater contaminants.

The chemical constituents detected consist of both systemic toxicants and carcinogens. Hazard quotients (the ratio of the level of exposure to an acceptable level, e.g. an MCL) were calculated for each systemic toxicant. As a worst case evaluation, different toxicological end-points were ignored and a total hazard index (HI) for the systemic toxicants was calculated. The HI is obtained by summing the hazard quotients of all the systemic toxicants. For example, if the hazard quotients for individual chemicals are less than 1.0 but the sum of the hazard quotients for all substances in an exposure medium (i.e., the hazard index) is greater than 1.0, then there may be a concern for potential health effects. For carcinogens, the lifetime cancer risk is calculated for each constituent, as well as summed for all carcinogens to give a total cancer risk.

The sum of the potential risks indicates the following cumulative risks for exposure to non-carcinogens and carcinogens under average and worst case residential exposure scenarios:

<u>Exposure to Non-Carcinogens</u>

Hazard Index

Average Case	Worst Case
4.17	13.2

<u>Exposure to Carcinogens</u>

Lifetime Cancer Risk

Average Case	Worst Case
4.63×10^{-3}	1.43×10^{-2}

For the systemic toxicants the HI was greater than unity only for ingestion. The HI for the other exposure scenarios was well below unity.

The carcinogens pose a greater risk than one in one million (1×10^{-6}). Again, ingestion is the main exposure pathway with the other exposure pathways contributing low additional risks. Over 95 percent of the calculated risk is due to tetrachloroethene.

Potential exposure to facility workers was also evaluated. Cooper uses three wells (WS 2, WS 3, WS 4) for potable and process water. Water from WS 3 which has never had detectable contamination is piped directly into the facility water system. Water from WS 2 and WS 4 passes through two in-series activated carbon cells for each well prior to use. When break through occurs on the first cell the second cell prevents the constituents from entering the distribution system. The first cell is removed and the carbon is replaced. The second cell is placed in the first cell position and the first cell with new carbon is placed in the second position.

Start-up testing indicated that break through on the first cell did not occur until after 90 days. Therefore, a monitoring program was set up on a 90 day basis. Influent and effluent water after the first and second cells is monitored. No contaminants have ever been detected from the second cell (carbon filter #2 effluent). Therefore, there is no risk to facility employees as long as the cells are maintained and monitored.

However, at the direction of EPA, potential risks from a worst case scenario of facility employee exposure were calculated. Under this scenario it is assumed that the activated carbon system fails completely and that no monitoring, maintenance or repair work is performed. Thus, under this scenario, the Facility employees would be exposed to the contaminants in the three supply wells.

All of the basic assumptions and exposure routes used for the residential use assessment were also used for this industrial use assessment except that no exposure was estimated for irrigation of homegrown vegetables. The sum of the potential risks indicates the following cumulative risks for exposure to non-carcinogens and carcinogens under average and worst case exposure scenarios:

Exposure to Non-Carcinogens

Hazard Index

Average Case	Worst Case
0.26	0.46

Exposure to Carcinogens

Lifetime Cancer Risk

Average Case	Worst Case
2.91×10^{-4}	6.96×10^{-4}

This assessment indicates that there is no risk due to systematic toxicants. Potential exposure to the carcinogens presents a risk in the range of 10^{-4}. This is chiefly due to ingestion and dermal exposure to tetrachloroethene.

For the Cooper Facility, cleanup goals have been established that are either Maximum Contaminant Levels (MCLs) or the concentration of a given contaminant which corresponds to a 10^{-6} cancer risk. The 10^{-6} cancer risk level represents the concentration of a carcinogen such that a person of average weight drinking 2 liters/day of water containing the contaminant would have no more than a 1 in 1 million chance of developing cancer from drinking the water during a 70 year lifespan. The MCLs for TCE, 1,1,1 - TCA and chloroform are 5, 200 and 100 parts per billion (ppb), respectively. MCLs have not been promulgated for PCE and 1,2 - DCE. Therefore, the concentration which corresponds to a 10-6 cancer risk for 1,2 - DCE is 58 ppb, while the proposed MCL for PCE is 5 ppb.

Actual or threatened releases of hazardous wastes or haxardous constituents from this facility, if not further addressed by the proposed remedy or one of the other remedies considered, may present a current or potential threat to human health or the environment.

V. SCOPE OF CORRECTIVE ACTION

The history and distribution of contamination at the Cooper Facility is straightforward. All SWMUs have been characterized and the lateral and vertical distribution of the contaminants emanating from these SWMUs, if any, is known. The media of soil, surface water, sediment and air have not been impacted, in part, due to corrective action activities undertaken by Cooper as discussed earlier in this Statement of Basis. Consequently, groundwater is the only impacted medium at this facility. The groundwater contaminant plume is not migrating offsite due, in part, to the ongoing groundwater recovery program. Therefore, the scope of this proposed corrective action is restricted to recovery and treatment of groundwater and associated groundwater monitoring activities.

VI. SUMMARY OF ALTERNATIVES

Corrective Measure Alternatives	Brief Discription	Costs Capital	O&M
CMA #1	No action Alternative; including discontinuation of ongoing pump and treat program.	1.2 M to date	No Cost
CMA #2	Maintenance of ongoing pump & treat program; maintenance of groundwater as well as waste water treatment plant monitoring program; inclusion of institutional controls.	1.2 M	$105,000
CMA #3	CMA #2 with the inclusion of two new groundwater recovery wells.	1.2 M plus $35,000 for two new wells	$115,000
CMA #4	CMA #2 with the inclusion of an alternative onsite potable water supply coupled with the abandoment of the GAC system which is presently used to treat the potable water supply.	1.2 M	$80,000
CMA #5	CMA #2 combined with CMA #4; with the inclusion of one additional groundwater recovery well (which will be subjected to pulsed pumping) immediately downgradient of the east drain pit which is at the center of the onsite groundwater contaminant plume.	1.2 M plus $15,000 for one new well	$80,000

In its revised CMS Report, Cooper evaluated five (5) Corrective Measure Alternatives (CMAs). These five (5) alternatives are discussed in more detail, below. The pumping and treatment of groundwater via biologically activated sludge has been conducted since 1988. This pump and treat program is reducing the size as well as volume of the groundwater contaminant plume at the facility. In addition, this program is also preventing the offsite migration of contaminants. The pump and treat program proposed in CMA #3 and CMA #5 would expand the number of wells from which groundwater is recovered.

A. Alternative 1: No Action

In this alternative, no additional remedial actions are undertaken and existing groundwater recovery and treatment activity would be terminated, including the monitoring of groundwater. This CMA will not being considered as a corrective measure alternative because suspension of existing groundwater recovery and treatment would result in no remediation of contaminated groundwater beyond that which has already occured as part of Cooper's ongoing pump and treat program and thus would not be protective of human health and the environment.

B. Alternative 2: Ongoing Pumping/Treatment/Discharge System

In this alternative, the ongoing groundwater remedial actions that have already been implemented at the Cooper facility to mitigate potential risks to human health and the environment would continue. The groundwater pumping, treatment, and disposal system was implemented in 1988 using four of the five existing water supply wells to contain the groundwater plume and remediate VOCs found in onsite groundwater. A new granular activated carbon system was installed to replace the existing small vessel carbon system to eliminate potential exposure to facility personnel. Containment of the onsite groundwater plume is being accomplished by groundwater pumping at four of the five water supply wells (WS 1, WS 2, WS 4 and WS 5) and three additional recovery wells (2d, 20d and 26d). Removal of the VOCs from the extracted groundwater is accomplished by the following technologies. The water supply wells WS 2 and WS 4 are treated using a two stage GAC system housed at a central point adjacent to the existing water treatment plant. Discharge of these wells is into the plant potable water supply. The remaining five recovery wells (WS 1, WS 5, 20d, 2d and 26d) are treated by the facility water treatment plant. Use of activated sludge in the waste water treatment plant is an innovative treatment technology.

Operation of the GAC units as well as the waste water treatment plant since 1988 has confirmed the effectiveness and reliability of these technologies for treating the groundwater. Effluent concentrations for the VOCs of concern have consistently been below effluent limits specified by Virginia in Cooper's VPDES permit. Monitoring the effectiveness of contaminant removal is achieved by monitoring the influent and effluent of the GAC system as well as the effluent from the activated sludge waste water treatment plant. Finally, additional components of CMA #2 would be the inclusion of the institutional actions of maintaining the existing fencing at the facility and limiting the future use of the facility via deed restriction to non-residential uses.

C. Alternative 3: Addition of Existing Wells to Ongoing Pumping/ Treatment/Discharge System to Enhance CMA #2

In this alternative, CMA #3 combines the effective technologies of CMA #2 with increased groundwater recovery from two new additional recovery wells. The benefit of CMA #3 would be decreasing the time frame for meeting cleanup goals by increasing the rate of VOC removal from the groundwater. One of the two new additional wells would be located at the east drain pit. This well would be effective in expediting the groundwater cleanup by removing the most contaminated groundwater before it migrates to other recovery wells which are more distant from the east drain pit.. The other recovery well would be drilled between well 12d and the Drum-Heller residential property. The addition of this well would: (1) possibly control the migration of contaminants to well WS 5, thereby expediting groundwater cleanup at well WS 5, and (2) potentially eliminate the recent detection of 1,1,1 - TCA at the Drum-Heller well by hydraulically isolating this well from the onsite groundwater contaminant plume. The very low concentration of 1,1,1 - TCA detected at the Drum-Heller well is not necessarily attributable to the Cooper Facility. However, Cooper has provided and will continue to indefinitely provide treatment of groundwater at this residential well by using GAC units.

D. Alternative 4: Development of an Alternative Water Supply and Modification of CMA #2

In this alternative CMA #4 would entail the development of an alternative onsite potable water supply and the abandonment of the GAC system now currently treating the potable water supply, as discussed in CMA #2. Process options considered for this CMA were the location and drilling of a new well or wells, the pumping of an existing contaminant free well or increasing the pumping rate on contaminant-free supply well WS 3 to supply all the facility's potable water. At this time, the use of existing supply well WS 3 is the most attractive option within this CMA. A pilot project would be initiated to fully evaluate the capacity of WS 3 to supply all the facility potable water. Treatment of the groundwater from the recovery wells that discharge into the water treatment plant would continue as discussed in CMA #2. Wells WS 2 and WS 4, currently treated with the existing GAC system and included in the potable supply, would be routed to the water treatment plant, bypassing the GAC system under most operating conditions. Occasionally, wells WS 2 and WS 4 will be routed through the GAC system for process water makeup in the reverse osmosis permeate tank. Discharge of water from the waste water treatment plant would continue under the existing VPDES permit.

E. Alternative 5: Development of an Alternative Water Supply, Modification of CMA #2, and the Addition of a New Well to the Ongoing Pumping/Treatment/Discharge System

Corrective Measure Alternataive #5 is a combination of CMA 2, CMA 3, and CMA 4. It would include the use of WS 3 as a sole source potable water supply, modification of the ongoing pumping/treatment/discharge system of CMA 2, and the installation of a new recovery well at the east drain pit. A pilot project would be initiated to fully evaluate the capacity of WS 3 to supply the facility with its potable water needs. A new recovery well in the immediate vicinity of the east drain pit would be installed. Well 2d is currently serving as a recovery well in the vicinity of the east drain pit. As well 2d only recovers about 100 gallons per day, and the capture zone for well 2d is completely contained within the capture zone for well 20d, it will be removed from the recovery system following completion of the proposed new well.

In order to enhance the recovery of contaminants which may be sorbed to the soil matrix in the zone between the static and pumping water levels, a cycled pumping scenario is proposed for the new recovery well at the east drain pit. The proposed new well will be cycled on a schedule of five days on, two days off. Pumping at wells WS 2 and WS 4 would be modified in order to not adversely affect the existing VPDES permit or the capacity of the treatment plant.

The other components of CMA #2 would be included in CMA #5. Wells WS 2 and WS 4, currently treated through the GAS system, would be routed directly to the waste water treatment plant. Wells WS 2 and WS 4 may occasionally be routed through the GAC system to the reverse osmosis permeate tank for use as process makeup water. Discharge will continue under the existing VPDES permit.

VII. Media Cleanup Standards/Points of Compliance

Media cleanup standards will be used to establish when groundwater has been remediated. For the Cooper facility, media cleanup standards have been established that are either Maximum Contaminant Levels (MCLs) or the concentration of a given contaminant which corresponds to the 10^{-6} cancer risk level.

When establishing media cleanup standards, it is also necessary to establish where, i.e., in which groundwater monitoring wells, recovery wells and/or production wells, these media cleanup standards will be measured. The onsite points of compliance will be the wells designated 23d, WS #4 and the proposed new recovery well in CMA #5, i.e., the new recovery well will be installed in the center of the onsite groundwater plume which is located immediately downgradient of the east drain pit. No offsite points of compliance are proposed as no offsite contamination exists. The MCL for TCE is 5 ppb, the MCL for 1,1,1 - TCA is 200 ppb and the MCL for chloroform is 100 ppb. MCLs have not yet been promulgated for PCE and 1,2 - DCE. Therefore, the media cleanup standard for PCE is the proposed MCL which is 5 ppb and the media cleanup standard for 1,2 - DCE is 58 ppb which is the concentration that corresponds to the 10^{-6} cancer risk. The following table lists the Points of Compliance and the respective Media Cleanup Standards for contamianted groundwater that Cooper would be required to attain under CMAs #2, #3, #4 or #5. All concentrations are expressed in ppb.

Point of Compliance	PCE*	1,2 - DCE*	TCE**	1,1,1 - TCA**	Chloroform**
New Proposed Well at SWMU boundary, i.e., east drain pit	5	5	58	200	100
Monitoring Well 23d at downgradient property boundary	5	5	58	200	100
Water Supply Well #4 at downgradient property boundary	5	5	58	200	100

* Proposed Maximum Contaminant Level or concentration corresponding to a 10^{-6} cancer risk.

** Maximum Contaminant Level.

The goal of the proposed remedial action is to restore the groundwater to its beneficial use, which is, at this facility, a drinking water aquifer. Based on information obtained during the RFI, and the analysis of all proposed CMAs, EPA finds that CMA #2, CMA #3, CMA #4 or CMA #5 will be able to achieve these groundwater media cleanup standards. However, groundwater contamination may be especially persistent in the immediate vicinity of the principal contaminant source (the eastern drain pit), where concentrations are relatively high. The ability to achieve media cleanup standards throughout the entire groundwater contaminant plume cannot be realized within a few years. Rather, it is likely that many years of groundwater pumping and treatment will be required in order to determine if groundwater media cleanup standards can be achieved. EPA acknowledges that due to the high concentrations of volatile organic compounds in the groundwater in the vicinity of the eastern drain pit as well as the kinetics of chemical and physical desorption of contaminants in both the groundwater and soil which lies below the bottom of the excavated eastern drain pit, it may be technically impossible to attain the media cleanup standards at all points of compliance. It is quite possible that concentrations of VOCs in the groundwater may reach a level at which (regardless of the pumping and treatment that is undertaken and the length of time pumping and treatment is implemented), a chemical equilibrium or steady-state concentration of these VOCs is established. The equilibrium or steady-state concentration of these VOCs in onsite groundwater may be greater than the corresponding MCL or 10^{-6} cancer risk for these VOCs. That is, the equilibrium or steady-state concentration may exceed the required media cleanup standard.

To account for this possibility, EPA may, on its own initiative or upon receipt of a petition from Cooper, modify the selected Corrective Measure to require implementation of an alternative technology or technologies which will achieve the groundwater media clean-up standards. Any such modification will be made in accordance with all applicable public participation requirements in EPA's regulations, guidances or policies. If EPA determines that no practicable alternative technology which will achieve the groundwater media clean-up standards is available, EPA may, on its own initiative or upon receipt of a petition from Cooper, relieve Cooper of the obligation to achieve such media cleanup standards, for so long as achievement of such standards continues to be technically impracticable. At such time, EPA may also modify the selected corrective measure to include additional measures (such as those described later in this Section) designed to ensure that human health and the environment are protected notwithstanding the technical impracticability of meeting such standards.

A necessary condition of a petition by Cooper as described in the previous paragraph would be a statistical analysis of time versus concentration data which would verify the attainment of equilibrium in the groundwater system. Furthermore, Cooper would be required to apply an appropriate transport and fate model in order to predict the concentration of groundwater contaminants at the downgradient facility boundary given, as input into the model, the equilibrium concentration which exists at a given POC within the facility boundary.

The proposed CMA would include groundwater extraction for an estimated period of approximately ten (10) to fifteen (15) years, during which time the system's performance will be carefully monitored on a regular basis and adjusted as warranted by the performance/monitoring data collected during operation of the groundwater pump and treat system. Additional modifications may include any or all of the following:

a) at individual wells where media cleanup standards have been attained, pumping may be discontinued;

b) alternating pumping at wells to eliminate stagnation points;

c) pulse pumping to allow aquifer equilibration and encourage adsorbed contaminants to partition into ground water;

d) installation of additional extraction wells to facilitate or accelerate cleanup of the contaminant plume; and

e) additional in-situ vapor extraction program in the vicinity of the eastern drain pit.

To ensure that media cleanup standards continue to be maintained, the aquifer will be monitored at those recovery wells where pumping has ceased on an occurrence of every one year for a minimum of five (5) consecutive years following total discontinuation of the groundwater extraction program.

If it is determined, on the basis of the preceding criteria and the system performance data, that certain portions of the aquifer cannot be restored to their beneficial use, some or all of the following measures involving long-term management may occur, for an indefinite period of time, as a modification of the existing system:

a) engineering controls such as physical barriers, or long-term gradient control provided by low level pumping, as containment measures;

b) institutional controls will be maintained and potentially expanded to restrict access to those portions of the aquifer which remain above remediation goals;

c) continued monitoring of specified wells; and

d) periodic reevaluation of remedial technologies for ground water restoration.

The decision to invoke any or all of these Corrective Measure modifications may be made by EPA or upon receipt of a petition for such modification(s) by Cooper. EPA will conduct five (5) year periodic reviews of the progress of the Corrective Measure at the Facility and may determine that modifications, such as those described above, may be recommended at that time.

VIII. EVALUATION OF PROPOSED REMEDY AND ALTERNATIVES

Cooper has recommended Corrective Measure Alternative #5 as the remedy to be implemented. Based on the decision criteria that are identified in more detail below, EPA has determined that Alternative 2, Alternative 3, Alternative 4 and Alternative 5 are protective of human health and the environment. Nonetheless, EPA has preliminarily identified Alternative 5 as the most effective and expeditious means of addressing contamination at the Cooper Facility.

EPA prefers Alternative 5 because it utilizes proven technologies, is protective of human health and the environment, does not pose an unecessary or undue financial burden on Cooper, and allows for continuous plant operation. EPA believes that this corrective measure can be effectively employed to remediate the entire onsite groundwater contaminant plume.

Alternative 1 does not provide for pumping and treatment of contaminants in groundwater. Alternative 5 will allow the groundwater cleanup goals to be attained more quickly and effectively, relative to Alternative 2 and Alternative 4, by providing remediation of the principal source area as well as contamination present at all depths beneath the facility. Alternative 3 does not propose having a source of drinking water at the Facility which does not require pretreatment with GAC units. Therefore, CMA 3 would allow the continued useage of wells contaminated with VOCs, i.e., WS 2 and WS 4, as the potable source of drinking water. Useage of WS 3, which is free of VOC contaminants, as the sole source of drinking water for Facility personnel is not proposed in CMA 3.

The prefered Corrective Measure, i.e., CMA #5, addresses groundwater contamination at the facility by implementing recovery of contaminated groundwater from a multiple recovery well network. Wells have been located to accomplish recovery and hydraulic control in the vicinity of the principal source area, i.e., the eastern drain pit, and to prevent offsite contaminant migration. Groundwater treatment will occur in the facility's waste water treatment plant where useage of a biologically activated sludge will convert the groundwater contaminants, which consist of volatile organic carbon compounds, into carbon dioxide and water. The treatment plant is a closed system and, therefore, there will be no transfer of contaminants from the groundwater to the air. Finally, a more detailed evaluation of CMA #5 is provided, below. This evaluation compares and contrasts the proposed Corrective Measure Alternative against four general standards (overall protection; attainment of clean-up standards; source control; and compliance) and five remedy-decision standards (long-term reliability and effectiveness; reduction in toxicity, mobility and volume; short-term effectiveness; implementability; and cost.)

1. Overall Protection: All of the alternatives, with the exception of CMA #1 (the "no action" alternative), provide protection of human health and the environment by reducing and/or controling risk via groundwater containment, recovery and treatment, and institutional controls. Implementation of additional groundwater recovery via the new recovery well, as provided in CMA #5, will enhance the protection of human health and the environment by reducing the possibility of offsite contaminant migration and expeditiously removing all contaminants from the onsite groundwater.

Facility personnel are further protected by CMA #5 because it not only provides for the removal of VOCs from the recovered groundwater, but also provides that potable water will be supplied by a non-contaminated supply well (WS 3), thereby eliminating the need to treat potable water which is presently obtained from supply wells WS 2 and WS 4 which are contaminated with VOCs. In addition to VOC removal from onsite groundwater, the VOCs are remediated within the waste water treatment plant, thereby assuring no transfer of contaminants from the groundwater to the air or transfer of contaminants to surface water via the VPDES permited outfall.

Because the "no action" alternative is not protective of human health and the environment, it is not considered further in this analysis as an option for the Cooper Facility.

2. Attainment of Media Clean-up Standards: Alternatives 2, 3, 4 and 5 provide for recovery and treatment of VOCs in groundwater and are expected to result in the achievement of media clean-up standards, i.e., remediating groundwater to either MCLs or the concentration which corresponds to a 10^{-6} cancer risk.

3. Controlling the Sources of Releases: Alternatives 2, 3, 4 and 5 provide control of contaminant sources by providing hydraulic control of groundwater as well as groundwater recovery and treatment. However, only CMAs #3 and #5 require a new recovery well in the center of the onsite contaminant plume.

4. Compliance with Waste Management Standards: CMAs 2, 3, 4 and 5 require useage of biologically activated sludge in the facility's waste water treatment plant, which is a closed system, thereby assuring that no transfer of contaminants from the recovered

groundwater will be transfered to the air or that groundwater contaminants will be transfered to surface water via the VPDES permitted outfall, i.e., the activated sludge provides a medium in which the VOCs of concern are metabolized into carbon dioxide and water.

5. Long-term Reliability and Effectiveness: CMAs 2, 3, 4 and 5 would reduce the inherent hazards posed by the VOCs of concern in the groundwater. The ongoing pump and treat activity at Cooper has served to significantly reduce groundwater contamination and effectively control the spread of contaminants within the aquifer system beneath the Cooper facility. The addition of a new recovery well in the center of the onsite contaminant plume as specified in CMAs #3 and #5 would provide a more effective and efficient means of remediating contaminated groundwater at the Facility and serve to more effectively control contaminant migration beyond the Facility boundary. This new recovery well will be located in that portion of the aquifer most impacted, i.e., immediately downgradient of the east drain pit. The focus on remediating higher concentration groundwater source areas is expected to reduce the duration of the Corrective Measure program. However, the effect can not be quantified due to the complexity of contaminant distribution and recovery in the fractured bedrock aquifer beneath the Cooper facility.

Useage of the facility's waste water treatment plant which consists, in part, of a biologically activated sludge, is a tried and proven technology for remediating groundwater contaminated with VOCs. EPA has designated useage of a biologically activated sludge as a superior treatment technology for removal of VOCs from groundwater and this technology has a proven record at the Cooper facility. This reliability has been demonstrated not only at the Cooper facility but also at numerous other facilities, i.e., the literature is replete with examples of the successful useage of biologically activated sludge for the remediation of not only industrial waste water but also remediation of VOC contaminated groundwater. Finally, this waste water treatment plant is located at a viable and operating facility and, along with the required periodic treatment plant monitoring program, assures that if the treatment plant system fails that such nonoperation would be of minimal duration. It should be noted that the treatment plant does not contain any complex technologies that require intensive oversight or frequent maintainence.

Operation of the onsite remediation program (groundwater recovery and treatment with activated sludge) will result in the reduction of any adverse impacts on the environment resulting from the existing groundwater contamination. The overall level of groundwater contamination and the size or volume of the contamianted areas will be significantly reduced. This reduction serves as a benefit to current and future users of the groundwater resources within the immediate area.

6. Reduction of Toxicity, Mobility, or Volume of Wastes: Alternatives 2, 3, 4 and 5 provide treatment of groundwater with biologically activated sludge in the facility's waste water treatment plant, thereby assuring complete transformation of the VOCs of concern into carbon dioxide and water.

The hydraulic control resulting from pumping of the designated recovery wells as well as the proposed new recovery well near the downgradient boundary of the east drain pit as specified in CMAs 3 and 5 will serve to contain the contamination and thereby reduce its mobility by inhibiting migration.

7. Short-term Effectiveness: Alternatives 2, 3, 4 and 5 require the continuation of the ongoing groundwater pump and treat program. Alternatives 3 and 5 require the addition of a new recovery well in the center of the onsite contaminant plume in addition to the ongoing groundwater recovery program. The short-term effect of the ongoing pump and treat program has been to prevent the offsite migration of groundwater contaminants as well as reduce the overall extent or volume of the onsite groundwater contaminant plume. In effect, Cooper has already demonstrated to EPA's satisfaction the short-term effectiveness of its ongoing groundwater pump and treat program. Finally, none of these CMAs are expected to have short-term effects upon the nearby community and/or Facility personnel.

8. Implementability: Alternatives 2, 3, 4 and 5 have already been proven to be highly implementable as Cooper has been pumping and treating contaminated groundwater since 1988. Since the inception of the pump and treat program Cooper has successfully demonstrated to EPA that the ongoing pump and treat program is effectively remediating groundwater contaminants as well as controlling the migration of those contaminants beyond the facility boundary. Furthermore, the treatment of recovered groundwater in the facility's waste water treatment plant has been successful in that the VOCs of concern are metabolized into carbon dioxide and water, thereby assuring no transfer of groundwater contaminants to the air or surface water via the VPDES permited outfall.

9. Costs: The total estimated capital as well as operation and maintenance (O&M) costs associated with Alternative 2 are estimated to be $1,200,000 and $105,000/year, respectively by Cooper. Capital as well as operation and maintenance costs associated with Alternative 3 are estimated to be $1,200,000 plus an additional capital cost of $35,000 to install and bring the proposed additional recovery wells on line while the O&M costs would be $115,000/year. Capital as well as operation and maintenance costs associated with Alternative #4 are estimated to be $1,200,000 and 80,000, respectively. Finally, capital as

well as O&M costs associated with Alternative #5 are estimated to be $1,200,000 plus $15,000 for the new recovery well and $80,000, respectively. Operating and maintenance costs for Alternative 2, 3, 4 and 5 include labor, utilities, and monitoring of treated effluent from the waste water treatment plant as well as continued monitoring of groundwater quality.

10. Summary: Alternative #5 has been proposed by EPA as the Corrective Measure of choice to address VOC groundwater contamination at the Cooper Facility. Alternative #5 not only involves pumping of an additional recovery well, relative to CMA #2 and #4, but also provides for bringing on line the production well (WS 3) which is contaminant free, thereby eliminating useage of the production wells WS 2 and WS 4 for the Facility's potable water supply. Alternative #5 focuses more directly on recovery of groundwater from wells in close proximity to the principal source of groundwater contamination and, therefore, will result in the more rapid remediation of the groundwater contaminant plume, relative to CMAs 2 or 4. Alternative #5 is the CMA which provides the best onsite hydraulic control thereby preventing the offsite migration of the groundwater contaminant plume and, relative to CMA #3, costs less without sacrificing effectiveness. Finally, CMA #5 clearly meets the four general standards regarding the selection of a Corrective Measure, i.e., the standards of overall protection, attainment of clean-up standards, source control and compliance.

IX. PUBLIC PARTICIPATION

EPA is requesting comments from the public on the Corrective Measure Alternatives and on EPA's preliminary identification of Alternative #5 as the preferred Corrective Measure Alternative to remediate the onsite contamination from the Cooper facility. The public comment period will last thirty (30) calendar days from the date that this matter is publicly noticed in a local newspaper. Comments on the Corrective Measures Study and/or EPA's preliminary identification of a preferred Corrective Measure Alternative should be in writing. Written comments may be submitted to:

Thomas J. Buntin
U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107

Attn: 3HW64

Additionally, EPA is also providing the public with the opportunity to attend a public meeting to discuss this matter in more detail. Persons interested in such a meeting should contact Mr. Buntin at (215) 597-2745. EPA will notify the public of the date, time and location of the public meeting through a second display advertisement.

The administrative record is available for review at the following locations:

U.S. Environmental Protection Agency, Region III
841 Chestnut Building - Corner of 9th and Chestnut Streets
7th Floor File Room
Philadelphia, Pennsylvania 19107
Telephone: (215) 597-2381
By Appointment 9 a.m.- 4 p.m., Monday through Friday

or

Earlysville Post Office
Earlysville, Virginia 22936-9998
Telephone: (804) 973-5214

Monday through Friday from 8:00 a.m. - 5:00 p.m., and
Saturday from 10 a.m. - noon

Following the thirty (30) calendar day public comment peroid, EPA will prepare a Final Decision and Response to Comments which identifies the selected Corrective Measure and addresses all written comments and/or any substantive comments generated at the public meeting. This Response to Comments will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are made in the Corrective Measure Alternative identified by EPA, i.e., Alternative #5, EPA will seek public comments on the revised Corrective Measure Alternative.

Upon consideration of public comment and after the Response to Comments has been publicly noticed, EPA will select a final Corrective Measure Alternative for the Cooper Facility. Thereafter, EPA will seek implementation of this CMA by Cooper via the legal mechanism described in Section 3008(h) of RCRA.

FINAL DECISION AND RESPONSE TO COMMENTS

COOPER INDUSTRIES, INC. EARLYSVILLE, VIRGINIA

INTRODUCTION

This Response to Comments (RTC) is being presented by the U. S. Environmental Protection Agency (EPA). The purpose of the RTC is to present concerns and issues raised during the public comment period including concerns and issues raised at the public meeting which was held on September 13, 1991, and to provide EPA's response to those concerns and issues. All of the comments received were carefully reviewed during the final selection of the Corrective Measure, and have been responded to in this RTC. No additional alternatives were raised that were not considered in the Corrective Measures Study (CMS) and the proposed Corrective Measure was not altered as a result of public comments or the public meeting.

SELECTED CORRECTIVE MEASURE

The selected Corrective Measure for the contaminated onsite groundwater at this facility is continuation of the ongoing groundwater pump and treat program. No offsite pumping of groundwater is required as the groundwater contaminant plume has not migrated beyond the facility boundary as demonstrated in the EPA approved RCRA Facility Investigation (RFI) which is part of the Administrative Record and is located at the following address: Earlysville Post Office, Earlysville, Virginia. The selected Corrective Measure also requires Cooper to install an additional groundwater recovery well in the center of the onsite groundwater plume (immediately downgradient of the east drain pit). The installation of this additional recovery well will expedite the rate at which the groundwater will be remediated. Finally, the selected Corrective Measure requires Cooper to discontinue useage of potable water supply wells WS-2 and WS-4. These wells are currently treated with granular activated carbon (GAC) units prior to consumption or useage of the water by facility personnel. In order to eliminate the need for GAC units, Cooper will provide potable water from water supply well #3 (WS-3) as this is a production well which is free of contamination, i.e., this well lies beyond the outermost edge of the onsite groundwater plume. Therefore, potable water at the facility will not require treatment with GAC units and the possibility of facility personnel being exposed to contaminants will be eliminated.

All of the proposed Corrective Measures initially screened in the CMS, with the exception of the "no action" alternative (Corrective Measure #1), would provide adequate protection of human health and the environment by eliminating, reducing or controlling risk through treatment, engineering controls or institutional controls. However, Corrective Measure #5 has been chosen by EPA as the Corrective Measure to be implemented by Cooper in order to address groundwater contamination. Corrective Measure #5, compared to Corrective Measures #2 and #4, not only requires pumping of an additional recovery well but also provides for bringing on line the production well (WS-3) which is contaminant free, thereby eliminating useage of the production wells WS-2 and WS-4 for the facility's potable water supply. Corrective Measure #5, compared to Corrective Measures #2 and #4, focuses more directly on recovery of groundwater from wells in close proximity to the principal source of groundwater contamination and, therefore, will result in the more rapid remediation of the groundwater contaminant plume. Corrective Measure #5 also provides the best onsite hydraulic control thereby preventing the offsite migration of the groundwater contaminant plume and, relative to Corrective Measure #3, costs less without sacrificing effectiveness. Finally, Corrective Measure #5 provides the best balance among the various proposed Corrective Measures with respect to the evaluation criteria, including: 1) long-term reliability and effectiveness; 2) reduction of toxicity, mobility or volume of waste; 3) short-term effectiveness; 4) implementability; and 5) cost.

CONCERNS RAISED PRIOR TO THE PUBLIC COMMENT PERIOD

No concerns were raised prior to the public comment period.

PUBLIC PARTICIPATION ACTIVITIES

A public comment period was set from August 14, 1991, through September 13, 1991. A public meeting was held on September 13, 1991, at 7 p.m. at the Earlysville Fire House, Route 660, Earlysville, Virginia. The meeting was attended by approximately twenty-five (25) people, including representatives of EPA and concerned citizens. A number of concerns were raised and EPA will addresses these concerns under two separate headings. These headings are termed 1) substantive comments and 2) procedural comments.

CONCERNS RAISED DURING THE PUBLIC COMMENT PERIOD
AND THE AGENCY'S RESPONSE

I. Substantive Comments

Concern:

Concern was expressed regarding any potential impact to the Greymont Subdivision during implementation of CMA #5 by Cooper. The concern was twofold: 1) could groundwater contaminants migrate from Cooper's property to the Greymont Subdivision, and 2) could the aquifer beneath the Greymont Subdivision be dewatered or significantly reduced in its capacity?

Response:

The first point (migration of contamination) was rigorously addressed in Section III. C. of the Statement of Basis (SOB). The RFI clearly demonstrated (in Section "Eight") that the Greymont subdivision has not been impacted in any respect at present nor is it expected to be impacted in the future as a result of the implementation of Corrective Measure Alternative (CMA) #5. The four principal reasons why the Greymont Subdivision would not be impacted are: 1) Cooper's ongoing groundwater pump and treat program is hydraulically controlling any further migration of the groundwater contaminant plume both toward Camp Faith Creek and the Greymont Subdivision; 2) the entire onsite groundwater contaminant plume lies within the capture zones of the facility's recovery wells, and, therefore, is precluded from migrating to Camp Faith Creek and beyond; 3) the RFI clearly demonstrated that in the absence of groundwater pumping at Cooper's facility that groundwater from Cooper would discharge to Camp Faith Creek and that groundwater would not flow beneath Camp Faith Creek to the Greymont Subdivision. This finding is verified by several 200 feet deep monitoring wells located at the property boundary of Cooper and Greymont in which no contamination is found; and 4) a significant number of private wells in the Greymont Subdivision have been tested by the private owners for the contaminants known to exist in groundwater beneath the Cooper facility. This privately generated data shows that no contamination of groundwater beneath the Greymont Subdivision has occured.

In summary, the evidence collected to date shows that groundwater contamination will not migrate from Cooper's property to the Greymont Subdivision during the implementation of CMA #5.

Regarding the second point (dewatering of the aquifer or reduction of the aquifer's water-bearing capacity beneath the Greymont Subdivision), the RFI clearly demonstrated (in Appendices E and F) through water level contour maps and pump tests, respectively, that the aquifer beneath Greymont will not be dewatered and, furthermore, that the aquifer will not be reduced in terms of its water-bearing capacity. Other evidence which supports this conclusion is the fact that Cooper has not only had an ongoing groundwater pump and treat operation in effect since 1988 but also has been pumping several water supply wells in the same time period to meet facility manufacturing and potable demands. If dewatering or reduction of the aquifer's capacity were going to occur, it would already have occured in the aquifer beneath Greymont Subdivision due to the extensive pumping conducted by Cooper over the last four years.

Another reason why the aquifer beneath the Greymont Subdivision will not be impacted, in terms of reduced water bearing capacity, is the fact that Cooper is now withdrawing less water from the aquifer than it was prior to 1990. Cooper is able to do this as a result of its 1990 upgrading of the waste water treatment plant (WWTP). Prior to 1990 and the installation of reverse osmosis treatment technology at the WWTP, Cooper had to obtain water from outside of the facility in order to have an adequate amount of process water. However, due to the aforementioned upgrading of the WWTP, Cooper no longer needs to obtain water from outside of the facility and it is not expected to need to obtain water from outside of the facility in the future. The water treated via the reverse osmosis process is then recycled and reused in Cooper's current manufacturing activities.

Accordingly, because less groundwater is being withdrawn from the aquifer today, as compared to time prior to 1990, coupled with the fact that the wells at Greymont are high yielding wells, EPA believes that it is unlikely that the implementation of CMA #5 by Cooper will have any effect on the water bearing capacity of the aquifer beneath Greymont Subdivision.

In summary, the water-bearing capacity of the aquifer beneath Greymont Subdivision will not be reduced by the implementation of CMA #5 by Cooper.

Concern:

Concern was raised regarding the impact to Camp Faith Creek from Cooper's waste water treatment plant effluent.

Response:

Cooper has a National Pollutant Discharge Elimination System (NPDES) permit issued by the State of Virginia. The purpose of this permit is to assure that the discharge from Cooper's WWTP does not degrade Camp Faith Creek. The permit uses water quality criteria as well as the volume of flow in Camp Faith Creek in order to set discharge limits. There is no evidence of Cooper's having exceeded the limits specified in the NPDES permit for hazardous waste constituents. The effluent is tested on a monthly basis by Cooper and unscheduled sampling events of the effluent are, on occasion, conducted by the State of Virginia. The RFI demonstrated that there has been no impact to the water of Camp Faith Creek or the sediments of Camp Faith Creek stemming from the effluent of the waste water treatment plant. These data are available in the RFI Report which is part of the Administrative Record.

Comment:

How long will it take to clean up groundwater at Cooper once CMA #5 has been implemented?

Response:

Although it is very difficult to predict exactly when groundwater contaminants will be remediated to the clean up goals specified in Section VII of the SOB, it is probable that at least 10 to 15 years of groundwater pump and treat operations will be necessary in order to remediate the onsite contaminated groundwater. This issue is further addressed in Section VII of the SOB.

Comment:

How will EPA monitor the progress of the groundwater clean-up program as delineated in CMA #5?

Response:

The groundwater monitoring program which runs concurrently with the implementation of CMA #5 is addressed in Section VII of the SOB. In particular, twenty (20) sampling points consisting of monitoring wells, groundwater recovery wells and facility production wells will be monitored on either a semi-annual or annual basis until groundwater has been remediated to the clean-up goals as delineated in Section VII of the SOB. These wells are: 1D, 1A, 2A, 2D, 3A, 3D, 12A, 13D, 19A, 20D, 21D, 23D, 26D, WS1, WS2, WS3, WS4, WS5, the Drum Heller private well immediately north of the facility and the new proposed groundwater recovery well which will be located near the eastern drain pit and will be installed as part of the implementation of CMA #5. These wells, taken as a whole, will assure a groundwater monitoring program that is readily capable of determining the lateral and vertical extent of groundwater contamination, and therefore, monitoring of the spatial relationship of the onsite plume relative to the Greymont subdivision, i.e., any additional movement of the plume toward Greymont would be quickly detected.

As discussed in Section VII of the SOB, EPA will review these monitoring data (which are collected both semi-annually and annually) every five years in order to evaluate the effectiveness of CMA #5. If EPA determines that CMA #5 is either not effective or the rate of groundwater remediation is too slow, i.e., only slight decreases in the levels of groundwater contaminants takes place over a 5 year period, then EPA may reevaluate the continued implementation of CMA #5. Any decision by EPA to modify CMA #5 will be made in accordance with all applicable public participation requirements in EPA's regulations and guidance.

Comment:

Are there any sources of contamination at Cooper that EPA might have missed during the RFI and what is the potential for future contamination emanating from the Cooper facility?

Response:

The principal contaminants found at Cooper's facility are chlorinated solvents such as tetrachloroethylene (PCE) and trichloroethylene (TCE). However, as of 1990, useage of all chlorinated solvents has been discontinued by Cooper. Therefore, based on available information, it appears that there is no potential for future contamination of any media (air, surface water, soil or groundwater) with chlorinated solvents.

The RFI for Cooper required many different methods for determining potential areas of contamination including, but not limited to, soil gas surveys, soil borings, geophysical surveys and historical data regarding useage of hazardous wastes. One of the major components of the Cooper RFI included the analysis of soil and/or groundwater for Appendix IX constituents as provided in 40 C.F.R. Part 141. Appendix IX is a comprehensive list of over 200 compounds which could possibly be found not only at Cooper but also any given facility. Regarding Cooper, Appendix IX analysis of groundwater was used to determine if any area of contamination had been missed or overlooked within soils, i.e., any contaminants in the soil would, in part, migrate to groundwater and these contaminants would be detected via the Appendix IX analysis of groundwater. Therefore, if contaminants that are found in groundwater are not also found in the soil, then it may be concluded that all source areas within the soil have not been found.

EPA knew from Cooper's and its own historical records as well as Cooper's Part A application that not only were chlorinated solvents used at the facility but also the areas in which these chlorinated solvents were discarded, i.e., all solid waste management units (SWMUs) were known prior to the the RFI and no new SWMUs were discovered during the RFI. The Appendix IX analysis of groundwater confirmed the presence of chlorinated solvents only. Therefore, EPA can confidently state that there are no unknown source area(s) of contamination and that the facility has been thoroughly investigated for all known contaminants.

In summary, the only contaminants found in soil and/or groundwater were those already known to exist from past manufacturing activities. The Appendix IX data for soil and/or groundwater is located in Table 15 of the RFI.

II. Procedural Comments

Comment:

Would EPA test private wells in the vicinity of Cooper?

Response:

Based upon the EPA-approved RFI for Cooper, EPA determined which private wells had the potential to be impacted by the contamination at the Cooper facility. As previously discussed in the first comment in the substantive section, above, many of the private wells in the Greymont subdivision were independently tested by the private owners for chlorinated solvents, e.g., PCE, TCE, etc. No chlorinated solvents were found in the Greymont wells tested. Additionally, based on the reasons set forth in the first comment in the substantive section, above, EPA does not intend to sample private wells in the Greymont subdivision in the future. Specifically, the contaminant plume has not and is not expected to migrate any further toward any of the existing Greymont wells. Accordingly, other private wells in the Greymont Subdivision are not expected to be impacted.

The private well that has the potential to be impacted by Cooper's contamination is the Drum Heller well located immediately north of the facility. However, it is unlikely that the contaminant found in the Drum Heller well is from the Cooper facility. The circumstances surrounding this particular private well is discussed in Section II of the SOB. EPA is requiring Cooper to sample this well on a semi-annual basis during the time in which implementation of CMA #5 is occuring.

Other private wells in the area will not be sampled by EPA and/or Cooper as the EPA-approved RFI clearly demonstrated that no other private wells could be impacted. However, EPA suggested that this particular private well be tested for those contaminants known to exist within the Cooper facility. Since this was considered too expensive of an alternative, EPA suggested that the well be tested for what is known as "total organic halogens". This test, which costs between $20 and $30, will determine if chlorinated organics exist in a given sample, i.e., this is not a compound-specific analysis. If this well is privately tested for total organic halogens, and if this well tests positive for total organic halogens, EPA will test this well for the chlorinated solvents found at Cooper.

Comment:

The participants at the public meeting objected to the timing of the public meeting at the end of the public comment period. The participants stated that they would have preferred to have the benefit of the information provided at the public meeting prior to the time the public could make written comments so that the written comments provided to EPA could have been more focused.

Response:

EPA agrees that information provided at public meetings is beneficial and that this information would have been helpful to the public in the preparation of written comments. EPA is reviewing the timing of public meetings for purposes of future public participation activities involving the Cooper facility.

The public has not requested that a Corrective Measure other than the proposed Corrective Measure be implemented at the Cooper facility. No modifications or changes to the selected Corrective Measure were made as a result of the public comments.

FUTURE ACTIONS

To determine whether specific community concerns arise during the Corrective Measure Implementation process, information will be provided to the public through press releases or other appropriate means, such as additional public meetings.

DECLARATIONS

Based on the Administrative Record compiled for this corrective action, I have determined that the selected Corrective Measure to be ordered at this site is appropriate and will be protective of human health and the environment.

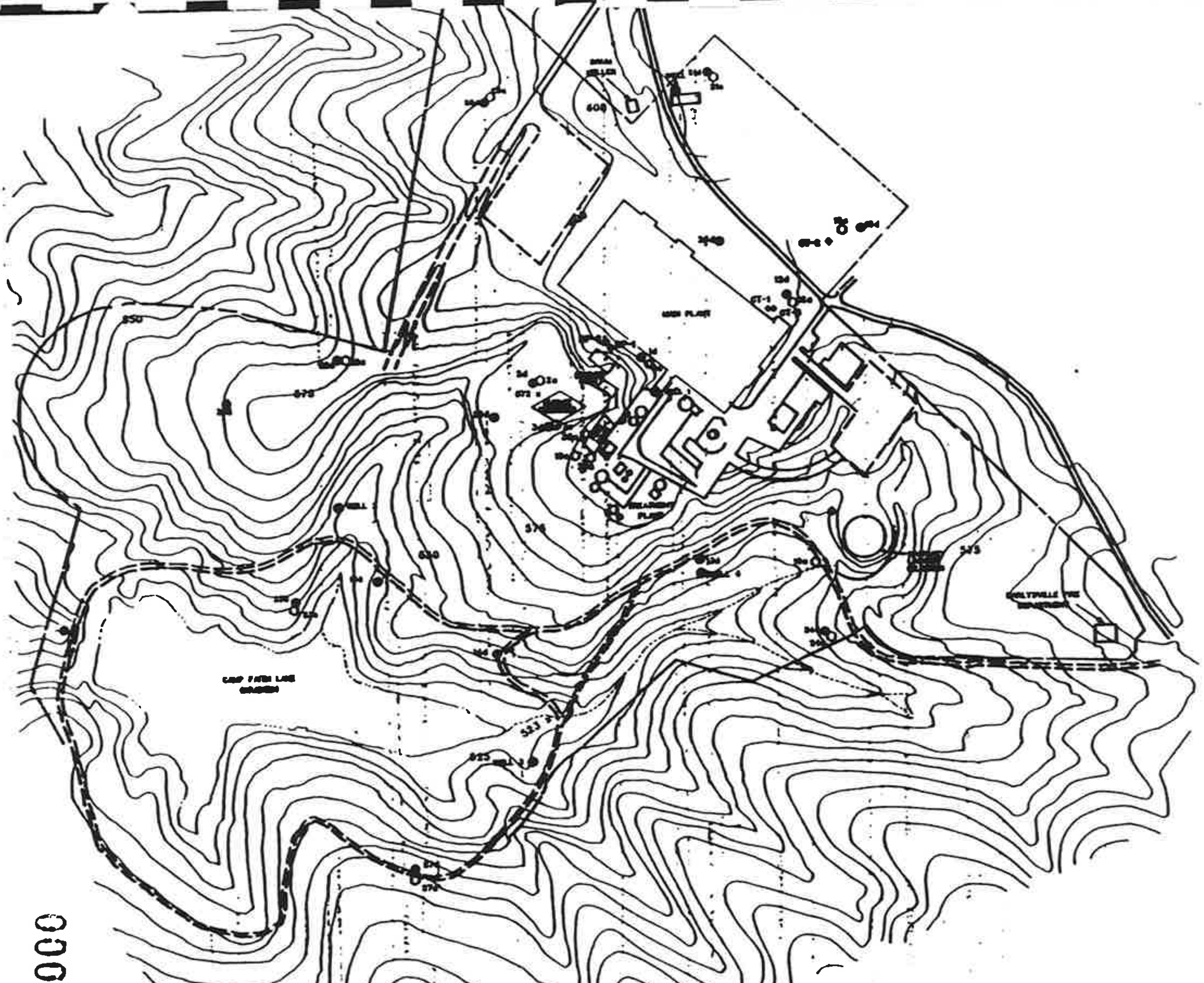
W.T. Wisniewski
-------------------------------- Edwin B. Erickson
for Regional Administrator
Region III

9-30-91
-------------------------------- Date

Attachments

A through H

ATTACHMENT A



EXPLANTION:

- ● 2d —DEEP WELL
- ○ 1s —SHALLOW WELL
- ⊖ WELL 2 —WATER SUPPLY WELL
- — — — —PROPERTY BOUNDARY
- ◆ —UNDERGROUND CONCRETE TANKS
- ◆ —DRAIN PITS

NOTES:

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL-5 feet

ALL LAND BASED SOLID WASTE MANAGEMENT UNITS HAVE BEEN REMOVED AND/OR CLOSED IN ACCORDANCE WITH EPA AND/OR VDWM REGULATIONS AND APPROVALS

300 0 300

SCALE (FEET)

FIGURE 2

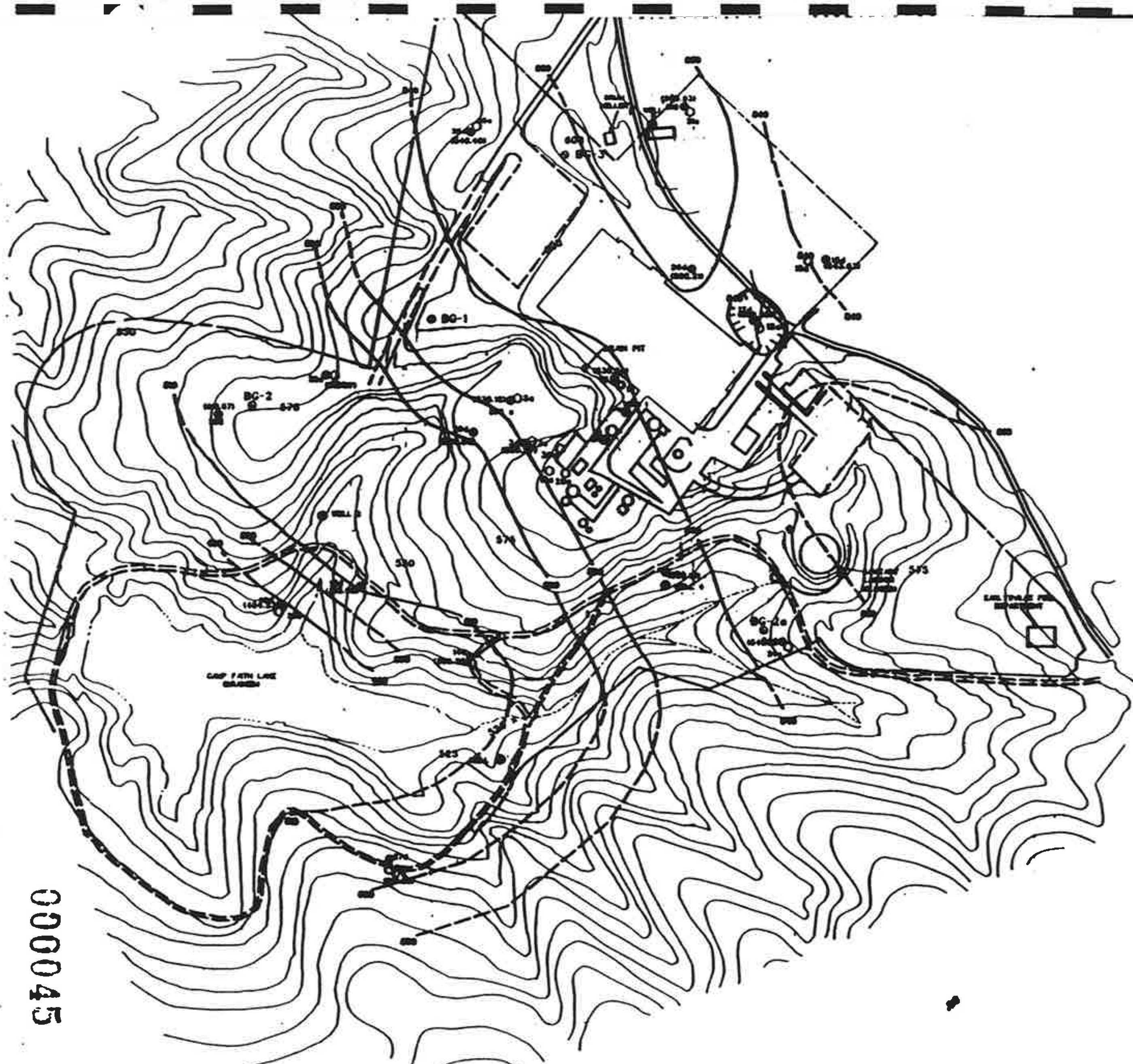
Westinghouse Environmental Services

COOPER EBP
EARLYSVILLE, VIRGINIA

FACILITY LAYOUT AND LOCATION OF SOLID WASTE MANAGEMENT UNITS

000044

ATTACHMENT B



EXPLANTION:

- ● 2d - DEEP PIEZOMETER
- ○ 16 - SHALLOW PIEZOMETER
- ⊕ WELL 2 - WATER SUPPLY WELL
- □ DP-1 - DRAIN PIT
- ⊕ BG-1 - BACKGROUND SOIL SAMPLING LOCATIONS
- 340 - CONTOUR LINE ON TOP OF BEDROCK(FT MSL) DASHED WHERE INFERRED; CONTOUR HACHURED FOR CLOSED DEPRESSION CONTOUR INTERVAL- 10'
- (538.12) - BEDROCK ELEVATION (FT MSL)

NOTES:

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL-5 foot

300 0 300

SCALE (FEET)

000341

FIG 3

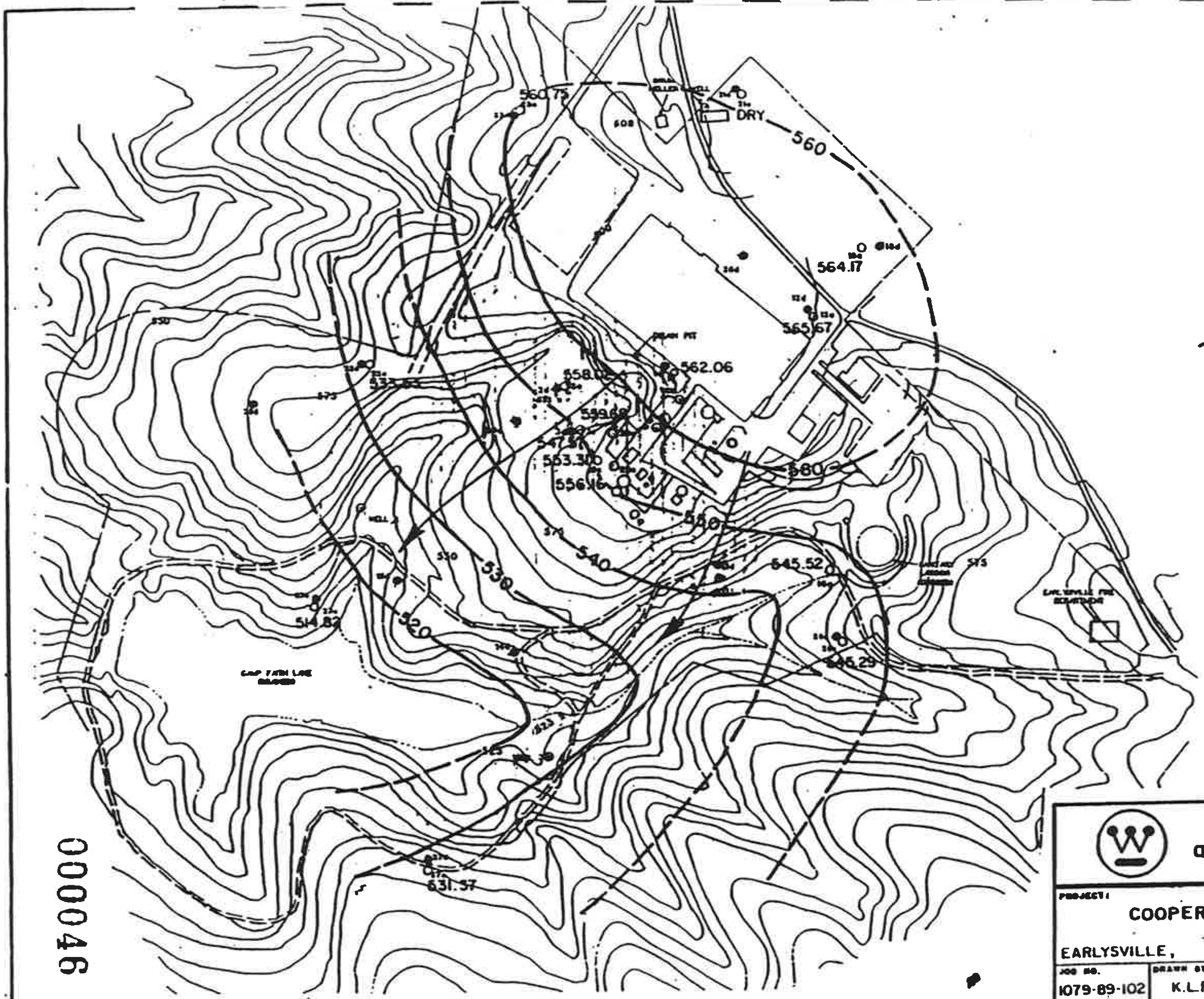
Westinghouse Environmental Services

COOPER EBP
EARLYSVILLE, VIRGINIA

CONTOUR MAP OF TOP OF BEDROCK

000045

ATTACHMENT C



EXPLANTION:

- ● 24 – DEEP WELL
- ○ 16 – SHALLOW WELL
- ⊙ WELL 2 – WATER SUPPLY WELL
- 564.17 – POTENTIOMETRIC ELEVATION (FT. MSL)
- —560— – POTENTIOMETRIC CONTOUR (FT. MSL) DASHED WHERE INFERRED. CONTOUR INTERVAL = 10 FEET.
- → – GROUND-WATER FLOW DIRECTION

NOTES:

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL-5 feet
4. DATA FROM 12/5/90 – 12/15/90.

300 0 300

SCALE (FEET)

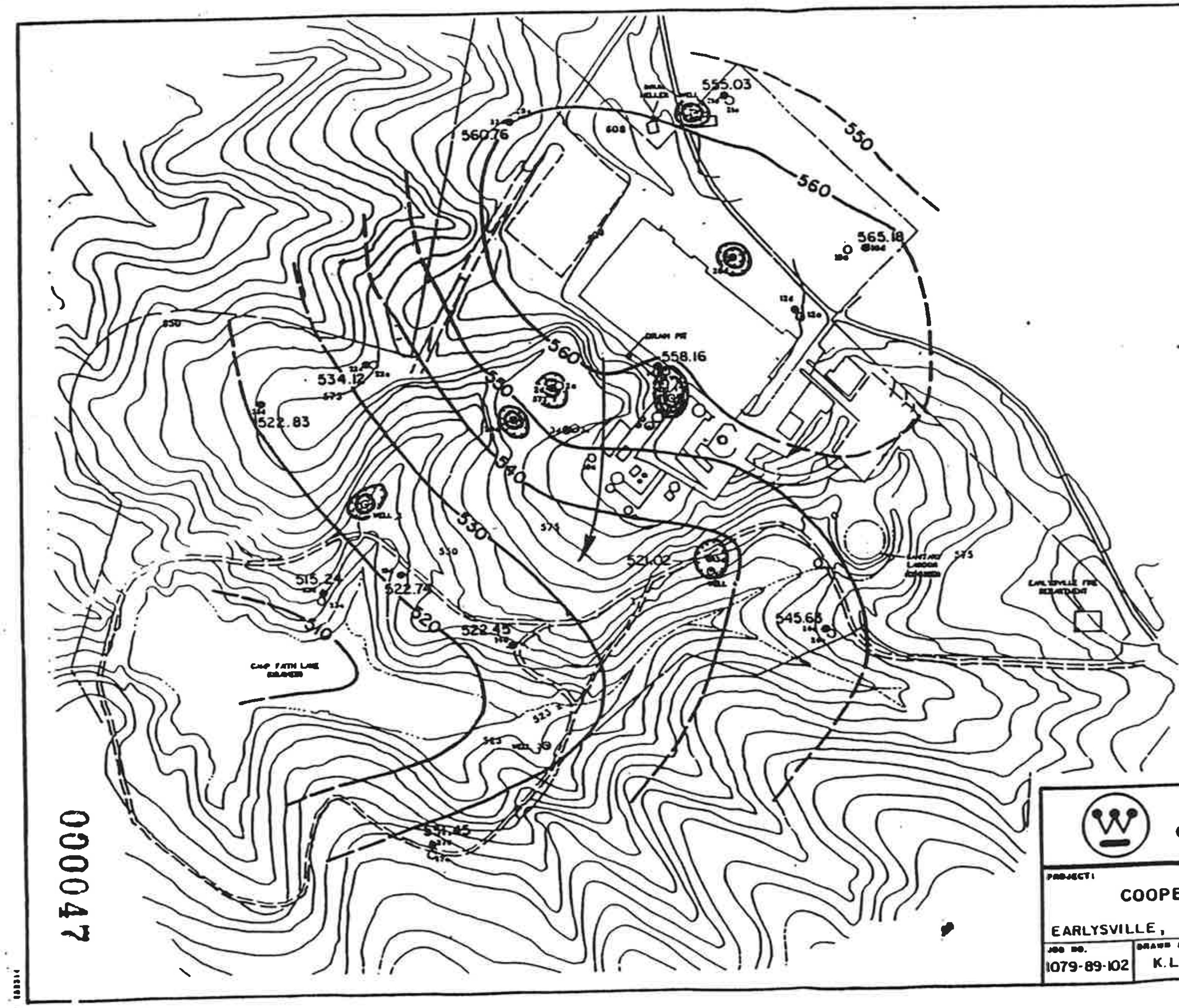
Westinghouse Environmental and Geotechnical Services, Inc.
RICHMOND, VIRGINIA

PROJECT: COOPER DED, EARLYSVILLE, VIRGINIA			TITLE: SHALLOW GROUND-WATER FLOW		
JOB NO.	DRAWN BY:	CHECKED BY:	SCALE:	DATE:	FIGURE NO.
1079-89-102	K.L.F.	J.S.P.	1" = 300'	3/6/91	3

000046

A & E SUPPLY CO., INC.

ATTACHMENT D



EXPLANTION :

- ● 24 — DEEP WELL
- O 16 — SHALLOW WELL
- ⊙ WELL 2 — WATER SUPPLY WELL
- 565.18 — POTENTIOMETRIC ELEVATION (FT. MSL)
- 560 — POTENTIOMETRIC CONTOUR (FT. MSL) DASHED WHERE INFERRED. CONTOUR INTERVAL = 10 FEET.
- → GROUND-WATER FLOW DIRECTION

NOTES:

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL-5 feet
4. DATA FROM 12/5/90 - 12/15/90.
5. DATA FROM 3d & 12d NOT USED.
6. MAP REFLECTS PUMPING AT W.S. 1, 2, 3, 4, 5, 2d, 20d, AND 26d.

300 0 300

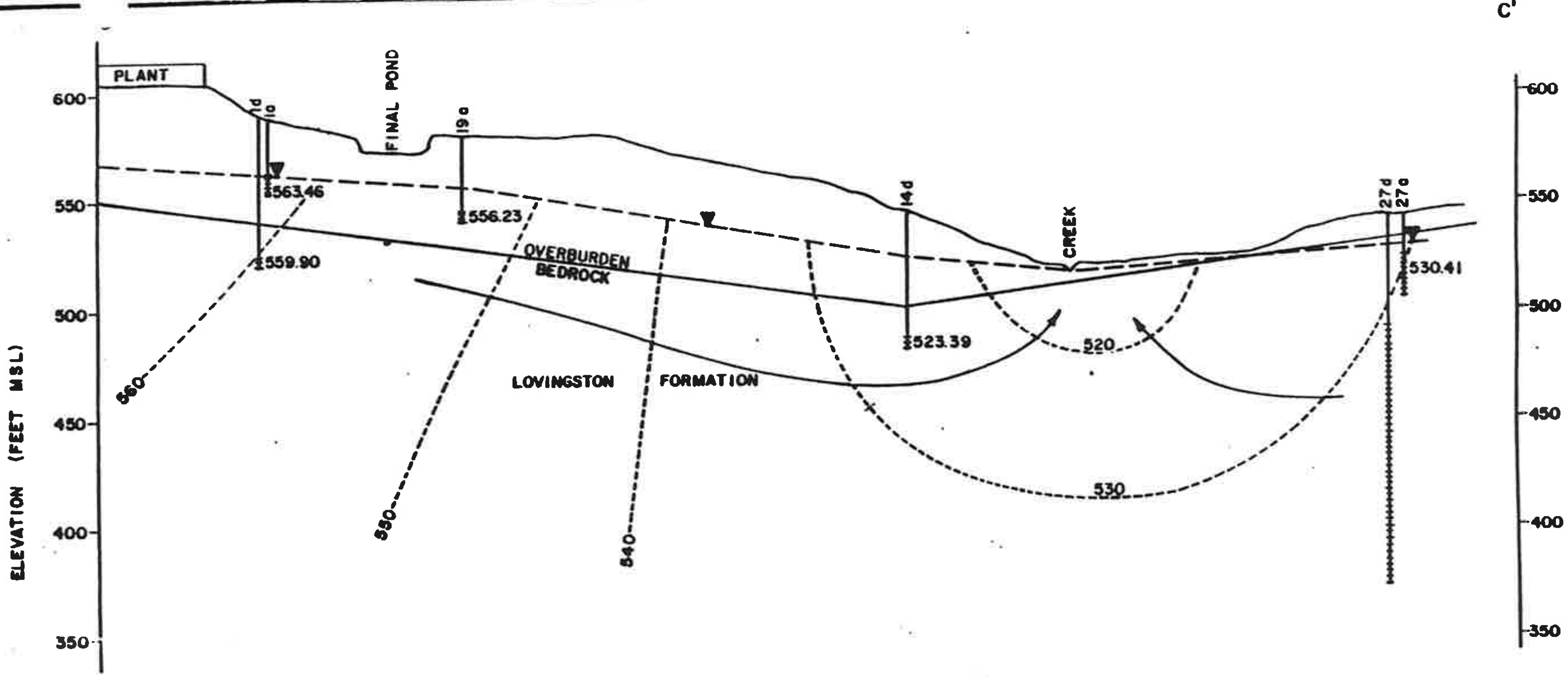
SCALE (FEET)

Westinghouse Environmental and Geotechnical Services, Inc.
RICHMOND, VIRGINIA

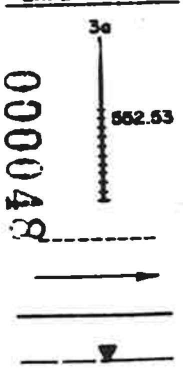
PROJECT: COOPER DED EARLYSVILLE, VIRGINIA			TITLE: DEEP GROUND-WATER FLOW		
JOB NO.	DRAWN BY:	CHECKED BY:	SCALE:	DATE:	FIGURE NO.
1079-89-102	K.L.F.	J.S.P.	1" = 300'	3/6/91	4

000047

ATTACHMENT E



EXPLANATION:



PIEZOMETER DESIGNATION

POTENTIOMETRIC ELEVATION (Ft. MSL)

COMPLETION INTERVAL

POTENTIOMETRIC CONTOUR LINE (Ft. MSL)

GROUND-WATER FLOW DIRECTION

OVERBURDEN BEDROCK CONTACT

WATER TABLE

NOTES:

- SEE TABLE I FOR PIEZOMETER COMPLETION DATA
- SEE DRAWING I FOR CROSS SECTION LOCATIONS
- POTENTIOMETRIC DATA FROM 10/17/89.

SCALE:

VERTICAL 1" = 50'
HORIZONTAL 1" = 150'
VERTICAL EXAGGERATION = 3x

HYDROGEOLOGIC CROSS SECTION C-C'

Westinghouse Environmental Services

COOPER EDP
EARLYSVILLE, VA.

DRAWN BY: ACT	CHKD. BY:
JOB NO.: 1079-89-102	DATE: 11/89
SCALE: AS SHOWN	FIGURE: 6

000048

Table 1

Chronological Listing of Previous Site Reports

Westinghouse, 1988, Preliminary Site Evaluation, Cooper Industries, Westinghouse Environmental Services, September 8, 1988.

Westinghouse, 1989a, Concrete Tank Removal, Cooper Electrical Distribution Products, Westinghouse Environmental Services, January 10, 1989.

Westinghouse, 1989b, Site Investigation and Response Activities, Cooper Industries, Westinghouse Environmental Services, February 3, 1989.

Westinghouse, 1989c, Evaluation of Ground-Water Monitoring Requirements for Final Pond, Cooper EDP Facility, Earlysville, Virginia, June, 1989.

Westinghouse, 1989d, Sampling and Analysis Plan for Final Pond Ground-Water Quality Assessment Program, Cooper Electrical Distribution Products, Westinghouse Environmental and Geotechnical Services, Inc., August, 1989.

Westinghouse, 1989e, Final Pond Ground-Water Monitoring Program, Cooper Electrical Distribution Product, Westinghouse Environmental and Geotechnical Services, Inc., August, 1889.

Westinghouse, 1989f, Site Investigation, Response Action and Planned Additional Site Activities, Cooper Industries, Westinghouse Environmental and Geotechnical Services, Inc., October, 1989.

Westinghouse, 1989g, Final Pond Closure Plan, Revision III, Cooper Electrical Distribution Products, Westinghouse Environmental and Geotechnical Services, Inc., December, 1989.

Westinghouse, 1990a, Facility Investigation and Response Action Study, Cooper Electrical Distribution Products, Westinghouse Environmental and Geotechnical Services, Inc., January, 1990.

Westinghouse, 1990b, Final Pond Risk Assessment, Cooper Electrical Distribution Products, Westinghouse Environmental and Geotechnical Services, Inc., April, 1990.

Westinghouse, 1990c, Closure Plan for East Drain Pit, Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., June, 1990.

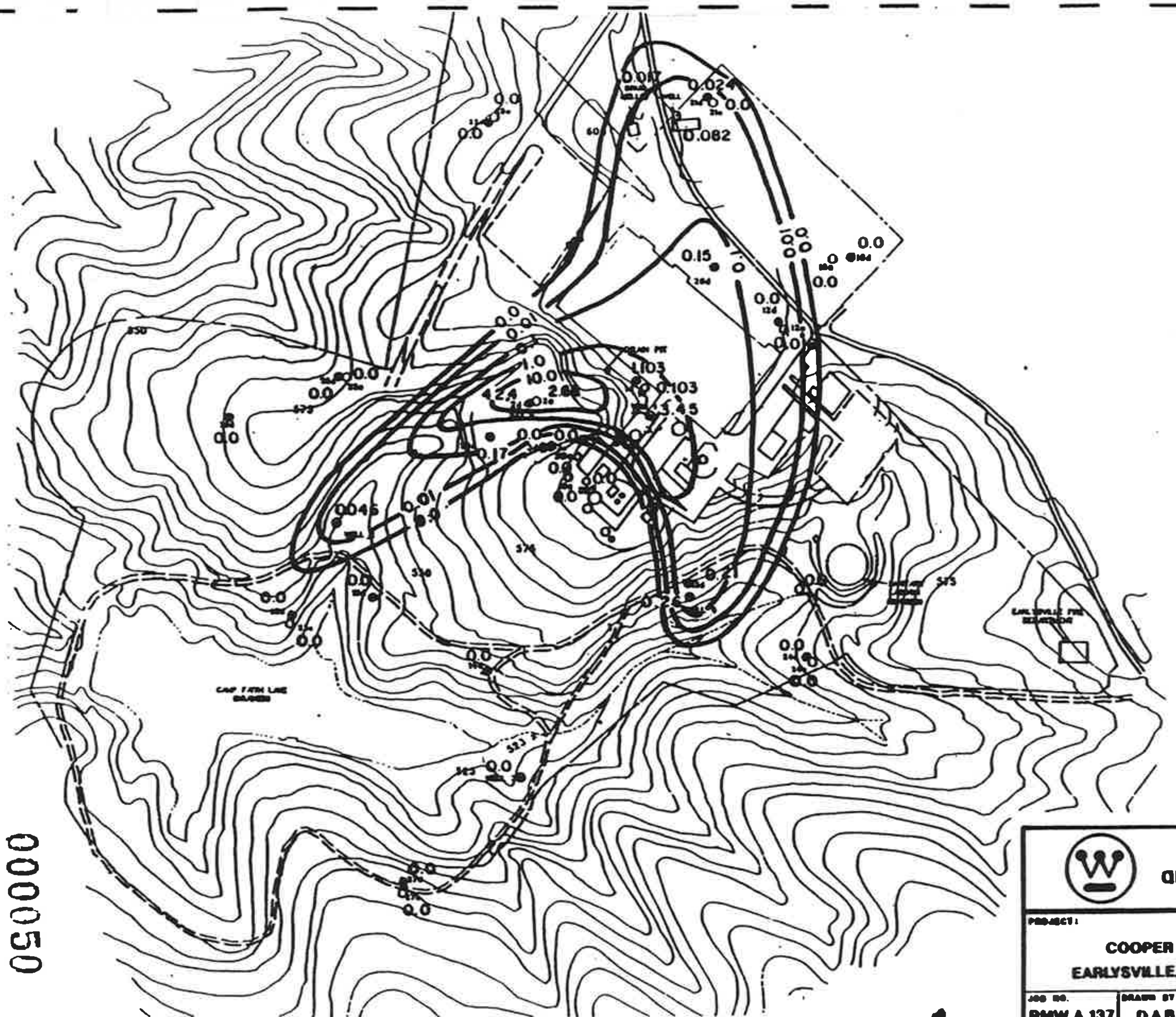
Westinghouse, 1990d, East Drain Pit Closure Documentation, Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., July, 1990.

Westinghouse, 1990e, Final Pond Closure Documentation, Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., July, 1990.

Westinghouse, 1990f, Quality Assurance Project Plan for Ground-Water Monitoring Program at Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., September, 1990.

Westinghouse, 1991a, RCRA Facility Investigation, Cooper Distribution Equipment Division, Westinghouse Environmental and Geotechnical Services, Inc., Revised March, 1990.

ATTACHMENT G



EXPLANTION:

- ● 2d — DEEP PIEZOMETER
- O 1s — SHALLOW PIEZOMETER
- ⊙ WELL 2 — WATER SUPPLY WELL
- ◻ DP-1 — DRAIN PIT
- —— 0.1 —— — CONTOUR OF TOTAL VOLATILE ORGANICS CONCENTRATION (mg./L.) CONTOUR INTERVAL = ORDER OF MAGNITUDE.

NOTE: CONTOURS DRAWN USING HIGHEST VALUE AT WELL NEST. ALL DATA IN mg./L.

NOTES:

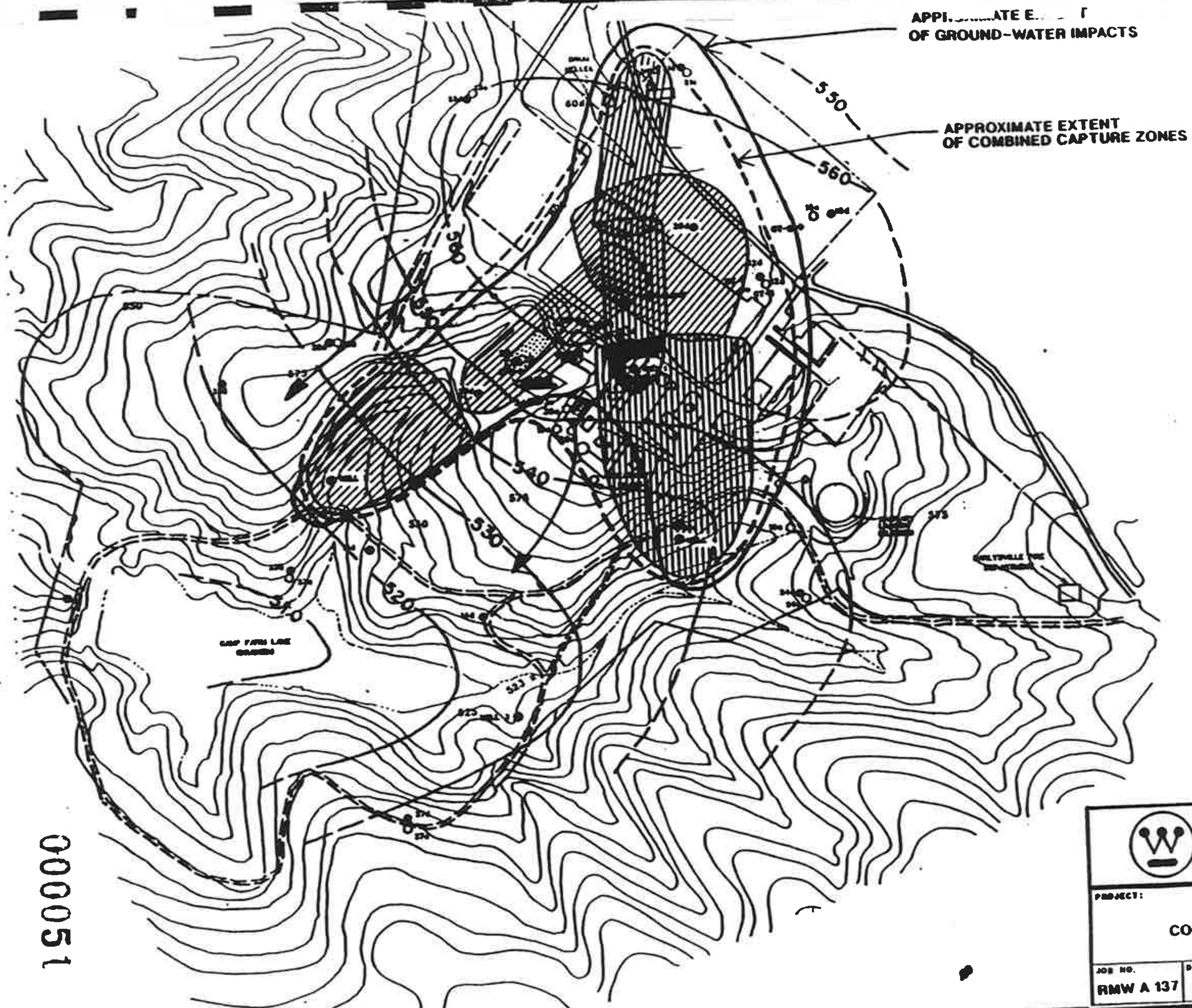
1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL-5 feet

Westinghouse Environmental and Geotechnical Services, Inc.
RICHMOND, VIRGINIA

PROJECT:			TITLE:		
COOPER DED EARLYSVILLE, VIRGINIA			HORIZONTAL EXTENT OF POTENTIAL IMPACTS		
JOB NO.: RMW A 137	DRAWN BY: D.A.B.	CHECKED BY:	SCALE: 1"=300'	DATE: 3/28/91	FIGURE NO. 5

000050

ATTACHMENT H



EXPLANTION :

- 2d — DEEP WELL
- 1s — SHALLOW WELL
- WELL 2 — WATER SUPPLY WELL
- 560 — POTENTIOMETRIC CONTOUR (FT MSL) DASHED WHERE INFERRED. CONTOUR INTERVAL = 10 FEET.
- GROUND-WATER FLOW DIRECTION
- CAPTURE ZONES FOR WELLS WS-1, WS-2, WS-4, WS-5, 20d, & 2...
- CAPTURE ZONE FOR WELL 2d

NOTES:

1. BASE MAP FROM COOPER INDUSTRIES.
2. TOPOGRAPHY NEAR PLANT BUILDINGS MAY NOT BE ACCURATE.
3. TOPOGRAPHIC CONTOUR INTERVAL-5 feet
4. DATA FROM 12/5/90 - 12/15/90.
5. DATA FROM 3d & 12d NOT USED.
6. MAP REFLECTS PUMPING AT W.S. 1, 2, 3, 4, 5, 2d, 20d, AND 26d.

Westinghouse Environmental and Geotechnical Services, Inc.
RICHMOND, VIRGINIA

PROJECT:			TITLE:		
COOPER DED			PROJECTED CAPTURE ZONES F... THE EXISTNG GROUND-WATER RECOVERY SYSTEM		
JOB NO.: RMW A 137	DRAWN BY: D.A.B.	CHECKED BY: J.S.P.	SCALE: 1"=300'	DATE: 7/19/91	FIGURE NO: 20

000051