FILE

46

DUKE ENERGY.

155 East Broad Street
20th Floor
Columbus, Ohio, 43215

o: 614-222-1334
f: 614-222-1337

July 26, 2018

Ms. Barcy McNeal
Ohio Power Siting Board
Docketing Division
180 East Broad Street, 11th Floor
Columbus, OH 43215-3716

RE: PUCO Case No. 16-253-GA-BTX, In the Matter of the Application of Duke Energy Ohio, Inc., for a Certificate of Environmental Compatibility and Public Need for the C314V Central Corridor Pipeline Extension Project.

Dear Ms. McNeal,

Duke Energy Ohio, Inc., is hereby filing the following two reports, related to the above-referenced proceeding:

1. A report concerning the Pristine, Inc., superfund site.
2. A report addressing potential environmental issues along the "alternate route" for the Central Corridor project.

Please feel free to contact me with any questions.

Regards,

/s/ Jeanne W. Kingery
Jeanne W. Kingery
Associate General Counsel

RECEIVED-DOCKETING DIV
2018 JUL 26 PM 3:57
PUCO

This is to certify that the images appearing are an accurate and complete reproduction of a case file document delivered in the regular course of business
Technician MN Date Processed JUL 26 2018

ch2m

Duke Energy C314V Central Corridor Pipeline Extension Project: Pristine Superfund Site Summary

PREPARED FOR:	Jamie Olberding/Duke Energy
COPY TO:	Steve Lane/Duke Energy Jeanne Kingery/Duke Energy
PREPARED BY:	Julie Schucker/CH2M
DATE:	July 26, 2018

Duke Energy is planning to install a subsurface natural gas pipeline in Cincinnati. As part of their planning efforts, Duke Energy reviewed publicly available documents for properties along this route. The purpose of the document review was to identify where the pipeline route was located in relation to potentially environmentally impacted properties. This review effort focused on one segment of the pipeline route in an area with historical industrial activity. This area is near an industrial property, Pristine, Inc., that had reported releases impacting soil and groundwater. This memorandum presents a summary of historical investigations and remediation activities at the Pristine site, Duke Energy's investigation efforts in the area, and conclusions drawn from these efforts.

During Route analysis a number of pipeline installation/construction options were reviewed between the Formica facility south to West Street in Reading along the east side of the railroad right of way. The area presents a number of challenging features that required extensive review to determine the best installation method for the pipeline. The pipeline crosses the Mill Creek and a small feeder creek, the City of Reading's maintenance garage and associated buildings and material storage, construction business staging yard, and limited area between buildings and the railroad right of way. The middle section of this area is adjacent to the Pristine property which is located on the west side of the railroad right of way. A key consideration when determining installation/construction methods adjacent to the Pristine site was to select a method that would not exacerbate contamination (if encountered) and that would not negatively impact remediation efforts at the site.

A number of options were reviewed that included installation via a horizontal directional drill (HDD), auger bore, and open trench in varying configurations. The pipeline will be installed approximately 100 feet east of the railroad tracks and incorporate HDD, auger bore and open trench installation methods as described below.

Initial installation proposed through this area was a long HDD, however this was determined to have a greater chance to encounter potential subsurface contamination near the Pristine area due to potential contaminant migration. To insure impacted groundwater south of the Pristine property would not be encountered, the pipeline will be installed via HDD from the southern portion of the Formica property to just south of the City of Reading maintenance buildings. This will allow for crossing under the Mill Creek, feeder creek, and the City of Reading maintenance area. The HDD will terminate adjacent to the northern property line of Pristine. The remaining pipeline will be installed in open trench from that point south until crossing under the railroad to the west via shallow auger bore (10' deep) approximately 600 feet south of the southern Pristine property line. After crossing the railroad, open trench installation will resume.

Technical information reviewed and summarized in this memorandum was obtained from the following sources:

- Phone conversations with USEPA David Linnear/Remedial Project Manager and Adrian Palomeque/Community Involvement Coordinator who indicated that Pristine site technical documents were available at Reading Public Library located at 8740 Reading Road.
- USEPA website for Pristine Inc site:https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0504445
- Phone conversations with Scott Glumm, Ohio EPA Site Southwest District Office Site Coordinator for the Pristine site.
- Ohio EPA *eDocument Search* website: http://edocpub.epa.ohio.gov/publicportal/.

Historical Information

The Pristine site (OHD076773712) is comprised of approximately three acres of land that is part of the Cincinnati Drum Service property, which cleaned and recycled steel drums (Figure 1). Pristine conducted liquid waste treatment operations including incineration, from 1974 to 1981, at which time their operations were shut down as a result of complaints about spills and a large inventory of waste onsite, under terms of a Consent Agreement with US Environmental Protection Agency (USEPA). The Pristine site is regulated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA[1]).

Historical investigations (starting in early 1980's) were performed at the Pristine site in accordance with CERCLA regulations and guidelines. These investigations included the collection of soil and groundwater samples. Following the evaluation of this sampling data, it was determined contamination was present in soil and groundwater both on- and off-property. This determination was based on soil and groundwater samples collected from the site (including locations beyond the property boundary) (Figure 2). The type of contamination found at elevated concentrations included various semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs). The contaminants detected in soil samples are associated with wastes present in drums onsite and in dissolved groundwater contamination present in the shallow groundwater zone. Groundwater in this zone occurs at depths from eight to twelve feet below the ground surface at the site.

Based on the results of the soil sampling effort it was determined that soil remediation via excavation was required to remove contaminated soil from the site. Soil was removed both to eliminate risk to human health and the environment from the soil media as well as a means of preventing contaminants from leaching from soil into the groundwater. Several remedies were implemented on site, and included drummed waste removal, pond sediment removal, and soil excavation and removal.

In evaluating the groundwater conditions on and off site, groundwater was found to flow primarily towards the south. This information was necessary to understand where contaminated groundwater was migrating to, and at what depths it was found. The results of years of groundwater sampling identified a short-list of site-derived VOC contaminants in wells found on site and south of the property that are collectively identified as chlorinated solvents. Chlorinated solvents have densities that are heavier than water and therefore sink in groundwater. The primary chlorinated solvent associated with Pristine site is 1,2-dichloroethane (1,2-DCA).

---

1 CERCLA is informally called "Superfund" and allows USEPA to clean up contaminated properties. It also forces those responsible for hazardous releases to perform the cleanups or reimburse the government for USEPA-led cleanup work.

Through multiple investigations to define the extent of the groundwater contamination, remedial options were developed with the goal of cleaning up groundwater. Groundwater remediation was initiated in the 1990's by pumping subsurface contaminated groundwater and treating it to remove the

contaminants. This remedy was becoming less effective in recent years due to the removal of a large percentage of the contamination; this is common for pump and treat systems to reach a steady-state and become less effective over time. The site is currently pursuing a remedy to only monitor groundwater since groundwater sampling indicated that the contamination is attenuating.

The Pristine investigations focused primarily on onsite and offsite areas to the south where contamination was found to have migrated in groundwater. However, limited offsite soil and groundwater sampling occurred at locations within 100-feet from the property along the rail lines on the east and along the northern property boundary (Figure 2). Shallow soil samples (<4 feet) were collected during installation of monitoring wells GW-65 and GW-66; these soil samples did not contain elevated concentrations of contaminants.

Historical groundwater samples were collected from offsite monitoring wells located on the east side of the property along the rail line at GW-45 (well screen 8-18-feet bgs), GW-46 (well screen 10-20 ft bgs), GW-47 (well screen 38-43 ft bgs), GW-48 (well screen 78-83 ft bgs), GW-64 (well screen 5-15 ft bgs), and GW-65 (well screen 56.5-66.5 ft bgs). These wells were not identified as part of the monitoring well network in demonstrating the effectiveness of remedial activities because these wells were not screened in the groundwater zone where remedial action occurred and/or concentrations were below remedial action.

Current Offsite Conditions

There is a cluster of monitoring wells, MW 71 through MW-73, that are located approximately 60-feet offsite to the north on the adjacent property and are approximately 100 feet west of rail line and approximately 200-feet west of the pipeline route. These wells are monitoring the lower aquifer at depths between 60 to 145 feet below ground surface. Groundwater samples collected both historically and in recent years from these wells showed the existence of the contaminant trichloroethene (TCE) which was not originating from the Pristine facility. This TCE contamination is moving to the south under Pristine property and was present in lower aquifer at depths exceeding 60-feet deep. TCE also is a chlorinated solvent and therefore has a density that is heavier than water and sinks within groundwater. Ohio EPA Site Coordinator for the Pristine site, Scott Glumm, was contacted to find out if the regulatory agencies knew the source for this TCE in the lower aquifer. Mr. Glumm was not aware of any investigations on adjacent properties north of Pristine facility or along the railroad tracks. He indicated that these offsite properties belonged to City of Reading and were historically used for waste transfer, incineration, and flyash disposal. These properties are now used by the Metropolitan Sewer District (MSD) for managing stormwater. He also indicated that during redevelopment of the MSD property, partially buried drums were found; their ownership, quantities, and contents were unknown and he is not aware of any documentation with regard to their removal. Pristine report documentation indicates the remedial activities on site (involving pump and treat of groundwater in lower aquifer) pulled groundwater contamination from other sources, including this TCE contamination located north, off property.

Duke Energy performed an extensive site investigation in November 2017 to identify potential environmental impacts associated with the current and historical usage of the properties along the proposed pipeline route. Data collected from this site investigation has been used to evaluate pipeline route location and potential risks to construction workers, and to support pipeline permitting and construction.

Investigation activities in the area of the Pristine facility were focused east of the facility boundary along the railroad line (Figure 2). The location of investigative activities were identified based on the location of the pipeline, depth of the proposed pipeline excavation, and/or depth of the pipeline in HDD locations. Borings were drilled to collect both geotechnical (WB-04) and environmental data (E-104). Shallow soil samples (2-3 feet) were collected from both borings, based on the sampling rationale that

included visual staining and/or field instrumentation detecting volatile organic compounds; if neither was observed, then a discrete sample was collected at the discretion of the sampling personnel. It should be noted that based on the field screening data, there was no evidence of volatile organic compound impacts within soils from the investigation borings. Therefore, field personnel selected the the "2-3" feet below ground surface horizon for sampling, as the sampling plan directed. The analytical results from the 2-3 feet horizon showed no indication of contaminant impacts at either boring. Soil analytical results were compared to Ohio EPA Voluntary Action Program (VAP) generic numerical standards for commercial/industrial land use and construction/excavation activity category. Based on the laboratory results, the two soil samples had concentrations below VAP standards for volatile organic compounds. The soil sample from WB-04 was also analyzed for metals and semi-volatile organic compounds, with concentrations also reported below the VAP standards.

Figure 3 conveys a conceptual picture where the groundwater contamination is relative to the pipeline location. As shown, the contamination in groundwater is present in the lower aquifer at depths exceeding 60-feet below ground surface. Recent groundwater sampling from 2016 at Pristine site indicates presence of 1,2-DCA at concentrations up to 300 ppb, which is above maximum contaminated levels (MCL) of 5 ppb and flowing southward. In addition, TCE is present in MW-71 at low concentrations (13 ppb), which is above MCL of 5 ppb. Also shown on Figure 3 is the location of the proposed pipeline route, which is located east of the groundwater contamination and at shallower depth of 10-feet below ground surface.

Conclusions

Based upon the proposed depth of the open trenching of the pipeline in the area of Pristine property (8 to 10 feet deep), it was determined that only shallow soils (less than 10-feet deep) and the shallow groundwater zone along the proposed pipeline route would be evaluated for potential negative impacts. Groundwater contamination is present at Pristine, but at depths significantly below the pipeline excavation depth and west of the pipeline route.

Based on the review of historical information along with Duke Energy's recent investigation activities, the following conclusions are made:

- Historical activities at the Pristine facility resulted in contaminated soil and groundwater within the Pristine site.
- Active remediation in the form of soil excavation and vapor extraction to remove contaminants occurred on Pristine property.
- The primary contaminant present in groundwater at Pristine is 1,2-DCA.
- Contaminated groundwater migrated offsite to the south of the facility and due to its density, the contamination sank in the groundwater.
- To remediate the groundwater contamination on site and south of the Pristine site, pump and treat remedy was implemented followed by monitoring groundwater concentrations to demonstrated natural attenuation.
- Due to the southerly component to the groundwater flow at Pristine and in the region, groundwater impacts east of Pristine are not present.
- Current data collected in the proposed pipeline route east of the Pristine site show no offsite soil impacts from the Pristine site.

These lines of evidence support the conclusion that contamination from the Pristine facility is not impacting 0 to 10-feet below ground surface conditions along Duke Energy's proposed pipeline route.

Figures

LEGEND

- Proposed Pipeline Route
- Pristine Site

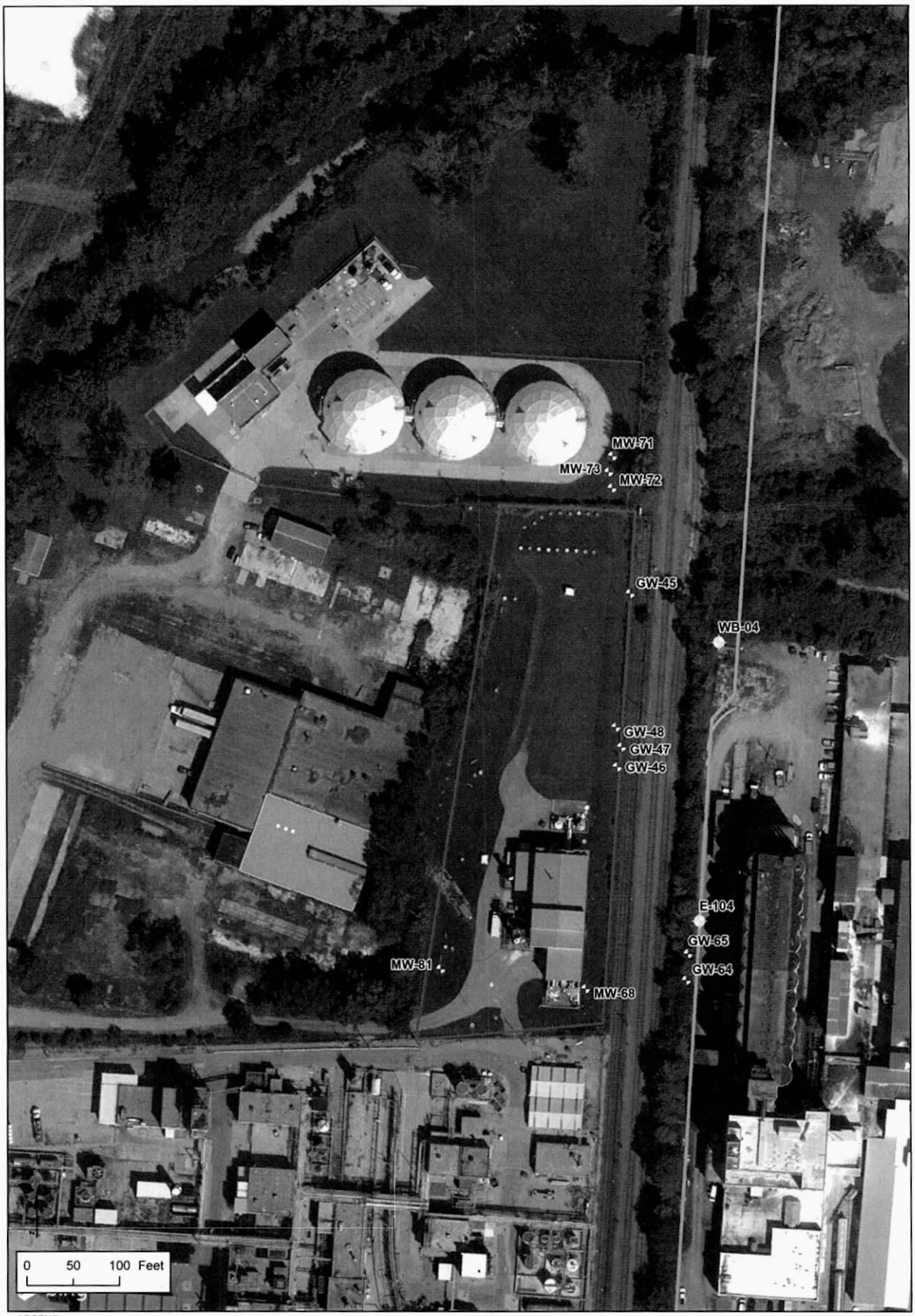
FIGURE 1
Project Location Map
Duke Energy
Cincinnati, Ohio

DRAFT

Note: All locations are approximate

BUSINESS GROUP JETT NUMBER OFFICE LOCATION \\BROOKSIDE\GIS_SHARE\ENBG00_PROJ\DDUKEENERGY\C314\MAPS\REMEDIATION\FIGURE1_SITE_OVERVIEW.MXD AUTHOR 12/19/2017

ch2m



LEGEND

- Historical Monitoring Well
- Recent Boring
- Proposed Pipeline Route
- Pristine Site

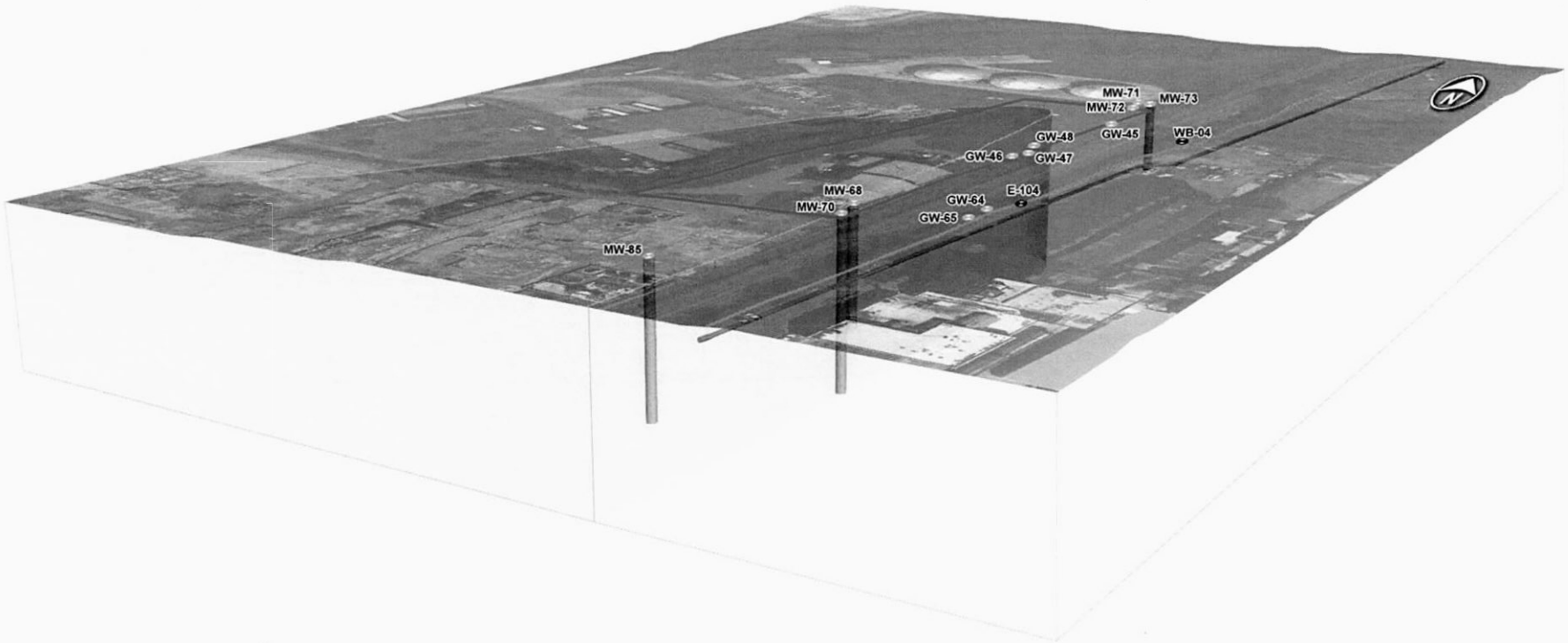
FIGURE 2
Project Layout Map
Duke Energy
Cincinnati, Ohio

DRAFT

Note: All locations are approximate

BUSINESS GROUP JETT NUMBER OFFICE LOCATION \\BROOKSIDE\GIS_SHARE\ENBG000_PROJDID\DUKEENERGY\C314\MAPS\REMEDIATION\FIGURE2_SITE_LAYOUT.MXD AUTHOR 1/15/2018

ch2m



LEGEND

- Pristine Site
- Historical Monitoring Well
- Recent Boring
- Proposed Pipeline Route
- TCE? Plume

Figure X. Figure Title

Caption

Project Name

ch2m:

X002005000LOC Figure_CSM_V4.ai tdaus 01.16.2018

C314V Project - Environmental Summary Report

Duke Energy Ohio, Inc.

Central Corridor Gas Pipeline Extension Project
Project No. 102679
7/25/2018

C314V Project - Environmental Summary Report

prepared for

Duke Energy Ohio, Inc.
Central Corridor Gas Pipeline Extension Project
Cincinnati, Ohio

Project No. 102679

7/25/2018

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

COPYRIGHT © 2017 BURNS & McDONNELL ENGINEERING COMPANY, INC.

TABLE OF CONTENTS

Page No.

1.0 INTRODUCTION 1-1
1.1 C314V Project Summary 1-2

2.0 ENVIRONMENTAL SCREENING 2-1
2.1 C314V Routing – Site Settings 2-1
2.1.1 Geology 2-1
2.1.2 Hydrogeology 2-1
2.2 Environmental Screening Process 2-2
2.2.1 Records Review 2-2
2.2.2 Geotechnical and Environmental Borings 2-4

3.0 ADDITIONAL BACKGROUND INVESTIGATION EFFORTS 3-1
3.1 State Resource Review 3-2
3.2 Site Summaries 3-2
3.2.1 Primary Areas of Interest 3-2
3.2.2 Secondary Areas of Interest 3-9

4.0 CONSTRUCTION CONSIDERATIONS 4-1

LIST OF TABLES

Table No.	Table Title
1	EDR Summary – Sites on Route
2	Summary of Detections - Soil
3	Summary of Detections - Groundwater

LIST OF FIGURES

Figure No.	Term/Phrase/Name
1	Project Overview Map

LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
AAI	All Appropriate Inquiries
AOI	Area of Interest
ASTM	ASTM International
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
Bgs	Below ground surface
BUSTR	Bureau of Underground Storage Tanks Regulation
C314V Project	Central Corridor Pipeline Expansion 314V Project
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CERCLIS – NFRAP	CERCLIS – No Further Remedial Action Planned
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
CORRACTS	RCRA Corrective Action Report
DERR	Division of Environmental Response and Revitalization
DRO	Diesel range organics
Duke	Duke Energy Ohio, Inc.
EDR	Environmental Data Resources
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
FOIA	Freedom of Information Act
GRO	Gasoline range organics
GWE&T	Groundwater extraction and treatment
HDD	Horizontal Directional Drill
HWMF	Hazardous waste management facility
I-275	Interstate 275
LQG	Large Quantity Generator
LUST	Leaking Underground Storage Tank
ug/L	Microgram per liter
NFA	No Further Action
NPL	National Priorities List
OAC	Ohio Administrative Code

Abbreviation	Term/Phrase/Name
Ohio EPA	Ohio Environmental Protection Agency
PAH	Polynuclear aromatic hydrocarbons
PID	Photo ionization detector
PCB	Polychlorinated biphenyl
PPM	Parts per million
OTTER	Ohio Tank Tracking and Environmental Regulations
RCRA	Resource Conservation and Recovery Act
SHWS	State Hazardous Waste Site
SVOCs	Semi-volatile organic compounds
SEMS	Superfund Enterprise Management System
SWF/LF	Solid Waste Facility/Landfill
TCE	Trichloroethylene
TDSF	Treatment, Storage, and Disposal Facility
TPH	Total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell), at the request of Duke Energy Ohio, Inc., (Duke), conducted an environmental screening of the properties along the proposed route for the Central Corridor Pipeline Expansion C314V Project (C314V Project). The environmental screening was performed to identify potential environmental impacts associated with the current and historical usage of the properties along the proposed route, adjoining properties, and adjacent off-site sources. The purpose of the environmental screening was to identify properties along the C314V Project that may have impacted soil and/or groundwater based on current or historical activities. The environmental screening data was used as one of several tools to evaluate the route placement, to evaluate potential construction worker risks, and to support pipeline permitting and construction. The environmental screening information was also utilized to identify locations with soil and/or groundwater impacts along the proposed route that could potentially require re-routing and to verify route certainty.

The environmental screening consisted of a review of a commercially available environmental database reports from federal, state, and local environmental agencies and a review of reports and data sources providing site specific environmental reports for environmental sites located within or adjacent to the C314V Project route.

Burns & McDonnell completed the environmental screening utilizing approaches applicable to ASTM International (ASTM) E1527-13 *Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process*, which incorporates the All Appropriate Inquiry (AAI) Standard [40 Code of Federal Regulations (CFR) 312]. In addition, Burns & McDonnell completed limited site investigation activities at locations deemed priority sites in accordance with technical guidance provided by the Ohio Environmental Protection Agency (EPA) and the Ohio EPA Voluntary Action Program, where applicable. It should be noted that Duke is not considered the "User" as defined in ASTM E1527-13 and does not satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchase limitations on Comprehensive Environmental Response Compensation and Liability Act (CERCLA) liability (hereinafter, the "landowner liability protections" or "LLPs"): that is the practice that constitutes "all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial and customary practice" as defined at 42 United States Code (USC) § 9601(35)(B). The environmental screening was completed to evaluate environmental risk associated with properties along and near the C314V Project that may necessitate investigation.

1.1 C314V Project Summary

Duke operates an integrated natural gas system in southwest Ohio that includes infrastructure installed at varying points in time over the past several decades. Duke has safely maintained the system while meeting the ever-changing needs of its customers and adhering to increased regulatory oversight.

Construction of the proposed C314V Project would allow Duke to decommission propane peaking facilities, improve balance of gas supply from north to south, and allow for the replacement of aging infrastructure.

The C314V Project will result in the installation of approximately 13 miles of new 20-inch natural gas pipeline from Duke Energy Ohio's WW Feed Station, near the intersection of Hamilton, Warren and Butler Counties, to the existing Line V at Norwood Station. The C314V Project is located entirely within Hamilton County.

* * * * *

2.0 ENVIRONMENTAL SCREENING

2.1 C314V Routing – Site Settings

The proposed C314V Project Route for environmental screening is depicted on Figure 1. The C314V pipeline extends north to south through residential, commercial and industrial properties.

2.1.1 Geology

Hamilton County lies within the Till Plains section of the Central Lowland physiographic province, which is characterized by rolling uplands and broad valleys. The uplands are mainly comprised of Late Ordivician-age shale and limestone bedrock covered by thin till deposits. The valleys are mainly filled with thick glacial and fluvial deposits of sand and gravel, silts, and clays (ODNR). Hamilton County is located on the crest of the "Cincinnati Arch", which is a significant regional geoanticline (NRCS).

Based on information from the web soil survey online and the Hamilton County Soil Survey, soils within the area are variable ranging from clay loam to sand. The predominant soil (over 50 percent) within the area of the route is described as Urban land-Udorthents complex with 0 to 12 percent slopes. Depth to water in the area typically ranges from 5-15 feet below ground surface.

2.1.2 Hydrogeology

Hamilton County lies within the Ohio River drainage basin. Tributaries to the Ohio River within Hamilton County include the Whitewater River, Mill Creek, the Great Miami River, and the Little Miami River (ODNR). The sand and gravel deposits form the primary aquifer system within the buried valleys. The buried valleys beneath the Great Miami River, the Ohio River, and the Whitewater River contain coarse deposits of sand and gravel capable of producing yields up to 1,000 gallons per minute (ODNR). Water supply within the bedrock is small due to the impermeable shale and the dense limestone. The main source of water for Hamilton County and the City of Cincinnati is the Ohio River (NRCS).

Mill Creek which is crossed by the C314V Project route flows approximately 28 miles from the headwaters in Butler County to its confluence with the Ohio River. Most of the creek flows on top of the buried valley aquifer composed of the highly permeable sand and gravel glacial deposits. It is predominantly an urban watershed than drains an area of approximately 170 square miles. Most of the mainstem and major tributaries for Mill Creek have been assigned the Warmwater Habitat aquatic life use designation (Ohio EPA).

2.2 Environmental Screening Process

The environmental screening process was a multi-tiered approach taking into consideration several factors including but not limited to: distance from the proposed route; regulatory program and current status of the site(s); historical knowledge of the area and/or site(s); anticipated pipeline construction depths and excavation methods. The first step in the environmental screening process was to review environmental database reports from federal, state, and local environmental agencies for environmental sites located within or adjacent to the C314V Project route. These sites were first reviewed to identify if sufficient information was available to determine if the listed site(s) was or was not a concern (Table 1). If the site(s) was a concern or did not have enough information, further investigation was conducted. The remaining sites identified in the environmental database reports that were not within or adjacent to the proposed route were evaluated based on the regulatory program they were listed under and distance to the proposed route. This approach mitigated the potential for a site address to be listed outside of the set search distance, but due to the size and location could potentially impact the proposed route.

Additional investigation efforts then included a review of site status through regulatory databases and submitting Freedom of Information Act (FOIA) requests and subsequent to review available technical reports, permits, and any other environmental document. Reviews of these reports and documents were conducted to determine the current status of the sites, historical contamination, location of impacts on the property, and any remedial actions. Based on the review of available environmental information and/or identified data gaps, select locations were identified for limited site investigations to evaluate soil and groundwater conditions. Analytical results from soil and/or groundwater samples were used to evaluate the presence of contaminants.

2.2.1 Records Review

2.2.1.1 Environmental Data Resources, Inc

For the C314V Project, Burns & McDonnell contracted with Environmental Data Resources, Inc (EDR) of Shelton, Connecticut to supply a summary report listing sites in environmental databases (ASTM environmental databases) along the proposed route. A search distance of ½-mile from the centerline of the proposed route was selected to identify potential release sites that could impact soil and/or groundwater encountered during the construction of the C314V Project.

The information provided by the EDR screening for environmental sites within the potential C314V Project route area is presented in as a standalone document. In order to make the screening data manageable and relevant to the C314V Project, the data was first evaluated based on whether or not the

proposed route crossed or was adjacent to the EDR sites. Additionally, sites were evaluated based on the respective databases that may or indicate soil or groundwater impacts along the proposed route.

The following databases were reviewed as part of the environmental screening:

- Federal National Priorities List (NPL)
- Federal Delisted NPL Site List
- Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
- Federal CERCLIS No Further Remedial Action Planned (NFRAP) Site List
- Federal Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal Facilities
- Listed Corrective Action Tracking System (RCRA CORRACTS) Facilities List
- Federal RCRA Generators List
- Federal Institutional Control/Engineering Control Registries
- Federal Emergency Response Notification System (ERNS) List
- State and Tribal State Hazardous Waste Sites (SHWS)
- State and Tribal Solid Waste Landfills and/or Solid Waste Disposal Site Lists (SWF/LF)
- State and Tribal Leaking Underground Storage Tank Lists
- State and Tribal Registered Underground Storage Tank Lists
- State and Tribal Institutional Control/Engineering Control Registries
- State and Tribal Voluntary Cleanup Sites
- State and Tribal Brownfield Sites

Additional databases beyond the minimum required by ASTM, were reviewed and supplied by EDR.

2.2.1.2 Ohio Environmental Protection Agency

Databases supplied by the Ohio EPA were also reviewed by Burns & McDonnell during the Environmental Screening. The Ohio EPA eDocument Search (http://edocpub.epa.ohio.gov/publicportal/edochome.aspx) was also utilized to search for additional information.

2.2.1.3 Ohio State Fire Marshall

The Bureau of Underground Storage Tanks Regulation (BUSTR) maintains the Ohio Tank Tracking and Environmental Regulations (OTTER) site (https://apps.com.ohio.gov/fire/otter/) which was utilized to review records and information on underground storage tanks.

2.2.2 Geotechnical and Environmental Borings

A geotechnical assessment of the proposed route was conducted at 23 locations, at trenchless crossing locations that may require Horizontal Directional Drills (HDD's) or auger bores. The borings were advanced using hollow stem augers and soil cores were screened with a photo ionization detector (PID) equipped with a 10.6 eV lamp. Soil cores were also visually observed for signs of impacted soils (i.e., staining). If elevated PID readings occurred or if visual staining was noted, a sample from that interval was collected and submitted for analysis.

Throughout the environmental screening process, following a records review and any additional review of documents, boring locations strictly for environmental purposes were deemed necessary. A total of 14 environmental borings were completed. Soil sample collection was conducted using direct push sampling equipment (e.g., Geoprobe®) to a depth of 10 feet below ground surface (bgs). Once removed from the sampling device, personnel split open the acetate sleeve and the soil sample was visually inspected. Soil samples were field screened using a PID equipped with a 10.6 eV lamp. If PID readings or staining were noted, a sample from that interval was collected and submitted for analysis. If no PID reading or staining was present a sample was collected from the top five feet of the soil boring and submitted for analysis. Samples were analyzed for contaminants based on records and document review, which may include: RCRA metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons-diesel range organics (TPH-DRO), and TPH-gasoline range organics.

Environmental sampling locations and geotechnical locations where environmental samples were collected are discussed further in Section 3.0.

* * * * *

3.0 ADDITIONAL BACKGROUND INVESTIGATION EFFORTS

The C314V Project route centerline was evaluated during the environmental screening and areas of interest (AOI) were identified, which required additional background investigation. Twenty-eight sites along or near the route were selected for additional evaluation using the Ohio EPA online database queries and/or State document review through the FOIA.

These sites were selected based on the need for geotechnical information at stream, railroad or road crossings, proximity to the proposed route, and the potential for impacts to soil and/or groundwater. Typically, the selected sites could include gas stations, industrial sites, dry cleaning sites, environmental remediation sites, leaking underground storage tank sites, or landfills. The goal of the additional background investigation was to obtain site-specific information pertaining to each site to pinpoint the type and location of contamination at the sites and thereby better evaluate potential impact to the proposed route. These sites are divided into Primary AOI and Secondary AOI sites and are discussed below.

During the review of the AOI's, instances occurred where additional soil and/or groundwater data was deemed necessary to fill a data gap. Any additional soil and/or groundwater data collected as part of the Environmental Screening is discussed in the respective summaries below. Soil and groundwater data detection summaries are presented in Tables 2 and 3 and analytical data packages are provided in a separate document. Soil data was and compared to Ohio EPA Voluntary Action Program (VAP) Generic Numerical Standards for Commercial/Industrial Land Use Category and Construction or Excavation Activity Category. These categories were utilized based on the property use as defined in Ohio Administrative Code (OAC) 3745-300-08 Generic Numerical Standards. If Generic Numerical Standards were not published for a compound the USEPA Regional Screening Level for industrial soil were utilized.

As presented in the summaries below, the potential for contaminants from current and/or historical activities at the AOIs may be present. These properties were evaluated with respect to the location of the proposed route and potential impact to the C314V Project. Based on the review of available environmental information and analytical results from soil and/or groundwater samples, potential impacts to the C314V Project will be mitigated through proper material handling strategies and field screening/verification of soil and/or groundwater conditions during construction and do not necessitate a reroute. Due to the unknown nature of the subsurface, conditions may differ from what was originally anticipated once construction excavation begins. Soil contamination may become apparent and/or

impacted groundwater may be encountered that was not identified during the environmental screening process. Additional construction considerations are discussed in Section 4.0.

3.1 State Resource Review

The Ohio EPA was contacted by Burns & McDonnell staff through a FOIA request (Application for Access to Records), to review available environmental files such as previous site assessments, clean up reports, and other documentation that could indicate the type and extent of contamination, location of underground storage tanks, and/or location of landfill limits. The FOIA requests and responses are provided in a separate document.

3.2 Site Summaries

The following site summaries were compiled from review of the EDR report and any associated documents that were provided through the FOIA requests. Primary sites are those sites that lie within the one-mile corridor; are adjacent to the proposed transmission route; or are directly located where the proposed transmission route is sited. Secondary AOI's are sites that are within the one-mile corridor; and warranted additional review due to the regulatory program and/or historical knowledge of potential contaminants.

3.2.1 Primary Areas of Interest

3.2.1.1 Blue Ash Airport – Former Shooting Range

The Blue Ash Airport – Former Shooting Range property is approximately 43 acres of land currently under development (Summit Park) located at 4273 Glendale-Milford Road, Blue Ash, Ohio. The site is located southwest of the intersection of Glendale-Milford Road and Reed Hartman Highway. The proposed route crosses the northern portion of the site along Glendale-Milford Road. Remediation at the site included excavation of approximately 24,473 tons of impacted soil removed from the former shooting range area at depths ranging from 6 inches to 4.5 feet bgs. The property was determined to meet unrestricted potable use for groundwater and unrestricted land use for soil, except for an 8.6-acre portion of the property that is restricted from residential land use under an environmental covenant. This 8.6-acre portion under the environmental covenant is located just north of the airport's runway, approximately 1,000 feet south of the route. Due to the location and the lack of groundwater impacts, the former shooting range is not considered to be a concern.

Based on historical aerial images, it was determined that a former hanger was located on or near the proposed route on the northern portion of the site. Because of the location of the former hanger and

general activities associated with aviation maintenance, two soil sampling locations were advanced along the route to verify current site conditions. Analytical results were below commercial/industrial or construction/excavation activity screening levels.

3.2.1.2 Formica Corporation

The Formica Corporation site is located at 10155 Reading Road, approximately 1/2-mile east of Interstate 75 with the route crossing the northern and western sides of the property. The Formica Corporation facility had been a hazardous waste management facility (HWMF) that stored hazardous waste from printing operations. A permit for the HWMF was issued in 1985 and the facility was approved for closure in 1991. As part of the HWMF closure plan, soil sampling was conducted in 1991 and 1994. Exceedances of lead and chromium were discovered within the top 12 inches in the drainage ditch at the site, and low levels of organic materials were discovered beneath the hazardous waste storage pad. According to HWMF closure documentation for the facility, soil excavation of the drainage ditch was conducted to remove contaminated soil and closure beneath the storage pad was demonstrated with a health-based risk assessment.

A soil boring was advanced near the Formica Corporation facility along the proposed route. Analytical results were below commercial/industrial or construction/excavation activity screening levels.

Geotechnical borings were conducted on the Formica Property for the purpose of evaluating suitability for a potential HDD. Soil samples were collected from the borings. Analytical results were below commercial/industrial or construction/excavation activity screening levels. A grab sample of groundwater was collected from one boring.

3.2.1.3 General Electric Aviation

The GE Aviation Facility is located at 1 Neumann Way, Cincinnati, Ohio. The site is located directly east of the intersection of I-75 and Neumann Way, approximately 1,000 feet west of the route. Geotechnical borings were conducted with the purpose of evaluating suitability for a potential HDD. A grab groundwater sample was collected from each borehole at each location. No analytes were detected.

3.2.1.4 Pristine, Inc. Superfund Site

The Pristine, Inc. Superfund site is located at 410 Cavett Avenue, Reading, Ohio, approximately 1/3-mile east of Interstate 75 and west of the route across the railroad tracks. Railroad tracks border the property to the east and Mill Creek is just west of the site. The Pristine, Inc. site was used for manufacturing of sulfuric acid and fertilizer prior to 1974. From 1974 to 1981, the site was a liquid waste disposal facility that included the incineration of liquid waste. The site closed in 1981 due to numerous permit violations.

Chemicals of concern at the site included PCBs, pesticides, VOCs, SVOCs, and metals. Most material was removed from the site from 1980 and 1983, and the site was added to the NPL database in 1983.

Several remedial actions at the site have taken place, including demolition, thermal treatment of soil, soil vapor extraction, and groundwater extraction and treatment (GWE&T) system. The GWE&T system began operation in 1997 with reductions in extraction rates starting in 2002. The GWE&T system is still presently operating, but a reduced rate. The site is subject to the four institutional controls per USEPA guidance: governmental controls, enforcement and permit controls, proprietary controls, and informational device controls. Additional investigation efforts also included the approximate location of the extraction well piping south of the Pristine Inc. Superfund site along West Street in the City of Reading associated with the Pristine GWEA&T system. This information was utilized to verify that the proposed route would not interfere with GWE&T system. A detailed review of the Pristine Inc. Superfund site was provided to Duke by CH2M Hill (Pristine Superfund Site Summary).

Two soil samples were advanced along the route to verify current site conditions. Analytical results were below commercial/industrial or construction/excavation activity screening levels.

3.2.1.5 Ohio Valley Petroleum Company

The Ohio Valley Petroleum Company site is located at 9361 Reading Road, Reading, Ohio. Reading Road borders the property to the west, and the route is located approximately 400 feet northwest of the property. Information from the Ohio Tank Tracking and Environmental Regulations website indicates that the site was a distribution facility with nine tanks that contained petroleum products. The tanks were installed in 1949 and removed in 1995. The site is listed as a leaking underground storage tank (LUST) site, however the current status is listed as no further action (NFA). Due to the NFA status and the distance of the site from the route, the site is not considered to be a concern.

3.2.1.6 Rohm and Haas Chemicals LLC

The Rohm and Haas Chemicals LLC Facility site is located at 2000 West Street in Reading, Ohio, and is approximately 34 acres. The site is located approximately 1/2-mile east of Interstate 75 and Mill Creek is located approximately 100 feet west of the site's property boundary. Alternate names found for the address include the Morton International, Inc. Facility, PMC Cincinnati Inc. Facility, and Dow Chemical. The manufacturing of chemical products has been conducted at the site under several owners since approximately 1950. Several investigations were conducted at the site, which included the collection of soil, sediment, surface water, and groundwater samples. VOCs, SVOCs, Pesticides, PCBs, and metals

were detected at the site and identified as potential chemicals of concern and a baseline health risk assessment was conducted.

Soil borings were advanced at the site due to the lack of data available in the vicinity of the route. Analytical results were commercial/industrial or construction/excavation activity screening levels.

3.2.1.7 Former Nivison-Weiskopf Property

The former Nivison-Weiskopf Property is located at 601 Third Street, Reading, Ohio, approximately 1/2-mile east of Interstate 75. Railroad tracks border the west portion of the property and the route goes through where the former facility used to be. The Nivison-Weiskopf was an industrial manufacturing facility of crates and cardboard since approximately 1900. Production stopped in the early 1990's, and the facility was then used for warehousing and automobile part distribution, maintenance, and repair, until it was demolished in 2008. The City of Reading also purchased an adjacent residential property, the former Ostholthoff and Glorius residential parcel, located at 595 Third Street. The residential portion contained a home from the 1930's until it was demolished in the 1980's. The former Niviion-Weiskopf Property and the former Ostholthoff and Gloriuos property is approximately 13.5 acres total.

During previous investigations from approximately 2006 to 2010, several areas of concern associated with the historical operations of the former Nivison-Weiskopf facility were identified. Potential contaminants of concern included VOCs, SVOCs, TPH, PCBs, and metals. Remedial activities including asbestos abatement, underground storage tank (UST) removal, and excavation of petroleum contaminated soil occurred during the facility's demolition in 2008. A NFA letter for the Property was issued on August 10, 2011. There are institutional controls for the property that include a prohibition against use or extraction of groundwater and a commercial/industrial land use restriction. Operation and Maintenance and a Risk Mitigation Plan were not required.

Soil borings were advanced along the route at the site to verify current site conditions. Analytical results were below commercial/industrial or construction/excavation activity screening levels.

3.2.1.8 Reading VSI Property

The Reading VSI Property is located at 8740 Reading Road, Cincinnati, Ohio directly to the west of the former Nivision-Weiskopf Property, and approximately 400 feet west of the route. Previous investigations identified petroleum contaminated soils, as well as possible contamination of metals and PCBs. Information indicates that the site is listed in the Voluntary Cleanup Program (VCP) and Division of Environmental Response and Revitalization (DERR) databases. The site was identified as an AOI due to the proximity to the route, however the pipeline route will not cross the property. Soil borings were

advanced adjacent to the Reading VSI property (on the east side of the railroad tracks) at the former Nivision-Weiskopf Property Site to confirm or deny impacts to the route. Soil results are discussed in the previous section.

3.2.1.9 Thermo-Fisher Scientific (formerly Patheon Pharmaceuticals Inc.)

The Patheon Pharmaceuticals Inc. facility is located at 2110 East Galbraith Road, approximately 1/2-mile east of Interstate 75. The site address is also referenced as the Merrell Dow Pharmaceutical site. The facility conducted manufacturing of pharmaceutical products, which included the generation and storage of hazardous wastes. Records indicate that phosphorus was historically buried at the site, and 36 drums of material were excavated in 1985. The excavation was conducted under supervision from Ohio EPA and closure was completed. The excavated area was approximately 300 feet east of the proposed route. In 2001, a Closure Certification Report for the Merrell Pharmaceuticals, Inc. Hazardous Waste Storage Area was submitted to provide details on the removal of hazardous waste materials, decontamination, and certify completion of closure for the storage area. Information listed online at the USEPA website indicate that Patheon Pharmaceuticals Inc. is currently listed as a Large Quantity Generator (LQG) for several waste codes as well as a Treatment Storage, and Disposal Facility (TDSF). Because cleanup and or closure activities were completed and approved, impact to the pipeline is not a concern.

3.2.1.10 Liebel-Flarsheim Company

The Liebel-Flarsheim Company site is located at 2111 East Galbraith Road, Cincinnati, Ohio. Ronald Reagan Cross Country Highway borders the property to the north and the route is along the west side of the property. Information indicates that the Liebel-Flarsheim Company is a Conditionally Except Small Quantity Generator (CESQG). The facility was also listed previously as a LQG with no violations found.

Soil borings were advanced along the route to verify current site conditions. Analytical results were below commercial/industrial or construction/excavation activity screening levels.

3.2.1.11 Former Ashland Chemical Company

The Former Ashland Chemical Facility is located at 1953 Losantiville Avenue, Cincinnati, Ohio. The site is located approximately 1/2-mile east of Reading Road, and the route crosses along the property to the east. The Former Ashland Chemical Facility was a chemical and solvents distribution and warehouse plant, which included historical generation and storage of hazardous waste. Ashland purchased the property in 1958 and the facility was decommissioned in 1984. During the plant decommissioning,

underground and above ground tanks were removed. In 1995, a Closure and Post Closure Plan was submitted and approved by Ohio EPA.

Several phases of investigation have been conducted to assess the onsite and offsite conditions of soil, groundwater, soil vapor, and indoor air. A number of remedial actions have been conducted at the site. Soil borings were advanced along the route to verify current site conditions. Analytical results were below commercial/industrial or construction/excavation activity screening levels.

3.2.1.12 Cincinnati Recreation Commission

The Cincinnati Recreation Commission maintenance facility is located at 1955 Losantiville Avenue, Cincinnati, Ohio. The site is located approximately 1/4-mile south of Losantiville Avenue on an access road, and the route crosses along the east property line. The site was listed in the LUST database, with a UST located close to the route.

A soil boring was advanced along the route to verify current site conditions. Analytical results were below commercial/industrial or construction/excavation activity screening levels.

3.2.1.13 Seymour Sunoco

The Seymour Sunoco site is a gasoline station located at 2098 Seymour Avenue, Cincinnati, Ohio. The property is located northeast of the intersection of Seymour Avenue and Langdon Farm Road, and the route borders the east portion of the property. The site had been a gasoline station since 1965, and three releases are associated with the property in 1998, 1999, and 2008. NFA status was granted for the 1998 and 1999 releases. Information indicates that one 6,000-gallon and two 6,000-gallon USTs, installed in 1968, were closed by removal in 2007. During removal, one 5,000-gallon and one 6,000-gallon orphaned USTs were discovered and closed by removal. Chemicals of concern in samples from the UST cavity exceeded default closure action levels, and the third release was assigned to the site. Chemicals of concern at the site included BTEX/MTBE, TPH-DRO, TPH-GRO, and PAHs. In 2015, the Department of Commerce, Division of State Fire Marshall determined that the Tier 1 investigation was completed and instructed that the Tier 2 evaluation be submitted on or before April 14, 2017. A request for current information was submitted to the BUSTR, however a response was not received.

A Soil boring was advanced along the route to verify current site conditions. Analytical results were below commercial/industrial or construction/excavation activity screening levels.

3.2.1.14 Former Hilton Davis Site

The Former Hilton Davis Chemical Company site is located at 2235 Langdon Farm Road, Cincinnati, Ohio, approximately three hundred feet east of the route. Langdon Farm Road borders the north portion of the property and railroad tracks bound the west and south portions of the property. In 1986, Sterling Drug, Inc. and Hilton Davis Chemical Company entered into a Consent Decree with the state of Ohio. The Former Hilton Davis site has operated as a pigment and pharmaceutical manufacturing plant since 1927. Products manufactured at the plant include chemicals such as dyes, food colors, pigments, brighteners, and pharmaceutical intermediates, and raw materials used at the site include acids, bases, amines, and solvents. Previous investigations identified concentrations of VOCs, SVOCs, and metals at the site.

Currently two groundwater extraction systems operate at the site. The Interim Engineering Controls extraction system has operated since 1999 and controls the source of contaminated groundwater. The Perimeter Groundwater Collection System has operated since 2005 and is used to intercept groundwater flow in the uppermost sand units beneath the site's perimeter. In 2016, concentrations of trichloroethylene (TCE) from monitoring wells exceeded the Vapor Intrusion Screening Level residential criterion for TCE in groundwater. Due to those TCE concentrations, a vapor intrusion investigation was conducted in 2017 to investigate the potential for off-Site residential exposure near the northern boundary, approximately 2,000 feet west of the route. Sampling results from the vapor investigation indicated that TCE was not detected above reporting limits and residential sub-slab and indoor air sampling was not warranted. Due to current Interim Engineering Controls, impact to the route is not a concern.

3.2.1.15 Keenan Oil Company Plant/Thomas Trucking

The Keenan Oil Company Plant is located at 2350 Seymour Avenue, Cincinnati, Ohio. Railroad tracks border the northeast property boundary and the site is located approximately 750 feet east of the route. The site was used to reclaim waste oil to obtain fuel oil. Information indicates that three spills between 1978 and 1983 occurred and possibly affected the Mill Creek tributary and the sewer system. The facility had been a RCRA TSD but ceased when the solvents were removed in 1985. A lagoon, closed in 1980, had been used at the site to contain the underflow from a process tank. A Phase II ESA was conducted in 2001 following remediation activities, which indicated contaminants (metals, VOCs, SVOCS, PCBs) were all below the Ohio VAP commercial/industrial screening levels. Due to the site being approximately 750 feet from the route and information obtained from the previously conducted Phase II, the site is not a concern.

3.2.2 Secondary Areas of Interest

3.2.2.1 Blue Ash Air National Guard Station

The Blue Ash Air National Guard Station site is located approximately 1/3-mile north of the Blue Ash Airport and the proposed route, and approximately 1/3-mile west of Reed Hartman Highway. Operations at the site include maintenance and storage of communications equipment, shop activities, field maintenance, and vehicle maintenance since approximately 1953. Previous site investigations identified chemicals of potential concern in soil and groundwater as PAHs, VOCs, SVOCs, TPH-DRO, and metals. As stated in a Remedial Action Work Plan dated December 2016, remedial investigation was proposed to quantify the extent of contamination and the risk associated with the chemicals at the site. Due to the site being located and 1/3-mile north of the route, the site is not believed to be a concern.

Soil borings were advanced along the route on the Blue Ash Airport site indicating impacts from the Blue Ash Air National Guard Station were not present.

3.2.2.2 GKN Aerospace / Sermatech-Lehr Plant

The GKN Aerospace site is located at 11230 (Plant 1) and 11495 (Plants 2 and 3) Deerfield Road, Blue Ash, Ohio. Plants 2 and 3 are located approximately 600 feet southwest of Interstate 275 and approximately 1,000 feet southeast of the route. Plant 1 is located approximately 1,000 feet west of Interstate 71 and approximately 2/3-mile southeast of the route. The sites are also referenced as the Sermatech-Lehr Plant or Lehr Precision Inc. The plants have been used for general machining operations and electrochemical-machining operations dating back to the 1960's at Plant 1. In addition, the Plant 2 property was historically used as a brick company, a pharmaceutical company, and a radio manufacturing company. Previous site investigations identified potential chemicals of concern to include VOCs, metals, and PAHs. Risk assessments done for the properties determined that the applicable standards were met for industrial/commercial land use. NFA, covenant not to sue, and land use restrictions for the sites were recorded in 2004. Due to the NFA and distance from the route, the site is not believed to be a concern.

3.2.2.3 Milestone AV Technologies LLC

Milestone AV Technologies LLC is located at 11500 Williamson Road, Cincinnati, Ohio, approximately 600 feet west of the route and Reed Hartman Highway. The site is also referenced as the Da-Lite Screen Company, Inc. or 3M-Cincinnati Ohio. The facility was constructed in 1966 by Polacoat, Inc., and then 3M owned the property from 1975 until 1983, when Da-Lite purchased the site. The facility manufactures projection screens and hazardous waste generated includes spent coatings and solvents used in the production process (waste codes D001, F003, and F005). Contaminated soils were encountered

during the closure of the hazardous waste storage area in 1989. In addition, Ohio EPA was notified of alleged dumping/burial of drums that occurred in the 1960's. Closure activities for the contaminated soils were conducted in 1995, which included soil excavation, drum removal, confirmation sampling, and a deed restriction. Due to the distance of the site from the route, the site is not considered to be a concern.

3.2.2.4 Blue Ash Distribution Center

The Blue Ash Distribution Center site is located at 11013 Kenwood Road, Blue Ash, Ohio. The site is located northwest of the intersection of Kenwood Road and Osborne Boulevard, and the route runs adjacent to the west property boundary. Information indicates that a LUST had been assigned to the site, but the UST was removed in 1994 and the site was issued a NFA letter. The Blue Ash Distribution Center is not considered to be a concern.

3.2.2.5 Springhill Suites by Marriott

The Springhill Suites by Marriott is located at 4650 Creek Road, Blue Ash, Ohio. The site is located northeast of the intersection of Creek Road and Reed Hartman Highway, and the route is approximately 350 feet west of the site. The site is also referenced as the Former 4650 Creek Road Property. The site is an approximately 2.7-acre piece of land that was part of the property owned by a tin seaming plant and later part of General Electric's electroplating plant. Assessments identified VOCs, PAHs, metals, and cyanic in soils. Due to arsenic levels in soils above residential land use standards and lead in groundwater exceeding potable use standards, an environmental covenant is in place to restrict the site to commercial/industrial use and prohibit groundwater use. A NFA and covenant not to sue letter was issued in 2007 and it is not considered a concern

3.2.2.6 Former General Electric Corporation

The Former General Electric site was located at 10745 Kenwood Avenue, Blue Ash, Ohio. The site is located northwest of the intersection of Creek Road and Kenwood Road, and approximately 1,000 feet east of the route. The facility was built in 1956 by American Cans, Inc, which used the facility for manufacturing that included a tin seaming process. General Electric purchased the property in 1961 for manufacturing operations which included cyanide electroplating of tin and silver on aluminum, copper, and steel. The manufacturing facilities included two wastewater treatment plants, a xylene UST, cyanide reaction tank and associated buried piping, a paint room, and two lagoons. Manufacturing operations at the site ceased in 1976, and the facility was then used for distribution and warehousing until the facilities were demolished in 1988. Soil and groundwater contamination was discovered during decommissioning activities. Potential contaminants of concern at the site included metals, VOCs, asbestos, polychlorinated biphenyl (PCBs), and cyanide. Wastes were processed through the wastewater treatment plants prior to

discharge into the lagoon system and then eventually to the creek. Information indicates that the site is listed on the Superfund Enterprise Management System (SEMS) archived list, with a completed date listed as 1995.Due to the distance of the site from the route, the site is not considered to be a concern.

3.2.2.7 Graphic Packaging International

The Graphic Packaging International site is located at 10600 Evendale Drive, Cincinnati, Ohio. The property is located approximately 1/4-mile east of Interstate 75 and approximately 1/2-mile northwest of the route. The site is also referenced as Riverwood International USA, Inc. and Manville Forest Products Corporation Plant. Information indicates several spills have occurred at the property, including a spill in 1988 where approximately 3,500 gallons of toluene-containing solvent spilled. Remedial actions included soil and groundwater sampling, soil excavation, soil gas survey, and soil vapor extraction. Another solvent spill occurred in 1992 in which approximately 100 tons of soil was excavated. A 1992 report indicated that the facility was in process of changing from a solved based ink to a water-based ink to reduce the risk of similar spills. Due to the distance of the site from the route, the site is not considered to be a concern.

3.2.2.8 Univar USA Inc.

The Univar USA Inc. site is located at 3025 Exon Avenue, approximately 1/3-mile north of Glendale Milford Road and the route. The site is also referenced as McKesson Chemical Co., Van Waters & Rodgers Inc., and Vopak USA, Inc. The facility operated a hazardous waste container storage unit from approximately 1980 to 1992. A RCRA closure plan was approved by Ohio EPA in 1993. Information lists the site in the CORRACTS, RCRA-TSDF, and RCRA-LQG databases. Due to the distance of the site from the route, the site is not considered to be a concern.

3.2.2.9 Nexeo Solutions LLC

The Nexeo Solutions LLC site is located at 2788 Glendale-Milford Road, Cincinnati, Ohio. The site is located approximately 2/3-mile east of Interstate 75 and is bound by Mill Creek to the north and railroad tracks to the east. Information indicates that the site is listed as a NFRAP site, and the facility is also assigned a low corrective action priority. Due to the distance of the site from the route, the site is not considered to be a concern.

3.2.2.10 HB Fuller

The HB Fuller site is located at 4440/4450 Malsbary Road, Blue Ash, Ohio, approximately 1 mile south of the route. The property is approximately 16 acres and the facility was used to manufacture polymer and water-based adhesives from 1974 until the polymer plant was decommissioned in 2009. The site has

a history of releases, including a release of 5,400 gallons of TCA in 1984 that impacted soil, soil gas, and groundwater. Remedial actions included soil excavation, and a risk mitigation plan was prepared to protect future construction activities. An environmental covenant is in place to restrict the site to commercial/industrial use and prohibit groundwater use, and a NFA letter was issued in 2009. Due to the distance of the site from the route, the site is not considered to be a concern.

3.2.2.11 Deluxe FAC Former

The Deluxe FAC Former site is located at 9875 Redhill Drive, Blue Ash, Ohio, approximately 1 mile south of the route and 3/4-mile west of Interstate 71. The site is also reference as the Deluxe Check Printers Inc. Information indicates that the site is listed in the VCP and the DERR databases. Due to the distance of the site from the route, the site is not considered to be a concern.

3.2.2.12 Stearns and Foster Textile Plant

The Stearns and Foster Textile Plant is located at East Wyoming Avenue in Lockland, Ohio and is located over 1/2-mile west of the route. Chemicals of concern evaluated at the Property included VOCs, SVOCs, PAHs, metals, TPH, PCBs, asbestos, and dioxins. Arsenic and benzo(a)pyrene contaminated soil was removed to a depth of 2.5-feet, and soil impacted with PCBs was removed to at least 2.5 feet. A Risk Mitigation Plan was prepared in 2012 to address exposure to asbestos during construction and excavation, as well as the exposure to vinyl chloride if encountering groundwater. An environmental covenant is in place to restrict the site to commercial/industrial use and prohibit groundwater use. The covenant also restricts building occupancy until a vapor intrusion barrier is installed and operational. A NFA action letter for the site was submitted and a covenant not to sue was issued in 2012. Due to the distance of the site from the route, the site is not considered to be a concern.

3.2.2.13 Celotex

The Celotex site is located at 320 South Wayne Avenue, Lockland, Ohio. The site is also referenced as the Former Celotex Corp Lockland/Verwandt Property. The site is located approximately 1/4-mile west of Interstate 75 and over one mile west of the route. Celotex and its predecessors produced mainly asbestos cement and rock wool insulation between the 1940's and 1970's. Celotex left the property in 1990 and the buildings were demolished in 2002. An environmental covenant is in place to restrict the site to commercial/industrial use and prohibit groundwater use. A NFA letter was submitted in 2009 and a covenant not to sue was issued in 2010. Due to the distance of the site from the route, the site is not considered to be a concern.

* * * * *

4.0 CONSTRUCTION CONSIDERATIONS

Information presented in this Environmental Summary Report will be integrated into key construction considerations such as soil and/or groundwater management, evaluation of pipeline integrity, and worker health and safety during construction and operation and maintenance activities.

A Soil and Groundwater Management Plan will be prepared for construction activities utilizing data obtained and interpreted in this report. The Soil and Groundwater Management Plan will describe soil, groundwater, and waste management and minimization strategies to be followed during construction to provide adequate safety precautions and minimize the potential for cross contamination. Due to variability of surface and subsurface conditions, the information in the Soil and Groundwater Management Plan will be used in conjunction with appropriate field screening efforts (e.g. PID, visual and olfactory assessment) and laboratory confirmation techniques as necessary to field verify appropriate soil and groundwater conditions.

Pipeline integrity will be evaluated during the design phase of the C314V Project to verify compatibility with any contaminants that were identified during this Environmental Summary Report.

Additional information will be included in the Health and Safety Plan that addresses contaminants identified in this Environmental Summary Report to provide for the safety of personnel during construction.

* * * * *

TABLES

Table 1
EDR Summary - Sites on Route
C314V Project
Duke - Cincinnati, Ohio

Owner/Former Facility Name	Address	City	Approximate Distance from Route (Feet)	Concern	Additional Information
Kemper Commers Park Limited Partnership / Tekmar Co	7143 E Kemper Rd	Cincinnati	341	No	
Ohio Department of Transportation	11590 Grooms Rd	Cincinnati	0	No	
A&A Real Estate Investments LLC / Montgomery Flooring Inc.	11591 Grooms Rd	Cincinnati	0	No	
Proctor & Gamble Co.	11510 Reed Hartman Hwy	Cincinnati	68	No	
Camelot Associates / Wilson Freight Co	11353 Reed Hartman Hwy	Cincinnati	0	No	
Reed Hartman Business Park LLC	11315 Reed Hartman Rd	Blue Ash	0	No	
Reed Hartman Business Park LLC / AGFA Compugraphic	11325 Reed Hartman Hwy	Cincinnati	0	No	
4665 & 4675 Cornell Road LLC / Fed Ex	4675 Cornell Rd	Blue Ash	255	No	
Blue Ash Distribution Center	11013 Kenwood Rd	Blue Ash	670	No	
Toyota Motor	4550 Creek Rd	Blue Ash	473	No	
Ethicon Endo Surgery	10560 Ashview Place	Blue Ash	656	No	
GSA Westlake Owner LLC / Fleet Care Corp	4555 Lake Forest Dr	Cincinnati	267	No	
GSA Lake Forest Place Owner LLC	4445 Lake Forest Dr	Cincinnati	531	No	
City of Blue Ash / Steelcraft Mfg Co Plant No 4	4300 Glendale Milford Rd	Blue Ash	111	No	
City of Blue Ash / Summit Park	4335 Glendale Milford Rd	Blue Ash	0	No	
City of Blue Ash / ALS Laboratory Group / Datachem Laboratories	4388 Glendale Milford Rd	Blue Ash	0	No	
City of Blue Ash / Blue Ash Airport	4273 Glendale Milford Rd	Cincinnati	0	No	Environemtnal sample was collected. Results below Ohio EPA VAP commercial/industrial and construction/excavation activity screening levels.
City of Blue Ash / TRM Copy Centers Corp	4396 Glendale Milford Rd	Cincinnati	0	No	
City of Blue Ash / TRM Copy Center	McKinley Rd & Glendale Milford Rd	Cincinnati	0	No	
Evendale Elementary School	3940 Glendale Milford Rd	Cincinnati	426	No	
Village of Evandale / UNK	SR 126 W of Reading Rd	Evendale	0	No	
Evandale Commons LTD / Domestic Linen & Supply	2931 Glendale Milford Rd	Evendale	103	No	
Evandale Commons LTD / McSwain Hardwood Co	2933 Glendale Milford Rd	Evendale	100	No	
Formica Corporation	10155 Reading Rd	Cincinnati	2,021	No	Environmental sample was collected. Results below Ohio EPA VAP commercial/industrial and construction/excavation activity screening levels.
Alumchem Inc	1 Landy Ln	Cincinnati	232	No	Environmental sample was collected directly east of the Pristine, Inc. site. Results were below Ohio EPA VAP commercial/industrial and construction/excavation activity screening levels.
General Tool Co	101 Landy Ln	Cincinnati	319	No	

Table 1
EDR Summary - Sites on Route
C314V Project
Duke - Cincinnati, Ohio

Owner/Former Facility Name	Address	City	Approximate Distance from Route (Feet)	Concern	Additional Information
K. L. New Construction / Richs Transmission Service	24 Landy Ln	Cincinnati	497	No	
West Street Capital LLC / Rosemont Industries	1700 West St	Cincinnati	275	No	
2000 West Property LLC / Morton International / Morton / Carstab /Rohm Haas / PMC / Dow Chemical	2000 West St	Cincinnati	0	No	Environmental samples collected at E-105 and E-114. Results below Ohio EPA VAP commercial/industrial and construction/excavation activity screening levels.
City Of Reading / UNK	1770 West Rahn	Township	0	No	
City of Reading / Carstab Corp	1560 West St	Reading	0	No	
Anita Clark / Ross Thomas	1406 Market St	Reading	0	No	
Nelson C. Koehler / Gad Sunoco	9185 Reading Rd	Cincinnati	114	No	
St. Mary's Educational Institute at Cincinnati / Central Insulation	Vine St & 3rd St at PNC Bank	Cincinnati	0	No	
Patheon Pharmaceuticals / Merrel Dow	2110 E Galbraith Rd	Cincinnati	282	No	
Patheon Pharmaceuticals	8560 Reading Rd	Cincinnati	284	No	
City of Reading / Former Nivision Weiskopf	601 3rd St	Reading	0	No	Environmental sample was collected. Results below Ohio EPA VAP commercial/industrial and construction/excavation activity screening levels.
Liebel-Flarsheim Company	2111 E Galbraith Rd	Cincinnati	608		Environmental sample was collected. Results below Ohio EPA VAP commercial/industrial and construction/excavation activity screening levels.
Proctor & Gamble Co.	2150 Sunny Brook Dr	Cincinnati	196	No	
Pepsi Cola General Bottlers	2121 Sunny Brook Dr	Cincinnati	213	No	
Novelart Manufacturing Company / Gibson Greeting Cards	2100 Section Rd	Cincinnati	211	No	
Ashland Chemical Inc	1953 Losantiville Rd	Cincinnati	0	No	Environmental sample was collected. Results below Ohio EPA VAP commercial/industrial and construction/excavation activity screening levels.
City of Cincinnati / Recreation Commission	1955 Losantiville Rd	Cincinnati	0	No	Environmental sample was collected. Results below Ohio EPA VAP commercial/industrial and construction/excavation activity screening levels.
Disi Brothers Land LLC / Seymour Sunoco	2098 Seymour Ave	Cincinnati	91	No	Environmental sample was collected. Results below Ohio EPA VAP commercial/industrial and construction/excavation activity screening levels.
Port of Greater Cincinnati Development Authority / Kentucky Independent Oil Co / Suburban Oil Co / Cities Service Oil Co of Ohio / Midvale Garage Co	7436 Carthage Pike	Cincinnati	92	No	
Michael P. Mergenthal / Mike's Automotive	5930 Carthage Ct	Cincinnati	0	No	
Michael P. Mergenthal / Smith Electro Chemical Co	5936 Carthage Ct	Cincinnati	61	No	
MLD Ventures LLC / Dicks Auto & Radio Repair	2290 Seymour Ave	Cincinnati	99	No	
T & D Land LLC / Keenan Oil	2350 Seymour Ave	Cincinnati	614	No	

Table 2
Summary of Detections - Soil
C314V Project
Duke - Cincinnati, Ohio

	Unit	Commercial/ Industrial Direct-Contact Soil Standards	Construction/ Excavation Direct-Contact Soil Standards	E-101/S 2-3 11/9/2017	E-102/S 1-2 11/9/2017	E-103/S 11/14/2017	E-104/S 2-3 11/9/2017	E-105/S 2-3 11/28/2017	E-106/S 2-4 11/28/2017	E-107/S 2-3 11/28/17	E-108/S 5-6 1/19/18	E-109/S 9-10 1/19/18	E-110/S 8-9 1/19/18	E-111/S 9-10 1/19/18
Gasoline Range Organics (GRO)														
TPH C6-C12[1]	mg/kg	1000	1000	ND	ND	–	–	ND	ND	ND	ND	ND	ND	ND
Diesel Range Organics (DRO)														
TPH C10-C20[1]	mg/kg	2000	2000	ND	ND	–	–	ND	ND	ND	ND	ND	ND	ND
TPH C20-C34[1]	mg/kg	5000	5000	ND	ND	–	–	ND	35	ND	ND	ND	ND	ND
Metals														
Arsenic	mg/kg	82	390	9.1	21	27	–	13	8	13	8.4	ND	10	8.6
Barium	mg/kg	370000	120000	61	61	56	–	72	43	67	66	69	36	190
Cadmium	mg/kg	2300	1600	ND	ND	2.4	–	ND	ND	ND	ND	ND	ND	ND
Chromium	mg/kg	1000000	1000000	14	20	72	–	15	12	19	13	19	11	18
Lead	mg/kg	1800	750	17	18	55	–	24	22	17	17	10	12	14
Volatile Organic Compounds (VOCs)														
1,1,1-Trichloroethane	mg/kg	1300	1300	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.27	ND
1,1-Dichloroethane	mg/kg	2300	2300	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.043	ND
1,1-Dichloroethene	mg/kg	610	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13	ND
1,2,4-Trimethylbenzene	mg/kg	120	35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	mg/kg	95	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	mg/kg	100000	320000	0.093	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	mg/kg	570	1500	0.0058	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Napthalene	mg/kg	150	84	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene[2]	mg/kg	24000	24000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	mg/kg	520	520	ND	ND	ND	ND	ND	ND	0.0045	ND	ND	ND	ND
Vinyl Chloride	mg/kg	12	48	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0046	ND
m,p-Xylene[2]	mg/kg	2400	2400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene[2]	mg/kg	2800	2800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes, Total	mg/kg	370	370	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatile Organic Compounds (SVOCs)														
1-Methylnaphthalene	mg/kg	360	360	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	mg/kg	22000	170000	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene[2]	mg/kg	3000	3000	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	mg/kg	56000	430000	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
3&4-Methylphenol[3]	mg/kg	5600	4300	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	mg/kg	56000	440000	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
Anthracene	mg/kg	280000	1000000	–	–	–	–	ND	0.35	ND	ND	ND	ND	ND
Benzo(a)anthracene	mg/kg	76	680	–	–	–	–	ND	0.78	ND	ND	ND	ND	ND
Benzo(a)pyrene	mg/kg	7.7	69	–	–	–	–	ND	0.7	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	mg/kg	77	690	–	–	–	–	ND	0.95	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene[4]	mg/kg	–	–	–	–	–	–	ND	0.43	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	mg/kg	770	6900	–	–	–	–	ND	0.42	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	mg/kg	190	190	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
Carbazole	mg/kg	3400	30000	–	–	–	–	ND	0.26	ND	ND	ND	ND	ND
Chrysene	mg/kg	7600	69000	–	–	–	–	ND	0.81	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	mg/kg	7.7	69	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	mg/kg	37000	290000	–	–	–	–	ND	2.8	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	mg/kg	77	690	–	–	–	–	ND	0.43	ND	ND	ND	ND	ND
Naphthalene	mg/kg	150	84	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
Phenanthrene[4]	mg/kg	–	–	–	–	–	–	ND	2.5	ND	ND	ND	ND	ND
Phenol	mg/kg	66000	510000	–	–	–	–	ND	ND	ND	ND	ND	ND	ND
Pyrene	mg/kg	28000	220000	–	–	–	–	ND	2.2	ND	ND	ND	ND	ND

Table 2
Summary of Detections - Soil
C314V Project
Duke - Cincinnati, Ohio

-- Not analyzed

mg/kg - milligram per kilogram

ND - not detected

1 TPH screening levels are based on TPH Action Levels for a Class 1 Soil as presented in the Bureau of Underground Storage Tanks Regulation Technical Guidance.

2 Screening Value used was from the United States Enviromental Protection Agency Regioan Screening Levels Table (November 2017). Ohio direct contact standards were not available.

3 Value is for 4-methylphenol. Lab could not isolate 3-methyphenol and 4-metholpheol.

4 Screenig value is not available.

Commercial/Industrial Land Use Category	-Commercial land use is land use with potential exposure of adult workers during a business day and potential exposures of adults and children who are customers, patrons or visitors to commercial facilities during the business day. Commercial land use has potential exposure of adults to dermal contact with soil, inhalation of vapors and particles from soil and ingestion of soil. Examples of commercial land uses include, but are not limited to warehouses; retail gasoline stations; retail establishments; professional offices; hospitals and clinics; religious institutions; hotels; motels; and parking facilities. -Industrial land use is land use with potential exposure of adult workers during a business day and potential exposures of adults and children who are visitors to industrial facilities during the business day. Industrial land use has potential exposure of adults to dermal contact with soil, inhalation of vapors and particles from soil and ingestion of soil. Examples of industrial land uses include, but are not limited to: lumberyards; power plants; manufacturing facilities such as metalworking shops, plating shops, blast furnaces, coke plants, oil refineries, brick factories, chemical plants and plastics plants; assembly plants; non-public airport areas; limited access highways; railroad switching yards; and marine port facilities.
Construction/Excavation Activities	-Construction or excavation activities include invasive activities that result in potential exposure of adult workers during the business day for a portion of one year. Exposures during construction or excavation activities are of greater intensity and shorter duration than those for the commercial and industrial land use categories. Construction or excavation activities have potential exposures of adults to dermal contact with soil, inhalation of vapors and particles from soil, and ingestion of soil. Examples of construction or excavation activities include but are not limited to maintenance or installation of utilities; installation of building footers or foundations; grading; trenching; or laying utility lines or cable.

Table 2
Summary of Detections - Soil
C314V Project
Duke - Cincinnati, Ohio

	Unit	Commercial/ Industrial Direct-Contact Soil Standards	Construction/ Excavation Direct-Contact Soil Standards	E-113A/S 2-3 3/14/2018	E-113/S 1.5-2.5 3/14/2018	E-114/S 2-3 11/28/2017	WB-01/S 5-6' 11/10/2017	WB-01A/S 3-4' 11/10/2017	WB-01/S 11/16/2017	WB-01A/S 25-26.5' 11/17/2017	WB-03/S 4-5 11/6/2017	WB-03A/S 2-3 11/6/2017	WB-04/S 1.5-3.0 11/6/2017	WB-05/S 3-4 11/6/2017	WB-09/S 2-3 11/1/2017
Gasoline Range Organics (GRO)															
TPH C6-C12[1]	mg/kg	1000	1000	ND	290	ND	--	--	--	--	--	--	--	--	ND
Diesel Range Organics (DRO)															
TPH C10-C20[1]	mg/kg	2000	2000	130	47	ND	--	--	--	--	--	--	--	--	41
TPH C20-C34[1]	mg/kg	5000	5000	540	36	18	--	--	--	--	--	--	--	--	17
Metals															
Arsenic	mg/kg	82	390	21	7.1	11	6.7	ND	--	--	ND	9.4	53	80	9.9
Barium	mg/kg	370000	120000	220	88	55	67	51	--	--	32	70	97	36	49
Cadmium	mg/kg	2300	1600	ND	ND	ND	ND	ND	--	--	ND	ND	ND	ND	ND
Chromium	mg/kg	1000000	1000000	24	20	17	7.5	9.3	--	--	13	20	18	12	11
Lead	mg/kg	1800	750	52	22	14	9.2	10	--	--	41	41	23	37	10
Volatile Organic Compounds (VOCs)															
1,1,1-Trichloroethane	mg/kg	1300	1300	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	ND	ND
1,1-Dichloroethane	mg/kg	2300	2300	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	ND	ND
1,1-Dichloroethene	mg/kg	610	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	mg/kg	120	35	0.019	0.45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	mg/kg	95	200	ND	0.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	mg/kg	100000	320000	0.075	ND	ND	ND	ND	ND	ND	ND	ND	0.11	ND	ND
Methylene Chloride	mg/kg	570	1500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0041
Napthalene	mg/kg	150	84	0.011	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene[2]	mg/kg	24000	24000	ND	0.031	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	mg/kg	520	520	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	mg/kg	12	48	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylene[2]	mg/kg	2400	2400	0.033	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene[2]	mg/kg	2800	2800	0.012	0.062	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes, Total	mg/kg	370	370	0.044	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semi-Volatile Organic Compounds (SVOCs)															
1-Methylnaphthalene	mg/kg	360	360	0.69	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.29	ND
2,4-Dimethylphenol	mg/kg	22000	170000	9	0.96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene[2]	mg/kg	3000	3000	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33	ND
2-Methylphenol	mg/kg	56000	430000	0.63	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3&4-Methylphenol[3]	mg/kg	5600	4300	1.9	0.57	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	mg/kg	56000	440000	ND	ND	ND	ND	ND	ND	ND	0.39	0.49	ND	1.3	ND
Anthracene	mg/kg	280000	1000000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.91	ND
Benzo(a)anthracene	mg/kg	76	680	ND	ND	ND	ND	ND	ND	ND	1	1.6	.120 J	2.9	ND
Benzo(a)pyrene	mg/kg	7.7	69	ND	ND	ND	ND	ND	ND	ND	1.3	1.3	ND	4.6	ND
Benzo(b)fluoranthene	mg/kg	77	690	ND	ND	ND	ND	ND	ND	ND	1.7	1.8	ND	7.4	ND
Benzo(g,h,i)perylene[4]	mg/kg	--	--	ND	ND	ND	ND	ND	ND	ND	0.84	0.69	ND	3.3	ND
Benzo(k)fluoranthene	mg/kg	770	6900	ND	ND	ND	ND	ND	ND	ND	6.3	0.7	ND	2.3	ND
Bis(2-ethylhexyl)phthalate	mg/kg	190	190	ND	0.85	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	mg/kg	3400	30000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25	ND
Chrysene	mg/kg	7600	69000	ND	ND	ND	ND	ND	ND	ND	0.97	1.5	ND	3.2	ND
Dibenzo(a,h)anthracene	mg/kg	7.7	69	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.82	ND
Fluoranthene	mg/kg	37000	290000	ND	ND	ND	ND	ND	ND	ND	1.9	4.2	ND	4.2	ND
Indeno(1,2,3-cd)pyrene	mg/kg	77	690	ND	ND	ND	ND	ND	ND	ND	1	0.85	ND	3.8	ND
Naphthalene	mg/kg	150	84	0.66	0.32	ND	ND	ND	ND	ND	ND	ND	ND	0.26	ND
Phenanthrene[4]	mg/kg	--	--	ND	ND	ND	ND	ND	ND	ND	0.6	2.1	ND	0.79	ND
Phenol	mg/kg	66000	510000	0.64	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	mg/kg	28000	220000	ND	ND	ND	ND	ND	ND	ND	1.7	3.4	0.25	4	ND

Table 2
Summary of Detections - Soil
C314V Project
Duke - Cincinnati, Ohio

-- Not analyzed
mg/kg - milligram per kilogram
ND - not detected

1 TPH screening levels are based on TPH Action Levels for a Class 1 Soil as presented in the Bureau of Underground Storage Tanks Regulation Technical Guidance.
2 Screening Value used was from the United States Enviromental Protection Agency Regioan Screening Levels Table (November 2017). Ohio direct contact standards were not available.
3 Value is for 4-methylphenol. Lab could not isolate 3-methyphenol and 4-metholpheol.
4 Screenig value is not available.

Commercial/Industrial Land Use Category	-Commercial land use is land use with potential exposure of adult workers during a business day and potential exposures of adults and children who are customers, patrons or visitors to commercial facilities during the business day. Commercial land use has potential exposure of adults to dermal contact with soil, inhalation of vapors and particles from soil and ingestion of soil. Examples of commercial land uses include, but are not limited to warehouses; retail gasoline stations; retail establishments; professional offices; hospitals and clinics; religious institutions; hotels; motels; and parking facilities. -Industrial land use is land use with potential exposure of adult workers during a business day and potential exposures of adults and children who are visitors to industrial facilities during the business day. Industrial land use has potential exposure of adults to dermal contact with soil, inhalation of vapors and particles from soil and ingestion of soil. Examples of industrial land uses include, but are not limited to: lumberyards; power plants; manufacturing facilities such as metalworking shops, plating shops, blast furnaces, coke plants, oil refineries, brick factories, chemical plants and plastics plants; assembly plants; non-public airport areas; limited access highways; railroad switching yards; and marine port facilities.
Construction/Excavation Activities	-Construction or excavation activities include invasive activities that result in potential exposure of adult workers during the business day for a portion of one year. Exposures during construction or excavation activities are of greater intensity and shorter duration than those for the commercial and industrial land use categories. Construction or excavation activities have potential exposures of adults to dermal contact with soil, inhalation of vapors and particles from soil, and ingestion of soil. Examples of construction or excavation activities include but are not limited to maintenance or installation of utilities; installation of building footers or foundations; grading; trenching; or laying utility lines or cable.

Table 3
Detection Summary - Groundwater
C314V Project
Duke - Cincinnati, Ohio

	Unit	WB-1/W 11/16/2017	WB-2A/GW50 11/21/2017	WB-2/GW55 11/20/2017
Volatile Organic Compounds (VOCs)				
VOC Analytes	ug/L	ND	ND	ND
Semi-Volatile Organic Compounds (SVOCs)				
Dibenzo(a,h)anthracene	ug/L	1.0	ND	ND
All other SVOC Analytes	ug/L	ND	ND	ND

ND - not detected

ug/L - microgram per liter

FIGURES

Pipeline Centerline

NORTH

0.75 0.375 0 0.75

Miles

BURNS McDONNELL

Figure 1
Project Overview Map
Central Corridor Pipeline Expansion
Duke Energy
Hamilton County, OH

Source: ESRI and Burns & McDonnell Engineering Company, Inc.

Issued: 12/19/2017

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: C:\Users\cfwisniewski\Desktop\Duke Energy\Figure 1.mxd cfwisniewski 12/19/2017

COPYRIGHT © 2017 BURNS & McDONNELL ENGINEERING COMPANY, INC.

BURNS McDONNELL

CREATE AMAZING.