SDMS DocID 2048087

Third Five-Year Review Report

for

L. A. Clarke and Son Superfund Site

Spotsylvania County, VA

September 2005

Prepared By:

U.S. Environmental Protection Agency
Region III
Philadelphia, PA

Approved By:

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Hazardous Site Cleanup Division
EPA Region III

Date:

9/29/05

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Five-Year Review
L. A. Clarke and Son Superfund Site

Attachments:

List of Acronyms

AOC	Administrative Order on Consent
ARARs	Applicable or relevant and appropriate requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CPNA	Carcinogenic polynuclear aromatic
EPA	Environmental Protection Agency
DNAPL	Dense Non-Aqueous Phase Liquids
ESD	Explanation of Significant Differences
IC	Institutional Controls
mg/kg	Milligrams per kilogram or parts per million ("ppm")
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
O&M	Operations and Maintenance
OU	Operable Unit
PNA	Polynuclear Aromatics
PRA	Probabilistic Risk Assessment
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RF&P	Richmond, Fredericksburg & Potomac Railroad
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
TBC	To Be Considered
TPNA	Total Polynuclear Aromatics
VADEQ	Virginia Department of Environmental Quality

Executive Summary

The L.A. Clarke and Son Superfund Site ("Site") is located in Spotsylvania County, Virginia. The facility was a former wood treating facility that used creosote on railroad ties and telephone poles. The Site has undergone various cleanup actions while a final remedy is being determined. The cleanup actions taken on the Site have been as follows:

- Provide partial fencing and signage to deter trespassers from entering the Site;
- Provide public water service for neighboring residences;
- Demolition of all process area buildings and other structures;
- Removal of all of the remaining telephone poles and railroad ties;
- Decommissioning of the former lagoon, including removal, treatment, and off-site disposal of surface water, sludge, and underlying soils; and
- Excavation and off-site disposal of sediments from the drainage ditches and flood plain.

The U.S. Environmental Protection Agency issued a Record of Decision for the Site on March 31, 1988 to address surface soil contamination and sediments. The Potentially Responsible Parties (PRPs) have petitioned EPA to change the surface soil cleanup level based on industrial rather than residential exposure. EPA is currently evaluating this petition in conjunction with current and reasonably anticipated future land use.

Another issue remaining that affects protectiveness of the actions taken is the extent of contamination in the soils and ground water in the flood plains near the former lagoon. Investigations in the area of the flood plains near the former lagoon must be concluded to determine the extent of contamination migration.

The actions taken to date at this Site are protective of human health in the short term. Currently, exposure pathways that could result in unacceptable risks are being controlled through implementation of the completed portions of the remedy namely, fencing, decommissioning of the wastewater lagoon, demolition and off-site disposal of all of the process buildings and tanks, and excavation and off-site disposal of the sediments in the drainage ditches and the flood plain. A determination with respect to environmental impacts associated with the Westvaco Pond cannot be made at this time as the sediments in the pond need to be evaluated.

The selected remedy is expected to be protective of human health and the environment upon completion, and in the interim exposure pathways that could result in unacceptable risks are being controlled. It should be noted that EPA is evaluating a proposed change to the surface soil cleanup level.

A fourth five-year review will be due in September 2010

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name: L. A. Clarke and Son

EPA ID: VAD007972482

Region: 3	**State:** VA	**City/County:** Spotsylvania County

SITE STATUS

NPL status: ✓ Final Deleted ☐ Other (specify)_____

Remediation Status (choose all that apply): ✓ Under Construction ☐ Operating Complete

Multiple OUs?* ✓ YES NO	**Construction completion date:**

Has site been put into reuse? ☐ YES ✓ NO ☐ NA

REVIEW STATUS

Lead agency: ✓ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Robert Sanchez

Author title: Remedial Project Manager	**Author Affiliation:** U.S. EPA - Region 3

Review period: August 2004 - September 2005

Date(s) of site inspection: March 3, 2005

Type of review: ✓ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion

Review number: ☐ 1 (first) ☐ 2 (second) ✓ 3 (third) ☐ Other(specify)_____

Triggering action:
☐ Actual RA Onsite Construction at Site OU ☐ Actual RA Start at OU# _____
☐ Construction Completion ✓ Previous Five-Year Review Report
☐ Other (specify) *Informed public review would be conducted*

Triggering action date: September 30, 1999

Due date (five years after triggering action date): September 30, 2004

* ("OU" refers to operable unit.)

Five-Year Review Summary Form, cont'd.

Issues:

- EPA is currently developing a decision document which will address a change to the cleanup standards for the surface soils of the Site.
- No Institutional Controls have been implemented; site conditions require restrictions on use.
- Site protective cover not complete.
- Sediments in Westvaco Pond have not been addressed.

Recommendations and Follow-up Actions:

- Issue an additional decision document.
- Develop and implement Institutional Controls.
- Protective cover may be incorporated into final use plan for the Site.
- The sediments in the Westvaco Pond need to be studied and addressed as needed.

Protectiveness Statement:

The actions taken to date are protective of human health in the short term. Currently, exposure pathways that could result in unacceptable risks are being controlled through implementation of the completed portions of the remedy namely, fencing, decommissioning of the wastewater lagoon, demolition and off-site disposal of all of the process buildings and tanks, and excavation and off-site disposal of the sediments in the drainage ditches and the flood plain. A determination with respect to environmental impacts associated with the Westvaco Pond cannot be made at this time as the sediments in the pond need to be evaluated.

The selected remedy is expected to be protective of human health and the environment upon completion, and in the interim exposure pathways that could result in unacceptable risks are being controlled. It should be noted that EPA is evaluating a proposed change to the surface soil cleanup level.

U.S. Environmental Protection Agency, Region III
Third Five -Year Review Report
L. A. Clarke and Son Superfund Site
Spotsylvania County, Virginia

I. Introduction

The purpose of the five-year review is to determine whether the actions taken at a site are protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them.

The Environmental Protection Agency ("EPA") is preparing this Five-Year Review report pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") §121 and the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"). CERCLA §121states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

EPA Region III has conducted a five-year review of the actions implemented at the L. A. Clarke and Son Superfund Site ("Site") in Spotsylvania County, Virginia. This review was conducted for the entire cleanup by the Remedial Project Manager ("RPM"). This report documents the results of the review.

This is the third five-year review for the Site. The triggering action for this review is the prior five-year review for the Site completed on September 30, 1999. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. Remedial action construction is not complete at the Site. The potentially responsible party ("PRP") at this Site also owns most of

the affected property. Institutional Controls ("ICs") are being developed for implementation by the PRP but have not been implemented.

II. Site Chronology

Table 1 lists the chronology of events for the L. A. Clarke and Son Site.

Table 1: Chronology of Site Events

[illegible]	Date
Wood preserving operations began	June 1937
Inactive period	April 1979 - June 1980
Continued wood preserving operations	1980 - 1988
L. A. Clarke and Son Site listed on the NPL	July 10, 1986
Remedial Investigation / Feasibility Study Report Complete	February 1988
Record of Decision signed Operable Unit 1 ("OU 1"), surface soils and sediments	March 31, 1988
Remedial Design and Remedial Action ("RD/RA") Consent Decree 89-0651-A	July 17, 1989
Administrative Order by Consent ("AOC") III-89-30-DC	September 6, 1989
Explanation of Significant Differences 1 ("ESD") - Demolish process buildings, no soil flushing	December 29, 1989
ESD 1 work complete	January 13, 1993
ESD 2 - Lagoon sludge to be excavated and moved off-site for incineration	March 31, 1994
First EPA Five-Year Review completed	September 30, 1994
Order to Withdraw AOC III-89-30DC	September, 29, 1995
Administrative Order by Consent for Removal Action	September 29, 1995
ESD 2 work complete	February 28, 1997
ESD 3- Floodplain sediments to be excavated and moved off-site for landfill disposal	June 14, 1999
Second EPA Five-Year Review completed	September 30, 1999
ESD 3 work complete	October 2001

III. Background

Physical Characteristics

The Site is located in Spotsylvania County, Virginia, approximately 4.5 miles southeast of Fredericksburg (see attachment 1). The location is approximately one quarter mile east of Route 608, north of Massaponax Creek. The Site encompasses approximately 44 acres in area. Attachment 2 identifies the approximate boundaries of the Site, the location of railroad lines, Westvaco Pond, Massaponax Creek and its flood plain. The Site is composed of two tracts separated by the CSXT railroad siding, as shown on the map. The former wood treatment plant was located on the northern L.A. Clarke tract, and the former wastewater evaporation lagoon on the southern tract. Both the wood treatment plant and lagoon were located on the west end of the Site. A former soil waste pile was also located in the west-central portion of the Site. The nearest residence is about 1000 feet away (see attachment 2) from the northern property boundary.

Land and Resource Use

The Site consists of an upland area near the Massaponax Creek and the associated flood plain. A portion of the Site is divided by a rail spur which is still in use by a neighboring property owner. All of the process buildings, structures, and tanks have been removed from the Site. The Site is situated near a secondary road in a mostly rural area. There are a few residential houses upgradient of the Site but within 1000 feet of the Site. These homes have been placed on public water service by the County due to possible impacts from ground water contamination at the Site. The Site is zoned industrial.

A fence was installed at the Site to deter trespassing onto the Site as it pertains to OU-1, Site security. Since there is an active railroad line transversing the Site, the fence cannot encircle the Site as a whole. Rather, the fence was placed along most of the perimeter of the Site, especially where trespassers would likely enter the Site. Signs have been placed around the perimeter of the Site to warn against trespassing.

The property is not in active use at this time and is overgrown with brush and grasses. The property remains dry through the use of drainage ditches which cut through the Site. Surface water from the ditches flow to the flood plain area which discharges to Massaponax Creek. Massaponax Creek eventually discharges into Ruffins Pond approximately two miles downstream. Ruffins Pond is used for recreational swimming and fishing. The Westvaco Pond, not known to be used for swimming or fishing, lies immediately to the West of the Site (see attachment 2).

History of Contamination

Wood preserving operations began at the Site in June 1937 and continued until 1988, except for one inactive period between April 1979 and June 1980. L.A. Clarke leased the land from the Richmond, Fredericksburg & Potomac Railroad ("RF&P Railroad") until 1976, when the Clarke family bought the property. In 1980, the Clarke family sold the facility to the Curtas family who then operated the facility until it closed in 1988. Railroad ties, telephone poles, and fence posts

were preserved at the Site by injecting them with a mixture of creosote and coal tar in a sealed compartment under high temperature and pressure.

In the early 1970's, wastewater treatment consisted of draining process wastewaters into two concrete-lined pits. Historical aerial photography indicates that these pits were present at least from 1953 through 1974, and are located north of the process facility. Overflow from the concrete pits went to an earthen pit, and excess water was discharged to drainage ditches and sprayed on the ground around the storage yard to control dust. Four additional waste pits have been identified in aerial photos dating back to 1937. All of these pits had been filled in by 1979.

In 1975, L.A. Clarke and Son, Inc was issued a National Pollution Discharge Elimination System ("NPDES") permit for outfalls from two drainage ditches on-site (see attachment 2). These drainage ditches still function to maintain the dry upland condition of the property.

Initial Response Activities

Prior to the 1988 RI/FS conducted for EPA (February 1988, Roy F. Weston) several other studies had been conducted at the Site. In 1982 in response to a Virginia Health Department notice L.A. Clarke retained T.A. Houston and Associates, LTD ("Houston"). Houston drilled monitoring wells and sampled the wells, however for financial reasons the data has never been made available. In 1983, EPA's field investigation team ("NUS FIT III") sampled the Houston wells which indicated elevated levels of polycyclic aromatic hydrocarbons and other creosote compounds. A year later L.A. Clarke retained Gilbert W. Clifford and Associates to conduct a hydrologic and geologic study. Seventeen ground water wells were installed and several of these wells were sampled as part of the RI. In addition, in 1988 EPA's Environmental Response Team ("ERT") conducted an investigation of soil, sediment and surface water samples in the flood plain of Massaponax Creek near Outfall 1.

Basis for Taking Action

In the Remedial Investigation/Feasibility Study ("RI/FS'), dated February 1988, it was determined that the Site contained contaminated soils and sediments which may present an imminent and substantial endangerment to public health, welfare, or the environment. The Site contamination consists of the by-products of creosote: polynuclear aromatic hydrocarbons, benzene, and dense non-aqueous phase liquids ("DNAPL"). These contaminants were found in the soils and sediments at the Site and presented an imminent and substantial endangerment to public health, welfare, or the environment. Other subsequent investigations confirmed that contamination was either transported off-site via surface flow or has migrated along thin alluvial planes to the flood plain area near Massaponax Creek. Additionally, a survey of bottom feeding fish from the Westvaco Pond revealed carcinogenic lesions around the gills and mouth of several specimens. These abnormalities may be due to direct contact with creosote contaminated sediments.

IV. Remedial Action

Remedy Selection

The ROD was signed on March 31, 1988 ("1988 ROD") to address the contaminated surface soils and sediments. EPA organized its cleanup activities at the Site into five Operable Units ("OUs"). The Remedial Action ("RA") work under the ROD covered four OUs. OU 1 addressed Site security by installing the Site fence and signage. OU 2 addressed the decontamination and demolition at the Site including demolition of the process buildings, disposal of the then existing railroad ties, telephone poles, unused treated wood, and decommissioning the waste water evaporation lagoon. OU 3 addressed Site water controls, and OU 4 addressed treatment and disposal of the contaminated surface soil and sediments. EPA deferred additional RI/FS work and development of an OU 5 ROD for ground water. Although ground water information was obtained during the RI indicating that the aquifers underlying the Site were contaminated, additional information was required to determine the extent of the contamination and to develop remedial alternatives.

The 1988 ROD addressed the surface conditions and contamination at the Site requiring remedial action. To address these hazards, the remedy selected in the OU 1 ROD contained the following major components:

- Biological treatment of contaminated soil under the then existing process buildings via in-situ soil flushing with a surfactant solution followed by in-situ bioreclamation;

- Biological treatment of all other contaminated soil and sediment via on-site landfarming. All contaminated surface soil which could not be treated in-situ, sediments (ditches 1, 2, 3 and wetlands), buried pit materials, and subsurface wetlands soils would be excavated/dredged and consolidated for treatment in the landfarming unit. The total amount of soil and sediments to be treated was approximately 119,000 cubic yards.

- Backfill excavated areas with treated soil and sediment. Cover backfilled areas with topsoil and revegetate.

- Biological treatment of the Resource Conservation and Recovery Act ("RCRA") regulated soil pile via land treatment in-place;

- Biological treatment of the lagoon sludge in a tank. The bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol is a listed waste under RCRA, with the designation K001; and

- Ground water monitoring during and post treatment.

Incidental Ingestion/Dermal Contact

The 1988 ROD Remedial Action Objectives ("RAOs") set forth cleanup standards for soils contaminated with polynuclear aromatics ("PNAs") that would be protective of current workers and on-site potential future residents for incidental ingestion and dermal contact with soils contaminated with PNAs. It was determined in the 1988 ROD that a risk level of 1.0E-6 would be appropriate for protection of on-site workers. To achieve a 1.0E-6 risk level for on-site workers and potential future residents, the 1988 ROD set cleanup levels for carcinogenic polynuclear aromatics ("CPNAs") in surface soils of 0.22 mg/kg and 0.08 mg/kg for current workers and potential future residents, respectively. In addition, the remedy selected in the 1988 ROD required that a one and a half (1.5) foot cover of clean soil be placed on top of the treated soil.

Conditions at the Site have changed significantly since the cleanup standards were established in the 1988 ROD. All wood treating operations at the Site have ceased, and the Site has been cleared of all buildings and equipment associated with the past manufacturing processes. Currently, there are no worker activities occurring which could potentially result in soil contact. Furthermore, the current owner has indicated that it has no intention of allowing the Site to be used for residential development. In addition, future off-site residential use is considered unlikely based on current land uses, the presence of flood plains and lakes to the north and south of the Site, and the presence of active rail spurs through the Site.

The NCP provides EPA the flexibility to select remediation goals within the range between 1.0E-4 and 1.0E-6 for the upperbound lifetime cancer risk level. Also, since the time of the 1988 ROD, new EPA guidance and advances in risk assessment science have occurred. The Consent Decree contained a provision which allowed RF&P to petition EPA to change the soil cleanup level. Based upon information submitted by RF&P, the reasonably anticipated future use of the Site being industrial, and subsequent re-analysis of the risk assessment utilizing current methodologies, EPA will evaluate a change in the surface soil cleanup level at the Site for incidental ingestion and dermal contact. The petition states that a change in surface soil cleanup is based on an anticipated future use of the Site being industrial, with the Operator, Fabricator, and Laborer labor classifications being the most likely workers at the Site.

A number of years have passed since EPA began evaluating the PRPs petition to change the surface soil cleanup levels and risk level. EPA decided to perform a reevaluation of the cleanup level utilizing even more current risk methodologies and procedures to determine if the proposed soil cleanup level of 60 mg/kg as benzo(a)pyrene equivalents for CPNAs is still protective. Changes in risk methodologies now include the addition of the dermal and inhalation routes of exposure for benzo(a)pyrene (the inhalation route is negligible). This re-analysis for the Site indicated that the soil cleanup level of 60 mg/kg as benzo(a)pyrene equivalents for CPNAs is still protective. However, the total cancer risk at this soil cleanup level now lies at the 5E-05 risk level instead of the 1.0E-5 risk level because of the addition of the dermal exposure route, but the 5.0E-05 risk level lies within the Reasonable Maximum Exposure range and is protective for the chosen worker at the Site defined to be the Operator, Fabricator, and Laborer job classifications, not for general industrial workers. The exposure duration of the Operator, Fabricator, and Laborer is shorter than the exposure duration for the general industrial worker. If all future industrial workers

are considered, then the 60 mg/kg cleanup standard would not be protective. The PRPs have indicated a desire to build industrial structures (e.g., warehouses) with offices. Office workers and other general industrial worker classifications would require a re-evaluation of risk, or additional cleanup measures.

Ingestion of Shallow Ground Water

The 1988 ROD RAOs required that concentrations of Site-related contaminants in sub-surface soils (at or below an average depth of 1.5 feet from ground surface) should not exceed criteria protective of the shallow aquifer underlying the Site as a potential drinking water supply. Based upon site-specific circumstances, the 1988 ROD established a 1.0E-5 risk level as a reasonable goal for protecting current and potential future users of the aquifer of concern. In addition, the 1988 ROD stated that this goal was achievable through the use of soil/sediment treatment technologies. Therefore, the 1988 ROD established target cleanup levels of 10.3 mg/kg and 94.03 mg/kg for CPNAs and benzene, respectively, to achieve this goal. The 1988 ROD further stated that the target cleanup levels would be confirmed via studies during the Remedial Design phase of the cleanup and indicated that remedial alternatives for restoration of ground water to applicable or relevant and appropriate requirements ("ARARs") would be determined in a subsequent ROD.

EPA is deferring the action regarding the protection of ground water via subsurface soil cleanup to another OU for this Site, OU 5. As stated previously, the 1988 ROD contemplated the development of additional remedial alternatives to address ground water contamination in a separate ROD. Deferring the subsurface soil cleanup action to a separate ROD will enable EPA to comprehensively evaluate remedial alternatives for ground water contamination in one document as opposed to implementing any requirements for ground water in separate documents for two operable units. In an effort to try and expedite the ground water remediation EPA entered into an Administrative Order on Consent with RF&P in September 1995 to perform the remaining investigation, design, and work as a non-time critical removal action. However, work under this Order was suspended while the PRPs evaluated another conceptual model.

Protection of Aquatic Life

Concentrations of site-related contaminants in sub-surface soils, at or below 1.5 feet, would not exceed criteria protective of aquatic life in surface soils. The 1988 ROD set Total Polynuclear Aromatics (TPNAs)levels in soils and sediments at 352 mg/kg.

Institutional Controls

The 1988 ROD mentioned enacting institutional controls for the L.A. Clarke and Son Site; however, the ROD did not contemplate specifically how institutional controls would be implemented for the Site. Since the property is currently owned by the PRP it can be envisioned that land use restrictions would be first incorporated through a deed notice with enforcement by the Remedial Action Consent Decree, and finally through deed restrictions when the property is transferred. Institutional controls shall be addressed in a future decision document.

Remedy Implementation

RF&P entered into a Consent Decree with EPA on July 17, 1989, to conduct the Remedial Design/Remedial Action ("RD/RA") called for in the 1988 ROD. This RD/RA is being conducted under the oversight of EPA as the lead agency and the Virginia Department of Environmental Quality ("VADEQ") as the support agency. RF&P has since been sold to Commonwealth Atlantic Properties, with the RD/RA being performed by a subsidiary, Commonwealth Atlantic-Spotsylvania Inc.

Since the issuance of the ROD, EPA has determined that changes should be made to the remedy set forth in the ROD. These changes are identified in Explanation of Significant Differences ("ESDs") to the ROD because these changes do not fundamentally alter the overall approach intended by the selected remedy for the Site. The significant differences between the remedy presented in the ROD and the remedy that will be implemented are discussed below. Except for the specific changes discussed below, all terms of the ROD and previous ESDs remain in effect.

On December 29, 1989, EPA issued ESD number 1 to revise the selected remedy for the soil in the former process area. In-situ soil flushing originally was selected to remediate the soil under the then existing process buildings because the wood treating facility was still in operation at the time of the 1988 ROD. Because the wood treatment facility had then stopped operations and RF&P agreed to dismantle the process buildings, EPA selected landfarming as the selected remedy.

On March 31, 1994, EPA issued ESD number 2 to revise the selected remedy for the lagoon sludge from biological treatment in a tank to off-site incineration. Work was completed and the wastewater impoundment was decommissioned in March 1997. This effort included removal and off-site disposal of approximately 240,000 gallons of wastewater, approximately 153,000 gallons of emulsion and sludge, 172 tons of liner material, and 96 cubic yards of contaminated soil from underneath the impoundment liner.

On June 14, 1999, EPA issued ESD number 3 to revise the selected remedy for the flood plain and drainage ditch sediments from biological treatment via on-site landfarming to off-site disposal in a landfill, as long as disposal was performed in conformance with RCRA Land Disposal Restrictions. The estimated amount of sediment removed by ESD number 3 was approximately 1,028 tons or about 771 cubic yards.

System Operation/Operation and Maintenance

The Site does not have treatment equipment therefore no operation or maintenance is required in this respect. However, general Site maintenance by PRPs, including security fencing, and signage is still required at the Site.

The Site should be inspected for possible release of source material (i.e., creosote DNAPL) in the flood plain areas and along drainage ditches. These inspections should be conducted during

the early spring and late summer since these are the periods when the greatest fluctuation in the water table occur. Reports of these inspections shall be submitted to EPA.

V. Progress Since Last Five-Year Review

The previous five year review dated September 1999 recommended that additional "No Trespassing" signs were needed on the fence and wooded areas around the Site property line. These signs have not been installed. A request to install these signs has been made to the PRP group.

The Site has undergone removal and investigation work since the last five-year review. These activities exposed contaminants temporarily during excavation and drilling activities. One work item included excavation and off-site disposal of 1,028 tons of contaminated sediments from the flood plain and drainage ditches which was completed in October 2001. Investigation work involving installation of monitoring wells is continuing in the flood plain areas to determine extent and source of contaminant migration.

VI. Five-Year Review Process

Administrative Components

The Five-Year Review team was led by Robert Sanchez EPA Region III, Remedial Project Manager ("RPM") for the L. A. Clarke and Son Superfund Site and included Herminio Concepcion, Hydrogeologist, EPA Region III, Nancy Rios-Jafolla, toxicologist, EPA Region III, and Tom Modena, Environmental Program Planner, VA DEQ.

Community Involvement/Interviews

A public notice informing the public that EPA was conducting the third Five-Year Review appeared in the September 2004 issue of the 'Free Lance Star' newspaper. Following signature of this Five-Year Review Report a notice will be sent to a local newspaper announcing that the Five-Year Review Report for the Site is complete. The results of this review and the report will be made available to the public at the County Administrator's Office at 9105 Courthouse Road, PO Box 99, Spotsylvania VA 22553, the EPA Region III offices in Philadelphia, PA and on the EPA internet at www.epa.gov/5yr.

Document Review

This third Five-Year Review consisted of a review of relevant documents identified in Attachment 3 including the Site Investigation Reports, the Feasibility Study Report, the 1988 ROD, ESD numbers 1, 2, 3 and the first and second Five-Year Review Reports (1994 and 1999).

Data Review

Soils

Soil sample data from the top two feet of the Site have been analyzed and reviewed by EPA for this five-year review. Based on this re-evaluation it appears that a lifetime cancer risk level of 1.0E-5 can be achieved for exposure under a proposed industrial zoning classification for Operators, Fabricators, and Laborers.

Ground Water

The ground water investigation is continuing as part of OU 5, however, the current data indicates that contaminants have migrated beyond the property line in the area of the flood plain. Investigations are continuing to determine how the contamination has migrated from the former process area and lagoon. The current investigation should be able to identify if the contamination is migrating from surface flow to the flood plain area or from direct flow through alluvial plains (e.g. underground sand layers.) Based on the findings of the April 2005 "Supplement OU 2 Site Characterization Report" which indicate that contamination is adjacent to Massaponax Creek (see MW-85) an ECO Risk Study should be completed as part of OU 5's investigation.

Site Inspection

A Site inspection was conducted on March 3, 2005 by Robert Sanchez, EPA's Remedial Project Manager, and PRP representatives Channing Martin and Jim Zubrow. During the inspection observations were noted as to the condition of on-site drainage ditches, flood plain areas, and uplands. No Dense Non-Aqueous Phase Liquids ("DNAPL") seeps were noted during the inspection of ditches or flood plain areas. In addition, inspection for erosion and vegetative cover, signs of trespass, and other unsafe conditions were conducted. No liquid DNAPL was found coming to the surface; however, solid material, possibly creosote or tar pitch, was noted in the flood plain area just below the bluff (see attachment 2). A shell of a non-native Asiatic Clam (Corbicula fluminea) was found in the flood plain area. The Asiatic Clam is an invasive species that has been thriving regionally in local streams with deteriorated environmental quality.

There have been plans by Spotsylvania County to install a new sewer interceptor pipe along the existing 24-inch diameter sewer main due to increased residential development in the County. The existing sewer main runs along the elevated bluff over the flood plains area on the southern edge of the Site. The existing pipe runs directly through the area we are investigating for OU 5 between the former lagoon and floodplain area. The County conducted a site survey in September 2004 to consider placement of the new sewer interceptor. Due to the possible risk associated with excavating contaminated soils, the County decided on another route to run the new sewer interceptor. This new interceptor route is being located south of the Site across Massaponax Creek. It did not appear that the County had begun its construction of their new sewer interceptor pipeline at the time of the site walk through.

The region remains relatively rural with a few older homes near the Site. Newer houses, approximately 75, have been constructed one-half of a mile north and east of the Site. These homes are built on about one-third acre which indicates that they may be on public water/sewer systems.

There are a number of 'For Sale' signs on neighboring properties. Adjacent to the Site to the north, there is a sign for 30 acres of commercial land, and south of the Site another property is also offering land for commercial use.

Interviews

There were no community interviews conducted as part of this review.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

No.

Under the 1988 ROD and ESDs the following actions have been conducted to make the property protective: site fencing has been installed; public water supplied to neighboring homes; demolition of process area buildings and structures; excavation, incineration and off-site disposal of the lagoon sediments, and excavation and off-site disposal of drainage ditch and flood plain sediments.

The 1988 ROD Remedial Action Objectives ("RAOs") set forth cleanup standards for soils contaminated with polynuclear aromatics ("PNAs") that would be protective of current workers and on-site potential future residents for incidental ingestion and dermal contact with soils contaminated with PNAs. It was determined in the 1988 ROD that a risk level of 1.0E-6 would be appropriate for protection of on-site workers. To achieve a 1.0E-6 risk level for on-site workers and potential future residents, the 1988 ROD set cleanup levels for carcinogenic polynuclear aromatics ("CPNAs") in surface soils of 0.22 mg/kg and 0.08 mg/kg for current workers and potential future residents, respectively. In addition, the remedy selected in the 1988 ROD required that a one and a half (1.5) foot cover of clean soil be placed on top of the treated soil.

A ground water contamination final remedy has not been selected at this time. However, investigations in the flood plain areas adjacent to the lagoon area are continuing to assist in the development of a ROD for OU 5.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy still valid?

No

Remedial Action Objectives ("RAOs")

EPA is in the process of evaluating a modification of the target risk level specified in the 1988 ROD. The proposal to change the cleanup level is based on industrial rather than a residential exposure scenario. However, other ROD RAOs are still valid.

There have been no changes in the site conditions that would affect the protectiveness of the proposed remedy. To date the work that has been accomplished has been designed and implemented to the RAOs of the 1988 ROD and ESDs.

Changes in Standards and To Be Considered ("TBCs")

There have been no changes in ARARs or TBCs that affect the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Contaminant Characteristics

Based on current information, it appears that the most likely exposure pathway will be as a result of an industrial rather than a residential exposure scenario. There have been no changes in the toxicity or contaminant characteristics.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Yes. Investigative work in the ground water is continuing in the area of the flood plains to determine the mechanism of contamination migration. The investigation has found contamination beyond the property boundary.

The institutional controls have not yet been selected.

Technical Assessment Summary

The cleanup actions taken to date have improved conditions at the Site and have moved the Site toward acceptable protectiveness levels. The investigative work of sub-surface soils and ground water is continuing to identify migration mechanisms causing contamination in the flood plain areas. These investigations will facilitate the identification and selection of actions to deal with the contaminated groundwater. To ensure the safety of future workers, institutional controls will have to be identified and put into effect. In addition, these future investigations should evaluate Ecological Risks.

VIII. Issues

Issues	Affects Protectiveness? (Y/N)	
	Current	Future
PRP Petition to change cleanup levels based on industrial rather than residential exposure	N	Y
Institutional Controls have not yet been selected.	N	Y
Site Protective Cover not complete	N	Y
Westvaco Pond Sediments not addressed	N	Y

IX. Recommendations and Follow-Up Actions

Issue	Recommendations/Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
PRP Petition to change cleanup levels based on industrial rather than residential exposure	EPA needs to issue another decision document based upon current and reasonably anticipated future land use, and including institutional controls.	EPA	-	July 2006	N	Y
Institutional Controls not selected	EPA will work with PRPs to develop institutional controls	PRPs EPA	EPA	September 2006	N	Y
Site Protective Cover not complete	Provide 1.5 feet of cover over areas where treatment is required. Soil cover may be incorporated into final use.	PRP	EPA	November 2006	N	Y
Westvaco Pond Sediments not addressed	Evaluate sediments in Westvaco Pond.	PRP	EPA	June 2006	N	Y

X. Protectiveness Statement

The actions taken to date are protective of human health in the short term. Currently, exposure pathways that could result in unacceptable risks are being controlled through implementation of the completed portions of the remedy namely, fencing, decommissioning of the wastewater lagoon, demolition and off-site disposal of all of the process buildings and tanks, and excavation and off-site disposal of the sediments in the drainage ditches and the flood plain. A determination with respect to environmental impacts associated with the Westvaco Pond cannot be made at this time as the sediments in the pond need to be evaluated.

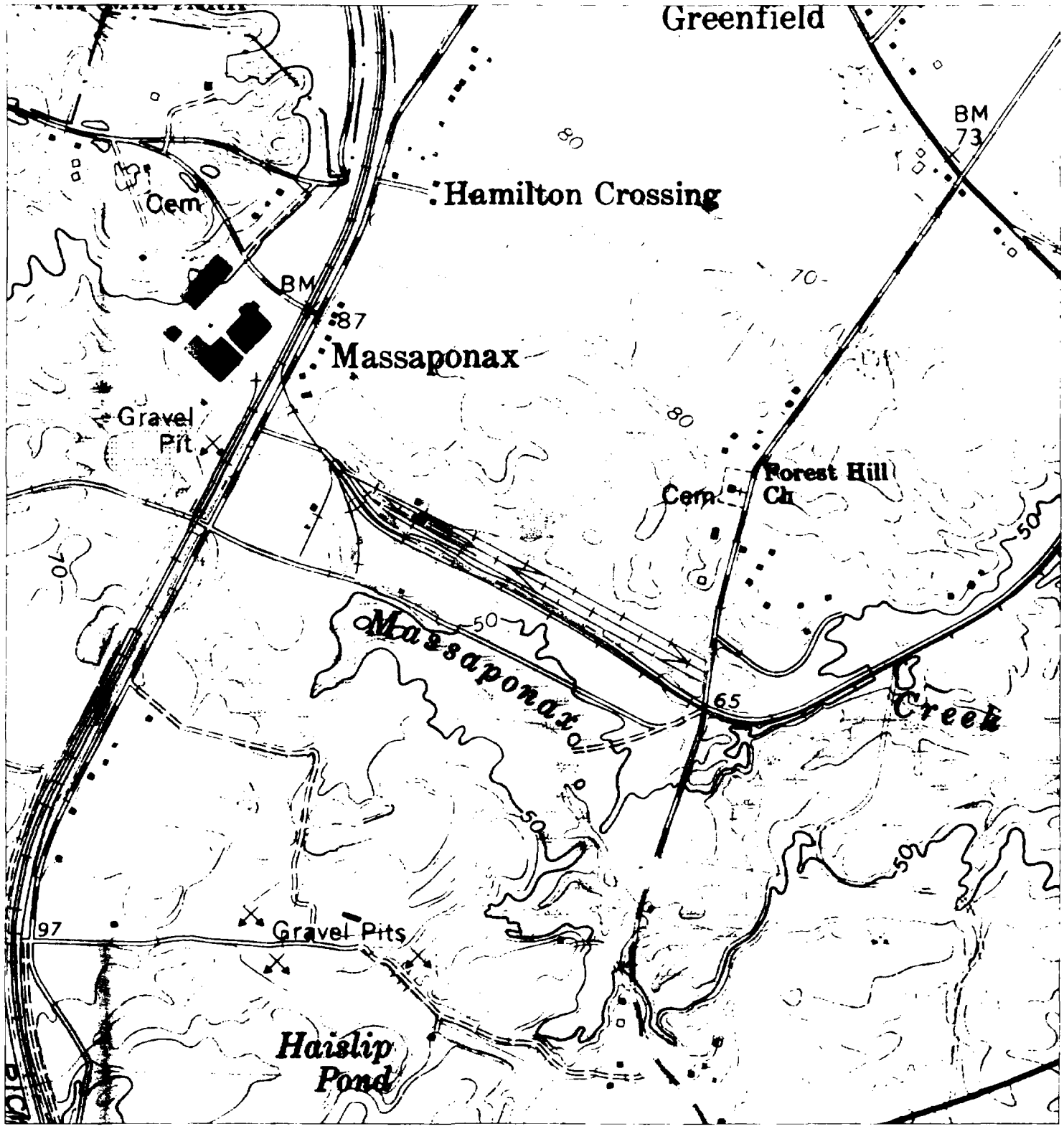
The selected remedy is expected to be protective of human health and the environment upon completion, and in the interim exposure pathways that could result in unacceptable risks are being controlled. It should be noted that EPA is evaluating a proposed change to the surface soil cleanup level.

XI. Next Review

Since site conditions do not allow for unlimited use and unrestricted exposure, EPA will conduct another five-year review of the L.A. Clarke and Son Site by September 2010, five years from the date of this review.

ATTACHMENT 1

Site Location



N

QUADRANGLE LOCATION

COMMONWEALTH ATLANTIC
SPOTSYLVANIA CO
RICHMOND, VIRGINIA

DRWN	BJS	DATE	2/25/05
CHKD	RJH	DATE	2/25/05
APPD	JSZ	DATE	2/25/05
SCALE	1" = 1000'		

KEY

J.A. CLARKE SUPERFUND SITE
SPOTSYLVANIA COUNTY, VIRGINIA

REFERENCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE OF GUINEA, VIRGINIA

ISSUE DATE

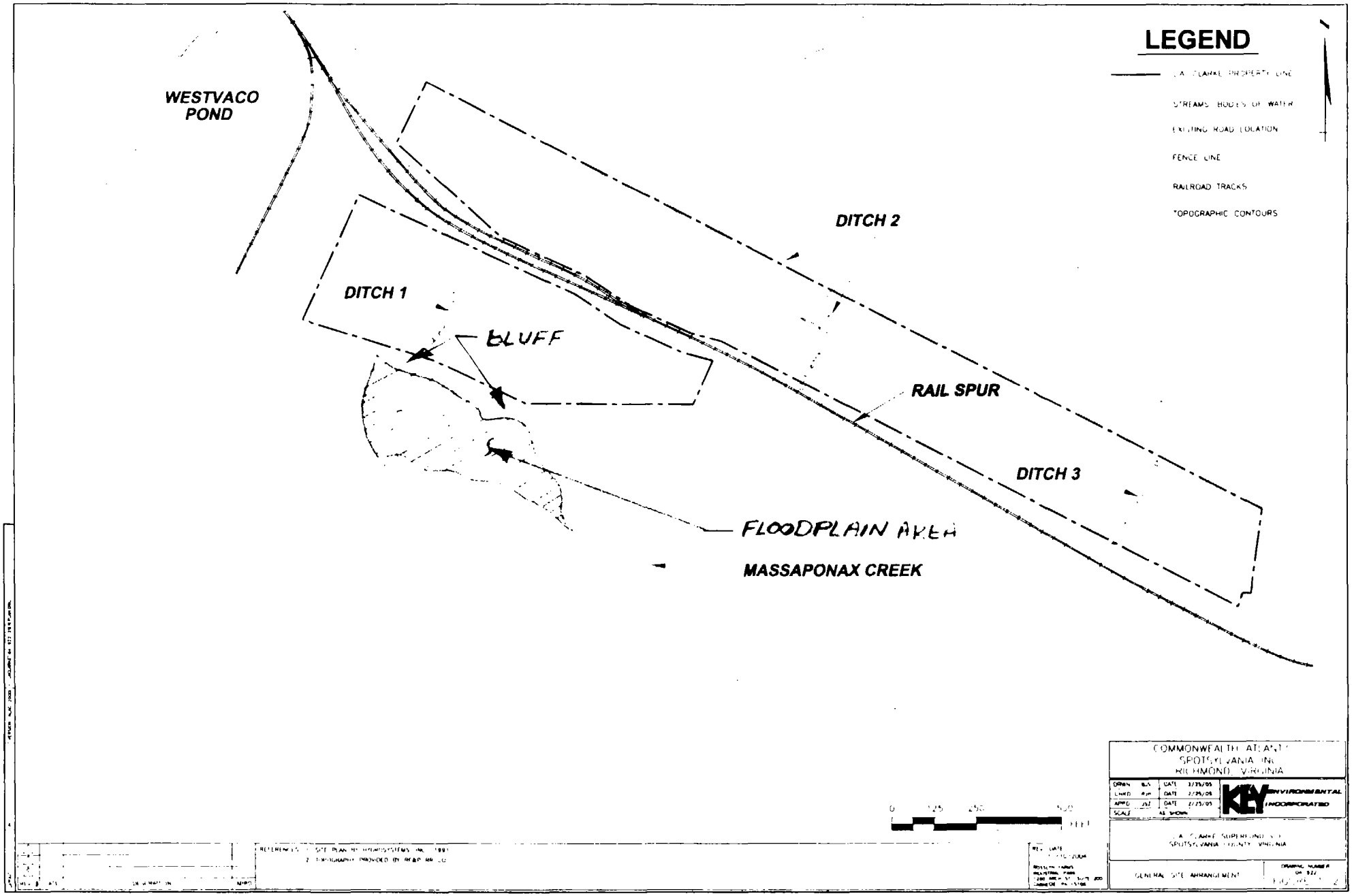
ROSSLYN FARMS
INDUSTRIAL PARK
1200 ARCH ST, SUITE 200
CARNEGIE, PA 15106

SITE LOCATION MAP

DRAWING NUMBER
04-322
FIGURE 1-1

ATTACHMENT 2

Site Layout


LEGEND
J.A. CLARKE PROPERTY LINE
STREAMS, BODIES OF WATER
EXISTING ROAD LOCATION
FENCE LINE
RAILROAD TRACKS
TOPOGRAPHIC CONTOURS
WESTVACO POND
DITCH 1
DITCH 2
DITCH 3
BLUFF
RAIL SPUR
FLOODPLAIN AREA
MASSAPONAX CREEK
0
125
250
500
FEET
COMMONWEALTH ATLANTIC
SPOTSYLVANIA INC.
RICHMOND, VIRGINIA
KEY ENVIRONMENTAL INCORPORATED
J.A. CLARKE SUPERFUND SITE
SPOTSYLVANIA COUNTY, VIRGINIA
GENERAL SITE ARRANGEMENT

ATTACHMENT 3

List of Documents Reviewed

List of Documents Reviewed

- Site Walk Though for Five Year Review, L. A. Clarke and Son Site, Fredericksburg, Virginia, March 03, 2005

- Operable Unit 2 Site Characterization Report, L. A. Clarke and Son Inc. November 2002

-Record of Decision, Remedial Alternatives Selection, L. A. Clarke Site, Spotsylvania County, Virginia, March 31, 1988

-U.S. Environmental Protection Agency, Region III, Hazardous Site Cleanup Division, Five-Year Review, L. A. Clarke Superfund Site, Spotsylvania County, Virginia, September 30, 1999

-U.S. Environmental Protection Agency, Region III, Hazardous Site Cleanup Division, Five-Year Review, L. A. Clarke Superfund Site, Spotsylvania County, Virginia, September 30, 1994

- Explanation of Significant Differences dated December 29, 1989

- Explanation of Significant Differences dated March 31, 1994

- Explanation of Significant Differences dated June 14, 1999

- Administrative Order on Consent Doc III-95-60-DC, dated September 29, 1995

- Administrative Order on Consent Doc III-89-30-DC, dated September 6,1989

- Consent Decree CA# 89-0651-A, dated July 17, 1989

- Focused Feasibility Study (FFS) May 10, 1993

- NPL Listing of the L.A. Clarke and Son, Inc Site, 51 F.R. 21054, dated June 10, 1986

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SUBJECT: L.A. Clarke Superfund Site — September 28, 2005

Five-Year Review Report,

FROM: Peter W. Schaul, Director

Office of Superfund Site Remediation (3HS20)

TO: Abraham Ferdas, Director

Hazardous Site Cleanup Division (3HS00)

Enclosed for your signature is the third Five -Year Review Report for the L.A. Clarke Superfund Site ("Site") located in Fredericksburg, Virginia.

The assessment of this Five-Year Review found that the site remains protective of human health in the short term. Currently, exposure pathways that could result in unacceptable risks are being controlled through implementation of the completed portions of the remedy namely, fencing, decommissioning of the wastewater lagoon, demolition and off-site disposal of all of the process buildings and tanks, and excavation and off-site disposal of the sediments in the drainage ditches and the flood plain. A determination with respect to environmental impacts associated with the Westvaco Pond cannot be made at this time as the sediments in the pond need to be evaluated.

The selected remedy is expected to be protective of human health and the environment upon completion, and in the interim exposure pathways that could result in unacceptable risks are being controlled.

The Potentially Responsible Parties have petitioned EPA to change the surface soil cleanup level. EPA is currently evaluating this petition in conjunction with current and reasonably anticipated future land use.

I recommend that you sign the enclosed Five-Year Review Report for the L. A. Clarke Superfund Site.