EXCAVATION AND MATERIALS HANDLING CONTINGENCY PLAN

EDGEMOOR EXPANSION SITE
104 HAY ROAD
WILMINGTON, DELAWARE

REVISION 1

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(Revised January 2020)

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I. INTRODUCTION

The purpose of this plan is to provide environmental guidance for excavation activities, work in the subsurface environment, and handling of excavated materials at the Chemours Edgemoor Plant in Wilmington, Delaware (referred to as the "Site"). The plan addresses subsurface work at the Site and is based on the current understanding of environmental conditions that exist or may be encountered. The plan should be viewed as a living document that is updated periodically as new subsurface information is generated and subsurface conditions at the Site become better understood. This version of the plan is focused on maintenance and repair of underground utilities and infrastructure that is necessary to accommodate the changed use of the Site. This plan is not meant to cover major earth-moving activities (e.g., site grading or new construction), but should be adequate for minor earth-disturbing activities (e.g., subsurface utility removal/installation and maintenance) in preparation of future redevelopment of the Site. This plan is intended to guide management of excavated materials to prioritize on-site reuse and minimize off-site disposal.

The Site consists of two tax parcels located along Hay Road in Wilmington, Delaware. The tax parcel numbers are 06-153.00-006 (112 acres) and 06-153.00-003 (2.08 acres). The larger parcel contains the Chemours Edgemoor Plant, which formerly operated as a pigment manufacturing facility since 1931, where titanium dioxide, titanium tetrachloride, and ferric chloride have been produced. This industrial use has resulted in the presence of conditions of environmental concern relating to the manufacturing processes, particularly in the defined solid waste management units (SWMUs) outlined in Figure 1. Excavation and subsurface work within the SWMUs in this parcel should proceed with caution and appropriate contingency planning. Areas outside the SWMUs have not been previously investigated and conditions are unknown. Excavation and subsurface work in such areas should proceed with monitoring for environmental conditions of concern.

The smaller parcel contains the former Holland Mulch Site (HMS). The HMS was part of an earlier oil recycling facility. No manufacturing activities are known to have been performed on this parcel. Based on previous investigations on the smaller parcel, anticipated environmental conditions of concern are soil-impacted by benzo(a)pyrene and arsenic, as well as groundwater-impacted by trichloroethylene (TCE). These conditions may relate to the former presence of underground petroleum storage tanks on the central portion of the parcel.

Both tax parcels are being managed in the Resource Conservation and Recovery Act's (RCRA's) Facility Program by the State of Delaware, Department of Natural Resources and Environmental Control (DNREC). The smaller parcel was previously part of the DNREC – Site Investigation and Restoration Section's (SIRS's) Voluntary Cleanup Program (VCP), identified as Program ID No. DE-1489, but was transferred to DNREC's RCRA Program on May 7, 2015. Both parcels are now identified as part of the DuPont Edge Moor RCRA Facility with EPA I.D. No. DED000800284.

II. SUMMARY OF SITE ENVIRONMENTAL INFORMATION

For the purposes of this plan, the Site has been divided into three zones based on separate historical uses, reported environmental issues, and potential risks to human health and the environment posed by those environmental issues. The three zones are identified as SWMUs, areas outside SWMUs, and subsurface work in contact with groundwater. Subsurface work likely will encounter substances of environmental concern in identified SWMUs, but environmental conditions within areas outside the SWMUs are unknown. If excavations extend into groundwater on the Site, worker contact with substances of environmental concern are likely. The SWMUs on the Site are shown on Figure 1.

A. ZONE 1: SOLID WASTE MANAGEMENT UNITS (SWMU) THAT REQUIRE FURTHER ACTION

As part of the RCRA Part B Permitting Process, EPA and DuPont developed a list of 29 SWMUs at the Site in 1986. By 2001, a Consent Order was issued by the Superior Court of State of Delaware requiring DuPont to obtain a RCRA Corrective Action Plan (CAP) and address previously identified SWMUs. By January 2002, a Closure Plan was submitted to DNREC for solid waste impoundments A, B, C, and D, identified as SWMU-6, which described a plan to neutralize and stabilize impacted waste on-site and then cover the stabilized waste with a geo-synthetic liner. The Post Closure Care Plan was approved by DNREC in April 2003 and by March 2004, the closure of the impoundments was completed. SWMU-6 is considered a part of Zone 1, but has special requirements, as outlined in sections below labeled Zone 1A.

DuPont and their consultant (Parsons) prepared a facility-wide CAP and performed two RCRA Facility Investigations (RFIs) to address the previously identified SWMUs with the exception of SMWU-6. Other than SWMU-6, there are 13 active SWMUs identified on the Site:

SWMU-1: Wastewater Treatment System
SWMU 2: Pond E (Effluent Holding Basin)
SWMU-3: Waste Mixing Area and Split Box
SWMU-4: Former Trash Landfill
SWMU-5: Waste Settling Area:
SMWU-13A & 13B: Process Sewers
SWMU-16: Scrap Metal Area
SWMU 18: Iron-Rich Staging Area
SWMU-20: Area of Old Oil Storage Tank
SWMU-23: Recovered Ore Storage Area
SMWU-25: Ferric Chloride Railcar Loading Area
SWMU-27: Fuel Oil Stained Soil
Holland Mulch Site (HMS)

Assessments of subsurface conditions in these areas have indicated environmental constituents of concern, primarily semi-volatile organic compounds and metals, are present in Site soils.

Soils at the HMS reportedly contain benzo(a)pyrene and arsenic at concentration of potential concern for human health. HMS was transferred to DNREC's RCRA Program on May 7, 2015 and should be handled as an active SWMU.

The SWMUs that were identified as requiring "No Further Action" in Parsons' Phase I and Phase II RFIs will be handled as "Areas Outside of SWMUs."

B. ZONE 2: AREAS OUTSIDE SWMUs

Zone 2 consists of areas of the Site that are located outside the bounds of SWMU-6 and the 13 SWMUs listed in the Zone 1. Per RCRA, the areas outside the Zone 1 and the 1A SWMUs reportedly presented no conditions of concern to human health, but that premise has not been confirmed. The Corrective Action Plan for Edgemoor identified the following SWMUs as requiring no further action prior to site investigations:

SMWU-7A: Building 23 PCB Storage Area
SMWU-7B: Kiln 2 PCB Storage Area
SMWU-9: Hazardous Waste Accumulation Pad
SMWU-10: Eastern Shore Area
SMWU-11: Drainage Culvert
SMWU-12: Emergency Overflow Basin
SMWU-14: Underground Pipelines
SMWU-19: Iron Rich Filter Press Building
SMWU-22: Ferric Chloride Tank Truck Loading Spot
SMWU-26: TiO_2 Railcar Loading Area

A Phase I RCRA Facility Investigation and Phase II RCRA Facility Investigation additionally identified the following SWMUs as requiring no further action:

SMWU-8: Former Less-Than-90-Day Hazardous Waste Accumulation Area
SMWU-15: Former Unpaved Ditch
SMWU-17A: Former Underground Storage Tanks - 1, 2, 3, 4, B, C, F, & G
SMWU-17B: Former Underground Storage Tanks - 6, 7, 8. I, J, K, & L
SMWU-21: Copper Vanadium Sludge Pad
SMWU-24: Oil-Water Separator / Skimmer
SMWU-28: Caustic Storage Area
SMWU-29: Southland Tank

C. ZONE 3: MATERIALS WITHIN THE GROUNDWATER TABLE

Groundwater on the Site was encountered between 12 and 31 feet below ground surface. According to previous Phase I and Phase II RFIs performed on the Site, a clay unit is present near the surface that limits the extent of a shallow permeable unit, and groundwater is not present within the shallow zone of most of the Site. Testing results for groundwater samples collected across the Site reported metals as the primary constituent of concern.

III. SUBSURFACE WORK

Regulatory agency notification requirements vary by Zone. The Site owner or authorized representative shall proceed with caution with minor subsurface work performed in "SWMUs that Require Further Action (Zone 1)." Duffield Associates, Inc. suggests that prior to subsurface work performed in Zone 1, Contractors review previous Phase I and Phase II RFIs as well as the Draft Risk Analysis prepared by Parsons on behalf of DuPont for background and substances of concern identified in the SWMUs. If subsurface work is to be performed within SWMU-6 (Zone 1A), DNREC, State Hazardous Waste Management Section (SWMS) must be notified. Prior written and properly recorded authorization must be obtained from DNREC-SWMS before subsurface work can be performed. The Site owner or authorized representative has no special requirements for performing subsurface work in "Areas Outside of SWMUs (Zone 2)." Minor subsurface work is not anticipated to occur within the groundwater table (Zone 3), because the shallow groundwater table was identified as 12 to 31 feet below ground surface on the Site. Additional guidance regarding handling excavated materials is provided in Section V.

A. ZONE 1: SWMUS THAT REQUIRE FURTHER ACTION

Excavation work in Zone 1 shall be performed by personnel trained to recognize and react to conditions of environmental and human health concern in accordance with OSHA's Hazardous Waste Operations and Emergency Response standard, 29 CFR 1910.120 and 1926.65 (HAZWOPER). The excavation and excavated materials shall be screened for conditions of potential concern including organic vapors using a photo-ionization detector (PID) or a flame-ionization detector (FID), fire potential using a combustible gas meter, visible non-water liquids, odors, and visible discoloration by a Competent Person while work is in process. The Competent Person shall be the owner's representative, shall have been trained in accordance with 29 CFR 1910.120 or 1926.65, and shall have the ability to stop work when environmental conditions appear to pose a threat to human health or the environment that the workers at the Site are not prepared to address. At a minimum, excavation workers and the Competent Person engaged to screen excavating activities shall wear level D personal protective equipment (PPE) at the start of work. If screening results indicate that additional protection is warranted, workers shall upgrade to Level C protection or cease work until conditions are further assessed. Worker health and safety is addressed in more detail in Section VI (Worker Hazard Mitigation).

Materials excavated in Zone 1 shall be considered environmentally impacted. As such, excavated materials should be deposited on top of plastic sheeting (minimum 10 mil thickness) and securely covered with plastic sheeting (minimum 10 mil thickness) at the end of each workday, or the materials should be placed in storage containers lined with plastic and covered with tarps at the end of each workday. The covering plastic should be anchored with weights or other restraints to ensure that it will remain in place in the event of strong winds.

Prior to subsurface work performed in Zone 1, Contractors and the Competent Person should review background information on SWMUs and potential substances of concern anticipated in the SWMUs, summarized in Parsons' Phase I and Phase II RFIs as well as Parsons' Draft Risk Analysis prepared for the Site. At a minimum, during subsurface work, the Competent Person should be able to identify wastes in excavated materials from the SWMUs that differ from previously identified environmental conditions. If no substantial differences are identified, SWMUs can be backfilled with excavated materials. Soil and vegetative covers shall be replaced where necessary.

The potential exists for excavated materials to contain solid wastes, titanium dioxide pigment, waste solvents, sulfate sludge, and iron-rich wastes in SWMUs 4, 5, and 6, which were utilized previously as waste settling areas and landfills. Within the bounds of SWMU-4, 5, and 6, soil covers, liners, membranes, vegetation, and impermeable covers shall be repaired and replaced, after excavated materials have been backfilled. For more detailed information on subsurface work in SWMU-6, see Section 3.B Zone 1A.

Precautions shall be taken to exclude stormwater runoff from entering excavations or stockpiles of excavated materials using diversionary berms. Excavations that are not backfilled by the end of a workday shall be covered (with support) or lined with plastic sheeting to minimize the potential for precipitation to directly contact subsurface materials. If the excavation is lined and stormwater accumulates on the liner, the Competent Person shall review the accumulated stormwater for indications of substances of concern, such as visible free-phase liquids on top of the pooled stormwater or visibly suspended sediment before work resumes. If visible indications of concern are present, accumulated water shall be pumped from the excavation into containers of adequate volume and held for further assessment. If no visible indications of concern are present, accumulated water shall be pumped from the excavation and discharged to the ground surface near the excavation.

<u>If excavated materials exhibit different environmental conditions than what was previously identified</u>, the stockpiled materials will be tested to evaluate material handling requirements based on reported results.

Excavated materials from specific Zone 1 locations shall not be removed from that Zone 1 location and shall not be removed from the Site without appropriate assessment of the environmental character, including sampling and analytic testing. Additional guidance regarding handling excavated materials is provided in Section V.

Work that follows excavation, such as installing conductors or pipes, shall be performed by workers appropriately trained for the actual conditions exposed by excavation. Screening results collected during excavation will be used to assess the location specific risk to worker health for the activities planned.

Most utility work likely to occur in Zone 1 is not anticipated to intercept the groundwater table or require excavation below the groundwater table, based on available information about the probable depths to groundwater. In the event that groundwater is encountered during excavation, work shall be stopped until the environmental condition of groundwater in the immediate vicinity of the excavation is adequately characterized and a plan for managing groundwater is developed.

B. ZONE 1A: SWMU-6

Zone 1A has the same subsurface work requirements as outlined for Zone 1 (see above section). However, prior to subsurface work in this area, DNREC-SWMS must be notified. Prior written and properly recorded authorization must be obtained from DNREC-SWMS before subsurface work can be performed. Additionally, after subsurface work is completed in SWMU-6, the vegetative, soil, and geotextile cap must be repaired, in accordance with Parsons' March 2010 "Post Closure Care Plan – Addendum 1, Revised Monitoring and Maintenance Plan for the Closed Surface Impoundments at the DuPont Edge Moor Plant."

C. ZONE 2: AREAS OUTSIDE OF SMWUS

Excavation work in Zone 2 is anticipated to have low potential of encountering petroleum or hazardous substances in the subsurface at levels of potential human health or environmental concern, based on available information. Workers engaged to excavate and install or repair subsurface utility systems in this zone need not be trained in accordance with 29 CFR 1910.120 and 1926.65 (HAZWOPER). However, excavation work shall be monitored by a Competent Person for indications of environmental or health concerns. The Competent Person shall be the owner's representative and shall have been trained in accordance with 29 CFR 1910.120 or 1926.65, and shall have the ability to stop work when environmental conditions appear to pose a threat to human health or the environment that the workers at the Site are not prepared to address. The Competent Person shall be equipped with instruments capable of detecting organic vapors and potential combustible vapors to monitor conditions exposed during excavation. Worker health and safety is addressed in more detail in Section VI.

Materials excavated in Zone 2 shall remain on Site and be used as fill in proximity to the location and within the zone from which they are excavated, unless screening indicates the potential for substances to be present in the soils at concentrations of potential concern. Such indications would include chemical or petroleum odors, visible discoloration, and instrument readings greater than ambient atmospheric readings. In response to such circumstances, the stockpiled material shall be sampled and tested to facilitate assessment of environmental conditions and appropriate management options for the materials.

If indications suggest the presence of substances of concern, such as chemical or petroleum odors, visible discoloration, and instrument readings greater than ambient

atmospheric readings, subsurface work in that area must be stopped. Any evidence of a release during land disturbing activities will require the Competent Person, or owner's representative, to notify the Department of Natural Resources and Environmental Control, Site Investigation and Restoration Section (DNREC-SIRS) within 24 hours to the 24 Hour Release Hotline (800-662-8802). Land disturbing activities may continue on another part of the Site as long as it is not immediately adjacent to the area where there is evidence of a release. However, if evidence of a release is encountered at the new area, work must again stop and excavation activities moved elsewhere on-site where no evidence of a release is apparent. Evidence of a release includes, but is not limited to, appearance of a sheen, soil staining, or odors characteristic of hazardous substances; buried materials that may contain hazardous substances; or, presence of free product. See DNREC-SIRS' January 2013 "Guidance for Notification Requirements" document for more information.

Most utility installations and maintenance or repair work likely to occur in Zone 2 are not anticipated to intercept the groundwater table or require excavation below the groundwater table, based on available information about the probable depths to groundwater.

D. ZONE 3: MATERIALS WITHIN THE GROUNDWATER TABLE

Most work activities likely to occur in Zones 1 and 2 are not anticipated to intercept the groundwater table or require excavation below the groundwater table, based on available information about the probable depths to groundwater. In the event that groundwater is encountered during excavation, work shall be stopped until the environmental condition of groundwater in the immediate vicinity of the excavation is adequately characterized and a plan for managing groundwater is developed.

IV. UNDERGROUND/ABOVEGROUND UTILITY AND STORAGE SYSTEMS

Numerous underground, privately maintained, utility systems are present at the Site, including:

- High voltage electricity lines.
- Natural gas lines.
- Steam and condensate lines.
- Fire mains.
- Potable water pipes.
- Sanitary/Industrial Wastewater sewers and appurtenances.
- Storm sewers, culverts, and appurtenances.
- Pipelines that formerly conveyed materials from aboveground and underground storage tanks to end-use locations.
- Former underground storage tanks (USTs) that were abandoned-in-place.

The facility has undergone multiple renovations during the period of use as a pigment manufacturing facility. These renovations may have resulted in several generations of underground utility systems. The currently understood locations of utility systems are shown on drawings obtained from the former Site owner. Copies of these drawings will be available to persons engaged for subsurface work. The utility locations shown on these drawings most likely are not the only locations where subsurface utilities are present. Persons engaged in excavating or intrusive activities shall work with care and caution to avoid encountering and damaging underground utility systems to minimize potential danger to themselves, coworkers and the environment.

If USTs or associated piping is encountered during subsurface work, Contractors will immediately notify the Competent Person or owner's representative. The Competent person or owner's representative will, in turn, notify DNREC-SIRS and DNREC-Tank Management Section. A licensed UST removal contractor will be engaged to properly drain, clean, remove, and dispose of encountered UST system components in accordance with the Delaware Regulations Governing UST Systems.

Persons responsible for excavation (contractors, consultants, or owner) will request public utility clearance through the Miss Utility service. The owner will arrange for marking and clearing private utilities within the work area. This effort may be performed by the owner or a contractor engaged for the purpose. These utility mark-outs and clearances shall be completed prior to the start of excavation, and the information will be reviewed with the persons responsible for excavation before excavation starts.

V. MATERIALS MANAGEMENT

Soils and other materials excavated on the Site will remain on Site for reuse as fill or until appropriately assessed for off-site reuse, treatment, or disposal. However, every effort will be made to reuse excavated materials on-site before consideration of off-site disposal opportunities.

The Competent Person reviewing the excavation will use the screening information gathered during excavation to assess whether excavated materials may be used as backfill at the location of the work. For instance, excavated materials without indications of environmental impact (e.g., visible discoloring, obvious chemical or petroleum odors, obvious free draining non-aqueous liquids, indications of organic, or indications of combustible vapors) would be considered environmentally suitable for use as backfill. Additionally, impacted soils excavated from areas within Zone 1 and Zone 1A may be used as backfill at the same source locations from where they were excavated, as long as materials appear to be similar to those described in Parsons Phase I and Phase II RFIs. Soil and vegetative covers will be replaced where necessary in Zones 1 and 1A locations.

At a minimum, the Competent Person will consider the following criteria when assessing the environmental suitability of the excavated materials for use as backfill:

- The Zone and/or SWMU where subsurface work is taking place.
- The distance between the bottom of the excavation and the estimated depth to groundwater.
- The relative permeability of soil(s) present (e.g., gravel, sand, silt, or clay).
- The purpose of the excavation.
- The ground cover that will be placed over the excavation.

Prior to starting excavation work for a project, the Site owner will select an on-site location for storing excavated materials from that project and will ensure that an adequate supply of materials are available to construct a temporary material storage area in the manner described below. The selected storage location will be used to stage excavated materials that exhibit environmental impact. The selected storage location preferentially will be located on existing pavement in an area where access can be controlled. The storage area preferentially will be selected to minimize the potential for stormwater drainage to enter the material storage area and to not block existing stormwater drainage pathways. The size of the location selected will be adequate to receive the anticipated volume of excavated materials from planned work areas.

Prior to receiving excavated materials, temporary berms (e.g., hay bales, railroad ties, jersey-type concrete barriers) shall be installed around the periphery of the selected storage area or prepared storage containers (e.g., roll-off dumpster) shall be used. Plastic sheeting (minimum 10 mil thickness) shall be used to line the bottom of the storage area or the inside of storage containers. The storage area bottom liner shall extend over the top of the peripheral berms. When required by sediment and erosion control planning, silt fence shall be installed around the perimeter of the storage area and configured to allow vehicle access to the prepared storage area. Sufficient additional plastic sheeting (minimum 10 mil thickness) shall be available to cover materials placed in the storage area. Sandbags, used tires, or other heavy objects that can be used to weigh-down the covering plastic shall be available for use as necessary. If storage containers are used, water shedding tarps suitable for transportation shall be used to cover the containers.

When a decision has been made to temporarily store excavated materials, the materials shall be transported to the prepared storage area or storage containers. Materials from multiple locations shall not be comingled in storage. Separate storage areas or containers shall be provided for each project location. During placement of the excavated materials in the storage area, the materials shall not be allowed to cover the peripheral berms of the storage area or spill over the sides of storage containers. The stored materials will be covered with plastic sheeting or tarps at the end of excavating activities or the end of each workday, whichever occurs sooner. Sufficient weights shall be placed on the plastic cover to hold it in place in the event of windy conditions or precipitation.

When excavation and material additions to the storage site are complete for a specific project, stored materials will be handled under the following three scenarios:

- Environmentally impacted soils within Zones 1 and 1A that appear to be similar to those described in Parsons Phase I and Phase II RFIs for the location of the excavation, shall be used as backfill in the same excavation from which they were obtained. Soil and vegetative covers shall be replaced, where necessary.
- Soils exhibiting no impact shall be used as backfill in the area where the soil was removed.
- Soils exhibiting apparent environmental impact within Zone 2 and exhibiting environmental impact in Zones 1 and 1A that appear to be substantially different from findings during previous investigations of those areas should shall be assessed through collection and analysis of samples. The characterization testing will be based on the planned fate for the material (on-site reuse, off-site reuse, treatment, or disposal). Grab and composite samples of the material will be collected in a manner to represent the entire volume in storage. The samples will be handled, stored, and submitted to the laboratory in accordance with DNREC-SHWS protocols.

A. TESTING FOR ON-SITE REUSE (**PREFERRED METHOD OF MATERIALS MANAGEMENT**)

Soil characterization testing will conform to the "Policy Soil/Material Re-Use Policy at Hazardous Substance Cleanup Act Regulated Sites" dated May 19, 2010 (Soil Reuse Policy), which guides re-use of soil/material from regulated Sites (including RCRA Sites). If the materials are planned for reuse on Site, the laboratory will be requested to perform the following initial analyses:

Grab Samples:

- Target Compound List (TCL) Volatile Organics by EPA Method SW-846 8260B.

Composite Samples:

- pH by EPA Method SW-846-9045C.
- TCL Semi-Volatile Organics by EPA Method SW-846 8270C.
- TCL Pesticides by EPA Method SW-846 8081A.
- Total Polychlorinated Biphenyls (PCBs) by EPA Method SW-846 8082 or EPA Method 680 (at DNREC-SHWS' request).
- Target Analyte List (TCL) Inorganics by EPA Methods SW-846 6010B and 7471A.

The results of these analyses will be compared to regulatory standards, as appropriate, for the intended use location. The testing results and comparison information will be summarized in a brief report and submitted to DNREC for review. The report will contain a recommendation that either the materials be released from storage for reuse on Site OR further assessment of the material be performed. With the concurrence of DNREC, the materials will either be reused on Site OR remain in storage until an appropriate end use (reuse, treatment, or disposal) is identified.

B. TESTING FOR OFF-SITE REUSE

If the project necessitates that excavated materials cannot be reused at the area of excavation and off-site reuse may be an option, the laboratory will be requested to perform a suit of analyses similar to those listed above for on-site reuse. These characterization analyses will be modified, as appropriate, and with the concurrence of DNREC to comport with DNREC's Soil Reuse Policy.

C. TESTING FOR TREATMENT OR DISPOSAL

If the excavated materials cannot be kept on-site and screening indicates substantial environmental impact, the laboratory will be requested to perform the following initial analyses or such other analyses as may be requested by the potential treatment or disposal facilities when the source of the substances of concern is not apparent or is unknown. The analyses listed reflect a combination of testing typically requested by treatment and disposal facilities in the region. In instances where the source of the substances of concern is established, such as petroleum from underground tanks, characterization testing will be limited to those analytes required by the receiving facility.

Grab Samples:

- Target Compound List (TCL) Volatile Organics by EPA Method SW-846 8260B.
- Diesel Range Organics (DRO) by EPA Method SW-846 8015B.
- Gasoline Range Organics (GRO) by EPA Method SW-846 8015B.

Composite Samples:

- Total Metals (As, Sb, Ba, Be, Cd, Cr, Cr^{+6}, Cu, Hg, Pb, Mo, Ni, Se, Ag, Tl, and Zn) by EPA Methods SW-846 6010B and 7471A.
- Total PCBs by EPA Method SW-846 8082.
- Ignitibility in accordance with 40 CFR261.21.
- Corrosivity by EPA SW-846 Chapter 7.
- Reactivity by EPA SW-846 Chapter 7.3.
- Oil and Grease by EPA Method 413.1.
- Total Organic Carbon by EPA Method 415.1.
- Chemical Oxygen Demand by EPA Method 410.1.
- Total Extractable Halides (TOX) by EPA Method SW-846 9020B.
- Ammonia-Nitrogen by EPA Method 350.2.
- Total Solids by EPA Method 160.3.

- Total Volatile Solids by EPA Method 160.4.
- Paint Filter Liquids Test by EPA Method SW-846 9095A.
- Toxicity Characteristic Leaching Procedure (TCLP) metals, volatile organics, semi-volatile organics, pesticides, and herbicides) by EPA Methods SW-846 1311/6010B, 1311/8260B, 1311/8270C, and 1311/8081A/8151A.

The results of these material characterization analyses will be compared to Federal criteria for categorizing solid waste and treatment or disposal facility acceptance criteria, as appropriate for various types of data generated. The application will be submitted to chosen treatment or disposal facilities to garner their acceptance of the materials. Copies of testing results and treatment or disposal facility acceptance documents will be submitted to DNREC for informational purposes, along with a tentative schedule for transporting the materials to the treatment of disposal facility. The materials will be removed from the Site in accordance with the recommendations. Copies of disposal or treatment facility receipts will be provided to DNREC.

VI. WORKER HAZARD MITIGATION

This section describes criteria that will guide the Competent Person's recommendations regarding personal protective equipment and Site work. This section presumes that contractors engaged to provide services at the Site have their own corporate health and safety plans and will prepare Site specific health and safety plans, if needed.

A. ZONE 1 AND 1A: WORK IN SWMUS

Subsurface work in SWMUs initially will be performed by workers who have been trained in accordance with 29 CFR 1910.120 and 1926.65 (HAZWOPER).

The initial minimum personal protective equipment (PPE) worn by workers who are likely to be in direct contact with excavated materials or subsurface materials shall conform to EPA Level D criteria and consist of the following equipment:

Level D PPE

Hard hat	Ear Protection
Eye protection	Work boots with toe protection
Disposable gloves	Disposable coveralls (dust suit)

A cleaning station will be provided to remove materials that cling to the outer surface of work boots and where workers can wash there hands during breaks and prior to leaving the work area. No drinking, eating, or smoking shall be permitted in the work area.

In the event that work area monitoring indicates that a potential breathing hazard is present in the form of organic vapors, workers will be required to don Level C PPE. **Level C PPE** will include all of the equipment required for Level D plus use of a full-face negative air respirator with organic vapor cartridges. The full-face coverage provided by the respirator will provide the eye protection specified for Level D PPE.

While work is in progress, the Competent Person will monitor breathing zone atmospheric conditions, atmospheric conditions within the excavation, and screen excavated materials for indications of substance-related hazards. The following criteria shall indicate the appropriateness of Level D PPE during work:

- PID or FID readings less than 5 units above ambient background readings with the meter calibrated to isobutylene.
- Combustible gas meter readings less than 10% of the lower explosive limit (LEL) with the meter calibrated to methane and oxygen meter readings between 19.5% and 23%.
- Oxygen meter readings between 19.5% and 23%.

If PID or FID readings are sustained at 5 deflections units or more above ambient background readings for more than 30 seconds, the Competent Person will require work to cease and workers to leave the work area. The Competent Person will return to the work area after 5 minutes and resume monitoring. If PID or FID meter readings have returned to levels less than 5 deflection units, the Competent Person will allow work to resume. If PID or FID readings remain above 5 deflection units but less than 50 deflection units, the workers will be required to upgrade PPE to Level C. The Competent Person will contact the DSPC Site manager, and inform him of conditions encountered and actions being taken.

If oxygen meter readings are between 19.5% and 23%, and combustible gas meter readings exceed 10% of the LEL but remain below 25% of the LEL, the Competent Person will inform the excavation foreman and workers of the condition. Work will proceed with caution. If combustible gas meter readings exceed 25% of the LEL for 30 seconds, the Competent Person will require work to cease, ensure that potential sources of ignition are de-energized or extinguished, and ensure that workers leave the work area. The Competent Person will return to the work area after 5 minutes and resume monitoring. If combustible gas meter readings have returned to levels less than 25% of the LEL, the Competent Person will allow work to resume. If combustible gas readings remain above 25% of the LEL, the Competent Person will contact the DSPC Site manager and inform him or her of conditions encountered and actions being taken. The Competent Person will continue to periodically monitor the work area with the combustible gas meter for approximately 30 minutes. If readings do not fall below 25% of the LEL, the Competent Person will again contact the DSPC Site manager and will contact the Brandywine Hundred Fire Company to inform them of the situation and request

assistance. The DSPC Site manager will contact the DNREC Case Manager and inform him or her about the situation. Work will be halted until the situation can be further assessed and a safe course of action planned.

If oxygen meter readings fall below 19.5%, the Competent Person will require work to cease and workers to leave the work area. The Competent Person will cautiously return to the work area after 5 minutes and resume monitoring. If oxygen meter readings have rebounded above 19.5%, the Competent Person will allow work to resume and contact the DSPC Site manager to inform him or her of conditions encountered and actions being taken. If oxygen levels are indicated to remain below 19.5% in portions of the work area, work will be halted until the situation can be further assessed and a safe course of action planned. The DSPC Site manager or their authorized representative will contact the DNREC Case Manager and inform him or her about the situation.

B. ZONE 2: WORK IN AREAS OUTSIDE OF SWMUS

HAZWOPER training will not be required for workers engaged in subsurface work in Zone 2, based on the available information which indicates that hazardous substances are not present in these zones at concentrations of concern. However, subsurface work area conditions will be monitored by a Competent Person, who is the Site owner's representative.

While work is in progress, the Competent Person will monitor breathing zone atmospheric conditions, atmospheric conditions within the excavation, and screen excavated materials for indications of substance-related hazards. The following criteria will be used to assess the appropriateness of the worker protection in use:

- PID or FID readings less than 5 units above ambient background readings and no sustained readings above ambient background with the meter calibrated to isobutylene.
- Combustible gas meter readings less than 10% of the lower explosive limit (LEL) with the meter calibrated to methane and oxygen meter readings between 19.5% and 23%.
- Oxygen meter readings between 19.5% and 23%.

If PID or FID readings are sustained above ambient background readings for more than 30 seconds, the Competent Person will require work to cease and workers to leave the work area. The Competent Person will return to the work area after 5 minutes and resume monitoring. If PID or FID meter readings have returned to ambient background readings, the Competent Person will allow work to resume. If PID or FID readings remain above ambient background, the Competent Person will continue monitoring organic vapors for 30 minutes. If the organic vapor readings do not return to ambient background values after 30 minutes, work will be halted until the situation can be further assessed and a safe course of action planned. The

Competent Person will contact the DSPC Site manager and inform him of conditions encountered and action being taken. The DSPC Site manager or their authorized representative will contact the DNREC Case Manager and inform him or her about the situation.

If oxygen meter readings are between 19.5% and 23% and combustible gas meter readings exceed 10% of the LEL for 30 seconds, the Competent Person will require work to cease, ensure that potential sources of ignition are de-energized or extinguished, and ensure that workers leave the work area. The Competent Person will return to the work area after 5 minutes and resume monitoring. If combustible gas meter readings have returned to levels less than 10% of the LEL, the Competent Person will allow work to resume. If combustible gas readings remain above 10% of the LEL, the Competent Person will contact the DSPC Site manager to inform him or her of encountered conditions and actions being taken. The Competent Person will continue to periodically monitor the work area with the combustible gas meter for approximately 30 minutes. If readings do not fall below 10% of the LEL, the Competent Person will again contact the DSPC Site manager and halt work until the situation can be further assessed and a safe course of action planned. The DSPC Site manager or their authorized representative will contact the DNREC Case Manager and inform him or her about the situation.

If oxygen meter readings fall below 19.5%, the Competent Person will require work to cease and workers to leave the work area. The Competent Person will cautiously return to the work area after 5 minutes and resume monitoring. If oxygen meter readings have rebounded above 19.5%, the Competent Person will allow work to resume and contact the DSPC Site manager to inform him or her of conditions encountered and actions being taken. If oxygen levels remain below 19.5% in portions of the work area, work will be halted until the situation can be further assessed and a safe course of action planned. The DSPC Site manager or their authorized representative will contact the DNREC Case Manager and inform him or her about the situation.

VII. EMERGENCY PROCEDURES

A. POSSIBLE FIRE OR EXPLOSION

Notify the proper authorities for emergency response (fire and police personnel). Alert the appropriate regulatory authorities (see below for telephone numbers). Notify the DSPC Site manager.

B. PERSONAL INJURY

Any injured Site worker must seek immediate medical care. If a Site worker is seriously injured, call an ambulance to transport the individual to the nearest hospital for emergency room care. The nearest hospital to the Site is Christiana Care Wilmington Hospital located at 501 W 14th St, Wilmington, Delaware 19801.

Figure 2 depicts a route to Christiana Care Wilmington Hospital. The Competent Person will notify the DSPC Site manager of any Site worker who needs medical attention via ambulance or needs a trip to see a medical professional.

C. EMERGENCY EVACUATION

In case an emergency evacuation of the Site must take place, all personnel on Site will stop work immediately, shut off equipment, and assemble at a location designated by the Competent Person. The DSPC Site manager will be notified, if Site evacuation is required.

1. Emergency Telephone Numbers

Police/Local, State 911
Ambulance 911
Brandywine Hundred Fire Company 911
Wilmington Hospital (Christiana Care) .....(302) 733-1000
DNREC 24-hour emergency hot line.....(302) 739-5072
Federal
National Response Center.....(800) 424-8802
Poison Control Center.....(800) 222-1222
U.S. EPA Environmental
Response Team .....(215) 814-5000

2. Contact

DSPC Site manager
Office .....(302) 472-7800

FIGURES

DUFFIELD ASSOCIATES
Soil, Water & the Environment

5400 LIMESTONE ROAD
WILMINGTON, DE 19808
TEL. (302)239-6634
FAX (302)239-8485

OFFICES IN DELAWARE, MARYLAND, PENNSYLVANIA, AND NEW JERSEY

E-MAIL: DUFFIELD@DUFFNET.COM

Legend

- Zone 1 (with SWMU #)
- Zone 1A (SWMU-6)
- Zone 2

BASEMAP:
AS SHOWN

DRAWN BY:
JCF

CHECKED BY:
MRB

FILE: 11139.EC. FIgure 1 - SWMUS.

FIGURE 1

CONTINGENCY PLAN EXCAVATION ZONES
CHEMOURS EDGEMOOR PLANT

WILMINGTON~NEW CASTLE COUNTY~DELAWARE

DATE:
FEBRUARY 2017

SCALE:
AS SHOWN

DUFFIELD PROJECT NO.
11139.EC

SHEET:
FIGURE 1

FIGURE 2 – CONTIGENCY PLAN

ROUTE TO HOSPITAL