U.S. Environmental Protection Agency
Office of Compliance and Enforcement
1200 Pennsylvania Avenue, NW
Washington, DC 20460

INSPECTION AND SAMPLING REPORT
CWA, RCRA, TSCA

DuPont Circleville
Circleville, Ohio 43113

Report Date: December 3, 2021 (Revised 2/15/2024)

Inspection and Sampling Activities: September 13-16, 2021

Signature Page

LIANNA KARDEMAN Digitally signed by LIANNA KARDEMAN
Date: 2024.02.15 17:15:58 -05'00'

Lianna Kardeman – U.S. EPA HQ – OCE – WED, Water Inspector/Project Manager Date

JUSTIN YOUNG Digitally signed by JUSTIN YOUNG
Date: 2024.02.28 07:36:20 -05'00'

Justin Young – U.S. EPA HQ – OECA – WCED, RCRA Inspector/Project Manager Date

JOSEPH THEIS Digitally signed by JOSEPH THEIS
Date: 2024.03.20 11:54:53 -04'00'

Joseph Theis – U.S. EPA HQ, EPA Management Date

CONTENTS

1.0 Investigation Overview

This report does not contain Confidential Business Information (CBI).

1.1 Project Objective

The U.S. Environmental Protection Agency (EPA) Office of Civil Enforcement (OCE) Water Enforcement Division (WED) and Waste and Chemical Enforcement Division (WCED), EPA Region 5, along with EPA contractors Eastern Research Group, Inc. (ERG) and PG Environmental (PG) (henceforth, the Inspection Team) conducted a multimedia compliance investigation of the DuPont Specialty Products USA, LLC site at 800 DuPont Road, Circleville, Ohio 43113 (henceforth, DuPont Circleville or the facility). The regulatory scope of the inspection was to assess DuPont Circleville's compliance with the Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), and Toxic Substances Control Act (TSCA). The focus of the investigation was to conduct on-site process evaluations with emphasis on waste management and per- and polyfluoroalkyl substances (PFAS) wastewater generation, management, treatment, and effluent discharge.

The project team members are listed in Table 1.

Table 1. Project Team Members

Team Member	Organization	Project Role
Justin Young	EPA OECA WCED	Project Manager, RCRA Inspector
Lianna Kardeman	EPA OECD WED	Project Manager, CWA Inspector
Michelle Spiezio	ERG	CWA Inspector
Danny O'Connell	PG	CWA Inspector
Ray Cullen	EPA Region 5	CWA Inspector
Janosh Wolters	ERG	RCRA Inspector
Bryan Gangwisch	EPA Region 5	RCRA Inspector
Daryl Hudson	ERG	TSCA Inspector
Anna Nguyen	EPA Region 5	TSCA Inspector

1.2 Facility Contact Information

Table 2 lists the primary facility contacts. Michelle Spiezio, Danny O'Connell, and Ray Cullen presented their CWA inspector credentials to Julie Hough on September 13, 2021. Anna Nguyen and Daryl Hudson presented their TSCA credentials to Kenneth Cresap, Lee French, and Carolyn Conners on September 13, 2021. Justin Young, Janosh Wolters, and Bryan Gangwisch presented their RCRA inspector credentials to Thad Dilley and David Spanfelner on September 13, 2021. **Appendix A** contains the sign-in sheet documenting participants for the opening meeting.

Table 2. Facility Contact Information

Name, Title	Phone Number	Email Address
Julie Hough, Site Environmental, Health, and Safety (EHS)	614-783-3075	Julie.A.Hough-1@dupont.com
Kenneth Cresap, EHS Manager	614-312-6247	Ken.S.Cresap@dupont.com
Stephen Irwin, Plant Manager	740-474-0220	Stephen.F.Irwin@dupont.com
Thad Dilley, EHS	740-207-1458	Thadeus.L.Dilley@dupont.com
David Spanfelner, Waste Resources	302-999-5444	David.P.Spanfelner@dupont.com
Lee French, PS&R TSCA Consultant	989-859-6248	Lee.French@dupont.com
Carolyn Connors, Dupont Counsel, DuPont Legal	302-999-2834	Carolyn.G.Connors@dupont.com

1.3 Facility Overview

The DuPont Circleville facility produces specialty resins and film products, some of which are coated or treated (EPA Registry Identification No. 110000381881). According to EPA Enforcement and Compliance History Online (ECHO) database, the facility has the following North American Industry Classification System (NAICS) codes (Table 3):

Table 3. Applicable NAICS Codes

NAICS Code	Description
325211	Plastics Material and Resin Manufacturing
326113	Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing
326199	All Other Plastics Product Manufacturing

According to a site overview provided by DuPont Circleville representatives during the inspection (**Appendix B**), the facility site is located on approximately 450 developed acres along the Scioto River. Plastic film production at the site started in 1954, and there were approximately 530 DuPont employees and 270 full-time contractors at the site at the time of the inspection.

1.3.1 Facility Operations

DuPont Circleville produces different types of plastic films and resins. Specifically, the facility has four main product lines, referred to by their trade names:

- Kapton – polyimide film,
- Vespel – polyimide resin,
- Teflon – polytetrafluoroethylene (PTFE) film, and
- Tedlar – polyvinyl fluoride (PVF) film.

Some of these produced films may undergo processing such as texturizing or coating at the facility. Otherwise, the produced films and resins are generally sent off site for additional

processing into the final end-use articles. In addition to these product lines, the facility has ancillary operations including solvent recovery, power production, heating and cooling, groundwater treatment for use as process water, and wastewater treatment.

The facility also conducted operations for a plastic film product with the trade name Mylar, starting in 1954 and ending in 2001 due to changes in client needs. In 1981, there was a spill in the Mylar process area of 16,000 gallons of 1,1-dichloroethane (1,1- DCA). As a result of the spill, contaminated soil was removed from the site and the facility is currently subject to RCRA corrective action to treat and monitor groundwater for 1,1-DCA. This involved the installation of new monitoring wells. See Section 1.4 for information on fluorocarbon chemical monitoring in the spill area.

Appendix C contains general process descriptions of each of the four active product lines at DuPont Circleville. The description is based on process flow diagrams and verbal descriptions provided by DuPont Circleville staff during the inspection, as well as discussions and observations made during the inspection. **Appendix C** contains company-claimed confidential business information. Descriptions of the wastes and wastewaters produced for each product line are included in Section 2.0 of this report.

1.3.2 Clean Water Act

DuPont discharges to the Scioto River under National Pollutant Discharge Elimination System (NPDES) Permit No. OH0006327 (**Appendix CWA A**). The permit was issued by Ohio EPA, became effective on February 1, 2020, and expires on January 31, 2025. The permit applies to discharges of treated wastewater, treated groundwater, noncontact cooling water (NCCW), and stormwater runoff through one outfall (001) from the DuPont Circleville facility. The permit contains monitoring requirements for perfluorooctanoic acid (PFOA) at Outfall 001. No other fluorocarbon chemical monitoring requirements are included in the permit. In addition to Outfall 001, the permit includes requirements for three internal outfalls (602, 603, and 604), which comingle and discharge through Outfall 001.

In addition to outfalls listed in the permit, DuPont Circleville has three stormwater outfalls (002, 003, and 004) that discharge runoff to areas of the facility property that do not connect to waters of the United States, according to facility representatives. These outfalls are summarized in Table 4.

In summary, the facility biologically treats all wastewater through two aerated lagoons. The South Lagoon is used for the majority of wastewater and the North Lagoon is used for wastewater with high concentrations of organics. The North Lagoon discharges to the South Lagoon and the South Lagoon discharges through Outfall 602. Stormwater and NCCW are comingled with the discharge from Outfall 602 and collectively discharged through Outfall 001. Only one process area at the facility, Vespel, pretreats process wastewater before it is sent to the lagoons. The Vespel pretreatment consists of biological treatment in sequencing batch reactors (SBRs). More detailed descriptions of the treatment and pretreatment processes are included in Section 2.1.

Table 4. DuPont Circleville Outfalls

Outfall	Description	Receiving Water/Point of Discharge
001	Discharge of all combined wastewater, stormwater, and NCCW sources	Scioto River
602	South Lagoon effluent (used for wastewater treatment)	Outfall 001
603	Groundwater remediation system effluent (not active or discharging at time of inspection)	Outfall 001
604	Vespel Resins SBR effluent	Outfall 602
002	Stormwater	Discharges to facility property and infiltrates/evaporates. According to facility representatives, the point of discharge is not connected to a water body.
003	Stormwater	Discharges to facility property and infiltrates/evaporates. According to facility representatives, the point of discharge is not connected to a water body.
004	Stormwater	Discharges to facility property and infiltrates/evaporates. According to facility representatives, the point of discharge is not connected to a water body.

1.3.3 Resource Conservation and Recovery Act

DuPont Circleville is a RCRA large quantity generator (LQG) of hazardous waste (EPA ID No. OHD004287322). Prior to this inspection, the Ohio Environmental Protection Agency conducted a compliance evaluation inspection of the facility on July 25, 2019. The inspection led to a written informal enforcement action. At the time of the July 2019 inspection, DuPont Circleville was operating as a LQG.

1.3.4 Toxic Substances Control Act

DuPont Circleville is a chemical manufacturer and processor as defined under the TSCA. This facility is subject to regulations outlined in several sections of TSCA, including:

- Section 4 (Test Rules).
- Section 5 (Premanufacture Notification, Regulated Actions (Consent Orders, Significant New Use Rules, Exemptions).
- Section 6 (Regulation of Hazardous Chemical Substances).
- Section 7 (Imminent Hazards).
- Section 8 (Reporting and Retention of Information).
- Section 12(b) (Export Notifications).
- Section 13 (Import Certification).

Because all relevant information to the TSCA inspection was claimed as TSCA CBI, the findings from the TSCA inspection are included in a separate TSCA inspection report that is included as

Appendix TSCA A to this multi-media inspection report.

1.4 Fluorocarbon Chemical Characterization

DuPont Circleville manufactures Kapton polyimide film using aqueous fluoropolymer resins and a fluoropolymer processing aid, both purchased from a supplier (CBI redacted). According to the facility's 10/12/2021 response to EPA's request for documents during the inspection, prior to 2013, the supplier made these fluoropolymer materials using PFOA. Since 2013, the supplier has used hexafluoropropylene oxide-dimer acid (HFPO-DA) to produce the fluoropolymer materials purchased by the facility.

DuPont Circleville had conducted multiple fluorocarbon chemical sampling activities at the facility prior to the time of the inspection, including sampling at Outfall 001 (NPDES permit requirement), the Kapton film coating process area sump (internal DuPont sampling), the South Lagoon sediment (internal DuPont sampling), and groundwater at various wells at the site (at the request of EPA Region 5), which are summarized in Table 5. These activities included analysis for PFOA, HFPO-DA, perfluorooctane sulfonic acid (PFOS), and multiple other compounds.

The sampling conducted by the facility at Outfall 001 shows levels of PFOA up to 14 ng/L (based on six samples taken from 2018 to 2021). The one process wastewater sample taken in 2019 from the Kapton film coating process area sump indicated the presence of HFPO-DA at 8,100 ng/L. Facility representatives indicated that, prior to 2019, this sump discharged process wastewater to the aerated lagoons and through Outfall 001. However, facility representatives indicated that the sump was filled with concrete in late 2019 so that it does not collect or discharge wastewater. The Inspection Team confirmed this sump was filled with concrete at the time of the inspection. All wastewater from this process area is currently disposed of off-site to Heritage Thermal Services for incineration. There are no other sumps in that process area.

As shown in Table 5, the facility also conducted PFOA and PFOS sampling of the sediment at 12 locations in the South Lagoon. This sediment sampling showed that these compounds may be present in some areas of the lagoon but are not consistently present. Finally, at the request of EPA Region 5, the facility conducted sampling of the groundwater at 22 wells at the site for 18 fluorocarbon chemicals, using a modified version of EPA Method 537. These samples were taken in July – August 2021 and the preliminary results were shared during the inspection and are summarized in Table 5. The highest number of detections were for perfluoroheptanoic acid (PFHpA), perfluorohexanoic acid (PFHxA), and PFOA. See **Appendix D** for a map of the sampled wells, with wells that have detections of all three PFHpA, PFHxA, and PFOA circled.

Recently, EPA Region 5 has requested the facility to conduct testing for PFOA and PFOS at 20 of the newer monitoring wells that the facility installed as a result of the RCRA corrective action for the 1,1-DCA spill associated with the old Mylar operations (see Section 1.3.1). The findings of this testing showed the highest concentrations of PFOA and PFOS were found in some of the monitoring wells located in the Mylar spill area.

Table 5. Fluorocarbon Chemical Sampling Provided by DuPont Circleville

Matrix	Sample Location	Date of Sampling	Analyte (CASRN)	No. Samples	Result	Notes
Process wastewater	Outfall 001	2018 - 2021	PFOA	6	ND – 14 ng/L	Permit requirement for semiannual monitoring. Two of the six samples were ND, meaning they were <5 ng/L.
Process wastewater	Kapton coating process area sump	11/19/2019	HFPO-DA	1	8,100 ng/L	This process area sump was closed off at the time of the inspection. ND means the sample was <10 ng/L.
	Outfall 001	11/19/2019	HFPO-DA	1	ND	
Sediment	South Lagoon sediment	9/29/2018	PFOA (335-67-1)	12	140 – 390 µg/kg	Facility representatives indicated potential method error for these samples may impact the results. All but one PFOS sample was ND, meaning they were <1.8 to <4.5 µg/kg (the level of detection varies by sample).
		9/29/2018	PFOS (1763-23-1)	12	ND – 7.4 µg/kg	
		2/23/2021	PFOA (335-67-1)	12	ND – 320 µg/kg	Four of the 12 samples were ND, meaning they were <2.6 to <3.1 µg/kg (the level of detection varies by sample).
		2/23/2021	PFOS (1763-23-1)	12	ND – 39J µg/kg	All 12 samples were ND, meaning they were <2.6 to <3.9 µg/kg (the level of detection varies by sample), or below the reporting limit (not specified).
Groundwater	22 wells	July – Aug. 2021	11Cl-PF3OUdS (763051-92-9)	25	ND	All samples were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	9Cl-PF3ONS (756426-58-1)	25	ND	All samples were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	DONA (919005-14-4)	25	ND	All samples were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).

Table 5. Fluorocarbon Chemical Sampling Provided by DuPont Circleville

Matrix	Sample Location	Date of Sampling	Analyte (CASRN)	No. Samples	Result	Notes
		July – Aug. 2021	HFPO-DA	25	ND	All samples were ND, meaning they were <2.3 to <3.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	N-ethyl perfluorooctane sulfonamidoacetic acid (2991-50-6)	25	ND	All samples were ND, meaning they were <2.3 to <3.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	N-methyl perfluorooctane sulfonamidoacetic acid (2355-31-9)	25	ND	All samples were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	Perfluorobutane Sulfonic Acid (375-73-5)	25	ND – 3.9 ng/L	Three samples had detections; all others were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	Perfluorodecanoic Acid (335-76-2)	25	ND – 6.3 ng/L	All except one sample was ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	Perfluorododecanoic Acid (307-55-1)	25	ND – 2.9 ng/L	Two samples had detections; all others were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	Perfluoroheptanoic Acid (375-85-9)	25	ND – 25 ng/L	11 samples had detections; all others were ND, meaning they were <1.7 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	Perfluorohexane Sulfonic Acid (355-46-4)	25	ND	All samples were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	Perfluorohexanoic Acid (307-24-4)	25	ND – 55 ng/L	15 samples had detections; all others were ND, meaning they were <1.7 to <2.0 ng/L (the level of detection varies by sample).

Table 5. Fluorocarbon Chemical Sampling Provided by DuPont Circleville

Matrix	Sample Location	Date of Sampling	Analyte (CASRN)	No. Samples	Result	Notes
		July – Aug. 2021	Perfluorononanoic Acid (375-95-1)	25	ND	All samples were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	Perfluorotetradecanoic Acid (376-06-7)	25	ND	All samples were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	Perfluorotridecanoic Acid (72629-94-8)	25	ND	All samples were ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	Perfluoroundecanoic Acid (2058-94-8)	25	ND – 4.7 ng/L	All except one sample was ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	PFOA (335-67-1)	25	ND – 130 ng/L	14 samples had detections; all others were ND, meaning they were <1.7 to <2.0 ng/L (the level of detection varies by sample).
		July – Aug. 2021	PFOS (1763-23-1)	25	ND – 2.2 ng/L	All except one sample was ND, meaning they were <1.5 to <2.0 ng/L (the level of detection varies by sample).

ND – Non-detect, with the level of detection defined in the notes column.
J – Result is between detection limit and method reporting limit, which are defined in the notes column.

2.0 Field Activities Summary

Lianna Kardeman, Michelle Spiezio, and Danny O'Connell conducted a CWA on-site inspection at DuPont Circleville from September 13-16, 2021. Justin Young and Janosh Wolters conducted a RCRA on-site inspection at DuPont Circleville from September 13-16, 2021. Daryl Hudson conducted a TSCA on-site inspection at DuPont Circleville from September 13-15, 2021. Ray Cullen, Bryan Gangwisch, and Anna Nguyen from EPA Region 5 also participated in portions of the inspection. **Appendix A** contains sign-in sheets documenting participants for the opening meeting.

The Inspection Team inspected process areas, waste and wastewater generation sources, waste and wastewater management and treatment areas, and wastewater discharge and self-monitoring locations. Specific CWA and RCRA areas inspected by the Inspection Team are discussed below. The Inspection Team also collected samples as part of the inspection, and sampling activities are described in detail later in this report. The Inspection Team conducted interviews with DuPont Circleville personnel, reviewed documents, and took photographs as part of the inspection. Inspection photographs are included in **Appendix CWA B** and **Appendix RCRA A**.

2.1 Clean Water Act

As part of the CWA inspection process, the Inspection Team inspected process areas, wastewater generation sources, wastewater management and treatment areas, stormwater management areas, and wastewater discharge and self-monitoring locations. The Inspection Team reviewed facility records, including sewer maps and diagrams, wastewater treatment system schematics, standard operating procedures (SOPs), operation and maintenance (O&M) records, calibration records, sampling and analysis records, monitoring reports, permits, and groundwater monitoring documentation.

In summary, the facility has three sewer systems:

- The sanitary sewer system, which is connected to the Earnhart Hill Regional Water & Sewer District in Circleville OH.
- The process sewer, which conveys wastewater to the aerated lagoons for treatment and discharge through Outfall 001.
- The storm sewer, which conveys stormwater to one of the facility's four stormwater outfalls, Outfalls 001 through 004.

Diagrams of the general wastewater flow, drainage areas associated with each stormwater outfall, and aerated lagoons and Outfall 001 flow are included as **Appendix CWA C**. Note that the Inspection Team discussed this wastewater diagram with facility representatives and learned that the "Non-Contact Cooling" block following the iron removal process should be removed from the diagram.

2.1.1 Utilities

As shown in the diagram in **Appendix CWA C**, the facility's process water comes from groundwater production wells. Groundwater is pumped from these wells and treated by a contractor on site for iron removal prior to storage in a large tank and distribution to the facility process areas. A portion of the treated groundwater may also undergo softening through reverse osmosis (RO) as needed for a subset of operations at the facility. The area of the facility where this treatment occurs is called the

Powerhouse.

The Powerhouse operations also include boilers to produce steam used throughout the facility. Cooling of process water occurs in the process areas, as needed, and not in the Powerhouse. Potable water for toilets and sinks is supplied by the Earnhart Hill Regional Water & Sewer District. Sanitary wastewater from toilets and sinks is conveyed via sanitary sewer off site to the Earnhart Hill Regional Water & Sewer District for treatment and discharge.

2.1.2 Process Areas

The Inspection Team inspected each process area (i.e., operations in the Kapton, Vespel, Teflon, and Tedlar areas), sources of wastewater generation, and wastewater management in each area. In general, each process area has sumps or area tanks to collect wastewater before it is conveyed via process sewer to the aerated lagoons for treatment and discharge. Only the Vespel process area has process wastewater pretreatment (two SBRs) prior to conveyance to the aerated lagoons. Specific information on the sources of wastewater generation in each of these process areas is discussed in the below subsections.

The Inspection Team observed that many of the process area sumps and tanks have the potential to receive wastewater with varying degrees of pollutants, including spills, equipment clean-out wastewater, and general floor washdowns. In each process area, the Inspection Team discussed procedures for discharging of the area sumps and tanks to the aerated lagoons. In general, wastewater from process areas is automatically discharged to the process sewer without testing, based on the facility operators' institutional knowledge that these wastewaters are acceptable for treatment in the aerated lagoons. The facility has controls in place for these routine discharges, including level alarms on the sumps and area tanks that will alert the facility if they fill up at an abnormal rate. Additionally, some of the process area sumps and sewers have total organic carbon (TOC) analyzers with setpoints that will alert the facility if the TOC concentration exceeds the setpoint. These setpoints are based on the amount of TOC the aerated lagoons can treat while maintaining permit requirements.

- The KSR1 and KSR2 analyzers, which are for the Kapton Solvent Recovery area, have a setpoint of 5,100 ppm TOC. The Inspection Team observed the KSR1 analyzer read 1,500 mg/L and the KSR2 analyzer read 150 mg/L on September 15, 2021 (refer to CWA Photos 1 and 2). Facility representatives believed KSR1 was falsely reading high and required maintenance at the time of the inspection. Additionally, the time shown on the KSR2 analyzer was off by one hour at the time of the inspection.
- The K1 analyzer, which is for wastewater from Kapton Building K1 and Teflon, has a setpoint of 600 ppm TOC. The Inspection Team observed the K1 analyzer read 106 mg/L on September 15, 2021, and 185 mg/L on September 16, 2021, at the time of sampling (Sample point SK1) (refer to CWA Photos 3 and 4).
- The K2 analyzer, which is for wastewater from Kapton Buildings K2 and K3, Kapton chemical area building, and Vespel SBR effluent, has a setpoint of 600 ppm TOC. The Inspection Team observed the K2 analyzer read 34 mg/L on September 15, 2021, and 12 mg/L on September 16, 2021, at the time of sampling (Sample point SK2) (refer to CWA Photos 5 and 6). The time shown on the K2 analyzer was off by approximately 1 hour and 40 minutes at the time of the inspection.
- The Tedlar analyzer, which is for wastewater from the Tedlar process area, has a setpoint of

200 ppm TOC. The Inspection Team observed the K2 analyzer read 26 mg/L on September 16, 2021 (refer to CWA Photo 7).

For non-routine wastewater, such as if a spill occurs or equipment must be washed out, either process knowledge or testing is used to determine the disposition of the wastewater to process sewer for treatment in the aerated lagoons, vacuum into holding tanks (referred to as "frac tanks"), or direct disposal off site. Wastewater collected in frac tanks is sampled for pyridine, acetone, TOC and pH before the facility decides if the wastewater can be discharged into the North Lagoon or hauled off site for disposal (refer to CWA Photos 8 and 9). The facility provided records of frac tank testing and disposition for the past three years, which show that the facility routinely sends frac tank wastewater with pH of approximately 4 and TOC ranging from 5,000 up to 27,000 ppm to the North Lagoon. In one instance in September 2020, the wastewater from the frac tank had a TOC concentration of 39,470 ppm. The acetone and pyridine concentration is routinely non-detect or much less than 1 ppm.

Kapton

Information in this section is CBI and has been redacted from this version of the report.

Vespel

Some information in this section is CBI and has been redacted from this version of the report.

The Inspection Team inspected the 20,000-gal wastewater collection tank and the SBRs and discussed their operation with facility representatives (refer to CWA Photos 10 and 11). The facility representatives explained that the SBRs are used to biologically treat for pyridine and acetone, a digestion process that generally takes 5-8 hours or more followed by settling overnight to allow the microorganisms to settle. The SBRs are then manually discharged to the process sewer (and through the K2 TOC analyzer), which goes to the aerated lagoons. Discharge occurs only when the concentration of the pyridine and acetone in the SBRs is confirmed by sampling to be non-detect. Discharge from the SBRs (Outfall 604) averaged approximately 3,000 to 4,000 gal/day in 2020. Phosphoric acid is added to the SBRs as a food source for the microorganisms, generally at a rate of one gallon of phosphoric acid per day during normal operating conditions per the facility's SOP for the SBR system.

The Inspection Team reviewed the SBR wastewater flow diagram, SOP, and the SBR daily operational data sheets, which include SBR feed and discharge times and volume, pyridine and acetone concentrations in the SBRs and feed tank, SBR characteristics (e.g., pH, dissolved oxygen [DO], settleability), and other process control checks.

The Inspection Team sampled the SBRs (Outfall 604); however, since the Vespel process area had been shut down for maintenance since the start of the week, the SBRs were not actively discharging. Facility representatives indicated the wastewater in the SBRs at the time of the inspection had been treated to a point where it could be discharged because the solvent concentrations were zero.

Teflon

Information in this section is CBI and has been redacted from this version of the report.

Tedlar
Information in this section is CBI and has been redacted from this version of the report.

2.1.3 Aerated Lagoons

Refer to **Appendix CWA C** for process flow diagrams of process water at the facility and the aerated lagoons.

The Inspection Team inspected the facility's two aerated lagoons, the North and South Lagoons, used for biological treatment of wastewater (refer to CWA Photos 12 and 13). Wastewater produced at the facility is conveyed via a process sewer system to the lift station preceding the two aerated lagoons. There are two TOC analyzers in the lift station to continuously monitor TOC. From the lift station, the wastewater enters a diversion structure that has automated sluice gates for the North and South lagoons (refer to CWA Photo 14). Normally, wastewater is <115 ppm TOC and is automatically sent to the South Lagoon, where it receives biological treatment and discharges through Outfall 602 to Outfall 001 (refer to CWA Photos 15 and 16). However, if the TOC reading on one of the lift station analyzers is ≥115 ppm, the South Lagoon sluice gate closes and the North Lagoon sluice gate opens, diverting this higher organics concentration wastewater to the North Lagoon. Higher organics concentration wastewater may also be directly added to the North Lagoon from vacuum trucks, which are used to collect this wastewater from various process areas in instances where the wastewater is expected to contain higher than normal concentration organics (e.g., certain equipment washouts, spills).

In the North Lagoon, the high organics concentration wastewater receives extended treatment to reduce TOC; once TOC is reduced, it is pumped to the South Lagoon via the lift station. When not pumping to the lift station, this pump serves as a recycle loop from which TOC is continuously monitored. In the event of a power failure, the sluice gates are set to divert all wastewater to the North Lagoon. The decision of when to pump from the North to the South Lagoon is based on the wastewater level and TOC in the North Lagoon. However, based on the reviewed 2019-2021 daily wastewater reports for the aerated lagoons, the facility appears to transfer contents from the North Lagoon to the South Lagoon with TOC measurements sometimes over 300 ppm in the North Lagoon and often with no observed decline in TOC over the proceeding days. Note, however, that the facility has not experienced an effluent limit exceedance in the past three years.

The facility did not provide an O&M manual or SOP for the aerated lagoons but did provide a written description. The facility monitors pH, DO, TOC, and flow at Outfalls 602 and 001 for evaluating South Lagoon performance. DO, pH, and TOC are also monitored daily for the North Lagoon and lagoon diversion box. If needed, sulfuric acid can be manually added to the lift station to control pH, and FoamTrol can be added to the diversion box to control foaming in the lagoons. The provided description and discussions during the inspection did not address how the facility manages the biology in the aerated lagoons, including process control measures for determining the performance of the biology in treating the organic material in the lagoons.

The Inspection Team sampled the South Lagoon (Outfall 602) and Outfall 001, both of which were actively discharging at the time of the inspection and sampling. Discharge from the South Lagoon is approximately 800,000 gal/day.

2.1.4 Stormwater

The Inspection Team discussed DuPont Circleville's stormwater management, reviewed stormwater drainage maps, the Stormwater Pollution Prevention Plan (SWPPP), and stormwater inspection documentation, and inspected selected stormwater management systems and outfalls. Stormwater at the facility is collected in a series of storm sewers that discharge through one of four outfalls, Outfall 001 through 004, as shown in **Appendix CWA C**. In summary:

- Outfall 001 discharges stormwater from Power operations (e.g., utilities), offices, outdoor storage and staging areas, and the aerated lagoons. Stormwater comes from drainage areas associated with manufacturing operations and storage areas, including rainfall captured in secondary containment and in the outdoor wastewater treatment system. Outfall 001 also discharges treated wastewater and NCCW comingled with the stormwater to the Scioto River.
- Outfall 002 discharges stormwater from Vespel operations and the north end of Kapton operations. Stormwater comes from drainage areas associated with manufacturing operations and storage areas, including rainfall captured in secondary containment. Outfall 002 is located approximately 1,700 ft from the Scioto River and, according to the SWPPP, any discharge from Outfall 002 infiltrates into the soil prior to reaching the Scioto River.
- Outfall 003 discharges stormwater from Tedlar operations, Tedlar parking lot, the south end of Kapton operations, Teflon, and the Gate #2 parking lot. Stormwater comes from drainage areas associated with parking lots, manufacturing operations, and storage areas, including rainfall captured in secondary containment. Outfall 003 is located approximately 6,500 ft from the Scioto River and there is an earthen dam located in the drainage flow path such that, according to the SWPPP, any discharge from Outfall 003 infiltrates into the soil prior to reaching the Scioto River.
- Outfall 004 discharges captured rainwater from a drum storage area secondary containment trench located at the southeast corner of the facility property. Outfall 004 is located approximately 1,500 ft from the Scioto River and, according to the SWPPP, any discharge from Outfall 004 infiltrates into the soil prior to reaching the Scioto River.

In general, stormwater captured in secondary containment is tested based on process area procedures and/or visually inspected for sheen before determining if the stormwater can be discharged to the storm sewer, process sewer, or must be disposed of off site. For example, the Kapton SOP for Pumping Secondary Containment Structures indicates that stormwater in secondary containment at the Kapton Tank Farm must be <400 ppm TOC, <1 ppm acetone, and pH between 6.5 and 9.0 before discharge to the storm sewer to Outfall 001. Testing records are not maintained for these analyses. The facility maintains secondary containment drainage logs for the secondary containment structures identified as having the potential to reach surface waters in the Spill Prevention, Control, and Countermeasure (SPCC) Plan, but these do not contain sampling analysis records.

For the portion of the facility that discharges stormwater to Outfall 001, stormwater is collected in sewers that convey the stormwater to a concrete ditch where it is comingled with NCCW at various points (refer to CWA Photos 17 and 18). This concrete ditch then combines with the discharge from the South Lagoon (Outfall 602) and collectively discharges through Outfall 001 (refer to CWA Photo 19). The facility has a lift station and diversion sluice gate in the concrete ditch upstream of where it combines with the South Lagoon effluent. This sluice gate automatically diverts the

stormwater/NCCW in the ditch to the North Lagoon if pH measurements are outside the permitted range (6.5 – 9 s.u.) or the TOC concentration is ≥ 60 ppm in the lift station. The Inspection Team reviewed the SOP for the sluice gate operation.

Stormwater Outfalls 002 and 003 are drainage ditches that capture stormwater runoff via sheet flow and/or gravity piping. There is an earthen dam in the Outfall 003 drainage ditch to allow for additional infiltration. For Outfall 004, when stormwater accumulates in the drum secondary containment trench, a facility representative will visually inspect the stormwater for sheen and sample for pH (must be between 6.5 and 9 s.u.) and TOC concentration (must be between 0 and 10 ppm) prior to opening the valve and discharging the water to Outfall 004.

The Inspection Team inspected Outfalls 001, 003, and 004. The Inspection Team did not inspect Outfall 002. The Inspection Team observed very low flow in the stormwater/NCCW concrete ditch upstream of Outfall 001 after a minor rain event on September 15, 2021. This flow was not sufficient to reach Outfall 001. The Inspection Team sampled this slowly flowing water from the diversion point in the concrete ditch. The Inspection Team observed that Outfall 003 was a corrugated metal pipe that leads to an open grassy area and was not discharging during the inspection (refer to CWA Photo 20). The Inspection Team observed that the secondary containment trench for Outfall 004 is associated with storage of drums of deicing fluid, sodium hydroxide, oil, and other chemicals. The Inspection Team was unable to locate the discharge point for the containment trench; however, the Inspection Team observed the Outfall 004 discharge location was an open vegetated area and did not observe any flow in the area at the time of the inspection (refer to CWA Photo 21).

2.1.5 Groundwater

DuPont Circleville provided an overview of the site's hydrogeology. The depth to water is approximately 40 feet below ground surface and the groundwater flow direction is generally to the north-northeast.

The facility experienced a spill of 1,1-Dichloroethene (1,1-DCE) in 1981, which resulted in soil excavation and the installation of a groundwater pump and treat system the same year. In 2004, Ohio EPA decided that the facility could cease the pump and treat system and instead implement a monitored natural attenuation (MNA) program with semiannual monitoring. The facility last completed a performance evaluation of the MNA in 2021. The pump and treat system, associated with Outfall 604, was not operating at the time of the inspection.

The facility conducted fluorocarbon chemical sampling of the groundwater in July 2021 through August 2021 at the request of EPA Region 5. The preliminary sampling results were provided by the facility and summarized in Section 1.4.

2.2 Resource Conservation and Recovery Act

Field activities information in this section is CBI and has been redacted from this version of the report.

2.3 Toxic Substances Control Act

Because all relevant information to the TSCA inspection was claimed as TSCA CBI, the findings from the TSCA inspection are included in a separate TSCA inspection report that is included as **Appendix TSCA A** to this multi-media inspection report.

3.0 Sampling Activities and Results

This section summarizes the Inspection Team's sampling activities at the facility, including the analytical results. Both CWA and RCRA samples were taken. CWA samples were taken on Wednesday, September 15, 2021, and Thursday, September 16, 2021. All RCRA samples were taken on Thursday, September 16, 2021.

3.1 Sample Analyses

A summary of the sample analyses relevant to the CWA and RCRA sampling is provided in Table 6. The specific analyses performed for each sample is listed in Section 3.2.

Table 6. Sample Analyses

Statute	Analyses Performed	Analytes
CWA	EPA 537 with Isotope Dilution	Targeted fluorocarbon analyte list: HFPO-Dimer Acid (HFPO-DA) (13252-13-6) Perfluorobutanoate (PFBA) (375-22-4) Perfluoro-n-pentanoic acid (PFPeA) (2706-90-3) Perfluorohexanoic acid (PFHxA) (307-24-4) Perfluoroheptanoic acid (PFHpA) (375-85-9) Perfluorooctanoic acid (PFOA) (335-67-1) Perfluorononanoic acid (PFNA) (375-95-1) Perfluorodecanoic acid (PFDA) (335-76-2) Perfluoroundecanoic acid (PFUnA) (2058-94-8) Perfluorododecanoic acid (PFDoA) (307-55-1) Perfluorotridecanoic acid (PFTriA) (72629-94-8) Perfluorotetradecanoic acid (PFTA) (376-06-7) Perfluorobutanesulfonic acid (PFBS) (375-73-5) Perfluorohexanesulfonic acid (PFHxS) (355-46-4) Perfluorooctanesulfonic acid (PFOS) (1763-23-1) Perfluorooctanesulfonamide (PFOSA) (754-91-6) PFESA Byproduct 1 (29311-67-9) PFESA Byproduct 2 (749836-20-2) Perfluoro-3-oxabutanoic acid (PFFMOAA) (674-13-5) Perfluoro-3,5-dioxahexanoic acid (PFO2HxA) (39492-88-1) Perfluoro-3,5,7-trioxaoctanoic acid (PFO3OA) (39492-89-2)
CWA	EPA SOP for non-targeted fluorocarbon chemicals	Non-targeted fluorocarbon chemicals
RCRA	EPA 537 with Isotope Dilution	Same targeted fluorocarbon analyte list as CWA
RCRA	EPA 1010A	Flash Point
RCRA	EPA 9040C	pH
RCRA	EPA 6020B/7470A Metals	Aluminum Antimony Arsenic Barium Beryllium Cadmium

Table 6. Sample Analyses

Statute	Analyses Performed	Analytes
		Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc
RCRA	EPA 1311/6020B/7470A Metals	Metals: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver
RCRA	EPA 1311/8260C Semivolatile Organic Compounds (SVOCs)	1,1-Dichloroethene 1,2-Dichloroethane 2-Butanone Benzene Carbon tetrachloride Chlorobenzene Chloroform Tetrachloroethene Trichloroethene Vinyl chloride
RCRA	EPA 1311/8270D Volatile Organic Compounds (VOCs)	1,4-Dichlorobenzene 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 2,4-Dinitrotoluene 2-Methylphenol 4-Methylphenol Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene

Table 6. Sample Analyses

Statute	Analyses Performed	Analytes
		Pentachlorophenol Pyridine

3.2 Sampling Locations

Table 7 summarizes field sampling activities, including the sample locations and observations. A copy of the chain of custody forms for these samples is provided in **Appendix E**. Pertinent photographs from the sampling activities are provided in **Appendix CWA B** and **Appendix RCRA A**.

For the CWA samples, a trip blank and field blank were taken. The Eurofins lab prepared the trip blank, which was shipped with the sample bottles from the lab, remained in the coolers for the entire trip, and shipped back to the lab for analysis without being opened. The Eurofins lab provided fluorocarbon chemical-free water for the field blank, which was transferred into sample bottles during the sampling event.

Table 7. Sample Locations

Statute	Sample ID	Date and Time	Sampler	Sampling Point Location	Sampling Method and Observations	Relevant Photos	Analyses Performed
CWA	SWNCCW	9/15/2021 at 09:35CDT	Danny O'Connell and Michelle Spiezio	Open concrete trench conveying stormwater and NCCW to Outfall 001	Grab sample taken directly into sample containers held by sampler or affixed a to telescoping rod dipped into the water in the concrete trench. Flow in the trench was very slow at the time of sampling. Sample was clear liquid with a slight brown tint and no visible solids.	CWA Photos 22 and 23	Targeted and non-targeted fluorocarbon chemicals
CWA	PW32	9/16/2021 at 08:35 CDT	Danny O'Connell and Michelle Spiezio	Groundwater production well 3 (actively used for process water at the facility)	Grab sample taken directly from a tap on the well pump into sample containers held by sampler. Tap was flushed for approximately three minutes before sample was taken. Sample was clear liquid with a slight brown tint and no visible solids.	CWA Photos 24 and 25	Targeted and non-targeted fluorocarbon chemicals
CWA	PW3	9/16/2021 at 08:37 CDT	Danny O'Connell and Michelle Spiezio	Groundwater production well 3 (actively used for process water at the facility)	Duplicate of PW32.	CWA Photos 24 and 26	Targeted and non-targeted fluorocarbon chemicals
CWA	VSBR	9/16/2021 at 12:23 CDT	Danny O'Connell and Michelle Spiezio	Outfall 604, Vespel SBR	Grab sample taken directly into sample containers affixed to a telescoping rod dipped into the top layer of wastewater in the SBR. Since Vespel was not operating during the inspection, the SBRs were not discharging; however, sample was taken when wastewater in the SBR was of discharge quality. Sample was brownish liquid with a small amount of visible brown solids.	CWA Photos 27 and 28	Targeted and non-targeted fluorocarbon chemicals

Table 7. Sample Locations

Statute	Sample ID	Date and Time	Sampler	Sampling Point Location	Sampling Method and Observations	Relevant Photos	Analyses Performed
CWA	602	9/16/2021 at 12:52 CDT	Danny O'Connell and Michelle Spiezio	Outfall 602, South Lagoon concrete discharge flume	Grab sample taken directly into sample containers affixed to a telescoping rod dipped into the water flowing through the concrete discharge flume. Flow through the flume was moderate and constant during the time of sampling. Sample was clear liquid with a slight brown tint and no visible solids.	CWA Photos 29 and 30	Targeted and non-targeted fluorocarbon chemicals
CWA	001	9/16/2021 at 13:17 CDT	Danny O'Connell and Michelle Spiezio	Outfall 001 concrete discharge flume	Grab sample taken directly into sample containers affixed to a telescoping rod dipped into the water flowing through the concrete discharge flume. Flow through the flume was fast and constant during the time of sampling. Extra sample volume for laboratory matrix interference analyses was taken at this sample point. Sample was clear liquid with a slight brown tint and no visible solids.	CWA Photos 31 and 32	Targeted and non-targeted fluorocarbon chemicals
CWA	SK1	9/16/2021 at 13:56 CDT	Danny O'Connell and Michelle Spiezio	K-1 process sewer collection point (process sewer for Kapton Building K1 and Teflon)	Grab sample taken directly into sample containers affixed to a telescoping rod dipped into the water flowing from the K-1 process sewer into the sewer collection point. Flow from the K-1 process sewer was slow and constant during the time of sampling. Sample was clear liquid with no visible tint or solids.	CWA Photos 33 and 34	Targeted and non-targeted fluorocarbon chemicals

Table 7. Sample Locations

Statute	Sample ID	Date and Time	Sampler	Sampling Point Location	Sampling Method and Observations	Relevant Photos	Analyses Performed
CWA	SK2	9/16/2021 at 14:07 CDT	Danny O'Connell and Michelle Spiezio	K-2 process sewer collection point (process sewer for Kapton Buildings K2 and K3, Kapton Chemical storage building, and Vespel SBR effluent)	Grab sample taken directly into sample containers affixed to a telescoping rod dipped into the water flowing from the K-2 process sewer into the sewer collection point. Flow from the K-2 process sewer was moderate and constant during the time of sampling. Sample was clear liquid with settleable fine black solids.	CWA Photos 35 and 36	Targeted and non-targeted fluorocarbon chemicals
CWA	Field Blank	9/16/2021 at 13:44 CDT	Danny O'Connell	Field Blank	Fluorocarbon chemical-free water provided by Eurofins. Transferred in the area of the K-1 process sewer collection point.	CWA Photos 37 and 38	Targeted and non-targeted fluorocarbon chemicals
CWA	Trip Blank	n/a	n/a	Trip Blank	Fluorocarbon chemical-free water provided by Eurofins. Trip blank remains in cooler unopened during the entire trip.	n/a	Targeted fluorocarbon chemicals
RCRA	SP-1	9/16/2021 at 09:33 CDT	Janosh Wolters	Field Blank	Fluorocarbon chemical-free water provided by Eurofins. Transferred in the parking lot of DuPont Circleville.	n/a	Targeted fluorocarbon chemicals, Total Metals (Target Analyte List), TCLP SVOCs, TCLP VOCs

Table 7. Sample Locations

Statute	Sample ID	Date and Time	Sampler	Sampling Point Location	Sampling Method and Observations	Relevant Photos	Analyses Performed
RCRA	SP-2	9/16/2021 at 10:23 CDT	Janosh Wolters	Vespel solvent recycler basement tank	Grab sample taken directly from sample tap into sample containers held by sampler. Tap was flushed prior to sample being taken. Sample was clear liquid and no visible solids.	0033	Targeted fluorocarbon chemicals, Total Metals (Target Analyte List), TCLP SVOCs, TCLP VOCs, Flashpoint
RCRA	SP-3	9/16/2021 at 10:36 CDT	Janosh Wolters	Duplicate of SP-2	Grab sample taken directly from sample tap into sample containers held by sampler. Tap was flushed prior to sample being taken. Sample was clear liquid and no visible solids.	0035	Targeted fluorocarbon chemicals, Total Metals (Target Analyte List), TCLP SVOCs, TCLP VOCs, Flashpoint
RCRA	SP-4	9/16/2021 at 11:30 CDT	Janosh Wolters	Equipment Blank	Fluorocarbon chemical-free water provided by Eurofins. Transferred in the area of tanker trailer LT-1625.	0038	Targeted fluorocarbon chemicals, Total Metals (Target Analyte List), TCLP Semivolatiles, TCLP Volatiles
RCRA	SP-5	9/16/2021 at 11:33 CDT	Janosh Wolters	Tanker trailer LT-1625	Grab sample taken directly from tanker trailer LT-1625 using a coliwasa to allow for a representative sample of all levels of the tank. Sample was black liquid with flakey pea sized visible solids.	0039	Targeted fluorocarbon chemicals, Total Metals (Target Analyte List), TCLP SVOCs, TCLP VOCs, Flashpoint

Table 7. Sample Locations

Statute	Sample ID	Date and Time	Sampler	Sampling Point Location	Sampling Method and Observations	Relevant Photos	Analyses Performed
RCRA	SP-6	9/16/2021 at 12:52 CDT	Janosh Wolters	Equipment Blank	Fluorocarbon chemical-free water provided by Eurofins. Transferred in the area of Frac Tank RT00030.	n/a	Targeted fluorocarbon chemicals, Total Metals (Target Analyte List), TCLP SVOCs, TCLP VOCs
RCRA	SP-7	9/16/2021 at 12:57 CDT	Janosh Wolters	Frac tank RT00030	Grab sample taken directly from tanker trailer using a coliwasa to allow for a representative sample of all levels of the tank. Sample was black liquid with no visible solids.	0041	Targeted fluorocarbon chemicals, Total Metals (Target Analyte List), TCLP SVOCs, TCLP VOCs, Flashpoint

3.3 Results

This section includes discussion of the analytical results of the samples listed in Table 7.

3.3.2 Clean Water Act

Results for the targeted and non-targeted fluorocarbon chemical analyses are described below.

Quality Control Samples

The sample results for the field blank and the trip blank were below the reporting limit for all targeted fluorocarbon analytes. For the targeted fluorocarbon chemical analysis, the laboratory also conducted analyses on two method blanks and two laboratory control samples (LCS). In the method blanks, all fluorocarbon analytes were below the reporting limit and the percent recoveries for all fluorocarbon analytes were within control limits. For both laboratory control samples, the percent recovery was significantly below control limits for PFESA Byproduct 1. The results for this analyte are qualified with a *- in Table 10 through Table 12. The laboratory case narrative indicates the results for PFESA Byproduct 1 should therefore be considered "advisory." The laboratory also conducted a matrix spike (MS) and matrix spike duplicate (MSD) analysis, using extra sample volume taken at sampling point 001. The percent recovery was outside of control limits for six analytes. These samples are denoted by the qualifier F1 in Table 11. However, as described in the case narrative "This sample was re-extracted within the required holding time and the recovery for a target analyte(s) in the laboratory control spike sample(s) is within the QC acceptance limits. However, recovery for the labeled isotope(s) in the sample were outside of the QC acceptance limits."

For the non-targeted fluorocarbon chemical analysis, the laboratory ran solvent blanks before and after the field samples were analyzed to identify systematic contamination. One potential fluorocarbon chemical impurity was identified in all samples and is excluded from the presented results. No other quality concerns were identified.

Based on ERG's review of the available quality control data, the analytical data provided by the laboratories are acceptable for use in this report, except for the targeted analysis results for the analyte PFESA Byproduct 1 due to the low percent recoveries in the LCS, MS, and MSD analyses.

Additional discussion on quality assurance and quality control analyses is included in **Appendix F**.

Field Sample Results for Targeted Fluorocarbon Chemicals

The full results for the targeted fluorocarbon chemical analysis can be found in the laboratory report included as Appendix CWA D; this section presents a summary of the results. Table 10, Table 11, and Table 12 present the results of the fluorocarbon chemical analyses and the associated reporting limits. Reporting limits may be elevated due to dilutions, which are required due to the presence of elevated levels of target analytes. The permit contains a monitoring requirement for PFOA but does not include numeric limits for any fluorocarbon chemical to which the sampling results can be compared. Ohio EPA has drinking water action limits of 70

ppt for PFOA, 70 ppt for PFOS, 700 ppt for HFPO-DA, 140,000 ppt for PFBS, 140 ppt for PFHxS, and 21 ppt for PFNA.[1] However, according to the permit factsheet, the receiving water for the facility, the Scioto River, is not designated for drinking water.

A summary of the number of fluorocarbon chemical detections per sample point is listed in Table 8. There were no fluorocarbon chemical detections in the groundwater that is used for process water at the facility, corresponding to samples PW32 and PW3 (duplicates). However, fluorocarbon chemical were detected in all other samples taken at the facility. The samples with the most fluorocarbon chemical detections, sample numbers SWNCCW and SK1, also had the highest concentrations of fluorocarbon chemicals, as shown in Table 10 and Table 11. SWNCCW corresponds to stormwater runoff and non-contact cooling water that is comingled in a concrete ditch that discharges without treatment through Outfall 001. The water in this ditch did not reach Outfall 001 at the time of sampling due to low flow in the ditch. SK1 corresponds to equipment wash water and floor drains from Kapton Building K-1 and NCCW and floor drains in the Teflon process area. The process wastewater at SK1 follows the process sewer to the aerated lagoons for treatment.

Table 8. Number of Targeted Fluorocarbon Chemicals Detected for Each CWA Sample

Sample Number	Sample Location	Number of Targeted Fluorocarbon Chemicals Detected
SWNCCW	Open concrete trench conveying stormwater and NCCW to Outfall 001 (the water did not reach Outfall 001 at the time of sampling)	13
PW32	Groundwater production well 3 (actively used for process water at the facility)	0
PW3	Duplicate of PW32	0
VSBR	Outfall 604, Vespel SBR	8
602	Outfall 602, South Lagoon concrete discharge flume	9
001	Outfall 001 concrete discharge flume	10
SK1	K-1 process sewer collection point (process sewer from Kapton and Teflon)	12
SK2	K-2 process sewer collection point (process sewer from Kapton and Vespel SBRs)	6
Field Blank	Field Blank	0
Trip Blank	Trip Blank	0

A summary of the number of samples in which each targeted fluorocarbon chemical was detected is provided in Table 9. This summary excludes the Trip Blank and Field Blank, for which there were no detections. Excluding the two groundwater samples, six fluorocarbon chemical from the targeted list were found in all of the remaining six samples taken at the facility. These are PFMOAA, PFBA, PFHpA, PFHxA, PFOA, and PFPeA. The facility does not currently and has not historically manufactured, processed, or used these compounds except for

[1] Ohio PFAS Action Levels are available at: https://epa.ohio.gov/pfas#1843453314-public-drinking-water

PFOA, which was formerly present as an impurity in monomers used at the facility prior to 2013. The company that manufactures these monomers has since switched from PFOA to HFPO-DA as a processing aid for these monomers. HFPO-DA was detected in one sample for stormwater and NCCW (sample SWNCCW). None of the compounds listed in Table 9 through Table 12 are listed in the facility's NPDES permit apart from PFOA, which has monitoring requirements at Outfall 001.

Table 9. Number of Detections per Targeted Fluorocarbon Analyte in CWA Samples [a]

Analyte	Number of Detections
HFPO-DA	1 of 8 samples
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	0 samples
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	0 samples
Perfluoro-2-methoxyacetic acid (PFMOAA)	6 of 8 samples [b]
Perfluorobutanesulfonic acid (PFBS)	0 samples
Perfluorobutanoic acid (PFBA)	6 of 8 samples [b]
Perfluorodecanoic acid (PFDA)	5 of 8 samples
Perfluorododecanoic acid (PFDoA)	3 of 8 samples
Perfluoroheptanoic acid (PFHpA)	6 of 8 samples [b]
Perfluorohexanesulfonic acid (PFHxS)	0 samples
Perfluorohexanoic acid (PFHxA)	6 of 8 samples [b]
Perfluorononanoic acid (PFNA)	5 of 8 samples
Perfluorooctanesulfonamide (PFOSA)	0 samples
Perfluorooctanesulfonic acid (PFOS)	0 samples
Perfluorooctanoic acid (PFOA)	6 of 8 samples [b]
Perfluoropentanoic acid (PFPeA)	6 of 8 samples [b]
Perfluorotetradecanoic acid (PFTA)	2 of 8 samples
Perfluorotridecanoic acid (PFTriA)	2 of 8 samples
Perfluoroundecanoic acid (PFUnA)	4 of 8 samples
PFESA Byproduct 1	0 samples [c]
PFESA Byproduct 2	0 samples

a – The analysis in this table is based on the eight non-blank samples taken at the facility and therefore excludes the Field Blank and Trip Blank.

b – These analytes were detected in all samples except those taken of the facility's groundwater.

c – The results for this analyte are not acceptable for use, see Quality Control Samples discussion.

Table 10. Summary of Targeted Fluorocarbon Chemical Sample Results for CWA Samples SWNNCW, PW32, PW3, and VSBR

Analyte	Value (ng/L)							
	SWNCCW		PW32		PW3		VSBR	
	Result	Reporting Limit	Result	Reporting Limit	Result	Reporting Limit	Result	Reporting Limit
HFPO-DA	240	2.9	ND	2.7	ND	2.9	ND	2.6
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	ND	1.9	ND	1.8	ND	1.9	ND	1.7
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	ND	1.9	ND	1.8	ND	1.9	ND	1.7
Perfluoro-2-methoxyacetic acid (PFMOAA)	2.1	1.9	ND	1.8	ND	1.9	35	1.7
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ND	1.8	ND	1.9	ND	1.7
Perfluorobutanoic acid (PFBA)	190	4.8	ND	4.6	ND	4.8	36	4.3
Perfluorodecanoic acid (PFDA)	22	1.9	ND	1.8	ND	1.9	1.8	1.7
Perfluorododecanoic acid (PFDoA)	32	1.9	ND	1.8	ND	1.9	ND	1.7
Perfluoroheptanoic acid (PFHpA)	83	1.9	ND	1.8	ND	1.9	18	1.7
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ND	1.8	ND	1.9	ND	1.7
Perfluorohexanoic acid (PFHxA)	770	19	ND	1.8	ND	1.9	67	1.7
Perfluorononanoic acid (PFNA)	11	1.9	ND	1.8	ND	1.9	3.2	1.7
Perfluorooctanesulfonamide (PFOSA)	ND	1.9	ND	1.8	ND	1.9	ND	1.7
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ND	1.8	ND	1.9	ND	1.7
Perfluorooctanoic acid (PFOA)	560	19	ND	1.8	ND	1.9	30	1.7
Perfluoropentanoic acid (PFPeA)	1,100	19	ND	1.8	ND	1.9	45	1.7
Perfluorotetradecanoic acid (PFTA)	7.6	1.9	ND	1.8	ND	1.9	ND	1.7
Perfluorotridecanoic acid (PFTriA)	7.2	1.9	ND	1.8	ND	1.9	ND	1.7
Perfluoroundecanoic acid (PFUnA)	14	1.9	ND	1.8	ND	1.9	ND	1.7
PFESA Byproduct 1	ND *-	1.9	ND *-	1.8	ND *-	1.9	ND *-	1.7
PFESA Byproduct 2	ND	1.9	ND	1.8	ND	1.9	ND	1.7

ND – Analyte not detected.
Qualifiers:
*- LCS and/or LCSD is outside acceptance limits, low biased.
*+ LCS and/or LCSD is outside acceptance limits, high biased.
F1 MS and/or MSD recovery exceeds control limits.
F2 MS/MSD RPD exceeds control limits.

Table 11. Summary of Targeted Fluorocarbon Chemical Sample Results for CWA Samples 602, 001, SK1, and SK2

Analyte	Value (ng/L)							
	602		001		SK1		SK2	
	Result	Reporting Limit	Result	Reporting Limit	Result	Reporting Limit	Result	Reporting Limit
HFPO-DA	ND	2.4	ND	2.5	ND	2.4	ND	2.4
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	ND	1.6	ND F1 *+	1.7	ND	1.6	ND	1.6
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	ND	1.6	ND F1 *+	1.7	ND	1.6	ND	1.6
Perfluoro-2-methoxyacetic acid (PFMOAA)	11	1.6	22	1.7	88	1.6	22	1.6
Perfluorobutanesulfonic acid (PFBS)	ND	1.6	ND	1.7	ND	1.6	ND	1.6
Perfluorobutanoic acid (PFBA)	31	4	44	4.2	110	4.1	13	4
Perfluorodecanoic acid (PFDA)	6.4	1.6	9.6	1.7	47	1.6	ND	1.6
Perfluorododecanoic acid (PFDoA)	ND	1.6	1.7	1.7	30	1.6	ND	1.6
Perfluoroheptanoic acid (PFHpA)	13	1.6	17	1.7	61	1.6	6.1	1.6
Perfluorohexanesulfonic acid (PFHxS)	ND	1.6	ND	1.7	ND	1.6	ND	1.6
Perfluorohexanoic acid (PFHxA)	11	1.6	17 F1	1.7	40	1.6	28	1.6
Perfluorononanoic acid (PFNA)	5.5	1.6	7.5	1.7	77	1.6	ND	1.6
Perfluorooctanesulfonamide (PFOSA)	ND	1.6	ND F1 *+	1.7	ND	1.6	ND	1.6
Perfluorooctanesulfonic acid (PFOS)	ND	1.6	ND	1.7	ND	1.6	ND	1.6
Perfluorooctanoic acid (PFOA)	13	1.6	19	1.7	22	1.6	9.5	1.6
Perfluoropentanoic acid (PFPeA)	45	1.6	65 *+	1.7	150	1.6	18	1.6
Perfluorotetradecanoic acid (PFTA)	ND	1.6	ND	1.7	9.1	1.6	ND	1.6
Perfluorotridecanoic acid (PFTriA)	ND	1.6	ND	1.7	31	1.6	ND	1.6
Perfluoroundecanoic acid (PFUnA)	1.7	1.6	3.3	1.7	95	1.6	ND	1.6
PFESA Byproduct 1	ND *-	1.6	ND F2 F1 *-	1.7	ND *-	1.6	ND *-	1.6
PFESA Byproduct 2	ND	1.6	ND F1 *+	1.7	ND	1.6	ND	1.6

ND – Analyte not detected.
Qualifiers:
*- LCS and/or LCSD is outside acceptance limits, low biased.
*+ LCS and/or LCSD is outside acceptance limits, high biased.
F1 MS and/or MSD recovery exceeds control limits.
F2 MS/MSD RPD exceeds control limits.

Table 12. Summary of Targeted Fluorocarbon Chemical Sample Results for CWA Samples Field Blank and Trip Blank

Analyte	Value (ng/L)			
	Field Blank		Trip Blank	
	Result	Reporting Limit	Result	Reporting Limit
HFPO-DA	ND	2.8	ND	2.6
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	ND	1.8	ND	1.7
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	ND	1.8	ND	1.7
Perfluoro-2-methoxyacetic acid (PFMOAA)	ND	1.8	ND	1.7
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ND	1.7
Perfluorobutanoic acid (PFBA)	ND	4.6	ND	4.3
Perfluorodecanoic acid (PFDA)	ND	1.8	ND	1.7
Perfluorododecanoic acid (PFDoA)	ND	1.8	ND	1.7
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ND	1.7
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ND	1.7
Perfluorohexanoic acid (PFHxA)	ND	1.8	ND	1.7
Perfluorononanoic acid (PFNA)	ND	1.8	ND	1.7
Perfluorooctanesulfonamide (PFOSA)	ND	1.8	ND	1.7
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ND	1.7
Perfluorooctanoic acid (PFOA)	ND	1.8	ND	1.7
Perfluoropentanoic acid (PFPeA)	ND	1.8	ND	1.7
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ND	1.7
Perfluorotridecanoic acid (PFTriA)	ND	1.8	ND	1.7
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ND	1.7
PFESA Byproduct 1	ND *-	1.8	ND *-	1.7
PFESA Byproduct 2	ND	1.8	ND	1.7

ND – Analyte not detected.
Qualifiers:
*- LCS and/or LCSD is outside acceptance limits, low biased.
*+ LCS and/or LCSD is outside acceptance limits, high biased.
F1 MS and/or MSD recovery exceeds control limits.
F2 MS/MSD RPD exceeds control limits.

Field Sample Results for Non-Targeted Fluorocarbon Chemical Analysis

The full results for the non-targeted analysis can be found in the laboratory report included as Appendix CWA E; this section presents a summary of the results. Table 13 contains a summary of the number of fluorocarbon chemical compounds found in one or more samples during the non-targeted analysis. The laboratory analyst also tentatively identified chlorinated organic chemicals that are present in relatively higher abundance in many of the samples along with the fluorocarbon chemicals (note that this is not a comprehensive analysis of all chlorinated compounds). In summary, a total of 802 features in the fluorocarbon and chlorinated categories and 817 features in the non-fluorocarbon category were identified in the samples.

Table 13. Summary of Compound Identifications from Non-Targeted Analysis

Category [a]	Total	Present > Reporting Limit [b]	<Reporting Limit [c]	Contaminated [d]
Targeted fluorocarbon	23	22	1	0
Known fluorocarbon	0	0	0	0
Likely fluorocarbon	16	14	1	1
FM ID fluorocarbon	36	32	4	0
FM Potential fluorocarbon	19	15	4	0
Unknown fluorocarbon	694	490	198	6
Chlorinated (non- fluorocarbon)	14	14	0	0
Total All Fluorocarbon and Chlorinated Categories	**802**	**587**	**208**	**7**
Additional non-fluorocarbon, non-chlorinated	817	555	255	7

a - Targeted – Included in Eurofins quantitated list. Known – Examined by the laboratory analyst and accepted as identified. Likely – Confident analyte is fluorocarbon with some verification by analyst. FM ID – Identified by FluoroMatch software as a fluorocarbon compound; no additional verification by analyst. FM Potential – Identified by FluoroMatch software as a likely fluorocarbon compound; no additional verification by analyst. Unknown – Probably fluorocarbon based on negative defect but no other information. Chlorinated (non- fluorocarbon) – Chlorinated non- fluorocarbon compounds identified by analyst.
b – At least one sample is greater than the reporting limit.
c – All samples are less than the reporting limit.
d – Prevalent instrument blank contamination.

The number of fluorocarbon chemicals identified varied by sample location, as shown in Figure 1. Most samples have a mix of compounds with the number of analytes ranging from about 60 in groundwater production well 3 (sample PW32) to 479 in Outfall 604 (sample VSBR). The facility's NPDES permit only has monitoring requirements for PFOA at Outfall 001.

The relative abundance of each category of fluorocarbon and chlorinated compounds is depicted in Figure 2. Assuming that peak area translates equally to concentrations among analytes, the chlorinated compounds and the analytes in the unknown fluorocarbon chemical category appear to add significant abundance to the total chemical load in most of the samples. While the sample from the open concrete trench conveying stormwater and NCCW to Outfall 001 (sample SWNCCW) is dominated by the targeted fluorocarbon chemicals, all samples have additional peak area from other identified and unidentified fluorocarbon chemicals.

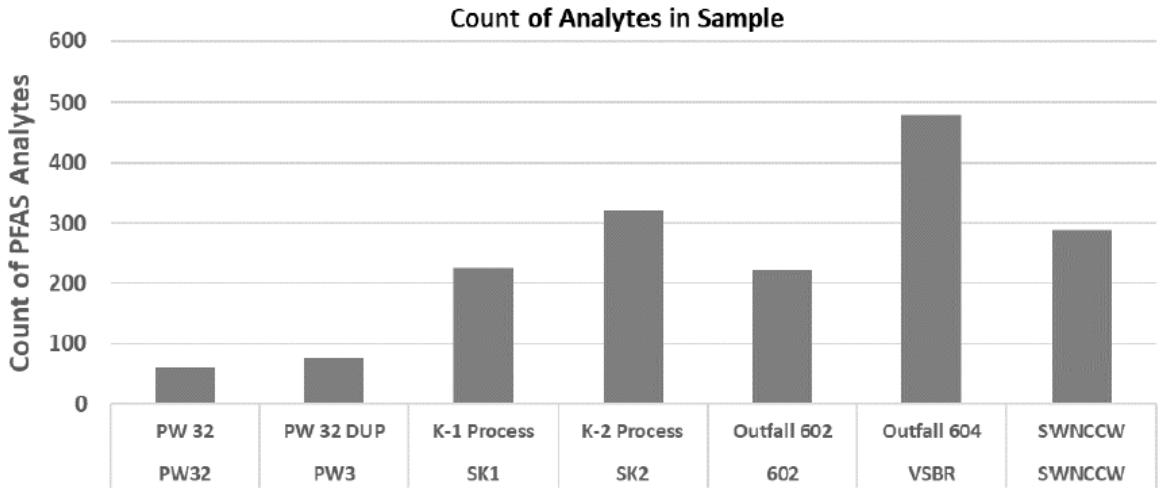


Figure 1. Number of Fluorocarbon Analytes Counted in Each Samples (includes Targeted, Known, FM ID, Likely, FM Potential, and Unknown categories)

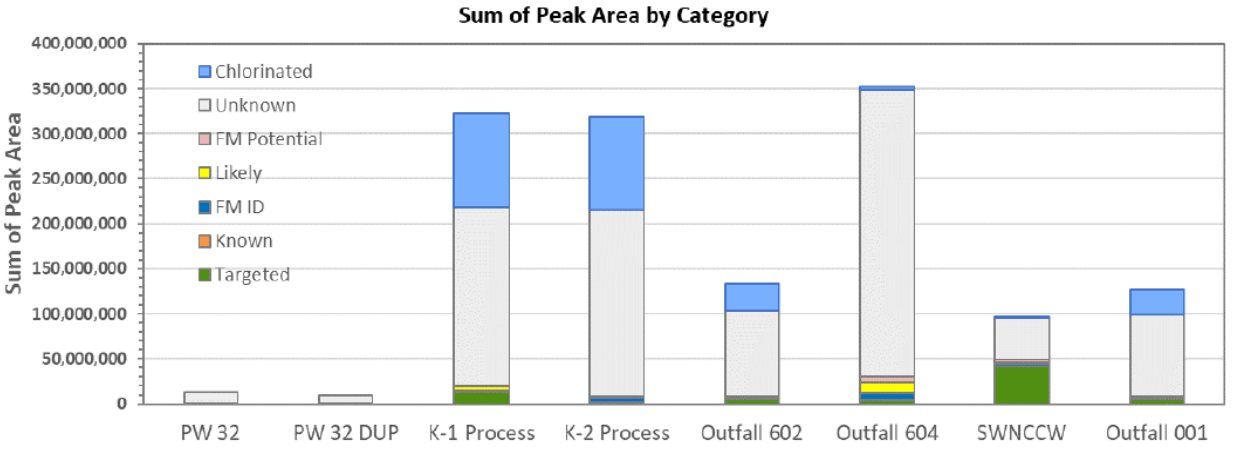


Figure 2. Total Abundance of Fluorocarbon and Chlorinated Analytes by Samples

3.3.3 Resource Conservation and Recovery Act

Results for the targeted fluorocarbon chemicals, total metals (Target Analyte List), Toxicity Characteristic Leaching Procedure (TCLP) SVOCs, TCLP VOCs, and flashpoint analyses are described below.

Quality Control Samples

The sample results for the trip blank were below the reporting limit for all analytes. All equipment blanks were below the reporting limit for all analytes. Field blank results (SP-1) exceeded the reportable limits for pyridine, calcium, and sodium. All equipment blanks were below the reporting limit for all analytes.

The laboratory reported the following quality control issues:

Fluorocarbon Chemicals
The laboratory observed poor recoveries for PS Acid with all samples. The results reported for PS Acid should be considered estimated for all samples. Reporting limits were raised due to the interference from the sample matrix for SP-5 and SP-7. The laboratory also conducted a LCS from SP-5 and the results for this sample were outside of QC limits for both the injection and re-injection. The only values reported are from the initial injection of the sample. The same issue occurred with sample SP-7. In addition, samples SP-4, SP-5, SP-7 all had recovery for the listed isotopes outside the QC acceptance limits.

Based on ERG's review of the available quality control data, the analytical data provided by the laboratory are acceptable for use in this report.

Additional discussion on the laboratory's quality assurance and quality control analyses is included in **Appendix F**.

Metals, TCLP SVOCs, TCLP VOCs
Method 7470A (mercury) for samples SP-1, SP-2, SP-3, and SP-7 were analyzed outside of the analytical holding time due to laboratory error. Method 7470A and Method 6020B require samples to be preserved to a pH of <2. SP-5 was received with insufficient preservation at a pH of 6. In addition, SP-5 was diluted due to the nature of the sample matrix and elevated reporting limits were provided. No additional analytical or quality issues were noted for metals.

SP-5 was diluted due to foaming at the time of purging during the original analysis for both Method 8260C and Method 8270D. Elevated reporting limits were provided for Method 82060C. For Method 8270D, surrogate recoveries were below the calibration range and were not reported, but elevated reporting limits were provided. No additional analytical or quality issues were noted for the SVOC and VOC analyses.

Based on ERG's review of the available quality control data, the analytical data provided by the laboratory are acceptable for use in this report.

Additional discussion on the laboratory's quality assurance and quality control analyses is included in **Appendix F.**

Field Sample Results for Targeted Fluorocarbon Chemicals
Table 14, Table 15, and Table 16 present the results of the analyses and the associated reporting limits. Reporting limits may be elevated due to dilution, which was required due to the presence of elevated levels of target analytes.

A summary of the number of fluorocarbon chemical detections from the targeted list per sample point is listed in Table 14. Fluorocarbon chemicals were detected in all other samples taken at the facility. SP-5 had the most PFAS detections. SP-5 was taken from tanker trailer LT-1625 which holds material that is generated in the Kapton process area. If the material cannot be sent

directly to one of the KSR units on-site, the material is stored in tanker trailers until it is able to be run through a KSR unit. SP-2 and SP-3 were taken from the solvent recovery basement tank located in the Vespel process area. The material is then sent through the wastewater treatment plant. Specifically, the basement tank material is sent to the facility's SBR's which are eventually sent to the facility's discharge lagoon's.

Table 14. Number of Targeted Fluorocarbon Chemicals Detected for Each RCRA Sample

Sample Number	Sample Location	Number Detected
SP-1	PFAS-free water provided by Eurofins. Transferred in the parking lot of DuPont Circleville.	0
SP-2	Vespel solvent recycler basement tank	13
SP-3	Duplicate of SP-2	6
SP-4	Equipment blank taken next to tanker trailer LT-1625	0
SP-5	Tanker trailer LT-1625	5
SP-6	Equipment blank taken next to frac Tank RT00030	0
SP-7	Frac Tank RT00030	4
Trip Blank	Trip Blank	0

A summary of the number of samples in which each fluorocarbon chemical was detected is provided Table 15. This summary excludes the Trip Blank and Field Blanks, for which there were no detections. PFAS were found in all of the four samples taken at the facility. These are PFMOAA, PFBA, PFDA, PFDoA, PFHpA, PFHxA, PFOA, PFOA, PFPeA, PFTA, PFTriA, PFUnA, and PFMOAA. The source of these compounds is unknown; however, PFOA was formerly present as an impurity in monomers used at the DuPont facilities. The company that manufactures these monomers has since switched from PFOA to HFPO-DA as a processing aid for these monomers. HFPO-DA was not detected in any samples.

Table 15. Number of Detections per Targeted Fluorocarbon Analyte in RCRA Samples

Analyte	Number of Detections
HFPO-DA	0 samples
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	0 samples
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	0 samples
Perfluoro-2-methoxyacetic acid (PFMOAA)	4 of 4 samples
Perfluorobutanesulfonic acid (PFBS)	0 samples
Perfluorobutanoic acid (PFBA)	4 of 4 samples
Perfluorodecanoic acid (PFDA)	1 of 4 samples
Perfluorododecanoic acid (PFDoA)	1 of 4 samples
Perfluoroheptanoic acid (PFHpA)	3 of 4 samples
Perfluorohexanesulfonic acid (PFHxS)	0 samples
Perfluorohexanoic acid (PFHxA)	4 of 4 samples
Perfluorononanoic acid (PFNA)	1 of 4 samples
Perfluorooctanesulfonamide (PFOSA)	0 samples
Perfluorooctanesulfonic acid (PFOS)	1 of 4 samples

Table 15. Number of Detections per Targeted Fluorocarbon Analyte in RCRA Samples

Analyte	Number of Detections
Perfluorooctanoic acid (PFOA)	2 of 4 samples
Perfluoropentanoic acid (PFPeA)	4 of 4 samples
Perfluorotetradecanoic acid (PFTA)	1 of 4 samples
Perfluorotridecanoic acid (PFTriA)	1 of 4 samples
Perfluoroundecanoic acid (PFUnA)	1 of 4 samples
Perfluoro-2-methoxyacetic acid (PFMOAA)	4 of 4 samples

Table 16. Summary of Targeted Fluorocarbon Chemical Sample Results for RCRA Samples

Analyte	Sample ID							Reporting Limit	Units	Method
	SP1	SP2	SP3	SP4	SP5	SP6	SP7			
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluorobutanoic acid (PFBA)	ND	**160**	**110**	ND	**1,700**	ND	**92**	50	ng/L	537 IDA
Perfluorodecanoic acid (PFDA)	ND	**3.5**	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluorododecanoic acid (PFDoA)	ND	**5.2**	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluoroheptanoic acid (PFHpA)	ND	**8.9**	**22**	ND	**120**	ND	ND	20	ng/L	537 IDA
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluorohexanoic acid (PFHxA)	ND	**13**	**32**	ND	**2,300**	ND	**110**	20	ng/L	537 IDA
Perfluorononanoic acid (PFNA)	ND	**4.8**	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluorooctanesulfonamide (PFOSA)	ND	ND	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluorooctanesulfonic acid (PFOS)	ND	**21 I**	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluorooctanoic acid (PFOA)	ND	**7.1**	**23**	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluoropentanoic acid (PFPeA)	ND	**51*+**	**66**	ND	**550**	ND	**51**	20	ng/L	537 IDA
Perfluorotetradecanoic acid (PFTA)	ND	**3.1**	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluorotridecanoic acid (PFTriA)	ND	**5.7**	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluoroundecanoic acid (PFUnA)	ND	**6.2**	ND	ND	ND	ND	ND	20	ng/L	537 IDA
HFPO-DA	ND	ND	ND	ND	ND	ND	ND	30	ng/L	537 IDA
Perfluoro-2-methoxyacetic acid (PFMOAA)	ND	**45**	**40**	ND	**31**	ND	**180**	20	ng/L	537 IDA
Perfluoro(3,5,7-trioxaoctanoic) acid (PFO3OA)	ND	ND	ND	ND	ND	ND	ND	20	ng/L	537 IDA
Perfluoro(3,5-dioxahexanoic) acid (PFO2HxA)	ND	ND	ND	ND	ND	ND	ND	20	ng/L	537 IDA
PFESA Byproduct 1	ND	ND	ND	ND	ND	ND	ND	20	ng/L	537 IDA
PFESA Byproduct 2	ND	ND	ND	ND	ND	ND	ND	20	ng/L	537 IDA

ND - Analyte not detected.
Qualifiers:
I - Value is EMPC (estimated maximum possible concentration).
*+ LCS and/or LCSD is outside acceptance limits, high biased.

[a] Maximum reporting limit listed for purposes of compiling results into single table. Some of the samples were analyzed at a lower reporting limit.

Field Sample Results for Ignitability, pH, Total and TCLP Metals, TCLP SVOCs, TCLP VOCs

Table 17, Table 18, Table 19, and Table 20 present the results of the metals, SVOCs, and VOCs analyses and the associated reporting limits. Table 21 presents the ignitability results and Table 22 presents the pH results. The pH field parameter had a holding time of 15 minutes but the test was performed by laboratory at ERG's request. None of the samples exhibited the characteristic of ignitability or corrosivity.

Reporting limits may be elevated due to sample dilution, which were required due to elevated levels of target analytes in the samples. SP-2 and SP-3 were taken from the solvent recovery basement tank located in the Vespel process area. The material is then sent through the wastewater treatment plant. Specifically, the basement tank material is sent to the facility's SBR's which are eventually sent to the facility's discharge lagoons. The EPA enforceable regulatory level for pyridine, a D038 characteristic hazardous waste, is 5.0 mg/L. SP-2 was reported with 550 mg/L. SP-3, the duplicate sample of SP-2 was reported with a 530 mg/L.

Table 17. Summary of Total Metal Results for RCRA Samples

Analyte	Sample ID					Reporting Limit[a]	WUTS (mg/L)[b]	Units	Method
	SP1	SP2	SP3	SP5	SP7				
Aluminum	ND	**860**	**850**	ND	**1,300**	250	n/a	ug/L	6020B
Antimony	ND	**4.9**	**5.0**	ND	ND	10	1.9	ug/L	6020B
Arsenic	ND	ND	ND	ND	ND	100	1.4	ug/L	6020B
Barium	ND	**29**	**29**	**100**	**100**	20	1.2	ug/L	6020B
Beryllium	ND	ND	ND	ND	ND	5.0	0.82	ug/L	6020B
Cadmium	ND	ND	ND	ND	ND	5.0	0.69	ug/L	6020B
Calcium	**110**	**19,000**	**11,000**	**9,500**	**100,000 ^3+**	5,000	n/a	ug/L	6020B
Chromium	ND	**2.5**	**2.6**	**1,700**	**100**	100	2.77	ug/L	6020B
Cobalt	ND	ND	ND	ND	**11**	25	n/a	ug/L	6020B
Copper	ND	**17**	**17**	**68**	**650**	50	n/a	ug/L	6020B
Iron	ND	**260**	**290**	**7,600**	**130,000**	2,500	n/a	ug/L	6020B
Lead	ND	**1.5**	**1.3**	**5.0**	**8.6**	5.0	0.69	ug/L	6020B
Magnesium	ND	**11,000**	**11,000**	**2,600**	**32,000**	500	n/a	ug/L	6020B
Manganese	ND	**61**	**60**	**160**	**1,400**	100	n/a	ug/L	6020B
Mercury	ND	ND	ND	ND	ND	8.0	0.15	ug/L	7470A
Nickel	ND	**8.5**	**9.5**	**1,300**	**200**	50	3.98	ug/L	6020B
Potassium	ND	**6,800**	**6,800**	ND	**5,500**	2,000	n/a	ug/L	6020B
Selenium	ND	ND	ND	**34**	ND	10	0.82	ug/L	6020B
Silver	ND	ND	ND	ND	ND	5.0	0.43	ug/L	6020B
Sodium	**320**	**410,000 ^3+**	**470,000**	**10,000**	**86,000**	2,000	n/a	ug/L	6020B
Thallium	ND	ND	ND	ND	ND	5.0	1.4	ug/L	6020B
Vanadium	ND	ND	ND	ND	ND	200	4.3	ug/L	6020B
Zinc	ND	1,100	**1,200**	**2,600**	**5,200**	500	2.61	ug/L	6020B

ND – Analyte not detected.
^3+ Reporting Limit Check Standard is outside acceptance limits, high biased.

[a] Maximum reporting limit listed for purposes of compiling results into single table. Some of the samples were analyzed at a lower reporting limit.
[b] See 40 CFR § 268.48. Wastewater standards. Note that wastewater UTS are based on composite samples.

Table 18. Summary of TCLP Metal Results for RCRA Samples

Analyte	Sample ID					Reporting Limit[a]	TCLP Limit[b]	Units	Method
	SP1	SP2	SP3	SP5	SP7				
Arsenic	ND	ND	ND	ND	ND	50	5,000	ug/L	6020B
Barium	ND	ND	**20**	**80**	**150**	50	100,000	ug/L	6020B
Cadmium	ND	ND	ND	ND	ND	13	1,000	ug/L	6020B
Chromium	ND	ND	ND	**1,300**	**110**	50	8,000	ug/L	6020B
Lead	ND	**17**	ND	**37**	ND	13	5,000	ug/L	6020B
Mercury	ND	ND	ND	ND	ND	8	200	ug/L	7470A
Selenium	ND	ND	ND	ND	ND	25	1,000	ug/L	6020B
Silver	ND	ND	ND	ND	ND	13	5,000	ug/L	6020B

ND – Analyte not detected.
[a] Maximum reporting limit listed for purposes of compiling results into single table. Some of the samples were analyzed at a lower reporting limit.
[b] See 40 CFR § 261.24.

Table 19. Summary of TCLP VOC Results for RCRA Samples

Analyte	Sample ID					Reporting Limit[a]	TCLP Limit[b]	Units	Method
	SP1	SP2	SP3	SP5	SP7				
1,1-Dichloroethene	ND	ND	ND	ND	ND	0.50	0.7	mg/L	8260C
1,2-Dichloroethane	ND	ND	ND	ND	ND	0.50	0.5	mg/L	8260C
2-Butanone	ND	ND	ND	ND	ND	5.0	200.0	mg/L	8260C
Benzene	ND	ND	ND	ND	ND	0.50	0.5	mg/L	8260C
Carbon tetrachloride	ND	ND	ND	ND	ND	0.50	0.5	mg/L	8260C
Chlorobenzene	ND	ND	ND	ND	ND	0.50	100.0	mg/L	8260C
Chloroform	ND	ND	ND	ND	ND	0.50	6	mg/L	8260C
Tetrachloroethene	ND	ND	ND	ND	ND	0.50	0.7	mg/L	8260C
Trichloroethene	ND	ND	ND	ND	ND	0.50	0.5	mg/L	8260C
Vinyl chloride	ND	ND	ND	ND	ND	0.50	0.2	mg/L	8260C

ND – Analyte not detected.
[a] Maximum reporting limit listed for purposes of compiling results into single table. Some of the samples were analyzed at a lower reporting limit.
[b] See 40 CFR § 261.24.

Table 20. Summary of SVOC Results for RCRA Samples

Analyte	Sample ID					Reporting Limit[a]	TCLP Limit[b]	Units	Method
	SP1	SP2	SP3	SP5	SP7				
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	0.40	7.5	mg/L	8270D
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	0.40	400	mg/L	8270D
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.40	2	mg/L	8270D

Analyte	Sample ID					Reporting Limit[a]	TCLP Limit[b]	Units	Method
	SP1	SP2	SP3	SP5	SP7				
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	1.0	0.13	mg/L	8270D
2-Methylphenol	ND	ND	ND	ND	ND	0.40	n/a	mg/L	8270D
4-Methylphenol	ND	ND	ND	ND	**0.034**	0.40	n/a	mg/L	8270D
Hexachlorobenzene	ND	ND	ND	ND	ND	0.10	0.13	mg/L	8270D
Hexachlorobutadiene	ND	ND	ND	ND	ND	0.40	0.5	mg/L	8270D
Hexachloroethane	ND	ND	ND	ND	ND	1.0	3	mg/L	8270D
Nitrobenzene	ND	ND	ND	ND	ND	0.40	2	mg/L	8270D
Pentachlorophenol	ND	ND	ND	ND	ND	1.0	100	mg/L	8270D
Pyridine	**0.13**	**550**	**530**	ND	**1.6**	25	5	mg/L	8270D

ND – Analyte not detected.
[a] Maximum reporting limit listed for purposes of compiling results into single table. Some of the samples were analyzed at a lower reporting limit.
[b] See 40 CFR § 261.24.

Table 21. Flash Point Results

Analyte	Sample ID				Ignitability Limit	Units	Method
	SP-2	SP-3	SP-5	SP-7			
Flashpoint	>183	>186	>212	>173	140	deg F	1010A

Table 22. pH Results

Analyte	Sample ID SP-3				Regulatory Limit	Units	Lab Method
	SP-2	SP-3	SP-5	SP-7			
pH	11.7 HF	11.7 HF	5.5 HF	4.6 HF	pH>12.5 or <2.0	S.U.	9040C

HF - Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

4.0 Field Observations

The Inspection Team made the following observations during the multimedia compliance inspection. The Inspection Team discussed these observations with facility representatives during the closeout meeting unless otherwise noted in the observation description below.

These observations are not compliance determinations. EPA OCE and Region 5 will make compliance determinations based on their review of this report and other technical, regulatory, and facility information.

4.1 Clean Water Act

Observation: CWA 1
Observation Summary: The pH analyzers associated with the facility's wastewater operations are sometimes calibrated on timeframes exceeding regulatory specifications or best practices.
Citation: **NPDES Permit No. OH0006327, Part III.5** – *Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored flow. Test procedures for the analysis of pollutants shall conform to regulation 40 CFR 136, "Test Procedures For The Analysis of Pollutants" unless other test procedures have been specified in this permit. The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to insure accuracy of measurements.* **40 Code of Federal Regulations (CFR) § 136.3, Table IB – List of Approved Inorganic Test Methods –** *Hydrogen ion (pH), EPA Method 150.2. This method generally requires daily calibration for handheld meters and electrodes that are easily removed from continuous analyzers, and monthly calibration for electrodes that are difficult to remove from continuous analyzer mountings.*
Evidence: **Appendix CWA A** – NPDES Permit No. OH0006327 **Documents obtained from the inspection –** Document number DD006719, "Environment PM History by Maintenance Plan - Wastewater System"
Description of Observation: The preventative maintenance history provided by the facility for the various analytical instruments used for on-site wastewater testing show that continuous pH analyzers are on a monthly calibration schedule. The past three years of historical calibration dates generally show monthly calibrations; however, many calibrations are greater than 31 days apart. Additionally, over the past three years, approximately 2-4 calibrations per analyzer exceeded 40 or 50 days since the previous calibration. pH meters/analyzers are generally sensitive to deviations in accuracy and require frequent calibrations at least as frequent as those required in the method or by manufacturer's specifications.

Observation: CWA 2

Observation Summary: Some of the TOC analyzers associated with wastewater discharges to the process sewer required maintenance.

Citation:

NPDES Permit No. OH0006327, Part III.5 – *Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored flow. Test procedures for the analysis of pollutants shall conform to regulation 40 CFR 136, "Test Procedures For The Analysis of Pollutants" unless other test procedures have been specified in this permit. The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to insure accuracy of measurements.*

Evidence:

Appendix CWA A – NPDES Permit No. OH0006327
Appendix CWA B – CWA Photos 1, 2, 5, and 6

Description of Observation:

Facility representatives believed the KSR1 TOC analyzer was falsely reading high and required maintenance at the time of the inspection. The Inspection Team observed the KSR1 analyzer read 1,500 mg/L on September 15, 2021 (refer to CWA Photo 1). Additionally, at the time of the inspection, the KSR2 TOC analyzer was off by approximately one hour (refer to CWA Photo 2) and the K2 analyzer was off by approximately 1 hour and 40 minutes (refer to CWA Photos 5 and 6).

Observation: CWA 3

Observation Summary: The Inspection Team observed multiple documented instances where high TOC wastewater was sent to the aerated lagoons; however, the Inspection Team was unable to evaluate the effectiveness of the biological treatment in the aerated lagoons due to the lack of process control information provided by the facility.

Citation:

NPDES Permit No. OH0006327, Part III.3 –

A. At all times, the permittee shall maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee necessary to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with conditions of the permit.

B. The permittee shall effectively monitor the operation and efficiency of treatment and control facilities and the quantity and quality of the treated discharge.

Evidence:

Inspection observations
Documents obtained from the inspection – Frac Tank/Process Water Discharge Forms PWW-001, Daily wastewater forms PAF-010

Description of Observation:

The Inspection Team observed multiple documented instances where wastewater with high TOC was sent to the aerated lagoons for biological treatment and discharged through Outfall

Observation: CWA 3

001; however, the Inspection Team could not confirm the expected or actual biological/organic removal efficiency within the aerated lagoons because the facility did not provide an SOP or O&M manual for the treatment system or process control information used for evaluating biological treatment performance.

For example, the facility will send up to 5,100 ppm TOC wastewater from the Kapton Solvent Recovery process area to the aerated lagoons, according to the KSR1 and KSR2 TOC analyzers setpoints. Additionally, according to records of frac tank testing and disposition (form PWW-001) for the past three years, the facility routinely sends frac tank wastewater with pH of approximately 4 and TOC ranging from 5,000 up to 27,000 ppm to the North Lagoon. The facility provided a description of the operation of the aerated lagoons; however, neither the provided description nor the discussions conducted during the inspection provided information on the effectiveness of the biological treatment in the lagoons. The facility appears to not conduct biological process control monitoring in the aerated lagoons to ensure that the biological treatment is operating to effectively treat the high TOC wastewater sent to the lagoons. Therefore, the Inspection Team cannot determine the extent of organics removal by biological treatment versus air stripping.

The facility has not experienced an effluent limit exceedance in the past three years. However, the Inspection Team was unable to evaluate the effectiveness of the biological treatment in the aerated lagoons due to the lack of data showing the actual biological removal capacity of the aerated lagoons or procedures for measuring the performance of the biology.

Observation: CWA 4

Observation Summary: Facility operating procedures allow for discharges of stormwater with up to 400 ppm TOC to Outfall 001.

Citation:

NPDES Permit No. OH0006327, Part IV.A – Control Measures – *You shall select, design, install, and implement control measures (including best management practices) to address the selection and design considerations in Part IV.B, and meet the control measures/best management practices in Part IV.C and any applicable numeric effluent limits in Part I. The selection, design, installation, and implementation of these control measures shall be in accordance with good engineering practices and manufacturer's specifications. Note that you may deviate from such manufacturer's specifications where you provide justification for such deviation and include documentation of your rationale in the part of your SWPPP that describes your control measures, consistent with Part IV.J.3. If you find that your control measures are not achieving their intended effect of minimizing pollutant discharges, you shall modify these control measures as expeditiously as practicable. Regulated storm water discharges from your facility include storm water run-on that commingles with storm water discharges associated with industrial activity at your facility.*

NPDES Permit No. OH0006327, Part IV.C.6 – *You shall divert, infiltrate, reuse, contain, or otherwise reduce storm water runoff, to minimize pollutants in your discharges.*

Evidence:

Observation: CWA 4

Appendix CWA A – NPDES Permit No. OH0006327
Documents obtained from the inspection – Kapton SOP for Pumping Secondary Containment Structures (document number DD006815), DuPont Circleville SWPPP (document number DD002648)

Description of Observation:
The Kapton SOP for Pumping Secondary Containment Structures allows the discharge of accumulated stormwater from secondary containment with up to 400 ppm TOC to the stormwater/NCCW ditch that goes to Outfall 001. Specifically, the SOP indicates that water in secondary containment of the Kapton Tank Farm must be sampled and have results of <400 ppm TOC, <1 ppm acetone, and pH between 6.5 and 9.0 s.u. before discharge to the "storm sewer". According to the facility's SWPPP, stormwater in secondary containment is managed by "visual inspection" and "site procedures" prior to discharge. Apart from referencing site procedures, the SWPPP does not include any specific procedures for how stormwater captured in secondary containment is managed.

Testing records are not maintained for the Kapton Tank Farm secondary containment stormwater sampling, so the Inspection Team could not identify the TOC concentration of stormwater historically discharged to the storm sewer from secondary containment in the Kapton Tank Farm. Water in the storm sewer (i.e., stormwater/NCCW ditch) is not treated and comingles with wastewater from the South Lagoon for discharge through Outfall 001.

As discussed in Section 2.1.4, the stormwater/NCCW ditch that leads to Outfall 001 has a lift station and diversion sluice gate that automatically diverts the stormwater/NCCW in the ditch to the North Lagoon if pH measurements are outside the permitted range (6.5 – 9 s.u.) or the TOC concentration is ≥ 60 ppm in the lift station. Additionally, as discussed in Section 2.1.3, the facility determines the lagoon that process wastewater is sent to based on TOC of the wastewater. Specifically, if the TOC reading is ≥115 ppm, this higher organics concentration wastewater is automatically sent to the North Lagoon. It is unclear why the TOC threshold for stormwater from the Kapton Tank Farm secondary containment is <400 ppm when the facility TOC thresholds both for the stormwater/NCCW ditch and the North Lagoon are significantly lower.

Observation: CWA 5

Observation Summary: The routine facility stormwater inspection reports are not signed by the inspector.

Citation:
NPDES Permit No. OH0006327, Part IV.E.1.a.ii – *You are not required to submit your routine facility inspection findings to Ohio EPA, unless specifically requested to do so. At a minimum, your documentation of each routine facility inspection shall include:*
ii. The name(s) and signature(s) of the inspector(s)

Evidence:
Appendix CWA A – NPDES Permit No. OH0006327
Documents obtained from the inspection – Document numbers DD006768, DD006780, DD006791, and DD006800 (routine facility inspections for 2020)

Observation: CWA 5

Description of Observation:
The Inspection Team reviewed the routine facility stormwater inspections for the year 2020 and observed that these inspection reports do not contain the signature of the inspector. The digital routine facility stormwater inspection form used does not contain a field for the inspector's signature.

Observation: CWA 6

Observation Summary: The sample taken for the stormwater visual assessment in the first quarter of 2020 was taken greater than 30 minutes after a qualifying discharge without explanation of why it was not possible to take the sample within the first 30 minutes.

Citation:
NPDES Permit No. OH0006327, Part IV.E.2.a – *Once each calendar quarter for the entire permit term you shall collect a storm water sample from outfall 001 and conduct a visual assessment of each of these samples. These samples are not required to be collected consistent with 40 CFR Part 136 procedures but should be collected in such a manner that the samples are representative of the storm water discharge. The visual assessment shall be made:*

- *On samples collected within the first 30 minutes of an actual discharge from a storm event. If it is not possible to collect the sample within the first 30 minutes of discharge, the sample shall be collected as soon as practicable after the first 30 minutes and you shall document why it was not possible to take samples within the first 30 minutes. In the case of snowmelt, samples shall be taken during a period with a measurable discharge from your site;*

Evidence:
Appendix CWA A – NPDES Permit No. OH0006327
Documents obtained from the inspection – Document numbers DD006779 (1Q2021 Visual Inspection Report)

Description of Observation:
The Inspection Team reviewed the stormwater visual assessment reports for the year 2020 and observed that visual assessment sample for the first quarter of 2020 was taken more than 30 minutes after the start of a discharge resulting from a storm event. Specifically, the report lists the discharge as beginning on 2/7/2020 at 03:00 and the sample as taken on 2/7/2020 at 09:40, which is greater than 30 minutes from the start of the discharge. No explanation was provided documenting why it was not possible to take the sample within the first 30 minutes of the event.

Observation: CWA 7

Observation Summary: The Inspection Team identified issues related to the stormwater benchmark monitoring requirements in the NPDES permit.

Citation:
NPDES Permit No. OH0006327, Part IV.F – *The SWPPP does not contain effluent limitations; the limitations or benchmarks are contained in Part I* [of the permit].

Observation: CWA 7
NPDES Permit No. OH0006327, Part V.B.1, Stormwater Monitoring Requirements – *Monitored Outfalls. Applicable benchmark monitoring requirements apply to outfall 4IF00001001.*
Evidence: **Appendix CWA A** – NPDES Permit No. OH0006327
Description of Observation: The NPDES permit indicates that benchmark monitoring requirements apply to Outfall 001. Part V.B of the permit provides discussion of the benchmark monitoring requirements, including what to do if an exceedance of the benchmark occurs. However, neither Part V.B nor Part I, which contains effluent limitations and monitoring requirements, contain any benchmark monitoring parameters. Facility representatives and the facility's SWPPP indicate that benchmark monitoring requirements were removed in the recent renewal of the permit because the outfall is for combined stormwater and process wastewater. However, the permit appears to contain lingering, incomplete benchmark monitoring requirements.

Observation: CWA 8
Observation Summary: The facility's SPCC plan required updating to reflect current facility conditions.
Citation: **CWA § 311 and 40 CFR § 112** regulate the discharge of oil and other hazardous substances into navigable waters of the United States or adjoining shorelines, or into or upon the waters of the contiguous zone. This includes the Spill Prevention, Control, and Countermeasure (SPCC) rule. **40 CFR § 112.20(g)(3) –** *The owner or operator shall review and update the facility response plan periodically to reflect changes at the facility.*
Evidence: **Documents obtained from the inspection –** Document numbers DD003622 (Final Circleville SPCC Plan – 2019 Recertification)
Description of Observation: The SPCC plan provided by the facility is dated June 2019 and was observed to require updates to reflect current facility conditions. For example, the SPCC plan did not include stormwater Outfall 004 in the stormwater outfall map (Figure 2) and contains an outdated SPCC Action Schedule.

Observation: CWA 9
Observation Summary: Analytical results for the wastewater sample collected during the inspection at Outfall 001 show the discharge of several fluorocarbon chemicals that are not listed in the facility's NPDES permit.

Observation: CWA 9

Citation:

33 U.S. Code § 1311(a) – *Except as in compliance with this section and sections 1312, 1316, 1317, 1328, 1342, and 1344 of this title, the discharge of any pollutant by any person shall be unlawful.*

40 CFR § 122.1(b) – *Scope of the NPDES permit requirement. (1) The NPDES program requires permits for the discharge of "pollutants" from any "point source" into "waters of the United States." The terms "pollutant", "point source" and "waters of the United States" are defined at §122.2.*

NPDES Permit No. OH0006327 – *In compliance with the provisions of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et. seq., hereinafter referred to as the "Act"), and the Ohio Water Pollution Control Act (Ohio Revised Code Section 6111), DuPont Specialty Products USA, LLC is authorized by the Ohio Environmental Protection Agency, hereinafter referred to as "Ohio EPA," to discharge from the DuPont Circleville Ohio wastewater treatment works located at 800 DuPont Road, Circleville, Ohio, Pickaway County and discharging to the Scioto River in accordance with the conditions specified in Parts I, II, III, IV, V, and VI of this permit.*

NPDES Permit No. OH0006327, Effluent Limitations and Monitoring, Final Outfall 001 – *During the period beginning on the 18th month of this permit and lasting until the expiration date, the permittee is authorized to discharge in accordance with the following limitations and monitoring requirements from outfall 4IF00001001….*

Parameter	Discharge Limits	Measuring Frequency	Sampling Type
Perfluorooctanoic Acid	Monitor Only	2/Year	Grab

Evidence:

Appendix CWA A – NPDES Permit No. OH0006327
Appendix CWA B – CWA Photos 31 and 32
Section 3.3.2 – Analytical Sampling Results

Description of Observation:

The facility is required in its NPDES permit to monitor semi-annually for PFOA at Outfall 001, with no discharge limitations (monitor only) specified in the permit.

The Inspection Team collected one sample from Outfall 001 during the inspection, on September 16, 2021, identified as sample ID 001 (refer to CWA Photos 31 and 32). This sample was analyzed for the 21 targeted fluorocarbon chemicals listed in Section 3.1. The following table shows the sample results both for fluorocarbon chemicals listed in the NPDES permit and those that are not listed in the permit but were detected in the sample (shaded in grey). In summary, nine fluorocarbon chemicals were detected that are not included in the NPDES permit.

Analyte	Sample 001 Concentration (ng/L = ppt)
PFMOAA[1]	22
PFBA [1]	44

Observation: CWA 9

PFDA [1]	9.6
PFDoA [1]	1.7
PFHpA [1]	17
PFHxA [1]	17 F1
PFNA [1]	7.5
PFOA	19
PFPeA [1]	65 *+
PFUnA [1]	3.3

1 – Compound is not included in the NPDES permit (shaded in grey).
ND – Analyte not detected.
Qualifiers:
*+ LCS and/or LCSD is outside acceptance limits, high biased.
F1 MS and/or MSD recovery exceeds control limits.

In addition to the targeted fluorocarbon chemical analysis, the non-targeted analysis identified the presence of hundreds of additional fluorocarbon chemicals in the sample from Outfall 001, which account for the majority of the total chemical load in the sample.

Observation: CWA 10

Observation Summary: Analytical results for the stormwater/NCCW sample collected upstream of Outfall 001 during the inspection show elevated concentrations of several fluorocarbon chemicals. This stormwater and NCCW do not receive treatment, only mixing with the South Lagoon effluent (Outfall 602) and subsequent discharge through Outfall 001 to the Scioto River.

Citation:
33 U.S. Code § 1311(a) – *Except as in compliance with this section and sections 1312, 1316, 1317, 1328, 1342, and 1344 of this title, the discharge of any pollutant by any person shall be unlawful.*

Evidence:
Appendix CWA B – CWA Photos 22 and 23
Section 3.3.2 – Analytical Sampling Results

Description of Observation:
Stormwater and NCCW are collected throughout the facility and comingled and conveyed in the concrete ditch near the aerated lagoons. The water in this concrete ditch does not receive treatment and comingles with the effluent from the South Lagoon (Outfall 602), then discharges through Outfall 001 to the Scioto River.

The Inspection Team collected one sample from this stormwater/NCCW concrete ditch during the inspection, on September 15, 2021, identified as sample ID SWNCCW (refer to CWA Photos 22 and 23). This sample was taken after a small rain event of 0.08 inches earlier that morning, according to National Oceanic and Atmospheric Administration (NOAA) climate data. At the time of sampling, the water in the ditch was flowing very slowly and had not yet reached the point where it comingles with effluent from Outfall 602. The SWNCCW sample was analyzed for the 21 fluorocarbon chemicals listed in Section 3.1. The following table

Observation: CWA 10

shows the sample results. In summary, the SWNCCW sample had 13 fluorocarbon chemicals detections and the highest concentrations of all samples taken during the inspection. This stormwater/NCCW comingles with Outfall 602 and discharges through Outfall 001 without treatment.

Analyte	Sample SWNCCW Concentration (ng/L = ppt)
HFPO-DA	240
PFO3OA	ND
PFO2HxA	ND
PFMOAA	2.1
PFBS	ND
PFBA	190
PFDA	22
PFDoA	32
PFHpA	83
PFHxS	ND
PFHxA	770
PFNA	11
PFOSA	ND
PFOS	ND
PFOA	560
PFPeA	1,100
PFTA	7.6
PFTriA	7.2
PFUnA	14
PFESA Byproduct 1	ND *-
PFESA Byproduct 2	ND

ND – Analyte not detected.
Qualifiers:
*- LCS and/or LCSD is outside acceptance limits, low biased.

In addition to the targeted fluorocarbon chemical analysis, the non-targeted analysis identified the presence of hundreds of additional fluorocarbon chemicals in the SWNCCW sample, which account for almost half of the total chemical load in the sample.

Observation: CWA 11

Observation Summary: Analytical results for the three process area samples taken upstream of the wastewater treatment lagoons during the inspection show several fluorocarbon chemicals that are not present in the influent process water used at the facility. The wastewater at these sample points undergo treatment in the aerated lagoons prior to discharge through Outfall 602 and ultimately Outfall 001 to the Scioto River. The aerated lagoons are not designed nor intended for treatment of fluorocarbon chemicals.

Citation:

Observation: CWA 11

33 U.S. Code § 1311(a) – *Except as in compliance with this section and sections 1312, 1316, 1317, 1328, 1342, and 1344 of this title, the discharge of any pollutant by any person shall be unlawful.*

Evidence:
Appendix CWA B – CWA Photos 24 through 28, and 33 through 36
Section 3.3.2 – Analytical Sampling Results

Description of Observation:
Processes throughout the facility utilize groundwater as process source water. Following use of the influent process water, the produced process wastewater is collected at several points throughout the facility and conveyed via the process sewer system to the lift station preceding the aerated lagoons. After biological treatment in the aerated lagoons, the wastewater is discharged through Outfall 602 and ultimately Outfall 001 to the Scioto River.

The Inspection Team collected the following:

- One sample and a duplicate sample of the groundwater from production well 3, which was being used at the time of the inspection as process source water at the facility. These samples were collected on September 16, 2021 and are identified as sample points PW3 and PW32 (refer to CWA Photos 24 through 26).
- Three process area samples, including one from the Vespel SBRs (sample point VSBR), one from the K1 process sewer used for process wastewater from Kapton Building K1 and Teflon (sample point SK1), and one from the K2 process sewer used for process wastewater from Kapton Buildings K2 and K3, the Kapton Chemical storage building, and Vespel SBR effluent (sample point SK2). These samples were collected on September 16, 2021. See CWA Photos 27 and 28 for sample point VSBR, CWA Photos 33 and 34 for sample point SK1, and CWA Photos 35 and 36 for sample point SK2.

The table below contains a summary of these sample results. These results show 12 fluorocarbon chemicals detected in one or more of the process area samples, and that these fluorocarbon chemicals were not detected in the groundwater samples (shaded in grey). Additionally, PFBA and PFPeA were detected in concentrations exceeding 100 ppt in the SK1 sample. The process wastewater at these three sample points is sent to the aerated lagoons, where it is mixed with other process wastewater and biologically treated before discharge. However, this treatment is not designed or intended to remove PFBA or PFPeA.

	Analyte Concentration (ng/L = ppt)				
Analyte	**PW3**	**PW32**	**VSBR**	**SK1**	**SK2**
HFPO-DA	ND	ND	ND	ND	ND
PFO3OA	ND	ND	ND	ND	ND
PFO2HxA	ND	ND	ND	ND	ND
PFMOAA	ND	ND	35	88	22
PFBS	ND	ND	ND	ND	ND
PFBA	ND	ND	36	110	13
PFDA	ND	ND	1.8	47	ND

Observation: CWA 11

PFDoA	ND	ND	ND	30	ND
PFHpA	ND	ND	18	61	6.1
PFHxS	ND	ND	ND	ND	ND
PFHxA	ND	ND	67	40	28
PFNA	ND	ND	3.2	77	ND
PFOSA	ND	ND	ND	ND	ND
PFOS	ND	ND	ND	ND	ND
PFOA	ND	ND	30	22	9.5
PFPeA	ND	ND	45	150	18
PFTA	ND	ND	ND	9.1	ND
PFTriA	ND	ND	ND	31	ND
PFUnA	ND	ND	ND	95	ND
PFESA Byproduct 1	ND *-	ND *-	ND *-	ND *-	ND *-
PFESA Byproduct 2	ND	ND	ND	ND	ND

ND – Analyte not detected.
Qualifiers:
*- LCS and/or LCSD is outside acceptance limits, low biased.

In addition to the targeted fluorocarbon chemical analysis, the non-targeted analysis identified the presence of additional fluorocarbon chemicals in these samples.

- Sample PW3 and PW32: Approximately 60 additional unknown fluorocarbon chemicals were identified in the non-targeted analysis.
- Sample VSBR: Approximately 400 additional unknown fluorocarbon chemicals were identified in the non-targeted analysis.
- Sample SK1: Approximately 200 additional unknown fluorocarbon chemicals were identified in the non-targeted analysis. This sample also had a relatively high abundance of organic chlorinated compounds compared to the number of identified fluorocarbon chemicals.
- Sample SK2: Approximately 300 additional unknown fluorocarbon chemicals were identified in the non-targeted analysis. This sample also had a relatively high abundance of organic chlorinated compounds compared to the number of identified fluorocarbon chemicals.

4.2 Resource Conservation and Recovery Act

Observation: RCRA 1
Observation Summary: Manway cover on the less-than-90-day container holding hazardous waste, tanker trailer LT-1087, was not closed during the visual inspection of the Vespel process area. Based on how the tanker trailer was observed during the visual inspection, it appeared to be a level 2 container.
Citation: 40 CFR 262.15(a)(4) states, *"A container holding hazardous waste must be closed at all times during accumulation, except when adding, removing, or consolidating waste; or when temporary venting of a container is necessary."* **Citation: 40 CFR 265.1087(d)(3) states,** *"Whenever a hazardous waste is in a container using Container Level 2 controls, the owner or operator shall install all covers and closure devices for the container, and secure and maintain each closure device in the closed position except as follows:* *(i) Opening of a closure device or cover is allowed for the purpose of adding hazardous waste or other material to the container as follows:* *(A) In the case when the container is filled to the intended final level in one continuous operation, the owner or operator shall promptly secure the closure devices in the closed position and install the covers, as applicable to the container, upon conclusion of the filling operation.* *(B) In the case when discrete quantities or batches of material intermittently are added to the container over a period of time, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon either the container being filled to the intended final level; the completion of a batch loading after which no additional material will be added to the container within 15 minutes; the person performing the loading operation leaving the immediate vicinity of the container; or the shutdown of the process generating the material being added to the container, whichever condition occurs first."*
Evidence: **Appendix RCRA A** – RCRA Photo 15
Description of Observation: On September 14, 2021, one less-than-90-day container holding hazardous waste, tanker trailer LT-1087, was not closed during the visual inspection of the Vespel process area (**Appendix RCRA A**, Photo 15). On October 12, 2021, Ms. Hough provided a response from DuPont stating the actions DuPont took after learning that the tanker trailer manway cover was not adequately closed. The facility's response and photographs are provided in **Appendix RCRA V**.

Observation: RCRA 2
Observation Summary: Four 55-gallon containers of hazardous waste were being accumulated for longer than 90 days in the facility's Building 510 Central accumulation area (CAA) without a permit.
Citation: 40 CFR § 262.17(a) states that without a permit, *"A large quantity generator accumulates hazardous waste on site for no more than 90 days."*
Evidence: **Appendix RCRA A** – RCRA Photos 17 through 20
Description of Observation: On September 14, 2021, four 55-gallon containers of hazardous waste were being accumulated for longer than 90 days in the facility's Building 510 CAA. The four 55-gallon containers were labeled with an accumulation start date of "6/7/2021". (**Appendix RCRA A**, Photos 17 through 20)

Observation: RCRA 3
Observation Summary: 34, 55-gallon hazardous waste containers were observed in Building 510's CAA were not inspected after being generated at the end of June prior to being placed in the CAA in early September.
Citation: 40 CFR 262.17(a)(1)(v) states CAA inspections should occur, "*At least weekly, the large quantity generator must inspect central accumulation areas."*
Evidence: **Appendix RCRA A** – RCRA Photo 22
Description of Observation: On September 14, 2021, 34, 55-gallon hazardous waste containers were determined to not be inspected at least weekly. Mike Sherrier, Principal Project Manager Remediation Group explained the details regarding hazardous waste generation from remediation projects. The remediation project is due to a RCRA corrective action due to a release of 1-1, DCA in 1981 in the Mylar process area. The Mylar process is no longer operational due to changes in client's needs. The remediation includes bio stimulation, specifically injection of substrate to enhance biological activity. This involves drilling new wells or injection points that generate solid waste. In June 2021, installation of monitoring wells generated hazardous waste. Mr. Sherrier stated it is the facility's policy to containerize all hazardous waste immediately upon generation and to move containers into Building 510's CAA. Mr. Sherrier stated he estimated the 55-gallon containers were generated on 6/31/2021 and moved to Building 510's CAA in the beginning of September 2021 (**Appendix RCRA A**, Photo 22). Additional details on facility corrective measure are provided in **Appendices RCRA R, S, and T**, respectively.

Observation: RCRA 4
Observation Summary: Hazardous waste manifest that was not signed by a facility representative.
Citation: 40 CFR 262.23(a) states, "*Generator must sign the manifest certification by hand."*
Evidence: **Appendix RCRA W**
Description of Observation:

During records review, the inspection team noted a copy of a hazardous waste manifest for a shipment of hazardous waste on September 1, 2021, to Ross Incineration Services, Inc. did not include a generator signature (see **Appendix RCRA X**). DuPont Circleville provided the corrected manifest that was signed on September 9, 2021 (**Appendix RCRA X**).

Observation: RCRA 5

Observation Summary: Satellite accumulation area (SAA) container waste being transferred into another SAA container instead of transferring the material to the CAA.

Citation: 40 CFR 262.15(a)(6)(ii) states, "*A generator who accumulates either acute hazardous waste listed in §261.31 or §261.33(e) of this chapter or non-acute hazardous waste in excess of the amounts listed in paragraph (a) of this section at or near any point of generation shall remove the excess from the satellite accumulation area within three consecutive calendar days to either: (A) A central accumulation area operated in accordance with the applicable regulations in §262.16(b) or §262.17(a); (B) An on-site interim status or permitted treatment, storage, or disposal facility, or (C) An off-site designated facility.*"

Evidence:
Appendix RCRA A, Photos 30 and 31

Description of Observation:
During the inspection, laboratory personnel stated that they pour hazardous waste in the approximately 1-liter plastic container in Photo 30, a SAA container, in a laboratory hood to the 55-gallon SAA container shown in Photo 31 (**Appendix RCRA A**, Photos 30 and 31).

Observation: RCRA 6

Observation Summary: Potential to accumulate more than 55-gallons of hazardous waste in a single SAA.

Citation: 40 CFR 262.15(a) states, "*A generator may accumulate as much as 55 gallons of non-acute hazardous waste and/or either one quart of liquid acute hazardous waste listed in § 261.31 or § 261.33(e) of this chapter or 1 kg (2.2 lbs) of solid acute hazardous waste listed in § 261.31 or § 261.33(e) of this chapter in containers at or near any point of generation where wastes initially accumulate which is under the control of the operator of the process generating the waste, without a permit or interim status and without complying with the requirements of parts 124, 264 through 267, and 270 of this chapter, provided that all of the conditions for exemption in this section are met.*"

Evidence:
Appendix RCRA A, Photo 31

Description of Observation:
During the inspection, laboratory personnel stated they manage two separate SAA's shown in Photo 31. The facility has two 55-gallon containers placed next to each other. SAA D is accumulating solid hazardous wastes and SAA B is accumulating liquid hazardous wastes. At the time of the inspection, both containers were almost empty, and the facility did not appear to be managing more than 55-gallons of hazardous waste. Although, with both containers staged in the same area, there is a potential for the facility to generate more than 55-gallons of hazardous waste in one SAA.

4.3 Toxic Substances Control Act

Because all relevant information to the TSCA inspection was claimed as TSCA CBI, the findings from the TSCA inspection are included in a separate TSCA inspection report that is included as **Appendix TSCA A** to this multi-media inspection report.

Observation: TSCA 1
Observation Summary: Lack of recordkeeping showing documentation of two chemicals claimed under the R&D exemption.
Citation: None
Evidence: See **Appendix TSCA A**
Description of Observation: See **Appendix TSCA A**

Appendix A: Sign-In Sheet

Sign In Sheet

Site Name: DuPont Circleville
Date: 9/13/21

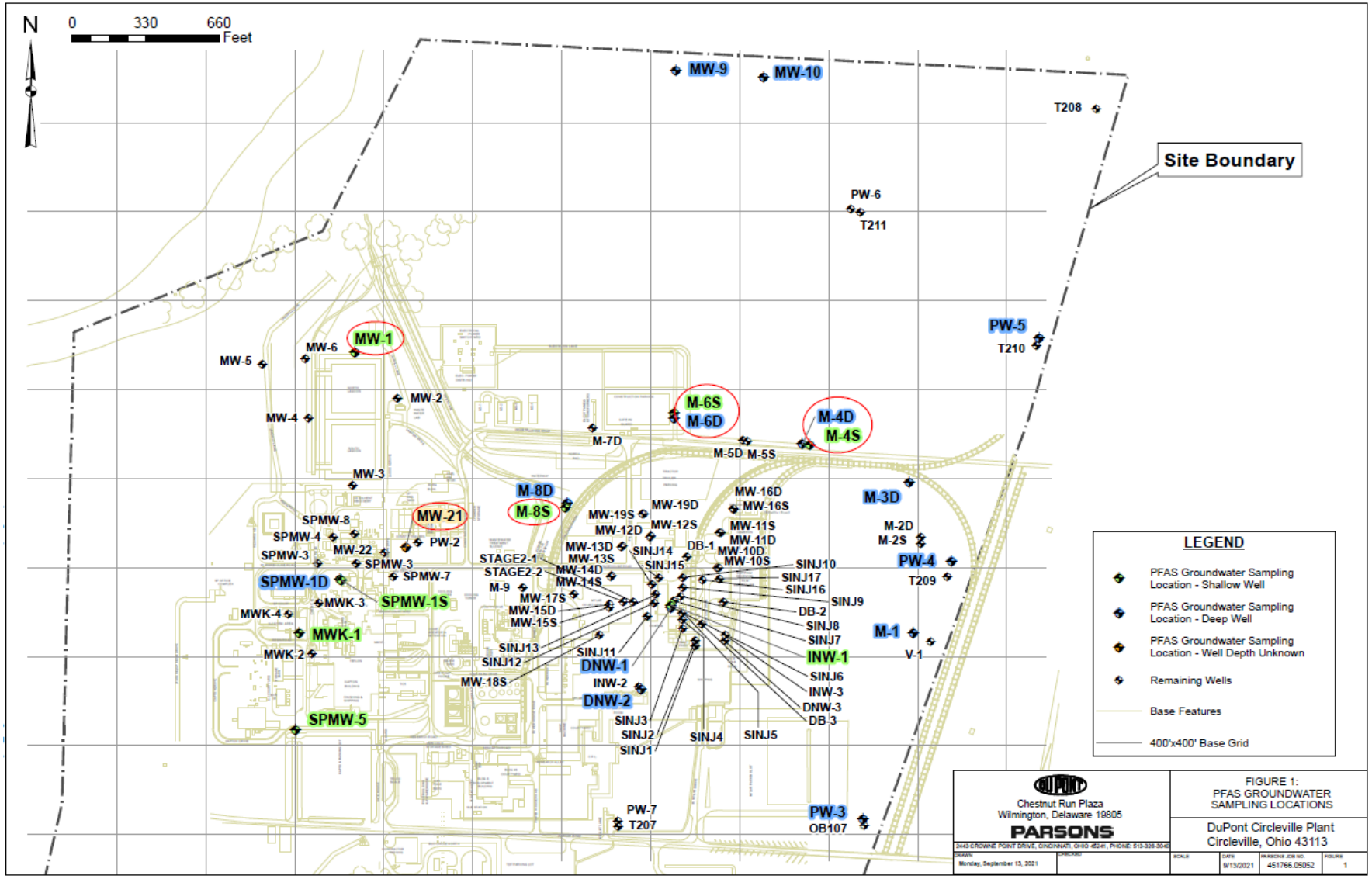
Name	Title	Company	Phone	Email
Michelle Spizio	Chemical Engineer	ERG	703 633 1709	Michelle.spizio@erg.com
Janosh Wolters	Energy Engineer	ERG	484-678-8675	janosh.wolters@erg.com
Danny O'Connell	Env. Specialist	PL	720 784 8032	danny.oconnell@pyeng.com
Lee French	TSCA Consultant	DuPont	859-859-6248	Lee.French@DuPont.com
Dave Spandelaar	Waste Resource	DuPont	(302) 999-5444	david.p.spandelaar@dupont.com
Lynn Szabo	Water Resource	DuPont	302 319 1437	lynn.m.szabo@dupont.com
Bryan Gangwisch	Physical Scientist	USEPA	(312) 886-0989	gangwisch.bryan@epa.gov
Daryl Hudson	Chemical Engineer	ERG	703 633 1706	daryl.hudson@erg.com
Ray Cullen	Che. Engineer	U.S. EPA	(312) 886-0538	cullen.raymond@epa.gov
Thad Dilley	EHS	DuPont	(740) 207-1458	thadeus.l.dilley@DuPont.com
Kenneth S. Cresap	CVL EHS Mgr	DuPont	614-312-6247	ken.s.cresap@dupont.com

Name	Title	Company	Phone	Email
Julie Hough	DuPont Site EHS	DuPont	614-783-3075	Julie.A.Hough-1@dupont.com
Anna Nguyen	TSCA Inspector	US EPA	312-886-6798	nguyen.anna@epa.gov
Lianna Kardeman	CWA Inspector	US EPA	646-584-8127	Kardeman.Lianna@epa.gov
Justin Young	RCRA Inspector	U.S. EPA	202-564-5436	Young.Justin@epa.gov

Appendix B: Facility Overview (CBI Attachment)

Appendix C: General Process Descriptions (CBI Attachment)

Appendix D: Groundwater Well Map for 2021 Sampling


N
0
330
660
Feet
MW-9
MW-10
T208
Site Boundary
PW-6
T211
PW-5
T210
MW-1
MW-6
MW-5
MW-2
MW-4
M-6S
M-6D
M-4D
M-4S
M-7D
M-5D
M-5S
MW-3
M-8D
M-8S
MW-21
SPMW-8
SPMW-4
SPMW-3
MW-22
PW-2
SPMW-3
SPMW-7
SPMW-1D
MWK-3
SPMW-1S
MWK-4
MWK-1
MWK-2
SPMW-5
MW-19S
MW-19D
MW-12D
MW-12S
MW-13D
MW-13S
MW-14D
MW-14S
STAGE2-1
STAGE2-2
M-9
MW-17S
MW-15D
MW-15S
SINJ13
SINJ12
MW-18S
SINJ14
SINJ15
DB-1
MW-16D
MW-16S
MW-11S
MW-11D
MW-10D
MW-10S
SINJ10
SINJ17
SINJ16
SINJ9
DB-2
SINJ8
SINJ7
SINJ11
DNW-1
INW-2
DNW-2
SINJ3
SINJ2
SINJ1
SINJ4
SINJ5
INW-1
SINJ6
INW-3
DNW-3
DB-3
M-3D
M-2D
M-2S
PW-4
T209
M-1
V-1
PW-7
T207
PW-3
OB107
LEGEND
PFAS Groundwater Sampling Location - Shallow Well
PFAS Groundwater Sampling Location - Deep Well
PFAS Groundwater Sampling Location - Well Depth Unknown
Remaining Wells
Base Features
400'x400' Base Grid
Chestnut Run Plaza
Wilmington, Delaware 19805
PARSONS
FIGURE 1:
PFAS GROUNDWATER
SAMPLING LOCATIONS
DuPont Circleville Plant
Circleville, Ohio 43113
Monday, September 13, 2021
9/13/2021
451766.05052
1

Appendix E: Chain of Custody Forms

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Phone: 717-656-2300 Fax: 717-656-2681

EPA

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler:	Lab PM: Williams, Marrissa C	Carrier Tracking No(s):	COC No: 410-33395-10398.4
Client Contact: Michelle Spiezio	Phone: 805-881-8302	E-Mail: Marrissa.Williams@eurofinset.com	State of Origin:	Page: Page 4 of 4
Company: Eastern Research Group, Inc.	PWSID:	Analysis Requested		Job #:
Address: 14555 Avion Parkway Suite 200	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: Chantilly	TAT Requested (days):			
State, Zip: VA, 20151-1102	Compliance Project: Δ Yes Δ No			
Phone: 703-633-1709(Tel)	PO #: 0453.12.001 13			
Email: Michelle.Spiezio@erg.com	WO #:			
Project Name: TO 02 & TO 03	Project #: 41007818			
Site:	SSOW#:			Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA_D5.3 - DoD list of 24	Non targeted PFAS	Total Number of containers	Special Instructions/Note:
			Preservation Code:			N				
Field blank	9/16/21	1344	G	Water			✓		1	1 bottle ✓
SK1	9/16/21	1356	G	Water			✓		2	2 bottles ✓
SK2	9/16/21	1407	G	Water			✓		2	2 bottles ✓
001	9/16/21	1317	G	Water			✓		2	2 bottles ✓
602	9/16/21	1252	G	Water			✓		2	2 bottles ✓
SW NCCW	9/15/21	935	G	Water			✓		2	2 bottles ✓
VSBR	9/16/21	1223	G				✓		2	2 bottles ✓
PW3	9/16/21	837	G				✓		2	2 bottles ✓
PW32	9/16/21	835	G				✓		2	2 bottles ✓
TRIP blank	extra label / SW NCCW								1	1 bottle NOT present

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements:

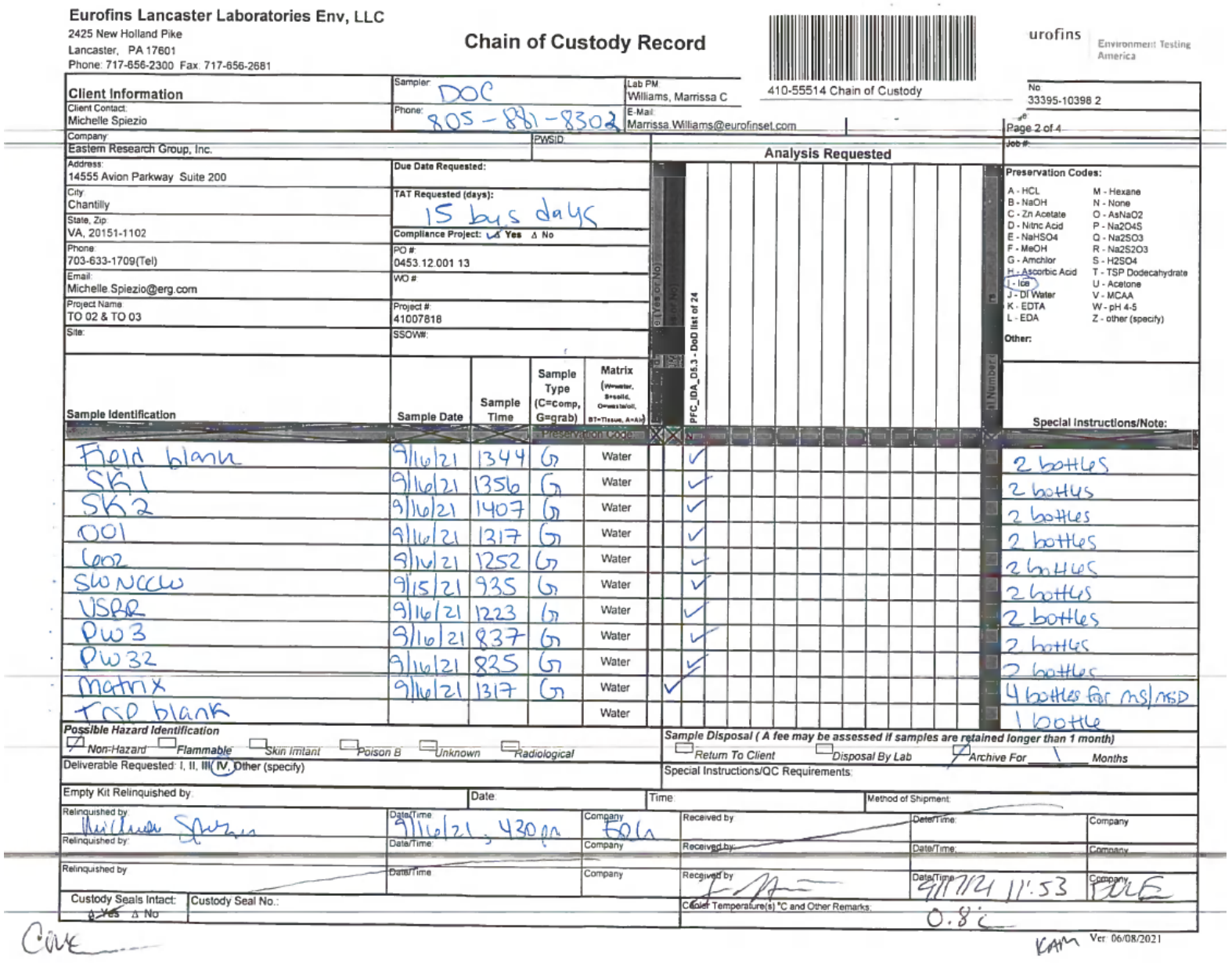
Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	9/16/21 430pm	ERG	Monte Strynar	9/21/21 9:00AM	US EPA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021



Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Phone: 717-656-2300 Fax: 717-656-2681

Chain of Custody Record

410-55514 Chain of Custody

urofins Environment Testing America

Client Information	Sampler: DOC	Lab PM: Williams, Marrissa C	No: 33395-10398 2
Client Contact: Michelle Spiezio	Phone: 805-881-8302	E-Mail: Marrissa.Williams@eurofinset.com	Page 2 of 4
Company: Eastern Research Group, Inc.	PWSID:		Job #:
Address: 14555 Avion Parkway Suite 200	Due Date Requested:	Analysis Requested	
City: Chantilly	TAT Requested (days): 15 bus days		Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: VA, 20151-1102	Compliance Project: ☑ Yes ☐ No		
Phone: 703-633-1709(Tel)	PO #: 0453.12.001 13		Other:
Email: Michelle.Spiezio@erg.com	WO #:		
Project Name: TO 02 & TO 03	Project #: 41007818		
Site:	SSOW#:		

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, Oil, Waste/oil, BT=Tissue, A=Air)	Preservation Code	Filtered Sample (Yes or No)	MS/MSD (Yes or No)	PFC_IDA_D&.3 - DoD list of 24	Total Number	Special Instructions/Note:
Field blank	9/16/21	1344	G	Water				✓		2 bottles
SK1	9/16/21	1356	G	Water				✓		2 bottles
SK2	9/16/21	1407	G	Water				✓		2 bottles
001	9/16/21	1317	G	Water				✓		2 bottles
002	9/16/21	1252	G	Water				✓		2 bottles
SW NCCW	9/15/21	935	G	Water				✓		2 bottles
VSBR	9/16/21	1223	G	Water				✓		2 bottles
PW3	9/16/21	837	G	Water				✓		2 bottles
PW32	9/16/21	825	G	Water				✓		2 bottles
Matrix	9/16/21	1317	G	Water				✓		4 bottles for MS/MSD
TSP blank				Water						1 bottle

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☑ Archive For 1 Months

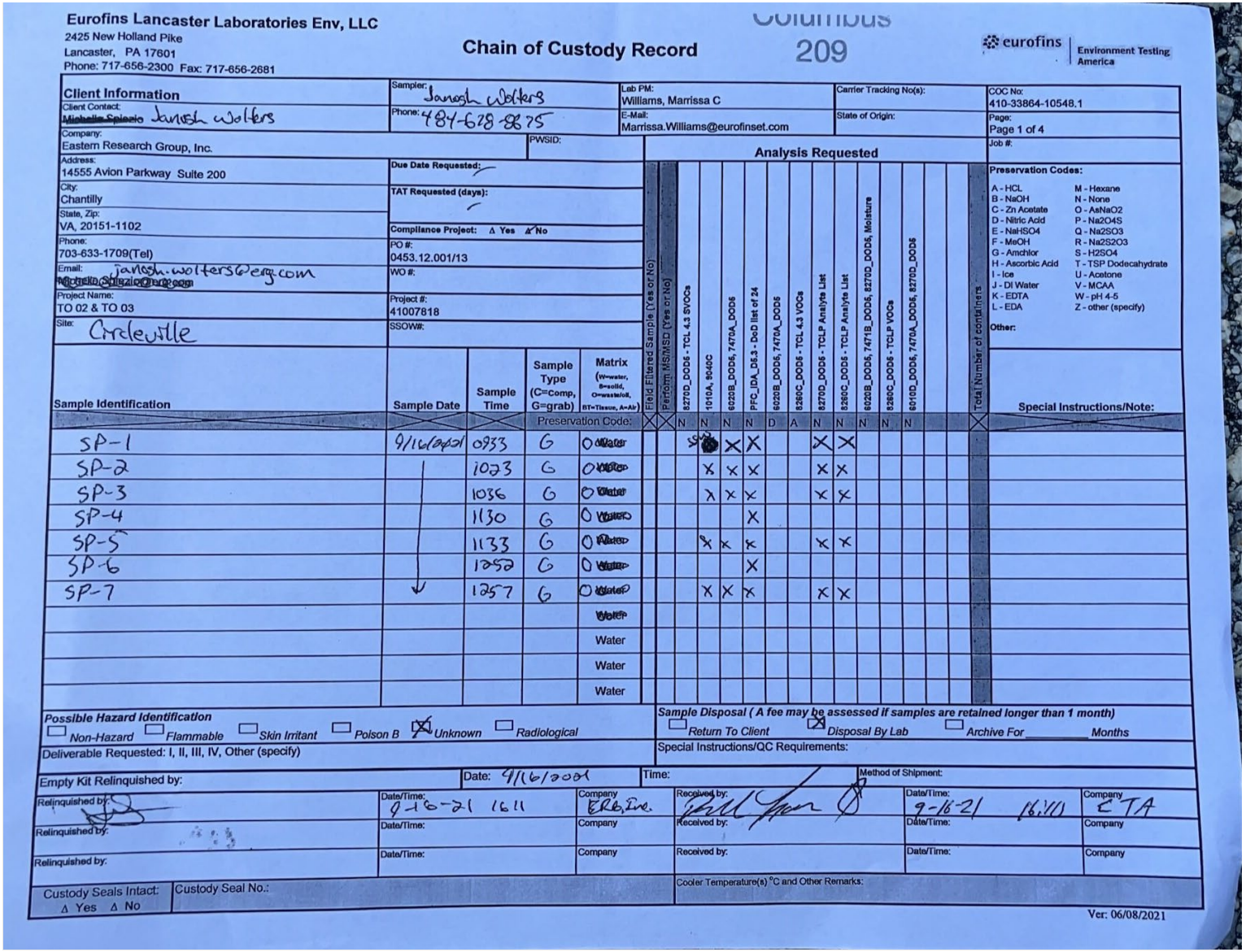
Deliverable Requested: I, II, III, (IV), Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 9/16/21, 430 PM	Company: EDA	Received by:	Date/Time:	Company:	
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:	
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time: 9/17/21 11:53	Company: EDA	

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 0.8°C

Ver: 06/08/2021



Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Phone: 717-656-2300 Fax: 717-656-2681

Columbus 209

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Janosh Wolters	Lab PM: Williams, Marrissa C	Carrier Tracking No(s):	COC No: 410-33864-10548.1
Client Contact: ~~Michelle Spiezio~~ Janosh Wolters	Phone: 484-678-8875	E-Mail: Marrissa.Williams@eurofinset.com	State of Origin:	Page: Page 1 of 4
Company: Eastern Research Group, Inc.	PWSID:			Job #:
Address: 14555 Avion Parkway Suite 200	Due Date Requested:			
City: Chantilly	TAT Requested (days):			
State, Zip: VA, 20151-1102	Compliance Project: Δ Yes Δ No			
Phone: 703-633-1709(Tel)	PO #: 0453.12.001/13			
Email: janosh.wolters@erg.com ~~michelle.spiezio@erg.com~~	WO #:			
Project Name: TO 02 & TO 03	Project #: 41007818			
Site: Circleville	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify), Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8270D_DOD5 - TCL 4.3 SVOCs	1010A, 9040C	6020B_DOD5, 7470A_DOD5	PFC_IDA_D5.3 - DoD list of 24	6020B_DOD5, 7470A_DOD5	8260C_DOD5 - TCL 4.3 VOCs	8270D_DOD5 - TCLP Analyte List	8260C_DOD5 - TCLP Analyte List	6020B_DOD5, 7471B_DOD5, 8270D_DOD5, Moisture	8260C_DOD5 - TCLP VOCs	6010D_DOD5, 7470A_DOD5, 8270D_DOD5	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	N	N	D	A	N	N	N	N	N		
SP-1	9/16/2021	0933	G	O Water				X	X	X			X	X					
SP-2		1023	G	O Water				X	X	X			X	X					
SP-3		1036	G	O Water				X	X	X			X	X					
SP-4		1130	G	O Water						X									
SP-5		1133	G	O Water				X	X	X			X	X					
SP-6		1252	G	O Water						X									
SP-7		1257	G	O Water				X	X	X			X	X					
				Water															
				Water															
				Water															
				Water															

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: 9/16/2021 Time: Method of Shipment:

	Date/Time	Company	Received by:	Date/Time	Company
Relinquished by:	9-16-21 1611	ERG, Inc.		9-16-21 16:11	ETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Appendix F: Sample Quality Assurance/Quality Control Discussion

Sample Quality Assurance/Quality Control Discussion

Eurofins Lancaster Laboratories was selected as the laboratory for the targeted analyses because it operates a National Environmental Laboratory Accreditation Certification (NELAC) certified laboratory for the method used in this sampling episode. An EPA Office of Research and Development (ORD) laboratory in Research Triangle Park (RTP) completed the non-targeted fluorocarbon chemicals analysis.

For this sampling episode, ERG followed all Quality Assurance Project Plan sampling requirements.

CWA Samples – Targeted Fluorocarbon Chemicals Analysis

Sample Receipt Condition

The samples were received for analysis at Eurofins in good condition and consistent with the accompanying chain of custody form, except there were three bottles of Trip Blank instead of one as listed on the chain of custody. The field samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Holding Times

All holding times were met.

Laboratory Control Samples

All analytes measured in the two method blanks were below the reporting limit.

The laboratory conducted analyses on two sets of laboratory control samples (LCS). The first LCS showed percent recoveries for the following analytes: PFO3OA, PFO2HxA, PFOSA, PFPeA, PFESA Byproduct 1, and PFESA Byproduct 2. The laboratory performed a second laboratory control sample, which showed only PFESA Byproduct 1 was outside of control limits. All sample results for PFESA Byproduct 1 are qualified with a *-, indicating that the percent recovery in the LCS is below the control limits. The laboratory case narrative indicates the results for PFESA Byproduct 1 should therefore be considered “advisory.” Based on this and the very low percent recoveries for this analyte, the PFESA Byproduct 1 results are not acceptable for use.

Matrix Spikes and Duplicates

The laboratory also conducted a matrix spike (MS) and matrix spike duplicate (MSD) analysis, using extra sample volume taken at sampling point 001. All percent recoveries and RPDs were within acceptance criteria except for the following:

- The percent recoveries exceeded control limits for the following analytes: PFO3OA, PFO2HxA, PFHxA, PFOSA, and PFESA Byproduct 2. The percent recoveries were only slightly outside of control limits (within ~10%) for these analytes; therefore, these results are still acceptable for use.
- Percent recovery was below control limits for PFESA Byproduct 1. Additionally, the RPD between the MS and MSD exceeded the control limit for this analyte. Therefore, the PFESA Byproduct 1 results are not acceptable for use.

Additional Quality Notes from the Laboratory
None.

Conclusion
Based on ERG's review of the available quality control data, the analytical data provided by the laboratory are acceptable for use in this report, except for the results for the analyte PFESA Byproduct 1 due to the low percent recoveries in the LCS, MS, and MSD analyses.

CWA Samples – Non-Targeted Fluorocarbon Chemicals Analysis
Sample Receipt Condition
The samples were received for analysis by the EPA ORD RTP laboratory in good condition and consistent with the accompanying chain of custody form, except there was no Trip Blank included in the samples as listed on the chain of custody. The field samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Holding Times
For non-targeted analysis, hold times are not applicable because the specific analytes in the samples are unknown. Samples were processed within 28 days of receipt.

Laboratory Control Samples
The eight samples were processed with two laboratory blanks and one field blank. After applying the reporting limit, no analytes in any of the blanks exceeded the reporting limit.
Matrix Spikes and Duplicates
Eight internally injected labeled isotopic standards were injected into the samples and the field blank at the same concentrations during sample preparation. These injections provide a means to generally assess precision in the laboratory process. Internal standards were summed for each sample. The sum should be equal in all samples if recoveries are good. The sum of internal standards was generally consistent among samples and the field blank. Summed peak area of internal standards in the samples and the field blank were within ± 50% of their average and most where within 20%. The sample from SWNCCW had higher summed peak area than the other samples indicating possible interferences in this sample.

A field duplicate was collected with samples PW3 and PW32. The duplicate pair provides a means to generally assess the precision in the overall sampling and analysis process. The overall precision of peak area between the duplicates is determined by the Relative Percent Difference (RPD) of the two samples. There were 816 possible comparisons among analytes including the internal standard injected analytes. The sample and its duplicate agreed that there were no detectable peak areas for 254 analytes (12%) and another 392 analytes (54%) agreed that peak area was present but less than the reporting limit. The average RPD for valid comparisons of the remaining analytes, in which the peak area in both samples was greater than the reporting limit (n=52) was 29%. The RPD of the injected internal standards averaged 5% indicating good laboratory precision in the laboratory control samples.

Additional Quality Notes from the Laboratory
None.

Conclusion
Based on ERG's review of the available quality control data, the analytical data provided by the laboratory are acceptable for use in this report.

RCRA Samples –
Receipt for All Samples
The samples were received on 9/17/2021 11:50 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 3.6°C and 4.1°C.

GC/MS VOA
Method 8260C: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: SP-5 (410-55602-5). Elevated reporting limits (RLs) are provided. No additional analytical or quality issues were noted, other than those described above.

GC/MS Semi VOA
Method 8270D: The following sample was diluted due to the nature of the sample matrix: SP-5 (410-55602-5). As such, surrogate recoveries are below the calibration range or are not reported, and elevated RLs are provided. No additional analytical or quality issues were noted, other than those described above.

Targeted Fluorocarbon Chemicals
Method PFC_IDA: Poor recoveries for PS Acid were observed in quality control samples associated with samples: SP-1 (410-55602-1), SP-2 (410-55602-2), SP-3 (410-55602-3), SP-4 (410-55602-4), SP-5 (410-55602-5), SP-6 (410-55602-6), SP-7 (410-55602-7). The results reported for PS Acid should be considered estimated. The LCS/LCSD labeled isotope(s) recovery associated with samples: SP-5 (410-55602-5) and SP-7 (410-55602-7) is outside the QC acceptance limits. Since the recovery for the associated target analytes is within the limits, the data is reported. RLs were raised for the following samples: SP-3 (410-55602-3), SP-5 (410-55602-5), and SP-7 (410-55602-7) due to interference from the sample matrix. The sample injection standard peak areas in the following samples: SP-5 (410-55602-5) and SP-7 (410-55602-7) are outside of the QC limits for both the initial injection and the re-injection. The values reported are from the initial injection of the samples. The recovery for the labeled isotope(s) is outside the QC acceptance limits due to the matrix of the sample. The recovery for the labeled isotope(s) in the following samples: SP-4 (410-55602-4), SP-6 (410-55602-6), and SP-7 (410-55602-7) is outside the QC acceptance limits. Since the recovery is high and the native analyte is not detected in the sample, the data is reported.

Metals
Method 6020B: The reference method requires samples to be preserved to a pH of <2. The following sample(s) were received with insufficient preservation at a pH of 6: SP-5 (410-55602-5). The following sample was diluted due to the nature of the sample matrix: SP-5 (410-55602-5). Elevated RLs are provided.

Method 7470A: The reference method requires samples to be preserved to a pH of <2. The following sample(s) were received with insufficient preservation at a pH of 6: SP-5 (410-55602-5). The following sample(s) were analyzed outside of analytical holding time due to laboratory error: SP-1 (410-55602-1), SP-2 (410-55602-2), SP-3 (410-55602-3) and SP-7 (410-55602-7). No additional analytical or quality issues were noted, other than those described above.

Appendix CWA A: NPDES Permit No. OH0006327 (Non-CBI Attachment)

Appendix CWA B: Photographs

CWA Photo 1. View of the KSR1 TOC analyzer, which read 1,500 mg/l (ppm) at the time of the inspection.

CWA Photo 2. View of the KSR2 TOC analyzer, which read 150 mg/l (ppm) at the time of the inspection. The time reading on this analyzer was off by approximately one hour.

CWA Photo 3. View of the K1 TOC analyzer, which read 106 mg/l (ppm) at the time of the inspection on 9/15/2021.

CWA Photo 4. View of the K1 TOC analyzer, which read 185 mg/l (ppm) at the time of the sampling on 9/16/2021.

CWA Photo 5. View of the K2 TOC analyzer, which read 34 mg/l (ppm) at the time of the inspection on 9/15/2021. The time reading on this analyzer was off by 1 hour and 40 minutes.

CWA Photo 6. View of the K2 TOC analyzer, which read 12 mg/l (ppm) at the time of the sampling on 9/16/2021. The time reading on this analyzer was off by 1 hour and 40 minutes.

CWA Photo 7. View of the Tedlar process sewer tank TOC analyzer, which read 26 mg/l (ppm) at the time of the inspection on 9/16/2021.

CWA Photo 8. View of the frac tanks being used for intermediate waste storage prior to disposal in the North Lagoon or off site.

CWA Photo 9. View of the hose used to transfer high organics concentration wastewater, collected by vacuum trucks such as those used at the frac tanks, to the North Lagoon.

CWA Photo 10. View of the 20,000-gal wastewater tank that feeds the Vespel SBRs (white tank).

CWA Photo 11. View of one of the Vespel SBRs, which was not discharging at the time of the inspection because Vespel was shut down for routine maintenance at the time of the inspection.

CWA Photo 12. View of the North Lagoon, which was not discharging to the South Lagoon at the time of the inspection. The hose viewed in the photo is a recirculation line.

CWA Photo 13. View of the South Lagoon.

CWA Photo 14. View of the diversion box through which wastewater flows to the aerated lagoons. Wastewater was flowing through the left pipe at the time of the inspection, corresponding to the South Lagoon.

CWA Photo 15. View of the Outfall 602 flume, through which there was a consistent discharge from the South Lagoon at the time of the inspection.

CWA Photo 16. View downstream of the Outfall 602 flume, which leads to Outfall 001.

CWA Photo 17. View, facing south, away from Outfall 001, of the concrete ditch used to convey stormwater and NCCW to Outfall 001.

CWA Photo 18. View, facing North, towards Outfall 001, of the concrete ditch used to convey stormwater and NCCW to Outfall 001. Flow was not sufficient to reach Outfall 001 at the time of the inspection.

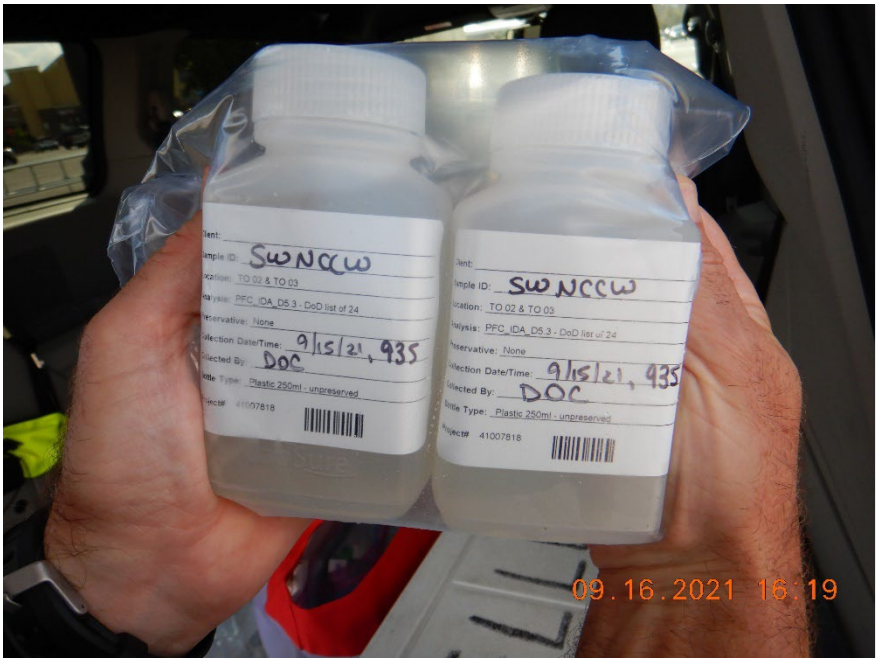
CWA Photo 19. View of the Outfall 001 flume, through which there was consistent discharge at the time of the inspection.

CWA Photo 20. View of stormwater Outfall 003, which was not discharging at the time of the inspection.

CWA Photo 21. View of the discharge area for stormwater Outfall 004. No flow was observed in this area at the time of the inspection.

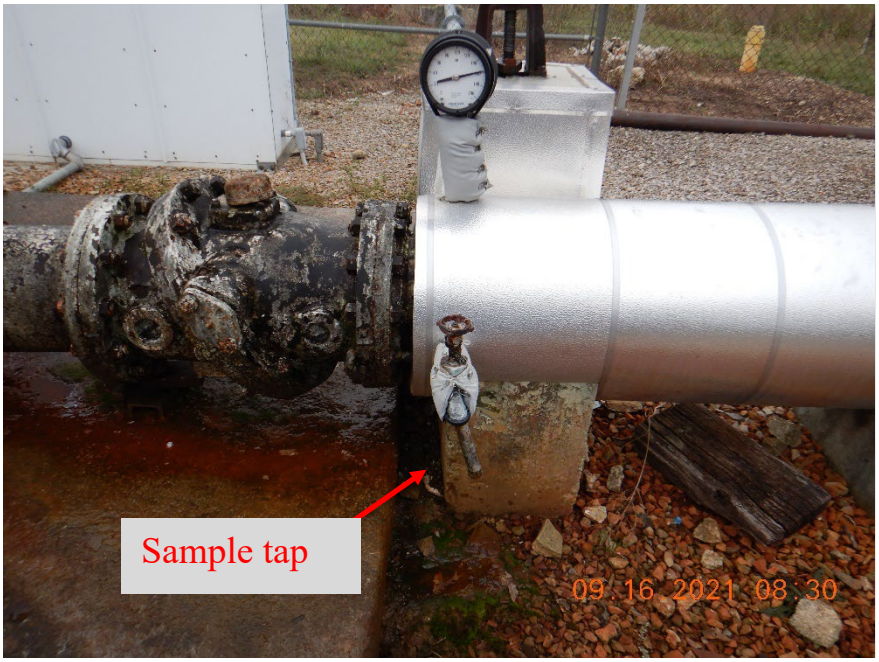
Sample ID: SWNCCW	**Date sample taken:** 9/15/2021
Sample taken by: Danny O'Connell and Michelle Spiezio	**Sample location:** Concrete ditch for stormwater and NCCW

CWA Photo 22. View of sampling of the slowly flowing water in the concrete ditch use for stormwater and NCCW. This water was not discharging at the time of sampling.



CWA Photo 23. View of SWNCCW samples, which were clear with a slight brown tint.

Sample ID: PW32	**Date sample taken:** 9/16/2021
Sample taken by: Danny O'Connell and Michelle Spiezio	**Sample location:** Groundwater production well 3



CWA Photo 24. View of sample tap at groundwater production well 3. Water was flushed from the tap for approximately three minutes prior to sampling.

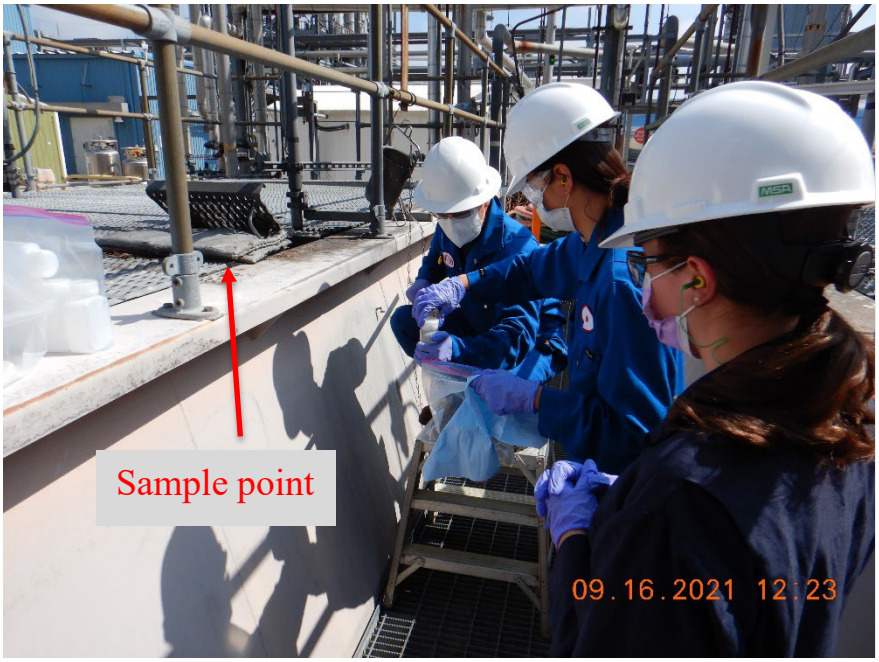
CWA Photo 25. View of PW32 samples, which were clear with a slight brown tint.

Sample ID: PW3	**Date sample taken:** 9/16/2021
Sample taken by: Danny O'Connell and Michelle Spiezio	**Sample location:** Groundwater production well 3 (duplicate)

Refer to **CWA Photo 24** for a photograph of the sampling point.

CWA Photo 26. View of PW3 samples, which were clear with a slight brown tint.

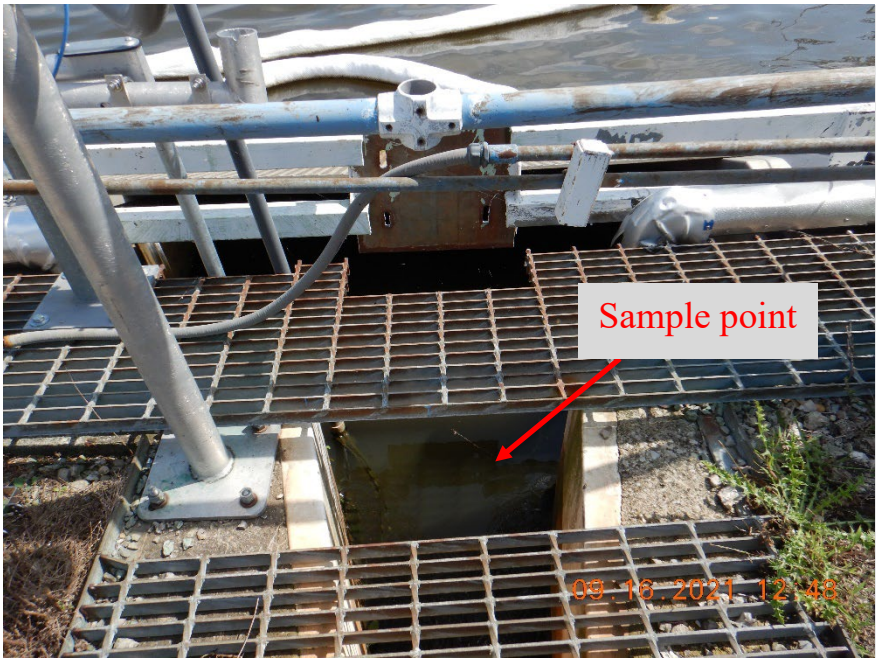
Sample ID: VSBR	**Date sample taken:** 9/16/2021
Sample taken by: Danny O'Connell and Michelle Spiezio	**Sample location:** Outfall 604, Vespel SBR



CWA Photo 27. View of sampling point from Vespel SBR. The SBR was not discharging at the time of sampling, due to a scheduled shutdown, but the sampled wastewater was of discharge quality.

CWA Photo 28. View of VSBR samples, which were slightly brown with a small amount of solids.

Sample ID: 602	**Date sample taken:** 9/16/2021
Sample taken by: Danny O'Connell and Michelle Spiezio	**Sample location:** Outfall 602



CWA Photo 29. View of sampling point for Outfall 602.

CWA Photo 30. View of the 602 samples, which were clear with a slight brown tint.

Sample ID: 001	**Date sample taken:** 9/16/2021
Sample taken by: Danny O'Connell and Michelle Spiezio	**Sample location:** Outfall 001

CWA Photo 31. View of sampling from Outfall 001.

CWA Photo 32. View of 001 samples, which were clear with a slight brown tint.

Sample ID: SK1	**Date sample taken:** 9/16/2021
Sample taken by: Danny O'Connell and Michelle Spiezio	**Sample location:** K1 process sewer

CWA Photo 33. View of sampling from the K1 process sewer.

CWA Photo 34. View of the SK1 samples, which were clear with no visible solids.

Sample ID: SK2	**Date sample taken:** 9/16/2021
Sample taken by: Danny O'Connell and Michelle Spiezio	**Sample location:** K2 process sewer

CWA Photo 35. View of sampling from the K2 process sewer.

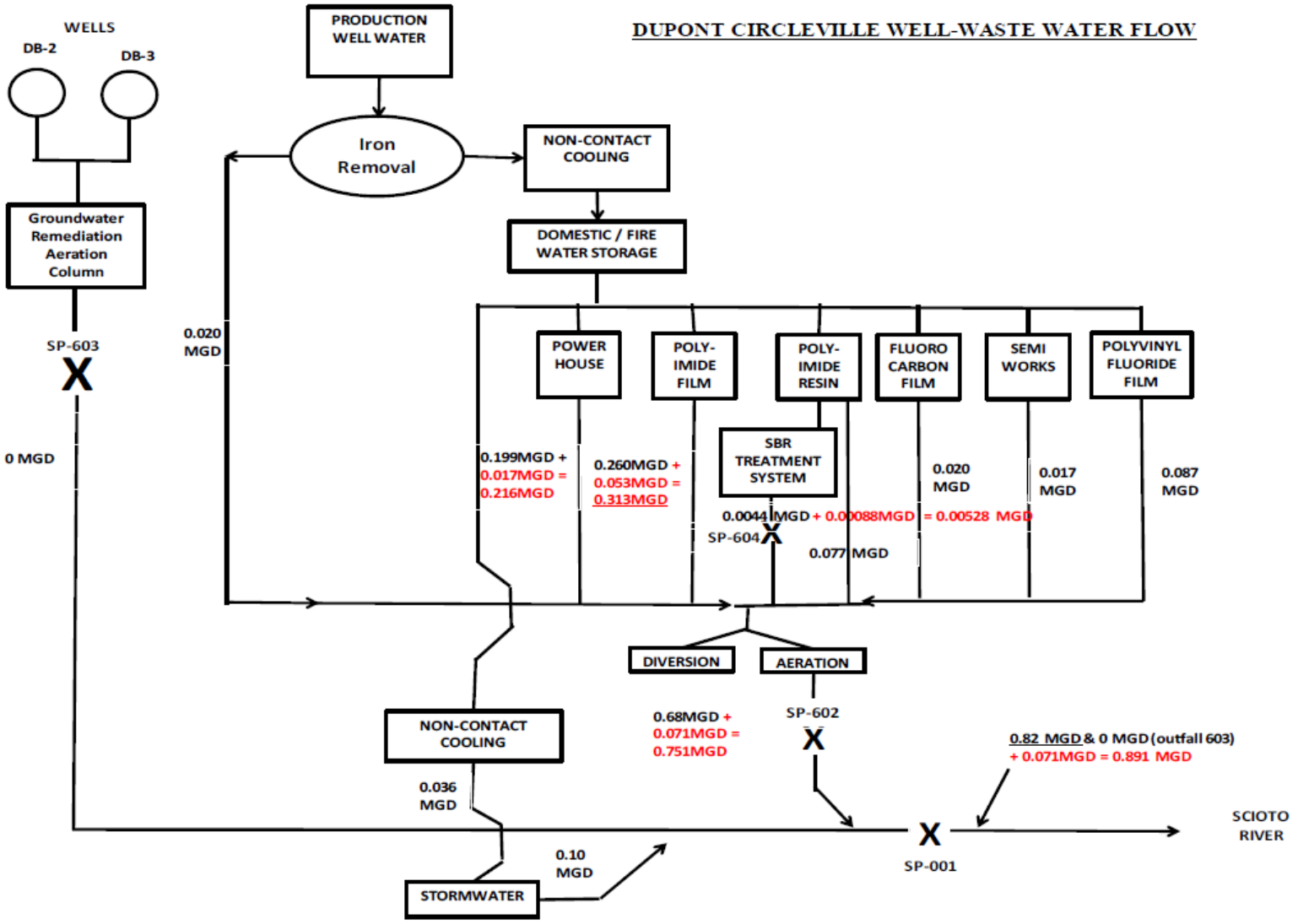
CWA Photo 36. View of the SK2 samples, which were clear with settleable black solids.

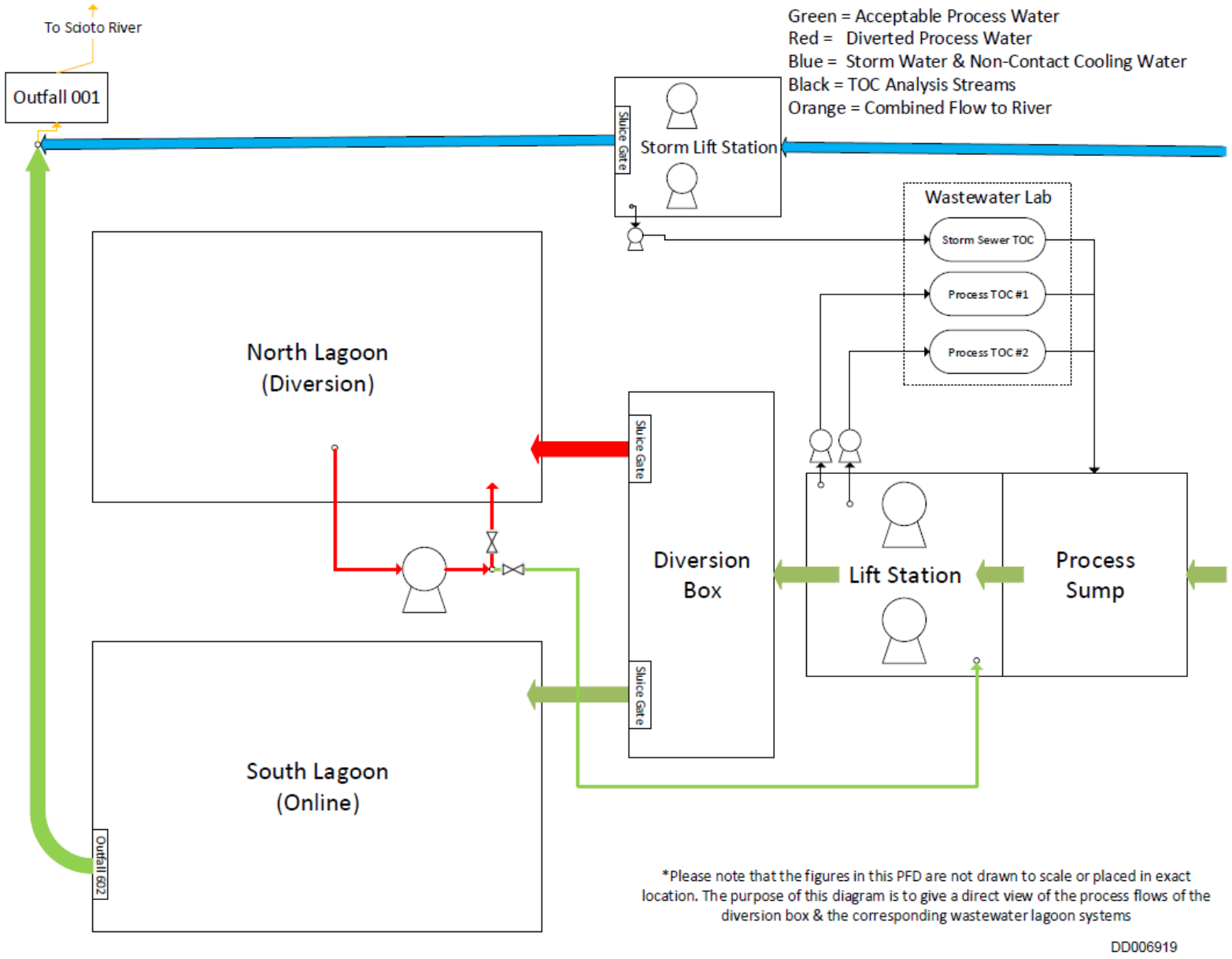
Sample ID: Field Blank	**Date sample taken:** 9/16/2021
Sample taken by: Danny O'Connell and Michelle Spiezio	**Sample location:** Field Blank was transferred near the K1 process sewer manhole

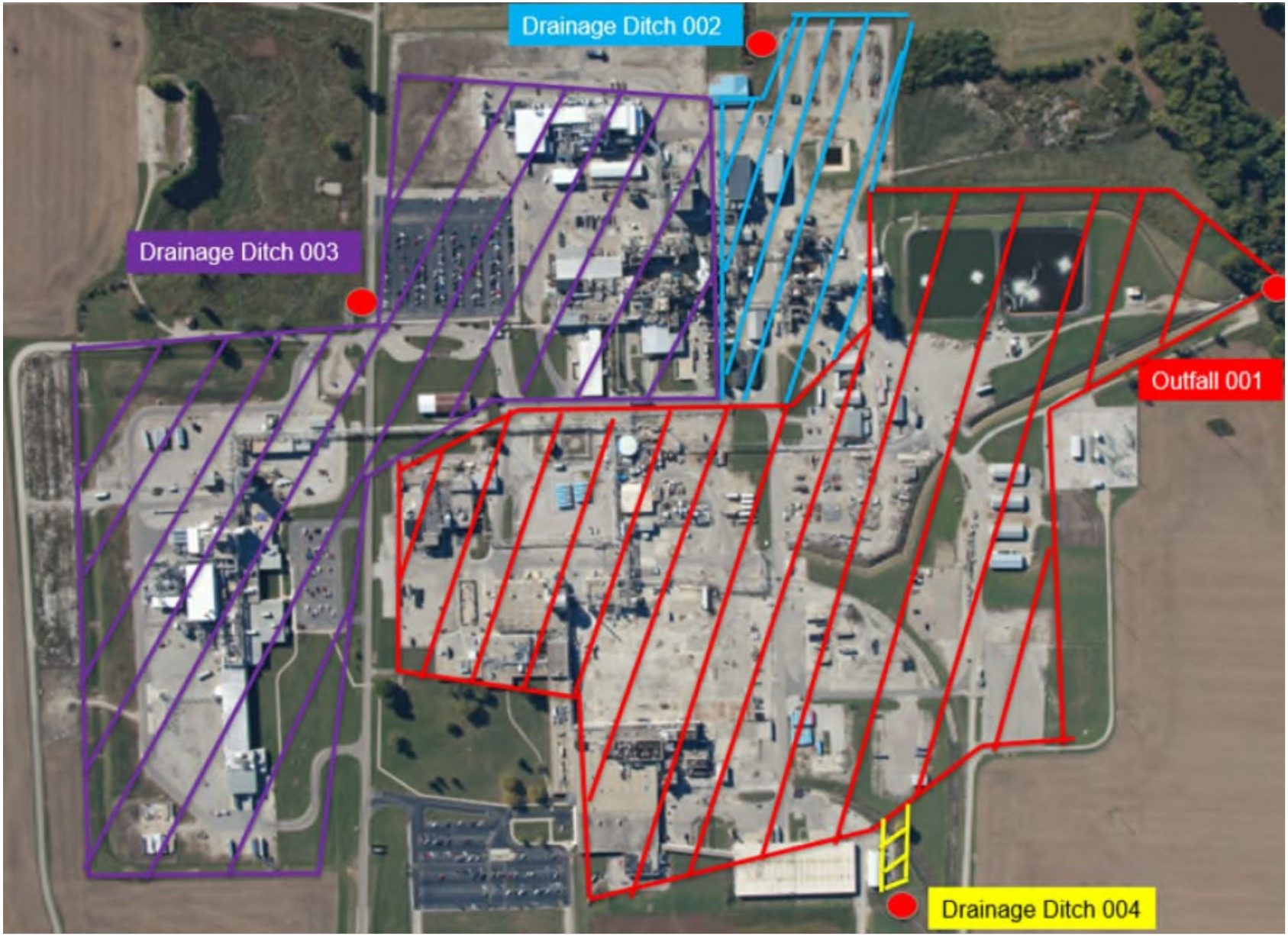
CWA 37. View of the K1 process sewer manhole, near which the Field Blank was transferred.

CWA 38. View of the Field Blank samples.

Appendix CWA C: Water Diagrams


DUPONT CIRCLEVILLE WELL-WASTE WATER FLOW
WELLS
DB-2
DB-3
PRODUCTION WELL WATER
Iron Removal
NON-CONTACT COOLING
Groundwater Remediation Aeration Column
DOMESTIC / FIRE WATER STORAGE
SP-603
0 MGD
0.020 MGD
POWER HOUSE
POLY-IMIDE FILM
POLY-IMIDE RESIN
FLUORO CARBON FILM
SEMI WORKS
POLYVINYL FLUORIDE FILM
0.199MGD + 0.017MGD = 0.216MGD
0.260MGD + 0.053MGD = 0.313MGD
SBR TREATMENT SYSTEM
0.020 MGD
0.017 MGD
0.087 MGD
0.0044 MGD + 0.00088MGD = 0.00528 MGD
SP-604
0.077 MGD
DIVERSION
AERATION
NON-CONTACT COOLING
0.68MGD + 0.071MGD = 0.751MGD
SP-602
0.82 MGD & 0 MGD (outfall 603) + 0.071MGD = 0.891 MGD
0.036 MGD
0.10 MGD
STORMWATER
SP-001
SCIOTO RIVER


To Scioto River
Outfall 001
Green = Acceptable Process Water
Red = Diverted Process Water
Blue = Storm Water & Non-Contact Cooling Water
Black = TOC Analysis Streams
Orange = Combined Flow to River
Sluice Gate
Storm Lift Station
Wastewater Lab
Storm Sewer TOC
Process TOC #1
Process TOC #2
North Lagoon
(Diversion)
Sluice Gate
Diversion
Box
Lift Station
Process
Sump
Sluice Gate
South Lagoon
(Online)
Outfall 602
*Please note that the figures in this PFD are not drawn to scale or placed in exact location. The purpose of this diagram is to give a direct view of the process flows of the diversion box & the corresponding wastewater lagoon systems
DD006919


Drainage Ditch 002
Drainage Ditch 003
Outfall 001
Drainage Ditch 004

Appendix CWA D: Targeted Fluorocarbon Chemical Laboratory Report (Non-CBI Attachment)

Appendix CWA E: Non-Targeted Analysis Laboratory Report (Non-CBI Attachment)

Appendix RCRA A: Photographs

RCRA Photo 1. View of the 2,200-gallon liquid fuel tank located in the Kapton solvent recovery area.

RCRA Photo 2. View of the lines that feed into the 2,200-gallon liquid fuel tank shown in Photo 1.

RCRA Photo 3. View of the P12 distillate decanter tank located in the Kapton solvent recovery area. The P12 decanter tank feeds the facility's 5,000-gallon hazardous waste tank shown in Photo 8.

RCRA Photo 4. View of hazardous waste feeding lines coming off the P-12 decanter tank shown in Photo 3.

RCRA Photo 5. View of the P-20 purge receiver unit which is used in conjunction with the Kapton solvent recovery unit. The P-20 purge receiver is fed directly to the 5,000-gallon hazardous waste tank shown in Photo 8.

RCRA Photo 6. View of the lines underneath the P-12 decanter tank.

RCRA Photo 7. Close-up view of the lines underneath the P-12 decanter tank shown in Photo 6. This photo was taken to show an example of the facility's RCRA subpart BB tagging system.

RCRA Photo 8. An overview of the facility's 5,000-gallon hazardous waste tank. This view of the hazardous waste tank is shown from the Kapton solvent recovery area.

RCRA Photo 9. A view of both filters used in the Kapton solvent recovery process.

RCRA Photo 10. A view of a SAA 55-gallon container located near the hazardous waste tank used primarily to collect samples taken of rain water that is observed in the secondary containment area for the hazardous waste tank.

RCRA Photo 11. A view of the collected solvent settling tank located next to the Kapton solvent recovery process. The tank is used to hold material that is sent through the solvent recovery process.

RCRA Photo 12. A view of the discharge port of the collected solvent settling tank. The tank is cleaned out approximately once per year and the material is put into a tanker trailer which attaches directly to the port photographed above.

RCRA Photo 13. A view of a SAA 55-gallon container located outside of Building 2. The container holds process samples and drain helps from process tanks.

RCRA Photo 14. A view of the 5,000-gallon tanker trailer LT-1087 that is used to accumulate hazardous pyridine and acetone waste. The tanker trailer acts as a less-than-90-day accumulation container located in the Vespel process area.

RCRA Photo 15. A view of the manway cover on the tanker trailer LT-1087 accumulating hazardous waste photographed in Photo 16. The manway cover was unlatched and venting to the atmosphere.

RCRA Photo 16. A view of the front of tanker trailer LT-1087 accumulating hazardous waste.

RCRA Photo 17. A view of one of four 55-gallon hazardous waste containers located in the facility's Building 510 CAA. The containers had an accumulation date of "6/30/2021". This date is over the 90-day accumulation limit for the facility's CAA.

RCRA Photo 18. A view of an additional 55-gallon hazardous waste container as described in Photo 17.

RCRA Photo 19. A view of an additional 55-gallon hazardous waste container as described in Photo 17.

RCRA Photo 20. Overview of all four 55-gallon hazardous waste containers described in Photo 17.

RCRA Photo 21. A view of a 55-gallon waste container labeled as "Pending Analysis" in the facility's Building 510 CAA.

RCRA Photo 22. A view of the tight aisle space between hazardous waste containers located in Building 510 CAA.

RCRA Photo 23. A view of frac tank RT00040 that was labeled with "Hazardous Waste – Pending Analysis" on the side of the tank.

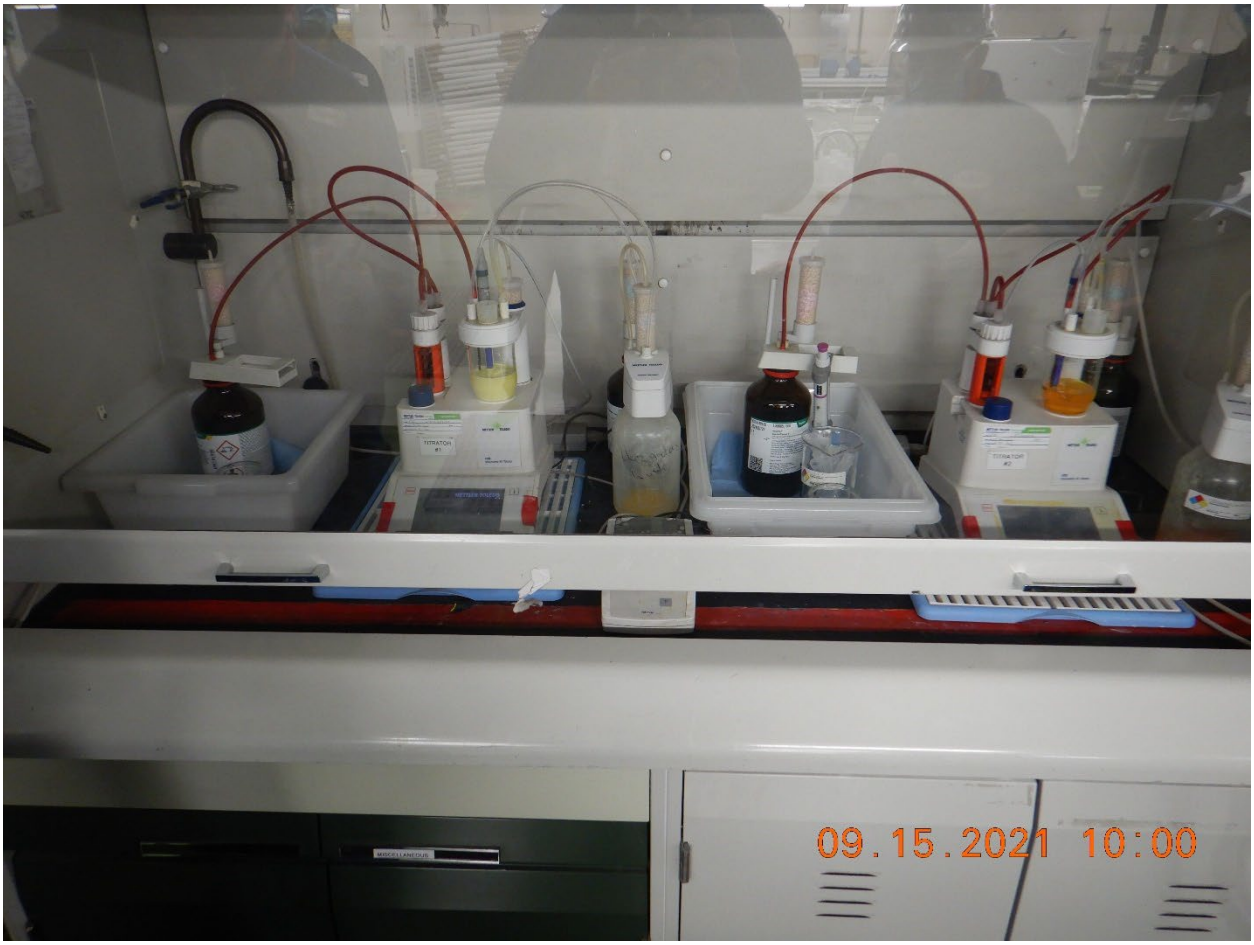
RCRA Photo 24. A view of the backside of frac tank RT00040.

RCRA Photo 25. A close-up view of the labeled observed on frac tank RT00040.

RCRA Photo 26. A view of frac tank RT00026 that was also labeled with "Hazardous Waste – Pending Analysis" on the side of the tank as seen on frac tank RT00040 in Photo 25.

RCRA Photo 27. A view of tanker trailer LT-1625 located in trailer hill area. The tanker trailers are used to store hazardous spent solvent waste from the Kapton process.

RCRA Photo 28. A view of SAA Z located on the south pad next to the facility's PAD unit. The SAA is used to manage the facility's laboratory wastes which are generated directly inside the building shown in the photograph.



RCRA Photo 29. A view of inside the facility's laboratory hood.

RCRA Photo 30. A view of hazardous waste that is stored inside the laboratory hood. The waste is then transferred from this SAA container into the SAA container shown in Photo 31.

RCRA Photo 31. A view of two 55-gallon containers placed outside of the laboratory that hold laboratory waste accumulated in the containers shown in Photo 30.

RCRA Photo 32. A view of the tap used to sample the basement tank located in the Vespel solvent recovery area. This sample tap was used to fill all SP-2 and SP-3 containers.

RCRA Photo 33. A view the grab sample (SP-2) taken directly from sample tap into sample containers held by sampler. The sample tap was flushed prior to sample being taken. Sample was clear liquid and no visible solids.

RCRA Photo 34. A view of the facility's split samples of SP-2.

RCRA Photo 35. A view of grab sample (SP-3) taken directly from sample tap into sample containers held by sampler. Tap was flushed prior to sample being taken. Sample was clear liquid and no visible solids.

RCRA Photo 36. A view of the facility's split samples of SP-3.

RCRA Photo 37. A view of the open manway cover on tanker trailer LT-1625 prior to sampling.

RCRA Photo 38. A view of the fluorocarbon chemical equipment blank (SP-4) taken prior to sampling the tanker trailer shown in Photo 37.

RCRA Photo 39. A view of grab sample (SP-5) taken directly from tanker trailer LT-1625 using a coliwasa to allow for a representative columnar sample of all material the tank. Sample was black liquid with visible flakey pea-sized solids.

RCRA Photo 40. A view of the facility's split samples of SP-5.

RCRA Photo 41. A view of grab sample (SP-6) taken directly from tanker trailer using a coliwasa to allow for a representative columnar sample of all material the tank. Sample was black liquid with no visible solids.

RCRA Photo 42. A view of the facility's split samples of SP-6.

Appendix TSCA A: TSCA Inspection Report (TSCA CBI Attachment)