



## FINAL PLAN OF REMEDIAL ACTION

Cavaliers Country Club Site  
Operable Unit 1B.1

*100 Addison Drive  
Newark, Delaware*

*August, 2023  
DNREC Project No. DE-1600*

This Final Plan of Remedial Action (Final Plan) presents clean-up actions required by the Department of Natural Resources and Environmental Control (DNREC) to address environmental contamination at the Cavaliers Country Club Site.

DNREC issued public notice of the Proposed Plan of Remedial Action (Proposed Plan) for the Site on July 8, 2023 and opened a 20-day public comment period. The Proposed Plan is attached. There were no comments from the public; therefore, the Proposed Plan is adopted as the Final Plan.

### **Approval:**

**This Final Plan meets the requirements of the Hazardous Substance Cleanup Act.**

\_\_\_\_\_  
Qazi Salahuddin, Program Administrator  
Remediation Section

08/07/2023

\_\_\_\_\_  
Date



## **PROPOSED PLAN OF REMEDIAL ACTION**

Cavaliers Country Club Site  
Operable Unit 1B.1  
Newark, Delaware  
DNREC Project No. DE-1600



JUNE 2023

Delaware Department of Natural Resources and Environmental Control  
Division of Waste and Hazardous Substances  
Remediation Section  
391 Lukens Drive  
New Castle, Delaware 19720

### CONTENTS

- Figures: 1 & 2
- Appendix A – Metes and Bounds Description
- Glossary of Terms

# PROPOSED PLAN OF REMEDIAL ACTION

Cavaliers Country Club Site  
Operable Unit 1B.1  
Newark, Delaware  
DNREC Project No. DE-1600



**Approval:**

This Proposed Plan meets the requirements of the Hazardous Substance Cleanup Act.

Approved by:

---

Qazi Salahuddin, Environmental Program Administrator  
Remediation Section

6/29/2023

---

Date



### **What is the Proposed Plan of Remedial Action?**

The Proposed Plan of Remedial Action (Proposed Plan) summarizes the clean-up (remedial) actions that are being proposed to address contamination found at the Site for public comment. A legal notice is published in the newspaper for a 20-day comment period. The Department of Natural Resources and Environmental Control (DNREC) considers and addresses all public comments received and publishes a Final Plan of Remedial Action (Final Plan) for the Site.

### **What is the Cavaliers Country Club Site – OU-1B.1?**

The Cavaliers Country Club site is located at 100 Addison Drive, Newark, DE 19702 and is the former location of the Cavaliers County Club (Figure 1). The property is approximately 146 acres in size and has been divided into four operable units, OU-1A, OU-1B, OU-1B.1, and OU-2, to facilitate cleanup and redevelopment.

This Proposed Plan addresses OU-1B.1 only, which consists of approximately 1 acre located near the southern boundary of the property including a portion of the connector road (“Haul Road”) as depicted on Figure 2. The metes and bounds description for OU-1B.1 is attached as Appendix A. OU-1B.1 contains portions of tax parcels 09-025.10-312 and 09-025.30-111.

OU-1A is approximately 72 acres in size and consists of the western half of the golf course and a portion of the eastern half of the golf course for utility corridors, a walking path, and open space. OU-1B is approximately 69 acres in size and consists of the remaining eastern portion of the golf course including the club house and parking lot. OU-2 consists of approximately 4 acres and includes the maintenance buildings and former underground storage tank (UST) area.

The current owners of the Site, Cavaliers Realty LLC, agreed to investigate the potential risks posed to public health, welfare and the environment at the Site. On Oct. 3, 2016, Cavaliers Realty LLC submitted an application to the Delaware Department of Natural Resources and Environmental Control ("Department or DNREC") to voluntarily perform environmental cleanup activities at the Site.

Cavaliers Realty LLC contracted with Verdantas LLC, formerly Duffield Associates, Inc., an environmental consulting firm, to conduct site assessment and remedial actions at the property under the provisions of the Delaware Hazardous Substance Cleanup Act (HSCA), 7 Del. C. Chapter 91. The application to the Voluntary Cleanup Program was accepted and an agreement between Cavaliers Realty LLC and DNREC was executed on January 10, 2017. The agreement

included a description of the environmental work to be performed and provisions to pay for DNREC oversight costs.

The cleanup of OU-1A has been completed and a Certification of Completion of Remedy (COCR) for this portion of the Site was recorded on July 26, 2021 with the New Castle County Recorder of Deeds. The Amended Final Plan of Remedial Action for OU-1B was issued on October 14, 2019. The Final Plan of Remedial Action to address OU-2 was issued on April 12, 2022.

The creation and expedited cleanup of OU-1B.1 is intended to support essential infrastructure proposed for a portion of the southern Haul Road, previously contained within OU-1B. The installation of this infrastructure will allow redevelopment activities to begin within OU-1A, which has been successfully remediated.

### **What happened at the Cavaliers Country Club Site – OU-1B.1?**

The Site operated as a country club with a golf course and related facilities from approximately 1958 until the present. Prior to 1958, the Site was utilized for agricultural purposes. Previous environmental investigations of the property identified hazardous substances, primarily arsenic, in soils at concentrations above DNREC Remediation Section's HSCA Screening Levels (DNREC-RS Screening Levels).

### **What is the environmental problem at the Cavaliers Country Club Site – OU-1B.1?**

Elevated concentrations of regulated substances were reported in the samples collected from shallow soils, deep soils, groundwater, surface water and sediment during the 2017 Remedial Investigation (RI) of OU-1, which was conducted prior to subdividing OU-1 into O-1A, OU-1B, and OU-1B.1.

#### **SOILS**

Soils at the property, including within OU-1B.1, have been the subject of environmental evaluation since at least 2015, including during a site-wide Remedial Investigation (RI) conducted in 2017 and approved by DNREC-RS in July 2018. During the RI and prior environmental assessments, soil sampling analytical data indicated soils are impacted with metals, principally arsenic, in shallow soils with isolated hot spots of impacted deeper soils. Elevated concentrations of arsenic, mercury, and thallium were reported as present above DNREC-RS Screening Levels in confirmatory shallow soil samples (collected from 0-2 feet below ground surface or bgs). Elevated concentrations of arsenic, cobalt, and thallium exceeding DNREC-RS Screening Levels were reported in confirmatory deep soil samples (collected from depths greater than 2 ft. bgs).

Confirmation sampling suggested the majority of shallow soil metal exceedances were located on course fairways and greens and sporadically located on tee boxes and within the rough. Additionally, shallow soil sample confirmatory results showed that arsenic, mercury, and/or thallium exceedances tend to be found together in shallow soil samples. The preliminary human health risk assessment performed as part of the RI indicated that soils at the site are unacceptable

for future residential use without a remedy due to the concentrations of regulated substances in the shallow and deep soils.

## **GROUNDWATER**

No groundwater monitoring wells installed during the RI were located within OU-1B.1, however, Site-wide groundwater data generated during the RI indicated that groundwater in OU-1B is impacted by various metals including arsenic, beryllium, chromium, cobalt, copper, iron, manganese, nickel, and vanadium at concentrations exceeding DNREC-RS Screening Levels.

In general, groundwater samples collected from the wells on the east/southeast side of the property nearest the Christina River tended to have fewer contaminants detected and at lower concentrations than the wells on the west/northwest side of the property. The concentration of total arsenic in groundwater generally decreased from west to east across the site and the total arsenic concentrations were significantly lower, or not detected in the monitoring wells located near the Christina River. The preliminary human health risk assessment indicated that the groundwater is not acceptable for residential use without a remedy due to the concentrations of regulated substances in the groundwater.

## **SURFACE WATER AND SEDIMENTS**

There are no ponds or surface water bodies located within OU-1B.1 and therefore, no impacted surface water or sediment will be encountered during the remediation of OU-1B.1.

### **What clean-up actions have been taken at the Cavaliers Country Club Site – OU-1B.1?**

None to date within OU-1B.1.

### **What does the owner want to do at the Cavaliers Country Club Site – OU-1B.1?**

The Site will be redeveloped for residential use. The current redevelopment plan envisions the construction of apartments, single-family homes and townhomes, and includes open space, roadways, storm water management basins, supporting utilities/infrastructure and landscaping.

### **What additional clean-up actions are needed at the Cavaliers Country Club Site – OU-1B.1?**

**DNREC proposes the following remedial actions for the Site, which need to be completed before a Certificate of Completion of Remedy (COCR) can be issued.**

1. A Remedial Action Work Plan must be submitted to DNREC for approval within 60 days of the issuance of the Final Plan of Remedial Action. The Remedial Action Work Plan will address the specific methods to be used to remediate the Site.

Overall, the soils within OU-1B.1 will be remediated through excavation and removal. Soils must achieve arsenic remedial concentrations below the DNREC-RS established background regulatory limit of 11 milligrams per kilogram.

2. A proposed Environmental Covenant must be submitted to DNREC for approval within 60 days of the issuance of the Final Plan of Remedial Action.
3. An Environmental Covenant, consistent with Delaware's Uniform Environmental Covenants Act (7 Del.C. Chapter 79, Subchapter II) must be recorded in the Office of the New Castle County Recorder of Deeds within 60 days of the issuance of the Long-Term Stewardship Plan. The Environmental Covenant must include the following activity and/or use restrictions:
  - [a.] Limitation of Groundwater Withdrawal. No groundwater wells shall be installed, and no groundwater shall be withdrawn from any well on the Property without the prior written approval of DNREC-RS and DNREC Division of Water; and
  - [b.] Compliance with Contaminated Materials Management Plan. All work required by the Contaminated Materials Management Plan must be performed to DNREC's satisfaction in accordance with the Plan.
4. A Contaminated Materials Management Plan (CMMP) must be submitted to DNREC within 60 days of the issuance of the Final Plan of Remedial Action. The CMMP will provide guidance to ensure that contaminated materials are appropriately managed and/or disposed off-site and will include a Health and Safety Plan for site workers during remedial activities.
5. The CMMP will be implemented upon its approval by DNREC.
6. A Remedial Action Completion Report must be submitted to DNREC within 60 days of the completion of the remedial actions required in this Proposed Plan.
7. A request for a Certification of Completion of Remedy (COCR) must be submitted to DNREC within 60 days of approval of the Remedial Action Completion Report.

### **What are the long term plans for the Site after the cleanup?**

The Site will be redeveloped for residential use after the cleanup. The current redevelopment plan envisions the construction of apartments, single-family homes and townhomes, and includes open space, roadways, storm water management basins, supporting utilities/infrastructure and landscaping.

### **How can I find additional information or comment on the Proposed Plan?**

The complete file on the Site including the Remedial Investigation Report and the various reports are available online at:

<https://den.dnrec.delaware.gov/>

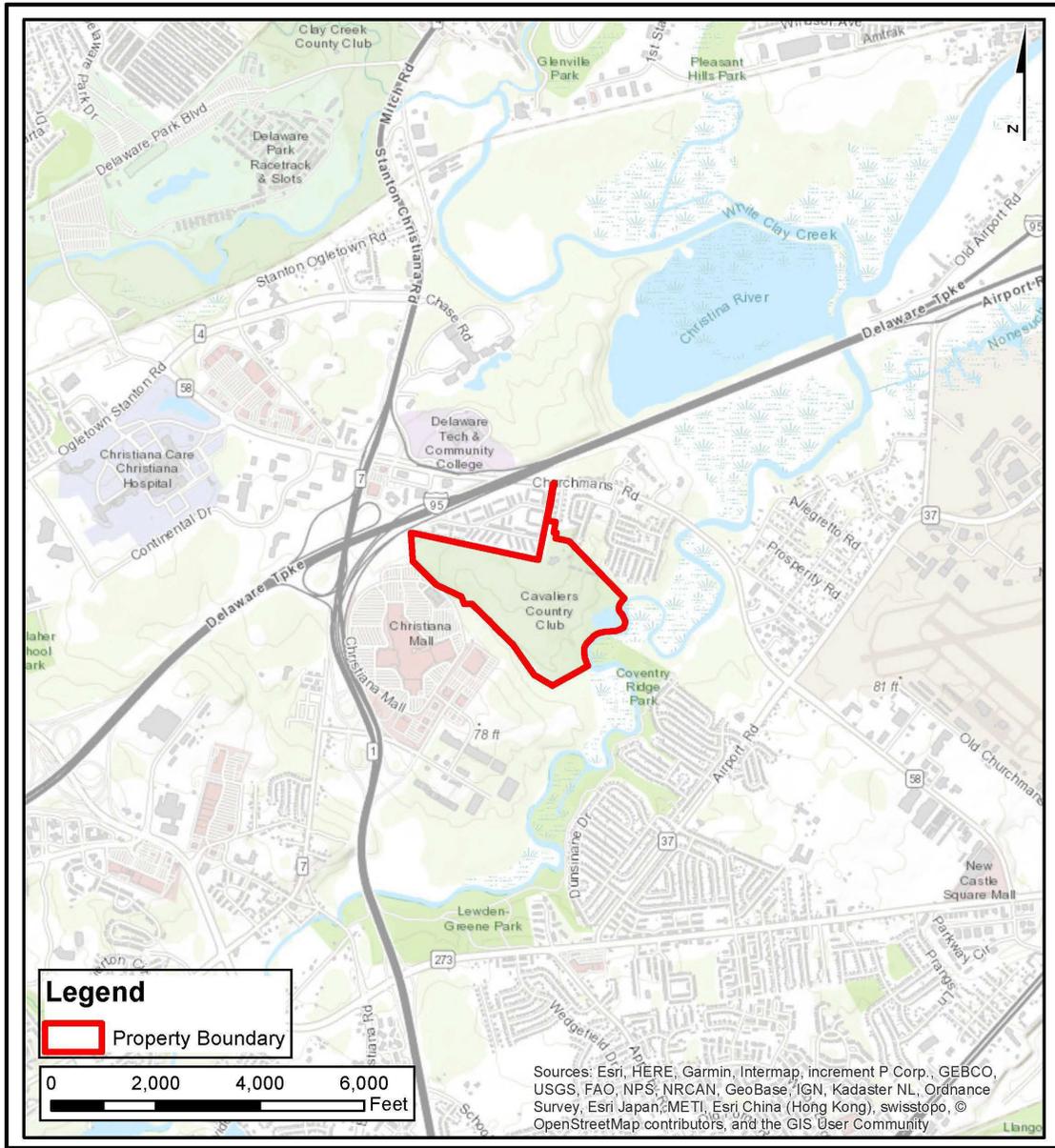
The 20-day public comment period begins on July 9, 2023 and ends at close of business (4:30 pm) on July 31, 2023. Please send written comments to the DNREC Project Officer, Gina Marinacci, via email to [RS\\_Public\\_Comments@delaware.gov](mailto:RS_Public_Comments@delaware.gov); or written letter to 391 Lukens Drive, New Castle, DE 19720

Figure 1: Site Location Map

Figure 2: Operable Unit Locations

Appendix A: Metes and Bounds Description OU-1B.1

GM:dh; GM23007.docx; DE-1600 II B8; QS23137



Date: 03/2019	<b>FIGURE 1 - SITE LOCATION SKETCH REMEDIAL ACTION WORK PLAN</b>  <b>CAVALIERS COUNTRY CLUB DE-1600 100 ADDISION DRIVE</b>  NEWARK~NEW CASTLE COUNTY~DELAWARE	DESIGNED BY: VAS	 <b>DUFFIELD ASSOCIATES</b> Soil, Water & the Environment  5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL: (302)239-6634 FAX: (302)239-8485  OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY  EMAIL: DUFFIELD@DUFFNET.COM
SCALE: AS SHOWN		DRAWN BY: VAS	
PROJECT NO. 10259.EQ		CHECKED BY: CCW	
SHEET: FIGURE 1		FILE: 10259.EQ.0319.SiteLocation.mxd	

**Figure 1**



Date: 02/2023	<b>FIGURE 2 - Operable Unit Locations</b>  <b>CAVALIERS COUNTRY CLUB SITE</b> <b>DE-1600</b>  NEW CASTLE COUNTY~CNEW CASTLE COUNTY~DE	DESIGNED BY: KP	 Soil, Water & the Environment  5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. (302)239-6634 FAX (302)239-8485  OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY  EMAIL: DUFFIELD@DUFFNET.COM
SCALE: 1:10000		DRAWN BY: KP	
PROJECT NO. 10259CP		CHECKED BY: RBS	
FIGURE: 2		FILE: Figure 2 - OU Locations	

Figure 2

**Attachment A – Metes and Bound Description for OU-1B.1**

**LEGAL DESCRIPTION FOR OPERATIONAL UNIT OU-1B.1  
(PART OF TAX PARCEL 09-025.10-312 and 09-025.30-111)**

**ALL** that certain piece or parcel of land situate in White Clay Creek Hundred, New Castle County, State of Delaware designated as an addition to Cavaliers Boulevard as shown on the Record Minor Land Development Plan – The Reserve at Cavaliers Country Club, prepared by Duffield Associates, of Wilmington DE, and recorded in the Office of the Recorder of Deeds, in and for New Castle County, Delaware, in Instrument No. 20220331-0035971, and being more particularly described as follows, to wit:

**BEGINNING** at a point on the easterly right-of-way line of Cavaliers Boulevard, at 80 feet wide, said point being the southerly end of a junction curve of the intersection of Cavaliers Boulevard and Mickelson Drive;

Thence, from the Point of Beginning, along the easterly right-of-way line of Cavaliers Boulevard, at 80 feet wide, S 11°53'48" W, 381.41 feet to a point;

Thence, the following two courses and distances within Private Open Space 1:

1. S 40°18'40" E, 132.90 feet; and
2. S 76°55'56" E, 83.73 feet to a point along the common boundary with lands now or formerly of The State of Delaware, also known as Acierno/Marta Property, Microfilm No. 14093;

Thence, common boundary with lands now or formerly of The State of Delaware, N 36°26'28" W, 146.04 feet to a point on the westerly side of Cavaliers Boulevard at 80 feet wide;

Thence, along the westerly side of Cavaliers Boulevard at 80 feet wide, N 11°53'48" E, 401.13 feet to a point at the southerly end of a junction curve at the intersection of Cavaliers Boulevard and Casper Drive;

Thence, across the right of way of Cavaliers Boulevard S 78°06'12" E, 80.00 feet to the point and place of beginning

Containing within said metes and bounds 41,208 Square Feet or 0.9460 acres of land, more or less.

## Glossary of Terms Used in this Proposed Plan

<b>Certification of Completion of Remedy (COCR)</b>	A formal determination by the Secretary of DNREC that remedial activities required by the Final Plan of Remedial Action have been completed.
<b>Contaminant of Concern (COC)</b>	Potentially harmful substances at concentrations above acceptable levels.
<b>Contaminated Materials Management Plan</b>	A written plan specifying how potentially contaminated material at a Site will be sampled, evaluated, staged, transported and disposed of properly.
<b>Exposure</b>	Contact with a substance through inhalation, ingestion, or direct contact with the skin. Exposure may be short term (acute) or long term (chronic).
<b>Final Plan of Remedial Action</b>	DNREC's adopted plan for cleaning up a hazardous site.
<b>Groundwater Management Zone</b>	A geographical area where DNREC restricts drilling for ground water because it is contaminated
<b>Hazardous Substance Cleanup Act (HSCA)</b>	Delaware Code Title 7, Chapter 91. The law that enables DNREC to identify parties responsible for hazardous substances releases and requires cleanup with oversight of the Department.
<b>Human Health Risk Assessment (HHRA)</b>	An assessment done to characterize the potential human health risk associated with exposure* to site related chemicals.
<b>Preliminary Risk Assessment</b>	A quantitative evaluation of only the most obvious and likely risks at a site
<b>Risk</b>	Likelihood or probability of injury, disease, or death.
<b>RS</b>	Remediation Section of DNREC, which oversees cleanup of sites that were contaminated as a result of past use, from dry cleaners to chemical companies