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**Response Action Plan
Voluntary Cleanup Program**

**Pooks Hill Road Property
5159 Pooks Hill Road
Bethesda, Montgomery County, Maryland**

February 18, 2021

ECC Project No. 13941-VRPI

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1.0 Introduction

On behalf of EM Pooks Hill, LLC, Environmental Consultants and Contractors, Incorporated (ECC) is pleased to submit this Response Action Plan (RAP) for the proposed 5159 Pooks Hill Road project, addressed 5159 Pooks Hill Road, located in the Bethesda area of Montgomery County, Maryland, the *Site*. The Site is identified as Montgomery County Tax Map Number HP22, Plat 9152. EM Pooks Hill, LLC, submitted an application to the Maryland Department of the Environment (MDE) Voluntary Cleanup Program (VCP) on September 25, 2020. EM Pooks Hill, LLC, was accepted into the VCP on February 1, 2021.

Historical documents pertaining to the Site referenced a previous address for this property (5151 Pooks Hill Road) which is the address listed on the VCP Acceptance Letter. The Site was previously a portion of the property addressed 5151 Pooks Hill Road but has been subdivided for redevelopment and the current address for the Site is 5159 Pooks Hill Road. The Site is referred to as its current address (5159 Pooks Hill Road) in this RAP.

Based on the findings of previous environmental investigations performed on the Site, it is expected that polycyclic aromatic hydrocarbons (PAHs)-impacted soil will be encountered during excavation activities. This RAP was prepared to address chemical contaminant risk potential (near the location of boring GP-3 installed during ECC's January 2020 Phase II ESA) for earthwork, excavation dewatering, and soil disposal during construction at the Site, through appropriate corrective actions. The outlined corrective actions were developed to mitigate potential exposures and risks to human health at the Site.

The Site is planned for a single 562-unit multi-family development comprised of two towers connected at ground level by a single lobby and a three level underground garage on the eastern portion of the site; the western portion of the site will remain as a forest conservation easement. The future land use category for the Site will be Tier 1B (Restricted Residential). The corrective actions described in this RAP are designed to ensure that impacted soil and groundwater encountered during redevelopment are properly documented, treated, and disposed of in accordance with MDE and U.S. Environmental Protection Agency (EPA) regulations, that all potential future risks to human health are mitigated, and that the planned development is safe for future residential uses. A groundwater use restrictions will be placed on the Site prior to occupancy.

2.0 Site Overview

2.1 Site Location and Description

The Site is located adjacent northeast of the intersection of Pooks Hill Road and Linden Avenue in the Bethesda area of Montgomery County, Maryland. The Site is identified as Montgomery County Tax Map Number HP22, Plat 9152. The Site is located within ZIP Code area 20814, and is centered at approximately 39°00'55" North latitude and 77°06'17" West longitude. A Site Location Map and Site Plan are presented as **Figure 1** and **Figure 2**, respectively, in **Appendix A**.

The Site occupies a land area of 261,679 square feet (6.0 acres) and is improved with a multi-tiered asphalt-paved parking lot constructed in the 1970s and early 1980s. The northwestern portion of the site consists of wooded land. The Site was formerly improved with two residences which were constructed prior to 1957 and razed between 1964 and 1970.

The Site has approximately 915 feet of frontage on Pooks Hill Road (the southern property boundary). Vehicular access to the Site Property is available via the northeast-adjacent hotel parking lot. There are two entrances to the parking lots located on Pooks Hill Road; these entrances have been closed to vehicular traffic via chain gate.

2.2 Site Setting

The Site is located in a residential area in the Bethesda area of Montgomery County, Maryland. The Site is bordered to the northwest and to the south (across Pooks Hill Road) by apartment buildings. A hotel is located on the northeast-adjacent property.

2.2.1 Geology and Hydrogeology

Geologically, the Site is located in the Uplands Section of the Piedmont Plateau physiographic province. The Piedmont is characterized as a rolling upland surface underlain by complexly folded and faulted igneous and meta-sedimentary rocks. The bedrock is overlain by regolith consisting of soil, saprolite, and weathered rock. More specifically it is located in the Hampstead Upland District which is characterized by rolling to hilly uplands, interrupted by steep gorges. There is differential weathering of contrasting lithologies which produce the ridges, hills, and valleys. Streams are prone to have short segments.

According to the USGS online GIS database (<http://mrddata.usgs.gov/geology/state/>) of the geology of Maryland, the Site is underlain by the Wissahickon Formation; Lower Pelitic Schist which was formed in the Late Precambrian. This unit consists of medium to coarse grained biotite-oligoclase-muscovite-quartz schist with garnet, staurolite, and kyanite as well as fine to medium grained semipelitic schist and fine grained granular to weakly schistose psammitic granulite. Psammitic (sandstone) beds increase upwards. "Pelitic" means that the schist is a metamorphosed fine-grained sedimentary rock. The thickness of the formation can be up to 5,500 feet.

The hydrogeology of the Piedmont physiographic province is controlled primarily by water infiltration and storage in the regolith and subsequent percolation of water through the regolith into

fractures of the crystalline rock. The regolith acts as a recharge source of the fractured metamorphic rock aquifer, both of which jointly compose an unconfined (water table) aquifer system. Groundwater flow is generally via primary porosity (interstitial) in the soil and saprolite of the shallow regolith and/or overlying sediments. Secondary porosity (fractures) typically becomes predominant in the underlying bedrock. The occurrence of fractures and resultant well yields diminish with the competence of the bedrock, and the interface of hard bedrock is likely to represent a significant change in aquifer conductivity and porosity. Based on local topography, the direction of groundwater flow on the Site is expected to be toward the southeast.

During a Phase II ESA performed on the Site in January 2020, ECC measured groundwater at a depth of approximately 25 feet below grade in a boring located on the eastern portion of the Site.

2.2.2 Topography

The topography of the Site slopes toward the southeast. According to U.S. Geological Survey (USGS) topographic mapping of the site area (USGS 7.5-minute Topographic Quadrangle Maps, Kensington, DC-MD-VA, 2016) and Google Earth, the surface elevation of the Site, relative to mean sea level, ranges from approximately 316 feet on the northwestern portion of the site to approximately 240 feet on the eastern portion of the site.

2.2.3 Soils and Observations

According to the U.S. Department of Agriculture's Soil Conservation Service, soils on the Site are identified as Glenelg-Urban land complex (mapping unit 2UC) and Wheaton-Urban land complex (mapping unit 66UB). The Glenelg-Urban land complex is composed of 45% Glenelg soils, 30% urban land, and 25% minor components. It is well drained with a slope of 8 to 15 percent, and the depth to water table is greater than 80 inches. The Wheaton-Urban land complex is composed of 50% Wheaton soils, 30% urban land, and 20% minor components. It is well drained with a slope of 0 to 8 percent, and the depth to water table is greater than 80 inches.

During a Phase II ESA performed on the Site in January 2020, lithology encountered on the Site consisted of light brown clayey silt. The clayey silt was overlain by fill material observed in borings on the eastern portion of the Site. The fill layer extended to 7.0 to 7.5 feet below ground surface and consists of brown and gray clay and silt with minor amounts of gravel and organic material.

2.3 Environmental History

2.3.1 Phase I Environmental Site Assessment - August 2004

ECC reviewed a Phase I ESA of a larger property including the Site and the northeast-adjacent hotel, entitled *Bethesda Marriott*, dated August 17, 2004, prepared by EMG. At the time of the assessment, the Site was owned by the Host Marriott Corporation. EMG discussed Oil Control Program (OCP) cases that occurred at the northeast-adjacent Bethesda Marriott. The OCP cases pertain to a 15,000-gallon heating oil UST that was closed in place (date of closure not indicated) and a former 550-gallon diesel fuel UST that was removed in 1998. EMG reviewed an MDE Certificate of Registration Closure for the two USTs. Based on the case closed status and the absence of a reported release associated with these tanks, EMG did not recommend further action or investigation on the northeast-adjacent property.

EMG discussed the OCP case associated with Promenade Towers addressed 5225 Pooks Hill Road, located adjacent northwest of the Site. EMG indicated that this OCP case pertains to closure of a heating oil UST and stated that MDE issued a site closure indicating that any contamination has been properly remediated according to federal, state, and local standards. No further action or investigation was recommended by EMG.

EMG did not identify *recognized environmental conditions* (RECs) in connection with the larger site including the Site and northeast-adjacent property. EMG recommended repairing a leak in hydraulic elevator equipment in the hotel building, implementing an Operations and Maintenance (O&M) program at the hotel, and remediating suspect mold observed in the hotel.

2.3.2 Geotechnical Investigation – February 2015

ECC reviewed a Subsurface Investigation and Geotechnical Engineering Report of the Site entitled *Pooks Hill Towers*, dated February 20, 2015, prepared by Geotechnical Solutions, Inc (GSI). GSI installed a total of twelve (12) soil test borings to depths ranging from 35 to 75 feet below existing grades or auger refusal. GSI relied on info obtained from the twelve (12) soil test borings as well as twelve (12) previously installed soil borings (installed February 2006) to develop recommendations for the Site. Water observations indicated groundwater was present at a minimum depth of approximately 6 feet below grade and a maximum depth of 34.5 feet below grade on the Site. Artificial fill material was encountered in five (5) of the twenty-four (24) borings at depths ranging from 2 to 10.5 feet below ground surface (bgs). The fill material was described as gray, reddish brown, and brown sandy lean clay and micaceous sandy silt with minor accumulations of organic material, gravel, and wood debris.

2.3.3 Phase I Environmental Site Assessment – January 2020

ECC completed a Phase I Environmental Site Assessment of the Site and summarized the findings in a report dated January 22, 2020. At the time of the January 2020 investigation, the Site was improved with a multi-tiered asphalt-paved parking lot constructed in the 1970s and early-1980s, and the northwestern portion of the Site consisted of wooded land. ECC identified the following *REC* in connection with the Site:

- Previous geotechnical sampling has identified artificial fill material on the Subject Property.

ECC recommended performance of a Phase II ESA (soil and groundwater testing) on the Site to document the presence or absence of contamination within the artificial fill material. ECC also recommended preparation of an environmental contingency budget for handling and disposal of contaminated materials prior to site redevelopment.

2.3.4 Phase II Environmental Site Assessment – January 2020

ECC performed a Phase II Environmental Site Assessment of the Site and summarized the findings in a report dated February 14, 2020. The Phase II ESA was performed based on the findings of ECC's Phase I Environmental Site Assessment of the Site dated January 22, 2020. As part of the Phase II ESA, ECC installed six (6) direct-push (Geoprobe®) soil borings (identified as GP-1 through GP-6) to depths of approximately 15 to 30 feet below ground surface (bgs) and collected soil and

groundwater samples for laboratory analysis to assess soil and groundwater quality on the Site. The boring locations are shown on **Figure 2** in **Appendix A**. Boring logs detailing subsurface lithology are presented in **Appendix B**. Laboratory analytical results of soil samples collected during this investigation are presented in **Table 1 and Table 2** in **Appendix A**. Laboratory analytical results of the groundwater sample collected from GP-3 are presented in **Table 3** in **Appendix A**.

A general summary of the contaminant concentrations detected in the soil samples, and exceedances of MDE Residential and Non-Residential Cleanup Standards:

- TPH-DRO was detected in 3 of the 6 soil samples at low concentrations of 11 milligrams per kilogram (mg/kg, equivalent to parts per million, ppm) at GP-1 at 4 feet bgs; 27 mg/kg at GP-2 at 3 feet bgs; and 21 mg/kg at GP-3 at 6 feet bgs. The detected TPH-DRO concentrations are well below its MDE Residential Cleanup Standard of 230 mg/kg and its Non-Residential Cleanup Standard of 620 mg/kg. TPH-DRO was not detected at or above its laboratory detection limit in any of the other soil samples.
- PAH compounds were detected in 3 of the 6 soil samples (GP-2, GP-3, and GP-4). One sample (from GP-3 at 6 feet bgs) exhibited five PAH concentrations which exceed their respective MDE Residential Cleanup Standards and one PAH (benzo(a)pyrene) which exceeds its MDE Non-Residential Cleanup Standard. PAH concentrations detected at GP-2 and GP-4 were all below MDE Residential and Non-Residential Cleanup Standards.
- RCRA Metals (specifically arsenic, barium, total chromium, and lead) were detected in all 6 of the soil samples collected from the soil borings.
 - Arsenic concentrations were detected in all 6 soil samples at concentrations ranging up to 2.9 mg/kg (in GP-3 at 6 feet bgs). All detected arsenic concentrations exceed its MDE Residential Cleanup Standard of 0.68 mg/kg, but are all below its MDE Non-Residential Cleanup Standard of 3.0 mg/kg. The published Anticipated Typical Concentration (ATC, i.e. average background concentration) for arsenic in central Maryland is 4.9 mg/kg. The detected arsenic concentrations are within the range of natural background concentrations in central Maryland.
 - Total chromium concentrations were detected in all 6 soil samples at concentrations ranging up to 55 mg/kg (in GP-1 at 4 feet bgs and GP-2 at 3 feet bgs). Significantly different screening levels exist for trivalent and hexavalent chromium. Hexavalent chromium (Cr-VI) has higher toxicity, but typically constitutes a very small fraction of total chromium concentrations. All total chromium results exceed the hexavalent chromium (Cr-VI) MDE Residential Cleanup Standard of 0.3 mg/kg, but do not exceed the MDE Residential Cleanup Standard for trivalent chromium (Cr-III) of 12,000 mg/kg. The detected total chromium concentrations are unlikely to contain levels of hexavalent chromium above the Cr-VI MDE Residential Cleanup Standard.
 - Barium and lead concentrations do not exceed MDE Residential or Non-Residential Cleanup Standards.
- TPH-GRO, BTEX, MTBE, naphthalene, and PCBs were not detected at or above laboratory detection limits in any of the soil samples.

During installation of the soil borings, evidence of groundwater (i.e. wet soil) was only observed at GP-3 at approximately 25 feet bgs. No free-phase petroleum or sheens were observed on the surface of the water from GP-3. ECC collected a “grab” groundwater sample from the temporary well installed in soil boring GP-3. TPH-DRO, TPH-GRO, and VOCs were not detected at or above the laboratory detection limits in the groundwater sample collected from GP-3.

2.3.5 Surface Soil Sampling for VCP Application – December 2020

ECC performed surface soil sampling in the proposed undisturbed/conservation area of the Site to obtain additional data to support the application for enrollment into the MDE VCP. Sampling was performed on December 8, 2020, and findings were summarized in a report dated January 8, 2021. As part of the surface sampling, ECC installed 30 hand augered borings (identified as HA-1 through HA-30) down to 1 foot bgs in the undisturbed/conservation area located on the western portion of the Site. The undisturbed/conservation area was divided into three grids (G1 through G3) and ten (10) hand augered borings were installed in each grid. Grab samples from the 10 borings in each grid were composited together for a total of three (3) composite samples (one from each grid). The boring location plan is provided as **Figure 3** in **Appendix A**. Laboratory analytical results of the surface soil composite samples collected during this investigation are presented in **Table 4** in **Appendix A**.

A general summary of the contaminant concentrations detected in the soil samples, and exceedences of MDE Residential and Non-Residential Cleanup Standards is provided below:

- SVOCs compounds, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene, were detected in the composite soil samples. All detected SVOCs concentrations were below their respective MDE Residential and Non-Residential Cleanup Standards.
- RCRA Metals, including arsenic, barium, total chromium, lead, and mercury, were detected in the composite soil samples.
 - Arsenic concentrations were detected in all of the composite soil samples at concentrations ranging from 3.3 mg/kg (in G1) up to 4.4 mg/kg (in G2). All detected arsenic concentrations exceed its MDE Residential Cleanup Standard of 0.68 mg/kg and MDE Non-Residential Cleanup Standard of 3.0 mg/kg. The published Anticipated Typical Concentration (ATC, i.e. average background concentration) for arsenic in central Maryland is 4.9 mg/kg. The detected arsenic concentrations are within the range of natural background concentrations in central Maryland.
 - The detected barium, chromium, lead, and mercury concentrations do not exceed their respective MDE Residential or Non-Residential Cleanup Standards.
 - Hexavalent chromium was detected at a concentration of 0.145 mg/kg in the G2 composite sample. The detected hexavalent chromium concentration in the G2 composite sample does not exceed its MDE Residential Cleanup Standard of 0.3 mg/kg or its MDE Non-Residential Cleanup Standard of 6.3 mg/kg.

Based on the results of the surface soil samples collected as part of this investigation, it was ECC's opinion that the Site had been characterized properly and it should be accepted into the VCP Program.

2.4 Additional Investigation

The Site was accepted for participation in the VCP on February 1, 2021, via a VCP acceptance letter issued by MDE. The VCP acceptance letter did not require additional investigative sampling. No additional investigative work has been completed since completion of the surface soil sampling to support the application for enrollment into the VCP.

2.5 Proposed Development and Future Use

The Site is planned for a single 562-unit multi-family development comprised of two towers connected at ground level by a single lobby and a three level underground garage. The proposed redevelopment at the Site is currently classified as Tier 1B (Restricted Residential) use under VCP Guidance Document, Section 1.6.1. Tier 1B refers to planned use of the property that allows exposure and access by all populations including infant, children, elderly, and infirmed populations with one or more land use controls imposed as a condition of residential use of the property. Tier 1B properties typically include hospitals and health care facilities, education facilities, day care facilities, playground or other recreational areas. A groundwater use restriction prohibiting the use of groundwater from the site for any purpose will be placed on the Site prior to occupancy.

The existing topography of the Site slopes toward the southeast, with surface elevations ranging from approximately 316 feet on the northwestern portion of the site to approximately 240 feet on the eastern portion of the Site. The proposed Site structure consists of two residential towers, a connecting structure, and entrance plaza, with residential entrances to the structure at future grades of approximately 270 feet. The buildings partially overlie an underground three-story parking garage with entrances at the top level (G-1) on the southern portion of the Site (elevation approximately 260 feet) and at the bottom level (G-3) in the northeastern portion of the Site (elevation approximately 240 feet). The garage footprint varies on each level and does not correspond to the surface footprint of the buildings. Final surface grades surrounding portions of the buildings are over portions of the underlying garage.

The proposed three-level underground garage will be cut into the slope on the eastern portion of the Site. The planned slab elevation of the lowest garage level (G-3) is approximately 239 feet, and the excavation for the garage is expected to extend to an elevation of approximately 238 feet (7 to 50 feet below existing ground surface). The planned extent of the lowest garage level extends east nearly to the property boundary but does not extend under the entire structure (as shown on **Figure 4** in **Appendix A**). Beyond the extent of the garage structure, excavation for the two planned residential towers northwest and southeast of the garage footprint will extend to elevations of 270 feet (excavation depths ranging from approximately 4 to 22 feet).

The area surrounding soil boring GP-3 (installed during ECC's January 2020 Phase II ESA), where PAH contaminants exceeding MDE Residential Cleanup Standards were detected at an elevation of approximately 245 feet, is considered the area of concern on the Site. The GP-3 area of concern lies

within the footprint of the planned garage, and excavation of the garage is expected to remove all of the impacted soil. The bottom of the excavation will be approximately 7 feet below the bottom of the documented impacted soil. A Site Plan showing the location of GP-3 is provided as **Figure 2** in **Attachment A**.

2.6 Summary of Proposed Response Actions

This RAP has been prepared to address risks to human health and the environment resulting from PAHs contamination in the sub-surface soil at the Site, particularly in the area near soil boring location GP-3 installed on the eastern portion of the site during ECC's January 2020 Phase II ESA. The entire property will be subject to this proposed RAP; however, no excavation work is planned for the northwestern portion of the Site (forest conservation easement area). The eastern portion of the Site will be excavated for redevelopment with two residential multi-family condominiums with three levels of underground parking. A Site Plan showing the location of GP-3 is provided as **Figure 2** in **Attachment A**. A Site Plan showing the forest conservation easement and the area of proposed redevelopment is provided as **Figure 4** in **Attachment A**.

The corrective actions described in this RAP are designed to ensure that impacted soil and groundwater encountered during redevelopment are properly documented, treated, and disposed of in accordance with Maryland Department of the Environment (MDE) and U.S. Environmental Protection Agency (EPA) regulations, that all potential future risks to human health are mitigated, and that the planned development is safe for future residential uses. A summary of proposed response actions for the 5159 Pooks Hill Road redevelopment site includes:

- Preparation of a site-specific Environmental Health and Safety Plan (EHASP) for excavation and dewatering activities.
- Preparation of an Impacted Material Management Plan (IMMP) for excavation activities.
- Implementation of the EHASP and the IMMP.
- Mass excavation and removal of residual-phase (soil) contamination from the Site. Impacted soil will be characterized and transported off-site for treatment and disposal at an appropriate facility.
- Removal and proper disposal of any unknown chemical storage vessels or orphaned underground storage tanks which may be encountered during Site excavation.
- Collection of post-excavation soil samples from the bottom and sidewalls of the proposed excavation.
- Discharge of construction-derived water in compliance with a NPDES General Permit for Construction Activity.
- Characterization, documentation, and approval of all fill material (structural fill, green roof material, or topsoil) imported onto the Site.
- Recordation of an institutional control to prohibit the use of groundwater on the Site.

3.0 Exposure Assessment

3.1 Current and Future Site Use

The Site is currently improved with a multi-tiered asphalt-paved parking lot with wooded land on the northwestern portion of the Site. The site is currently zoned commercial/residential.

The Site is planned for a single 562-unit multi-family development comprised of two towers connected at ground level by a single lobby and a three level underground garage. The Site is currently classified as Tier 1B (Restricted Residential) use under VCP Guidance Document, Section 1.6.1.

3.2 Media of Concern

3.2.1 Soil

Soil is considered a media of concern for the Site during construction activities. A previous Phase II ESA performed on the Site in January 2020 identified arsenic and PAHs in sub-surface soil at concentrations above the applicable MDE Residential Cleanup Standards for soil. Arsenic concentrations detected in all 6 of the soil samples collected during the investigation exceed its MDE Residential Cleanup Standard, but they are all within the range of natural background concentrations (Anticipated Typical Concentrations, ATCs) in central Maryland and are not considered a concern. The concentrations of 5 PAH compounds detected in the fill layer at GP-3 (located on the eastern portion of the Site) at 6 feet bgs (elevation of approximately 245 feet) exceed their respective MDE Residential Cleanup Standards and one PAH (benzo(a)pyrene) exceeds its MDE Non-Residential Cleanup Standard.

The proposed redevelopment will include excavation to an elevation of approximately 238 feet in the area of GP-3 to accommodate three levels of underground parking. Based on past sampling data and fill depth observations, it is anticipated that PAH-impacted soil will be encountered in the first 10 feet of excavation on the eastern portion of the Site (areas with identified fill material).

A site-specific Environmental Health and Safety Plan (EHASP) and Impacted Material Management Plan (IMMP) will be prepared to address the chemical contaminant risk potential for earthwork, excavation dewatering, and soil disposal during construction at the Site. The EHASP and IMMP will be available for review by MDE prior to implementation of the RAP.

As a result of remediation and construction activities, PAH-impacted soil exceeding MDE Residential Cleanup Standards on the Site will be excavated and removed from the Site and will not pose an exposure risk to future occupants and visitors. Soil is not considered a media of concern after the proposed structure is built.

3.2.2 Groundwater

Groundwater was encountered at a depth of approximately 25 feet below grade (elevation of approximately 226 feet) in GP-3 (eastern portion of the Site) during ECC's January 2020 Phase II

ESA, and between 6 and 34.5 feet bgs (with a few readings above elevation 239 feet) during GSI's February 2015 geotechnical investigation. Laboratory analysis of the groundwater sample collected from GP-3 during ECC's January 2020 Phase II ESA did not detect groundwater contaminant concentrations at or above laboratory method detection limits. Based on the proposed depth of excavation (to an elevation of approximately 238 feet), dewatering is expected during construction. Based on the absence of contaminants, groundwater is not considered a media of concern at the Site.

The Site and surrounding properties are supplied by municipal water. Even though groundwater is not identified as a media of concern at the Site, this RAP includes an institutional control prohibiting use of groundwater beneath the Site for any purpose except for environmental testing.

3.2.3 Soil Gas

No soil gas sampling has been conducted on the Site because the proposed redevelopment will include excavation of identified PAH-impacted fill material in the area of GP-3 (at an elevation of approximately 245 feet) to an elevation of approximately 238 feet. No contaminants were detected in native soils at the Site. The impacted fill material exceeding MDE Residential and Non-Residential Cleanup Standards will be removed during excavation, and it is ECC's opinion that the native soils that will remain in place at the bottom of the excavation do not present a vapor intrusion risk under the current proposed residential use scenario.

However, soil gas is considered a potential media of concern until the laboratory results of the post excavation soil samples are evaluated. If PAH compounds are detected in the post-excavation soil samples at concentrations which exceed MDE Residential Cleanup Standards, a risk assessment will be conducted to identify potential exposure pathways. Based on prior analytical data collected from the Site, it is not expected that contaminant concentrations that would warrant additional soil excavation and/or engineering controls (such as a vapor barrier) will be encountered. If warranted, confirmatory indoor air sampling will be performed to ensure soil gas will not pose a future exposure risk to future occupants and visitors.

The future Site structure's underground parking garage will be equipped with a ventilation system to dilute and exhaust vehicle emissions. The garage ventilation system(s) will be based on Maryland mechanical code (IMC 2018) and will be adequate to protect garage users from carbon monoxide, VOCs, and other dangerous automobile emissions. Mechanical code also mandates HVAC design which prevents migration of air from the garage into occupied spaces. The presence of the underground garage significantly mitigates the risk of vapor intrusion from the subsurface, in part by presenting a large volume of air between the soil and occupied building. More significantly, the code-mandated air exchange within the garage effectively mitigates the risk of any vapor intrusion from soil or groundwater impacting the garage environment itself, and effectively negates the potential for soil and groundwater contaminants to impact the occupied portions of the structure. The future garage will be located in the area of impacted soil exceeding MDE Residential Cleanup Standards on the eastern portion of the Site, and all impacted soil in this area will be removed as part of this RAP. Portions of the future Site buildings that do not overlie the garage are not located in areas where contaminant concentrations exceed MDE Residential Cleanup Standards; nevertheless, subgrade soil will still be sampled and analyzed across the entire building footprint to document remaining soil concentrations.

3.3 Potential Exposure Pathways and Receptors of Concern

3.3.1 Human Receptors and Exposure Pathways

The Site is currently improved with a multi-tiered asphalt-paved parking lot with wooded land on the northwestern portion of the Site and is currently zoned commercial/residential. Current potential receptors and exposure pathways of the identified contaminants at the Site include the following:

- *On-Site Construction Worker*: Incidental ingestion of soil, dermal contact with soil, inhalation of soil particles and soil gas.
- *On-Site Resident (Adult, Youth, and Child)*: Incidental ingestion of soil, dermal contact with soil, inhalation of soil particles and soil gas.
- *On-Site Commercial Worker (Adult)*: Incidental ingestion of soil, dermal contact with soil, inhalation of soil particles and soil gas.
- *On-Site Visitor (Adult, Youth, and Child)*: Incidental ingestion of soil, dermal contact with soil, inhalation of soil particles and soil gas.

Note that some of these potential receptors and exposure pathways are hypothetical. The Site is currently vacant, so the potential receptors and exposure pathways are based on allowed uses of the property under current zoning.

The Site is planned for redevelopment with two residential multi-family condominium buildings with three levels of underground parking (Tier 1B, Restricted Residential Use). Future potential receptors and exposure pathways of the identified contaminants at the Site include the following:

- *On-Site Construction Worker*: Incidental ingestion of soil, dermal contact with soil, inhalation of soil particles and soil gas.
- *On-Site Resident (Adult, Youth, and Child)*: Incidental ingestion of soil, dermal contact with soil, inhalation of soil particles and soil gas.
- *On-Site Visitor (Adult, Youth, and Child)*: Incidental ingestion of soil, dermal contact with soil, inhalation of soil particles and soil gas.

Under the proposed future use (Tier 1B, Restricted Residential Use) potential human receptors during the construction phase are limited to on-site construction workers. On-site construction workers may come in contact with impacted soil during earthwork activities associated with construction of the proposed structure. Potential exposure pathways include incidental ingestion, dermal contact, and inhalation of particulates entrained as dust from impacted site soils. A site specific EHASP and IMMP will be prepared to mitigate the potential exposure pathways to on-site construction workers. The EHASP and IMMP will be available for review by MDE prior to implementation of the RAP.

There will be no potential human receptors of the identified contaminants at the Site after construction of the residential structure because impacted soil (particularly the material in the vicinity of GP-3 which exceeds MDE Residential Soil Cleanup Standards) will be removed during development and all applicable exposure pathways will be incomplete.

3.3.2 Ecological Receptors and Exposure Pathways

There are no ecological receptors such as streams, ponds, wetlands, or floodplains located on the Site. The closest mapped surface water body is an intermittent stream located on the northeast-adjacent property, approximately 250 feet northeast of the Site. This intermittent stream appears to have been channelized and rerouted through culverts under the existing Marriott Hotel property on the northeast-adjacent property.

Surface sampling was performed in the forest conservation area (northwestern portion) of the Site. Contaminants identified in samples collected from the forest conservation area were below MDE Residential Cleanup Standards. Because of the anticipated remediation and lack of groundwater contaminants identified on the eastern portion of the site, no impacts are anticipated on the forest conservation area.

4.0 Cleanup Criteria

Previous investigations of the Site identified low-level arsenic and PAHs in sub-surface soil (at GP-3) at the Site at concentrations above the applicable MDE Residential Cleanup Standards; however, the detected arsenic concentrations are all within the range of natural background concentrations (MDE ATCs) in central Maryland and are not considered a concern. The proposed redevelopment will include excavation to an elevation of approximately elevation 238 feet in the area of GP-3 to accommodate three levels of sub-grade parking. Based on past sampling data and fill depth observations, it is anticipated that PAH-impacted soil will be encountered in the first 10 feet of excavation on the eastern portion of the Site (areas with identified fill material).

Groundwater has historically been encountered between 6 and 34.5 feet below grade (with a few readings above elevation 239 feet) at the Site. Based on the proposed depth of excavation for the garage (to approximately 238 feet), dewatering is expected during construction. If construction dewatering is necessary, the discharge must be in compliance with a NPDES General Permit for Construction Activity. Laboratory analysis of the groundwater sample collected from the Site did not detect groundwater contaminant concentrations at or above laboratory method detection limits. Based on the absence of detectable contaminant concentrations in the groundwater, construction-derived water is not expected to exceed applicable discharge standards.

4.1 Residual-Phase Cleanup Goals

The portion of the Site underlain by the garage will be excavated to an elevation of approximately 238 feet and the majority of the documented residual-phase contamination (especially around GP-3) will be removed during excavation. PAH-impacted soil appears to be located primarily within identified fill material at the Site. Confirmatory soil samples will be acquired from the base and sidewalls of the excavation and will be submitted for PAHs laboratory analysis via EPA-approved methods. Based on field screening, visual, or olfactory observations, additional confirmatory samples may be collected for VOCs, total petroleum hydrocarbons (TPH), and benzene, toluene, ethylbenzene, xylene (BTEX), methyl-tert-butyl ether (MTBE), and naphthalene laboratory analysis via EPA-approved methods.

If contaminants are detected in the post-excavation soil samples at concentrations which exceed MDE Residential Cleanup Standards, a risk assessment will be conducted to identify potential exposure pathways. Based on prior analytical data collected from the Site, it is not expected that contaminant concentrations which would warrant additional soil excavation and/or engineering controls (such as a vapor barrier) will be encountered.

4.2 Dissolved-Phase Cleanup Goals

Laboratory analysis of the groundwater sample collected from the Site did not detect groundwater contaminant concentrations at or above laboratory method detection limits. During construction activities, groundwater may be removed for construction purposes. Construction-derived water will be discharged in compliance with discharge standards as outlined in the NPDES General Permit for Construction Activity. Pre-treatment of construction-derived water to achieve the NPDES General

Permit for Construction Activity discharge standards is not anticipated but will be conducted if necessary. Prior to discharge, periodically during discharge (monthly), and when construction dewatering activities are complete, water samples will be collected and analyzed via EPA-approved methods to confirm compliance with discharge standards as outlined in the NPDES General Permit for Construction Activity.

If post-excavation, dissolved-phase VOCs are detected at concentrations above MDE Residential Cleanup Standards, a risk assessment will be conducted. Based on prior analytical data collected from the Site, it is not expected that contaminant concentrations that would warrant the need for engineering controls (such as a vapor barrier) will be encountered. This RAP includes an institutional control prohibiting use of groundwater beneath the Site for any purpose.

4.3 Vapor-Phase Cleanup Goals

Collection of post-excavation soil gas samples is not planned, however, if post-excavation, residual- and dissolved-phase PAHs or VOCs are detected at concentrations above MDE Residential Cleanup Standards, a risk assessment will be conducted. Based on prior analytical data collected from the Site, it is not expected that contaminant concentrations that would warrant a vapor intrusion risk will be encountered. If warranted, confirmatory indoor air sampling will be performed to ensure soil gas will not pose a future exposure risk to future occupants and visitors.

The future Site structure's underground parking garage will be equipped with a code-compliant ventilation and exhaust system designed to protect users of the Site from automobile emissions. The ventilated garage adequately mitigates the risk of vapor intrusion from the subsurface into the garage and occupied spaces of the structure.

5.0 Remedial Approaches and Institutional Controls

Future redevelopment of the Site is classified as Tier 1B (Restricted Residential) use under VCP Guidance Document 1.6.1.

Remediation by mass excavation and removal of residual-phase (soil) contamination from the Site during the construction phase is the selected technology to address soil contamination at the Site. The rationale for selecting mass excavation was based on the proposed redevelopment which includes excavation in the area of GP-3 to an elevation of approximately 238 feet to accommodate three levels of sub-grade parking. PAH contamination exceeding MDE Residential Cleanup Standards was detected at an elevation of approximately 245 feet at GP-3, so the impacted material will be removed during excavation for the garage.

Groundwater is not considered a media of concern at the Site, as no contaminants have been detected in groundwater collected from the Site. Exposure to groundwater is not a complete pathway because the Site and surrounding properties are served by municipal water. Future exposure could potentially occur if a groundwater supply well was installed and impacted groundwater was present beneath the Site. Even though it is unlikely that a groundwater supply well would ever be installed on the Site and laboratory analysis of a groundwater sample collected from the site did not detect groundwater contaminant concentrations at or above laboratory method detection limits, an institutional control to prohibit the use of groundwater for any purpose is proposed for the Site.

5.1 Site-Specific Environmental Health and Safety Plan

A site-specific Environmental Health and Safety Plan (EHASP) will be prepared in accordance with MDE and U.S. Occupational Safety and Health Administration (OSHA) regulations for all excavation and dewatering activities. The EHASP will incorporate procedures for VOC screening for protection of construction workers and specify criteria for donning applicable safety gear. The site-specific EHAP will be available for review by MDE prior to implementation of the RAP.

5.2 Site-Specific Impacted Material Management Plan

A site-specific Impacted Material Management Plan (IMMP) will be prepared for use during site construction activities. The IMMP will outline procedures for identification, segregation, handling, and appropriate off-site disposal of impacted materials (soil and water). The IMMP will provide guidance for management of unknown contaminants and orphaned underground tanks or vessels. The site-specific IMMP will be available for review by MDE prior to implementation of the RAP.

5.3 Soil Removal and Disposal

PAH contamination exceeding MDE Residential Cleanup Standards was detected at an elevation of approximately 245 feet at GP-3. The proposed redevelopment will include excavation to an elevation of approximately 238 feet in the area of GP-3 to accommodate three levels of sub-grade parking. Based on past sampling data, it is anticipated that PAH-impacted soil will be encountered in the first

10 feet of excavation on the eastern portions of the Site. The majority of the residual-phase contamination at the Site is expected to be removed during excavation activities.

Site excavation activities will be performed in accordance with the IMMP and monitored by ECC personnel using photoionization detectors (PIDs) with 10.6 eV lamps to determine if excavated soils are impacted by volatile organic compounds (VOCs). Soils exhibiting vapor-phase VOC concentrations exceeding 10 parts per million volume (ppmv), or olfactory or visible evidence of contamination will be segregated and disposed of in accordance with applicable Maryland and federal regulations at an appropriate facility (such as Soil Safe or Clean Earth). Pre-approval of planned disposal sites will be obtained prior to commencing excavation activities. Soil samples will be collected and analyzed during excavation activities to document contaminant concentrations. Soils deemed impacted by hazardous substances will be properly manifested and disposed of at a permitted, off-site treatment facility.

The MDE will be immediately notified if any unknown USTs or other chemical storage vessels are encountered during excavation activities. UST removal and closure activities will be performed in accordance with applicable MDE regulations.

The RAP Completion Report will include a description of the activities that included the excavation of impacted soil, disposal location, and volume/weight totals.

5.4 Confirmatory Soil Sampling

Post-excavation soil samples will be acquired from the base and sidewalls of the completed Site excavation and will be submitted for PAHs laboratory analysis via EPA-approved methods to document the residual-phase contaminant concentrations remaining at the Site. Based on field screening, visual, or olfactory observations, additional confirmatory samples may be collected for total petroleum hydrocarbon (TPH) and benzene, toluene, ethylbenzene, xylene (BTEX), methyl-tert-butyl ether (MTBE), and naphthalene laboratory analysis via EPA-approved methods. ECC does not anticipate collecting all the soil samples at once, as not all areas of the Site are expected to reach their final excavation depth at the same time.

If contaminants are detected in the post-excavation soil samples at concentrations which exceed MDE Residential Cleanup Standards, a risk assessment will be conducted to identify potential exposure pathways. Based on prior analytical data collected from the Site, it is not expected that contaminant concentrations that would warrant additional soil excavation and/or engineering controls (such as a vapor barrier) will be encountered.

5.4.1 Sample Handling Procedures

Wearing a clean pair of gloves, the sample will be carefully removed from the ground using a decontaminated hand auger or other sampling device. The top few inches of the sample will be removed to prevent cross contamination. The sample will be placed into the appropriate number of 4 oz. glass jars. The sample will be compacted in each 4 oz. jar as tightly as possible to minimize headspace, and the lid will be tightly sealed on the sample container.

5.4.2 Sample Identification and Custody Procedures

Each sample container will be identified with a separate identification label. Any errors will be crossed out with a single line, dated, and initialed. Each securely affixed label will include the project identification, sample identification, date of collection, and time of collection.

Samples will be placed on ice inside insulated coolers, and security labels will be affixed over opposite ends of the lid. Samples will be accompanied by a Chain-of-Custody (COC) Record. The Chain-of-Custody Record will accompany the sample during shipment to the laboratory, and through all the analyses at the laboratory. Information recorded on the Chain-of-Custody will include the following:

- Project number and name
- Sample collector's name
- Sample ID
- Date and time collected
- Type of sample/matrix (i.e., soil, groundwater, etc.)
- Number of containers
- Sample type (i.e., grab or composite)
- Method of preservation (i.e., ice, acidification, etc.)
- Analyses to be conducted
- Turnaround time requested
- Spaces for signatures, dates, and time of sample custody transfer

5.5 Importation of Clean Fill

A large amount of structural fill is not anticipated to be imported onto the Site during construction; however, clean fill material is anticipated to be imported to the Site for the green roof, planters, and landscape areas. All imported fill material (structural fill, green roof material, or topsoil) will be characterized and documented as "Clean Fill" according to the *MDE VCP – Clean Imported Fill Material* fact sheet, or a letter of certification from the company providing the fill, on the providing company's letterhead, will be provided stating the source of the material and that the material was screen tested clean in accordance with MDE requirements prior to importation onto the Site. The source of all imported fill material will be documented, and all fill materials will be approved by the VCP prior to transport to the Site. Clean fill material stockpiles will be maintained and separately secured from the excavated on-site soils.

If gravel or stone, including stone dust, is used, the General Contractor will provide certification from the quarry, on the generating quarry's company letterhead, that the material is not recycled, is derived from a virgin source mined at their facility, and that no controlled hazardous substances or oil were used in the extraction, production, or loading processes of the material.

The RAP Completion Report will include a description of the activities that included the use of clean fill material, volume/weight totals, and clean fill material documentation.

5.6 Construction Derived Water Management

Dewatering of the excavation may be necessary for contractors to achieve the target excavation depth to an elevation of approximately 238 feet and adequately prepare footing excavations prior to concrete pours. Construction-derived water will be discharged in compliance with discharge standards as outlined in the NPDES General Permit for Construction Activity.

Pre-treatment of construction-derived water to achieve the NPDES General Permit for Construction Activity discharge standards is not anticipated but will be conducted if necessary. If necessary to achieve discharge standards, a temporary water treatment system will be constructed and operated in order to remove dissolved-phase contaminants from water generated during dewatering operations. Prior to discharge, periodically during discharge (monthly), and when construction dewatering activities are complete, water samples will be acquired and will be analyzed via EPA-approved methods to confirm compliance with discharge standards as outlined in the NPDES General Permit for Construction Activity.

A typical temporary water treatment system for petroleum contaminant removal consists of a tank to allow for sediment settling and free-phase separation; bag filtration to remove suspended solids; and activated carbon filtration for removal of dissolved-phase VOC contaminants. A schematic drawing of a typical temporary treatment system is shown on **Figure 5**.

Depending on the volume of water generated, additional treatment units may be required. If additional treatment units are required, the effluents from all treatment units will be manifolded to a single discharge point.

5.7 Groundwater Use Restriction

Exposure to groundwater is not a complete pathway because the Site and surrounding properties are served by municipal water. Future exposure could potentially occur if a groundwater supply well was installed and impacted groundwater was present beneath the Site. Even though it is unlikely that a groundwater supply well would ever be installed on the Site and laboratory analysis of a groundwater sample collected from the Site did not detect groundwater contaminant concentrations at or above laboratory method detection limits, an institutional control to prohibit the use of groundwater for any purpose is proposed for the Site.

6.0 Evaluation Criteria for the Remedial Approaches

6.1 Criteria for Certificate of Completion

The Certificate of Completion should be issued when all of the following criteria have been completed and documented to the satisfaction of the MDE:

- Implementation of the EHASP and the IMMP for excavation and dewatering activities.
- Submission of monthly progress reports to the VCP Project Manager detailing corrective actions and RAP implementation.
- Completion of mass excavation and removal of residual-phase (soil) contamination from the area around GP-3 on the Site.
- Collection and analysis of post-excavation soil samples from the bottom and sidewalls of the excavation.
- Documentation of soil contaminant levels below MDE Residential Cleanup Standards in post-excavation samples or completion of other MDE-approved mitigation.
- All fill material (structural fill, green roof material, or topsoil) has been properly characterized, documented, and imported to the Site.
- Recordation of an institutional control to prohibit the use of groundwater at the Site.
- Submission of a RAP Completion Report within 45 working days after completion of all proposed response actions. The RAP Completion Report will include a description of the corrective actions taken, post-excavation soil quality data, waste manifests, disposal/waste treatment certificates, clean fill material documentation, and volume/weight totals of imported clean fill.

6.2 Criteria for Contingency Items

If, during implementation of this RAP, there is a change to the remediation schedule, a citation from regulatory entities related to health and safety practices is identified, or there is a discovery of any buried containers, drums, USTs, piping, hydraulic lifts, oil/water separators, or underground insulated power lines or other potential asbestos containing materials, the MDE will be notified within 24-hours of discovery. The MDE VCP will be provided with all documentation, including but not limited to, Bills of Lading, Material Shipping Records, Non-Hazardous and/or Hazardous Waste Manifests, and analytical reports generated as a result of the discovery of contingency items.

Discovered USTs will be handled and removed in accordance with the MDE Underground Storage Tank regulations. Other buried structures must be evaluated on a case-by-case basis for determination of proper disposal procedures. MDE Oil Control Program will be contacted for any UST or other oil storage related issues at 410-537-3442.

7.0 Reporting

7.1 Monthly Status Reports

RAP implementation status reports summarizing activities completed during the prior month and any activities planned for the current month will be submitted to the VCP Project Manager on a monthly basis. In the event that no RAP activities were completed or are planned for a given month, the progress report will state as such.

7.2 RAP Completion Report

A RAP Completion Report will be prepared and submitted to the MDE within 45 working days after completion of all proposed response actions. The RAP Completion Report will include a description of the corrective actions taken, post-excavation soil quality data, waste manifests, disposal/waste treatment certificates, clean fill material documentation, and volume/weight totals of imported clean fill. Based upon the findings, and in accordance with MDE regulations, the report will include a request for a *Certificate of Completion* (COC).

8.0 Permits, Notifications, and Contingencies

The participant will comply with all federal, State and local laws and regulations by obtaining all necessary approvals and permits to conduct all activities and implement this RAP. The VCP will be verbally notified within 48 hours (72 hours in writing) of any changes (planned or emergency) to the RAP implementation schedule, any previously undiscovered contamination, any previously undiscovered storage tanks and other oil-related issues, and citations from regulatory entities related to health and safety practices. All notifications shall be made to the VCP project manager at 410-537-3493. If the VCP project manager is unavailable, the notifications must be made to another VCP staff member.

The VCP must be provided with all documentation and analytical reports generated as a result of any previously unidentified contamination. The participant understands that previously undiscovered contamination and/or previously undiscovered storage tanks or other oil-related issues may require an amendment to this RAP.

9.0 Implementation Schedule

Initial site preparation activities will commence in March 2021 and completion of construction is projected in August 2023. A tentative construction schedule is provided as **Appendix C**.

The following provides the anticipated VCP schedule for the start of each RAP activity:

- Submission of the RAP: February 18, 2021
- Public notice RAP sign posted at the Site: February 19, 2021
- Public notices published in The Daily Record: February 18, 2021, and February 25, 2021
- Public comment meeting via Google Meet: March 2, 2021
- Submittal of performance bond, letter of credit, or other surety: Within 10 days after RAP approval
- Implementation of the EHASP, IMMP, and RAP: March 2021
- Submission of monthly progress reports to the MDE detailing corrective actions and RAP implementation: April 15, 2021 (estimated), and by the 15th day of each month thereafter during RAP related work.
- Mass excavation and removal of residual-phase (soil) contamination from the Site: May 2021 to September 2021
- Collection of post-excavation soil samples from the bottom and sidewalls of the excavation: June to September 2021 (estimated)
- Importation of clean fill material: March 2021 to August 2023 (estimated)
- Submission of a RAP Completion Report and request issuance of Certificate of Completion (COC): September 2023 (estimated)

During implementation of the RAP, the MDE will be notified in writing of all requested changes to the schedule. ECC understands the MDE will issue the COC upon completion all proposed response actions.

10.0 Administrative Requirements

10.1 Written Agreement

If the response action plan is approved by the Maryland Department of the Environment, the participant agrees, subject to the withdrawal provisions of Section 7-512 of the Environment Article, to comply with the provisions of the response action plan. Participant understands that if he fails to implement and complete the requirements of the approved plan and schedule, the Maryland Department of the Environment may reach an agreement with the participant to revise the schedule of completion in the approved response action plan or, if an agreement cannot be reached, the Department may withdraw approval of the plan.

Participant Signature: *jeremy small*

Printed Name: Jeremy Small

Date: February 18, 2021

10.2 Zoning Certification

The participant hereby certifies that the property meets all applicable county and municipal zoning requirements. The participant acknowledges that there are significant penalties for falsifying any information required by MDE under Title 7, Subtitle 5 of the Environment Article, Annotated Code of Maryland, and that this certification is required to be included in a response action plan for the Voluntary Cleanup Program pursuant to Title 7, Subtitle 5 of the Environment Article, Annotated Code of Maryland.

Participant Signature: *jeremy small*

Printed Name: Jeremy Small

Date: February 18, 2021

10.3 Performance Bond

The Participant agrees to post a performance bond or other security, such as a surety bond, letter of credit, escrow account, environmental insurance or other mechanism approved by the MDE within ten days following approval of this RAP. The Participant is exploring environmental insurance policies and may opt to have an insurance policy in place. Alternatively, the Participant may post a performance bond in an amount sufficient to secure and stabilize the Site should the RAP activities not be completed.

If the RAP activities are not completed, actions necessary to secure and stabilize the Site will likely include the following:

- Post appropriate warnings and notices about conditions on the Site and restrict site access by installing a six-foot fence around the perimeter of the Site.
- Place a clean fill soil cap, using soil that satisfies MDE Clean Fill criteria, over the area(s) of contamination.
- Where applicable, abandon monitoring wells, dismantle and dispose of water discharge treatment systems, backfill open excavations to prevent and abate any safety concerns; and maintain all of the above-referenced measures in effective working order.

10.4 Health and Safety Plan

All applicable Occupational Safety and Health Administration (OSHA) regulations will be followed during the implementation of this RAP. A site-specific Health and Safety Plan (HASP) for all personnel will be developed, implemented and maintained on-site. All on-site personnel must be made aware of and sign the HASP. The development of the HASP is the responsibility of the participant. On-site records of HASP signatures must be available to the Department upon request.

11.0 Limitations

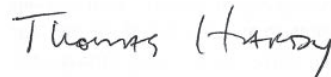
In preparing this Response Action Plan, our professional opinions and judgments have been made based upon the information gathered, our experience in the area with similar projects, and in accordance with generally accepted professional environmental practice under similar circumstances. The information presented is based upon the presumption that existing site soil and groundwater conditions do not deviate appreciably from those observed and described. Site soil and groundwater conditions are representative of conditions at the specified location and on the specific dates on which they were observed. The passage of time may result in changing conditions at the site.

ECC's recommendations are based on the nature of the investigation and current site usage and history. Should additional information become available with regard to site history or future planned use, ECC reserves the right to alter its recommendations regarding additional site activities and/or remedial activities.

Sincerely,



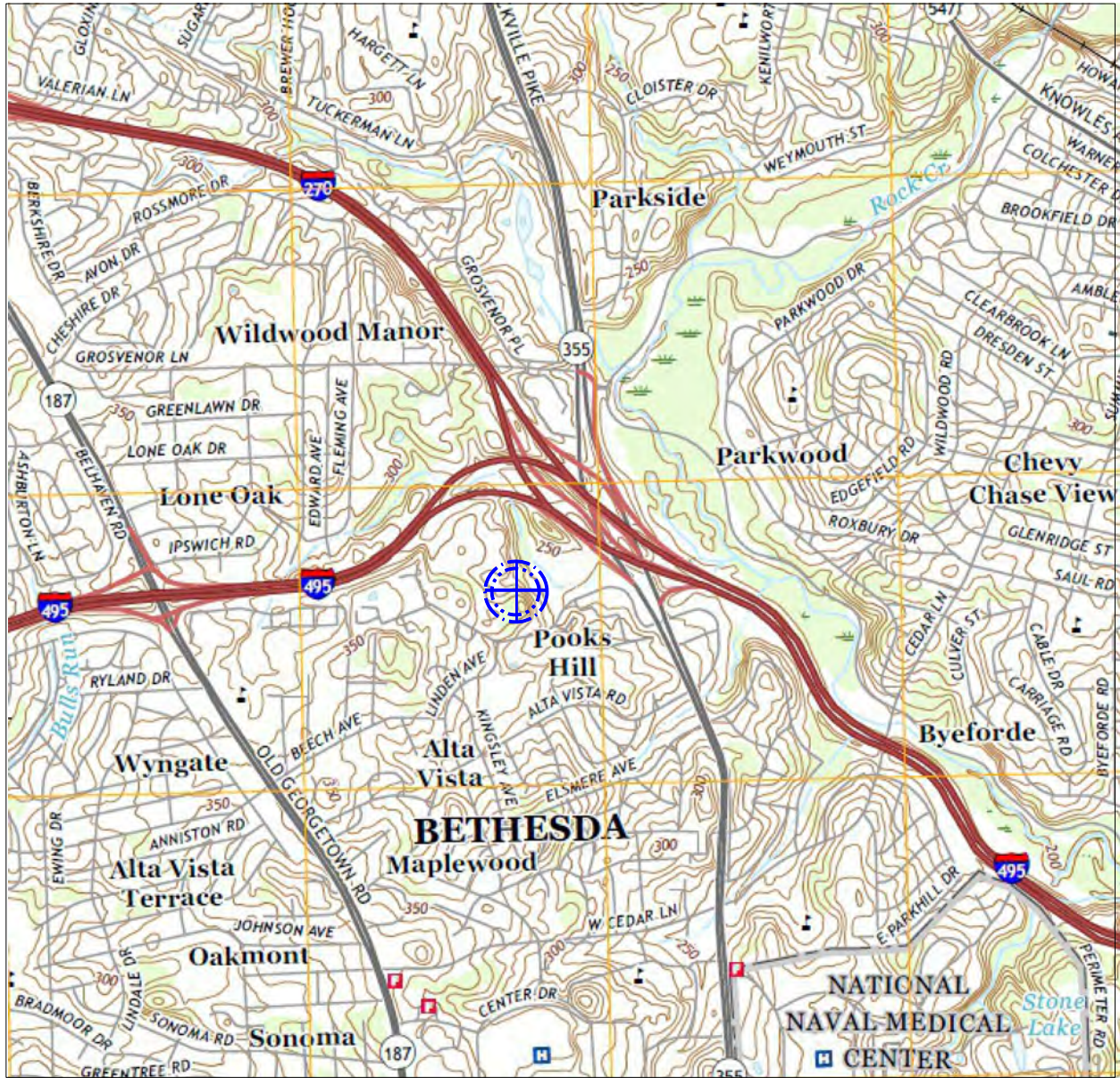
Alessandra Knowles
Project Manager
Alessandra.Knowles@eccfirst.com



Thomas Hardy
President
Tom.Hardy@eccfirst.com

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Appendix A
Figures and Tables



U.S. GEOLOGICAL SURVEY 7.5-MINUTE TOPOGRAPHIC QUADRANGLE MAPPING
 KENSINGTON, MD (2016)
 CONTOUR INTERVAL = 10 FEET



LEGEND

 Subject Property Location

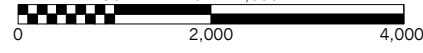
TITLE:
SITE LOCATION MAP

PROJECT:
POOKS HILL
POOKS HILL ROAD
BETHESDA, MONTGOMERY COUNTY, MARYLAND 20814

DATE:
01/02/2020

DRAWN BY:
VLS

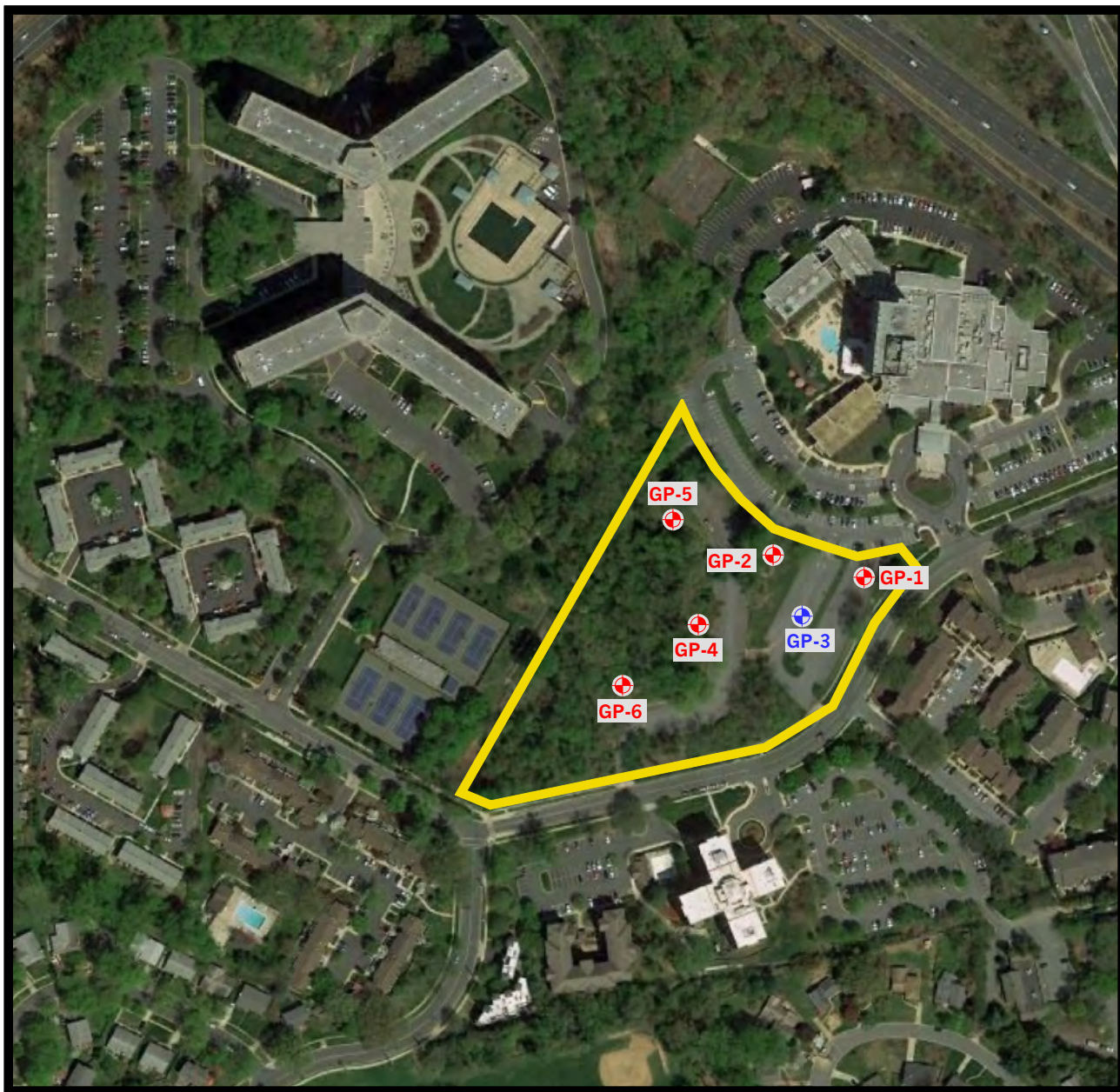
APPROVED BY:
WEB

SCALE: 1 INCH = 2,000 FEET


PROJECT NUMBER:
19-13765

REGULATORY CASE NUMBER:
N/A


Environmental
Consultants and
Contractors, Inc.



2019 AERIAL IMAGERY PROVIDED BY GOOGLE EARTH

LEGEND	
	Subject Property Boundary
	Soil Boring Location
	Soil Boring Location / Groundwater Sample

TITLE:
SITE PLAN

PROJECT:
POOKS HILL
POOKS HILL ROAD
BETHESDA, MONTGOMERY COUNTY, MARYLAND 20814

DATE:
2/11/2020

DRAWN BY:
VLS/JLG

REVIEWED BY:
WEB

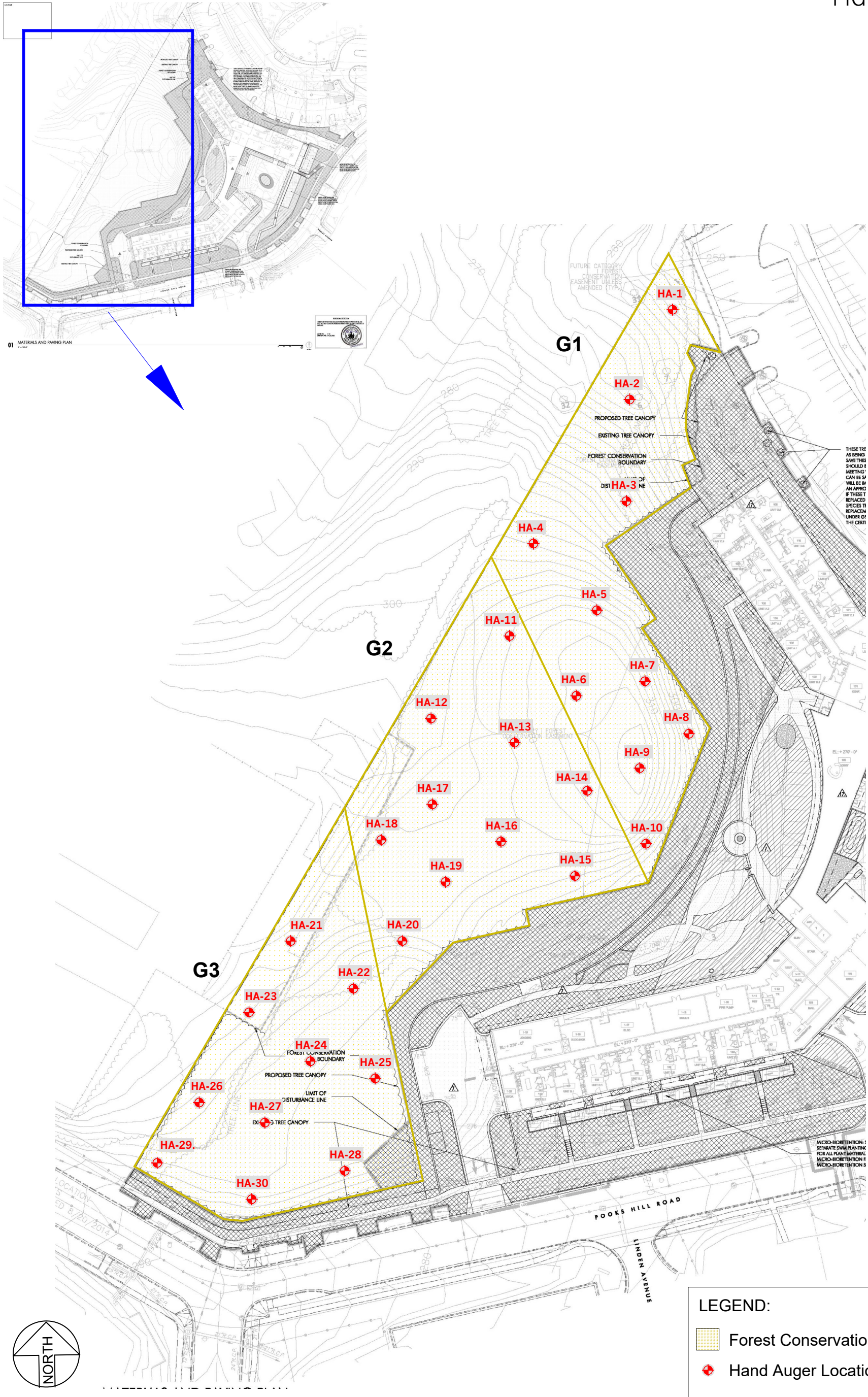
NO SCALE

PROJECT NUMBER:
20-13765

REGULATORY CASE NUMBER:
N/A



FIGURE 3



LEGEND:



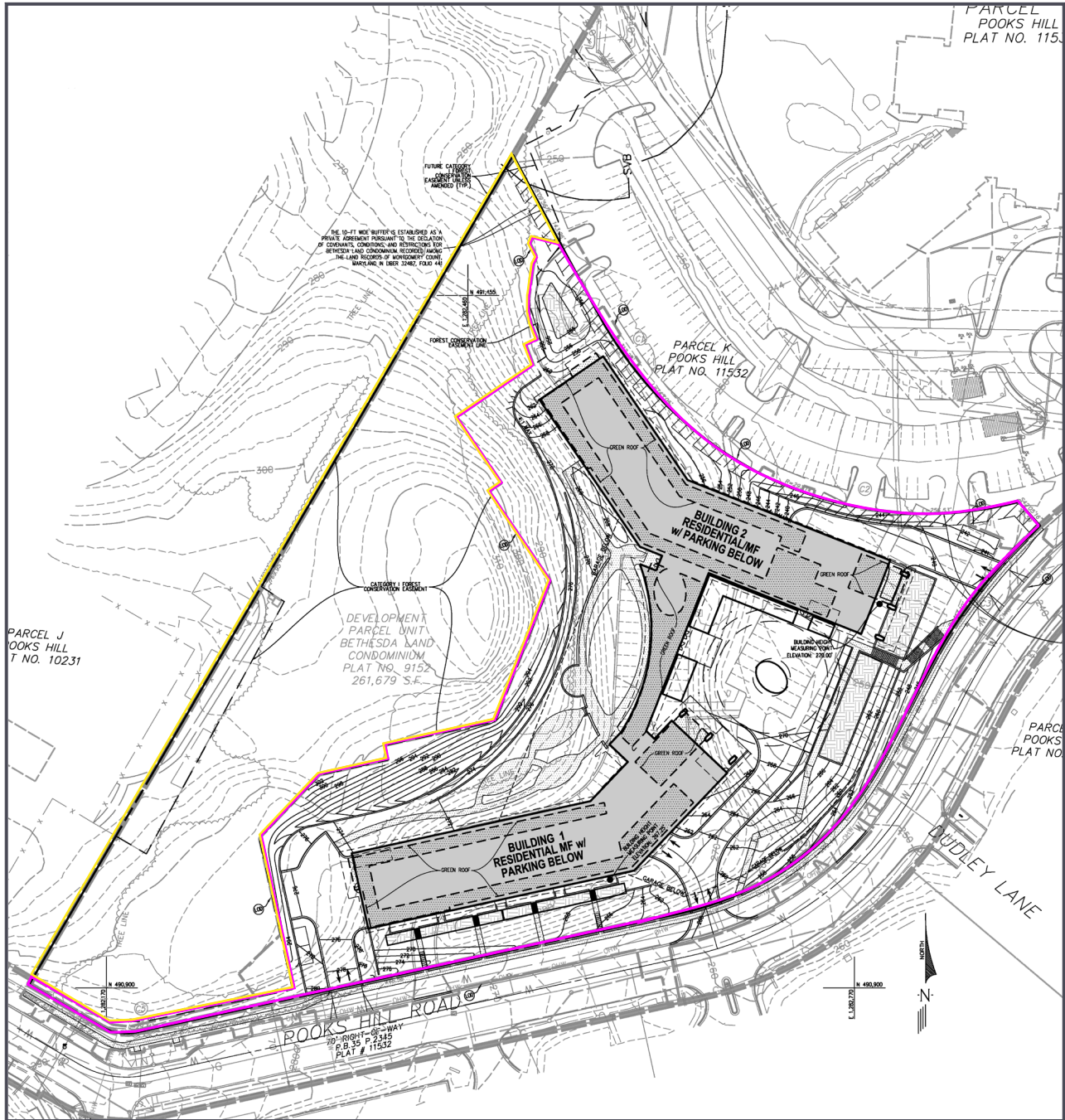
-  Forest Conservation Area
-  Hand Auger Location

FIGURE 4



LEGEND

- Forest Conservation Easement
- Redevelopment Area

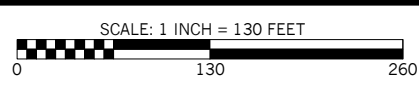
TITLE:
REDEVELOPMENT SITE PLAN

PROJECT:
POOKS HILL
POOKS HILL ROAD
BETHESDA, MONTGOMERY COUNTY, MARYLAND 20814

DATE:
02/16/2021

DRAWN BY:
AMK

APPROVED BY:
TMH

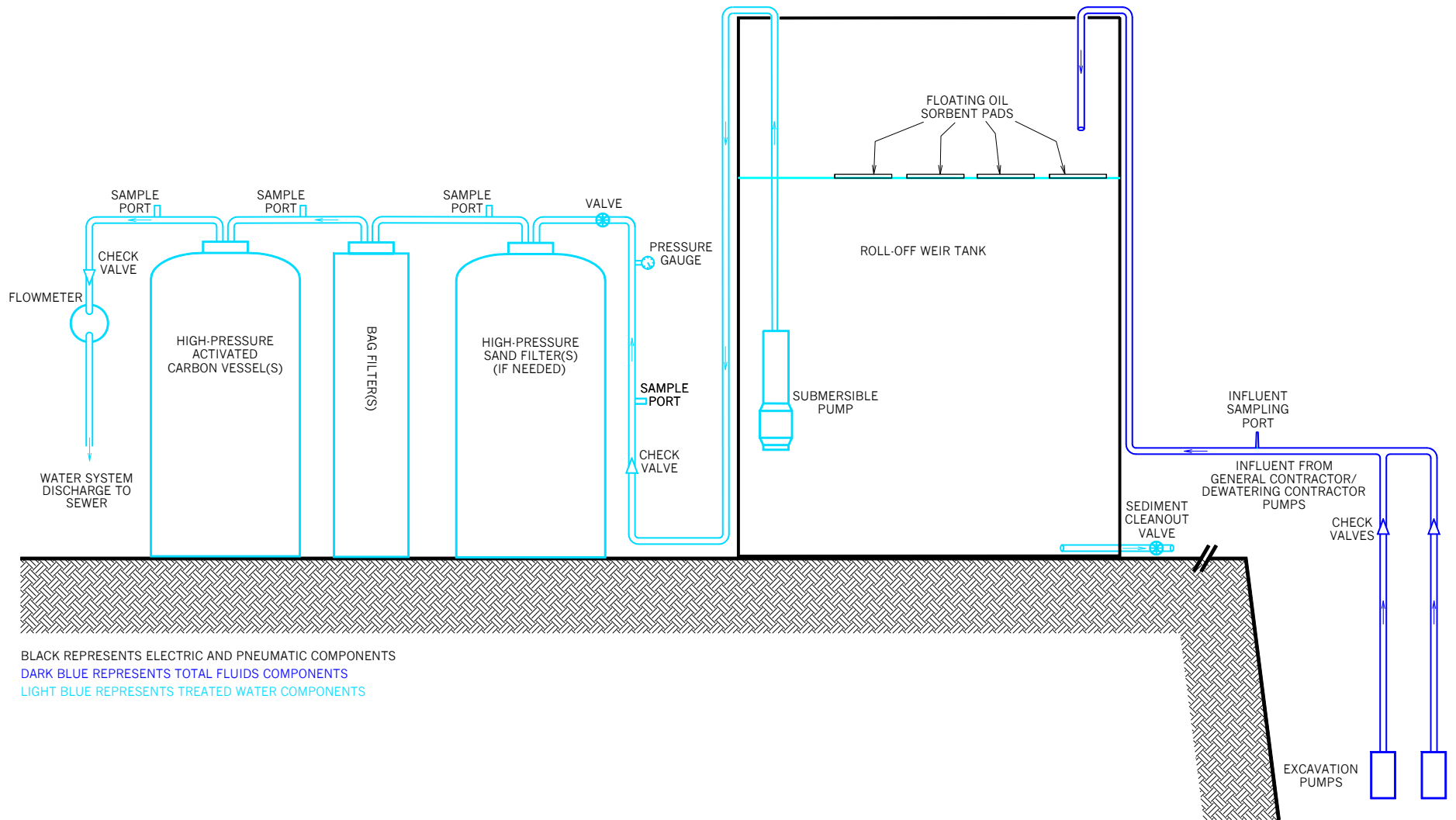



PROJECT NUMBER:
13941

REGULATORY CASE NUMBER:
N/A



FIGURE 5



TITLE: TYPICAL TEMPORARY WATER TREATMENT SYSTEM DIAGRAM		DATE: 02/16/2021		NO SCALE		 Environmental Consultants and Contractors, Inc.
PROJECT: POOKS HILL 5159 POOKS HILL ROAD BETHESDA, MONTGOMERY COUNTY, MARYLAND 20814		DRAWN BY: AMK				

Pooks Hill Property, Bethesda, Maryland Table 1- Residual-Phase Total Petroleum Hydrocarbons, BTEX, MTBE, & naphthalene ECC Project #20-13765			GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	MDE Residential Cleanup Standard	MDE Non-Residential Cleanup Standard
			1/29/20	1/29/20	1/29/20	1/29/20	1/29/20	1/29/20		
			4 feet bgs	3 feet bgs	6 feet bgs	4 feet bgs	5 feet bgs	1 foot bgs		
Analyte Name	Units	Cas#								
TPH-DRO (Diesel Range Organics)	mg/kg	C10C28DRO	11	27	21	<3.8	<3.6	<3.8	230	620
TPH-GRO (Gasoline Range Organics)	mg/kg	C6C10GRO	<0.12	<0.13	<0.12	<0.11	<0.11	<0.12	230	620
Benzene	mg/kg	71-43-2	<0.0012	<0.0012	<0.0013	<0.0011	<0.0011	<0.0012	1.2	5
Toluene	mg/kg	108-88-3	<0.0012	<0.0012	<0.0013	<0.0011	<0.0011	<0.0012	490	4,700
Ethylbenzene	mg/kg	100-41-4	<0.0012	<0.0012	<0.0013	<0.0011	<0.0011	<0.0012	5.8	25
m&p-xylenes	mg/kg	108-38-3	<0.0024	<0.0025	<0.0025	<0.0022	<0.0022	<0.0024	---	---
o-xylene	mg/kg	95-47-6	<0.0012	<0.0012	<0.0013	<0.0011	<0.0011	<0.0012	---	---
Total Xylenes	mg/kg	1330-20-7	<0.0036	<0.0037	<0.0038	<0.0033	<0.0033	<0.0036	58	250
Methyl-tert-butyl ether (MTBE)	mg/kg	1634-04-4	<0.0012	<0.0012	<0.0013	<0.0011	<0.0011	<0.0012	47	210
Naphthalene	mg/kg	91-20-3	<0.0012	<0.0012	<0.0013	<0.0011	<0.0011	<0.0012	3.8	17

Bold = values detected above method detection limit;

TPH = total petroleum hydrocarbons; DRO = diesel range organics; GRO = gasoline range organics;

mg/kg = milligrams per kilogram, equivalent to parts per million, ppm;

< X = analyte was not detected at or above X mg/kg or X µg/kg; --- = Not applicable; NT = Not tested;

Highlighted concentrations exceed MDE Residential Cleanup Standards (October 2018)

Red text indicates contaminant exceeds the MDE Non-Residential Cleanup Standard (October 2018)

Pooks Hill Property, Bethesda, Maryland Table 2 - Residual-Phase PAHs, Metals, & PCBs ECC Project #20-13765			GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	MDE Residential Soil Cleanup Standard	MDE Non-Residential Cleanup Standards
			1/29/20	1/29/20	1/29/20	1/29/20	1/29/20	1/29/20		
			4 feet bgs	3 feet bgs	6 feet bgs	4 feet bgs	5 feet bgs	1 foot bgs		
Detected PAHs by 8270	Units	Cas#								
2-Methylnaphthalene	mg/kg	91-57-6	<0.0099	<0.011	<0.10	<0.0094	<0.0090	<0.0095	24	300
Acenaphthene	mg/kg	83-32-9	<0.0099	<0.011	<0.10	<0.0094	<0.0090	<0.0095	360	4,500
Acenaphthylene	mg/kg	208-96-8	<0.0099	<0.011	0.14	<0.0094	<0.0090	<0.0095	---	---
Anthracene	mg/kg	120-12-7	<0.0099	<0.011	0.40	<0.0094	<0.0090	<0.0095	1,800	23,000
Benzo(a)anthracene	mg/kg	56-55-3	<0.0099	<0.011	3.2	<0.0094	<0.0090	<0.0095	1.1	21
Benzo(a)pyrene	mg/kg	50-32-8	<0.0099	<0.011	3.6	0.0094	<0.0090	<0.0095	0.11	2.1
Benzo(b)fluoranthene	mg/kg	205-99-2	<0.0099	<0.011	4.7	0.0094	<0.0090	<0.0095	1.1	21
Benzo(g,h,i)perylene	mg/kg	191-24-2	<0.0099	<0.011	2.7	0.016	<0.0090	<0.0095	---	---
Benzo(k)fluoranthene	mg/kg	207-08-9	<0.0099	<0.011	2.6	<0.0094	<0.0090	<0.0095	11	210
Chrysene	mg/kg	218-01-9	<0.0099	<0.011	4.5	0.0098	<0.0090	<0.0095	110	2,100
Dibenz(a,h)Anthracene	mg/kg	53-70-3	<0.0099	<0.011	0.71	<0.0094	<0.0090	<0.0095	0.11	2.1
Fluoranthene	mg/kg	206-44-0	<0.0099	0.024	11	0.021	<0.0090	<0.0095	240	3,000
Fluorene	mg/kg	86-73-7	<0.0099	<0.011	0.25	<0.0094	<0.0090	<0.0095	240	3,000
Indeno(1,2,3-c,d)Pyrene	mg/kg	193-39-5	<0.0099	<0.011	3.3	0.011	<0.0090	<0.0095	1.1	21
Naphthalene	mg/kg	91-20-3	<0.0099	<0.011	<0.10	<0.0094	<0.0090	<0.0095	3.8	17
Phenanthrene	mg/kg	85-01-8	<0.0099	<0.011	2.8	<0.0094	<0.0090	<0.0095	180	2,300
Pyrene	mg/kg	129-00-0	<0.0099	0.012	8.1	0.017	<0.0090	<0.0095	180	2,300
Metals by 6020	Units	Cas#								
Arsenic	mg/kg	7440-38-2	2.6	2.4	2.9	1.1	1.3	1.8	0.68	3
Barium	mg/kg	7440-39-3	130	140	150	240	160	210	1,500	22,000
Cadmium	mg/kg	7440-43-9	<0.54	<0.62	<0.56	<0.44	<0.39	<0.51	7.10	98
Chromium, Total	mg/kg	7440-47-3	55	55	40	8.7	13	18	---	---
Hexavalent Chromium	mg/kg	18540-29-9	NT	NT	NT	NT	NT	NT	0.3	6.3
Lead	mg/kg	7439-92-1	18	21	25	9.2	2.0	3.6	400	800
Mercury	mg/kg	7439-97-6	<0.11	<0.12	<0.11	<0.088	<0.078	<0.10	1.1	4.6
Selenium	mg/kg	7782-49-2	<0.54	<0.62	<0.56	<0.44	<0.39	<0.51	39	580
Silver	mg/kg	7440-22-4	<0.54	<0.62	<0.56	<0.44	<0.39	<0.51	39	580
PCBs by 8082	Units	Cas#								
PCB-1016	mg/kg	12674-11-2	<0.058	<0.064	<0.061	<0.057	<0.053	<0.058	0.41	5.1
PCB-1221	mg/kg	11104-28-2	<0.058	<0.064	<0.061	<0.057	<0.053	<0.058	0.20	0.8
PCB-1232	mg/kg	11141-16-5	<0.058	<0.064	<0.061	<0.057	<0.053	<0.058	0.17	0.7
PCB-1242	mg/kg	53469-21-9	<0.058	<0.064	<0.061	<0.057	<0.053	<0.058	0.23	1.0
PCB-1248	mg/kg	12672-29-6	<0.058	<0.064	<0.061	<0.057	<0.053	<0.058	0.23	1.0
PCB-1254	mg/kg	11097-69-1	<0.058	<0.064	<0.061	<0.057	<0.053	<0.058	0.12	1.0
PCB-1260	mg/kg	11096-82-5	<0.058	<0.064	<0.061	<0.057	<0.053	<0.058	0.24	1.0

Bold = values detected above method detection limit;

mg/kg = milligrams per kilogram, equivalent to parts per million, ppm;

< X = analyte was not detected at or above X mg/kg or X µg/kg; --- = Not applicable; NT = Not tested;

Highlighted concentrations exceed MDE Residential Cleanup Standards

RED text indicates contaminant exceeds the MDE Non-Residential Cleanup Standard

Pooks Hill Property, Bethesda, Maryland Table 3 - Dissolved-Phase TPH & VOCs ECC Project #20-13765			GP-3	EPA MCL (Table 2.0)	MDE Groundwater Standard for Type I and Type II Aquifers
			1/29/20		
Analyte Name	Units	Cas#			
TPH-DRO (Diesel Range Organics)	mg/L	C10C28DRO	<0.12	---	47
TPH-GRO (Gasoline Range Organics)	mg/L	C6C10GRO	<0.1	---	47
1,1,1-Trichloroethane	ug/L	71-55-6	<1.0	200	200
1,1,2,2-Tetrachloroethane	ug/L	79-34-5	<1.0	---	0.08
1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/L	76-13-1	<1.0	---	---
1,1,2-Trichloroethane	ug/L	79-00-5	<1.0	5	5
1,1-Dichloroethane	ug/L	75-34-3	<1.0	---	2.8
1,1-Dichloroethene	ug/L	75-35-4	<1.0	7	7
1,2,3-Trichlorobenzene	ug/L	87-61-6	<1.0	---	---
1,2,4-Trichlorobenzene	ug/L	120-82-1	<1.0	70	70
1,2-Dibromo-3-Chloropropane	ug/L	96-12-8	<5.0	0.2	0.2
1,2-Dibromoethane (EDB)	ug/L	106-93-4	<1.0	0.05	0.05
1,2-Dichlorobenzene	ug/L	95-50-1	<1.0	600	600
1,2-Dichloroethane	ug/L	107-06-2	<1.0	5	5
1,2-Dichloropropane	ug/L	78-87-5	<1.0	5	5
1,3-Dichlorobenzene	ug/L	541-73-1	<1.0	---	---
1,4-Dichlorobenzene	ug/L	106-46-7	<1.0	75	75
2-Butanone (MEK)	ug/L	78-93-3	<1.0	---	560
2-Hexanone	ug/L	591-78-6	<5.0	---	---
4-Methyl-2-Pentanone	ug/L	108-10-1	<5.0	---	630
Acetone	ug/L	67-64-1	<1.0	---	1,400
Benzene	ug/L	71-43-2	<1.0	5	5
Bromochloromethane	ug/L	74-97-5	<1.0	---	---
Bromodichloromethane	ug/L	75-27-4	<1.0	---	80
Bromoform	ug/L	75-25-2	<5.0	---	80
Bromomethane	ug/L	74-83-9	<1.0	---	0.75
Carbon Disulfide	ug/L	75-15-0	<1.0	---	81
Carbon Tetrachloride	ug/L	56-23-5	<1.0	5	5
Chlorobenzene	ug/L	108-90-7	<1.0	100	100
Chloroethane	ug/L	75-00-3	<1.0	---	2,100
Chloroform	ug/L	67-66-3	<1.0	---	80
Chloromethane	ug/L	74-87-3	<1.0	---	19
Cyclohexane	ug/L	110-82-7	<1.0	---	---
Dibromochloromethane	ug/L	124-48-1	<1.0	---	80
Dichlorodifluoromethane	ug/L	75-71-8	<1.0	---	---
Ethylbenzene	ug/L	100-41-4	<1.0	700	700
Isopropylbenzene	ug/L	98-82-8	<1.0	---	45
Methyl Acetate	ug/L	79-20-9	<1.0	---	---
Methyl-t-butyl ether	ug/L	1634-04-4	<1.0	---	20
Methylcyclohexane	ug/L	108-87-2	<1.0	---	---
Methylene Chloride	ug/L	75-09-2	<1.0	5	5
Naphthalene	ug/L	91-20-3	<1.0	---	0.17
Styrene	ug/L	100-42-5	<1.0	100	100
Tetrachloroethene	ug/L	127-18-4	<1.0	5	5
Toluene	ug/L	108-88-3	<1.0	1,000	1,000
Trichloroethene	ug/L	79-01-6	<1.0	5	5
Trichlorofluoromethane	ug/L	75-69-4	<5.0	---	---
Vinyl Chloride	ug/L	75-01-4	<1.0	2	2
cis-1,2-Dichloroethene	ug/L	156-59-2	<1.0	70	70
cis-1,3-Dichloropropene	ug/L	10061-01-5	<1.0	---	---
m,p-Xylenes	ug/L	108-38-3	<2.0	---	---
o-Xylene	ug/L	95-47-6	<1.0	---	---
trans-1,2-Dichloroethene	ug/L	156-60-5	<1.0	100	100
trans-1,3-Dichloropropene	ug/L	10061-02-6	<1.0	---	---

Bold values exceed laboratory reporting limits

TPH = total petroleum hydrocarbons; DRO = diesel range organics; GRO = gasoline range organics;
mg/L = milligrams per liter, equivalent to parts per million, ppm; ug/L = micrograms per liter, equivalent to parts per billion, ppb;
< X = analyte was not detected at or above X mg/L or X ug/L; --- = Not applicable; NT = Not tested;

MDE Groundwater Standards for Type I and Type II Aquifers (October 2018)

EPA MCL = Environmental Protection Agency Maximum Contaminant Level in Drinking Water

Highlighted concentrations exceed an EPA MCL or a MDE Groundwater Standard

Table 4 - Residual-Phase Laboratory Results Pooks Hill Property, Bethesda, Maryland Conservation Area Surface Soil Composite Samples ECC Project #20-13941			G1	G2	G3	MDE Residential Soil Cleanup Standard	MDE Non-Residential Cleanup Standards
			12/8/20	12/8/20	12/8/20		
			0-1' bgs	0-1' bgs	0-1' bgs		
Detected SVOCs by 8270	Units	Cas#					
Benzo(a)anthracene	mg/kg	56-55-3	0.012	0.011	0.017	1.1	21
Benzo(a)pyrene	mg/kg	50-32-8	0.012	<0.011	0.017	0.1	2.1
Benzo(b)fluoranthene	mg/kg	205-99-2	<0.011	<0.011	0.017	1.1	21
Benzo(g,h,i)perylene	mg/kg	191-24-2	<0.011	<0.011	0.011	---	---
Benzo(k)fluoranthene	mg/kg	207-08-9	<0.011	<0.011	0.012	11	210
Chrysene	mg/kg	218-01-9	0.012	0.011	0.02	110	2,100
Fluoranthene	mg/kg	206-44-0	0.018	0.018	0.032	240	3,000
Indeno(1,2,3-c,d)Pyrene	mg/kg	193-39-5	<0.011	<0.011	0.012	1.10	21
Phenanthrene	mg/kg	85-01-8	<0.011	<0.011	0.016	180	2,300
Pyrene	mg/kg	129-00-0	0.016	0.016	0.027	180	2,300
Metals by 6020	Units	Cas#					
Arsenic	mg/kg	7440-38-2	3.3	4.4	4.1	0.68	3.0
Barium	mg/kg	7440-39-3	150	160	190	1,500	22,000
Cadmium	mg/kg	7440-43-9	<0.55	<0.59	<0.60	7.10	98
Chromium	mg/kg	7440-47-3	67	110	130	---	---
Lead	mg/kg	7439-92-1	26	27	26	400	800
Mercury	mg/kg	7439-97-6	<0.11	0.15	<0.12	1.1	4.6
Selenium	mg/kg	7782-49-2	<0.55	<0.59	<0.60	39	580
Silver	mg/kg	7440-22-4	<0.55	<0.59	<0.60	39	580
Hex Chrom by 7199	Units	Cas#					
Hexavalent Chromium	mg/kg	18540-29-9	<0.0986	0.145	<0.104	0.3	6.3

Bold = values detected above method detection limit;

mg/kg = milligrams per kilogram, equivalent to parts per million, ppm;

< X = analyte was not detected at or above X mg/kg or X µg/kg; --- = Not applicable; NT = Not tested;

Highlighted concentrations exceed MDE Residential Cleanup Standards

RED text indicates contaminant exceeds the MDE Non-Residential Cleanup Standard

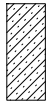
Appendix B

Boring Logs

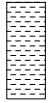
LEGEND

For Soil Borings and Monitoring Wells

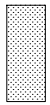
WELL CONSTRUCTION SYMBOLS:



CEMENT GROUT



BENTONITE



CLEAN SAND PACK



SCREEN



GROUNDWATER LEVEL

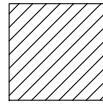
SAMPLE TYPES:

AC = Auger Cuttings
AR = Air Rotary (Dust)
GP = GeoProbe
HA = Hand-Auger Cuttings
RC = Rock Coring
NQ = Rock Coring
SS = Split Spoon

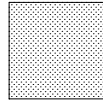
OTHER ABBREVIATIONS:

N/A = Not Applicable
N/R = No Instrument Response
N/T = Not Tested

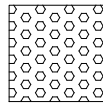
SOIL SYMBOLS:



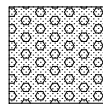
CLAY



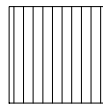
FINE TO MEDIUM SAND



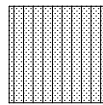
MEDIUM TO COARSE SAND



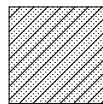
FINE TO COARSE SAND



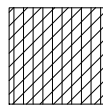
SILT



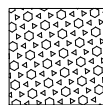
SANDY SILT / SILTY SAND



SANDY CLAY / CLAYEY SAND



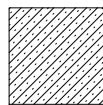
SILTY CLAY / CLAYEY SILT



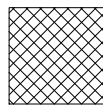
CRUSHED STONE



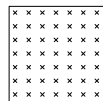
ASPHALT



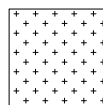
CONCRETE



FILL / ORGANIC MATERIAL



FRACTURED ROCK OR SAPROLITE



COMPETENT ROCK (BEDROCK)

Pooks Hill Property
 Montgomery County, MD
 ECC Project No. 20-13765
 Driller: Ground Zero

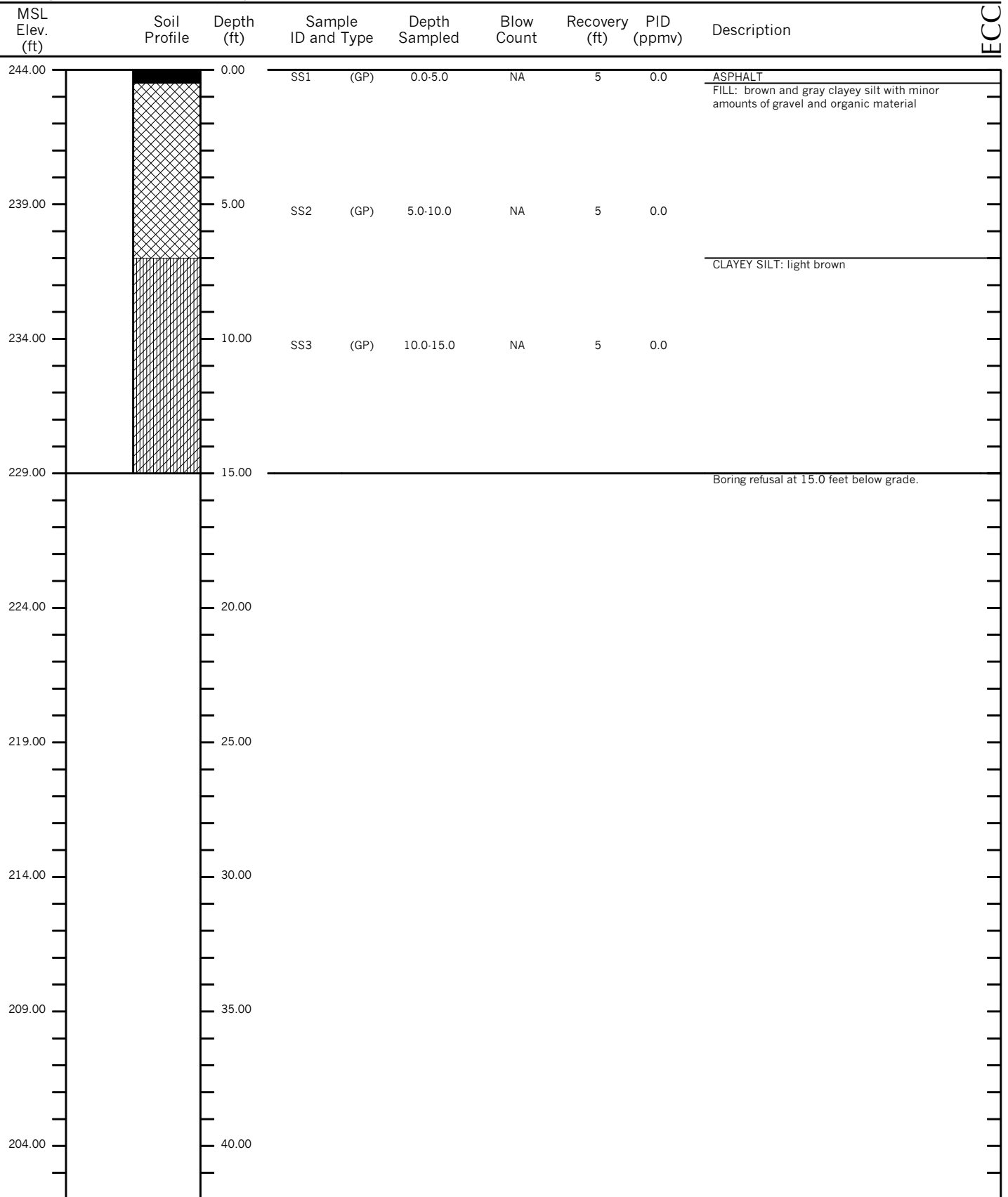
Geologic Boring Log

Boring No. GP-1

Soil boring only
 (Monitoring well not installed)
 Surface Elevation = 244.00 feet (est.)
 Groundwater Elev. Unknown
 Total Depth of Boring = 15.0 feet

Field Geologist: Thomas DeReggi
 Date Drilled: January 29, 2020

Drilling Method: Direct-Push (Geoprobe)



ECC

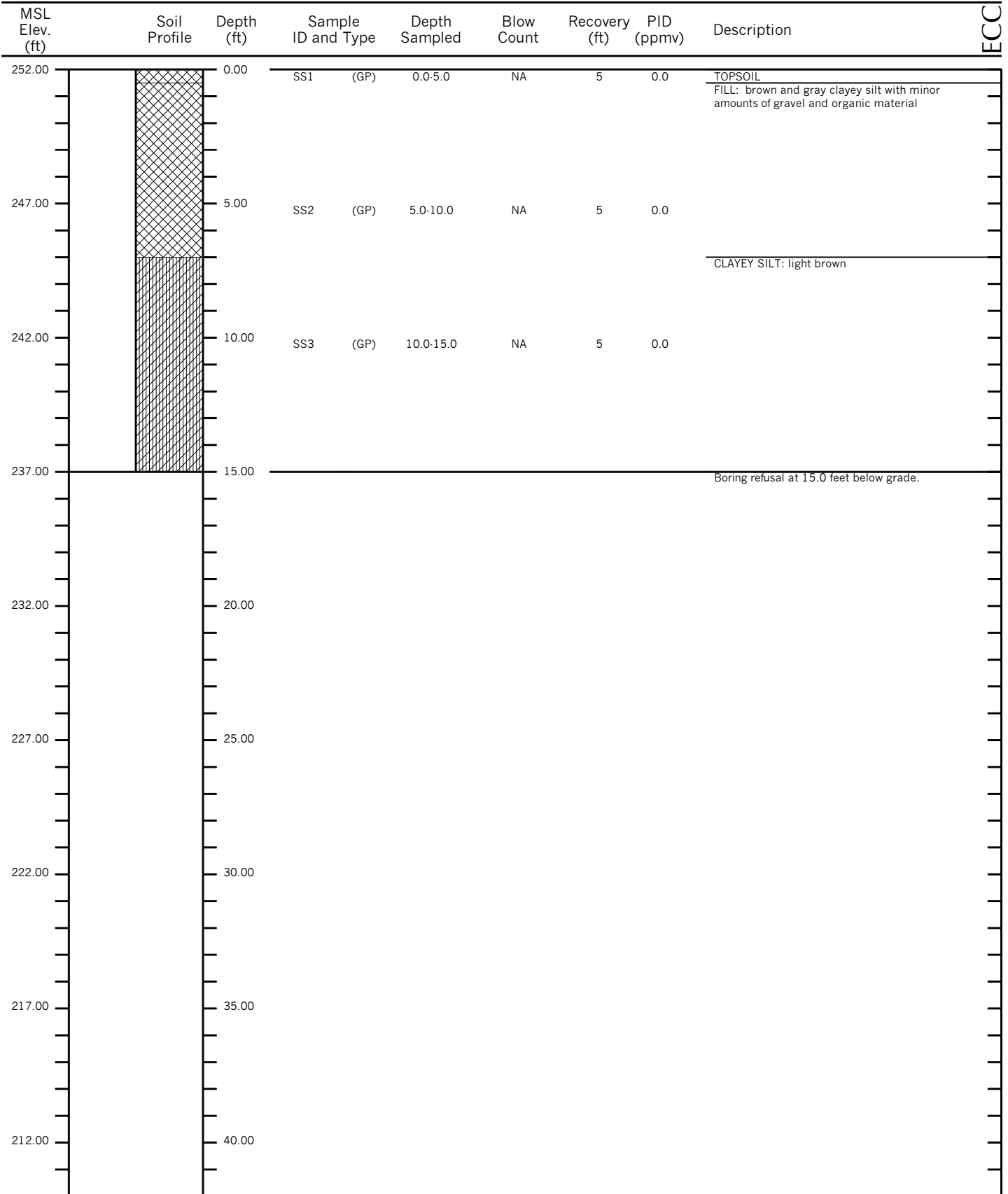
Pooks Hill Property
 Montgomery County, MD
 ECC Project No. 20-13765
 Driller: Ground Zero
 Field Geologist: Thomas DeReggi
 Date Drilled: January 29, 2020
 Drilling Method: Direct-Push (Geoprobe)

Geologic Boring Log

Boring No. GP-2

Page 1 of 1

Soil boring only
 (Monitoring well not installed)
 Surface Elevation = 252.00 feet (est.)
 Groundwater Elev. Unknown
 Total Depth of Boring = 15.0 feet



ECC

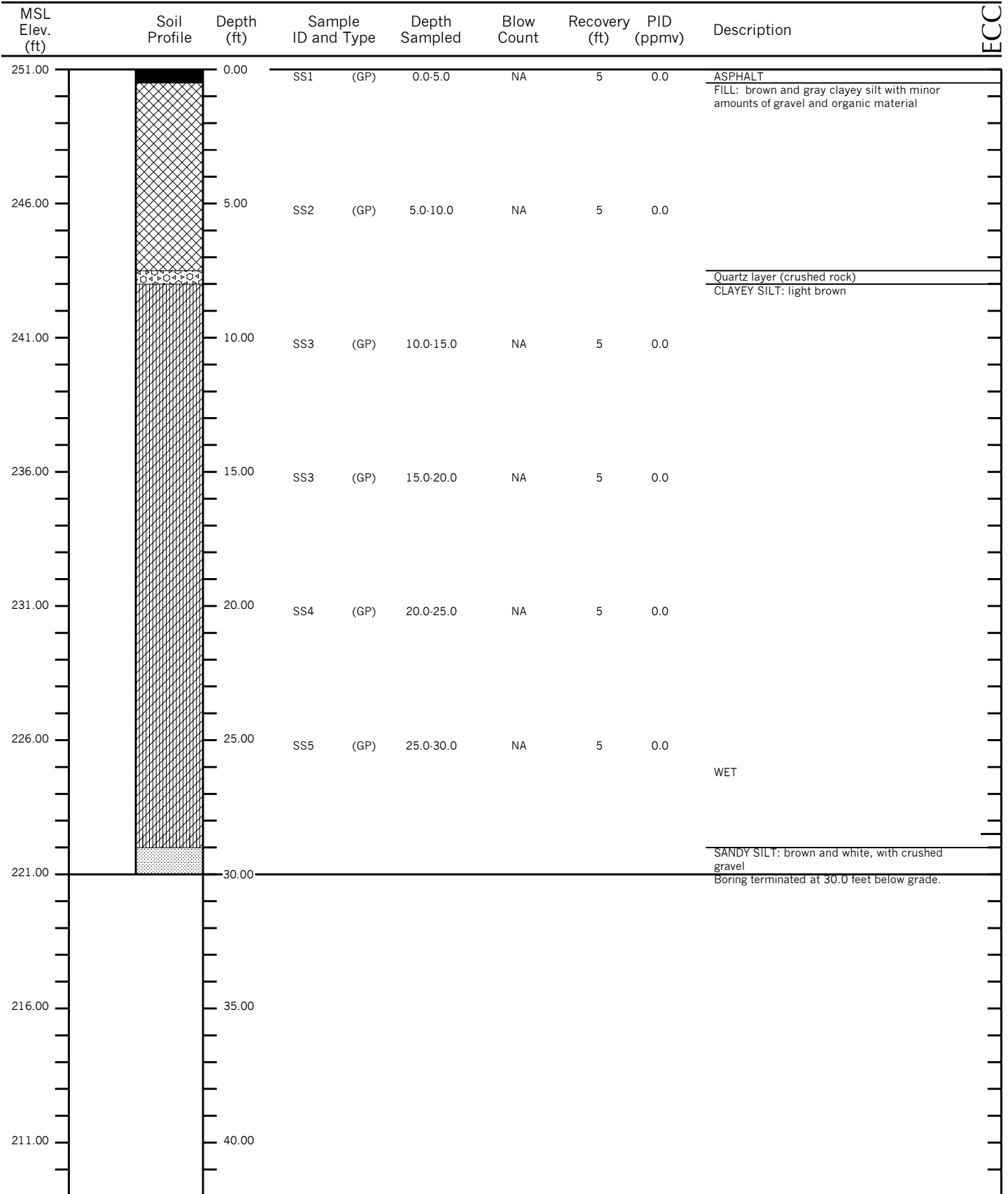
Pooks Hill Property
 Montgomery County, MD
 ECC Project No. 20-13765
 Driller: Ground Zero

Geologic Boring Log

Soil boring only
 (Monitoring well not installed)
 Surface Elevation = 251.00 feet (est.)
 Groundwater Elev. Unknown
 Total Depth of Boring = 28.5 feet

Boring No. GP-3

Field Geologist: Thomas DeReggi
 Date Drilled: January 29, 2020
 Drilling Method: Direct-Push (Geoprobe)



ECC

Pooks Hill Property
 Montgomery County, MD
 ECC Project No. 20-13765
 Driller: Ground Zero

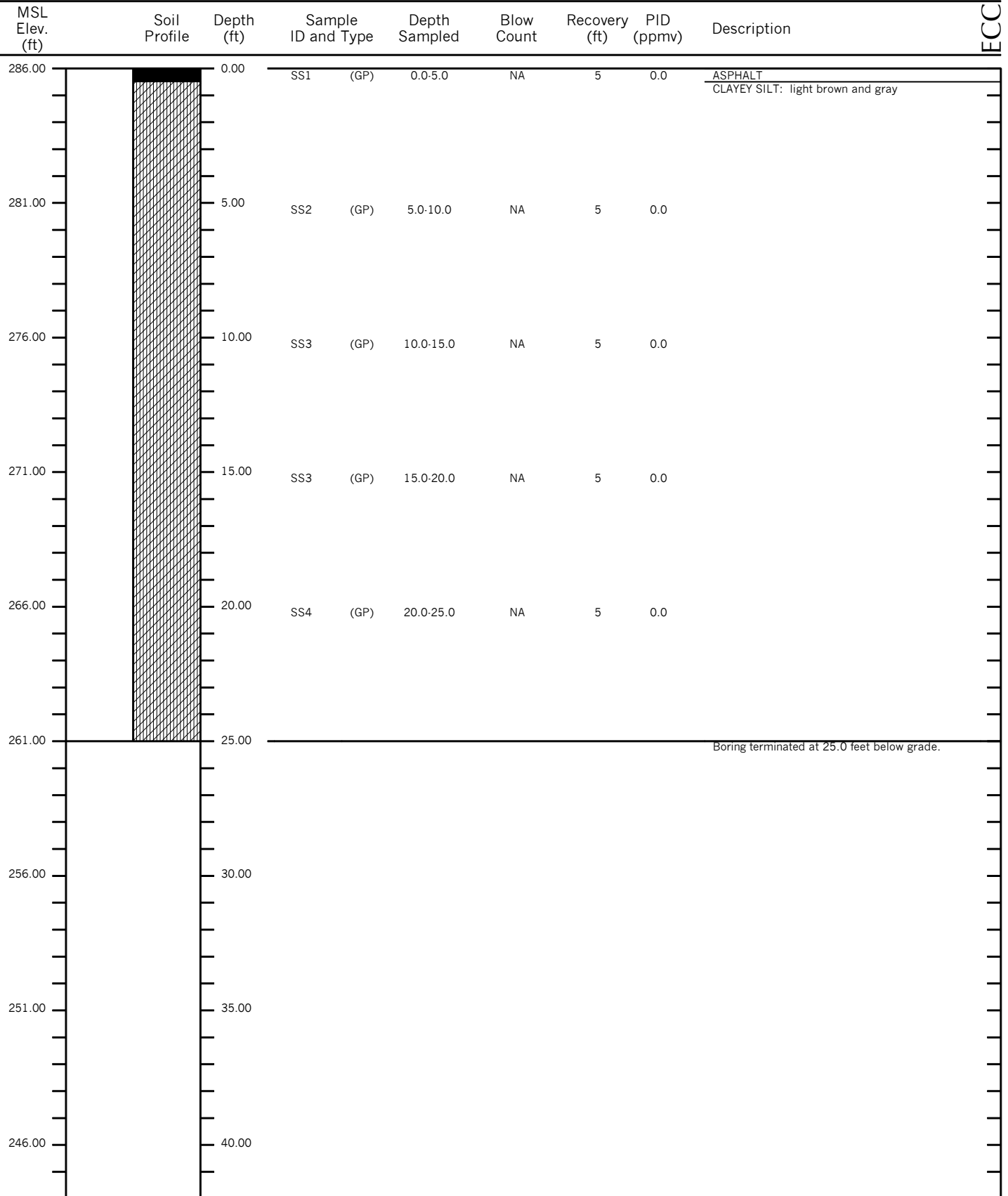
Geologic Boring Log

Boring No. GP-4

Soil boring only
 (Monitoring well not installed)
 Surface Elevation = 286.00 feet (est.)
 Groundwater Elev. Unknown
 Total Depth of Boring = 25.0 feet

Field Geologist: Thomas DeReggi
 Date Drilled: January 29, 2020

Drilling Method: Direct-Push (Geoprobe)



ECC

Pooks Hill Property
 Montgomery County, MD
 ECC Project No. 20-13765
 Driller: Ground Zero

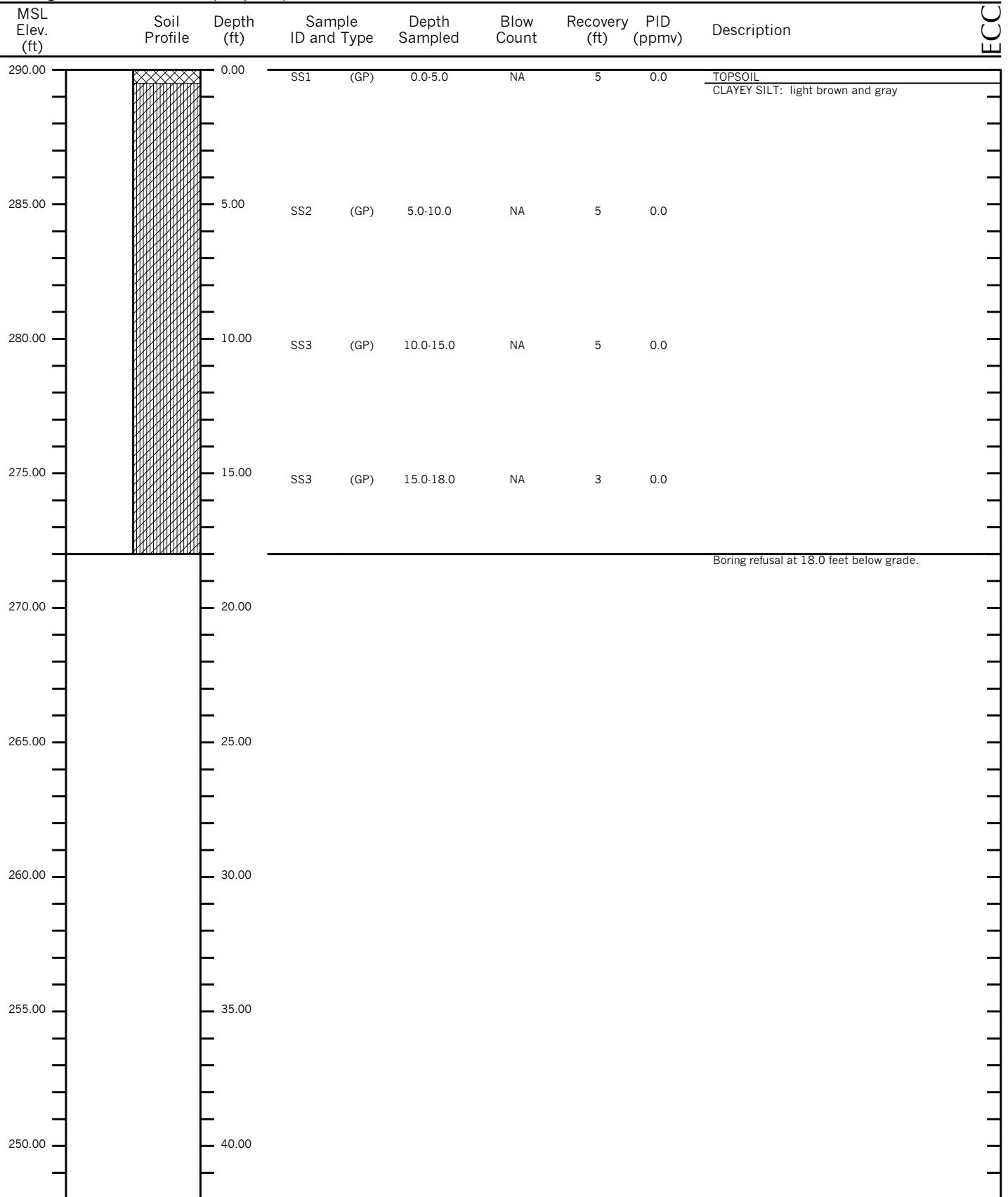
Geologic Boring Log

Boring No. GP-5

Soil boring only
 (Monitoring well not installed)
 Surface Elevation = 290.00 feet (est.)
 Groundwater Elev. Unknown
 Total Depth of Boring = 18.0 feet

Field Geologist: Thomas DeReggi
 Date Drilled: January 29, 2020

Drilling Method: Direct-Push (Geoprobe)



ECC

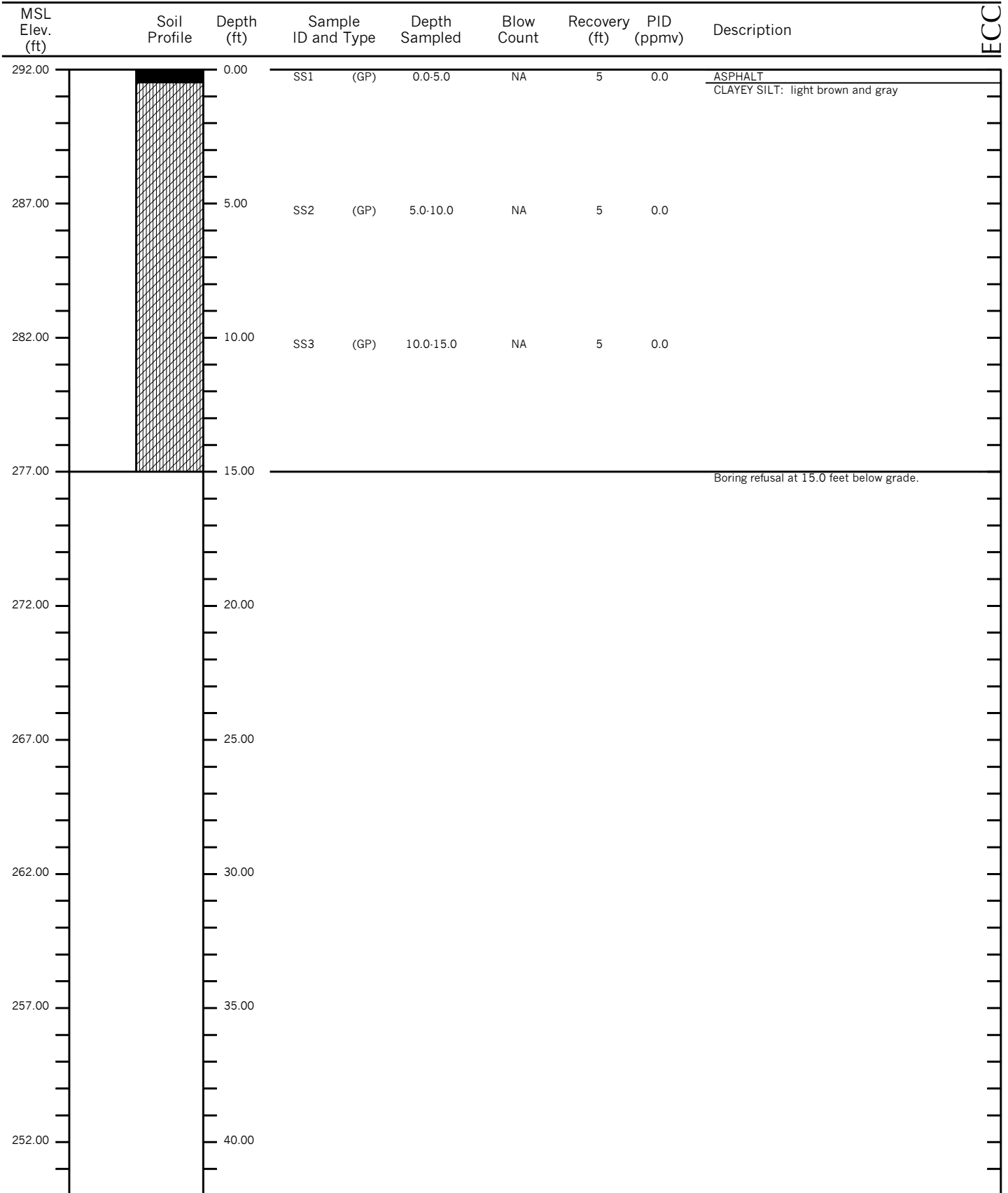
Pooks Hill Property
 Montgomery County, MD
 ECC Project No. 20-13765
 Driller: Ground Zero

Geologic Boring Log

Soil boring only
 (Monitoring well not installed)
 Surface Elevation = 292.00 feet (est.)
 Groundwater Elev. Unknown
 Total Depth of Boring = 15.0 feet

Boring No. GP-6

Field Geologist: Thomas DeReggi
 Date Drilled: January 29, 2020
 Drilling Method: Direct-Push (Geoprobe)



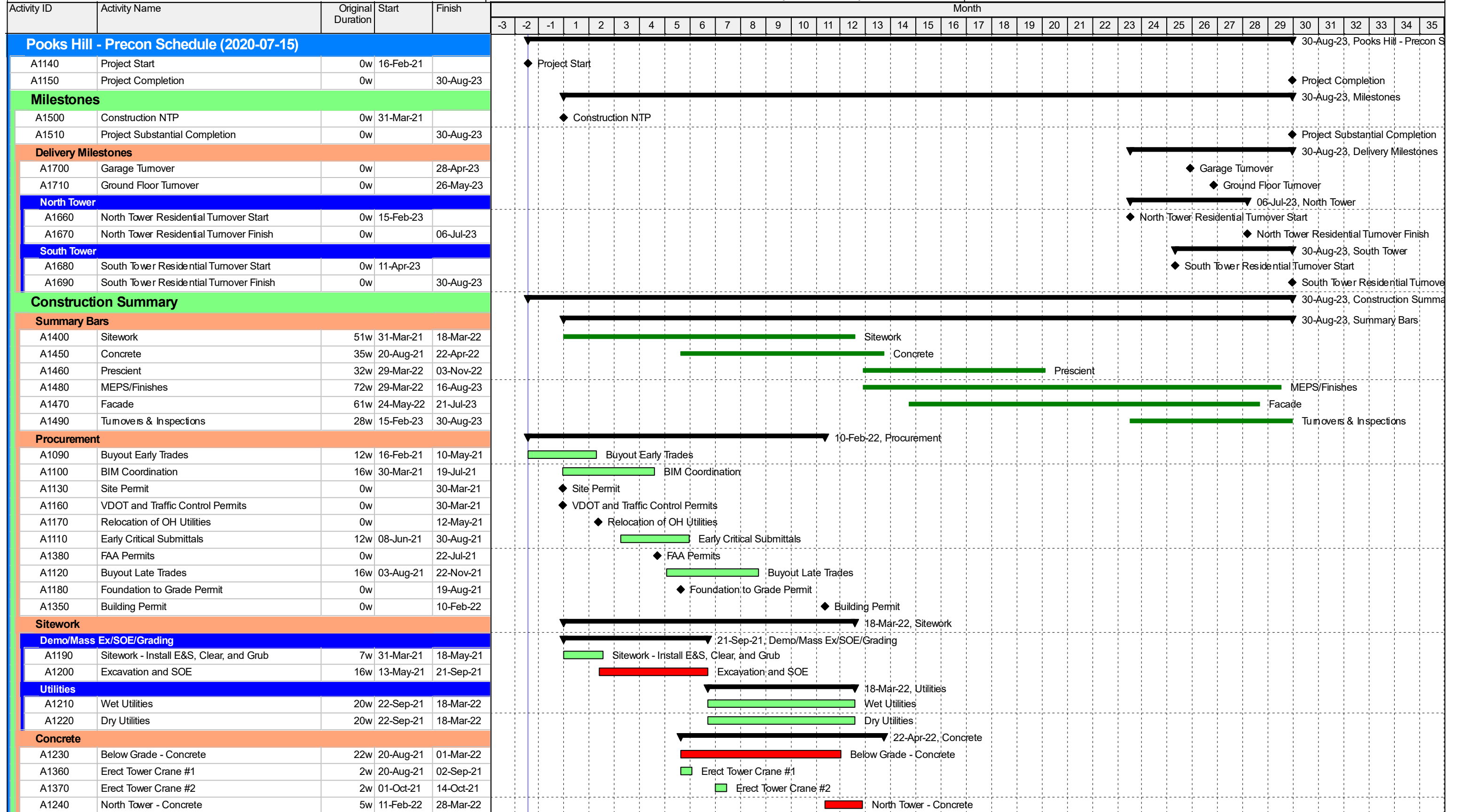
ECC

Appendix C

Construction Schedule

Pooks Hill - Precon Schedule (2020-07-15)

15-Jul-20 09:08

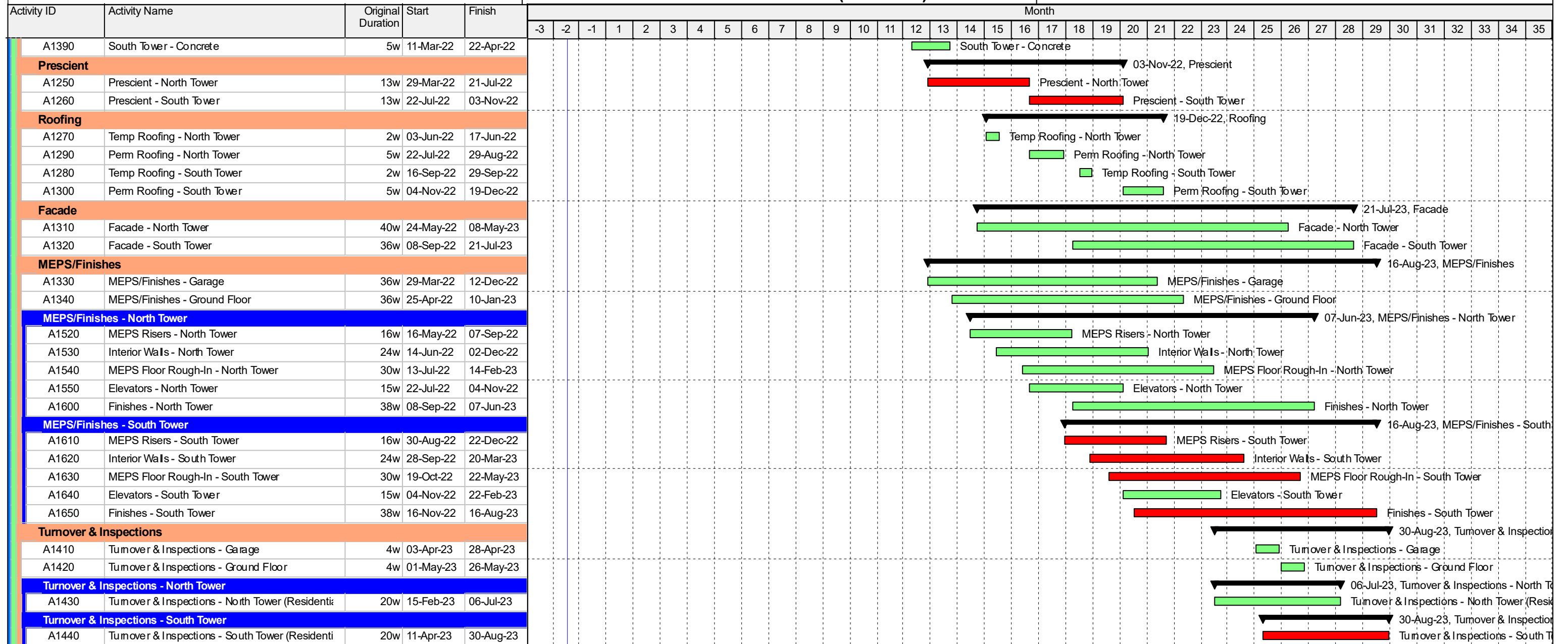


█ Remaining Level of Effort
 █ Remaining Work
 ◆ Milestone
 █ Actual Work
 █ Critical Remaining Work
 Summary



Pooks Hill - Precon Schedule (2020-07-15)

15-Jul-20 09:08



█ Remaining Level of Effort
 █ Remaining Work
 ◆ Milestone
█ Actual Work
 █ Critical Remaining Work
 ──▶ Summary

