

FIFTH FIVE-YEAR REVIEW REPORT FOR
RENTOKIL, INC. (VIRGINIA WOOD PRESERVING DIVISION) SUPERFUND SITE
HENRICO COUNTY, VIRGINIA



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Prepared by

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LIST OF ABBREVIATIONS & ACRONYMS

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substances and Disease Registry
AUL	Activity- and Use-Limitation
BTAG	Biological Technical Assistance Group
CCA	Chromated Copper Arsenate
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
CZA	Chromium Zinc Arsenate
EPA	U.S. Environmental Protection Agency
FFS	Focused Feasibility Study
FYR	Five-Year Review
HHRA	Human Health Risk Assessment
IC	Institutional Control
LDPE	Low-Density Polyethylene
LTM	Long-Term Monitoring
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
Mg/kg	Milligrams per Kilogram
µg/L	Microgram per Liter
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PCP	Pentachlorophenol
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act of 1976
RL	Reporting Limits
RI/FS	Remedial Investigation and Feasibility Study
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
UU/UE	Unlimited Use and Unrestricted Exposure
VDEQ	Virginia Department of Environmental Quality
VI	Vapor Intrusion
VPI	Virginia Properties, Inc.

I. INTRODUCTION

The purpose of a Five-Year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is, and will continue to be, protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR Reports such as this one. In addition, FYR Reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA),¹ consistent with Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP),² and considering EPA policy.

This is the fifth FYR for the Rentokil, Inc. (Virginia Wood Preserving Division) Superfund site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of one operable unit (OU). This FYR addresses the remedies for soil, sediment, and groundwater. EPA remedial project manager (RPM) Victoria Schantz led the FYR. Participants included EPA biological technical assistance group (BTAG) member Kimberly Hudson, EPA geologist Herminio Concepcion, EPA toxicologist Linda Watson, Virginia Department of Environmental Quality (VDEQ) project manager Angie McGarvey, and potentially responsible party (PRP) contractors Daniel Sheehan and Catherine Coffey from Arcadis. Virginia Properties, Inc. (VPI), the PRP, was notified of the initiation of the FYR. The review began on August 1, 2022.

Site Background

The Site is located on and around Peyton Street and Oakview Avenue, about 10 miles north-northwest of Richmond, Virginia, in Henrico County (Figure 1).³ A former wood-treating facility operated at the Site from 1957 until January 1990 (“the facility”). As described in the 1993 Record of Decision (ROD), the Site is comprised of the land occupied by the former facility, as well as wetland areas contiguous to the northcentral boundary and the southeastern corner of the facility where hazardous substances from the former facility came to be located (Figure 2). Chemicals used during wood-treatment operations included chromium zinc arsenate (CZA), chromated copper arsenate (CCA), pentachlorophenol (PCP), fuel oil no. 2, creosote, xylene, and fire retardants. Site operations resulted in the contamination of soil, sediment, and groundwater with hazardous substances.

¹ 42 U.S.C. § 9621(c).

² 40 C.F.R. § 300.430(f)(4)(ii).

³ The addresses associated with the Site are 2900, 3000, and 3001 Peyton Street, Richmond, Henrico County, Virginia 23228.

Current Site features include the original cap and slurry wall surrounding the former wood treating process area (Cap Area 1), the extended cap and slurry wall surrounding the area downgradient and north of the original cap (Cap Area 2), a building previously used as part of the remedy's groundwater dewatering system ("the water facility building"), and six monitoring wells (Figure 3 and Figure 4). The Site is fenced. Portions of the non-capped area of the Site are used for storage of contractor equipment. Surrounding land use includes light industrial, commercial and residential use.

There are two water-bearing units at the Site, separated by a clay hardpan. The upper (perched) aquifer consists of fluvial sediments and extends from the ground surface to about 4-7 feet below grade. The lower, or saprolitic, aquifer extends from the bottom of the hardpan (about 7-10 feet below grade) to the top of the Petersburg Granite bedrock. The bedrock serves as a confining layer and is encountered about 25 feet below ground surface.

A municipal water supply has provided water to the area since approximately 1987. Groundwater beneath the Site generally flows to the northeast, toward North Run Creek. Vertical groundwater movement is restricted by the hardpan. North Run Creek flows into Talley's Pond about 1 mile southeast of the Site (Figure 1) then continues to Upham Creek and then into the Chickahominy River.

For reference, Appendix A includes a list of documents reviewed during this FYR. Appendix B includes a timeline of Site events.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Rentokil, Inc. (Virginia Wood Preserving Division)		
EPA ID: VAD071040752		
Region: 3	State: VA	City/County: Richmond/ Henrico
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	Has the Site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Victoria Schantz		
Author affiliation: EPA Region 3		
Review period: 8/1/2022 – 5/1/2023		
Date of Site inspection: 11/2/2022		
Type of review: Statutory		
Review number: 5		
Triggering action date: 7/2/2018		
Due date (five years after triggering action date): 7/2/2023		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The Remedial Investigation (RI) initially identified two on-site plumes of groundwater contamination centered around the former treatment area and the unlined pond. A baseline human health risk assessment was performed in 1992 to evaluate soil, groundwater, surface water, and sediment. The baseline risk assessment determined that human exposure to soil, sediment, and groundwater could pose a cancer or a non-carcinogenic risk. Specifically, it identified unacceptable risks to residents and workers associated with incidental ingestion, inhalation and dermal absorption of site soil and sediment and with ingestion and dermal absorption of groundwater within both the perched and saprolite aquifers. The primary COCs are considered to be arsenic, copper, zinc, chromium, PCP, and carcinogenic PAHs for groundwater, soil, and sediment.

The environmental assessment, performed as part of the RI, identified no significant impact to aquatic organisms in North Run Creek associated with surface water. It did find that concentrations of organic and inorganic contaminants in sediment in North Run Creek and wetland areas adjacent to the Site could potentially pose a risk to organisms.

Response Actions

Following fish kills in Talley's Pond in 1962, under the direction of the Virginia State Water Control Board, the Site owner cleared, cleaned and replaced the facility's blowdown sump with a concrete holding pond and constructed a covered, unlined pond in 1963. An underground pipe connected the concrete holding pond to the covered unlined pond. In 1987, Rentokil removed the contents of the unlined pond and disposed of the waste off-site (Figure 5). Because the unlined pond was not backfilled, the excavation filled with rainwater and groundwater. The sludge at the bottom of the former unlined pond was considered a listed hazardous waste. In 1989, the owners of Talley's Pond (the off-property pond) dredged the pond sediment, placed the sediment around Talley's Pond and seeded the area. EPA added the Site to the Superfund program's National Priorities List (NPL) in March 1989.

Following the shut-down of wood-treating operations at the facility in 1990, the Site owner placed a polyvinyl chloride cover over the drip pad and constructed a roof over the concrete holding pond. In 1991, additional actions taken by the Site owner included removal and off-site disposal of wood-treating equipment, aboveground storage tanks and treatment cylinders; placement of clean, compacted clay over the former treatment cylinder area; construction of a roof over the former tank farm; and placement of a layer of clean gravel over the entire surface of the Site.

Rentokil, Inc. (Rentokil) (name was legally changed to VPI) and EPA signed an Administrative Order on Consent (AOC) in December 1987 to conduct a remedial investigation and feasibility

study (RI/FS).⁴ In March 1992, EPA entered into an AOC with VPI for the performance of a removal action to prevent additional migration of contamination into North Run Creek. The removal action included the placement of heavy plastic over the CCA Disposal Area and construction of a berm and sediment trap. VPI completed the work between June and September 1992.

EPA selected a remedy to address Site contamination in a June 1993 ROD. The ROD did not specify remedial action objectives (RAOs). However, as can be inferred from the list of the major components of the remedy listed below, the objectives of the remedy are:

Source Control Response Objectives

- Reduce risks to human health by preventing direct contact with, and ingestion of, contaminants in the Site soil, wetland sediments, and pond sediments, and by preventing potential ingestion of contaminated groundwater;
- Reduce risks to the environment by preventing direct contact with, and ingestion of, contaminants in the wetland sediments; and,
- Minimize the migration of contaminants from Site soil and wetland sediments that could result in surface water concentrations in excess of Ambient Water Quality Criteria.

Management of Groundwater Migration Response Objectives

- Eliminate or minimize the threat posed to human health and the environment by preventing exposure to the contaminants in the groundwater; and,
- Contain contaminated groundwater to protect human health and the environment.

The remedy outlined in the ROD included demolition and off-site disposal of existing structures, excavation and off-site disposal of the unusable CCA, excavation and off-site incineration of pond sediments, low temperature thermal desorption of “hot spot” soil, consolidation of surface soil outside the area to be capped that exceed site-specific cleanup levels to the area of the Site to be capped, construction of a Resource Conservation and Recovery Act (RCRA) Subtitle C cap, construction of a slurry wall around the perimeter of the area encompassed by the cap, installation of a dewatering system (horizontal wells) within the cap/slurry wall, extraction and on-site treatment of groundwater (later changed to off-site disposal), restoration of three wetland areas, implementation of ICs, and long-term monitoring (LTM) of groundwater. EPA issued a ROD Amendment in August 1996 removing the requirement to treat “hot spots” of soil contamination and modifying the groundwater remedy to dispose of the extracted groundwater off-site based on groundwater modeling during the remedial design.

The ROD requires LTM of the primary COCs (i.e., arsenic, chromium, copper, zinc, PAHs, and PCP) for at least 30 years to determine if maximum contaminant levels (MCLs) are being met at

⁴ VPI is a wholly owned subsidiary of Rentokil Initial plc, a U.K. public limited company.

the site boundary. For sediment and surface soils outside the area to be capped (i.e., the former process area), the ROD selected risk-based soil cleanup goals based on a future industrial land use scenario for PAHs, PCP, and arsenic. The primary COCs and associated cleanup goals established for soil and sediment are listed in Table 2.

Table 1: Primary COCs Established by the 1993 ROD and Associated Cleanup Goals

Groundwater COC ^a	
Arsenic	
Chromium	
Copper	
Zinc	
Total Carcinogenic PAHs	
PCP	
Soil and Sediment COC ^a	Cleanup Goal (mg/kg) ^b
Total Carcinogenic PAHs	5.1
PCP	48
Arsenic	33
<p><i>Notes:</i></p> <p>^a COCs established by the 1993 ROD. The ROD did not establish specific numeric values as groundwater cleanup goals but requires groundwater monitoring to determine if MCLs are being met at the site boundary.</p> <p>^b Cleanup goals established by the 1993 ROD for areas outside the capped area.</p> <p>mg/kg – milligrams per kilogram</p>	

Status of Implementation

In February 1994, VPI entered into a Consent Decree with the United States to perform the remedial design and implement the remedy selected in the 1993 ROD. VPI's remedial contractor started remedy construction in May 1998.

Remedial construction at the Site was completed in August of 1999. Contaminated site sediments and soils outside the area to be capped that exceeded cleanup goals listed in Table 1, above, (generally occurring in Wetland Areas A, B, and C) were excavated and consolidated into the former process area to be contained. A 30-inch-wide slurry wall was constructed around the area from the ground surface to the bedrock-confining layer. Three directionally drilled wells, identified as Laterals A, B, & C (also referred to as extraction wells), were installed 2 to 4 feet above the bedrock within the containment area to create a lower groundwater level inside the containment area than outside. The purpose of this inward gradient of groundwater was to prevent contaminants from migrating outside of the containment area. A French Drain was constructed at the perimeter of the containment area at the level of the perched aquifer. The purpose of this element was to capture groundwater from the perched horizon. A RCRA Subtitle C cap was placed over the approximately six (6) acre former process area of the Site (Cap Area 1), overlapping the boundaries of the slurry wall. Six monitoring wells (VPMW-1 thru VPMW-

6) were installed outside of the slurry wall downgradient from Cap Area 1 in the saprolitic groundwater aquifer for LTM.

The RCRA Cap system (Cap Area 1) consists of graded fill material, a low permeability Geo-Clay liner (GCL), a low-density polyethylene liner (LDPE), a geonet and drainage composite layer, geotextile fabric, protective cover soil, and approximately six inches of vegetated topsoil. In preparation for possible future non-residential reuse of the Site, three divider-wall structures were constructed within the confines of the slurry wall. The rectangular areas consist of reinforced concrete walls with embedded LDPE strips for connection to the RCRA cap. The divider walls allow for a total area of approximately 50,000 square feet for potential redevelopment. Waterstops were inserted in each concrete construction joint for future foundation construction. Utilities were also placed inside the divider wall structure. Four vents are positioned on the highest elevation of the cap. The system is a passive gas-venting system consistent with typical RCRA Subtitle C cap construction. EPA documented the completion of remedy construction in the September 1999 Preliminary Close Out Report.

Groundwater extraction from the three laterals was initiated in 1999. The extracted groundwater was pumped to the water facility building, which was constructed for water storage prior to being transported off-site for disposal. According to the 2000 Final Remedial Design and Remedial Action Report, the initial analysis of groundwater extracted from the containment system indicated detections of low levels of non-carcinogenic PAHs and metals with no exceedances of Maximum Contaminant Levels (MCLs). No recovery was being experienced from the French Drain System indicating that the perched aquifer had been dewatered completely.

To conduct performance monitoring and determine the groundwater gradient within the containment area, 14 piezometers were installed inside and outside the original slurry wall. Groundwater depths in these piezometers were measured monthly until August 2014. During that time, groundwater level data indicated a flat gradient with occasional slight outward or inward gradients in limited areas of the Site. The piezometers were abandoned in Spring 2015.

In July 2005, EPA approved VPI's request for a one-year moratorium on the extraction and disposal of groundwater from within the containment system. The moratorium was extended each year until December 2008 when groundwater extraction was suspended indefinitely. EPA and VDEQ agreed to the indefinite suspension based on a 2008 groundwater extraction test, which determined that site groundwater conditions, from a contaminant concentration and flow velocity/direction standpoint, are similar under extraction conditions and under the natural conditions observed since the shut-down of the extraction system. In 2015, the groundwater extraction pumps were removed and the groundwater extraction laterals were abandoned in place. The remainder of the groundwater recovery system, including the above-ground pumps, piping, and tanks were removed from the Site in 2016. In 2017, components of the containment area dewatering system from the water facility building were removed. The building remains in place. The current owner of the parcel uses the building for storage.

During long-term groundwater monitoring, results for well VPMW-2 consistently showed PCP concentrations at orders of magnitude above the MCL of 1 microgram per liter (µg/L) since 2001. Well VPMW-2 was located just north and downgradient of the original cap and slurry wall. In 2011, EPA requested that VPI develop a comprehensive remediation strategy to address contamination in this area, as an additional response action under the 1994 Consent Decree described below. VPI submitted a focused feasibility study (FFS) to EPA in November 2012. Based on the remedial alternatives in the FFS, EPA determined that extending the existing remedy containment system (which includes the original cap and slurry wall) was the most viable remedial option to address PCP contamination north of the original containment system. EPA documented this information in a December 2013 Determination of Necessary Additional Response Action.

VPI extended the cap (Cap Area 2) and slurry wall in December 2016 to contain the residual PCP-contaminated soil and prevent the infiltration of water. The slurry wall extension is 18 inches wide and installed to a depth of 15-26 feet below ground surface. The total length of the slurry wall is approximately 770 feet. The new cap components include a non-woven geotextile, geomembrane, geocomposite drainage layer, 18 inches of protective cover soil, and 6 inches of vegetated topsoil. The new cap overlaps the original cap by a minimum of 12 inches.

Partial NPL Deletion

In 2009, EPA partially deleted portions of the Site from the NPL, indicating that all appropriate response actions at those parcels had been completed. The partial deletion pertains to the soil and sediment of former Wetland Areas B and C and the groundwater at former Wetland Area C (Figure 3).⁵ The notice of partial deletion was published by EPA in the Federal Register on January 27, 2009, and the partial deletion became effective on March 30, 2009. Per the Federal Register deletion notice, even though the ground water at former Wetland Area B is not contaminated, EPA required the restriction on groundwater use to prevent the possibility of drawing contamination in that direction. The Federal Register notice states that former Wetland Area C would no longer be subject to five-year reviews because all response actions are complete and conditions allow for UU/UE.

Since the groundwater at former Wetland Area B remains on the NPL, and ICs are in place to prevent use of groundwater at former Wetland Area B, this area will continue to be evaluated in this and future FYRs. VPI sold the parcel containing former Wetland Area B in 2008. The parcel was sold again in December of 2018 to an adjacent property owner, Colonial Webb Contractors Company, in December of 2018. At the time of the current FYR, the 3.8-acre property is zoned for commercial and industrial use but has not yet been developed.

⁵ As part of the remedial action, the contaminated soil in former Wetland Areas B and C was excavated and disposed of under the cap constructed on the Site. The two former wetland areas were subsequently mitigated by VPI at an off-site location with the concurrence of the U.S. Fish and Wildlife Service (USFWS), the natural resource trustee. The mitigation area, which is located in Charles City County, Virginia, consists of 1.41 acres for former Wetland B and 5 acres for former Wetland C. USFWS continues to monitor VPI's wetland mitigation.

Institutional Control (IC) Review

The ROD requires implementation of ICs, including deed restrictions and restrictions on the use of the groundwater, to be implemented. The deed restrictions prohibit residential development of the Site in order to prevent exposure to contaminated soil. The restrictions on the use of the groundwater at the Site prevent exposure to the contaminated groundwater. In addition, the ROD Amendment provides, “ICs will be implemented to ensure that the integrity of the cap is maintained,” reflecting EPA’s intention to implement ICs that will protect the cap and prohibit interference with it.

On December 1, 2005, VPI recorded a Deed Notice and Declaration of Restrictive Covenants (Restrictive Covenant) for the Site with the Henrico County (VA) Clerk’s Office. Among other things, this Restrictive Covenant implements the activity- and use-limitations (AULs) selected in the ROD and ROD Amendment.⁶ The Restrictive Covenant applies to the three parcels that comprise the real property owned by VPI at the time of recording (“the Site property”). The Site, as described in the ROD, straddles these three parcels.

The Restrictive Covenant implemented AULs for the area of the Site property referred to as the “Restricted Area,” as shown in Exhibit B of the Restrictive Covenant. A copy of the Restrictive Covenant is included in Appendix C of this FYR. Under the Restrictive Covenant, the “Restricted Area” included: (i) Wetland Area A, (ii) the former industrial process area (i.e., the parts of the Site occupied by the original cap and slurry wall systems) (“Area C – Cap Area”), (iii) the area of the Site property immediately north of the Cap Area (“Area B”), and (iv) former Wetland Area B (“Area D”) (Figure 6). As required by the ROD and ROD Amendment, the Restrictive Covenant prohibits residential development of the Site, use of Site groundwater, and disturbance of the cap or placement of structures on it that would damage it in any way.

Neither EPA nor VDEQ were signatories to the Restrictive Covenant. However, EPA had an opportunity to review and comment on it, and the Restrictive Covenant expressly provides that the covenants contained in it cannot be “altered or breached in any respect without the express written approval and consent of EPA (as intentional third-party beneficiary pursuant to § 55-22 of the Code of Virginia).” (Restrictive Covenant, ¶ 8).⁷

On April 8, 2019, VPI recorded an Amendment to the Restrictive Covenant (“Amended Restrictive Covenant” or “Amendment”) with the Henrico County (VA) Clerk’s Office, the primary purpose of which was to expand Area C (Cap Area), as depicted on Exhibit B of the Restrictive Covenant, to include the additional areas of the Site where the cap and slurry wall

⁶ The Restrictive Covenant also implements AULs not selected in the ROD and ROD Amendment (e.g., AULs for Wetland Area A that mirror requirements under Section 404 of the Clean Water Act, 33 U.S.C. § 1344).

⁷ The Restrictive Covenant also provides VPI with enforcement rights under VA law and states that, if VPI transfers the Restricted Area of the Site property, any deed or instrument of conveyance will expressly reserve an irrevocable and permanent easement granting VPI (i) a right of access to meet its obligations under the Consent Decree and ROD, and (ii) a right to carry out and enforce the AULs under the ROD and the Restrictive Covenant.

were extended during the additional Remedial Action conducted in December 2016. The Amended Restrictive Covenant included a revised version of Exhibit B, which is Figure 6 of this FYR. The Amendment expanded the Restrictive Area of the Site to include the portion of the Site property immediately north of Wetland Area A (“Area A”), although this is not required by the ROD or ROD Amendment.⁸ EPA expressly approved and consented to the Amendment, as required by the original Restrictive Covenant. Table 3, below, summarizes the AULs for the Site property. A copy of the Amended Restrictive Covenant is included in Appendix C.

EPA completed a vapor intrusion (VI) assessment evaluation in February 2022 (as discussed in Section V. Question B, below); and determined that an IC specifically related to VI is not warranted.

Parcels 771-757-8224, 771-756-5980, and 771-756-7746, which comprise the Site property, were acquired by a construction company, Laydown Yard, LLC, from VPI in October 2021. On or around October 28, 2021, VPI and new owner, Laydown Yard, LLC, entered into an Environmental Agreement relating to the sale of the Site property. Under this Environmental Agreement, the parties purported to divide between themselves responsibility for VPI’s obligations under the Consent Decree (“the regulatory obligations”). Without going into detail about the obligations purportedly assumed by the new owner, we note that the Consent Decree “is binding upon the United States and upon VPI and its agents, successors and assigns. Any change in ownership or corporate status of VPI including, but not limited to, any transfer of assets or real or personal property shall in no way alter VPI’s responsibilities under this Consent Decree.”⁹

⁸ Area A is not included within the ROD’s definition of the Site. As such, EPA has not required AULs on this portion of the Site property.

⁹ See also 42 U.S.C. § 9607(e) (“No indemnification, hold harmless, or similar agreement or conveyance shall be effective to transfer from the owner or operator of any vessel or facility, or from any person who may be liable for a release or threat of release under this section, to any other person the liability imposed under this section.”)

Table 2: Summary of Planned and/or Implemented Institutional Controls

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions		ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
IC Area: Wetland Area (4.49 acres) Includes Wetland Area A	Soil	Yes	Yes	North/central portion of parcel 771-757-8224	Prohibit residential land use.	Restrictive Covenant, recorded Dec. 1, 2005, as amended, April 8, 2019
	Groundwater	Yes	Yes		Prohibit groundwater use.	
IC Area: Area B (7.10 acres)	Soil	Yes	Yes	Central portion of parcel 771-757-8224, just north of the Cap Area, and northern portion of parcel 772-757-0918	Prohibit residential land use.	Restrictive Covenant, recorded Dec. 1, 2005, as amended, April 8, 2019
	Groundwater	Yes	Yes		Prohibit groundwater use.	
IC Area: Area C – Cap Area (9.29 acres) Includes cap & slurry wall	Soil	Yes	Yes	Southern and Southeastern portions of parcel 771-757-8224. Parcel 771-756-5980.	Prohibit residential land use. Prohibit activities that could compromise the integrity of the cap.	Restrictive Covenant, recorded Dec. 1, 2005, as amended, April 8, 2019
	Groundwater	Yes	Yes		Prohibit installation of wells and groundwater use.	
IC Area: Area D (2.31 acres) Includes former Wetland Area B	Soil (deleted from NPL)	No	Yes	Southern portion of parcel 772-757-0918	Prohibit residential land use.	Restrictive Covenant, recorded Dec. 1, 2005, as amended, April 8, 2019
	Groundwater	Yes	Yes		Prohibit installation of wells and groundwater use.	

Notes:

1. The Site is comprised of four parcels (Nos. 771-757-8224, 772-757-0918, 771-756-5980, and 771-756-7746). Only the first three are subject to AULs under the 1993 ROD and the ROD Amendment. Parcel 772-757-0918, which comprises 3.846 acres, was subdivided from Parcel 771-757-8224 in 2008.
2. Under the 2005 Restrictive Covenant, as amended, the activity- and use-restrictions selected in the 1993 ROD will run with the land.
3. The Site “IC Areas” referenced in the table above are depicted in Figure 6. They were established by the 2019 Amended Restrictive Covenant and do not coincide with parcel boundaries. The Henrico County Parcel map is included as Figure 7.
4. Area A and IC Area E which are depicted in Figure 6 are not included in this table because they do not require ICs. Area A is considered off-Site under the ROD, but is part of parcel 771-757-8224, once owned by VPI. Area E, which contains former Wetland Area C, is parcel 771-756-7746 and was deleted from the NPL because conditions in this area allow for UU/UE and is not subject to five-year reviews.
5. Soil and sediments in Wetland Area B of the Site were deleted from the NPL in 2009. Arguably, the AUL prohibiting residential use of this area of the Site is no longer needed for protectiveness.

Systems Operations/ Operation and Maintenance (O&M)

VPI's O&M contractors, Arcadis and NewFields, perform O&M activities in accordance with the 2001 Final O&M Plan and 2016 Groundwater Monitoring Plan. The contractors document O&M activities in annual reports. This FYR included a review of O&M reports from 2017 through 2021. See the Data Review Section of this FYR for additional information regarding groundwater monitoring. The current maintenance program for the Site includes quarterly inspections and maintenance of the slurry-wall system, cap, stormwater management controls, and the security fence. No significant issues were noted in this FYR period regarding the condition or functionality of the cap, slurry wall or stormwater controls. Arcadis removes excess vegetation and tree growth that might pose a threat to the integrity of the cap. Cap vegetation is mowed at least twice a year. The security fence that surrounds the cap is cleared of vegetation and repaired, as needed.

There are no additional monitoring events required for the wetland areas impacted by Site releases. The maintenance and monitoring requirements for the restored wetlands located to the north of the Site were satisfied in 2010. The wetlands were sufficiently established at that time.

In 2015, to facilitate the construction of the expanded containment system, all but three monitoring wells (VPMW-4, VPMW-5 and VPMW-6) were abandoned. Following the extension of the containment system in 2016, three new monitoring wells (VPMW-1R, VPDW-04R and VPDW-05R) were installed north and downgradient of the extended system (Cap Area 2). The six monitoring wells currently located on the Site outside of the cap and slurry wall areas are depicted on Figure 4. There are currently no wells located within the containment areas.

The 2016 Groundwater Monitoring Plan became effective following the installation of the new monitoring wells downgradient of the expanded cap and slurry-wall area. Upon completion of the installation of the three new monitoring wells, a site-wide sampling event was conducted in October 2017. There were no detections above MCLs at any of the six wells that were sampled. Per the approved 2016 Groundwater Monitoring Plan and based on the results of the site wide sampling event, the PRP requested an annual sampling schedule for year two thru year four of post-remedial monitoring for the three new monitoring wells and discontinuance of monitoring for the three older monitoring wells. A request to reduce the frequency of groundwater monitoring from every year (annual) to every other year (biennial) was received in February 2022. The request was consistent with the approved 2016 Groundwater Monitoring Plan and current and historical analytical data shows concentrations of COCs consistently below applicable MCLs. Therefore, the request was approved by EPA in March 2022. Annual reporting and cap inspections are still required.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the previous FYR as well as the recommendations from the previous FYR and the current status of those recommendations.

Table 3: Protectiveness Determinations/Statements from the 2018 FYR

OU#	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	<p>The remedy is protective of human health and the environment in the short term because the cap prevents direct exposure to contaminated soil, the groundwater contamination remains on-site, the Site is fenced, and monitoring is performed to ensure the integrity of the remedy.</p> <p>Long-term protectiveness of the remedial action will be achieved when groundwater monitoring with improved detection limits verifies that there is no migration of groundwater above MCLs downgradient of the slurry wall.</p> <p>Additionally, ICs will need to prohibit activities that could impact the integrity of the expanded cap and slurry wall. Although no one currently uses the contaminated groundwater, institutional controls have been implemented to prevent exposure to, or ingestion of, contaminated groundwater. There are also institutional controls to prevent residential use.</p>

Table 4: Status of Recommendations from the 2018 FYR

OU#	Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
1	The institutional control in place for parcel 771-757-8224, which includes the new cap and slurry wall, does not prohibit activities that could compromise the integrity of the new remedial features.	Revise the institutional control for the property occupied by the new cap and slurry wall to include a prohibition on activities that could impact the integrity of the remedy and consider an Explanation of Significant Differences to include this restriction as part of the remedy.	Completed	The Amended Restrictive Covenant was recorded on 4/8/2019 to expand the AULs for the Cap Area of the Site. EPA determined an ESD would not be needed because this AUL was already selected in the 1996 ROD Amendment (p. 8). ¹⁰	4/8/2019

¹⁰ The ROD Amendment provides, “Institutional controls will be implemented to ensure that the integrity of the cap is maintained.”

The 2018 FYR also listed the below other findings that warranted follow-up, but did not affect current or future protectiveness:

- Evaluate the need to reseed the expanded part of the cap in 2018.
 - The seeding did not need to be redone. The Site visit for the 2018 FYR was done in the late fall 2017, and the area was initially seeded in late spring 2017. When spring 2018 came around, the area had a full grass field with wildflowers.
- Ensure that method detection limits (MDL) can detect groundwater constituents at cleanup goal concentrations.
 - VPI had already identified a new laboratory by issuance of the 2018 FYR that was used thereafter and can achieve the necessary detection limit for benzo(a)pyrene. The Arcadis Project Manager confirmed with the lab after the 2018 FYR about the detection limits, and this change has been reflected in the annual reports.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement, and Site Interviews

A public notice was made available by newspaper posting in the *Henrico Citizen* on January 12, 2023. It stated that the FYR was underway and invited the public to submit any comments to EPA. No comments were received. A copy of the press notice is in Appendix D. The results of the review and the report will be made available at the Site's information repository. The Site's information repository is located at the Tuckahoe Area Library and online at: www.epa.gov/superfund/rentokil. The Tuckahoe Area Library is located at 1901 Starling Drive in Henrico and is part of the Henrico County Public Library system.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy. The results of these interviews are summarized below. Completed interview forms are included in Appendix E.

The VDEQ Project Manager indicated there have been no problems with unusual or unexpected activities at the Site and has not received any complaints or inquiries regarding the Site. The Arcadis Project Manager noted that there was one known trespassing event that occurred in 2018; however, no vandalism occurred to the remedial measures. Occasional dumping of tires, vegetative debris, etc. outside of the perimeter fence had occurred prior to 2019 when warning signs and cameras were installed to prevent such activities.

Laydown Yard, LLC, the current owner of parcels 771-757-8224, 771-756-5980, and 771-756-7746 of the Site, stated that they were made aware of the environmental issues prior to purchasing the property and feels well-informed of the response activities and remedial progress at the Site. They are not aware of any problems or unusual or unexpected activities at the Site. They are planning redevelopment of the Site for use as a laydown yard and will be submitting a

Plan of Development to Henrico County. EPA will work with the property owner to ensure that any future land uses would not interfere with the site's remedy.

Colonial Webb Contractors Company, the current owner of parcel 772-757-0918 where former Wetland B was located, was contacted but not formally interviewed. The owner stated that they are aware of the environmental issues at the Site and are well informed of the response activities and remedial progress at the Site. The owner indicated that their future plans for their Site property potentially involve development of a warehouse on the parcel. The owner stated that they are aware of the Restrictive Covenant on the parcel. EPA will work with the property owner to ensure that any future land uses would not interfere with the site's remedy.

The local government representative interviewed was from the Henrico County Planning Department. The representative stated that Henrico County maintains a file on the Site but has not been kept informed of Site activities since the previous Five-Year Review in 2018. The county requested updates on the current status of the Site and restrictions on potential reuse of the Site. The county also suggested that EPA have a specific county contact on file to provide Site-related updates and copies of FYR reports. Leslie News, Assistant Director of Planning, has since been established as the point of contact at the Henrico County Planning Department. The county noted that the Division of Police has indicated there have been no calls for service at the Site's address within the past five years. The county's 2026 Comprehensive Plan designates the Site as restricted to light industrial use. The county is aware of Laydown Yard, LLC's plan to redevelop the Site for use as a laydown yard.

During the Site visit, EPA RPM Victoria Schantz and CIC John Brakeall spoke to three residents who live on Oakview Avenue, northwest of the Site. Two of the residents live in the same home and were interviewed together. The two residents were not aware of the Site, but said they were confident that EPA's work is protective of human health and the environment. They did, however, note that they have not been kept informed of Site activities and that it would be helpful if EPA could provide updates to the community, particularly if there are changes that could affect their health. One of the residents noted that there is a lot of wildlife near the Site, and it's easy to forget that the Site has contamination on it. Both residents appreciated the opportunity to speak with EPA representatives. Both residents expressed interest in being kept informed about future redevelopment of the Site. The third resident was not interested in being formally interviewed. The resident was aware of the Site but had no questions or concerns to share with EPA.

Data Review

The primary goal of the groundwater monitoring program is to evaluate water quality in the shallow groundwater aquifer downgradient of the capped areas. This FYR included a review of groundwater monitoring data collected from monitoring wells VPMW-1R, VPDW-04R and VPDW-05R in June 2018 through June 2021, as presented in the Site's semi-annual groundwater monitoring reports. Figure 4 shows the monitoring well network. The wells are installed in the saprolitic aquifer, which lies above a bedrock confining layer at about 20 to 30 feet below

ground surface. Groundwater samples were analyzed for arsenic, copper, chromium, zinc, PAHs, and PCP. The samples for arsenic, chromium, copper, and zinc were filtered in the laboratory. Since the Site-wide event in October 2017, annual sampling of the three monitoring wells from 2018 to 2021 has shown that all COCs remain below MCLs. Table 5, below, shows the detected analytes during these four sampling events. All reporting limits (RLs) were equal to or less than the MCL. No COCs were detected at or above their respective MCLs during the June 18, 2018, June 27, 2019, June 25, 2020, and the June 16, 2021 sampling events. Per the approved biennial sampling schedule, the wells were not sampled in June 2022. The next sampling event will take place in June 2023.

Table 5: Groundwater Analytical Detections Between June 2018 and June 2021

Location ID				VPMW-1R				VPDW-4R				VPDW-5R			
Sample Date				6/18/2018	6/27/2019	6/25/2020	6/16/2021	6/18/2018	6/27/2019	6/25/2020	6/16/2021	6/18/2018	6/27/2019	6/25/2020	6/16/2021
Analyte	Units	MCL	RSL												
Fluoranthene	µg/L	--	80	< 0.074	< 0.070	0.16 J	< 0.10	0.22	< 0.074	< 0.069	< 0.10	0.17 J	< 0.072	< 0.066	< 0.23
Pentachlorophenol (8151)	µg/L	1	--	< 0.036	< 0.037	< 0.019	< 0.027	< 0.035	< 0.038	< 0.019	0.038 J	< 0.036	< 0.037	< 0.019	< 0.026
Phenanthrene	µg/L	--	12	< 0.039	< 0.037	0.10 J	< 0.079	0.30	< 0.039	< 0.036	< 0.079	0.078 J	< 0.038	< 0.035	< 0.18
Pyrene	µg/L	--	12	< 0.044	< 0.041	0.12 J	< 0.10	0.16 J	< 0.043	0.045 J	< 0.10	0.14 J	< 0.042	< 0.043 J	< 0.10
Chromium (Dissolved)	µg/L	100	--	< 1.6	< 1.6	< 1.6	1.6 J	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	24	3.0 J	8.3 J
Copper (Dissolved)	µg/L	1300	--	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	3.4 J	3.8 J	5.6 J
Zinc (Dissolved)	µg/L	--	600	< 7.0	< 7.0	< 7.0	18 J	< 7.0	< 7.0	< 7.0	7.5 J	20	26	36	180

Notes:

µg/L - micrograms per liter

MCL - Maximum Concentration Limit

J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value

Bold - Indicates concentration was detected

Only analytes with detections are shown

Tap water Regional Screening Levels (RSLs) are provided for contaminants with no MCL as a comparative health-based screening standard.

The RSL for pyrene was used as a surrogate for phenanthrene.

Site Inspection

The Site inspection took place on November 2, 2022. Prior to meeting at the Site, Victoria Schantz (EPA RPM) and John Brakeall (EPA CIC) walked along Oakview Avenue and conducted interviews with neighbors. Following the interviews, the EPA RPM and CIC visited the Site's local information repository, Tuckahoe Public Library, at 1901 Starling Drive in Henrico. The Henrico Government and Law Library previously served as the Site's repository but merged with the Henrico County Public Library System. Library staff were unable to find the Site documents at the time of the visit. After the visit EPA's records center worked with the Tuckahoe Library to re-establish the repository for the Site.

After the visit to the library, the EPA RPM and CIC drove to the Site and met the other attendees: Owner of Laydown Yard, LLC, Angie McGarvey (VDEQ), Catherine Coffey (Arcadis), and Justin Coffey (Arcadis). Laydown Yard, LLC purchased the Site property (parcels 771-757-8224, 771-756-5980, and 771-756-7746) from VPI in October 2021. The purpose of the inspection was to assess the protectiveness of the remedy. The Site inspection checklist is included in Appendix F. Site inspection photographs are included in Appendix G.

Site inspection participants gathered at the Site, located at 3000 Peyton Street, inside the fenced area, near the water facility building. Once gathered, a brief safety meeting and discussion of the inspection was held. Site inspection participants first observed the portion of the non-capped area that the owner is using for contractor storage. Site inspection participants then left the fenced cap and slurry-wall area to inspect the monitoring wells and observe Wetland Area A and North Run Creek. All six monitoring wells were located and were locked. Site inspection participants observed the Wetland Area A, North Run Creek and the stormwater basin. No issues were noted in these areas.

Site inspection participants returned to inspect the fenced cap and slurry-wall area. The four cap vents were also inspected. No damaged fencing was noted. The original and extended caps were in good condition and vegetation was well established. No erosion was evident. No issues were noted in these areas.

Next, the participants toured the inside of the water facility building. The owner is currently using the building for storage of contractor equipment. Site inspection participants left the water facility building and observed former Wetland Area B, which is fenced and supports well-established vegetation.

V. TECHNICAL ASSESSMENT

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

Question A Summary: Yes. The remedy is functioning as designed and intended by the decision documents. There are no known complete exposure pathways at the Site.

In the early 1990s, the removal action and other cleanup actions performed by VPI addressed immediate threats to human health and the environment. Excavation and consolidation of contaminated soil and sediment beneath the caps prevents unacceptable exposures to human and ecological receptors through direct contact. The caps also prevent infiltration of precipitation through the contaminated material, preventing additional groundwater contamination. The slurry walls contain contaminated groundwater, preventing off-site migration of Site-related COCs.

The ROD and ROD Amendment require ICs to implement AULs to prohibit (i) residential development of the Site (ii) activities that would impact the integrity of the cap and slurry wall, and (iii) the use of Site groundwater. These AULs are required because the remedy leaves contamination in place at concentrations that do not allow for UU/UE of the Site. The 2005 Restrictive Covenant and the 2019 Amendment implement the AULs selected in the ROD and ROD Amendment.

Data from June 2018 to June 2021 indicate no COCs exceeding MCLs or Regional Screening Levels (RSLs) for groundwater. The review of available groundwater data indicates that groundwater contamination is confined within the Site property boundaries.

Site O&M is adequate. Based on a review of the available O&M reports and the Site inspection, no significant issues have been noted since the previous FYR regarding the condition or functionality of the cap, slurry wall or stormwater controls.

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

Question B Summary: Yes. The cleanup goals and exposure assumptions used at the time of the remedy selection remain valid. Although changes to toxicity data have occurred since remedy selection, the changes do not call into question the protectiveness of the remedy.

The ROD did not establish specific numeric values as groundwater cleanup goals but requires groundwater monitoring to determine if MCLs are being met at the Site boundary. The current MCL for arsenic (10 µg/L) is lower than it was at the time of the ROD (50 µg/L). However, groundwater COC concentrations are compared to the current MCLs and RSLs and during this FYR period measured concentrations did not exceed even the lower MCL for arsenic. Therefore, the change does not affect the protectiveness of the remedy.

The last FYR (2018) included a screening-level risk evaluation to determine if the soil dioxin concentrations detected on-Site during the RI would pose unacceptable risks since the non-cancer toxicity value for dioxin was updated. A review of the soil dioxin data confirmed that dioxin contamination in Site soil was within the same general footprint as PCP soil contamination which was consolidated under the cap. Therefore, the implemented soil remedy is expected to have also addressed risks associated with 2,3,7,8-Tetrachlorodibenzo-p-dioxin

(TCDD) in site soil. The evaluation also included an assessment of the soil cleanup goals which demonstrated that the direct contact cleanup goals remained valid for the three primary soil COCs established by the ROD.

The ROD did not evaluate risks to ecological receptors associated with surface soil. Available surface soil data from the RI for soil that potentially remains in place was evaluated and determined not to pose an unacceptable risk to ecological receptors. The clean fill used to backfill remediated areas and the vegetative covers and caps create a barrier and prevents exposure to any remaining potentially contaminated soil or sediment for ecological receptors.

This FYR evaluated the chemical-specific Applicable or Relevant and Appropriate Requirements (ARARs) identified in the ROD and determined that there were no changes that affect the protectiveness of the Site's remedy.

A VI assessment was performed by EPA in 2021. The evaluation was completed to answer questions raised by the Agency for Toxic Substances and Disease Registry (ATSDR) regarding the possible redevelopment of the Site and the potential need for an IC related to VI. The details of the VI assessment are included in Appendix H and are summarized below.

Groundwater contamination is confined within the containment area surrounded by two slurry walls and a RCRA Subtitle C cap. To get a sense of the potential risk of VI within the containment area screenings were performed using EPA's Vapor Intrusion Screening Level (VISL) Calculator. As no wells are currently located within the containment area to sample, the screenings used available groundwater data from the 1992 RI and data collected in 2008 from the extraction laterals. The screenings indicate:

- Groundwater in 1992 could have presented a VI risk within future commercial buildings, primarily from naphthalene.
- Groundwater in 2008 from within the containment area could have presented a minimal non-cancer VI risk within future commercial buildings, primarily from naphthalene.
- The results show that the VI risk decreased significantly from 1992, during the RI, to 2008, after the Remedial Action occurred and over one million gallons of groundwater were extracted from within the containment area and disposed.

The 2008 data is the most recent data available as it was collected prior to abandonment of the laterals. It is approximately 15 years old and concentrations of naphthalene have likely decreased to levels that would not cause an unacceptable VI risk today. In addition, vapor mitigation is inherent in a RCRA Subtitle C cap system. For these reasons, EPA is confident that VI is not an issue at the Site.

An IC is in place which prohibits residential development on the property and EPA can require additional VI mitigation as part of the reuse management authorities EPA has over the Site. Therefore, a formal IC for VI mitigation is not warranted. Moving forward, EPA will advise

Prospective Purchasers through a Comfort Letter and will work with the purchaser to determine if structures would be anticipated on the capped area. If so, out of an abundance of caution, EPA's preference would be to proactively incorporate a passive sub slab depressurization system and a vapor barrier into any building designs.

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

Question C Summary: No other information has come to light that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations	
OU(s) without Issues/Recommendations Identified in the Five-Year Review:	
OU1	

Other Findings:

In addition, the following is a recommendation that was identified during the FYR but does not affect current and/or future protectiveness:

- The potential for deletion from the NPL has been discussed. Additional groundwater data, including looking at additional potential parameters, will be necessary to perform a risk evaluation prior to deletion.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement	
<i>Operable Unit:</i> 1	<i>Protectiveness Determination:</i> Protective
<i>Protectiveness Statement:</i> The remedy is protective of human health and the environment. The cap prevents direct exposure to contaminated soil, the groundwater contamination remains within the containment area on-Site, the Site is fenced, and monitoring is performed to ensure the integrity of the remedy. Institutional controls are also in place to prohibit residential land use, prevent the use of impacted groundwater, and protect the integrity of the remedy. EPA will continue to conduct FYRs to ensure that the remedy remains protective.	

VIII. NEXT REVIEW

The next FYR Report for OU1 of the Rentokil, Inc. site is required five years from the completion date of this review.

FIGURES

Figure 1: Site Vicinity Map



0 462.5 925 1,850
Feet

Sources: Esri, DeLorme, AND, Tele Atlas, First American, UNEP-WCMC, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, Aerogrid, IGN, the GIS User Community and the 2016 Operation, Maintenance, and Monitoring Summary Report.

Legend

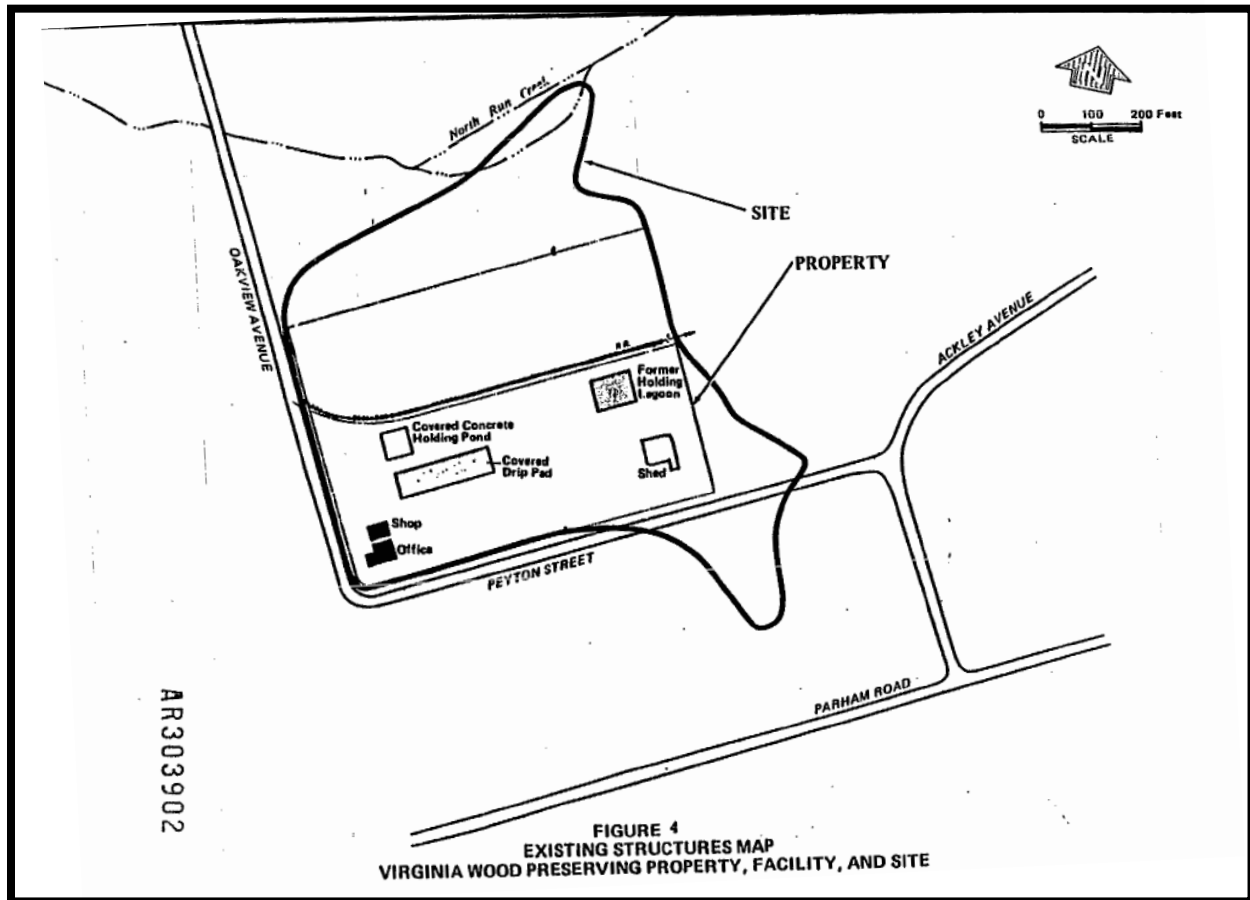
- New Cap
- Original Cap
- Wetland Areas
- North Run Creek
- +— Railroad Tracks



Rentokil, Inc. (Virginia Wood Preserving Division) Superfund Site
City of Richmond, Henrico County, Virginia

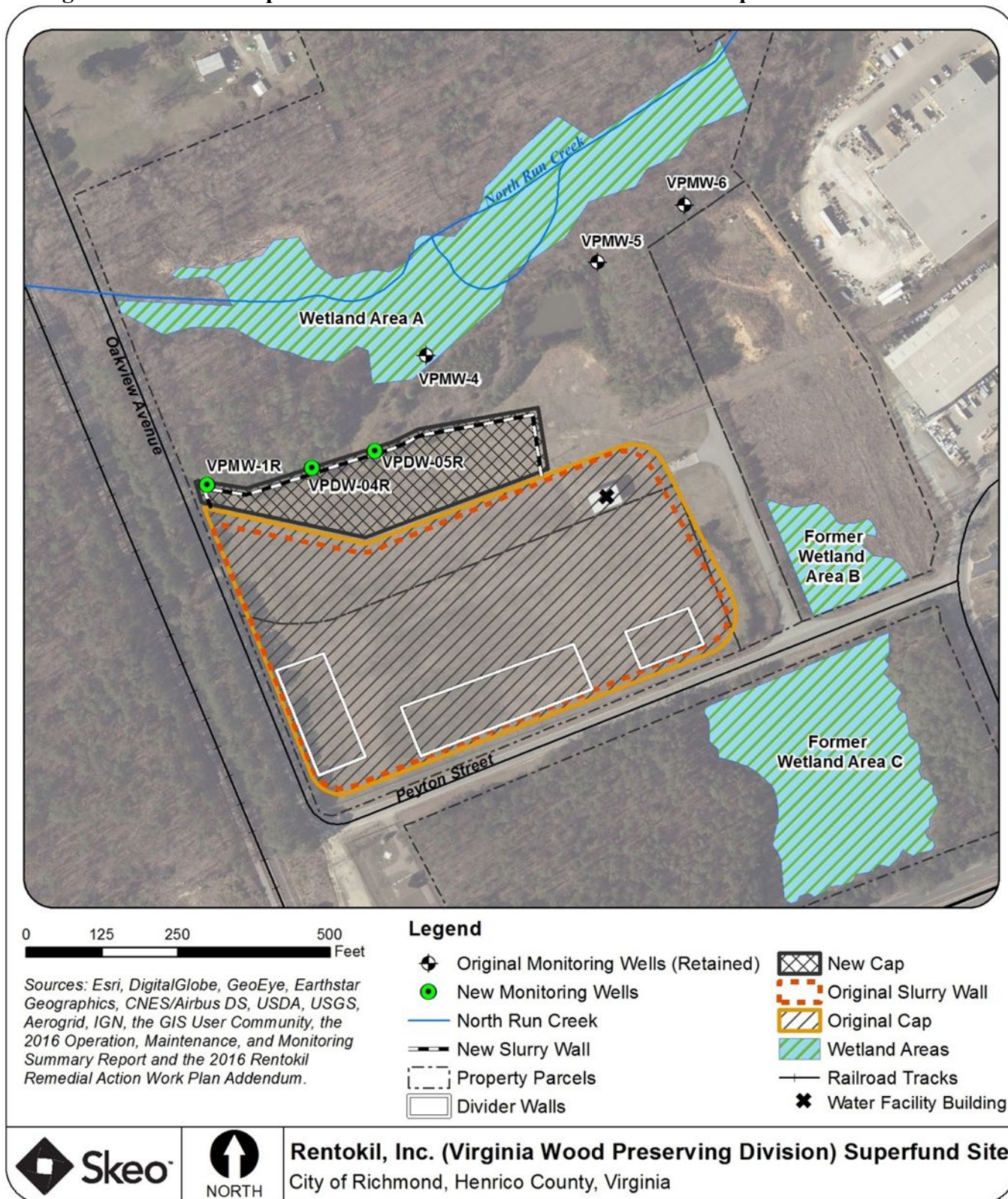
Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Figure 2: 3; ; 5'Site Boundary



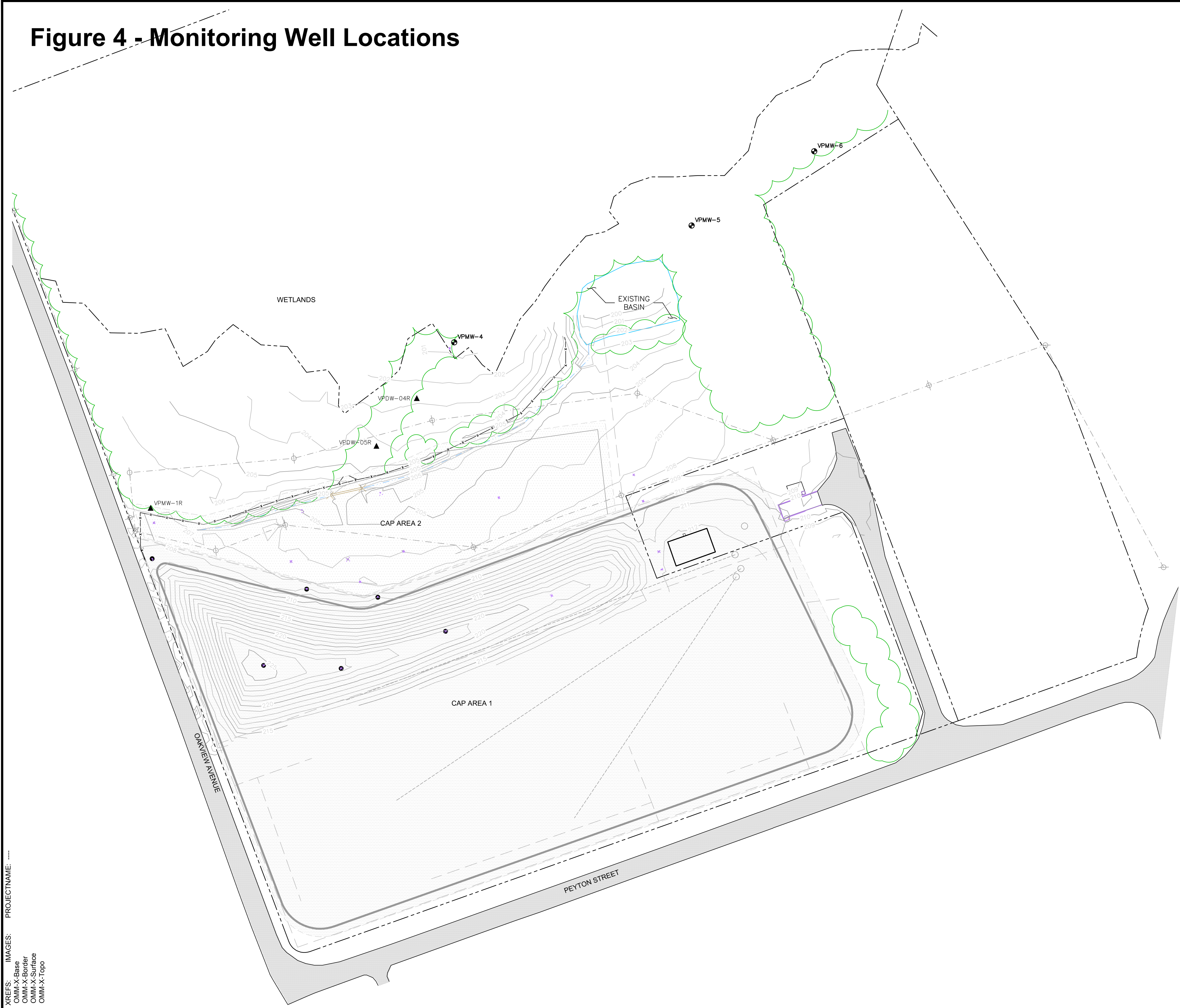
Note: Figure 2 above is Figure 4 from the Site's 1993 ROD.

Figure 3: Detailed Map of Current Site Features and Remedial Components



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Figure 4 - Monitoring Well Locations

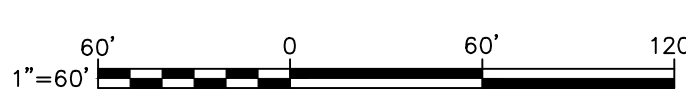


LEGEND

- PROPERTY OWNED BY VPI/RIESS
- x- EXISTING 8' CHAIN LINK FENCE
- - - EXISTING OVERHEAD UTILITY
- + EXISTING UTILITY POLE
- - - EXISTING TREE LINE
- - - EXISTING BASIN
- - - EXISTING DITCH
- - - EXISTING SLURRY WALL
- - - EXISTING PERFORATED STORMWATER COLLECTION PIPE (PSCP)
- - - EXISTING GROUDED LATERAL DRAIN
- EXISTING GROUDED MANHOLE
- EXISTING PVC CAP & BOLLARDS
- ▢ EXISTING LINER
- 205- EXISTING CONTOURS
- ⊙ MONITORING WELL
- ▲ PROPOSED MONITORING WELL

NOTES:

1. HORIZONTAL DATUM IS BASED ON NAD 83 SOUTH ZONE "GRID" COORDINATES REFERENCED TO THE KEYNET VRS SYSTEM.
2. VERTICAL DATUM BASED ON NAVD 88, GEOID 12A REFERENCED TO THE KEYNET VRS SYSTEM.
3. SURVEY PREPARED BY JORDAN CONSULTING ENGINEERS, P.C. AND SUPERFUND/CIVIL.DWG.
4. BASE MAP INFORMATION SUPPLIED BY NEWFIELDS; 1301 N. MCCARRAN BLVD; SUITE 101; SPARKS, NV 89431.



FORMER VIRGINIA PROPERTIES SUPERFUND SITE
RICHMOND, VIRGINIA
**2021 OPERATION, MAINTENANCE AND
MONITORING SUMMARY REPORT**

**EXISTING SITE CONDITIONS AND
MONITORING WELLS LOCATIONS**

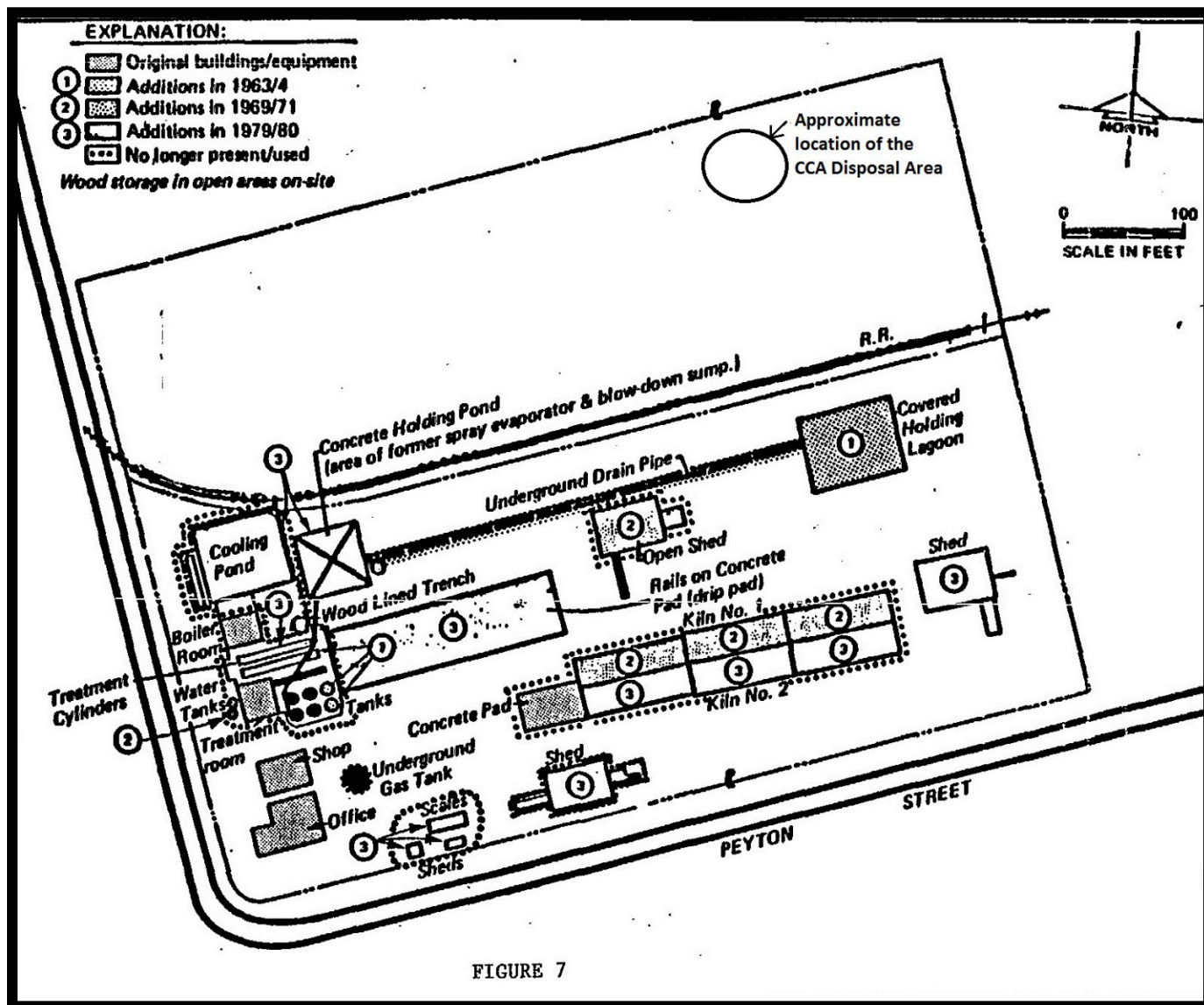


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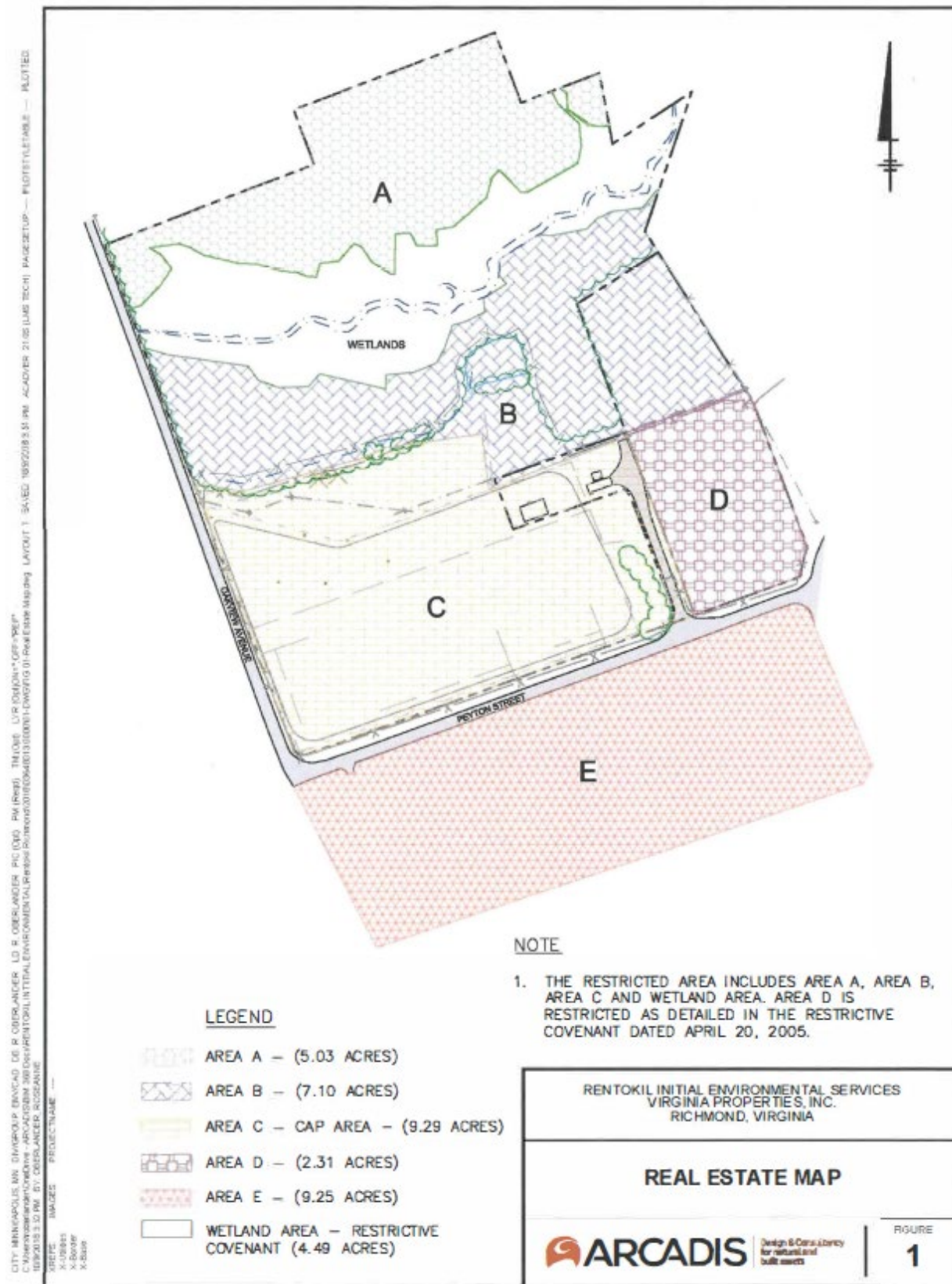
OMM-X-Base
OMM-X-Border
OMM-X-Surface
OMM-X-Topo

Figure 5: Historic Site Features

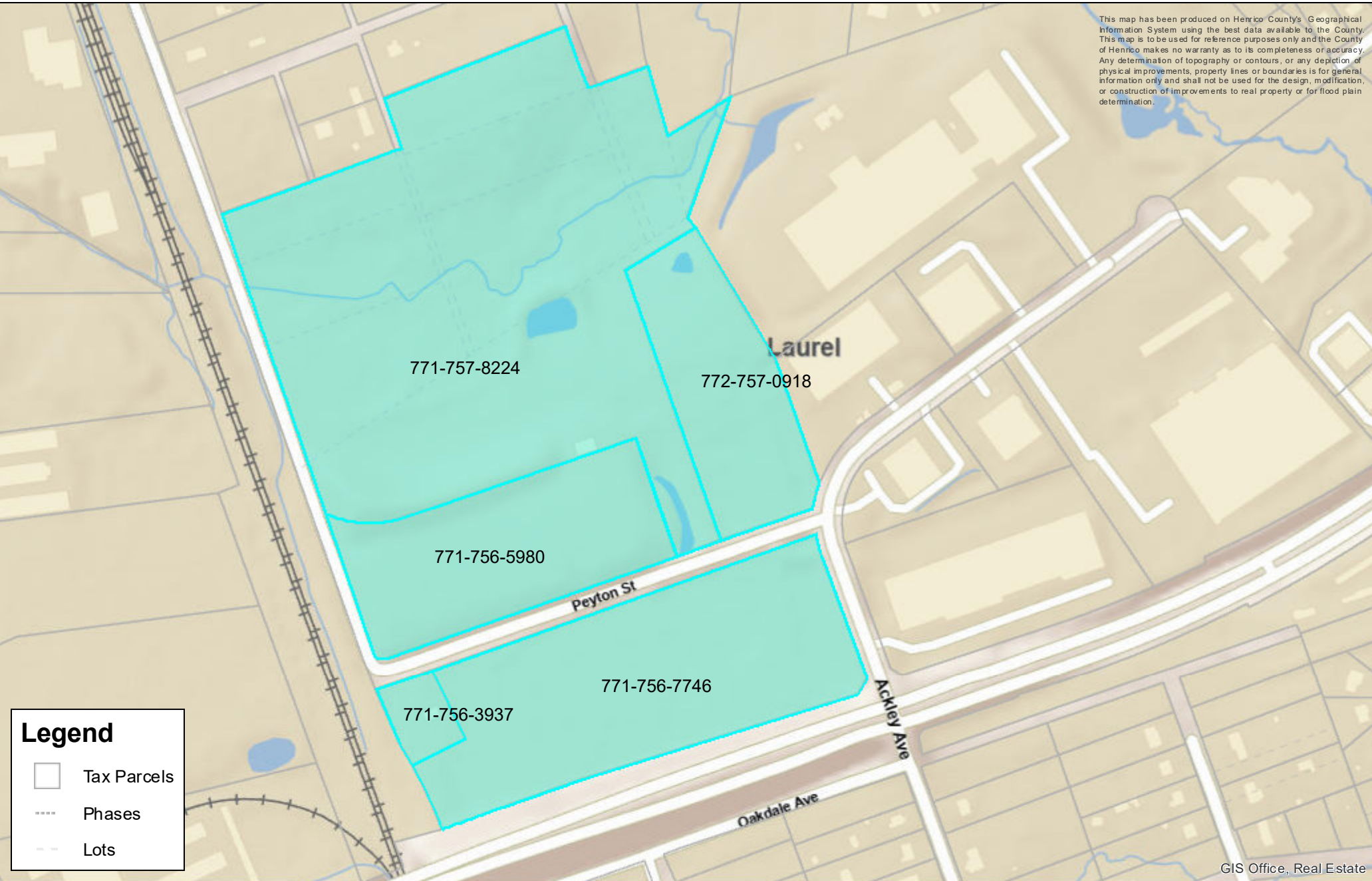


Note: Figure 4 above is Figure 7 from the Site's 1993 ROD.

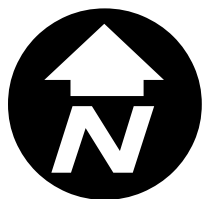
Note: Figure 6 above is Exhibit A of the 2019 Amended Restrictive Covenant which is a revised version of Exhibit B of the 2005 Restrictive Covenant.



This map has been produced on Henrico County's Geographical Information System using the best data available to the County. This map is to be used for reference purposes only and the County of Henrico makes no warranty as to its completeness or accuracy. Any determination of topography or contours, or any depiction of physical improvements, property lines or boundaries is for general information only and shall not be used for the design, modification, or construction of improvements to real property or for flood plain determination.



GIS Office, Real Estate



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Figure 7 - Henrico County Tax Map

Henrico GIS

Author: Internet User

Date: 5/9/2023



APPENDIX A – REFERENCE LIST

Reference List

Administrative Order by Consent, Virginia Wood Preserving Site. U.S. Environmental Protection Agency, Region 3. 1987.

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Remedial Action Workplan Addendum, Former Virginia Properties Superfund Site, Richmond, Virginia. Prepared by Arcadis U.S., Inc. for Rentokil Initial Environmental Services, LLC. October 18, 2016.

Remedial Investigation Report, Volume I – Text, Virginia Wood Preserving Site, Richmond, Virginia. Prepared by Dames & Moore for Virginia Properties, Inc. May 31, 1990.

Rentokil, Inc. Superfund Site, EPA Determination of Necessary Additional Response Action Memorandum. U.S. Environmental Protection Agency, Region 3. December 4, 2013.

Rentokil, Inc. Superfund Site, Need for Additional Response Action letter. U.S. Environmental Protection Agency, Region 3. December 5, 2013.

APPENDIX B – SITE CHRONOLOGY

Site Chronology

Event	Date
Wood treatment operations began on site	1957
Fish kills occurred in Talley's Pond	1962
Site owner cleared, cleaned and replaced the blowdown sump with a concrete holding pond and constructed a covered, unlined pond	1963
Site operators disposed of over 1,100 pounds of CCA in a surface pit on the northeastern part of the Site	1976
Rentokil, Inc. and EPA signed an Administrative Order by Consent to conduct an RI/FS, Rentokil started the RI/FS	December 1987
EPA added the Site to the NPL	March 31, 1989
Rentokil completed the RI/FS	1992
All facility operations ceased.	January 1990
EPA entered into an Administrative Order by Consent with the PRP for the performance of a removal action to prevent additional migration of site-related contamination into North Run Creek	March 1992
PRP started the removal action	June 22, 1992
PRP completed the removal action	September 29, 1992
EPA signed the ROD	June 22, 1993
PRP entered into a Consent Decree with EPA to perform the remedial design and implement the remedy selected by the ROD	February 1994
PRP began remedial design	May 2, 1994
EPA modified the remedy in an ROD Amendment to remove the requirement to treat "hot spots" of soil contamination	August 27, 1996
PRP completed remedial design and started remedial action	May 21, 1998
PRP completed remedy construction, EPA issued the Site's Preliminary Close Out Report	September 2, 1999
EPA completed the Site's first FYR	September 17, 2003
PRP ceased operation of the groundwater extraction system	2005
PRP filed a Deed Notice and Declaration of Environmental Covenants for the Site with the Henrico County Clerk's Office	December 1, 2005
EPA determined that the Site was ready for reuse and redevelopment	June 26, 2006
Developer purchased 3.8 acres of the site property (the part of the Site that includes former Wetland Area B)	July 28, 2008
EPA completed the Site's second FYR	September 22, 2008
EPA deleted a portion of the Site to accommodate industrial/commercial development. This partial deletion includes the soil and sediment at former Wetland Areas B and C and the groundwater at former Wetland Area C.	March 30, 2009
EPA submitted a letter to the PRP requiring development of a comprehensive remediation strategy to address the contamination north of the original containment system	March 3, 2011
PRP submitted an FFS to EPA that included remedial alternatives to address contamination north of the original containment system	November 8, 2012

EPA completed the Site's third FYR	July 2, 2013
EPA issued a Determination of Necessary Additional Response Action memorandum to the PRP regarding the need to expand the original containment system	December 4, 2013
PRP submitted the Remedial Design Workplan to EPA regarding the containment system expansion	April 2014
PRP submitted the initial Remedial Action Workplan to EPA regarding the containment system expansion	February 2015
EPA completed the Site's fourth FYR	July 2018
PRP submitted the Operations and Maintenance Manual	September 2018
PRP submitted a Remedial Action Completion Report	September 2018
Adjacent property owner purchased 3.8 acres of the site property (the part of the Site that includes former Wetland Area B)	December 2018
PRP filed an Amendment to Deed Notice and Declaration of Environmental Covenants for the Site with the Henrico County Clerk's Office	April 2019
VPI sold parcels 771-757-8224, 771-756-5980, and 771-756-7746	October 2021
EPA completed a Vapor Intrusion Investigation	February 2022
EPA approved request to decrease sampling frequency	March 2022

APPENDIX C – INSTITUTIONAL CONTROLS

**DEED NOTICE
and
DECLARATION OF RESTRICTIVE COVENANTS FOR
CERTAIN PROPERTY AT THE
RENTOKIL SUPERFUND SITE,
HENRICO COUNTY, VA**

THIS RESTRICTIVE COVENANT is made as of this _____ day of April, 2005, by VIRGINIA PROPERTIES, INC. ("VPI").

RECITALS

- A. VPI is the owner in fee simple of three parcels of land in Henrico County, Virginia, containing approximately 37.594 acres and more particularly described on Exhibit A attached hereto (collectively the parcels are referred to as the "Property").
- B. Portions of the Property were used for a wood preserving operation resulting in chemical contamination of soil and groundwater ("The Restricted Area"). The Restricted Area, as defined for the purposes of this Restrictive Covenant, is more particularly described on Exhibit B attached hereto.
- C. The United States Environmental Protection Agency ("EPA") issued a Record of Decision for the Virginia Wood Preserving Site on June 22, 1993 ("ROD") and a Record of Decision Amendment on August 27, 1996, pursuant to the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §§ 9601-9675.
- D. VPI entered into a Consent Decree which was entered by the United States District Court for the Eastern District of Virginia, Richmond Division, on September 30, 1994, and which was recorded in the land records of Henrico County, Virginia at Deed Book 2555, page 930, to accomplish work required by the ROD, and the ROD Amendment.
- E. Pursuant to the Consent Decree and the ROD Amendment, VPI carried out a Remedial Action. As part of the Remedial Action, VPI constructed a slurry wall, and a multi-layered protective cap, and a groundwater drainage and removal system (the "Remedial Facility") in the area designated "AREA C -CAP AREA" on the Plat attached hereto as Exhibit B.
- F. VPI also excavated soils and then undertook restoration of wetlands in area "B" and a portion of the area designated "WETLAND AREA - RESTRICTIVE COVENANT" on the Plat attached as Exhibit B. The wetland work was done under the oversight of EPA, the U.S. Army Corps of Engineers ("Corps") and the Virginia Department of Environmental Quality ("DEQ"), in consultation with the U.S. Fish & Wildlife Service.
- G. VPI hereby places a restrictive covenant on the Restricted Area to implement Institutional

Controls (described below) as required by the Record of Decision Amendment and Section V(E) (Notice of Obligations to Successors-in-Title) of the Consent Decree. See Exhibit B for a schematic map of the Site boundary and Restricted Area.

RESTRICTIVE COVENANT

NOW, THEREFORE, due to the CERCLA remedial action, VPI, for itself, and its successors and assigns, does hereby declare, covenant and agree, that the Restricted Area shall hereinafter be subject to the following conditions and restrictions:

1. The Restricted Area shall not be used for residential use. Specifically, no building or structure shall be constructed or located on the Restricted Area for residential use or residential occupancy, including without limitation, single or multiple-family dwellings, residential trailers and/or mobile homes.
2. Except as required for monitoring the quality of groundwater or treating groundwater, as required by the Consent Decree, VPI agrees for itself, its successors and assigns, that no wells or other structure or equipment for the pumping or other taking of groundwater shall be constructed or installed on the Restricted Area, and no groundwater shall be pumped or otherwise taken from Areas B, C, and D of Exhibit B for potable or other use.
3. Pursuant to the Consent Decree, VPI has agreed for itself, its successors and assigns, to monitor and operate the Remedial Facility in accordance with the Operating and Maintenance Plan approved by EPA, or as revised from time to time and approved by EPA.
4. Except as provided by the Operation and Maintenance Plan, there shall be no disturbance, digging, excavation of the soils, or invasive construction in Area C of Exhibit B, and there shall be no disturbance or removal of the Remedial Facility (e.g. there shall be no disturbance of the cap or placement of structures on it that would damage it in any way)
5. The discharge of dredged or fill material, destruction or alteration of water courses, land disturbance, land clearing, cultivation, draining, ditching, or building construction is prohibited in the Wetland Area, except (a) as necessary to ensure the success of and in conjunction with the monitoring and maintenance of the Wetland Area; (b) with the prior written consent of the Virginia Department of Environmental Quality and the Army Corps of Engineers; or (c) for structures or observation or management of the ecological state of the Wetland Area which do not imperil the natural movement of water.
6. VPI may enforce this Restrictive Covenant by proceedings at law or in equity against any person violating or attempting to violate the covenants herein. In the event of any conveyance, assignment or transfer of the Restricted Area (as defined in Exhibit B hereto), VPI shall expressly reserve in the deed or other instrument effecting the transfer, an irrevocable and permanent easement which grants VPI: 1) the right to access for the purposes of carrying out its obligations under the Consent Decree and this Restrictive

Covenant; and 2) the right to carry out and enforce the land use restrictions set forth in the ROD, particularly at pages 63-64, and in paragraphs 1-5 of this Restrictive Covenant. Prior to such a conveyance, assignment or transfer of the Site (as defined in Exhibit B hereto), or any interest therein, VPI shall provide EPA with a copy of the proposed deed or other instrument of transfer. VPI shall enforce the terms of any such covenants or land use restrictions reserved in this instrument against all subsequent grantees of an assignment or transfer of the Restricted Area of the Site (as defined in Exhibit B hereto), or any interest therein.

7. VPI agrees to record this document in the Office of the Clerk of the Circuit Court of Henrico County, Virginia within thirty (30) days of its execution.
8. The covenants contained herein shall not hereafter be altered or breached in any respect without the express written approval and consent of EPA (as intentional third party beneficiary pursuant to § 55-22 of the Code of Virginia). This Restrictive Covenant is not intended to and does not grant or convey any interest in the Property to EPA.

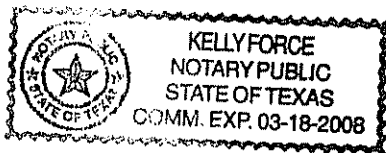
IN WITNESS WHEREOF, VPI has executed this instrument, under seal, by its duly authorized officer or representative on the date first above written.

VIRGINIA PROPERTIES, INC.

By: Michael W. Orick
Title: President

COMMONWEALTH OF VIRGINIA Texas
CITY/COUNTY OF Harris, to wit:

The foregoing instrument was acknowledged before me this 20 day of April, 2005, by Michael Orick, as President of Virginia Properties, Inc.



K Force
Notary Public

My commission expires: 3/18/08

EXHIBIT AParcel 1:

ALL that certain piece, tract or parcel of land located in the County of Henrico, Virginia, and described as follows:

Beginning at a stone marker on the easterly right of way line of Oakview Avenue, where the said right of way line intersects the northerly right of way line of Peyton Street;

Thence N. $16^{\circ} 12'$ W., along said easterly line of Oakview Avenue a distance of 335.38' to a point, which point is 10' south of a measured at right angles to the center line of a railroad spur track;

Thence in an easterly direction along a curve to the left which curve is 10' south of and parallel to the center line of said track having a radius of 304.56', a distance of 202.83' to a point;

Thence N. $74^{\circ} 54'$ E., 548.51' to a rod'

Thence S. $15^{\circ} 06'$ E., 290.0' to a rod;

Thence S. $74^{\circ} 54'$ W., along the north line of Peyton Street, 710.38' to a stone;

Thence continuing along said street linen on a curve to the right having a radius of 20.0', tangent of 19.62' and length of 31.03' to the point of beginning and containing 4.965 acres.

Parcel 2:

ALL those certain pieces or parcels of land, situated, lying and being in the Brookland District, Henrico County, Virginia, designated as Parcel A, containing 23.675 acres, and Parcel B, containing 8.954 acres, on plat made by Foster & Miller, P.C., dated March 11, 1994, entitled "Plat of Two Parcels of Land Lying on the North Line of Parham Road, in the Brookland District of Henrico County, Virginia" (the "Plat"), a copy of which is attached hereto and recorded herewith, and to which reference is hereby made, said property being more particularly described on the Plat by metes and bounds, as follows:

Parcel A:

BEGINNING at the point of intersection with the West line of Ackley Avenue, and the North line of Peyton Street; thence along the North line of Peyton Street South 74 degrees 58 minutes 04 seconds West for a distance of 347.08' to a point; thence North 14 degrees 59 minutes 33 second West for a distance of 290.00' to a point; thence South 75 degrees 00 minutes 27 seconds West for a distance of 548.51' to a point; thence along a curve to the right having a radius of 304.56' and a length 202.83' and being subtended by a chord of North 85 degrees 54 minutes 49 seconds West for a distance of 199.10' to a point on the East line of Oakview Avenue; thence along the East line of Oakview Avenue North 16 degrees 06 minutes 21 seconds West for a distance of 740.48' to a point; thence North 73 degrees 52 minutes 01 seconds East for a distance of 450.64' to a point on the East line of Mayfair Avenue; thence along the East line of Mayfair Avenue North 15 degrees 56 minutes 32 seconds West for a distance of 116.66' to a point; thence North 73 degrees 53 minutes 15 seconds East for a distance of 435.35' to a point on the West line of Russell Avenue; thence along the West line of Russell Avenue South 15 degrees 55 minutes 55 seconds East for a distance of 149.58' to a point; thence North 73 degrees 51 minutes 45 seconds East for a distance of 168.22' to a point; thence South 05 degrees 44 minutes 24 seconds East for a distance of 144.15' to a point; thence North 61 degrees 15 minutes 35 seconds East for a distance of 190.76' to a point; thence South 23 degrees 18 minutes 40 seconds West for a distance of 294.34' to a point; thence South 27 degrees 51 minutes 25 Seconds East for a distance of 408.84' to a point; thence South 16 degrees 08 minutes 57 seconds East for a distance of 306.07' to a point on the West line of Ackley Avenue; thence along the West line of Ackley Avenue through a nontangent curve having a radius of 271.73' and a length of 60.49' and being subtended by a chord of South 18 degrees 18 minutes 06 seconds West for a distance of 60.37' to the point of beginning. Said property being 23.657 acres more or less, and being part of Henrico County tax map parcel 98-B1-1.

Parcel B:

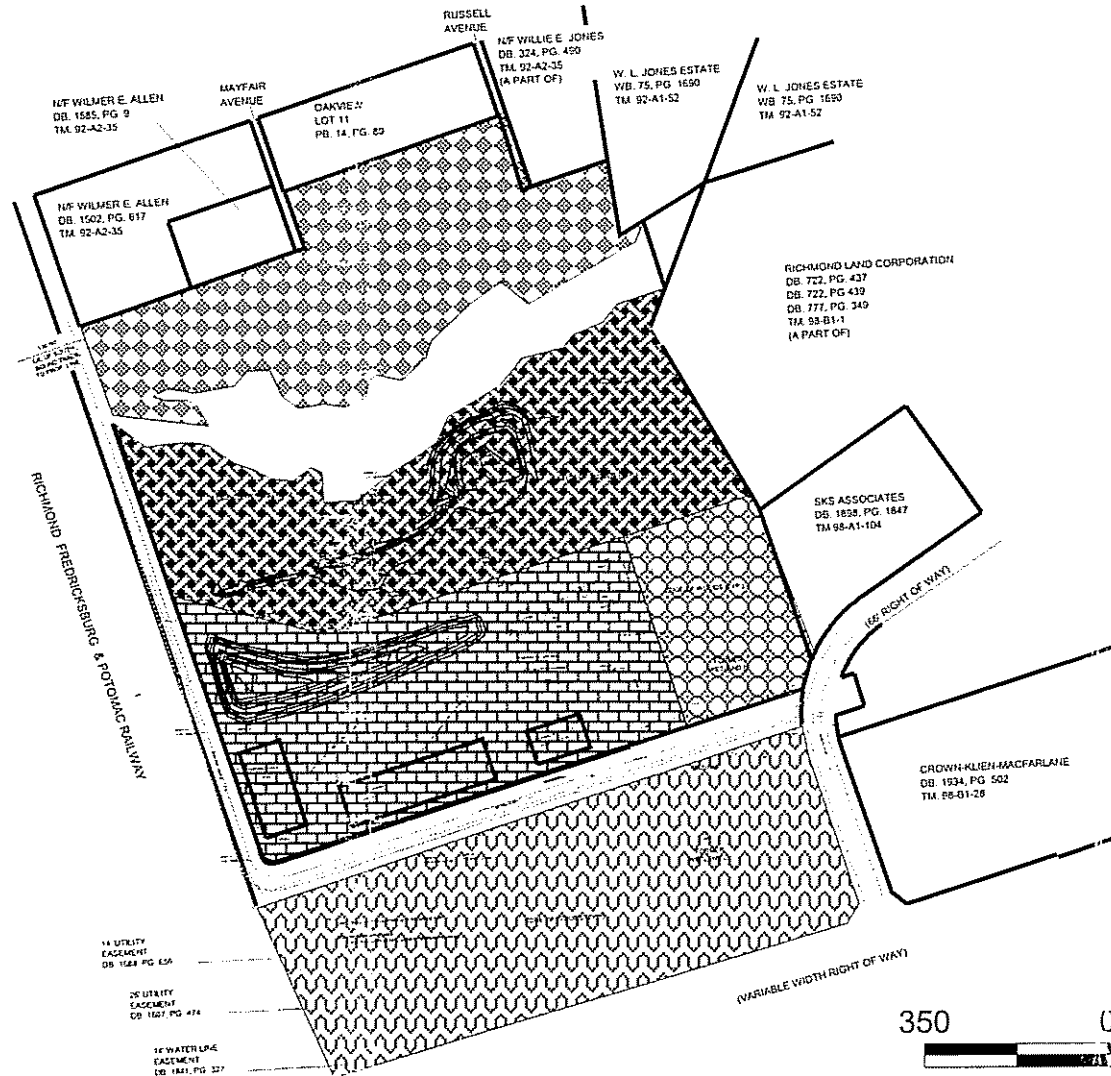
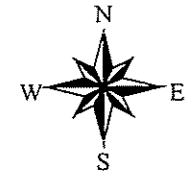
BEGINNING at the point of intersection with the West line of Ackley Avenue and the South line of Peyton Street; thence along the West line of Ackley Avenue through a curve having a radius of 271.73' and a length of 62.91' and being subtended by a chord of South 09 degrees 31 minutes 02 seconds East for a distance of 62.76' to a point; thence South 16 degrees 08 minutes 57 seconds East for a distance of 293.08' to a point; thence South 33 degrees 43 minutes 23 seconds West for a distance of 43.00' to a point on the North line of Parham Road; thence along the North line of Parham Road South 77 degrees 22 minutes 03 seconds West for a distance of 676.09' to a point; thence South 74 degrees 54 minutes 48 seconds West for a distance of 196.79' to a point; thence along a curve to the left having a radius of 7739.44' and a length of 148.40' and being subtended by a chord of South 74 degrees 21

minutes 50 seconds West for a distance of 148.40' to a point; thence along a non-tangent curve to the left having a radius of 1126.28' and a length of 130.42' and being subtended by a chord of North 19 degrees 48 minutes 54 seconds West for a distance of 130.35' to a point; thence North 23 degrees 07 minutes 56 seconds West for a distance of 138.01' to a point; thence along a curve to the right having a radius of 1166.28' and a length of 91.27' and being subtended by a chord of North 20 degrees 53 minutes 25 seconds West for a distance of 91.24' to the point of intersection of the West line of Oakview Avenue and the South line of Peyton Street; thence along the South line of Peyton Street North 74 degrees 58 minutes 04 seconds East for a distance of 1092.96' to the point of beginning. Said property being 8.954 acres more or less, and being a part of Henrico County tax map parcel 98-B1-1.

TOGETHER WITH and subject to all covenants, easements, and restrictions of record.

BEING a part of the same property conveyed to Richmond Land Corporation, a Virginia corporation, by the following deeds: (1) deed from A. J. Brent, Trustee, dated February 17, 1955, recorded March 3, 1955, Clerk's Office, Circuit Court, Henrico County, Virginia, in Deed Book 722, page 437; (2) deed from L. Paul Farley and E. J. Parley, also known as Elizabeth J. Farley, his wife, dated February 17, 1955, recorded March 3, 1955, Clerk's Office, Circuit Court, Henrico County, Virginia, in Deed Book 722, page 439; (3) deed from L. Paul Farley and Elizabeth J. Farley, his wife, dated January 20, 1956, recorded January 20, 1956, Clerk's Office, Circuit Court, Henrico County, Virginia, in Deed Book 777, page 349; (4) deed from Wesley D. Charles, unmarried, dated May 14, 1971, recorded July 16, 1971, Clerk's Office, Circuit Court, Henrico County, Virginia, in Deed Book 1471, page 28; (5) deed from Board of County Supervisors of Henrico County, Virginia, dated May 10, 1974, recorded June 24, 1974, Clerk's Office, Circuit Court, Henrico County, Virginia, in Deed book 1607, page 474; and (6) vacation of property by the Board of County Supervisors, Henrico County, Virginia, as to portions of Mayfair and Russell Avenues, January 28, 1976, a copy of said ordinance having been recorded March 1, 1976, Clerk's Office, Circuit Court, Henrico County, Virginia in Deed Book 1669, Page 659.

NOTE: THE "RESTRICTED AREA" IS DEFINED AS: WETLAND AREA, AREA B, AREA C, AND AREA D



LEGEND

Properties Delineation

- Area A - (6.72 Acres)
- Area B - (8.13 Acres)
- Area C - CAP Area - (7.97 Acres)
- Area D - (2.36 Acres)
- Area E - (9.05 Acres)
- Wetland Area - Restrictive Covenant (3.24 Acres)

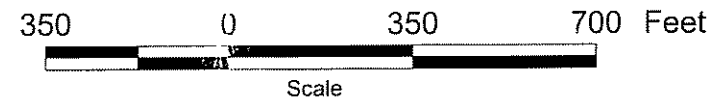


EXHIBIT 13

BK4021PG1217

NEWFIELDS

Two Midtown Plaza
1349 West Peachtree Street, Suite 2000
Atlanta, Georgia 30309
Tel: 404-347-9050 ~ Fax: 404-347-9080
www.newfields.com

RENTOKIL PROPERTY
Henrico County, Virginia

Real Estate
Map

BK4021PG1218

CLERK'S CERTIFICATE

DO NOT REMOVE FROM DOCUMENT

INSTRUMENT #75039
RECORDED IN THE CLERK'S OFFICE OF
HENRICO COUNTY ON
DECEMBER 1, 2005 AT 04:22PM
YVONNE G. SMITH, CLERK

RECORDED BY: KLB

Instrument Control Number

LR 200505075039 12/01/2005 4:22:00 PM

Commonwealth of Virginia

Land Record Instruments

Cover Sheet - Form A

BK4021Pg1210

[ILS VLR Cover Sheet Agent 1.0.93]

TAX
EXEMPT

CORP

Date of Instrument: [11/21/2005]

Instrument Type: [NOT] DEC

Number of Parcels [1]

Number of Pages [7]

City ☐ County ☒ [Henrico County] (Box for Deed Stamp Only)

First and Second Grantors

Last Name	First Name	Middle Name or Initial	Suffix
[Virginia Properties, Inc]			
[RentK1 Superfund Site]			

First and Second Grantees

Last Name	First Name	Middle Name or Initial	Suffix
[Virginia Properties, Inc]			
[NA]			

Grantee Address (Name) [Virginia Properties, Inc]
 (Address 1) [P O Box 5963]
 (Address 2) [
 (City, State, Zip) [Kingwood] [TX] [77325-5963]
 Consideration [0 00] Existing Debt [0 00] Assumption Balance [0 00]

Prior Instr. Recorded at: City ☐ County ☒ [Henrico County] Percent. in this Juris. [100]
 Book [] Page [] Instr. No []
 Parcel Identification No (PIN) [
 Tax Map Num. (if different than PIN) [
 Short Property Description [
 Current Property Address (Address 1) [3000 Peyton Street]
 (Address 2) [
 (City, State, Zip) [Richmond] [VA] [23228]

Instrument Prepared By [Decker Hallman Barber & Briggs]
 Recording Paid for By [Decker Hallman Barber & Briggs]
 Return Recording To (Name) [Kathy Sims, Paralegal]
 (Address 1) [260 Peachtree Street, Suite 1700]
 (Address 2) [
 (City, State, Zip) [Atlanta] [GA] [30303]
 Customer Case ID [1508/039] []



Official Receipt
Henrico Circuit Court
Heidi S. Barshinger
P.O. Box 90775
Henrico, VA 23273-0775
(804) 501-4202

Receipt For : FRIEND, HUDAK & HARRIS, LLP
Cashier : SCG

Instrument Type : AMEND-PL
Instrument # : 201900009310
Book/Page : 05837 / 1120-01126 Pages : 7
1st Grantor : VIRGINIA PROPERTIES INC
1st Grantee : VIRGINIA PROPERTIES INC
Description: AMENDMENT TO DEED NOTICE AND DECLARATION
OF RESTRICTIVE COVENANTS - RENTOKIL
SUPERFUND SITE
Consideration: 0.00 Assumed Value: 0.00
Receipt # : 2019-172232
Date : 04/08/2019 08:39am
Document : 1 of 1
Ex : N
Ex : N
Pct : 100.00%
1st City: Y

Item #	Description	Qty	Unit Cost	Extended
035	VOF	1	1.00	1.00
301	Clerk 1-10 Pages	1	14.50	14.50
145	VSLA	1	1.50	1.50
106	TTF	1	5.00	5.00
Document 1				22.00
Grand Total				22.00
Check 1858				-22.00
Balance				0.00

**VIRGINIA LAND RECORD COVER SHEET
FORM A - COVER SHEET CONTENT**

Instrument Date: 4/20/2019
Instrument Type: AMEND *PL*
Number of Parcels: 1 Number of Pages: *65*
☐ City ☒ County

HENRICO

TAX EXEMPT? VIRGINIA/FEDERAL LAW

☐ Grantor:

☐ Grantee:

Consideration: \$0.00

Existing Debt: \$0.00

Actual Value/Assumed: \$0.00

PRIOR INSTRUMENT UNDER § 58.1-803(D):

Original Principal: \$0.00

Fair Market Value Increase: \$0.00

Original Book Number: 4021 Original Page Number: 1211 Original Instrument Number: 75039

Prior Recording At: ☐ City ☒ County
HENRICO

Percentage In This Jurisdiction: 100%

BUSINESS / NAME

1 ☒ Grantor: VIRGINIA PROPERTIES, INC.

☐ Grantor:

1 ☒ Grantee: VIRGINIA PROPERTIES, INC.

☐ Grantee:

GRANTEE ADDRESS

Name: VIRGINIA PROPERTIES, INC.

Address: C/O NICOLE BLACKWELL, 2540 LAWRENCEVILLE HIGHWAY

City: LAWRENCEVILLE

State: GA Zip Code: 30044

Book Number: 4021

Page Number: 1211

Instrument Number: 75039

Parcel Identification Number (PIN): 771-756-5980

Tax Map Number: 771-756-5980

Short Property Description: AMENDMENT TO DEED NOTICE AND DECLARATION OF
RESTRICTIVE COVENANTS - RENTOKIL SUPERFUND SITE

Current Property Address: 3000 PEYTON STREET

City: HENRICO

State: VA Zip Code: 23228

Instrument Prepared By: FRIEND, HUDAK & HARRIS

Recording Paid By: FRIEND, HUDAK & HARRIS, LLP

Recording Returned To: FRIEND, HUDAK & HARRIS, LLP, NORMAN B. GERRY

Address: THREE RAVINIA DRIVE, STE 1700

City: ATLANTA

State: GA Zip Code: 30346

RECORDED IN
COUNTY OF HENRICO, VA
HEIDI S. BARSHINGER
CLERK OF CIRCUIT COURT
FILED Apr 08, 2019
AT 08:39 am
BOOK 05837
START PAGE 1120
END PAGE 1126
INSTRUMENT #
201900009310

SCG

(Area Above Reserved For Deed Stamp Only)

BK5837PG1120

Feb 14



**AMENDMENT TO DEED NOTICE AND DECLARATION OF RESTRICTIVE
COVENANTS FOR CERTAIN PROPERTY AT THE
RENTOKIL SUPERFUND SITE, HENRICO COUNTY, VA**

THIS AMENDMENT TO DEED NOTICE AND DECLARATION OF RESTRICTIVE COVENANTS FOR CERTAIN PROPERTY AT THE RENTOKIL SUPERFUND SITE, HENRICO COUNTY, VA, DATED APRIL 20, 2005 (the "**Restrictive Covenant**") (this "**Amendment**") is made and declared by VIRGINIA PROPERTIES, INC., a Virginia corporation ("**VPI**"), owner of the fee simple title to the Property hereinafter described, effective as of April 20, 2019 (the "**Effective Date**").

BACKGROUND

A. VPI is the owner in fee simple of certain real property located in Henrico County, VA (the "**Property**"), as described in Exhibit A of the Restrictive Covenant (Instrument Control No. 75039) that was recorded by VPI in Book 4021, Page 1211 Henrico County, VA records;

B. In and around December 2016, pursuant to the 1994 Consent Decree (Civil Action No. 3:94CV498), the Record of Decision, and the Comprehensive Environmental Response, Compensation, and Liability Act ("**CERCLA**"), VPI performed additional Remedial Action at the Property and, among other things, extended a multi-layered protective cap over portions of Area B of the Property, as delineated on the Real Estate Map attached as Exhibit B to the Restrictive Covenant; and

C. VPI desires to amend Exhibit B of the Restrictive Covenant to prohibit disturbance, digging, excavation of the soils, invasive construction, or disturbance or removal of the multi-layered protective cap in all areas of the Property where the cap was extended during the additional Remedial Action described above.

D. Pursuant to Paragraph 8 of the Restrictive Covenant, the United States Environmental Protection Agency ("**EPA**") expressly approves and consents to this Amendment.

NOW, THEREFORE, due to the additional CERCLA Remedial Action described above, VPI, for itself, and its successors and assigns, does hereby declare, covenant, and agree, that the Restrictive Covenant is and shall hereby be amended as follows:

1. **Defined Terms.** Any and all capitalized terms used but not defined herein shall have the meaning ascribed to such terms in the Restrictive Covenant.
2. **Amendment.** Exhibit B of the Restrictive Covenant is hereby amended by deleting in its entirety the plat of survey in Exhibit B and substituting a new plat of survey for Exhibit B in the form attached hereto as "**Exhibit A, New Plat**".
3. **Effect of Amendment.** Except as modified by this Amendment, the Restrictive Covenant shall remain in full force and effect.

4. **Counterparts.** This Amendment may be executed in multiple counterparts, each of which shall be fully executed as an original and all of which together shall constitute one and the same instrument. Any facsimile or other electronic copies hereof or signature hereon shall, for all purposes, be deemed originals.

[The remainder of this page is left blank intentionally.]

IN WITNESS WHEREOF, VPI has caused this Amendment to be duly executed as of the day and year first above written.

STATE: Pennsylvania

COUNTY: Berks,
to wit:

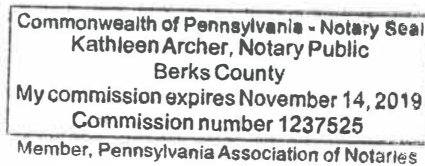
The foregoing instrument was
acknowledged before me on this
25th day of March, 2019,
by Bruce Gelting, as
Secretary/Director of
Virginia Properties, Inc.

Kathleen Archer
Notary Public

My commission expires: 11/14/2019

VIRGINIA PROPERTIES, INC.

By: [Signature]
Name: Bruce A. Gelting
Title: Secretary/Director



STATE: _____

COUNTY: _____,
to wit:

The foregoing instrument was
acknowledged before me on this
_____ day of _____, 2019,
by Paul Leonard, as Acting Director,
Hazardous Site Cleanup Division
U.S. Environmental Protection
Agency, Region III

Notary Public

My commission expires: _____

APPROVED BY:

**UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY**

By: _____
PAUL LEONARD
Acting Director, Hazardous Site Cleanup Division
U.S. Environmental Protection Agency, Region III

IN WITNESS WHEREOF, VPI has caused this Amendment to be duly executed as of the day and year first above written.

STATE: _____

VIRGINIA PROPERTIES, INC.

COUNTY: _____,
to wit:

By: _____

Name: _____

Title: _____

The foregoing instrument was
acknowledged before me on this
_____ day of _____, 2019,
by _____, as
_____ of
Virginia Properties, Inc.

Notary Public

My commission expires: _____

STATE: Pennsylvania

APPROVED BY:

COUNTY: Philadelphia,
to wit:

**UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY**

The foregoing instrument was
acknowledged before me on this
1st day of April, 2019,
by Paul Leonard, as Acting Director,
Hazardous Site Cleanup Division
U.S. Environmental Protection
Agency, Region III

By: 

PAUL LEONARD

Acting Director, Hazardous Site Cleanup Division
U.S. Environmental Protection Agency, Region III


Notary Public

My commission expires: Aug. 14, 2022

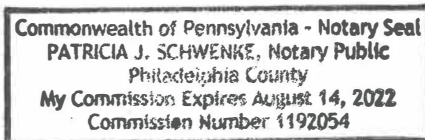
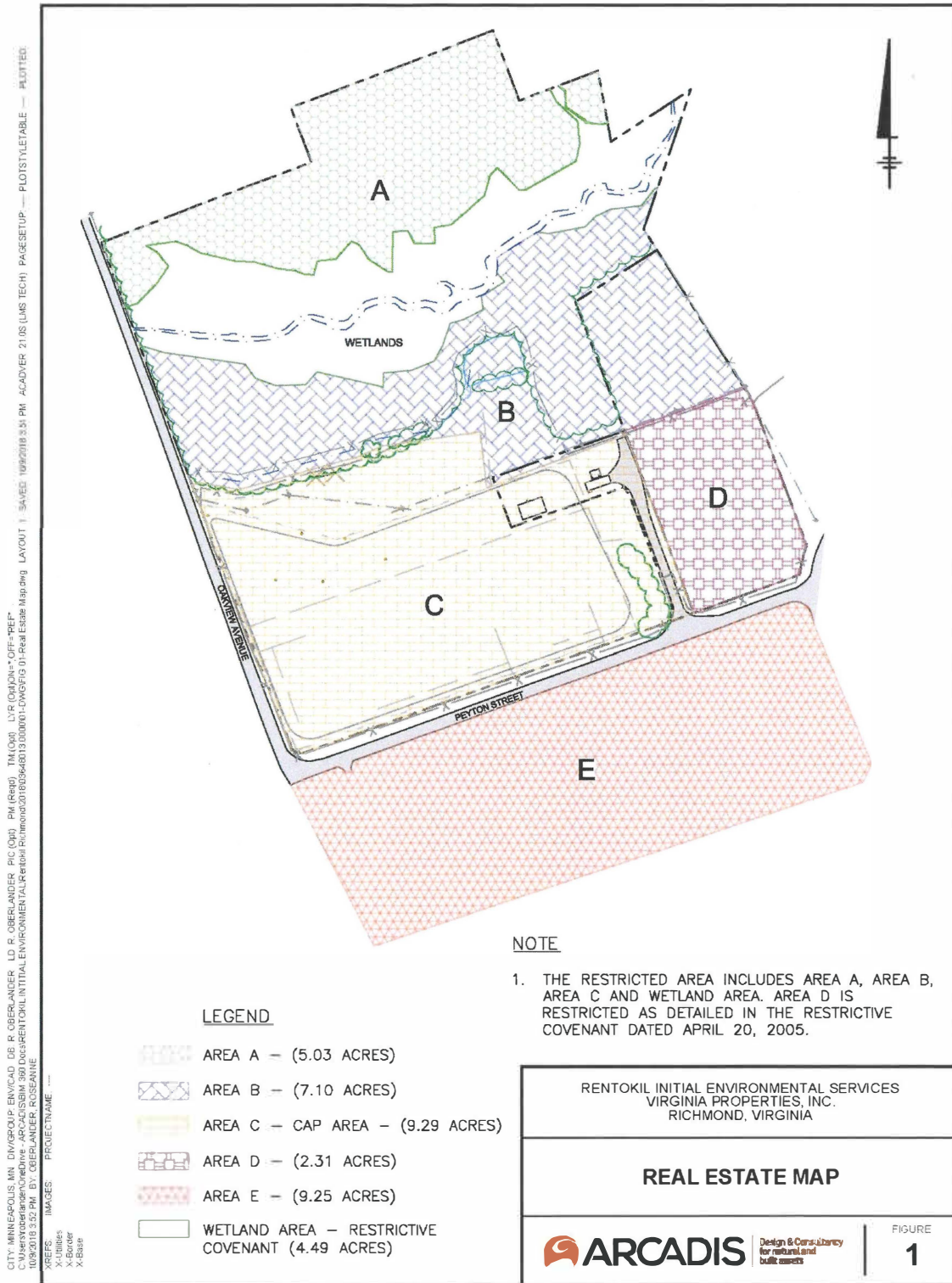


Exhibit A, New Plat



CLERK'S CERTIFICATE
DO NOT REMOVE FROM DOCUMENT

BK5837PG1126

INSTRUMENT # 201900009310
RECORDED IN THE CLERK'S OFFICE OF
HENRICO COUNTY ON
APRIL 8, 2019 AT 08:39AM

HEIDI S. BARSHINGER, CLERK
RECORDED BY: SCG

APPENDIX D – PRESS NOTICE

Top News



Moody MS student wins Henrico Schools' Divisionwide Spelling Bee

January 11, 2023

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Moody MS student wins Henrico Schools' Divisionwide Spelling Bee

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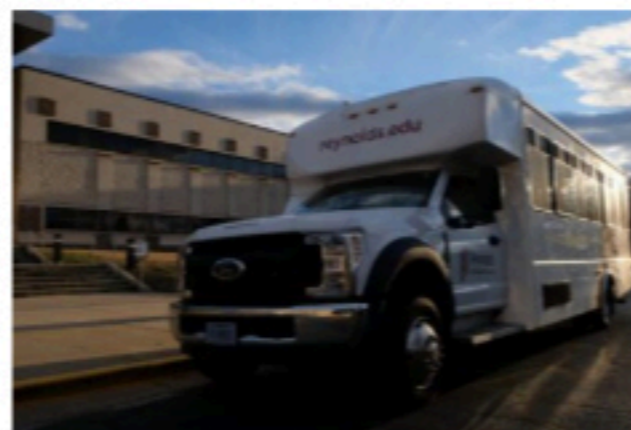
January 11, 2023



Republican lawmakers revive push for school choice legislation

[▶ Audio Article](#)

By Nathaniel Cline, Virginia Mercury on January 10, 2023



One-third of Virginia community colleges lack close public transit connections

[▶ Audio Article](#)

By Nathaniel Cline, Virginia Mercury on January 9, 2023

EPA PUBLIC NOTICE

EPA REVIEWS CLEANUP RENTOKIL, INC. SUPERFUND SITE

The U.S. Environmental Protection Agency (EPA) is reviewing the cleanup that was conducted at the Rentokil, Inc. (Virginia Wood Preserving Division) Superfund Site located in Richmond, Virginia. EPA conducts Five-Year Reviews to ensure that cleanups continue to protect public health and the environment. EPA conducted the previous Five-Year Review in 2018 and concluded that the remedy was working as designed and was protective in the short term. EPA will make the findings from this Five-Year Review available in July 2023.

To access site information, including the Five-Year Review, visit: www.epa.gov/superfund/rentokil

For questions or to provide site-related information for the review, contact: John Brakeall, EPA Community Involvement Coordinator 215-814-8837 or brakeall.john@epa.gov

January 2023

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Enter Your Phone Number *

CAPTCHA

☐ I'm not a robot



In the Classroom: Jan. 1-6, 2023

[▶ Audio Article](#)



Henrico Schools adds 2 new days off in February, May

[▶ Audio Article](#)



Henrico Schools to host job fair Jan. 10

[▶ Audio Article](#)

APPENDIX E – INTERVIEW FORMS

Rentokil Superfund Site**Five-Year Review Questionnaire**

Site Name: Rentokil
Subject Name: Angela McGarvey
Interview Format: Email
Interview Category: State
Affiliation: Virginia Department of Environmental Quality, CERCLA Program
Date: November 3, 2022

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Response: Yes, VADEQ is a supporting regulatory agency for this CERCLA site located in Richmond, Virginia.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

Response: Yes, VADEQ is copied on EPA's correspondence and provided the opportunity to comment on project reports.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

Response: No, the property is fenced and part of the property is used daily.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

Response: No, I am not aware of any changes to state laws that might affect the protectiveness of the Site's remedy.

5. Are you aware of any changes in projected land use(s) at the Site?

Response: The property was sold in October 2021 and the new owner plans to use the property, lease it, or sell it. Land use is projected to remain industrial/commercial.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

Response: Since the last review, VADEQ has not received any complaints or inquiries. There are no current or anticipated future offsite impacts.

7. Do you have any comments, suggestions or recommendations regarding the project?

Response: No.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Response: Yes.

Rentokil Superfund Site**Five-Year Review Questionnaire**

Site Name: Rentokil
Subject Name: Catherine Coffey
Interview Format: Email
Interview Category: PRP Representative
Affiliation: Arcadis U.S., Inc.
Date: November 4, 2022

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Response: Yes, I am aware of former environmental issues and cleanup activities.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

Response: Yes.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

Response: There was one known trespassing event that occurred in 2018; however, no vandalism occurred to the remedial measures. Occasional dumping of tires, vegetative debris, etc. outside of the perimeter fence had occurred prior to 2019 when warning signs and cameras were installed to prevent such activities. No emergency response actions have occurred.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

Response: No.

5. Are you aware of any changes in projected land use(s) at the Site?

Response: No.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

Response: To my knowledge, neighbors were interviewed as part of the 2018 Five Year Review and I have no other suggestions on how to keep the surrounding neighbors informed in addition to the current processes being used.

7. Do you have any comments, suggestions or recommendations regarding the project?

Response: Regulatory agencies have been actively engaged and are responsive to questions and discussions on path forward.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Response: Yes.

Rentokil Superfund Site**Five-Year Review Questionnaire**

Site Name: Rentokil
Subject Name: Leslie News
Interview Format: Email
Interview Category: Local Government
Affiliation: Henrico County Planning Department
Date: 12/29/2022

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Response: The Planning Department has kept a file on the Virginia Wood Preserving (Rentokil) Remediation Plan dating from the 1990s. However, no additional information has been provided by the EPA since the previous five-year report in 2017 recently received.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

Response: The previous five-year report provided to the county provides a thorough detail of site activities and remediation up to the year 2017. However, current status of the site is not clear to county staff. Inclusion of information related to the current status of the site, including any specific restrictions to potential uses, in the five-year report would be helpful.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

Response: The Division of Police have indicated there have been no calls for service at this address within the past five years.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

Response: I am not personally aware of any changes to state laws or local regulations that specifically impact the protection of the site, but I cannot guaranty that there have been no such changes.

5. Are you aware of any changes in projected land use(s) at the Site?

Response: The County's 2026 Comprehensive Plan designates the site as Light Industrial. This was the same designation for the site reflected in our previous 2010 Land Use Plan. The County has received several conceptual plan submissions for the site, none of which have been formally approved. Previous submissions included a proposal to use the site as a concert and event venue, a building materials storage yard with ancillary buildings, and contractor services storage yard.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

Response: The Planning Department has not received any information on this site prior to the recent receipt of the previous five-year report. Additionally, it does not appear a specific county contact has been established. County staff believes it would be beneficial for the EPA to have a specific county contact on file to provide updates.

7. Do you have any comments, suggestions or recommendations regarding the project?

Response: Please include reference to any restrictions or requirements applicable to any potential development of the site within the five-year report or other document which could be made available to the county.

Rentokil Superfund Site**Five-Year Review Questionnaire**

Site Name: Rentokil
Subject Name: Tim Karn
Interview Format: Email
Interview Category: Property owner
Affiliation:
Date: November 25, 2022

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Response: Yes, I was made aware of the environmental issues prior to purchasing the property.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

Response: Yes I feel like I have been well informed.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

Response: No, there have been no issues.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

Response: No, I am unaware of any changes in the laws or regulations that would affect the site.

5. Are you aware of any changes in projected land use(s) at the Site?

Response: Yes, we are submitting a Plan of Development to Henrico County for a part of the site.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

Response: I do not know.

7. Do you have any comments, suggestions or recommendations regarding the project?

Response: I may be asking for your input concerning the development of the Laydown Yard, to help answer the county's concerns if any.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Response: Yes you do, that will be fine.

Rentokil Superfund Site**Five-Year Review Questionnaire**

Site Name: Rentokil
Subject Name:
Interview Format: In person
Interview Category: Community
Affiliation: Oakview Avenue Resident
Date: November 2, 2022

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Response: Yes. I moved here in 1995 and remember the cleanup work.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

Response: I had never talked to anyone from EPA about the site before.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

Response: No. There is a lot of wildlife in the area. There may be groundhogs on the site too.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

Response: No.

5. Are you aware of any changes in projected land use(s) at the Site?

Response: No.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

Response: Let us know if our health could be affected.

7. Do you have any comments, suggestions or recommendations regarding the project?

Response: No. Just make sure no contamination migrates offsite and affects us.

APPENDIX F – SITE INSPECTION CHECKLIST

Appendix F: Site Inspection Checklist

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST			
I. SITE INFORMATION			
Site Name: Rentokil, Inc. (Virginia Wood Preserving Division)		Date of Inspection: 11/2/2022	
Location and Region: Richmond, VA; EPA Region 3		EPA ID: VAD071040752	
Agency, Office or Company Leading the Five-Year Review: EPA		Weather/Temperature: 60s, Sunny	
Remedy Includes: (Check all that apply)			
<input checked="" type="checkbox"/> Landfill cover/containment		<input type="checkbox"/> Monitored natural attenuation	
<input type="checkbox"/> Access controls		<input checked="" type="checkbox"/> Groundwater containment	
<input checked="" type="checkbox"/> Institutional controls		<input type="checkbox"/> Vertical barrier walls	
<input type="checkbox"/> Groundwater pump and treatment			
<input type="checkbox"/> Surface water collection and treatment			
<input checked="" type="checkbox"/> Other: While the original remedy called for on-site treatment and discharge of extracted groundwater, EPA approved VPI's request to modify that remedial component to allow for off-site disposal of extracted groundwater. Site groundwater was never treated on site.			
Attachments: <input checked="" type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached			
II. INTERVIEWS (check all that apply)			
1. O&M Site Manager	Catherine Coffey	Senior Environmental Scientist	11/4/22
	Name	Title	Date
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input checked="" type="checkbox"/> by email <input type="checkbox"/> by phone Phone: _____			
Problems, suggestions <input type="checkbox"/> Report attached: Interviews are summarized in Section IV; completed interview forms are included in Appendix F.			
2. O&M Staff			
	Name	Title	Date
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone: _____			
Problems/suggestions <input type="checkbox"/> Report attached: _____			
3.	Local Regulatory Authorities and Response Agencies (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.		
Agency VADEQ			
Contact	Angie Mcgarvey		11/3/2022
	Name	Title	Date
Problems/suggestions <input type="checkbox"/> Report attached: _____			
Agency Henrico County Planning Department			
Contact	Leslie News		12/29/2022
	Name	Title	Date
Problems/suggestions <input type="checkbox"/> Report attached: _____			
Agency _____			
Contact			
	Name	Title	Date
Problems/suggestions <input type="checkbox"/> Report attached: _____			

Agency _____ Contact _____ Name _____ Title _____ Date _____ Phone No. _____ Problems/suggestions <input type="checkbox"/> Report attached: _____	
Agency _____ Contact _____ Name _____ Title _____ Date _____ Phone No. _____ Problems/suggestions <input type="checkbox"/> Report attached: _____	
4. Other Interviews (optional) <input type="checkbox"/> Report attached: Interviews are summarized in Section IV.	
Oakview Avenue Resident #1	
Oakview Avenue Resident #2	
Oakview Avenue Resident #3	
Tim Karn - Owner of Site	
III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)	
1. O&M Documents <input type="checkbox"/> O&M manual <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> As-built drawings <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Maintenance logs <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks: _____	
2. Site-Specific Health and Safety Plan <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Contingency plan/emergency response plan <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks: _____	
3. O&M and OSHA Training Records <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks: _____	
4. Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Other permits: _____ <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks: _____	
5. Gas Generation Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks: _____	
6. Settlement Monument Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks: _____	
7. Groundwater Monitoring Records <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks: <u>The PRP submits groundwater monitoring data in Annual O&M Reports.</u>	

8.	Leachate Extraction Records	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
9.	Discharge Compliance Records			
	<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
10.	Daily Access/Security Logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
IV. O&M COSTS				
1.	O&M Organization			
	<input type="checkbox"/> State in-house	<input type="checkbox"/> Contractor for state		
	<input type="checkbox"/> PRP in-house	<input checked="" type="checkbox"/> Contractor for PRP		
	<input type="checkbox"/> Federal facility in-house	<input type="checkbox"/> Contractor for Federal facility		
	<input checked="" type="checkbox"/> <u>Arcadis performs O&M for Rentokil.</u>			
2.	O&M Cost Records			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date		
	<input type="checkbox"/> Funding mechanism/agreement in place	<input checked="" type="checkbox"/> Unavailable		
	Original O&M cost estimate: _____ <input type="checkbox"/> Breakdown attached			
	Total annual cost by year for review period if available			
	From: _____ Date	To: _____ Date	_____ Total cost	<input type="checkbox"/> Breakdown attached
	From: _____ Date	To: _____ Date	_____ Total cost	<input type="checkbox"/> Breakdown attached
	From: _____ Date	To: _____ Date	_____ Total cost	<input type="checkbox"/> Breakdown attached
	From: _____ Date	To: _____ Date	_____ Total cost	<input type="checkbox"/> Breakdown attached
	From: _____ Date	To: _____ Date	_____ Total cost	<input type="checkbox"/> Breakdown attached
3.	Unanticipated or Unusually High O&M Costs during Review Period			
Describe costs and reasons: _____				
V. ACCESS AND INSTITUTIONAL CONTROLS <input type="checkbox"/> Applicable <input type="checkbox"/> N/A				
A. Fencing				
1.	Fencing Damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Gates secured	<input type="checkbox"/> N/A
Remarks: <u>Site fencing appeared to be in good condition. The entrance gate to the Site is secured with a</u>				

<u>lock when no one is present.</u>			
B. Other Access Restrictions			
1.	Signs and Other Security Measures	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
Remarks: <u>Signage with number. Owner plans to put sign to deter trespassers.</u>			
C. Institutional Controls (ICs)			
1.	Implementation and Enforcement		
	Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
	Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
	Type of monitoring (e.g., self-reporting, drive by): _____		
	Frequency: _____		
	Responsible party/agency: <u>Arcadis</u>		
	Contact <u>Catherine Coffey</u>	<u>Senior Environmental Scientist</u>	_____
	Name	Title	Date
	Reporting is up to date	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
	Reports are verified by the lead agency	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
	Specific requirements in deed or decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
	Violations have been reported	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
	Other problems or suggestions: <input type="checkbox"/> Report attached		
2.	Adequacy <input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A		
Remarks: <u>Institutional controls are in place to prevent groundwater use, protect the integrity of the original and extended cap and slurry wall, and to prohibit residential land use for most of the Site.</u>			
D. General			
1.	Vandalism/Trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident		
Remarks: <u>No evidence was observed during the inspection.</u>			
2.	Land Use Changes On Site <input type="checkbox"/> N/A		
Remarks: <u>New owner using non-capped area for storage of contractor equipment.</u>			
3.	Land Use Changes Off Site <input checked="" type="checkbox"/> N/A		
Remarks: _____			
VI. GENERAL SITE CONDITIONS			
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Roads Damaged <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Roads adequate <input type="checkbox"/> N/A		
Remarks: <u>Site roads are in good condition.</u>			
B. Other Site Conditions			
Remarks: _____			
VII. LANDFILL COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			

A. Landfill Surface			
1.	Settlement (low spots) Area extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Settlement not evident Depth: _____
2.	Cracks Lengths: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map Widths: _____	<input checked="" type="checkbox"/> Cracking not evident Depths: _____
3.	Erosion Area extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident Depth: _____
4.	Holes Area extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Holes not evident Depth: _____
5.	Vegetative Cover <input checked="" type="checkbox"/> No signs of stress Remarks: _____	<input checked="" type="checkbox"/> Grass <input type="checkbox"/> Trees/shrubs (indicate size and locations on a diagram)	<input checked="" type="checkbox"/> Cover properly established
6.	Alternative Cover (e.g., armored rock, concrete) Remarks: _____		<input checked="" type="checkbox"/> N/A
7.	Bulges Area extent: _____ Remarks: _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Bulges not evident Height: _____
8.	Wet Areas/Water Damage <input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Wet areas <input type="checkbox"/> Location shown on site map Area extent: _____ <input type="checkbox"/> Ponding <input type="checkbox"/> Location shown on site map Area extent: _____ <input type="checkbox"/> Seeps <input type="checkbox"/> Location shown on site map Area extent: _____ <input type="checkbox"/> Soft subgrade <input type="checkbox"/> Location shown on site map Area extent: _____ Remarks: _____		
9.	Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of slope instability Area extent: _____ Remarks: _____		
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			

1.	Flows Bypass Bench	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
Remarks: _____			
2.	Bench Breached	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
Remarks: _____			
3.	Bench Overtopped	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
Remarks: _____			
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement (Low spots)	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of settlement
Area extent: _____		Depth: _____	
Remarks: _____			
2.	Material Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of degradation
Material type: _____		Area extent: _____	
Remarks: _____			
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of erosion
Area extent: _____		Depth: _____	
Remarks: _____			
4.	Undercutting	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
Area extent: _____		Depth: _____	
Remarks: _____			
5.	Obstructions	Type: _____	<input type="checkbox"/> No obstructions
<input type="checkbox"/> Location shown on site map		Area extent: _____	
Size: _____			
Remarks: _____			
6.	Excessive Vegetative Growth	Type: _____	
<input type="checkbox"/> No evidence of excessive growth			
<input type="checkbox"/> Vegetation in channels does not obstruct flow			
<input type="checkbox"/> Location shown on site map		Area extent: _____	
Remarks: _____			
D. Cover Penetrations <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Vents	<input type="checkbox"/> Active	<input checked="" type="checkbox"/> Passive
<input checked="" type="checkbox"/> Properly secured/locked		<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled
<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Good condition			

Remarks: _____			
2.	Gas Monitoring Probes <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs maintenance <input checked="" type="checkbox"/> N/A Remarks: _____		
3.	Monitoring Wells (within surface area of landfill) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs maintenance <input checked="" type="checkbox"/> N/A Remarks: <u>There are no active monitoring wells located within the surface of the caps.</u>		
4.	Extraction Wells Leachate <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs maintenance <input checked="" type="checkbox"/> N/A Remarks: _____		
5.	Settlement Monuments <input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A Remarks: _____		
E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____		
2.	Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A Remarks: _____		
F. Cover Drainage Layer <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Outlet Pipes Inspected <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks: <u>Outlet pipes were free of vegetation and appeared to be in good condition.</u>		
2.	Outlet Rock Inspected <input type="checkbox"/> Functioning <input checked="" type="checkbox"/> N/A Remarks: _____		
G. Detention/Sedimentation Ponds <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Siltation Area extent: _____ Depth: _____ <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Siltation not evident Remarks: _____		

2.	Erosion	Area extent: _____	Depth: _____
	<input checked="" type="checkbox"/> Erosion not evident		
	Remarks: _____		
3.	Outlet Works	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A
	Remarks: _____		
4.	Dam	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A
	Remarks: _____		
H. Retaining Walls <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement: _____		Vertical displacement: _____
	Rotational displacement: _____		
	Remarks: _____		
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks: _____		
I. Perimeter Ditches/Off-Site Discharge <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Area extent: _____		Type: _____
	Remarks: _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
4.	Discharge Structure	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks: _____		
VIII. VERTICAL BARRIER WALLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Settlement not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
2.	Performance Monitoring	Type of monitoring: <u>Groundwater monitoring and water level measurements.</u>	
	<input type="checkbox"/> Performance not monitored		
	Frequency: <u>The PRP performs semi-annual groundwater</u>		<input type="checkbox"/> Evidence of breaching

<u>monitoring and previously collected monthly water level measurements to assess the performance of the slurry wall.</u> Head differential: _____ Remarks: <u>In January 2017, PRP contractors removed components of the groundwater dewatering system from the water facility building.</u>
IX. GROUNDWATER/SURFACE WATER REMEDIES <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps and Pipelines <input type="checkbox"/> Applicable <input type="checkbox"/> N/A
1. Pumps, Wellhead Plumbing and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells properly operating <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A Remarks: _____
2. Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____
3. Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks: _____
B. Surface Water Collection Structures, Pumps and Pipelines <input type="checkbox"/> Applicable <input type="checkbox"/> N/A
1. Collection Structures, Pumps and Electrical <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____
2. Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____
3. Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided Remarks: _____
C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
1. Treatment Train (check components that apply) <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div><input type="checkbox"/> Metals removal</div> <div><input type="checkbox"/> Oil/water separation</div> <div><input type="checkbox"/> Bioremediation</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div><input type="checkbox"/> Air stripping</div> <div><input type="checkbox"/> Carbon adsorbers</div> </div> <div style="margin-top: 5px;"><input type="checkbox"/> Filters: _____</div> <div style="margin-top: 5px;"><input type="checkbox"/> Additive (e.g., chelation agent, flocculent): _____</div> <div style="margin-top: 5px;"><input type="checkbox"/> Others: _____</div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div><input type="checkbox"/> Good condition</div> <div><input type="checkbox"/> Needs maintenance</div> </div> <div style="margin-top: 5px;"><input type="checkbox"/> Sampling ports properly marked and functional</div>

	<input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually: _____ <input type="checkbox"/> Quantity of surface water treated annually: _____ Remarks: _____
2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____
3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs maintenance Remarks: _____
4.	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance Remarks: _____
5.	Treatment Building(s) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks: _____
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A Remarks: _____
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring Data Suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input checked="" type="checkbox"/> Contaminant concentrations are declining
E. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells located <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A Remarks: <u>Monitoring wells on site are used to assess the performance of the slurry wall and cap (not natural attenuation). All monitoring wells are secured with locks.</u>
X. OTHER REMEDIES	
If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	

A. Implementation of the Remedy	<p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).</p> <p><u>The Site's final remedy included demolition and off-site disposal of site structures, drum disposal, removal of the former site pond, construction of a slurry wall around the former process and storage areas, installation of a de-watering system, construction of a RCRA cap over the area encompassed by the slurry wall, excavation and consolidation of contaminated soil and wetland sediment beneath the cap, mitigation of wetland loss, institutional controls, and groundwater monitoring. In 2016, in accordance with the ROD, the PRP extended the slurry wall and cap to address an additional area of soil contamination north of the original cap. Based on the findings of the FYR site inspection, the remedy seems to be effective and functioning as designed. The caps are in good condition and appear to be well-maintained. They prevent exposure to contaminated soil and sediment. The slurry walls and caps prevent the migration of contaminated groundwater and institutional controls are in place to prevent groundwater use, prohibit residential land use, and prohibit activities that could potentially affect the integrity of cap and slurry walls. A review of groundwater data confirms that groundwater contamination is being contained and has not migrated off-site.</u></p>
B. Adequacy of O&M	<p>Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p><u>O&M procedures are implemented as prescribed by the O&M manual. Based on FYR site inspection observations, O&M activities seem to be adequate. Vegetation on the original cap is well-established and the fence surrounding the cap is in good condition.</u></p>
C. Early Indicators of Potential Remedy Problems	<p>Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p><u>No early indicators of potential remedy problems were identified at the time of the site inspection.</u></p>
D. Opportunities for Optimization	<p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><u>None identified.</u></p>

Site Inspection Roster:

Victoria Schantz, EPA RPM

John Brakeall, EPA CIC

Angie McGarvey, VDEQ

Catherine Coffey, Arcadis

Justin Coffey, Arcadis

Tim Karn, Owner

APPENDIX G – SITE INSPECTION PHOTOS



Contractor Storage Area and Water Facility Building



Inside of Water Facility Building



Inside of Water Facility Building



Capped Area, Facing West



Capped Area, Facing South



Vent on Original Capped Area



Monitoring Well



Former Wetland Area B

APPENDIX H – VAPOR INTRUSTION MEMO

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

SUBJECT: Rentokil, Inc. (Virginia Wood Preserving Site)
Superfund Site - Vapor Intrusion

February 28, 2022

FROM: Victoria Schantz
Remedial Project Manager

TO: FILE

The purpose of this memo to file is to document information and discussions regarding the possibility for Vapor Intrusion (VI) at the Rentokil Inc. (Virginia Wood Preserving) Superfund Site (the "Site") located in Henrico County, Virginia.

During a call on December 9, 2020, the Virginia Department of Environmental Quality (VDEQ) requested a consult from the U.S. Environmental Protection Agency (EPA) regarding questions raised to them by the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR was reviewing a draft Letter Health Consultation (LHC) report prepared by the Virginia Department of Health (VDH). VDH prepared the draft LHC under a cooperative agreement with ATSDR. The LHC reviewed multiple site-related documents and reevaluated exposure pathways, conclusions, and recommendations from ATSDR's public health assessment (PHA) for the Rentokil Site. The draft LHC recommends that, "If the Site is used for future building construction, the potential health risk of VI to workers in the buildings should be evaluated." Based on this recommendation, the potential for VI was investigated by reviewing past site data found in EPA records. The documents reviewed as part of the investigation are listed at the end of this memorandum. Additionally, the following people were consulted throughout the investigation:

- *Will Geiger, Chief, DE/VA/WV Remedial Section
- Joseph McDowell, Senior Remedial Project Manager, Site Remediation Branch
- *Chris Corbett, Senior Remedial Project Manager, Site Remediation Branch
- *Christian Matta, Remedial Project Manager, DE/VA/WV Remedial Section
- *Linda Watson, Toxicologist, Risk Assessment Section
- *Herminio Concepcion, Hydrogeologist, Hydrologic Support Section
- *Patricia Flores, Environmental Scientist, Air Quality Analysis Branch
- *Robert Hasson, Attorney Advisor, CERCLA Branch 1
- *Huu Ngo, Remedial Project Manager, Eastern Pennsylvania Remedial Section
- *Alan Geyer, Remedial Project Manager, DE/VA/WV Remedial Section
- *Christopher Thomas, Land Revitalization Action Team, Site Assessment Branch
- Thomas Cinti, Attorney Advisor, CERCLA Branch 2
- Angela McGarvey, Virginia Department of Environmental Quality
- Catherine Coffey, Project Manager, Arcadis U.S., Inc.
- Daniel Sheehan, Program Manager, Arcadis U.S., Inc.

*indicates presence at October 6, 2021 internal EPA meeting to discuss the VI assessment



Site Background

The Site, located in Henrico County, Virginia, is a former wood-treating facility that operated from 1957 until January 1990. Chemicals used during operations included chromium zinc arsenate (CZA), chromated copper arsenate (CCA), pentachlorophenol (PCP), fuel oil no. 2, creosote, xylene, and fire retardants. Site operations resulted in the contamination of soil, sediment, and groundwater with hazardous substances.

The EPA placed the Site on the National Priorities List (NPL) in March 1989. The Remedial Investigation (RI) was completed in two phases. The Phase I RI was completed in 1990 and a Phase II RI, which was intended to fill data gaps identified during the Phase I RI, was completed in 1992. The Phase II RI is not intended to be a stand-alone document and presents the results of the Human Health Risk Assessment (HHRA). Total polycyclic aromatic hydrocarbons (PAHs) and total carcinogenic PAHs were used in the Phase II RI as an indicator of constituents from creosote.

EPA issued a Record of Decision (ROD) for the Site in 1993 (later amended in 1996). The remedy outlined in the ROD included demolition and off-site disposal of existing structures, excavation and off-site disposal of the unusable CCA, excavation and off-site incineration of pond sediments, low temperature thermal desorption of “hot spot” soil, consolidation of surface soil outside the area to be capped that exceed site-specific cleanup levels to the area of the Site to be capped, construction of a Resource Conservation and Recovery Act (RCRA) Subtitle C cap, construction of a slurry wall around the perimeter of the area encompassed by the cap, installation of a dewatering system (horizontal wells) within the cap/slurry wall, extraction and on-site treatment of groundwater (later changed to off-site disposal), restoration of three wetland areas, implementation of institutional controls, and long-term monitoring (LTM) of groundwater. EPA amended the ROD in August 1996 to delete the low-temperature thermal desorption as a component of the cleanup.

The contaminants of concern (COCs) identified in the Phase II RI and the ROD were:

- Arsenic
- Chromium
- Copper
- Zinc
- Benzene
- Ethylbenzene
- Styrene
- Toluene
- Xylenes
- Benzoic Acid
- 2,4-Dimethylphenol
- 2-Methyphenol
- 4-Methyphenol
- PCP
- Phenol
- PAHs
- Dioxins
- Furans

The ROD requires LTM of groundwater for the primary contaminants detected in groundwater during the RI including arsenic, chromium, copper, zinc, PAHs, and PCP. For sediment and surface soils outside the area to be capped (i.e., the former process area), the ROD included cleanup levels for PAHs, PCP, and arsenic. Later reports for the Site list the COC's as the following list of primary COCs: Arsenic, Copper, Zinc, Chromium, PCP, and PAHs.



Geology & Hydrology

There are two water-bearing units at the Site, separated by a clay hardpan. The upper (perched) aquifer consists of fluvial sediments and extends from the ground surface to about 4-7 feet below ground surface (bgs). The lower, or saprolitic, aquifer extends from the bottom of the hardpan (about 7-10 feet bgs) to the top of the Petersburg Granite bedrock. The clay hardpan is a semi-permeable confining layer, which acts as a barrier to perched groundwater infiltration into the saprolitic aquifer. The perched aquifer pinches out toward the wetland on the northern portion of the property and becomes nonexistent at North Run Creek. The bedrock serves as a confining layer and is encountered about 25 feet bgs. Groundwater beneath the Site generally flows to the northeast, toward North Run Creek, the primary surface water feature near the Site, which flows into Talley's Pond about 1 mile southeast of the Site. A municipal water supply provides water to the area since approximately 1987.

Remedial Action

Remedial Construction at the Site was completed in August of 1999. Contaminated site sediments and soils were excavated and consolidated into the former process area to be contained. A 30-inch-wide slurry wall was constructed around the area from the ground surface to the bedrock-confining layer. Three directionally drilled wells, identified as Laterals A, B, & C (also referred to as extraction wells), were installed 2 to 4 feet above the bedrock within the containment area to create a lower groundwater level inside the containment area than outside. The purpose of this inward gradient of groundwater was to prevent contaminants from migrating outside of the containment area. A French Drain was constructed at the perimeter of the containment area at the level of the perched aquifer. The purpose of this element was to capture groundwater from the perched horizon. A RCRA Subtitle C cap was placed over the approximately six (6) acre former process area of the Site (Cap Area 1), overlapping the boundaries of the slurry wall. Six monitoring wells (VPMW-1 thru VPMW-6) were installed outside of the slurry wall down gradient from Cap Area 1 in the saprolitic groundwater aquifer for LTM.

The RCRA Cap system (Cap Area 1) consists of graded fill material, a low permeability Geo-Clay liner (GCL), a low-density polyethylene liner (LDPE), a geonet and drainage composite layer, geotextile fabric, protective cover soil, and approximately six inches of vegetated topsoil. In preparation for possible future non-residential reuse of the site, three divider wall structures were constructed within the confines of the slurry wall. The rectangular areas consist of reinforced concrete walls with embedded LDPE strips for connection to the RCRA cap. The walls allow for a total area of approximately 50,000 square feet for potential redevelopment. Waterstops were inserted in each concrete construction joint for future foundation construction. Utilities were also placed inside the divider wall structure. Cap construction details are depicted on the 1999 As-Built drawings and show four vents positioned on the highest elevation of the cap. The system is a passive gas venting system consistent with typical RCRA Subtitle C cap construction.

In 2016, an additional slurry wall was installed to extend the existing slurry wall and cap to enclose an approximately one and a half (1.5) acres area (Cap Area 2) located to the north of the Cap Area 1. The 2016 slurry wall is 18 inches thick and was installed to the depth of refusal



which was approximately 15-26 feet bgs. Cap Area 2 was constructed to contain residual PCP impacted soils and prevent the infiltration of stormwater, as well as any potential contact with impacted surface soils. Cap Area 2 ties into the existing anchor trench/infiltration drainage system of Cap Area 1 and consists of graded soil, a nonwoven geotextile layer, a LDPE Geomembrane, geosynthetic drainage composite, 18-inch general fill soil layer, and 6-inch vegetated topsoil layer.

Groundwater Extraction

Groundwater extraction from the three laterals was initiated in 1999. The extracted groundwater was pumped to the water facility building, which was constructed for water storage prior to being transported off-site for disposal. According to the 2000 Final Remedial Design and Remedial Action Report, the initial analysis of groundwater extracted from the containment system indicated detections of low levels of non-carcinogenic PAHs and metals with no exceedances of Maximum Contaminant Levels (MCLs). As of January 31, 2000, approximately 770,000 gallons of groundwater had been removed and disposed of from within the boundaries of the slurry wall and cap system. No recovery was being experienced from the French Drain System indicating that the perched aquifer had been dewatered completely.

To conduct performance monitoring and determine the groundwater gradient within the containment area, 14 piezometers were installed inside and outside the original slurry wall. Groundwater depths in these piezometers were measured monthly until August 2014. During that time, groundwater level data indicated a flat gradient with occasional slight outward or inward gradients in limited areas of the Site. The piezometers were abandoned in Spring 2015.

In July 2005, EPA approved the Responsible Party's (RP's) request for a one-year moratorium on the extraction and disposal of ground water from within the containment system. The moratorium was extended each year until December 2008 when groundwater extraction was suspended indefinitely. EPA and VDEQ agreed to the indefinite suspension based on a 2008 groundwater extraction test which determined that site groundwater conditions, from a contaminant concentration and flow velocity/direction standpoint, are similar under extraction conditions and under the natural conditions observed since the shut-down of the extraction system. In 2015 the groundwater extraction pumps were removed and the groundwater extraction laterals were abandoned in place. The remainder of the groundwater recovery system, including the above-ground pumps, piping, and tanks were removed from the Site in 2016. In 2017, components of the containment area dewatering system from the water facility building were removed. The building remains in place but is no longer in use.

According to the 2009 Groundwater Remediation Evaluation Report, leakage of groundwater through the fractured bedrock underlying the saprolite aquifer (groundwater that, based on previous evaluation of upgradient groundwater, does not contain COCs) acts as an equalization force in the saprolite aquifer inside and outside of the Slurry Wall. As expected, there has been minimal recharge of groundwater from the bedrock aquifer over time, groundwater inside the containment structure has most likely achieved equilibrium. The 2009 report concludes that the extraction of over one million gallons of groundwater from inside the containment elements of the site had resulted in the removal of a small amount of contamination from the site and that data from the most recent sampling events, compared with previous sampling events, and from the focused groundwater extraction test, clearly indicate that there is no further value in



extracting and disposing of groundwater from site.

According to the 2018 Operations and Maintenance Manual, the cap and the associated surrounding slurry wall contain and prevent movement of groundwater from the containment structure to the aquifer. The groundwater historically located within the containment structure originated from the perched aquifer and has since been removed from the area via the decommissioned groundwater recovery and extraction system. Groundwater in the containment system which originated from the saprolite aquifer was also removed by the decommissioned groundwater recovery and extraction system. The RCRA Subtitle C caps covering Cap Area 1 and Cap Area 2, as well as and the associated slurry walls, prevent surface water infiltration of rainwater and the intrusion of groundwater from outside the containment structure.

The three extraction wells from within the containment area appear to have been last sampling in April 2008 to support the permanent discontinuance of groundwater extraction, as summarized in the August 2008 Groundwater Monitoring Report. Semi-volatile organic compounds (SVOCs) as well as VOCs were detected in the samples. Benzene was the only VOC that was detected at concentrations above its MCL (5 µg/L) in Lateral 2 (38 µg/L), and Lateral 3 (47 µg/L). PCP was the only SVOC detected above its respective MCL (1 ug/L) in Lateral 1 (78 ug/L) and Lateral 3 (17 ug/L).

Groundwater Monitoring

LTM of groundwater at the site began in July 2001. In 2015, to facilitate the construction of the expanded containment system, all but three monitoring wells (VPMW-4, VPMW-5 and VPMW-6) were abandoned. Following the extension of the containment system in 2016, three new monitoring wells (VPMW-1R, VPDW-04R and VPDW-05R) were installed north and downgradient of the extended system. The six monitoring wells are currently located on the site. There are currently no wells located within the containment areas.

Upon completion of the installation of the three new monitoring wells, one site wide sampling event was conducted in October 2017 including all six monitoring wells. No detections were presented exceeding MCLs for the primary COCs detailed in the ROD for the site wide sampling event. Per the approved 2016 Groundwater Monitoring Plan and based on the results of the site wide sampling event, an annual sampling schedule for year two thru year four of post remedial monitoring for the three new monitoring wells (VPMW-1R, VPDW-04R and VPDW-05R) and discontinuance of monitoring the three existing monitoring wells (VPMW-4, VPMW-5, and VPMW-6) was requested. Since the site wide event, annual sampling of the three new monitoring wells have not reported concentration of COCs exceeding MCLs.

Institutional Controls

Institutional Controls (ICs) were implemented through a Restrictive Covenant in 2005. The Restrictive Covenant prohibits residential development, use of groundwater at the site, and disturbance of the cap. In 2019 the Restrictive Covenant was amended to include Cap Area 2. There is currently no IC specifically requiring mitigation of VI associated with placement of structures on the site.



Vapor Intrusion Assessments

VI is briefly discussed in the second, third, and fourth Five Year Review (FYR) reports completed in 2008, 2013, and 2018, respectively. The potential for VI is not addressed in prior reports for the Site. The second and third FYR reports state that, although the May 2007 Groundwater Monitoring Report clearly identifies VOCs at detectable concentrations (mainly within the extraction wells), the reported concentrations are low (trace) and do not exceed EPA's screening values except for a few contaminants. They conclude that VI is not a pathway of concern because the only existing building on the Site is the water facility building, which is rarely used, and the groundwater in former Wetland Areas B and C is not contaminated. While they provide an evaluation of current groundwater performance standards (MCLs) using updated risk guidance, the FYRs do not include risk from VI since, "none of the 1993 ROD identified COCs are VOCs". The fourth FYR simply states that VI does not pose a risk to human health because there are no exposure pathways as groundwater contamination is confined to the Site, primarily within the areas contained by the two slurry walls, and the only enclosed structure located on site is the water facility building, which is no longer used. The FYRs state that Site groundwater VOC concentrations should be re-screened, using EPA's most current table, when performance standards are believed to have been achieved.

While VI has not been assessed previously for the Site, current annual sampling from the six groundwater monitoring wells located outside of the capped area have not reported concentration of COCs exceeding MCLs. Therefore, VI is not anticipated to be a concern for the non-capped areas. Only historical groundwater data exists from within the capped areas and new samples cannot be collected. The last samples of groundwater collected within the containment area was collected in 2008 to support the permanent moratorium on groundwater extraction and disposal. Since all wells and piezometers that were once located within the contaminant area have been abandoned, groundwater samples cannot be collected without damaging the cap.

The water facility building is located on Cap Area 1 and is still present on Site though not used. The building appears to be a large pole barn with a garage door and louver windows. As discussed above, in preparation for possible future reuse of the Site, the cap has been engineered to anticipate construction of non-residential structures. The divider wall structures constructed within the confines of the slurry wall allow for a total area of approximately 50,000 square feet for potential redevelopment. The possibility for VI into the water facility building or in potential future construction has not been previously evaluated.

To get a sense of the potential risk of VI within the containment area at the Site, screenings were performed using EPA's Vapor Intrusion Screening Level (VISL) Calculator. The first screening was performed by Linda Watson, EPA Toxicologist, and used the 1992 Phase I RI groundwater data which was collected from the saprolite aquifer prior to Remedial Action. Table 1, below, shows the results from VISL.

Table 1: 1992 RI Data Saprolite Aquifer - VISL Groundwater to Indoor Air Risk Results

<i>VOC COC</i>	<i>Maximum Detected (ug/L)</i>	<i>Calculated Indoor Air Concentration (ug/m3)</i>	<i>Commercial VI Carcinogenic Risk</i>	<i>Commercial VI Hazard</i>
Benzene	300	68.1	4.3E-05	5.2E-01
Ethylbenzene	160	51.5	1.1E-05	1.2E-02
Toluene	1200	326	-	1.5E-02



Styrene	44	4.95	-	1.1E-03
Xylene	580	157	-	3.6E-01
Napthalene	7600	137	3.8E-04	10
Total Risks			4.3E-04	11

***Bold denotes an exceedance of EPA's risk criteria for cancer (Cancer Risk <1E-04) and non-cancer threshold of 1.0.**

Based on the above VISL Calculation results, groundwater in 1992 could have presented a VI risk within future commercial buildings, primarily from naphthalene.

The second screening was performed by Patricia Flores, EPA Environmental Scientist with the Air Quality Analysis Branch, and used data collecting in 2008 from the extraction laterals within the containment area. This data is the last sampling set collected from the containment area prior to the permanent moratorium on extraction and abandonment of all wells and piezometers. The data is being used for screening purposed only. Since the data was collected from extraction laterals, not properly constructed groundwater monitoring wells, the data's suitability for use in a risk assessment is uncertain.

Table 2: 2008 Extraction Laterals Within Containment Area Data - VISL Groundwater to Indoor Air Risk Results

<i>VOC COC</i>	<i>Maximum Detected (ug/L)</i>	<i>Calculated Indoor Air Concentration (ug/m3)</i>	<i>Commercial VI Carcinogenic Risk</i>	<i>Commercial VI Hazard</i>
Benzene	47	10.7	6.8E-06	8.1E-02
Ethylbenzene	34	11	2.2E-06	2.5E-03
Toluene	49	13.3	-	6.1E-04
Styrene	---	-	-	-
Xylene	130	35.2	-	8.1E-02
Napthalene	810	14.6	4.0E-05	1.1
Total Risks			4.9E-05	1.3

***Bold denotes an exceedance of EPA's risk criteria for cancer (Cancer Risk <1E-04) and non-cancer threshold of 1.0.**

Based on the above VISL Calculation results, groundwater in 2008 from within the containment area could have presented a minimal non-cancer VI risk within future commercial buildings, primarily from naphthalene. The results show that the VI risk decreased significantly from 1992, during the RI, to 2008 after the Remedial Action occurred and over one million gallons of groundwater was extracted from within the containment area and disposed. In addition, the 2008 data is approximately 14 years old and concentrations of naphthalene have likely decreased to levels that possibly would not cause an unacceptable VI risk today.

Furthermore, the RCRA Subtitle C cap, by design, will mitigate potential VI concerns by forcing any vapors building up under the cap to exit through the four vents positioned on the highest topographic points. On March 22, 2021, during the site's quarterly cap inspection, the RP's consultant, Arcadis U.S., Inc. (Arcadis), screened all four existing cap vents with a photoionization detector (PID). The PID showed 0 parts per million (ppm) of VOCs for each of the four vents during the screening. This indicates that VI is not a concern within the containment area.



Redevelopment

The Site was purchased in October 2021. Plans include development of a warehouse on the northern section of the Site, north of North Run Creek. The purchaser plans to use the capped areas for laydown storage of contractor equipment. EPA advised the Prospective Purchaser via a Comfort Letter dated November 2, 2021. The Comfort Letter listed multiple reasonable steps including that there shall be no placement of any structure on the capped area without first obtaining EPA's written permission to do so. The agency will work with the purchaser and, should new construction on the capped area be anticipated, out of an abundance of caution, EPA's preference would be to proactively incorporate in any building design a passive sub slab depressurization system and a vapor barrier. The assessment of the need for VI mitigation would need to be included in any reuse plans associated with the property which includes placement of structures on the cap. Moving forward, EPA will advise future Prospective Purchasers in a similar fashion.

Conclusion

EPA held an internal call on October 6, 2021 to discuss the information presented above. The assessment led the team to decide that a formal institutional control for VI mitigation is not warranted and that VI is likely not an issue at the Site. This is due to the vapor mitigation inherent in a RCRA Subtitle C cap system as well as EPA's ability to require any additional VI mitigation as part of the reuse management authorities EPA has over the Site. An IC is also in place which prohibits residential development on the property. Moving forward EPA will advise Prospective Purchasers through a Comfort Letter and would need to work with the purchaser to determine if structures would be anticipated on the capped area. This information will be included in the next five-year review (due in July 2023) as part of the discussion related to institutional controls.

Documents Reviewed

- 1990 Phase I Remedial Investigation Report
- 1992 Phase II Remedial Investigation Report
- 1992 Feasibility Study
- 1993 Proposed Plan
- 1993 Record of Decision
- 1996 Record of Decision Amendment
- 1999 As-Built Drawings
- 1999 Primary Close Out Report
- 2000 Final Report Remedial Design and Remedial Action
- 2003 First Five Year Review
- 2005 Property Deed and Restrictive Covenant
- 2008 Second FYR
- 2009 Groundwater Remediation Evaluation Report
- 2021 Focused Feasibility Study
- 2013 Third FYR



- 2016 Groundwater Monitoring Plan
- 2018 Fourth FYR
- 2018 Remedial Action Completion Report
- 2018 Operations and Maintenance Manual
- 2019 Property Deed Amendment
- Operation, Maintenance, and Monitoring Summary Reports for 2017, 2018, 2019, and 2020

