ACT 2 COMBINED REMEDIAL INVESTIGATION/ RISK ASSESSMENT/ CLEANUP PLAN

Former Elementis Pigments Facility
1525 Wood Avenue
Easton, Northampton County, PA 18042
PADEP eFACTS FACILITY IDENTIFICATION NO. 636923

Prepared for:

Easton Wood Ave Propco, LLC

Prepared by:

Langan Engineering & Environmental Services, LLC.
1818 Market Street, Suite 3300
Philadelphia, PA 19103

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JEFFREY ALAN SMITH
GEOLOGIST
No. PG002755G

Jeffrey A. Smith, P.G.
Professional Geologist License No PG002755G
Senior Associate

Adam Goldberg
Senior Project Manager

LANGAN

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1.0 INTRODUCTION

On behalf of Easton Wood Ave Propco, LLC, Langan Engineering and Environmental Services, LLC (Langan) is submitting this Combined Remedial Investigation / Risk Assessment / Cleanup Plan in accordance with the voluntary Pennsylvania Land Recycling Program and Environmental Remediation Standards Act (Act 2). This report is intended to document characterization of Site conditions relative to the Statewide Health Standards (SHS) and Site-Specific Standards (SSS), and also proposes a cleanup plan for soils, groundwater and Site-specific human health and ecological risk evaluation for the former Elementis Pigments Facility in Easton, Pennsylvania. The facility is located at 1525 Wood Avenue in Easton, Northampton County, Pennsylvania (Site, see Figure 1) (PADEP Facility ID No. 636923, EPA ID No. PAD002391548).

The Site characterized and remediated as described in this report consists of an approximately 114.1-acre, irregularly-shaped industrial property situated in an industrial area of Easton, Pennsylvania, planned to be redeveloped for a warehouse distribution Site. No buildings remain on-Site. The on-Site plant first began operations in 1876 under the name C.K. Williams Company, when it processed locally mined ores. It is understood that talc was mined on-Site and milled in the plant to produce soapstone. Locally mined ores were also milled in the plant to produce pigments. In the 1940's the plant began using pickle liquor and scrap steel from local industries to produce synthetic iron oxides in the Copperas plant. In 1962, the facility was purchased by Pfizer, Inc., and in 1984 the corporate entity that owned and operated the plant was incorporated as Pfizer Pigments, Inc., a subsidiary of Pfizer, Inc. Magnetic oxide production began in the early 1970's. In 1990, Pfizer Pigments, Inc. sold the portion of the plant west of the Bushkill Creek (approximately 100 acres) to Harcros Pigments, Inc., a subsidiary of Harcros, Inc. In 1998, Elementis Pigments (Elementis) purchased the Site from Harcros Pigments. On October 8th, 2019, the environmental consulting firm, Architecture, Engineering, Construction, Operations, and Management (AECOM) submitted a request to PADEP to change the name of the site from Huntsman Pigments Americas, LLC to Excalibur Realty Company after Excalibur Realty Company acquired the site in October of 2014. In 2021, Abruzzi Trust purchased the Site from Elementis, and is the current owner. The Site has most recently operated as an inorganic pigment manufacturing facility by Elementis for manufacturing iron oxide pigments of various colors and grades. Sulfuric acid was used in this process to create a ferrous sulfate solution, which was then processed into a final product.

The Site has been subject to the United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) regulations since these hazardous waste regulations were enacted in 1980. Since at least as early as 1989, the Site has had environmental investigations and corrective actions conducted. More recently since the 2000's investigations and spill responses related to discovered impacts to groundwater and soil have been investigated under the Pennsylvania Act 2 Land Recycling Program. Because of the RCRA applicability to historical operations at the Site, the findings, conclusions, risk assessment and evaluation, and cleanup plan in this report intend to satisfy both USEPA RCRA obligations and support an eventual Site-wide

Act 2 Release of Liability under the 2004 Memorandum of Agreement (MOA) between USEPA and PADEP, commonly known as the "One Cleanup" Program.

This report was prepared in accordance with Pennsylvania Chapter 250, Act 2, and constitutes a Combined Remedial Investigation / Risk Assessment / Cleanup Plan as defined in §250.408, §250.409, and §250.410.

In March 2024, Langan, on behalf of Easton Wood Ave PropCo, LLC, submitted a Notice of Intent to Remediate (NIR) for the Site. Municipal and public notifications of submittal of this report to PADEP have been made to the City of Easton, Wilson Borough, and the local community. The PADEP Act 2 investigation and remediation dataset does not include data from the small portion of the Site in Palmer Township; as such, the NIR was not submitted to Palmer Township. Additionally because the former Elementis Pigments Site is being remediated under the One Cleanup Program, the NIR notified the public of provisions for their ability to request a copy of and/or comment on the cleanup plan. Documentation of notification for the NIR and this report is included as Appendix A.

This Remedial Investigation / Risk Assessment / Cleanup Plan / Final Report is organized into the following major sections:

Section 1.0 – Introduction
Section 2.0 – Site Description and History
Section 3.0 – Remedial Investigation
Section 4.0 – Conceptual Site Model
Section 5.0 – Exposure Pathway Evaluation and Risk Assessment
Section 6.0 – Cleanup Plan
Section 7.0 – Municipal and Public Notification
Section 8.0 – Demonstration of Attainment
Section 9.0 – Post-Remediation Care Plan
Section 10.0 – Conclusions
Section 11.0 – References
Section 12.0 – Signatures

2.0 SITE DESCRIPTION AND HISTORY

This section includes descriptions of the location of the Site, the Site layout, surrounding land uses, former structures, historic and current property use, geologic and hydrogeologic setting, and potential areas of environmental concern.

2.1 Location and Description

The Site is an approximately 114.1-acre, irregularly-shaped property situated in an industrial area of Easton, Pennsylvania. The Site is bordered on the north by undeveloped woodland, the former Binney & Smith Crayola crayon plant and other active industrial facilities. To the south of the Site are Wood Avenue and United States (US) Route 22. The western portion of the Site is bordered by a community park, open space and residential development. To the east is Bushkill Creek, a north-south flowing surface water body that borders the Site and then sharply curves to the east near the southeast portion of the Site. A minerals manufacturing facility, which processes minerals to manufacture consumer and industrial products, is located further to the east. Another surface water body, Spring Brook, flows across the Site from the southwest, through a walled enclosure/conveyance beneath the Site to the northeast, before joining Bushkill Creek. There is also a dam or flow control structure within Bushkill Creek that connects with Spring Brook, as part of historical on-Site infrastructure.

The Site has most recently operated as an inorganic pigment manufacturing facility by Elementis for manufacturing iron oxide pigments of various colors and grades. Sulfuric acid was used in this process to create a ferrous sulfate solution, which was then processed into a final product. Based on aerial photographs, all structures on the Site have been demolished between 2018 and present day.

<u>HISTORIC SITE OPERATIONS AND MATERIALS HANDLED</u>

The former facility produced natural and synthetic iron oxides, which were used as pigments, and synthetic iron oxides, which were used as magnetic coatings for magnetic tape. Manufacturing operations at the facility included three general production processes: natural iron oxide pigment production, synthetic iron oxide pigment production, and synthetic magnetic iron oxide production. The facility included the following operational areas (Figure 2):

- Copperas Plant (Iron oxide pigment production since the early 1900s);
- Acid Plant (contact sulfuric acid manufacturing);
- MO-1 Plant (Magnetic oxide production – inactive as of 1988);
- MO-2 Plant (Magnetic oxide production) – was converted to a new Red Copperas finishing facility in the early 2000s; and
- Black Oxide Manufacturing Facility (BOMF) – Became active in the 1990s.

Natural iron oxide pigment (Fe2O3) was produced from iron ore, which was shipped from the island of Cyprus to the Harcros plant. The iron ore was ground and milled in buildings to the north and east of the Copperas Plant area and bagged in Building 22, the Reactor Grinding Building.

Synthetic iron oxide pigment (Fe2O3) was produced at the Copperas Plant using several input waste materials. Spent pickle liquor, other acids, and ferrous sulfate liquor were reacted with scrap steel in three neutralization tanks (AOC-A) to form ferrous sulfate heptahydrate (FeSO4 7H2O), an iron-rich solution known as copperas. The copperas solution was transferred to three claraflocculator tanks in Building 43. A polyacrylamide polymer was used in these tanks to flocculate and settle out solids. The clarified copperas was transferred to Building 16 where evaporation and crystallization were carried out in a triple effect evaporator, crystallizer, centrifuge, and finally a rotary dryer. Crystallized ferrous sulfate heptahydrate was transferred by elevator to dehydration kilns where it was converted to ferrous sulfate monohydrate, which was then calcined in rotary muffle kilns where iron oxide was formed (Kearney and USEPA, 1990).

Magnetic iron oxide was most recently produced at the MO-2 plant, but was previously also produced at the MO-1 plant. The oxide produced at MO-2 was cobalt-doped iron oxide for videotape production. In 1999, the MO-2 was converted to finishing for the Copperas operation.

In 2002, the Copperas Plant (the last active plant) manufactured iron oxide pigments of various colors and grades. Materials handled at the facility included petroleum compounds, iron salts, iron ores, scrap iron, sodium hydroxide, coconut oil fatty acid, liquid nitrogen, cobalt surface, and waste sulfuric and hydrochloric pickle liquors.

WASTES GENERATED

Two general types of waste were formerly managed at the Site, including: 1) wastes received from off-site and used as inputs to the production process, and 2) wastes generated onsite as residual byproducts of the production processes. Wastes received include: scrap steel, spent hydrochloric and/or sulfuric acid pickle liquor from steel finishing operations, and spent sulfuric acid from battery reclamation facilities. Wastes generated include: electrostatic pit dust, antifreeze, used oil, clara sludge (generated by clarification following neutralization in Building 43), off-specification spent pickle liquor, claraflocculator filter cake, oxide waste, empty packaging containers, tank cleanings, process wastewater, wastewater treatment filter cake, and parts cleaning solvents.

2.2 Physical Setting

Based on Langan's Site reconnaissance and review of the Easton, Pennsylvania USGS 7.5-minute-series topographic quadrangle maps, the Site has an approximate elevation generally ranging from 220 to 440 feet above mean sea level (AMSL). Areas of lowest elevation are along Bushkill Creek and to the south, with an incline to the highest elevations to the northwest.

2.2.1 Soil Overburden and Bedrock Geology

According to the USDA Natural Resources Conservation Service Soil Survey, a majority of the facility is covered by Urban Land. The Urban Land consists of Udorthents limestone complex, Gladstone complex, and occasionally flooded units within the southeastern portion of the Site. The Urban land is soil that has been modified by disturbance of the natural layers with addition of fill material to accommodate large industrial installations. The northern portion of the Site consists primarily of Gladstone-Parker Gravelly Loams towards topographic incline, and the Ryder-Rock outcrop complex towards the Bushkill Creek. The Gladstone-Parker Gravelly Loam is predominately composed of gravelly loam with a layer of gravelly sandy clay loam located between 10 to 22 inches and a layer of gravelly sandy loam located between 37 to 66 inches within the soil profile. The Ryder-Rock outcrop complex is composed of silt loam from 0 to 9 inches, channery silt loam from 9 to 34 inches and bedrock from 34 to 44 inches within the soil profile. A small section of the Site along the southwestern boundary is underlain by Washington Silt Loam which is comprised of a silt loam with a clay loam located between 9 to 42 inches within the soil profile.

Based on data obtained from borings, drilled by TPI Environmental Inc. of Easton, Pennsylvania (now Summit Drilling Inc.) overseen by Langan in December 2022, in the southeastern portion of the Site overburden is comprised of brown fine to coarse sand/gravel. In general, the fill varies in thickness from 0 to 5 feet. Soil encountered appears to be indicative of the Gladstone gravelly loam, consistent with descriptions from soil borings. Langan's boring logs from the December 2022 investigations are included as Appendix C.

Bedrock was observed in four of the borings during the 2023 investigation and consisted of light gray to tan dolomite. PaGEODE shows most of the Site underlain by the Leithsville Formation to the north and south which consists of gray dolomite up to 1,500 ft thick. The central portion of the Site is underlain by the Franklin Marble Formation and Felsic Gneiss. The Franklin Marble Formation consists of fine to medium grained graphitic marble with a thickness of approximately 100 feet. The Felsic Gneiss is a felsic to mafic, fine to medium-grained gneiss consisting of quartz, microcline, hornblende, and some biotite. The Allentown Formation is also mapped beneath the Site and consists of laminated, gray dolomite and impure limestone, dark-gray chert stringers and nodules, and sharpstone conglomerate. Its maximum thickness is about 2,000 feet.

Karst features are distinct landforms that form when water dissolves bedrock, and they are present at the Site and surrounding areas. Features including depressions observed on historical aerials on the western portion of the Site, the drainage patterns of Spring Brook and Bushkill Creek, and mapping PA Karst Features Pennsylvania database across

Bushkill Creek towards Bushkill drive to the northeast and north. The Site's PA mapped bedrock geology and karst features are shown on Figure 3.

2.2.2 Hydrogeology

Geologically, the Site area is part of an inverted limb of a recumbent fold centered on the Easton Antiform; a type of fold in bedrock which closes upwards and its limbs dip away from the hinge. Because of composition and small-scale fractures in the dolomitic rock in the Leithsville and Allentown formations, this fold structure is conducive to the formation of enlarged openings that are more interconnected and can be preferential pathways for groundwater flow under karst conditions. This indicates that there is potential for greater hydraulic connectivity between the soil overburden and the bedrock water-bearing zones. The 1989 Hydrogeologic Assessment & Corrective Action Report for the Acid Plant Area (Roux & Associates) noted that in rock cores taken beneath the Site, bedding planes within the Paleozic rocks dip between 30 and 55 degrees to the southeast, forming additional secondary pathways for groundwater flow to the north of Spring Brook in bedrock. Groundwater flow through a karst aquifer is influenced by fissures and bedding partings in the rock that are enlarged by chemical dissolution over time and can represent preferential flow paths, through which water can be more readily transmitted (Roux & Associates).

Based on the 1989 Hydrogeologic Assessment & Corrective Action Report for the Acid Plant Area (Roux & Associates) bedrock was encountered at depths between 14 to 19 feet below ground surface. The bedrock encountered in borings completed in this area of the Site are described as buff to green-grey fractured limestone-dolomite rock. Rock cores from prior investigations indicate the bedrock in the northeastern area of the Site resembles the Leithsville Formation and is highly fractured and steeply dipping (approximately 45 degrees).

Based on Langan's soil boring logs, groundwater occurs throughout the overburden unit at depths ranging from about 7 feet to 21 feet bgs at the Site. In general, groundwater flow direction is interpreted from elevations data to be toward the east in the overburden watering zone towards Bushkill Creek and to the east and southeast in the bedrock zone (See Section 3.3.1).

The bedrock drilling for the installing groundwater monitoring wells in January 2023 revealed shallow fractured dolomite from a light tan to gray color, encountered at depths as shallow as 3 ft bgs in the wells installed in the eastern portion of the Site. Furthermore, the Allentown formation, the uppermost and youngest unit has been described in the Hydrogeologic Assessment (1989) prepared by Roux Associates, Inc., to cover the southernmost 30% of the property. The Allentown Formation, which is described as fine to medium grained, gray rhythmically bedding dolomite derived rock, scattered with beds of orthoquartzite, was encountered during well installation on the southeastern portion of the Site (Roux, 1989).

2.3 Historical Investigations

Documents/reports for previous environmental investigations that Langan reviewed cover the period of investigations and remediation activities from 1989 to 2020 and generally included:

- 1989 – Hydrogeologic Assessment and RCRA Corrective Action Assessment for the Acid Plant Area;
- 1990 – RCRA Phase II Facility Assessment;
- Late 2000-early 2001 – Available facility files from various local agencies;
- 1999, 2007 and 2018 – Phase I Environmental Site Assessments;
- 1999, 2001, 2002, 2003, 2005 – Groundwater Monitoring Reports;
- 2002, 2003 – RCRA Environmental Indicator Reports;
- 2002, 2003, 2010, and 2020 – Select PADEP Tank Characterization, Remedial Action and Closure Reports;
- 2006-2007 – Pennsylvania Final Act 2 Report, Addenda for Groundwater and PADEP approval;
- 2008 – Limited Site Investigation Report (soil, sediment, groundwater);
- 2014 – Wastewater Pond Closure Summary; and
- 2022 – PADEP Storage Tanks Databases

Our review of ascertained historical environmental reports and past Site knowledge provided insights about former storage tanks, solid waste management units (SWMUs), reported and potential releases, and known and potential environmental conditions. Based on our review, some of these features and conditions have been adequately investigated and addressed and others have not and warranted further investigation and validation. During our review, Langan focused on identifying potential data gaps with respect to completeness of environmental investigations of historical spills, tank removals, and potential areas of concern and possibly remaining SWMUs.

2.4 Per-and Polyfluoralkylated Substances (PFAS) Due Diligence

Langan contacted federal, state, and local agencies via email correspondence, telephone interviews, and/or online requests to obtain available records of environmental concerns, violations, permits and/or emergency response incidents pertaining to the Site, with a focus on PFAS. Specifically, a file review request was submitted to PADEP, and Right-to-Know (RTK) requests were submitted to Northampton County, the City of Easton, the Easton Fire Department, Wilson Borough, and the Wilson Borough Fire Department in November 2022. In

September 2024, Langan also submitted a request to Palmer Township for the one undeveloped parcel (APN #L9-14-4-324) that is on the Site; although the parcel remains undeveloped, a RTK was filed for due diligence. Langan also performed a search of the USEPA EnviroFacts, MyPropertyInfo, and ECHO databases. Our findings from this research are summarized below. The findings from the RTK and file review requests are included in Appendix B.

- A response from PADEP was received indicating numerous documents were available for an in-person file review. However, because of the extensive document library already acquired and available for our review and based on the history of Site operations with respect to PFAS concerns, Langan did not review the PADEP files at this time. On-site operations did not indicate a concern or PFAS. However, the knowledge of historical fires warranted the review of fire department records from the Site municipal entities.
- An online search of the USEPA databases revealed no available information regarding potential PFAS use for the Site.
- Northampton County denied the Right-to-Know request because they do not maintain such records.
- The City of Easton responded with approximately 100 pages of building permits, tank registration and removal documents, and asbestos abatement records.
- Easton Fire Department responded separately with the National Fire Incident Reporting System (NFRIS) fire incident documents detailing five responses to the facility.
- Wilson Borough and Wilson Borough Fire Department provided reports detailing six responses to the facility and one fire extinguishing event.
- Palmer Township responded and did not have any documents available under the RTK request.

Information gleaned from reviewed documents concerning potential use of PFAS in operations and/or in fighting historical fires and other identified potential areas of environmental concern is summarized in the following sections.

Langan performed a desktop review concerning potential per- and polyfluoroalkylated substances (PFAS) that could be associated with the past operations and/or potential application of fire-fighting foams that could have been used in fighting historical fires at the Site. Langan reviewed available previous environmental reports and submitted Right-to-Know requests to the local municipal emergency response departments as part of this task.

Primary goals of the PFAS due diligence task consisted of the following:

- Document chemicals and substances used as part of historic Site operations to the extent practicable and determine the potential for past use of PFAS;
- Examine historic fire incidents on record for the Site to verify location and whether fire-fighting foams were applied;

- Recommend an approach to address the potential for PFAS that may be associated with historical Site operations and/or fire-fighting at the Site; and
- Supplement the remedial investigation approach by targeting locations with the potential for PFAS and submit soil and groundwater samples for PFAS analysis, as necessary.

Historic Fire Incidents

Fire incident reports for the Site provided by Easton Fire Department and Wilson Borough Fire Department indicate at least six reports of historic fire incidents.

Easton Fire Department responded to five incidents at the facility but only provided fire response actions during two of them, one on March 2, 2006 and one on February 13, 2012. The other incidents were related to either fires that were extinguished by facility personnel prior to fire department arrival or in response to spills of hazardous materials. Easton Fire Department records also indicate that Wilson Borough Fire Department responded alongside them to each of the five incidents. The March 2006 incident consisted of an acetylene fire at the Site, and the report narrative appears to indicate that only water was used in extinguishing efforts. However, the February 2012 incident took place at Building 39 on the eastern portion of the Site (see Figure 2), and Easton Fire Department records note that both water and foam were discharged to control and extinguish the fire. Reportedly, the hot spot was extinguished with a 3% universal foam mixture, and six total gallons of concentrate were discharged. The "3% Universal foam" terminology could refer to multiple products, some of which are PFAS-free and some of which are PFAS-containing.

Wilson Borough Fire Department provided records of six responses to the Site, with only one event where Wilson Fire Department extinguished fire (the same February 2012 fire at Building 39 discussed above). The report does not explicitly say whether Wilson Borough Fire Department discharged foam as part of the 2012 response. In a follow-up phone interview, Lieutenant Sipel, who responded to that fire, verbally stated that foam was not used by Wilson Borough Fire Department during that response event.

Building 39 was demolished in February 2012 following the fire incident according to City of Easton records. No information regarding management of the building waste was ascertained by Langan's review.

Based on information obtained regarding the February 2012 fire incident, this historical fire is the only reported fire incident determined to be of potential concern for PFAS-containing foam application at the Site. Langan included four soil borings with samples to specifically target the presence/absence of PFAS at this historical fire area near former Building 39 as part of the Remedial Investigation that is discussed in Section 3.

2.5 Other Identified Potential Areas of Environmental Concern

Our understanding of known and potential environmental conditions is briefly summarized below. This summary conveys Langan's understanding of the Site history and the basis of our approach to the Remedial Investigation and overall technical/regulatory approach. Known and potential environmental concerns that have been explored include:

- Former Underground Storage Tanks and Aboveground Storage Tanks;
- Former RCRA Solid Waste Management Units;
- Historic Releases and Discharges;
- Petroleum Storage and Contamination at the Acid Plant;
- Petroleum Contamination at Former 75,000-gallon Aboveground Storage Tank; and
- Wastewater Treatment Plan (WWTP) Ponds;

<u>FORMER UNDERGROUND AND ABOVEGROUND STORAGE TANKS</u>

The information we reviewed as part of our due diligence revealed an inventory of at least 19 former underground storage tanks (USTs) (1,000-to 200,000-gallon capacity) containing fuel oil (17) and gasoline (2) in addition to at least 51 former aboveground storage tanks (ASTs) (500-to 200,000-gallon capacity) containing heating oil, hazardous substances, and waste pickle liquor located on the Site. Langan has evaluated the Site's prior environmental remediation and closure under PADEP Storage Tanks UST closure database. Many of the former USTs and ASTs were unregulated heating oil tanks; therefore, formal regulatory closure reporting and confirmatory sampling may not have been required by PADEP unless there was evidence of suspected or confirmed release from such tanks.

Langan reviewed the following regulatory ID numbers in PADEP databases to assist in ascertaining the inventory of historical USTs and ASTs related to the facility and associated regulatory status: Site ID – 4897 (Storage Tanks); Other ID – 48-51276 (Storage Tanks); and, Facility ID – 607124 (eFACTs) and Facility ID – 636923.

The regulatory ID numbers indicated five records for "tank remediation" – with the clean-up status of "clean-up completed" (three listings), or "suspected release with investigation complete, no release confirmed." The clean-up status dates are July 14, 1995, August 28, 2007, February 22, 2011, and September 28, 2017 (two listings).

Six USTs are listed in the PADEP Inactive Tanks database as having a status of removed, exempt from state law or closed. The hazardous substance ASTs listed in the PADEP Inactive Tanks database have a status of permanently closed-in-place, removed, transferred, or exempt from state law.

On December 13, 2010, a Final Remedial Action Report was submitted by JMT Environmental Technologies (JMT) to PADEP Northeast Regional Office for the remedial activities involving excavation of soil for a release of a #2 fuel oil discovered during the removal of a non-regulated heating oil underground storage tank at Metal Shop Building #118. This report is included in Appendix B. As summarized below, remedial action soil sampling results for fuel oil #2 constituents were reported as meeting the statewide health standard using the 75%/10x statistical compliance test.

The Final Remedial Action Report details that the impacted soil in the vicinity of the sides and bottom of the heating oil UST was delineated using visual observation and field screening. The size of the determined excavation area was approximately 26 feet long, by 26 feet wide, and 13 feet deep. Twelve post-excavation soil samples were collected. Two post-excavation soil samples, SS-8 and SS-11, had reported results that exceeded the PA Default Residential to Indoor Air Screening Levels per comparison to Table 4 of PADEP Vapor Intrusion Guidance document applicable at the time of reporting. The contaminants of concern were not included in the available attachment of the report. Because these samples were documented more than the proximity distance of 100 feet from the metal shop, JMT declared no further action was warranted for the vapor intrusion pathway.

After considering the available closure documents, Langan also understands that there are no remaining ASTs or USTs on-Site that are regulated and/or could be required to be removed or closed-in-place in accordance with PADEP storage tank regulations. We also have no direct evidence or reported indication that storage tanks previously removed or closed in place warrant further investigation at this time. Figure 4 includes mapped underground and aboveground storage tanks ascertained from prior reporting and records review. Appendix B includes the status listings of PADEP tanks reportedly associated with historical operations.

FORMER RCRA SOLID WASTE MANAGEMENT UNITS

Since the promulgation of RCRA hazardous regulations in 1976, the facility operations were subject to compliance with these regulations and corrective action obligations. According to the RCRA Facility Assessment prepared in 1990, at one time there were 44 SWMUs identified at the Site. The SWMUs included 19 elements of the former wastewater treatment plant (WWTP), the numerous storage tanks and facilities associated with pickle liquor tanks, a packaging roll-off area, the oxide waste dust collection system, an iron oxide dust roll-off area, an oil/water separation drum storage area, an empty drum storage area, and other waste storage areas. Over time, RCRA regulations evolved and, pertinent to the Site SWMUs, pickle liquor was no longer considered a hazardous waste. In 2000, the facility hazardous waste storage permit was revoked because of changes in regulations at the state and federal levels, and, subsequently, many SWMUs, such as the pickle liquor tanks, were closed. Some soil samples were collected at various locations of identified SWMUs, and those results indicated that "low levels" of various metals were detected in several soil samples; note that neither soil data summary tables nor laboratory reports were present in the obtained reports to confirm detected constituent concentrations in soils. Figure 5 includes the mapped known SWMUs and areas of concern.

In 2003, EPA concluded the following with respect to the facility: (1) groundwater and soil were impacted; (2) surface water and sediment in the Spring Brook may be impacted; (3) complete pathways exist between impacts and current human exposures; and (4) current human exposures were determined to be controlled. Regarding the indicator for groundwater control, EPA declared in 2003 that there was a lack of sufficient information. Site-wide groundwater is a potential concern that had not been completely characterized and warrants further investigation toward satisfying the requirements under the Pennsylvania Act 2 and RCRA One Cleanup Program.

Based on our review of reasonably available and ascertainable records, Langan has summarized the status and formal regulatory closure status of SWMUs and identified AOCs and have designed our remedial investigation to address open concerns, potential data gaps, and characterize current subsurface conditions. The current RCRA regulatory status remains as identified in 2003 and listed on EPA's website for "Corrective Action Underway."

HISTORICAL RELEASES AND DISCHARGES

Historical documents reveal spills, releases, discharges and air emissions at the facility that have affected or have the potential to have impacted soils, groundwater, surface water, and sediments (Figure 5). Such documented historic spills, releases, and discharges include but are not limited to:

- Discharges to surface water at as many as 7 to 14 (possibly) permitted outfalls - sumps, floor drains, and process sewers present in Site buildings, that were reportedly connected to permitted discharge points;
- Petroleum impacts and separate phase liquids with documented impacts to groundwater and soils at the former Acid Plant area and near a former 75,000 gallon AST that leaked (2006-2007 – Pennsylvania Final Act 2 Report and Addenda for Groundwater with PADEP approval); and
- At least nine electrical transformers and some substations associated with historical operations that have the potential for spills/releases of oils that may have contained

polychlorinated biphenyls (PCBs). Prior reports also indicate potential PCBs associated with hydraulic oil used for historic hydraulic elevators.

Wastes that had been generated at the facility include off-specification spent pickle liquor, filter cake, oxide waste, empty packaging containers, residuals from tank cleanings, process wastewater, wastewater treatment filter cake, and parts cleaning solvents. Small quantities of spent parts cleaning solvents were generated in parts washers at several locations (e.g., the Maintenance Shop (Building 118), the Jitney Shop). Small quantities of non-descript lab chemicals were also reported to be used.

Certain historical incidences resulted in targeted investigation and/or remedial action, and regulatory review/approvals were reported in some of the documents reviewed. The following summarizes the reported status of prior investigation/remediation activities.

- <u>Petroleum Contamination at the Acid Plant</u>: The Acid Plant area, as shown on Figures 2 and 4, has been the subject of environmental investigation activities since 1988. These investigation activities have included the installation and sampling of groundwater monitoring wells; the removal of gasoline and fuel oil USTs; the excavation and removal of petroleum-impacted soils; and the operation of a multi-phase extraction pumping system and manual bailing of localized separate phase petroleum liquids (SPL) measured in wells between 2002 – 2003.

On January 18, 2006, Roux Associates (environmental consultant to Elementis) submitted a PADEP Act 2 Final Report for Groundwater, and on August 16, 2007, Roux submitted an Addendum #2 to this report (the second and final report). Roux concluded that the SPL and the dissolved impacts to groundwater were stable, not migrating, and were contained on-Site as evident by the concentrations in the down-gradient point of compliance (POC) wells. On August 28, 2007, PADEP approved the Act 2 Final Report affording a Release of Lability for groundwater related to these Former Gasoline and Fuel Oil UST Areas. PADEP eFACTs Activity ID 36055, PA Facility ID 636923.

- <u>Acidic Groundwater at the Acid Plant</u>: In October 2004, a release of sulfuric acid reportedly occurred from an AST located in this area, which is the same general area with residual petroleum impacts discussed above. In letters to PADEP dated September 27, 2005, and October 6, 2005, Roux reported that the extent of groundwater pH impacts appeared to be localized in the vicinity of an AST, and that no further action was warranted or planned.

- <u>Petroleum Impacts at Former 75,000-gallon AST</u>: In 2000, an oil sheen was observed on Spring Brook, reportedly emanating from beneath the facility. PADEP directed Elementis to investigate the source and take appropriate action. Elementis determined that the source was a leak from a 75,000-gallon, #2 fuel oil AST located east of the boiler room (see Figures 4 and 5), within a containment area that had an earthen base. In 2001, the AST was removed, and SPL/petroleum-impacted soils were encountered and removed from a depth between 8 and 12 feet below grade. Although reported constituent concentrations detected in post-excavation soil samples did not exceed applicable PADEP criteria at the time and the area was backfilled, a monitoring well was installed to investigate groundwater and then initiate recovery of SPL. Benzene was detected in groundwater that was sampled at the time.

Additionally, SPL was observed in a nearby well installed at Building 8 (see Figures 2 and 5), but SPL was reportedly not encountered in the well installed nearby for the purpose of initiating recovery of SPL at that time. Site representatives reported that between 2001 and 2003, the monitoring wells in the investigation area were periodically checked by Site personnel and SPL was occasionally but not consistently observed but manually removed, when observed. As of 2003, SPL was reportedly no longer observed in any well but no formal reporting to or acknowledgement by PADEP since 2001 is available to confirm the elimination of this concern.

- <u>Wastewater Treatment Plan (WWTP) Ponds:</u> Two WWTP settling beds/ponds that were partially filled with reportedly non-hazardous solids were proposed by EarthRes Engineering and Science (EarthRes) in 2014 for closure. We reviewed one ascertained document, dated December 2014, which provided a summary of the "soil sampling program" conducted by EarthRes in support of the pond closures. The pond closures were not performed under the purview of PADEP, but sampling and analysis reportedly followed the PADEP Act 2 guidance, and EarthRes compared the results to the Act 2 soil Medium Specific Concentrations (MSCs) applicable at that time. Initial sample results revealed concentrations that exceeded the soil MSCs for two metals - iron and, to a greater degree, manganese. Efforts were made by EarthRes to further excavate soils that contained elevated concentrations of iron and manganese, but were successful for only iron. Manganese exceedances persisted. Further attempts to excavate and remove the manganese-impacted soil were not successful.

Ultimately, using statistical compliance methods that included Synthetic Precipitation Leaching Procedure (SPLP) analysis and the 75%-10X statistical attainment test, EarthRes concluded that the remaining soils in the ponds "have been demonstrated to meet the requirements of Act 2" and the ponds were backfilled and closed. We are not aware whether this report was submitted to PADEP or EPA; however, no correspondence, including pond closure approval, from either agency was provided for our review. Soil sampling at a location of these former ponds was an element of the remedial investigation that is discussed in the

Soil Sampling Results section. Langan compared the prior soil sample results from this sampling event to the current 2021 PADEP Act 2 MSCs, which have been unchanged since the 2014 reporting for iron and manganese for non-residential direct contact and soil to groundwater MSCs. Based on these 2014 soil analytical results for the WWTP pond closure, they indicate compliance with current Act 2 MSCs for soil.

3.0 REMEDIAL INVESTIGATION

This section describes the methodology and procedures followed during remedial investigation (RI) activities, which were completed following standard industry practices and consistent with the PA Land Recycling Program Technical Guidance Manual. Described below are soil, groundwater, sediment, and surface water investigations completed by Langan in 2022 through 2024. Findings from the historic environmental investigations completed prior to 2022 were considered and guided sampling plan development and implementation in the RI. Specifics of the analytical data for those historical investigations are referenced to add context for the RI but are not discussed in detail below because of the age and hard copy format of the historic data.

A focus of the remedial investigation was to characterize environmental areas of concern warranting investigation and to a lesser degree, collect samples in areas previously investigated and/or where past releases/response actions were reported/taken to assess current conditions. Prior to the onset of each of the investigations described below, utilities were cleared through the Pennsylvania One Call system and a private utility locator.

The soil and groundwater remedial investigations conducted involved:

- Twenty (20) soil borings in total, 16 soil borings to investigate soil conditions at the Site with actual locations targeting specific areas of concern and determined in the field and four (4) additional borings to investigate for potential PFAS compounds;
- At each location, one sample from surficial soils (0 – 2 ft) and one from subsurface soils (2 – 15 ft, top of bedrock, or refusal, or at the groundwater interface, whichever was encountered first), were collected;
- Some sample locations included those where redevelopment activities are planned (e.g. cut areas and stormwater features);
- Soil samples were analyzed for TCL VOCs, TCL SVOCs, TCL PCBs, TAL Metals, Cyanide, and Mercury. QA/QC samples including field blanks and duplicates (1 per 20 samples) were collected consistent with standard practices and QA/QC protocols.
- Langan included four soil borings with samples to specifically target the presence/absence of PFAS at a historical fire area near former Building 39.
- Three (3) overburden groundwater monitoring wells were installed, and four (4) bedrock groundwater monitoring wells were installed, based on interior and down-gradient locations

of historical and known areas of concern and potential nearby receptors. Down-gradient locations were selected along Spring Brook, Bushkill Creek, and the former known groundwater contamination area near the Acid Plant located in the center of the Site. The groundwater flow direction in overburden and bedrock flows towards the surface water features as gaining streams in karst geology.

- Geoprobe direct-push methods and hollow stem augers were used to drill borings in overburden and collect soil samples and facilitate installation of the 3 overburden monitoring wells. Air rotary-percussion drilling was used to penetrate bedrock and facilitate installation of the 4 bedrock monitoring wells,
- Four rounds of groundwater samples were collected from the Site well network to span all seasons and evaluate potential changing conditions and attainment requirements under Act 2. Groundwater samples were collected via low-flow purging and sampling protocols for TCL VOCs, TCL SVOCs, TCL PCBs, TAL Metals (dissolved), ammonia-nitrogen, and mercury.
- Drill cuttings remain on Site in the vicinity of the well installations for on-Site re-use, with well development and purge water directed to the ground surface for infiltration near each sampled well head.
- A Human Health Risk Assessment (HHRA) was completed and focused on current conditions and potential future soil excavation, reuse, and subsequent soil exposure scenarios following redevelopment activities. Soil within the first 0-15 ft bgs was evaluated as part of the HHRA. The potential risk from groundwater was also evaluated for select receptors. Given the future land use assumptions, three receptor populations, Industrial workers, construction workers, and Trespassers were identified for risk-based evaluation, which is detailed in Section 5.1.
- Surface water and sediment samples were collected at strategic locations in Spring Brook and Bushkill Creek to support an ecological evaluation that involved a multiple lines of evidence approach, which is detailed in Section 5.

Ensuing subsections describe groundwater conditions, well search and groundwater receptor evaluation, soil conditions and surface water/sediment conditions in nearby Spring Brook and Bushkill Creek.

3.1 Selection of Applicable Screening Criteria

Soil samples were compared to the PADEP Non-Residential Direct Contact 0-2 ft and PADEP Non-residential Soil to Groundwater Used Aquifer – Unsaturated soil standards. The Act 2 standards for attainment compliance are included in Table 1.

Soil - Laboratory analytical data for soil samples are summarized in Table 2. Soil sample analytical results were compared to the PA Act 2 non-residential SHS, which represent the lower of the applicable direct contact and soil-to-groundwater Medium Specific Concentrations (MSCs) that are published as PA Chapter 250, Tables 3a/4a and 3b/4b, respectively (updated November 2021). For soil samples collected between 0-to-2 ft bgs, the non-residential surface soil values were selected as the applicable direct contact MSCs, and for soil samples collected between 2-to-15 ft bgs, the non-residential subsurface soil values were selected as the applicable direct contact MSCs.

The appropriate soil to groundwater MSCs are for a used aquifer, nonresidential setting, and TDS less than 2500 mg/l, with the higher of the 100X Groundwater MSC and the Generic Value was selected as the appropriate soil-to-groundwater MSC for each analyte, as allowed by PADEP regulations. Additionally, all soil results were compared to the non-residential soil SHS vapor intrusion (VI) screening values (SV_{SOIL}) and USEPA Regional Screening Levels (RSLs) for Industrial Soil.

Groundwater – Well construction and groundwater elevation data is included in Table 3. Laboratory analytical data for groundwater samples are summarized in Table 4. Groundwater sample analytical results were compared to the PA Act 2 non-residential SHS, which is the used aquifer, non-residential setting and TDS less than 2500 mg/l groundwater MSCs that are published as PA Chapter 250 Tables 1 and 2 (Updated November 2021).

Sediment - Laboratory analytical data for sediment samples are summarized in Table 5A and 5B. The PA Land Recycling Program (a/k/a Act 2) has not established numeric cleanup standards for sediments. Sediment sample analytical results were compared to the higher of USEPA Region III Biological Technical Assistance Group (BTAG) Freshwater Sediment Screening Benchmarks (EPA, 2006) or background. The USEPA Region III BTAG benchmarks are based on chronic exposure, non-lethal endpoint studies designed to be protective of sensitive species.

Surface Water and Porewater - Laboratory analytical data for surface water samples are summarized in Table 6. Surface water sample analytical results were compared to the current (July 2020) PADEP Chapter 93 Surface Water Quality Standards, including the Continuous Concentrations Criteria, the Maximum Concentrations Criteria, and Human Health Criteria.

3.2 Soil Conditions

3.2.1 Drilling and Soil Sampling Methods

For safety reasons and to avoid underground utilities/structures, a private utility location contractor was used, in addition to performing a standard Pennsylvania one-call notification, to investigate the potential locations of buried utilities on Site.

Langan contracted with TPI Environmental (now Summit Drilling) to locate subsurface utilities and to conduct soil sampling. In addition to performing a standard one-call notification, Subsurface Environmental Technologies (SET) visited the Site on December 14, 2022, accompanied by a Langan scientist, to locate underground utilities using near-surface geophysical investigation methods including ground-penetrating radar (GPR), Radio frequency (RF), and hand-held electromagnetic (HHEM) systems. Once the utilities were marked, proposed boring locations were adjusted, as needed, so that they were a reasonably safe distance from marked utilities. The adjusted soil boring locations were marked, and TPI performed additional scanning around each boring to verify that no subsurface anomalies were present at these locations. Soil sampling locations were selected to target historical areas of operations (Figure 6).

The soil boring activities commenced on December 14, 2022. TPI used a Geoprobe 6110® to advance the soil borings to the depth of refusal (which ranged between 3 to 20 ft bgs). Twenty borings (LB-1 through LB-16 and PB-1 through PB-4) were completed (Figure 7). A continuous soil core was obtained from each boring using the Macro-Core® sampling system. Samples were collected in single-use acetate liners at five-foot intervals. A field-calibrated Mini RAE 3000® photoionization detector (PID) was used to screen the soil cores for volatile vapors at six-inch intervals. The soil cores were also inspected for visual and olfactory indications of contamination. Soil boring logs are provided herein as Appendix C.

Two samples were collected from each boring for laboratory analysis (LB-1 to LB-16), for a total of 32 (excluding duplicate samples) samples. The samples were collected from near the surface (0 to 2.0 ft bgs) and from the bottom six inches of the boring. However, where applicable, samples were biased to depths where visual staining, odors, and/or elevated PID readings were observed. The samples for analysis of SVOCs, PCBs and metals were collected in laboratory-supplied bottleware using a stainless-steel trowel and bowl, while samples for analysis of VOCs were collected using 5-gram capacity En Core® samplers. The samples were then placed in a cooler with ice for preservation.

The samples were analyzed by United States Environmental Protection Agency (US EPA) method 8260D, 8270E, 6020B and 8082A for a select list of VOCs, SVOCs, metals and PCBs by Eurofins Environmental Testing in Edison, New Jersey, a PA-certified laboratory (No. 68-00522). The sampling equipment was decontaminated with Alconox® solution between each boring by scrubbing and rinsing the drilling rods, drilling shoe, and the stainless steel trowel. Additionally, a new Macro-Core® liner was used for each core boring, and the sampler changed gloves between each sample to reduce the risk of cross-contamination. Soil cuttings were returned to the borings. The samples were preserved on ice and retrieved by a laboratory under chain-of-custody protocol the following day.

Soil samples were compared to the PADEP Non-Residential Direct Contact 0-2 ft and PADEP Non-residential Soil to Groundwater Used Aquifer, TDS <=2500 mg/l – Unsaturated

Statewide Health Standards. The Act 2 standards for attainment compliance are included in Table 1.

3.2.2 Soil Sample Analytical Results

Visual staining or odors were observed in only two of the soil cores from the 18 soil borings drilled, LB-7 and LB-16. The highest PID reading (79.1 parts per million [ppm]) was observed at LB-16 at a depth of 14.0 feet bgs. Generally, the observed soils consisted of red to brown, silty sand, gravel and sand. Slightly weathered dolostone/bedrock were observed at the depth of refusal of the hydraulic push sampler in borings which encountered refusal. Depth to groundwater in the borings was observed to be approximately 10 to 15 feet bgs in borings on the south and eastern portion of the Site. Borings installed on the northwestern portion of the Site where bedrock is shallow encountered refusal 3 to 4 feet and no groundwater was observed.

Laboratory analytical data for soils are summarized on Figure 7 and in Table 2. The laboratory reports are provided in Appendix D.

Antimony (boring LB-15), cobalt (boring LB-9), nickel (boring LB-1) and lead (boring LB-2) were detected above PADEP Non-residential Soil to Groundwater Used Aquifer – Unsaturated standards, each in separate borings. Antimony was detected at a concentration of 32 micrograms per kilogram (mg/kg) in boring LB-15 at a depth of 7 to 7.5 ft bgs. Cobalt was detected at a concentration of 194 mg/kg in boring LB-9 at a depth of 1.5 to 2 ft bgs. Nickel was detected at a concentration of 1,070 mg/kg in boring LB-1 at a depth of 0.5 to 1 ft bgs. Lead was detected at a concentration of 637 mg/kg in boring LB-2 at a depth of 1.5 to 2 ft bgs.

Iron was detected above PADEP Non-Residential Direct Contact 0-2 ft at a concentration of 433,000 mg/kg at boring LB-1 at a depth of 0.5 to 1.0 ft bgs. Arsenic was detected above PADEP Non-residential Soil to Groundwater Used Aquifer – Unsaturated in five borings; the highest concentration (243 mg/kg) was in LB-15 at a depth of 7 to 7.5 ft bgs. Manganese was detected above PADEP Non-residential Soil to Groundwater Used Aquifer – Unsaturated in three borings, the highest of which was 12,500 mg/kg at LB-11 at a depth of 13.5 to 14 ft bgs.

To investigate the reported fire-fighting foam application related to one historical fire at the property, four additional soil borings (PB-1 to PB-4) were drilled and eight soil samples were collected. Shallow sample depths from 0-2 ft bgs were collected and analyzed with contingent subsurface soil samples collected from deeper depths between 2 to 15 bgs. if exceedances were detected in the shallow samples. Soil samples were analyzed for perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), and perfluorobutane sulfonic acid (PFBS). No concentrations were detected above laboratory method detection limits in the four samples analyzed; as such, no contingent deeper samples were analyzed and no further investigation of PFAS related to this historical fire incident is warranted.

3.3 Groundwater Conditions

3.3.1 Monitoring Well Installation

Langan retained the services of TPI Environmental Inc. of Easton, Pennsylvania (now Summit Drilling Inc.) to install seven monitoring wells in November 2022, December 2022, and January 2023 using hollow stem auger for overburden wells and air rotary percussion drilling methods for bedrock wells (Figure 6). Wells were installed based on specific area of interest and historical Site operations. Monitoring wells were constructed either with PVC, slotted well screen with solid riser or open hole in the bedrock with a locking stick-up protective casing, and concrete pad. The wells were developed by pumping until groundwater was relatively clear. The well casing and ground surface elevations were surveyed. Well construction details are summarized in Table 3. Monitoring well logs are included in Appendix C.

Wells completed in overburden were installed in 6-inch diameter boreholes drilled to the top of competent bedrock. Overburden wells were constructed using 2-inch diameter PVC well screen of 10-foot length, surrounded by a sand filter-pack that was poured between the annulus of the screen and the borehole wall to a depth of two feet above the top of the well screen. At minimum of 2-feet thick bentonite seal was applied to the top of the filter pack followed by cement grout to the surface.

Wells completed in bedrock were constructed by first advancing a 10-inch diameter borehole into the upper portion of competent bedrock. A six-inch diameter steel casing was then inserted to the bottom of the 10-inch borehole, and the outer annulus of the casing was filled to the surface with cement grout to isolate the overburden from deeper water-bearing zones in the fractured bedrock below. Before resuming drilling into bedrock, the cement grout for the steel casing was allowed to set overnight. Drilling resumed the next day, as a six-inch diameter borehole was then advanced through bedrock to the completed depth. The bedrock wells were advanced to a depth of the first-encountered water-bearing zone(s) that were observed by the Langan engineer/geologist during drilling. All bedrock wells except MW-5D were completed as open holes below the steel casing grouted in place into the top of bedrock. Because of variable weathering of bedrock conditions, MW-5D, initially intended to be an open hole well, had a 2-inch diameter PVC casing installed within the well, connected to a well screen in the borehole to overcome challenges of maintaining an open borehole condition at this location.

The well locations and elevations were surveyed by Langan's survey team on January 11, 2023. Monitoring well survey data are included in the well construction summary table (Table 3).

3.3.2 Groundwater Gauging and Sampling

Since November 2022, Langan installed three overburden monitoring wells and completed the installation of four bedrock monitoring wells in January 2023. Since the installation of the bedrock wells, the wells onsite have been gauged and sampled four times over the course of one year (January 2023, April 2023, October 2023, and January 2024).

3.3.2.1 Gauging

A 100-foot Solinst® oil/water interface probe was used to measure the static depth to groundwater in each of the seven monitoring wells that exist at the Site prior to the start of sampling activities. The interface probe was decontaminated between measurements. Groundwater elevations were calculated by subtracting the depth to groundwater measurements from the previously surveyed elevations of the tops of the inner well casings. Calculated groundwater elevations are in Table 3 and the interpretation of groundwater flow is discussed within Section 3.3.3.

3.3.2.2 Sampling and Analysis

Langan conducted low-flow groundwater sampling of the monitoring wells using a QED SamplePro® or Geotech bladder pump to extract groundwater from each well at a specified depth, at the mid-point of the installed screen or open borehole. Low-density polyethylene (LDPE) tubing transmitted the groundwater through a calibrated Horiba U-52® water quality meter, which measured the following parameters at each well during purging: dissolved oxygen; oxidation-reduction potential (ORP); specific conductivity; temperature; pH and turbidity. The water-quality indicators, which were recorded at five-minute intervals during well purging, and sample depths are summarized in the low-flow sampling sheets completed for each well during each groundwater sampling event (Appendix E). Once the water quality parameters stabilized, groundwater samples were collected directly into laboratory-provided bottleware and transferred immediately to an iced cooler chilled to approximately 4° Celsius until received by the lab.

All items used to sample multiple wells were decontaminated by scrubbing with a solution of Liquinox® detergent and potable water followed by a rinse with de-ionized water to prevent cross-contamination of the samples. The pump and bladder assembly was disassembled and decontaminated between each use. Langan personnel changed latex gloves between sampling each well to avoid cross-contamination. Quality control, field blank, rinsate blank, and trip blank samples were collected and analyzed. Field blank samples were poured through a Teflon bladder before collection into laboratory-provided bottle ware. Rinsate/Equipment blank samples were collected by pumping blank water through the gloves, bladder, and tubing before collection into laboratory-provided bottleware.

Groundwater samples were submitted to Eurofins Test America of Edison, NJ, a PA-certified laboratory (No. 68-00522) for analysis of VOCs, SVOCs, PCBs, select metals, ammonia-nitrogen, and mercury by U.S. EPA Method 8260D, 8270E, 8082A, 6020B, 7470A and 4500 NH_4 H-2011. Results of the groundwater analyses are discussed in Section 3.3.4 and summarized in Table 4. The full data reports from the laboratory are included as Appendix D.

3.3.3 Groundwater Flow

Groundwater elevations were calculated based on surveyed well elevations and depth to water measurements collected during all sampling events. Bedrock and overburden groundwater elevations were plotted and contoured to generate separate potentiometric surface maps for groundwater in overburden and bedrock. The groundwater elevation contour maps for overburden groundwater are presented as Figures 8A through 8D (January 2023, April 27, 2023, October 23, 2023, and January 23, 2024). The groundwater elevation contour maps for shallow bedrock groundwater are presented as Figures 9A (January 2023) through 9D (January 2024). A summary of well construction details and gauged groundwater elevations is included in Table 3. As shown on Figures 8A through 8D, and Figures 9A through 9D, groundwater flow direction beneath the Site is interpreted as generally toward the east in the overburden water bearing unit and to the south and southeast in the bedrock system.

Spring Brook intersects the southwestern corner of the Site and flows west beneath the Site until it intersects Bushkill Creek. Bushkill Creek intersects the northeastern portion of the Site and flows southeast beyond the Site boundary. As such, Bushkill Creek is the nearest potential receptor in reference to the Site.

3.3.4 Groundwater Quality

Groundwater analytical results for samples collected at the Site from January 2023 to January 2024 are summarized in Table 4. For convenience in reviewing these data, constituents detected at concentrations greater than the Pennsylvania Act 2 residential and non-residential used aquifer Statewide Health Standards for Groundwater (SHSG) are discussed.

While Table 4 provides a summary of analytical results for groundwater samples collected and analyzed by Langan, the below discussion of analytical results focuses on a comprehensive summary of groundwater conditions assessed during the four sampling events that occurred in 2023 (Figure 10).

Iron was detected in groundwater in 3 out of 7 wells sampled in April 2023, all of which had concentrations that exceeded the Pennsylvania Act 2 residential and non-residential used aquifer Statewide Health Standards (300 mg/l). Two wells were bedrock wells, and one well was an overburden well. When sampled again in October 2023 and January 2024, MW-3 and MW-4D had dissolved iron concentrations that exceeded the Pennsylvania Act 2 residential and non-residential used aquifer Statewide Health Standards.

Based on review of the groundwater sampling data, aluminum, beryllium, cobalt, iron, manganese and nickel are also metal constituents of concern that have been detected in on-Site groundwater. In April 2023, aluminum was detected above the PA Act 2 residential and non-residential used aquifer SHSG (200 mg/l) in two wells (MW-3 and MW-5D). When resampled in October 2023 and January 2024, the concentration in MW-3 exceeded the PA Act 2 residential and non-residential used aquifer SHSG (200 mg/l) and the concentration in MW-5 was below standards. Beryllium was detected over the PA Act 2 residential and non-residential used aquifer SHSG (4 mg/l) in well MW-4D in the four rounds of groundwater sampling, with the highest concentration detected in October 2023 (7.2 mg/l). Cobalt was detected over the PA Act 2 residential used aquifer SHSG (10 mg/l) in MW-4D in all four rounds of sampling, with the highest concentration at 54.5 mg/l. Concentrations of cobalt were detected exceeding PA Act 2 residential used aquifer SHSG in MW-3 in April 2023 but were below standards when resampled in January 2024.

Manganese was detected over the PA Act 2 residential and nonresidential used aquifer SHSG (300 mg/l) in MW-1, MW-1D, MW-3 and MW-4 when sampled in January 2024, with the highest concentration of manganese detected at 10,700 mg/l in MW-4D. Nickel was detected over the PA Act 2 residential and nonresidential used aquifer SHSG (100 mg/l) in well MW-3 in April 2023 and in well MW-4D in all sampling rounds. The highest concentration of nickel was in MW-4D at 612 mg/l. In April 2023, biphenyl and 2-Methylnapthalene were detected above the Pennsylvania Act 2 residential and non-residential used aquifer Statewide Health Standards in MW-3. When resampled in October 2023 and January 2024, both biphenyl and 2-Methylnapthalene were below the Pennsylvania Act 2 residential and non-residential used aquifer Statewide Health Standards. Wells MW-3 and MW-4D, which are both located in the central-eastern portion of the Site, have the most exceedances of the PA Act 2 residential and nonresidential used aquifer

SHSG.

3.4 Well Search / Groundwater Receptor Evaluation

On February 8, 2024, Langan completed a search of well records available in the PA Groundwater Information System (GWIS) database to identify the presence of potential groundwater receptors (domestic or agricultural wells) within a 1,000 foot radius of the Site property boundary. The results of the well search and groundwater evaluation are provided on Figure 11 and Appendix F.

According to PAGWIS records, there is one abandoned well (PA Well ID 601541), four unused observation wells (PA Well IDs 619604, 619626, 619715, and 619728), two monitoring wells (PA Well IDs 601513 and 503874), and one domestic well (PA Well ID 191606) within a 1,000 ft of the Site boundary. The domestic well was identified to the northwest of the Site. As the general groundwater flow direction from the Site is to the east-southeast, Site groundwater is not reasonably expected to flow toward this well.

To bolster the PAGWIS well search record information, Langan contacted the local water purveyor, Easton Suburban Water Authority (PWS ID 3480050), to verify that the properties within the well search buffer distance surrounding the Site pay a water bill and are serviced by the Easton Suburban Water Authority community water supply. Langan provided a tabular summary of parcel data (tax parcel ID and street address – as available) for parcels located within 1,000 feet of the Site boundary). From the list provided, the Easton Suburban Water Authority was unable to confirm a water hook-up for 14 parcels. An additional search of the Northampton County property records verified that 13 of the remaining properties were supplied with public utilities and one record confirmed the parcel was vacant land with no structures. Based upon the review of aquifer use in accordance with 25 PA Code 250.303 and available information, downgradient properties within 1,000 feet of the property boundary are shown to be connected to a community water system and do not appear to rely on private potable drinking well water.

Two domestic wells, PA Well IDs 191606 and 601986 were identified within a half-mile radius of the Site, located 0.45 miles to the northwest and 0.6 miles to the north (upgradient), respectively. A water well record for Well 601986 from PAGWIS listed the address of the well as 704 Wagner Lane. A search of the address in the Northampton County property records verified that the address listed was supplied with public utilities. For PA Well 191606, no address was listed on the well record so the latitude and longitude was used to verify the address of the well. On February 13, 2024, Langan provided the Easton Suburban Water Authority with the addresses associated with the domestic wells to confirm that the two domestic wells are present on properties but in both instances the property owners pay a water bill and are serviced by the Easton Suburban Water Authority community water supply.

According to the Easton Suburban Water Authority 2023 Water Quality Report, water is sourced from surface water from the Delaware River in the regional water service area. Since water is withdrawn from the Delaware River, which is located approximately 2 miles from the Site, the groundwater conditions at the Site are not expected to impact the public water supply for Easton Suburban Water Authority.

Based on the above information, groundwater impacts at the Site are not expected to pose a human health receptor concern because there are no known non-potable or potable water supply wells within 1,000 feet downgradient of the Site and no potential groundwater receptors were identified.

3.5 Sediment and Surface Water Investigation

Sediment and surface water samples were collected in November 2023 to assess potential groundwater/surface water interactions and whether complete ecological exposure pathways via surface water/sediment were present at the Site.

On November 28th – 30th, 2023, Langan collected sixteen (16) co-located sediment and surface water samples along Spring Brook and Bushkill Creek (SB-SED-1/SB-SW-1 through SB-SED-7/SB-SW-7 and BC-SED-1/BC-SW-1 through BC-SED-6/BC-SW-6, respectively). Two upgradient background samples were collected from Bushkill Creek (BC-BKG-1/BC-SW-BKG-1 through BC-BKG-2/BC-SW-BKG-2) and one upgradient background sample was collected from Spring Brook (SB-SED-BKG/SB-SW-BKG). Sediment samples were collected from a surficial interval (0.0 to 0.5 feet below sediment surface (bss)) and a subsurface interval (0.5 to 1.0 ft bss). The subsurface interval was only collected if field conditions allowed for it. The sediment and surface water samples are shown on Figure 12 and in Table 6. Sample results for surface water are shown on Figure 13 and summarized in Tables 5A and 5B.

Sediment samples collected at each location were characterized and thoroughly homogenized in a stainless-steel bowl prior to being transferred to laboratory supplied sample bottle ware. To minimize the presence of suspended solids, surface water samples were collected prior to sediment and all samples were collected from down-stream to upstream locations. Samples were stored in coolers on wet ice at 4°C and submitted to a PA-certified laboratory, TestAmerica, Inc., under proper chain-of-custody protocol.

Sediment samples from the November 2023 sampling event were analyzed for TAL metals, mercury, Target Compound List (TCL) PCBs, polycyclic aromatic hydrocarbons (PAHs), total organic carbon (TOC), pH, particle grain size, and percent moisture. Surface water samples were analyzed for total and dissolved TAL metals, mercury, TCL PCBs, PAHs, ammonia-nitrogen, total and dissolved hardness, ($CaCO3$), and alkalinity Quality assurance/ quality control samples

(QAQC) (i.e. field blanks and duplicates) were collected at a rate of 1 field blank per day for both sediment and surface water and 1 duplicate sample every 20 samples. Two duplicate sediment samples (DUP-1 and DUP-2) and one duplicate surface water sample (DUP-SW-11282023) were collected. Duplicate sediment samples were collected at BC-SED-5 and SB-SED-1, respectively, and the surface water duplicate sample was collected at BC-SED-5.

Additional ecological evaluation sampling was conducted in March 2024 to advance the conceptual site model and further assess the potential ecological risk at the Site. The additional ecological sampling was comprised of co-located surface sediment and porewater samples.

On March 26th-27th, 2024, Langan collected ten (10) co-located sediment and pore water samples in the portions of Spring Brook that will remain on Site after the Site redevelopment and re-grading activities (SB-SED-1/SB-PW-1, SB-SED-5/SB-PW-5). Samples were also collected in Bushkill Creek at the same locations as the November 2023 sampling event (BC-SED-1/BC-PW-1 through BC-SED-6). Two up-gradient background samples were collected from Bushkill Creek (BC-BKG-1/BC-PW-BKG-1 through BC-BKG-2/BC-PW-BKG-2). In this supplemental sampling phase, no up-gradient background sample was collected from Spring Brook, because the background sample previously collected in November 2023 did not have any exceedances of ecological criteria. The analytic results for sediment in Bushkill Creek and Springbrook are shown on Figures 14A and 14B, respectively.

The sediment and porewater analytical lists were refined based on the detections and Contaminants of Environmental Concern (COPECs) from initial sampling results. Sediment samples submitted from the March 2024 event were analyzed for TAL metals, mercury, PAHs, TOC, pH, simultaneously extracted metals/acid volatile sulfide (SEM/AVS), and percent moisture. Porewater samples were analyzed for total and dissolved TAL Metals, PAHs, total hardness and dissolved hardness (as Ca and Mg). One sediment and porewater sample was also analyzed for VOCs at BC-SED-1 because a slight iridescent coloration was noted on the water, had PID readings of 76.6 ppm, and a petroleum-like odor was detected in the sediment sample, which was collected at a depth of 0 to 0.5 feet bgs in this location. QA/QC samples (field blanks and duplicates) were collected at a rate of 1 field blank per day for both sediment and pore water and 1 duplicate every 20 samples. One duplicate sediment was collected (DUP-1-032724-SED) and one duplicate pore water sample was collected (DUP-1-032724). Duplicate samples were collected at BC-SED-6 and BC-PW-6, respectively.

The results and findings from the ecological remedial investigation are further evaluated (Section 4.5 ecological conceptual site model and Section 5.2 ecological health evaluation and risk assessment) and presented in context of the overall Site setting, history, and nature of occurrence of impacts to affected media and their implications for potential human health and ecological exposure pathways.

4.0 CONCEPTUAL SITE MODEL

The conceptual site model (CSM) provides physical Site conditions, an overview of proposed Site redevelopment and future land use, the nature and extent of impacts, and consideration of sources and migration pathways to potential receptors. Note that exposure pathway assessments and receptor evaluation, including human health risk assessment, ecological health evaluation, and vapor intrusion assessment, are described in Section 5.0.

4.1 Physical Setting

The Site is located in Easton, PA and is an irregularly shaped property, approximately 114.1 acres. The northern portion of the Site consists primarily of Gladstone-Parker Gravelly Loams towards topographic incline, and the Ryder-Rock outcrop complex towards the Bushkill Creek. The Gladstone-Parker Gravelly Loam is predominately composed of gravelly loam with a layer of gravelly sandy clay loam located between 10 to 22 inches and a layer of gravelly sandy loam located between 37 to 66 inches within the soil profile. The Ryder-Rock outcrop complex is composed of silt loam from 0 to 9 inches, channery silt loam from 9 to 34 inches and bedrock from 34 to 44 inches within the soil profile. A small section of the Site along the southwestern boundary is underlain by Washington Silt Loam which is comprised of a silt loam with a clay loam located between 9 to 42 inches within the soil profile.

Geologically, the Site area is part of an inverted limb of a recumbent fold centered on the Easton Antiform; a type of fold in bedrock which closes upwards and its limbs dip away from the hinge. Because of composition and small-scale fractures in the dolomitic rock in the Leithsville and Allentown formations this fold structure is conducive to the formation of enlarged openings that are more interconnected and can be preferential pathways for groundwater flow under karst conditions. This indicates that there is potential for greater hydraulic connectivity between the soil overburden and the bedrock water-bearing zones. The 1989 Hydrogeologic Assessment & Corrective Action Report for the Acid Plant Area (Roux & Associates) noted that in rock cores taken beneath the Site, bedding planes within the Paleozoic rocks dip between 30 and 55 degrees to the southeast, forming additional secondary pathways for groundwater flow to the north of Spring Brook in bedrock. Groundwater flow through a karst aquifer is influenced by fissures and bedding partings in the rock that are enlarged by chemical dissolution over time and can represent preferential flow paths, through which water can be more readily transmitted (Roux & Associates).

Drilling investigations at the Site indicate that fill material is present up to +/- 5 ft bgs in some locations. Fill consists of silt, sand, and gravel. Native soil encountered beneath the fill material appear to be indicative of the Gladstone-Parker gravelly loam, generally consisting of fine to coarse gravel, sand, with some silt and minor amounts of clay. Bedrock present in borings appear to be indicative to the Leithsville Formation which consists of gray dolomite.

Based on soil boring observations from the 2023 investigation, the upper-most water bearing unit occurs in the unconsolidated native material. The depth to water in the soil borings was generally encountered at depths ranging from 7 to 21 ft bgs. Groundwater flow direction is generally to the south-southeast towards Bushkill Creek.

4.2 History of Operations, Potential Releases/Sources

The on-Site plant first began operations in 1876 under the name C.K. Williams Company, when it processed locally mined ores. It is understood that talc was mined on-Site and milled in the plant to produce soapstone. Locally mined ores were also milled in the plant to produce pigments. In the 1940's the plant began using pickle liquor and scrap steel from local industries to produce synthetic iron oxides in the Copperas plant. In 1962, the facility was purchased by Pfizer, Inc., and in 1984 the corporate entity that owned and operated the plant was incorporated as Pfizer Pigments, Inc., a subsidiary of Pfizer, Inc. Magnetic oxide production began in the early 1970's. In 1990, Pfizer Pigments, Inc. sold the portion of the plant west of the Bushkill Creek (approximately 100 acres) to Harcros Pigments, Inc., a subsidiary of Harcros, Inc. In 1998, Elementis Pigments (Elementis) purchased the Site from Harcros Pigments. On October 8th, 2019, the environmental consulting firm, Architecture, Engineering, Construction, Operations, and Management (AECOM) submitted a request to PADEP to change the name of the site from Huntsman Pigments Americas, LLC to Excalibur Realty Company after Excalibur Realty Company acquired the site in October of 2014. In 2021, Abruzzi Trust purchased the Site from Elementis, and is the current owner. The Site has most recently operated as an inorganic pigment manufacturing facility by Elementis for manufacturing iron oxide pigments of various colors and grades. Sulfuric acid was used in this process to create a ferrous sulfate solution, which was then processed into a final product. Based on aerial photographs, all structures on the Site have been demolished between 2018 and present day.

The Site has been subject to the United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) regulations since these hazardous waste regulations were enacted in 1980. Since at least as early as 1989, the Site has had environmental investigations and corrective actions conducted. More recently since the 2000's investigations and spill responses related to discovered impacts to groundwater and soil have been investigated under the Pennsylvania Act 2 Land Recycling Program. Because of the RCRA applicability to historical operations at the Site, the findings, conclusions, risk assessment and evaluation, and cleanup plan in this report intend to satisfy both USEPA RCRA obligations and support an eventual Site-wide Act 2 Release of Liability under the 2004 Memorandum of Agreement (MOA) between USEPA and PADEP, commonly known as the "One Cleanup" Program.

Potential AOCs and former RCRA SWMUs that have been assessed via multiple investigations completed between 1989 and 2020 include: petroleum impacts and separate phase liquids with documented impacts to groundwater and soils and response actions, potential PCBs impacts via transformers, substations and historic hydraulic elevators, and potential spills/releases and groundwater discharges to surface water,

A summary of the nature and extent of confirmed impacts to soil, groundwater, surface water and sediments is presented below.

4.3 Nature and Occurrence of Impacted Soil

Langan performed a Site investigation in December 2022 and advanced 15 soil borings with 30 samples collected to investigate historical areas of interest. Soil was analyzed for VOCs, SVOCs, PCBs and TAL metals, cyanide, and mercury. Soil analytical results are described in Section 3.2, Table 2, Figure 7 and summarized below.

- One analyte, iron, was detected above PADEP Non-Residential Direct Contact MSC 0-2 ft in one boring, LB-1, which is associated with a former waste container area for tank cleanings. Historical production of natural iron oxide pigments, synthetic oxide pigments and magnetic iron oxides occurred on-Site since 1876.
- Six analytes were detected in soils at concentrations above the applicable PADEP Non-Residential Soil to Groundwater MSC. These include antimony, cobalt, nickel, lead, manganese and arsenic.
- Manganese and arsenic are the two most prevalent soil constituents on-Site. Iron ore, pickle liquor and scrap metal were used on-Site to make iron oxide pigments. Iron ore, one of the materials used to make the pigments, can contain arsenic impurities in the form of arsenopyrite as well as aluminum. Pickle liquor and scrap metal were recycled to make pigments on-Site. Spent pickle liquor can generate dissolved metal salt of iron, copper, nickel and residual acid.
- Also, fill was observed from 0 to 4 ft bgs in soil borings across the Site. Inferred from the occurrence and distribution of the soil constituents of concern, their presence is likely related to historic fill and former iron oxide pigment production and byproducts including electrostatic pit dust, used oil, clara sludge, off-specification spent pickle liquor, oxide waste, tank cleanings, process wastewater, and wastewater treatment filter cake.

4.4 Nature, Occurrence, and Extent of Impacted Groundwater

Langan performed four rounds of groundwater sampling from January 2023 to January 2024. Groundwater was analyzed for VOCs, SVOCs, PCBs, Ammonia-Nitrogen, dissolved metals (total metal used for January 2023 event) and Mercury. Groundwater analytical results are described in Section 3.3.4, Table 4, Figure 10 and summarized below.

- Two SVOCs, 2-Methylnaphthalene and Biphenyl were detected above the PADEP Residential and Non-residential MSCs in one groundwater sampling event in April 2023. When resampled in October 2023 and January 2023, all SVOC constituent concentrations were below the PADEP Residential and Non-residential MSCs.
- Six metals were detected at concentrations above the PADEP Residential and Non-residential GW MSCs. The most prevalent metals are manganese and iron, which were detected above the PADEP Residential and Non-residential GW MSCs in 16 of 18 and 14 of 18 samples, respectively. Aluminum, beryllium, cobalt and nickel were less frequently detected and found at concentrations above the PADEP Residential and Non-residential GW MSCs in the overburden and bedrock samples taken in the southcentral area of the Site (e.g. MW-3 and MW4D).
- Iron ore, pickle liquor and scrap metal were used on-Site to make iron oxide pigments. Raw iron ore is often alloyed with a variety of elements such as nickel, vanadium and manganese for a variety of product uses. Iron ore can also contain large amounts of aluminum related to the presence of aluminum-based clays. Pickle liquor and scrap metal were recycled to make pigments on-Site. Spent pickle liquor can generate dissolved metal salt of iron, copper, nickel and residual acid.
- Inferred from the occurrence and distribution of the groundwater constituents of concern, their presence is likely related to former iron oxide pigment production and byproducts including electrostatic pit dust, used oil, clara sludge, off-specification spent pickle liquor, oxide waste, tank cleanings, process wastewater, and wastewater treatment filter cake.

4.5 Nature, Occurrence, and Extent of Impacted Sediment and Surface Water

Langan conducted a Site investigation in November 2023, collecting 16 co-located sediment and surface water samples to assess potential exposure pathways at the Site. Sediment samples were analyzed for TAL metals, mercury, TCL PCBs, PAHs, TOC, pH, particle grain size, and percent moisture. Surface water samples were tested for total and dissolved TAL metals, mercury, TCL PCBs, PAHs, ammonia-nitrogen, and total and dissolved hardness (CaCO3).

In March 2024, additional ecological evaluation sampling was performed to enhance the conceptual site model and further assess ecological risks. This involved 10 co-located sediment and porewater samples, with refined analytical lists based on initial results. March 2024 sediment samples were tested for TAL metals, mercury, PAHs, TOC, pH, SEM/AVS, and percent moisture, while porewater samples were analyzed for total and dissolved TAL metals, PAHs, and total and dissolved hardness (Ca and Mg). An additional sample was analyzed for VOCs due to a visible sheen, elevated PID readings, and strong odor detected by field staff.

Sediment analytical results were compared to the higher of EPA Region III BTAG ecological benchmarks or background. Sediment analytical results are shown on Tables 5A and 5B. Sediment samples collected had concentrations of PAHs and select metals (aluminum, arsenic, barium, beryllium, calcium, cobalt, copper, iron, lead, manganese, mercury, nickel, potassium, sodium, thallium, vanadium, and zinc) above their respective screening criteria at one or more sample locations. One sediment sample taken from Spring Brook exceeded background concentrations of Aroclor 1260.

Surface water analytical results were compared to the PADEP Chapter 93. One sample, BC-SW-4, exceeded the CCC for dissolved cadmium, and concentrations of total alkalinity were detected above the CMC at all sample locations.

Porewater analytical results were compared to the PADEP Chapter 93 SWQS. There are no federal or state mandated criteria for porewater, making it common practice to use surface water criteria as default benchmarks.

A review of analytical data from two ecological field investigations identified constituents of potential ecological concern (CPECs), primarily parameters exceeding their applicable screening criteria. The investigation data was analyzed through an ecological health evaluation and risk assessment, presented in Section 5.2.

4.6 Groundwater Exposure Pathway Overview

On February 8, 2024, Langan completed a search of well records available in the PA Groundwater Information System (GWIS) database to identify the presence of potential groundwater receptors (domestic or agricultural wells) within a 1,000-foot radius downgradient and up to a half-mile of the Site property boundary. The well search and groundwater receptors survey are described in Section 3.4 and detailed in Appendix F.

Langan identified three domestic wells within a half-mile radius of the Site. The nearest domestic well was identified to the northwest (indicated as upgradient) of the Site within 1,000 ft of the Site boundary. As the general groundwater flow direction from the Site is to the east-southeast, Site groundwater is not reasonably expected to flow to this well. The other two domestic wells are present on properties which pay a water bill and are serviced by the Easton Suburban Water Authority community water supply. Based upon the review of aquifer use in accordance with 25 PA Code 250.303 and available information, downgradient properties within 1,000 feet of the property boundary are shown to be connected to a community water system.

According to the Easton Suburban Water Authority 2023 Water Quality Report, water is sourced from surface water from the Delaware River in the regional water service area. Since water is withdrawn from the Delaware River, which is located 2 miles from the Site, the groundwater conditions at the Site are not expected to impact the public water supply for Easton Suburban Water Authority.

Groundwater impacts at the Site are not expected to pose a human health receptor concern because there are no known non-potable or potable water supply wells within 1,000 feet downgradient of the Site and no potential groundwater receptors were identified.

5.0 EXPOSURE PATHWAY EVALUATION AND RISK ASSESSMENT

An exposure pathway assessment was also performed to determine if complete exposure pathways may exist between known Site contaminants and identified potential receptors. The exposure pathway assessment includes the following major elements:

- Human Health Risk Assessment;
- Ecological Health Evaluation; and
- Vapor Intrusion Assessment.

Each of these elements is discussed in further detail below.

5.1 Human Health Risk Assessment

Langan prepared a Human Health Risk Assessment (HHRA) for soil and groundwater in accordance with PADEP Act 2 regulations (25 Pa Code §§ 250.1 – 250.708), USEPA risk assessment guidance, and industry best practices. The full HHRA Report is included as Appendix G, and an overview of the methodology and findings are summarized below.

The HHRA evaluated potential future exposure to soil within a surface soil interval and subsurface soil interval of 0-15 ft bgs and groundwater for select receptors. The depth of the soil evaluated reflects the type of exposure that could occur at the Site should soil be disturbed, brought to the surface, and placed within the Site boundary for grading purposes. The objectives of the HHRA were to:

- Determine whether soil and groundwater concentrations of Site-related constituents potentially pose unacceptable risk to human health under Site-specific exposure conditions; and
- Support decisions concerning the need for further evaluation or action based upon reasonably anticipated future land use.

The technical approach for the HHRA consisted of the following basic steps: data analysis and identification of constituents of potential concern (COPCs); exposure assessment; toxicity assessment; and risk characterization, which includes an assessment of the uncertainty associated with each stage of the HHRA process. The HHRA used reasonable maximum exposure point soil concentrations of COPCs to derive risk and hazards to potentially exposed human populations for all complete (or potentially complete) exposure pathways. Cancer risk results were compared to PADEP's acceptable upper bound risk threshold for multiple carcinogens of one in ten thousand (1E-04). The non-cancer hazard index was compared to a hazard index of unity (1).

Known or potential future land use played a significant role in the development of the Conceptual Site Model (CSM) for the forward-looking HHRA. The Site is currently vacant land. However, the Site is proposed to be redeveloped with an industrial warehouse and paved parking areas. The HHRA focused on potential soil excavation, reuse, and subsequent chronic soil exposure following redevelopment activities. Soil within the first 0-15 ft bgs was evaluated as part of the HHRA. The potential risk from groundwater was also evaluated for select receptors based on their potential to be exposed during Site construction activities. Given the future land use assumptions, three future receptor populations were identified for risk-based evaluation. These receptors include:

- Industrial workers;
- Construction workers; and
- Trespassers.

Although the typical assumption for an on-Site industrial worker, an appropriate future receptor, includes potential exposure to chemicals of concern in surface soil (0 to 2 ft bgs), the sample data representing both the 0-10 ft bgs and 0-15 ft bgs intervals were also conservatively evaluated. Both of these intervals were evaluated to account for the disturbance and regrading of soil given the potential that Site soil may be re-used to establish final grade during construction. Soils were investigated, sampled, and characterized under PADEP Act 2 Investigation and Technical Guidance Manual for land recycling under existing conditions.

This screening accounts for evaluating the full dataset of soil results from the remedial investigation against the industrial worker or the construction worker receptor, the HHRA assumed he/she will encounter surface and subsurface soil, after grading, to a maximum depth of 20 ft bgs.

Evaluating soil under current conditions, the screening accounts for the full data of soil remedial investigation, which are soils encountered from 0-15 feet bgs. As further described in Section 6.0 – Cleanup Plan, while there are HHRA exceedances at locations at the 0 – 15 ft bgs interval, they are located in planned mass fill grading areas, not cut areas, with anticipated fills more than 15 feet. The subsequent clean-up plan will fill these locations deeper than the non-residential direct contact medium-specific criteria (MSC).

For the trespasser receptor, the HHRA assumed he/she will come in contact with shallow soil to a maximum depth of 2 ft bgs. Potentially complete exposure pathways for each of the trespasser, industrial worker and the construction worker include incidental ingestion of soil, dermal exposure to soil, and inhalation of fugitive dust and vapor in ambient air.

To identify COPCs for the identified receptors, the soil and groundwater analytical results were compared to the November 2023 USEPA Industrial Regional Screening Levels (RSLs) set to a target cancer risk of 1E-06 and a hazard quotient (HQ) of 0.1 (USEPA, 2021).

Identified COPCs in shallow soil include the following:

- Benzo(a)pyrene,
- Arsenic,
- Cobalt,
- Iron,
- Manganese, and
- Thallium.

The identified COPCs in subsurface soil include the following:

- Benzo(a)pyrene,
- Total PCBs,
- Iron,
- Manganese, and
- Thallium.

The identified COPCs in groundwater include the following:

- Chloroform,
- Ethylbenzene,
- 2-Methylnaphthalene,
- Dibenzofuran,
- Naphthalene,
- Aluminum,
- Arsenic,
- Beryllium,
- Cadmium,
- Cobalt,
- Iron,
- Manganese,
- Nickel, and
- Thallium.

Exposure point concentrations used in the receptor exposure models were calculated for each COPC using the 95th percent upper confidence limit (95UCL) of the soil or groundwater concentration. If a 95UCL could not be calculated then the maximum concentration was used.

Intake calculations considered general exposure parameters, such as exposure frequency, duration, receptor body weight, and averaging time, as detailed in the HHRA Report (Appendix G). Additionally, route-specific exposure parameters were considered in the HHRA, as intakes differ depending on the physicochemical properties of the COPC and the pathway by which the COPC enters the body (i.e., ingestion, dermal contact, and inhalation).

Toxicity values used in the risk assessment process were obtained from USEPA-recommended sources. Potential risks (i.e., risk characterization) were determined by combining the results of the exposure and toxicity assessments.

The conclusions of the HHRA are:

- No unacceptable cancer or non-cancer risks are posed to the trespasser.
- No unacceptable cancer risks to the construction work or industrial worker.
- Exceedances of the non-cancer threshold for the industrial worker from the 0 to 2 ft bgs and 0 to 10 ft bgs intervals. These results suggest potential unacceptable hazards to this receptor from the surface and subsurface (0 to 10 ft bgs) soil intervals.
- Exceedances of the non-cancer threshold for the construction worker receptor at each soil interval. These results suggest potential unacceptable hazards to this receptor in the absence of an appropriate Health and Safety Plan and exposure controls during construction.

Based on the findings of the HHRA, the non-cancer hazard to construction workers from Site soils is primarily attributable to potential exposure to iron and cobalt via the dermal contact pathway. These findings suggest potentially unacceptable hazards to construction workers that warrant appropriate Health and Safety measures and exposure controls during construction.

The findings of the HHRA indicate that there are no unacceptable cancer risks for the future on-Site industrial worker receptor. However, there are potential non-cancer hazards based on the current Site conditions. The non-cancer hazards are primarily being driven by dermal contact to cobalt and iron.

A cleanup plan has been developed for the Site based on the results of this HHRA and includes a Material Management Plan to guide future earth disturbances. The cleanup plan is discussed in more detail in Section 6.0.

5.2 Ecological Health Evaluation

An Ecological Health Evaluation (EHE) was completed for the Site. This EHE was completed in accordance with PA Chapter 250.311(b) and is presented in Appendix H. The following section summarizes the on-Site habitat and the conclusions of the EHE.

The Site is approximately 114.1-acre acres and is bordered on the east by Bushkill Creek. Spring Brook is another surface water body which is located on the southern part of the Site and eventually discharges into Bushkill Creek.

As part of the ecological screening process, an assessment of the Site was conducted to determine if any of the sensitive receptors listed at PA Chapter 250.311(a) are present on the Site. A Pennsylvania Natural Diversity Inventory (PNDI) database search indicates no potential conflicts with any Federally-listed threatened or endangered species as designated by the United States Fish and Wildlife Service (USFWS) under the Endangered Species Act (16 U.S.C.A. § § 1531-5544) as presented in Appendix I. Additionally, the PNDI did not list any potential impacts and no further review was required.

Sediment and surface water analytical samples were initially collected in November 2023 from sample locations in Bushkill Creek and Spring Brook. Two background samples were collected in Bushkill Creek and one background sample was collected in Spring Brook to assess potential upgradient sources. Sediment samples were analyzed for PAHs, TAL metals, PGS, and TOC. Surface water samples were analyzed for PAHs, total and dissolved TAL metals, PCBs, alkalinity, ammonia, and total and dissolved hardness. Based on the initial sediment and surface water analytical results, it was determined that additional data was required to refine the ecological assessment and bioavailability of contaminants.

Co-located sediment and porewater samples were collected at select locations in Bushkill Creek and Spring Brook. Porewater samples were collected to assess the bioavailability of potential contaminants at the Site. Sediment and porewater samples were collected from the same sample locations that were previously sampled in Bushkill Creek. However, only two sample locations were sampled in Spring Brook because the majority of the waterbody will be filled in as part of the proposed redevelopment activities. The sediment samples were analyzed for PAHs, TAL metals, TOC, and SEM/AVS. Porewater samples were analyzed for PAHs, total and dissolved TAL metals, and total and dissolved hardness.

The sediment analytical results from both rounds of sampling were compared to the higher of EPA Region III BTAG screening criteria or background. The sediment samples collected in Bushkill Creek were compared to an average background concentration. If a parameter was not detected, then one-half of the method detection limit (MDL) was used to calculate the average background. The sediment samples collected in Spring Brook were compared to concentration from the background sample location.

Surface water and porewater analytical results were compared to the PADEP Chapter 93 Surface Water Quality Standards for chronic criteria (criteria continuous concentration (CCC) and acute criteria (criteria maximum concentration (CMC) for fish and aquatic life. The porewater analytical results were screened against the surface water criteria because there are no federal or state mandated criteria for porewater. It is therefore common practice to use surface water criteria as default benchmarks. The screening criteria for cadmium, copper, nickel, silver, and zinc were based on the Site-wide average hardness. The screening criteria for alkalinity and ammonia were calculated based on average pH and average temperature.

Based on a review of the analytical data collected over the two ecological field investigations constituents of potential ecological concern (CPECs) were identified. Identified CPECs were generally parameters which exceeded their applicable screening criteria. The only exception was Aroclor 1260 which was only detected in sediment in Spring Brook above background. However, EPA Region III BTAG does not have a screening criteria for Aroclor 1260. Additionally, the concentrations of total PCBs in Spring Brook were below the EPA Region III BTAG screening criteria. Therefore, Aroclor 1260 was not carried forward as a potential CPEC.

The following CPECs were identified:

- Surface water
    - No CPECs were identified in surface water.

- Sediment
    - PAHs
      Select metals (aluminum, antimony, barium, beryllium, calcium, total chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc).

The bioavailability of the sediment CPECs was assessed through porewater analytical results. Concentrations of select total metals and benzo(a)anthracene were detected above their applicable screening criteria. However, the concentrations of benzo(a)anthracene were similar to the background concentrations which indicates that the benzo(a)anthracene concentrations are ubiquitous and present little to no risk to the benthic invertebrate community. Additionally, while select total metals were detected at concentrations above their applicable screening criteria, dissolved metals were either not detected or found at concentrations below their applicable screening criteria. The dissolved metals represent the bioavailable fraction which is responsible for benthic toxicity. Based on the lack of dissolved metals concentrations above their applicable screening criteria, it is unlikely that metals pose a risk to the benthic invertebrate community.

Potential wildlife receptors at the Site were assessed through dietary food chain modeling. The identified receptors of interest (ROI) were the great blue heron and the raccoon. The great blue heron was selected to represent the avian species in a semi-aquatic environment, and the racoon was selected to represent the semi-aquatic omnivorous mammalian species that may be present, foraging in Spring Brook and Bushkill Creek. Average daily doses (ADD), maximum daily doses (MDDs) and UCL daily doses (UCL DD) were calculated for each individual ROI. The exposure scenarios were compared to toxicity reference values (TRVs). Specifically, daily doses were compared to toxicological benchmarks based on no-observable adverse-effects levels (NOAEL) and lowest-observable adverse-effects levels (LOAEL). NOAEL based benchmarks represent values believed to represent no hazard for wildlife species (Sample, et. al., 1996). The LOAEL-based benchmarks represent threshold levels at which adverse effects are likely to become evident (Sample, et. al., 1996). The dietary food chain modeling results for the UCL exposure scenario, which is the most important in ecological risk assessments, noted no LOAEL exceedances for the great blue heron. Aluminum was the only analytical parameter to have a LOAEL exceedance for the raccoon.

The CPECs present at the Site were assessed through multiple lines of evidence. These lines of evidence included the calculation of screening quotients (SQs), the bioavailability of CPECs by assessing porewater, and potential bioaccumulation of CPECs through dietary food chain models. Based on the evaluation discussed in the Site-Specific Ecological Screening Evaluation presented in Appendix H, it is determined that the potential risk to ecological receptors was minimal and *de minimis*. Therefore, no further ecological evaluation is necessary at this time.

As discussed in Section 5.1 and included as Appendix G, a Site-specific human health risk assessment (HHRA) was completed by evaluating the Site soil data to determine the level of risk or hazard levels associated with the soil conditions and the applicable receptors (industrial worker, construction worker, and trespasser).

Based on results further discussed in this report, a Materials Management Plan is anticipated to be required for the Site as part of the clean-up plan to outline dust suppression, health and safety protocols, earthwork requirements, and contingency plans for unexpected environmental conditions. Furthermore, an Environmental Covenant is expected to be recorded with Northampton County to establish an activity and use limitation (AUL) for the Site (i.e., construction worker health-and-safety protocols, for known soil constituents above PADEP criteria), as more particularly set forth in the Post-Remediation Care Plan (see Section 9.0).

As discussed in above and detailed in Appendix H, the Ecological Health Evaluation (EHE) was completed for the Site in accordance with PADEP regulations and technical guidance. Based on the evaluation, it was determined that the potential risk to ecological receptors was minimal and *de minimis*. Therefore, no further ecological evaluation is necessary at this time.

5.3 Vapor Intrusion (VI) Assessment

Langan completed a VI assessment in accordance with Section IV of the PADEP Technical Guidance Manual (Document No. 261-0300-101). Soil data were evaluated to determine potential VI sources. Langan compared soil results to the relevant PA Act 2 VI screening values, as discussed in Section 3.1 and shown in Table 2. No compounds were detected in soils at concentrations above the PADEP Act 2 Non-Residential Soil Statewide Health Standard Vapor Intrusion Screening Values.

Langan reviewed available laboratory data for soil and groundwater that represents current conditions. As described in Section 2.5, there was historical reporting of VOC constituents in two of twelve post-excavation samples during a remedial action excavation of a #2 fuel oil release with concentrations above the PA Default Residential to Indoor Air (as documented in the 2010 Final Remedial Action Report submitted by JMT to PADEP Northeast Regional Office). The 2010 Final Remedial Action Report did not have quantitative soil data attached to the report (missing appendix). The soil excavation area is documented to be well over 100 feet from the proposed warehouse building at the Site (Figures 4, 5, and 6). Secondly, the residential to indoor air screening value is not the appropriate screening value for this planned redevelopment, as the redevelopment is for non-residential use. Furthermore, this area is expected to receive over 40 feet of fill material placed during earthwork movement.

Soil and groundwater conditions do not pose a vapor intrusion concern for current or future use scenarios at the Site.

6.0 CLEANUP PLAN

Langan evaluated the potential risks to the identified receptors: the construction worker, the trespasser, and the future industrial on-Site industrial worker. Considering current conditions and because the HHRA identified a potentially complete exposure pathway for the construction worker and industrial Site worker receptors, a remedy and a cleanup plan are required in accordance with PADEP Act 2 regulations. Remedial alternatives were considered and evaluated. Based on the Site redevelopment plan, which involves massive cuts and fills/re-grading for construction of an approximately 1 million square foot warehouse building, the cleanup approach will be an integrated Site development/cleanup effort that includes:

1) Institutional controls enforced via an Environmental Covenant that requires dust suppression and worker health-and-safety protocols and protection during soil disturbances; and
2) Elimination of potential direct contact worker exposure pathways accomplished via the redevelopment and extensive planned earthwork/regarding of the Site.

In accordance with the recommendation in the HHRA, an institutional control will require dust suppression and worker health-and-safety protocols during soil-disturbing activities. These worker safety protocols will effectively mitigate potential worker exposure to iron and cobalt in Site soils via dermal contact. The institutional control will be enforced via an Environmental Covenant, to be prepared in accordance with UECA and the Post-Remediation Care Plan (see Section 9.0).

For the clean-up plan, Langan conducted a modified HHRA that disregarded soil sample locations that had exceedances and would become filled with greater than 15 feet of fill material; namely, namely, LB 1A, LB 12B, LB 13A, LB 15, and LB 16. The modified HHRA scenarios only included the following samples: LB-3A and 3B, LB-4A and 4B, LBA-5A and 5B, LB-6A and 6B, LB-7A and 7B, LB9-A and 9B, and LB-14A and 14B. The results of the modified HHRA future post-construction exposure scenario are:

- No unacceptable cancer or non-cancer risks for the trespasser.
- No unacceptable cancer or non-cancer risks for the construction worker.
- No unacceptable cancer or non-cancer risks for the industrial worker.

Therefore, the re-grading activities and placed fill at the central portions of the Site will eliminate the industrial worker exposure concern after redevelopment and achieve cleanup objectives resulting in no human health risk. Table 7 includes the HHRA results that consider the future post-construction exposure scenario.

Figure 7 includes the soil sampling results, soil sample locations, and the proposed site grading and clean-up plan.

After the Site development construction and re-grading activities are complete, the soils that currently pose a potential direct contact risk for workers by select metals, will no longer be at a depth that would pose a direct contact exposure concern because of the placement/cover of a minimum of 15 feet of re-graded non-impacted fill. Therefore, the proposed redevelopment will eliminate the potential future exposure pathway for the on-Site industrial worker receptor.

7.0 MUNICIPAL AND PUBLIC NOTIFICATION

A Notice of Intent to Remediate (NIR) and proof of required municipal and public notices were submitted to the PADEP Northeast Regional Office in March 2024; a copy of the NIR submission is included as part of Appendix A. For Site soils, as outlined in Table 1 appended to the NIR in Appendix A, the NIR was submitted for combined attainment of the non-residential SHS for VOCs, SVOCs, PCBs, and select TAL metals (except antimony, arsenic, cobalt, iron, lead, manganese, and nickel), and select PFAS compounds (PFBS, PFOS, PFOA) and attainment of the Site-Specific Standard for antimony, arsenic, cobalt, iron, lead, manganese, and nickel. For groundwater, the NIR was submitted for attainment of the non-residential SHS for VOCs, SVOCs (except 2-methylnaphthalene and biphenyl), PCBs, TAL metals (except aluminum, beryllium, cobalt, iron, manganese, and nickel) and the Site-Specific Standard for aluminum, beryllium, cobalt, iron, manganese, and nickel (see Table 1 appended to NIR). In accordance with PADEP Land Recycling Program guidance for Site-specific cleanup, the public was provided an opportunity for participation and given a 30-day period for comment. No public comments were received during the comment period.

Easton City and Wilson Borough were notified of Easton Wood Ave PropCo, LLC’s submission of this PA Act 2 Combined Remedial Investigation / Risk Assessment / Cleanup Plan / Final Report by certified letter dated and sent March 4, 2024. The public has been notified of this report submission by publication of a notice in the March 7, 2024 issue of the Morning Call newspaper, which is circulated in Easton, PA. A copy of the letter that was sent to the municipalities with the certified mail receipts and the notarized proof of publication of the newspaper notice are included as Appendix A.

8.0 DEMONSTRATION OF ATTAINMENT

In accordance with Pa. Chapter 250, Subchapters C and G, the following section details a demonstration of attainment of the combined PA Act 2 non-residential SHS and the Site-Specific Standard (SSS) for all analytes investigated in surface and subsurface soils at the Site. For the SHS, the aquifer is considered non-residential, used aquifer, with TDS ≤ 2,500 mg/L.

Table 1 of the NIR in Appendix A lists the Site soil contaminants of concern for which attainment has been demonstrated or will be attained through the SSS cleanup measures and identifies which standard(s) has been attained.

<u>Statewide Health Standards Attainment - Soils</u>
Except for the seven analytes listed below, the contaminants analyzed for soil samples (see Table 1) did not have concentrations above the PADEP non-residential SHS. Soil was analyzed for

VOCs, SVOCs, PCBs and TAL metals, cyanide, and mercury. The only soil contaminants detected at concentration(s) above the PADEP non-residential SHS for soil at the Site include:

- Antimony
- Arsenic
- Cobalt
- Lead
- Iron
- Manganese
- Nickel

For iron and cobalt in Site soils, the SSS will be demonstrated for the construction worker receptor via implementation of an Environmental Covenant that mandates appropriate health-and-safety protocols for on-Site construction workers involved in soil-disturbing activities. These protocols will be identified in a Site-wide materials management plan and an environmental covenant, to be provided under separate cover. Implementation of this institutional control remedy constitutes post-remediation care for the Site to assure long-term compliance with the AUL.

<u>Statewide Health Standards Attainment - Groundwater</u>

For groundwater, the following constituents analyzed for four consecutive groundwater sampling events (see NIR Table 1 in Appendix A) did not have concentrations above the PADEP non-residential SHS and support a demonstration of attainment of SWHS for groundwater:

Groundwater was analyzed for VOCs, SVOCs, PCBs, Ammonia-Nitrogen, dissolved metals (total metal used for January 2023 event) and Mercury. The only groundwater constituents detected in the four consecutive quarterly sampling events at concentration(s) above PADEP Residential and Non-residential Groundwater MSC – Used Aquifer <= 2500mg/l TDS at the Site are:

- Aluminum
- Beryllium
- Biphenyl
- Cobalt
- Iron
- Manganese
- 2-Methylnapthalene
- Nickel

In April 2023, 2-Methylnapthalene and Biphenyl were detected at concentrations above PADEP Residential and Non-residential Groundwater MSCs but were not detected in the subsequent two additional rounds of groundwater sampling.

As documented herein (see Section 3.4 and Section 4.6), the groundwater pathway is incomplete and SSSs are attained via a demonstration of no complete exposure pathway. Groundwater impacts at the Site do not pose a human health receptor concern because there are no known non-potable or potable water supply wells within 1,000 feet downgradient of the Site and no potential groundwater receptors were identified. Additionally, as a conservative measure, an Environmental Covenant will implement a non-residential property use restriction and groundwater withdrawal prohibition to assure long term protection of receptors.

9.0 POST-REMEDIATION CARE PLAN

The future Post-Remediation Care Plan will impose the institutional controls to be maintained to assure attainment of the Act 2 Site-Specific Standards for soil and groundwater, in accordance with 25 Pa. Code §250.411(d). A draft Environmental Covenant will be prepared in accordance with the Uniform Environmental Covenant Act (UECA) and the PADEP model document The Environmental Covenant will be prepared as part of the Final Report. The Environmental Covenant includes AULs restricting land use to non-residential, prohibits groundwater withdrawal at the Site, and requires construction workers to adhere to health-and-safety measures to be prescribed in an MMP that must be implemented for worker protection during soil-disturbing activities at the Site. With eventual execution of the Environmental Covenant, the Site is subject to the activity and use limitations, which the Owner/Holder and each subsequent owner of the Site shall abide by to ensure protection of human health.

No further post-remediation care will be implemented.

10.0 CONCLUSIONS

Based on the remedial investigation and environmental risk evaluations, Easton Wood Ave Propco, LLC has successfully demonstrated that, upon Site redevelopment, the Site attains a combination of the Act 2 SWHS and SSS for COCs in soil and groundwater as detailed in Section 8.0. The information discussed herein, based on the more detailed risk assessment, ecological evaluation, and VI assessment provided in Section 5.0, support the conclusion that no further investigation, remediation or monitoring is warranted. Key findings include:

- The Site and surrounding land are industrial properties, zoned for non-residential use. To the east of the property is Bushkill Creek which borders the Site and then curves east near the southwestern portion of the Site. Another surface water body, Spring Brook, flows from the southwest to the northeast, before joining Bushkill Creek. There is also a dam or flow control structure within Bushkill Creek that connects with Spring Brook, as part of historical on-Site infrastructure.

- In the southeastern portion of the Site, overburden is comprised of brown fine to coarse sand/gravel. In general, the fill varies in thickness from 0 to 5 feet. Soil encountered appears to be indicative of the Gladstone gravelly loam, consistent with descriptions from soil borings. Groundwater occurs throughout the overburden unit at depths ranging from about 7 feet to 21 feet bgs at the Site.

- Because of its composition and small-scale fractures in the dolomitic rock in the Leithsville and Allentown formations this allows for the formation of a potential preferential pathways for groundwater flow under karst conditions. Bedrock encountered in borings completed at the Site is described as buff to green-grey fractured limestone-dolomite rock. Bedrock drilling for installing groundwater monitoring wells in January 2023 revealed shallow fractured dolomite from a light tan to gray color that was encountered at depths as shallow as 3 ft bgs in the eastern portion of the Site. Rock cores from prior investigations indicate the bedrock in the northeastern area of the Site resembles the Leithsville Formation and is highly fractured and steeply dipping (approximately 45 degrees).

- In general groundwater flow direction is interpreted from elevation data to be toward the east in the overburden watering zone towards Bushkill Creek and to the east and southeast in the bedrock zone.

- Langan sampled soils from 16 soil borings. One analyte, iron, was detected above PADEP Non-Residential Direct Contact 0-2 ft in one boring, LB-1 which is within the vicinity of a former waste container area for tank cleanings. Historical production of natural iron oxide pigments, synthetic oxide pigments and magnetic iron oxides occurred on-Site since 1876.

- Six analytes were detected in soils at concentrations above the applicable soil PADEP Non-Residential SHS. These include antimony, cobalt, nickel, lead, manganese and arsenic. The presence of these metals in soil is attributed to historic fill and to former iron oxide pigment production and byproducts including electrostatic pit dust, used oil, clara sludge, off-specification spent pickle liquor, oxide waste, tank cleanings, process wastewater, and wastewater treatment filter cake.

- Langan performed four rounds of groundwater sampling from January 2023 to January 2024. Six metals (total and dissolved) were detected at concentrations above the PADEP Residential and Non-residential GW MSCs. Manganese, iron, aluminum, beryllium, cobalt and nickel were all detected above the PADEP Residential and Non-residential GW MSCs on-Site.

- The sediment samples collected in Bushkill Creek had concentrations of PAHs and select metals above their respective screening criteria at one or more sample locations. The sediment samples collected in Spring Brook had concentrations of Aroclor 1260, PAHs, and select metals above their applicable criteria at one or more sample locations. A Site-specific ecological health evaluation was performed and demonstrates no ecological exposure concern for sediment.

- Surface water samples were collected at the same locations as the sediment samples. PAHs, PCBs, total metals and ammonia were not detected or were below their applicable screening criteria. A concentration of dissolved cadmium (1.3 micrograms per liter (ug/L)) was detected at BC-SW-4 above the CCC (0.446 ug/L). A Site-specific ecological health evaluation was performed and demonstrates no ecological exposure concern for surface water.
- Langan identified one domestic to the northwest (indicated as upgradient) of the Site within 1,000 ft of the Site boundary. As the general groundwater flow direction from the Site is to the east-southeast, Site groundwater is not reasonably expected to flow to this well. Langan provided the Easton Suburban Water Authority with the addresses associated with the two domestic wells within a half mile radius of the Site to confirm that the two domestic wells are present on properties which pay a water bill and are serviced by the Easton Suburban Water Authority community water supply.
- Based upon the review of aquifer use in accordance with 25 PA Code 250.303 and available information, downgradient properties within 1000 feet of the property boundary are shown to be connected to a community water system. Additionally, according to the Easton Suburban Water Authority 2023 Water Quality Report, water is sourced from surface water from the Delaware River in the regional water service area. Groundwater impacts at the Site are not expected to pose a human health receptor concern because there are no known non-potable or potable water supply wells within 1,000 feet downgradient of the Site and no potential groundwater receptors are identified.
- VOCs were not detected above the current PADEP Vapor Intrusion Screening Values (VISL) in the other historical environmental reporting. Therefore, the VI evaluation process is complete without the need for further assessment, investigation, or mitigation.
- The findings of the HHRA indicate that there are no unacceptable risks to a trespasser and that there are no unacceptable cancer risks for the future on-Site industrial worker receptor. However, there are potential non-cancer hazards based on the current Site conditions related to potential dermal contact to cobalt and iron in soils.
- The CPECs present at the Site were assessed via multiple lines of evidence that have determined the potential risk to ecological receptors is minimal and de minimis. Therefore, no further ecological evaluation is necessary.
- Based on the Site redevelopment plan, which involves massive cuts and fills/re-grading for construction of an approximately 1 million square foot warehouse building, the cleanup approach will be an integrated Site development/cleanup effort that includes AULs and worker health-and-safety protocols and protection during soil disturbances that will be established by an Environmental Covenant. The Post-Remediation Care Plan imposes the institutional controls to be maintained to assure attainment of the Act 2 Site-Specific

Standards for soil and groundwater, in accordance with 25 Pa. Code §250.411(d). No further post-remediation care plan is warranted.

In accordance with Act 2 provisions, Easton Wood Ave Propco, LLC respectfully requests the Department's approval of this Combined Remedial Investigation / Risk Assessment / Cleanup Plan toward eventually obtaining liability protection for the SWHS and SSS cleanup of soils and groundwater at the Site.

11.0 REFERENCES

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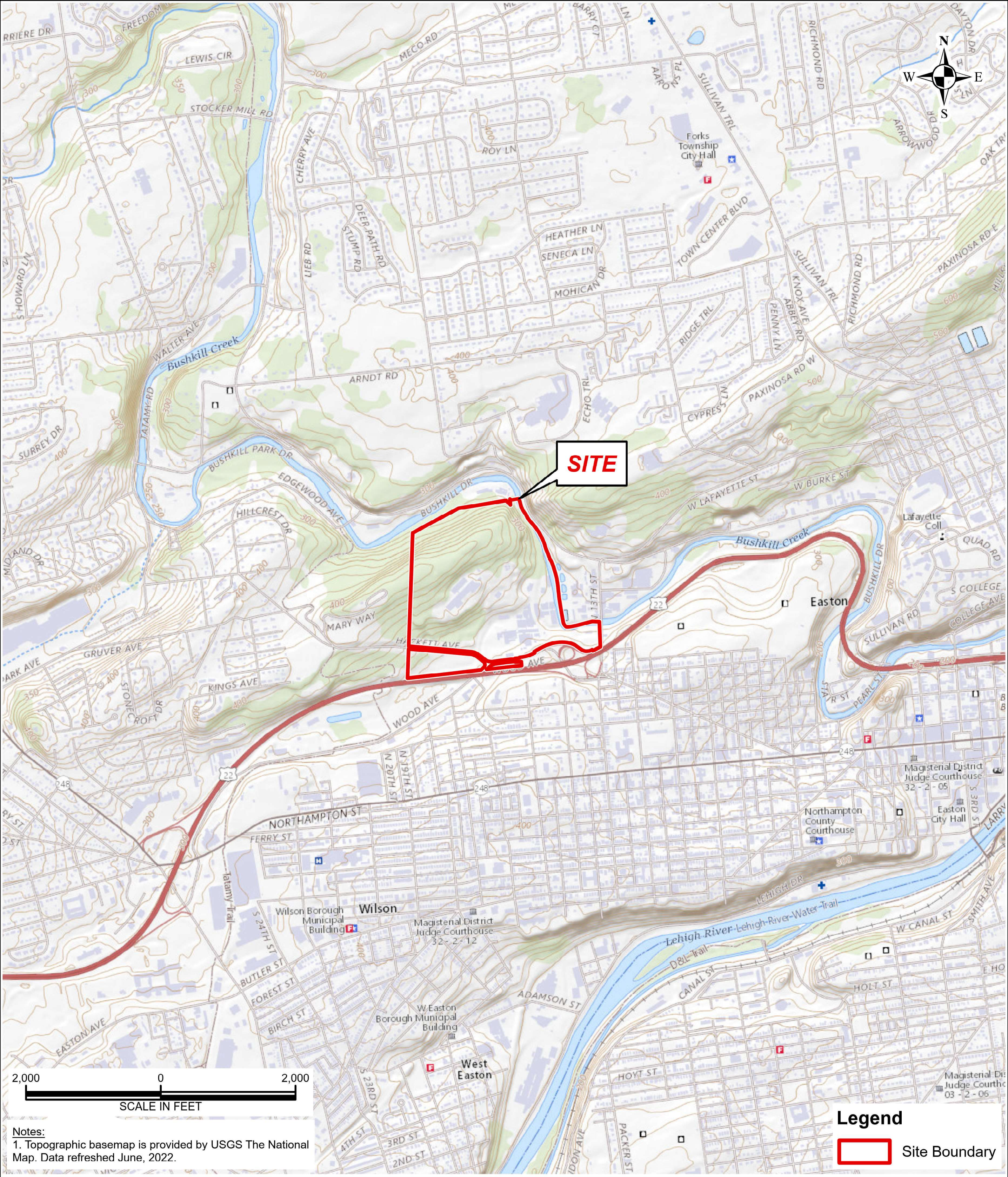
12.0 SIGNATURES

This PA Act 2 Remedial Investigation / Risk Assessment / Cleanup Plan was prepared and is certified by Mr. Jeffrey A. Smith, PG – 002755-G, a Registered Professional Geologist licensed in Pennsylvania.

Mr. Jeffrey A. Smith, P.G., Senior Associate
Langan Engineering and Environmental Services, LLC
1818 Market Street, Suite 3300
Philadelphia, PA 19103
Phone: (215) 845-8915
E-mail: jasmith@langan.com

Jeffrey A. Smith, P.G.
P.G. No.: PG002755G
Senior Associate

Adam E. Goldberg, Senior Project Manager
Langan Engineering and Environmental Services, LLC
1818 Market Street, Suite 3300
Philadelphia, PA 19103
Phone: (215) 845-8946
E-mail: agoldberg@langan.com



Notes:
1. Topographic basemap is provided by USGS The National Map. Data refreshed June, 2022.

LANGAN

1818 Market Street, Suite 3300
Philadelphia, PA 19103-3638
T: 215.845.8946 F: 215.845.8901 www.langan.com

Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan International LLC
Collectively known as Langan

Project	Figure Title	Project No.	Figure
FORMER ELEMENTIS PIGMENTS PLANT EASTON NORTHAMPTON COUNTY PENNSYLVANIA	SITE LOCATION MAP	220179901 Date: 3/8/2023 Scale: 1"=2,000' Drawn By: SH	1

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