GEI Consultants

Consulting
Engineers and
Scientists

Environmental Management Plan

Pump Station MH-3

Quantum Loophole, Frederick Maryland

Submitted to:
Quantum Maryland, LLC
500 E. 4th Street, Suite 333
Austin, Texas 78701

Submitted by:
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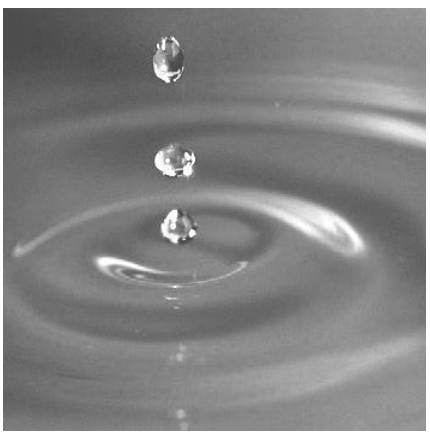

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Transmittal

Quantum Maryland, LLC
500 E. 4th Street, Suite 333
Austin, Texas 78701

Attn: Mr. AD Robison

Re: Environmental Management Plan
Pump Station Manhole 3
Quantum Maryland, Inc.
Frederick County, Maryland

Dear Mr. Robison,

GEI Consultants, Inc. (GEI) has prepared this Environmental Management Plan (EMP) for utility construction work related to sewer pump station construction at the former Eastalco property in Frederick Maryland.

This EMP relates to disturbance of soil and groundwater within the limits of the area of the Environmental Covenant (EC) during the construction of a secant pile wall around MH 3, excavation of soil and rock within that structure, and use of the excavation as a launch or receiving pit for installation of a sewer line via micro tunneling from manhole MH-3 to MH-2 (MH-2 is located at the pump station outside the EC boundary).

The remainder of the work for the pump station construction takes place outside of the EC and is not the subject of this EMP.

This EMP has been prepared to address potential environmental impacts in the MH-3 work area. Environmental media samples (soil and groundwater collected within the utility corridor in the vicinity of the MH-3) have not identified environmental impacts of concern other than total chromium in soil. However, as the work area is partially within the EC, this document outlines the controls put in place to assure protection of human health for workers and future visitors in this area.

We appreciate the continued opportunity to be of assistance on this project. Should you have any questions regarding this information, or should you require additional information, please contact the GEI office in Washington, D.C. at (202) 828-9510.

cc: Ms. Anuradha Mohanty / Maryland Department of the Environment Land and Materials Administration
Ms. Barbara Brown / MDE LMA
Ms. Kate Ansalvish / MDE Water and Science Administration

1. Introduction

1.1 Overview and Purpose

At the request of Quantum Maryland, LLC (QL), GEI Consultants, Inc. (GEI) has prepared this Environmental Management Plan (EMP) for the construction of specific listed elements of a 1 million gallon per day (MGD) pump station (the "PS site") as part of the development of the Former Alcoa Eastalco Works project. The overall Eastalco property ("overall property" or "the Site") comprises over 2,200 acres. The central portion of the overall property formerly contained the Eastalco Aluminum Works. The remaining portions of the overall property were primarily used for agricultural purposes. Future development of the overall property will include the construction of multiple data center buildings and associated infrastructure. The overall property is being developed in separate areas, and for the sake of expediency, multiple EMPs will be produced to cover individual work areas or construction elements.

The specific work elements covered by this EMP include grading within the EMP boundary to create a level construction pad, construction of a secant pile wall around the sewer manhole MH-3 location at the southern end of the Site, excavation of soil and rock within that structure, and use of the excavation as a launch or receiving pit for installation of a sewer line via micro tunneling between MH-3 and MH-2 (located at the pump station outside the EC boundary).

In 2021, the QL team requested that the Maryland Department of the Environment (MDE) Land and Materials Administration (LMA) participate in the review of the environmental conditions on the overall property and the proposed remedies. An expedited Inculpable Person (IP) was requested and was received by Quantum Maryland, LLC on June 22, 2021. On behalf of Quantum Maryland, LLC Geo Technology Associates, Inc. (GTA), the environmental consultant for QL at the time, submitted an application to the MDE Voluntary Cleanup Program (VCP) for the overall property on September 28, 2021. On May 4, 2022, GTA withdrew the overall property from the VCP and remedial oversight was engaged with the MDE Controlled Hazardous Substances (CHS) Enforcement Division. On September 26, 2023 Quantum Maryland further removed areas outside the EC from CHS oversight. However, construction activities within the EC continues to remain subject to CHS oversight and require preparation and approval of an EMP.

As part of the ongoing CHS oversight agreement between the project team and MDE, this EMP was prepared to establish proposed management of soils and groundwater encountered during the planned installation of the MH-3 construction elements. The proposed activities include:

- Grading within the EMP boundary to create a level construction pad;
- Installation of support of excavation (SOE) structures (secant pile wall);
- Soil screening and management/stockpiling during excavation;
- If any waste material is encountered during construction, it must be reported to LRP. Additional segregation and management of waste will be done with LRP approval.
- Removal, containerization and testing of seepage water in the excavation;
- Off-Site disposal of containerized water from dewatering operations;
- Stockpiling and testing of soil excavated from the pump station;
- Disposal of soil or soil re-use as backfill (if supported by the data collected and specifically authorized by MDE after review of data)
- Use of the MH-3 excavation as a micro tunnelling launch pit or receiving pit for the MH-3 to MH-2 sewer line;
- Installation of MH-3 and tie-in of the MH-3 to MH-2 sewer line
- Import of quarry fill following notification to and prior approval from LRP; and
- Use of appropriate health and safety measures during construction.

Once the EMP is approved, these remedial measures will be performed as part of the ongoing CHS oversight.

2. BACKGROUND

2.1 Pump Station Site Description

The PS Site is located on a larger property ("overall property" or "the Site") that comprises over 2,200 acres and is located southeast of Ballenger Creek Pike, north and south of Manor Woods Road, west of New Design Road, northwest of Mountville Road, and north of Adamstown Road. The Site or overall property is being developed as a data center community, and near-term construction consists generally of construction of roads and utilities including water, sewer (including a 1 MGD sewer pump station) and cooling water.

Figure 1 shows the approximate boundary of the overall property, the Pump Station, and the Limit of Disturbance (LOD) for the Pump Station Improvement Plan, as approved by Frederick County and associated with the MDE construction stormwater permits (20-CP) described in **Section 2.3.2**. This EMP applies only to specific identified work elements consisting of portions of the pump station construction which are located within the EC near the southern boundary of the EC. **Figure 2** shows the Pump Station LOD for reference along with EMP boundary. The EMP boundary shown as a green area comprises a 50-foot boundary around the MH 3 SOE.

Most of the subsurface construction activities under this EMP (outlined in Section 1.1) will be within the LOD shown on **Figure 2**. However, construction within the green EMP boundary also includes soil grading to create a level work platform the size of the EMP boundary. This requires a cut on the east portion and fill on the west portion. Soil outside the EC (within the EMP boundary) will stay outside the EC. Fill required inside the EC boundary to create this level platform will involve temporary import of approximately 1,000 cubic yards of clean quarry stone placed on a geotextile. A copy of the Clean Stone Certificate provided by Vulcan Materials to Clark subcontractor Metro Materials for pump station work is provided in **Appendix F**. After the secant wall and microtunneling are complete, this temporary clean fill will be removed and used in backfilling of the MH-3 SOE. A revision of the pump station LOD to include this area has been submitted to Frederick County SCD for approval. Because the EMP area is in the floodplain, a modification of the JPA Permit is also being submitted to MDE Wetlands and Waterways associated with the same expanded LOD. These agencies are aware of the CHS regulation of this activity subject to this EMP and their approvals are anticipated to reference this EMP. Grading of the portion of the EMP area outside the present LOD shown on **Figure 2** cannot proceed until those approvals are obtained.

The work subject to this EMP includes shallow soil grading to create a level work platform the same size as the EMP boundary, installing secant pile walls surrounding manhole MH-3

(the western end extends into the EC), excavating soil and rock from within that wall, and micro tunneling between MH-2 and MH-3.

All soil and water from within the wall will be managed as "inside the EC" material. Soil/Rock and water generated will be staged on-Site in stockpiles and frac tanks respectively. **Figure 5** shows the location of frac tanks for water storage and the location of the MH-3 soil/rock stockpiles. Both of these are located outside the EC and outside the floodplain. The stored water and soil remain subject to regulation under this EMP as follows. These soil piles will be labelled (as to contents) and surrounded with silt fence. The revised LOD submitted to Frederick County SCD also includes this area.

This EMP proposes testing of excavated soil and containerized water generated within the MH-3 secant wall prior to off-Site disposal at appropriate facility. Soil can be proposed for re-use as backfill if supported by the data collected and specifically authorized by MDE after review of data.

The pump station itself and MH-2 are located outside the EC and outside the floodplain and are not the subject of this EMP. They will be constructed using similar means; but soil and water generated during construction of and working within the separate Pump Station wet well/MH-2 secant wall will not be managed under CHS oversight. As a condition of the 20-CP Permits, water generated from the PS/MH-2 area (outside the EMP) will be containerized, tested and disposed off-Site in the same manner as water generated from MH-3 (under this EMP).

During construction, the EMP boundary will be staked/flagged in the field with temporary/construction fence along the east side to ensure that workers/equipment performing PS/MH-3 work are aware of where the EMP must be followed.

2.2 Environmental Site History

The central portion of the overall property was historically developed as an aluminum smelting plant (Alcoa Eastalco Works) that was in operation from 1969 through 2005. The plant was demolished between 2011 and 2016. Since 2005, the plant area has undergone extensive environmental evaluation and is currently subject to an Environmental Covenant (EC) and MDE-approved Site Management Plan (SMP). The former plant area is subject to the EC due to environmental impacts associated with the historic use of the Site. The EC places restrictions on land and groundwater use within a portion of the Site and requires current and future property owners to follow an MDE-approved SMP. The EC boundary includes both the former plant area and a smaller Soil Management Area (SMA), which includes two closed, permitted industrial landfills, former waste disposal sites (WDS), and other areas containing constituents of potential concern (COPCs). The boundaries of the EC and SMP are depicted on **Figure 1**.

Historic plant operations resulted in impacts to groundwater, surface water, surface soils, and subsurface soils in the former plant area (now included within the SMA). COPCs in the SMA primarily include fluoride in groundwater, cyanide in surface water, and metals, polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) in soils**.**

The work area covered by this EMP is well outside the SMA and thus does not include any construction activities within the SMA. However, the MH 3 SOE extends into the EC area.

The MH-3 secant wall construction is also proximal to groundwater monitoring wells within the EC with detected exceedance of the fluoride groundwater standard and historic detection of VOCs (also described herein).

The land use restrictions and maintenance requirements outlined below are still applicable during construction.

Land use is limited to restricted commercial (Tier 2B) and restricted industrial (Tier 3B) land uses.

- Groundwater use is prohibited.
- A Health and Safety Plan (HASP) must be prepared in accordance with the SMP and maintained on-site during site work.
- A HASP must also address areas where groundwater is proposed to be encountered.
- Water encountered in/removed from excavations within the EC must be containerized and tested before disposal.

With regard to water management, page 3 of the EC states:

> ”**Excavation Encountering Groundwater**: When conducting any excavation activities on the Property extending to the ground water table, the Property Owner shall implement the requirements of a site-specific health and safety plan in accordance with the Site Management Plan to ensure that worker protection measures are met. The encountered ground water shall be containerized during all dewatering activities at the property and shall be analyzed before disposal. The analytical results shall be the basis for appropriate disposition of the ground water in accordance with applicable local, State and federal laws and regulations.

In addition to the requirements of the EC, work conducted within the scope of this EMP (and all construction within the EC) is subject to CHS oversight and as such, requires approval of the MDE CHS case manager.

2.3 Future Land Use

According to the development plans (referenced in **Section 2.3.1 and Appendix C & D**), the PS Site will require the construction/installation of a pump station (wet well and MH-2), a section of gravity sewer line, and manhole MH-3 so that future additional development of the overall property may occur. The PS construction also includes other support structures including a storage shed, generator pad, and asphalt parking lot.

The work subject to this EMP includes creating a level drilling pad in the area surrounding MH-3, installing a secant wall SOE micro tunnel shaft by drilling and grouting overlapping columns around MH-3, drilling and grouting the base of the pit (at the bottom elevation of the secant wall), excavating soil and rock from within the secant wall, and removing and containing seepage water from the base of the SOE. While maintaining the dewatered condition, the shaft will be used to microtunnel between MH-2 and MH-3. The shaft will then be backfilled as described in **Section 2.3.1** using materials described in **Section 5.4**.

2.3.1 Construction of Sewage Pump Station Manhole 3

The Outlot 1 Pump Station (1 MGD sewage pump station) will be located in the southeastern portion of the Site, adjacent to the southwest terminus of future Happy Landing Road. The pump station will receive flows via gravity trunkline from the overall property to the west, and a force main is planned to exit the pump station towards the east. The Improvement Plan approved by Frederick County (and described in the next section) includes construction of the pump station "wet well," generator pad, and the sewer line from manhole MH-3 via MH-2 to the pump station wet well.

All of these elements (including MH-3 itself) are located outside the EC. However, MH-3 is very close to the EC boundary. Therefore, installation of the SOE structures (secant pile wall at MH-3) and work elements involving excavation, water management and microtunnel installation within that structure extend within the EC. This MH-3 work area is also within the floodplain and subject to permits described in the next section.

In order to construct the MH-3 SOE system, the contractor needs a level work platform at elevation 297.0 which is the top elevation of the secant wall per the design described in the next paragraph. This level work platform will extend to the dimensions of the EMP boundary (50 feet around the MH-3 SOE). This requires a cut (soil excavation) on the east portion and fill (soil and stone placement) on the west portion. **Figure 6** shows the existing grade of the area including some spot elevations. The maximum cut depth is approximately 5 feet on the northeast corner (from elevation 302 to elevation 297) and 3 feet at the southeast corner (from elevation 300 to elevation 297). The maximum fill is approximately 7 feet on the northwest corner (from approximate elevation 290 to elevation 297) and 6 feet at the southwest corner (from approximate elevation 291 to elevation 297). The eastern portion

of the work area (outside the EC at elevations above 297, shaded in red on **Figure 6**) will be excavated to elevation 297, generating approximately 1,000 cubic yards of soil. Approximately 300 cubic yards of that soil will be used to fill the adjacent (yellow-shaded area) which is also outside the EC at elevations below 297. The remaining approximately 700 cubic yards of soil will be temporarily stockpiled outside the floodplain in the stockpile area east of the pump station. These three soil movements will be reversed at the end of the work to restore existing grades. The area inside the EC (shaded in blue on **Figure 6**) will require approximately 1,000 cubic yards of fill. Because this area is within the EC, fill required inside the EC boundary to create this level platform will involve temporary import of approximately 1,000 tons of clean quarry stone placed on a geotextile. A copy of the Clean Stone Certificate provided by Vulcan Materials to Clark subcontractor Metro Materials for pump station work is provided in **Appendix F**. After the secant wall and microtunneling are complete, this temporary clean fill will be removed and used in backfilling of the MH-3 SOE. A revision of the pump station LOD to include the EMP boundary has been submitted to Frederick County SCD for approval. Because the EMP area is in the floodplain, a modification of the JPA Permit is also being submitted to MDE Wetlands and Waterways associated with the same expanded LOD. These agencies are aware of the CHS regulation of this activity subject to this EMP and their approvals are anticipated to reference this EMP. Grading of the portion of the EMP area outside the present LOD shown on **Figure 2** cannot proceed until those approvals are obtained.

The SOE structure at MH-3 extends to an excavation depth of 22 feet, with depth to water estimated at 4 feet and depth to bedrock estimated at 14.5 feet. Rock blasting is not proposed at this location. The SOE final design (by GEI Consultants, Inc. for Clark Foundations Group LLC, October 16, 2023) is provided as **Appendix D2** of this EMP.

Secant pile walls consist of overlapping drilled shafts installed from the ground surface down to an elevation that is determined based on the required embedment for the structural design. Per Sheet SOE-5 of the SOE design, surface grade is elevation 297.0. Top of rock is at approximate elevation 282.5. Subgrade elevation for the MH-3 base is elevation 276.8. The secant wall grout holes will extend to elevation 259.5. Steel piles in alternating grout holes will extend to elevation 267.5 or a minimum 8 feet into rock. The bottom elevation of grout holes and piles at MH-2 (the south end of the combined PS and MH-2 SOE) are the same as MH-3. The north end of the PS SOE is nine feet deeper with PS subgrade at elevation 266.5, grout holes extending to elevation 250.5, and steel piles extending to elevation 258.5 or a minimum 8 feet into rock.

These walls provide a low-permeability cutoff for the groundwater that would flow horizontally towards the excavation. However, due to the potential for high groundwater flows through karst rock formations below the secant piles, QL is also proposing to construct a grout plug at the bottom of the excavation. This grout plug will be constructed with low-

mobility grout pumped into a grid of grout holes to cover the footprint of the construction shafts.

Drilled soil and rock cuttings from the secant pile drilling and any groundwater displaced during grouting will be stored on-PS Site in the same manner as excavated soil and containerized groundwater as described in **Sections 5.3 and 5.5.**

After completion of the secant wall, the contents will be excavated. As described in **Section 5.3**, approximately 1,500 tons of soil and rock will be generated, stockpiled and tested.

At the completed excavation depth, the seepage analysis in **Appendix D1** estimates the groundwater seepage rate at the MH-3 SOE is 2,243 gallons per day. By design, two frac tanks (nominally 40,000 gallons capacity) is equal to 17.8 days capacity, which should allow for receipt of lab data for disposal. At a minimum it gives adequate time to rent a third or fourth tank if needed.

If needed (based on observed seepage rate after excavation of soil and rock within the secant wall), the SOE design includes a contingent concrete base over the grout plug. Alternatively, additional grouting can be conducted if the groundwater seepage rate is greater than expected.

The calculated seepage of 2,243 gallons per day would accumulate approximately 3 inches of water across the base of the SOE (25 feet x 50 feet) over a 24-hour period. Therefore, it should not be necessary to pump overnight to maintain construction conditions.

Once the MH-3 SOE and the PS/MH-2 SOE are both constructed, microtunneling between the two for sewer line installation will commence. The 30-inch diameter microtunnel boring machine (MTBM) is lowered into the "launch pit" (which could be MH-2 or MH-3) to begin tunneling through rock to the receiving pit. Microtunneling proceeds approximately 6 feet per day, or approximately 40 days for this project. Dewatering of the MH-3 SOE will continue over this duration.

The MTBM has connections for water supply (initially charged with potable water) and slurry return. The fluid is not a drilling mud, rather water conveying rock chips directly from the MTBM to an aboveground separator, where water is returned to the MTBM and rock cuttings are removed for management along with excavated rock and soil. Any significant karst voids along the microtunnel path will be grouted then drilled through in order to limit groundwater management by the tunneling water circulation system.

Once tunneling is complete, the 24-inch sewer line is installed/pushed through from one end and grouted in place.

The sewer line will be connected to MH-3 (which is likely to be removed and replaced within the SOE) and the SOE then backfilled with imported stone or excavated soil from PS Site soil (after sampling and subject to MDE approval per **Sections 5.3 and 5.4)**.

2.3.2 Plans and Permits

Several permits have been submitted to various issuing authorities for aspects of the work subject to this EMP.

Frederick County Maryland permitting included PS Site and Improvement Plans (Approved SP SP273456 and Approved IP PW273886). A copy of the Pump Station Site and Improvement Plans are included in **Appendix C**.

QL and its prime contractor STO have each submitted an NOI (notice of intent) for coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity (Maryland General Permit No. 20-CP) and these NOIs have been processed/issued by MDE WSA. The permit numbers are as follows:

Site Name	**20-CP Permit Number**	**State Number**	**Status**	**Applicant**
Quantum Frederick - Pump Station	MDRCK07C7	20CPK07C7	Issued November 27, 2023	Quantum Maryland, LLC
Quantum Frederick - Pump Station	MDRCK078V	20CPK078V	Issued November 27, 2023	STO

Also on November 27, 2023 MDE issued an addendum to each of the two permits stating:

> "This authorization does not cover discharges from the Environmental Covenant area as it is identified on the map included in your Stormwater Pollution Prevention Plan. The area, as marked, is to be left undisturbed unless approval from LMA is granted."

Upon MDE approval of this EMP by MDE LMA, QL and STO will contact MDE WSA to notify them of EMP approval and confirm WSA authorization under the 20-CP Permits to proceed with work within the EMP area identified in the SWPPP. All work within the EMP area will then be completed as per the approved EMP and 20-CP Permits and other State and Local requirements. This does not change the requirement that dewatering water collected from within the EMP and other areas of the pump station will not be discharged on-site.

An application for Water Appropriation and Water Use for construction dewatering for the Pump Station was submitted on 10/17/2023 and is awaiting approval.

Wetlands: No impacts to wetlands are authorized at this time.

Floodplain Permanent and temporary impacts to the 100-year Floodplain have been authorized by 20226097/ 22-NT-3124, and 202260706/ 22-NT-3094 respectively.

DWSU Contract number: 601-S
MDE Sewer Construction Permit – 1 MGD PS is 23-1020

3. Recent Site Activities

3.1 Impacted Media Evaluations

In September and August 2022 GTA performed a Phase II ESA to provide project-specific data along utility and roadway alignments in order to determine the proper management of material that will be excavated during roadway installation and utility installation/abandonment. The Phase II ESA was also prepared in consideration of a Work Plan that was submitted to the MDE LMA for review and approval. The sampling locations and sampling parameters were determined on September 1, 2022. The Work Plan was approved with some alterations and additional sampling parameters on September 28, 2022. Soil samples were collected from 86 soil borings that were situated at approximate 300-foot intervals along the Site's roadway or utility alignments or within the Site's proposed sediment traps, sewage pumping station, and electrical sub-station. The approximate sample locations are depicted on **Figure 3**.

This section describes the Phase II ESA in general, followed by specific Phase II samples in the vicinity of the MH-3 work subject to this EMP. **Section 3.3** further describes COPCs in soil and groundwater in the area subject to this EMP. **Section 3.3.1** describes the results of Phase II soil samples which are located closest to the area subject to this EMP (SA1-A within the EC, and SA5-A and SA6-A outside the EC). The analytes that were requested for analysis for samples at these locations were either not detected above the laboratory reporting limits or the applicable comparison values. Please refer to the *Phase II Environmental Site Assessment, Initial Infrastructure Phase* (GTA, October 11, 2022) and *Phase II ESA Initial Infrastructure Phase Addendum* (GTA, November 2, 2022) for specific details regarding the Phase II ESA. Figure 4, Figure 8, and Table 2 of the Phase II ESA are reproduced in **Appendix A** of this EMP.

3.2 Contaminants of Potential Concern

3.2.1 Soil

No work related to the pump station or MH-3 construction will be conducted within the SMA.

PAHs, PCBs, and arsenic are conservatively identified as COPCs in soil within EC areas, outside of the SMA; however, these COPCs were not detected above laboratory reporting limits and/or respective NRCS values outside the SMA as part of GTA's 2022 Phase II ESA – Initial Infrastructure Phase. See **Appendix A** for Phase II ESA – Initial Infrastructure Phase data tables.

As shown on **Figure 3**, the three closest Phase II boring locations surrounding the MH-3 location subject to this EMP include SA1-A within the EC, and SA5-A and SA6-A outside the EC. Sample SA-7C is the next closest boring within the EC, but it is located across Tuscarora Creek. Boring locations SA1-A, SA5-A and SA6-A are also shown on **Figure 2** in relation to proposed features. Sample depths are identified below.

At location SA1-A (northwest of pump station MH-3 inside the EC) – a grab sample was collected from 0-1 feet bgs and a composite sample was collected from 1-6.5 feet bgs.

- Arsenic results ranged between 2.7 (shallow) to 7.5 mg/kg (deep). All are below the Risk-based calculated value from the MDE NRCS

- Total Chromium was detected in the deep samples above the 30 mg/kg level for Anticipated Typical Concentrations for soils in Eastern Maryland. The four reported detections of total chromium ranged from 20 to 44 mg/kg. These two samples (and others referenced in this section) were not speciated for hexavalent chromium. However, as described in the Phase II Addendum, 7 samples with total chromium over 30 mg/kg from across the site were analyzed for hexavalent chromium and (per the Phase II Addendum) "Hexavalent chromium was not detected above the laboratory's reporting limits in the submitted samples. As such, it appears that the chromium detection was associated with the more benign trivalent chromium." The non-residential trivalent chromium standard is 150,000 mg/kg.

At locations SA5-A (southeast of MH-3 outside the EC) and SA6-A (at the pump station location outside the EC) - four samples were analyzed (SA5-A[0-1 grab], SA5-A[1-7.5 composite]. SA6-A[0-1 grab], and SA6-A[1-20 composite].

- arsenic results ranged between 5.2 to 7.7 mg/kg. All arsenic results are below the Risk-based calculated value from the MDE NRCS of 26.8 mg/kg.

- Total Chromium was not detected in any of the four samples above the 30 mg/kg level for Anticipated Typical Concentrations for soils in Eastern Maryland. The four reported detections of total chromium ranged from 12 to 30 mg/kg.

Detections of beryllium, copper, lead, nickel, and zinc were reported at all soil sample locations described above, which were all below their associated MDE NRCS values. Mercury was also detected (below the associated MDE NRCS value) in sample SA1-A(1-6.5) only.

3.2.2 Surface Water

No work activities for the pump station and MH-3 construction will encounter surface water bodies within the area of work. Also, the MH-3 work under this EMP will not include any discharge of collected water on-Site or into surface water.

The pump station work (not subject to this EMP but subject to the 20-CP Permit and SWPP) will also not discharge collected water on-Site or into surface water.

3.2.3 Groundwater

Prior evaluations, as summarized in the Environmental Background Summary of the SMP, indicated that fluoride exceeded the USEPA MCL on portions of the Site, primarily within the SMA and EC.

Groundwater data in the vicinity of the MH-3 SOE construction is available from several sources including the Phase II ESA (GTA 2022), current and historic sample results from the North and South Landfill monitoring programs (Tetra Tech 1988, 2005, 2022), a water sample from the partial pump station excavation (GTA 2022), and a water sample from water in the partially constructed 1B sewer line infiltrating from a pipe joint near MH-4.

GTA's 2022 *Phase II ESA – Initial Infrastructure Phase* included groundwater sampling for fluoride at sample locations SA6-A (the pump station location outside the eastern EC boundary – sample number GTA-GW-1) and SA7-H (outside the western EC boundary – sample number GTA-GW-2), both in utility corridors where groundwater is expected to be encountered. As shown on Table 4 of the Phase II report, both samples had non-detect fluoride results.

The nearest groundwater monitoring wells in the Site groundwater/surface water monitoring network are MW-52, MW-60, MW-72 and MW-73 (two overburden monitoring wells and two bedrock monitoring wells). These four wells are located inside the EC west of the pump station MH-3 SOE location and west of (across) Tuscarora Creek (see **Figure 4**, from Figure 1 of the September 1, 2017 Well Abandonment Plan). In 2022, bedrock well MW-60 was sampled semi-annually and had two fluoride detections of 2.5 and 2.6 mg/L, which were both below the fluoride MCL of 4 mg/L. In 2022, MW-52 (overburden), MW-72 (overburden) and MW-73 (bedrock) were each sampled semi-annually and all results were above the fluoride MCL of 4 mg/L. The fluoride detections in 2022 from MW-52, MW-72 and MW-73 ranged from 4.3 to 7.7 mg/L.

The landfill monitoring network is no longer sampled for VOCs. The most recent data for VOCs and other compounds was November 2005. Results from that event are as follows:

Historic Groundwater Results

COC	units	MW-52 11/15/2005	MW-60 11/15/2005	MW-72 11/15/2005	MW-73 11/15/2005
Free Cyanide	ug/L	2	3.7	7.1	5.8
1, 1-Dichloroethene (DCE)	ug/L	ND (<1)	ND (<1)	ND (<1)	ND (<1)
Cis-1, 2-Dichloroethene	ug/L	ND (<1)	ND (<1)	ND (<1)	ND (<1)
Tetrachloroethene (PCE)	ug/L	4.9	4.2	5	6.1
Trichloroethene (TCE)	ug/L	0.5	ND (<1)	ND (<1)	ND (<1)
Vinyl chloride	ug/L	ND (<1)	ND (<1)	ND (<1)	ND (<1)
Total Fluoride	mg/L	7.19	5.3	7.45	8.02

As shown on **Figure 4**, former (abandoned) overburden monitoring well MW-59 was previously located east of Tuscarora Creek, very close to the pump station location. This well was last sampled in 1988 and then abandoned in 2017 because groundwater concentrations for the parameters listed above were routinely non-detect or below standards in March, May, and June 1988. MDE has noted that this data is limited in number of samples and depth (overburden only) and is old. It is included here for completeness and direct proximity to the EMP work area. More recent samples from PS Site include SA6-A groundwater (GTA 2022, described above) and sample EMP-GW1 (GTA 2023) described in the next paragraph.

Appendix B provides the analytical data for the most-recent sample collected from groundwater seepage into the pump station excavation (EMP-GW1), collected May 23, 2023 from the excavation pit. This sample contained fluoride at a concentration below the reporting limit (0.25 mg/L) for the laboratory sample. Samples GW-2 and GW-3 on the same laboratory report relate to basins DA-2 and DA-11 which are not located near the area subject to this EMP.

Fluoride is considered a COPC in groundwater in the Site, in both overburden and deep groundwater, based on the consistent occurrence above MCL in sentry wells (MW 52, 60, 72 & 73) near the EC boundary in close proximity to the PS Site. The most recent monitoring report is pending.

3.3 Exposure Pathway Evaluation

Based on the Phase II ESA performed on the initial infrastructure phase of construction and the existing SMP, potential environmental exposure risks to future occupants and construction workers may exist at the Site. However, with institutional controls in the recorded EC itself serving as deed notice and prohibiting use of groundwater, there is not a complete exposure pathway after construction activities for the MH-3 area, within the EC.

Specific to this EMP and the MH-3 construction, potential soil exposure is described in **Section 3.4.1** and exposure to groundwater is described in **Section 3.4.2**.

During implementation of the work under this EMP there will be an environmental professional familiar with the authorized scope of work on-site during working hours. Typically, there are two - an employee of GEI Consultants, Inc. under contract to STO and an employee of Tetra Tech under contract directly to QL (see **Section 5.0**). In addition, the EMP will be distributed to and signed by representatives of QL, STO, Clark, and the GEI and Tetra Tech representatives (see **Section 7.2**)

The identified exposure pathways, potentially exposed populations, and COPCs are summarized in the table below.

Table 1: Potential Exposure Pathways

Media	Potential Exposed Population	Exposure Pathway	COPCs
Soil (SMA, Explicitly) EC Soils are assumed to have the potential to provide the same pathways	Adult On-Site Construction Worker Child Visitor Youth Visitor Adult Visitor Adult On-Site Worker	Dermal Exposure Incidental Ingestion Inhalation of Volatiles and Fugitive Dust	PAHs (benzo(a)anthrancene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthrancene, and indeno(1,2,3-c,d)pyrene), PCBs (Aroclor 1016, Aroclor 1242, and Aroclor 1248), and Arsenic
Groundwater	Adult On-Site Construction Worker	Dermal Exposure Incidental Ingestion	Fluoride

3.3.1 Direct Contact to Soil Contamination

There is a potential for site construction workers to come into contact with the COPCs during drilling of secant piles, excavation of soil and rock and management of soil stockpiles including loading for disposal. Some of the site soil COPCs listed above (such as PCBs) are related to specific areas of the site and within the SMA and not likely to be contacted in the MH-3 area. Soil COPCs were not detected above standards in the Phase II soil samples in the vicinity of MH-3 (**Section 3.3.1**). However, for planning and safety purposes, the listed site soil COPCs are addressed in the HASP.

This contact will be limited by implementing a site-specific HASP.

3.3.2 Exposure to Groundwater Contamination

Groundwater has generally been identified at elevations at the site ranging from 5 to 25 feet below ground surface (bgs), with some apparent perched water conditions present on portions of the Site. In the vicinity of MH-3 (and as confirmed through recent geotechnical drilling), groundwater is generally 6 to 9 feet below ground surface. Groundwater at the site is not currently used for any purpose, and the EC prevents its use within the area encumbered by the EC. The groundwater at the Site will be prohibited from being used for any purpose via restrictions recorded in the property deeds for areas within the EC and SMA.

There is a potential for site construction workers to come into contact with groundwater from within the area encumbered by the EC during the excavation at MH-3 and continuing dewatering at MH-3 during microtunneling operations. This contact will be limited by implementing the secant pile SOE (which will significantly limit the overall volume of water to be encountered/managed), as well as water management actions including containerizing the groundwater for testing and proper disposal.

Based on the groundwater seepage analysis conducted in conjunction with the SOE design (see Table 2 of **Appendix D**), the estimated water generation rate at MH-3 SOE is 2,243 gallons per day. **Appendix D** Table 1 shows a seepage estimate of 3,723 gallons per day at the pump station/MH-2 SOE (outside the EC and EMP). The SEEP/W model shows a maximum decrease in the water table of 0.2 feet outside of the excavations. Pump station construction is estimated to take approximately 105 days including approximately 85 days of dewatering at the PS/MH-2 SOE. The duration of dewatering at the MH-3 SOE is shorter (it will start later and end at approximately the same time).

The site-specific HASP will address worker contact with the groundwater.

3.3.3 Inhalation of Fugitive Dust

During construction activities, it is possible for soil impacted by COPCs to become airborne. There is a potential for site construction workers to breathe this fugitive dust. The inhalation of fugitive dust will be limited by implementing the site-specific HASP and construction practices that prevent dust generation (e.g., implementation of dust control methodologies), as well as air monitoring for dust concentrations to assure no hazardous exposure can occur for workers. Details of this monitoring is provided in **Section 5.2.1**.

The proposed remedy for inhalation of fugitive dust is protective of human health as exposure to contamination above regulatory limits will be prevented.

4. Cleanup Criteria

The cleanup criteria for the Site are summarized in the table below. The cleanup criteria for the Site soil COPCs generally reflect the MDE NRCS values, which are the generic risk-based guidance values in MDE's Cleanup Standards for Soil and Groundwater; October 2018; Interim Final Guidance (Update No. 3). MDE cleanup standards are derived from USEPA Region III Reginal Screening Levels (RSLs), which assume a 1E-6 cancer risk; generally speaking, MDE modifies these values to reflect a 1E-5 cancer risk in the NRCS values. The cleanup criteria for fluoride and cyanide are derived from the USEPA National Primary Drinking Water Regulations (NPWDR); May 2009. The cleanup criterion for cyanide is derived from the Administrative Consent Order (dated 1992 and revised 1997, and 2007) between Eastalco Aluminum Company and the MDE.

Table 2: Cleanup Criteria

Media	COPC	Cleanup Criteria	Basis
Soil	Benzo(a)anthracene	21 mg/kg	NRCS
	Benzo(a)pyrene	2.1 mg/kg	NRCS
	Benzo(b)fluoranthene	21 mg/kg	NRCS
	Benzo(k)fluoranthene	210 mg/kg	NRCS
	Dibenz(a,h)anthrancene	2.1 mg/kg	NRCS
	Ideno(1,2,3-c,d)pyrene	21 mg/kg	NRCS
	Aroclor 1016	5.1 mg/kg	NRCS
	Aroclor 1242	0.95 mg/kg	NRCS
	Aroclor 1248	0.95 mg/kg	NRCS
	Arsenic	26.8 mg/kg	RCV
Groundwater	Fluoride	4.0 mg/L	NPWDR
Surface Water	Cyanide	0.2 mg/L	NPWDR

Note: Arsenic is proposed to be compared to the MDE risk-based comparison value (RCV) of 26.8 mg/kg for commercial properties.

If other COPCs are identified, the cleanup criteria will be re-evaluated. Generally, the cleanup criteria that will be applied to any additional COPCs will be the published MDE NRCS values, or site-specific values calculated using the appropriate frequency exposure parameters, as the need arises.

5. Remedies and Institutional Controls

This EMP presents proposed actions to protect against exposure to potentially contaminated soil and groundwater in conjunction with construction and improvement on the Site. Potentially complete exposure pathways have been identified between contaminated soil and groundwater and construction worker and future on-site worker and visitor populations at the Site. These potential exposure pathways will be eliminated through implementation of a site-specific HASP by Clark Construction (Clark) and any subcontractors working for Clark, construction observation for health and safety measures, proper management of impacted materials encountered during construction activities, and engineering and land use controls (deed restrictions on use of groundwater in the EC).

During implementation of the work under this EMP there will be an environmental professional familiar with the authorized scope of work on-site during working hours. Typically, there are two - an employee of GEI Consultants, Inc. under contract to STO and an employee of Tetra Tech under contract directly to QL. These inspectors are responsible to be familiar with approved environmental plans and scopes of work (including this EMP) and have the authority to stop work if necessary or otherwise direct concerns to appropriate client or contractor personnel.

The environmental professionals are notified by the contractor each morning (via Smartsheets) of the activities for the next day, including specific information as to whether work is in the EC, whether any movement of soil or water is planned (including location/estimated quantity) etc. Both environmental professionals separately review the submittal to verify compliance with plans, add conditions if needed, and prepare for the next day. These sheets are retained. Armed with that advance information, specific elements which will be observed and documented by the environmental professionals or delegates include:

- Daily beginning of each work element (to verify equipment/work areas), including site prep, first secant drilling, first excavation inside secant wall;
- Start and completion daily of any water movement (log source, destination, label the tank, and once moved the amount);
- Start, periodically during work and at completion of any soil movement daily for work area prep, secant drilling, excavation, backfill (log source, destination, and quantity). If an import, document quarry fill cert or reference to MDE approval;
- As needed to verify continued EMP compliance and document daily water/soil/fill volumes for items which continue more than one day; and

- All environmental samples collected (water sampled for disposal, soil sampled for disposal or reuse.

5.1 Site Security

The SMA portions of the Site are currently secured with fencing to prevent trespassing during non-working hours. The excavation area of MH-3 is not located within the SMA.

5.2 Health and Safety Measures

A site-specific HASP has been produced by Clark Construction (Clark) and is included in **Appendix E**. The primary action taken to mitigate potential exposures to construction workers will be the avoidance of direct contact with potentially impacted soil and groundwater, and the appropriate use of personal protective equipment (PPE) during construction activities. Any subcontractors working for Clark will also produce a HASP that provides the administrative and engineering controls and PPE that will be used to ensure workers are protected.

HASPs will be provided by the contractors covering the work of that company's workers involved in construction activities potentially encountering impacted media, for their information. The contractors should independently assess the available information and implement appropriate measures to protect the health and safety of their employees and subcontractors. Information and recommendations contained in Clark's HASP should not in any way be construed as relieving its subcontractors of their responsibilities for site health and safety.

5.2.1 Dust Control

The potential for worker exposure to site contaminants is primarily via direct contact, ingestion, or inhalation of nuisance dust. The primary action taken to mitigate potential exposures to construction workers will be the avoidance of direct contact with potentially impacted soil and the appropriate use of standard construction site personal protective equipment (work gloves, safety glasses, etc.) during construction activities.

Using the maximum detected on-site concentrations of COPCs in soil, the OSHA Permissible Exposure Limits (PELs) for the individual COPCs could only be exceeded if the nuisance dust PEL is exceeded by several to many orders of magnitude. Therefore, airborne dust will be used as a real-time surrogate to prevent potential exposure to contaminant; with nuisance dust controlled to below the worker protection limits, construction workers are protected from COPCs.

Accordingly, the nuisance dust PEL of 15 mg/m^3 can be used as a conservative guideline for air monitoring. The nuisance dust concentration of 15 mg/m^3 can be visually identified

without active dust monitoring equipment. If airborne dust is visually observed during activities involving known or potentially contaminated soils, dust suppression measures (e.g., wetting, misting, etc.) will be implemented. If such efforts do not effectively suppress visible dust, then dust monitoring will be initiated to ensure nuisance dust does not exceed the OSHA PEL of 15 mg/m^3. The nuisance dust PEL of 15 mg/m^3 will be used as a stop work action level, and earthwork will cease until dust is no longer visible and dust concentrations are below the 15 mg/m^3 stop work action level.

Visual indications of dust will be observed and recorded, and dust suppression activities will be implemented during earth moving activities at the Site.

A water truck is routinely present on-site during construction activities and available for use. Hydroseed equipment can also be used to spray water as a backup or where more appropriate to reach a particular area. Potable water is used for dust control.

5.2.2 Volatile Organic Vapors

No environmental sampling data or observations have indicated any petroleum or other potentially hazardous volatile organic compounds are present outside of the EC area. If any additional organic odors are detected in borings or excavations during the work, QL will stop work and will direct an investigation of the presumed impacts. This EMP will be amended to describe the risks present and protections to enact if this situation occurs.

5.3 Construction-Related Soil Management

The current scope of work represents an interim use of the property. Soils excavated from within the EMP area is subject to the requirements laid out in the recorded EC and MDE-approved SMP. The soils and rock from the MH-3 excavation will be stockpiled separate from all other materials (where shown on **Figure 5**) and will be tested for site COPCs. All stockpiles will be labelled as to source/contents (such as "MH-3/EC soil"). This soil excavated from within the MH-3 SOE will be a mix of EC and non-EC soil. Based on the size of the MH-3 SOE (approximately 25 feet by 50 feet and 22 feet deep) approximately 1,500 tons of soil and rock will be removed. For construction expediency on this particular work element, this soil is intended to be disposed off-Site rather than used as backfill (which would require MDE review/approval as the SOE extends outside the EC).

Soil sampling will at a minimum meet the requirements of the selected disposal facility. If observed soil quality (lack of visible contamination/waste/debris) and/or disposal sample results suggest the material may be considered for reuse, QL may elect to sample the material in accordance with the MDE Fill Material and Soil Management in Maryland fact sheet and related regulation (including one 10-point composite per 2,000 tons of material). If sampled soils meet criteria for Category 1 – Residential Unrestricted Use Soil and Fill Material or

Category 2 – Non-Residential Restricted Use Soil and Fill Material, QL may request authorization for use of the material as backfill in the MH-3 SOE or other use.

If field observations, field screening, unusual odors, odd coloration, or other factors indicate environmental impacts in significant quantities, the suspect impacted soils will be segregated from non-impacted soils so that additional characterization can be performed. This soil will be placed on and covered with plastic sheeting. Soil samples will be collected from the suspect impacted materials to evaluate whether it should be classified as regulated and requiring off-site disposal.

Impacted soils/waste (as determined by sampling results) may be disposed at an appropriate disposal facility. The potential disposal facilities will be contacted to establish the necessary sampling and analysis requirements. The likely facilities for disposal of soil include:

Soil Safe, Inc. (Soil Safe)	or	Clean Earth Inc. (Clean Earth)
16001 Mattawoman Drive		1469 Oak Ridge Place
Brandywine, Maryland 20613-3027		Hagerstown, Maryland 21740
(301) 782-3036		(215) 734-1400

After completion of MH-3 area excavation, microtunneling will be conducted through rock between the MH-3 SOE and the MH-2/pump station SOE. The contractor may elect to tunnel from MH-2 to MH-3 or more likely from MH-3 to MH-2. In that case (tunneling from MH-3 to MH-2), tunneling spoils will be removed via the MH-3 SOE.

The entire length of this tunnel (from one SOE to the other) is outside the EC but part of the tunnel is beneath (inside) the EMP boundary. Therefore, tunneling spoils are not “EC soil”, however the material will be handled within the EMP boundary and will therefore be separately stockpiled next to the excavated MH-3 SOE soil and tested and the results shared with MDE prior to a decision on final disposition.

5.4 Clean Fill Materials

Materials such as open-graded aggregate to be used within the MH-3 excavation will be documented to be clean, either through submittal to MDE and prior approval of a certification from the supplier (for quarry stone) or by testing and approval by MDE prior to use. A copy of the Clean Stone Certificate provided by Vulcan Materials to Clark subcontractor Metro Materials for pump station work is provided in Appendix F.

5.5 Groundwater Management

A groundwater use restriction is recorded in the property deeds by way of the existing EC. As such, the use of public utilities is planned. Groundwater will be encountered during MH-3

area construction. Groundwater is anticipated to be encountered at a depth of 6 to 9 feet below grade at the MH-3 location.

The use of alternate means of construction including the secant pile SOE structure and grouted base plug will significantly limit the amount of seepage into the structure during excavation and construction within the SOE (microtunneling and MH-3 construction/pipe connection).

Appendix D includes a memorandum presenting the Pump Station Seepage Analysis with SOE Design elements. This memo separately describes the SOE design elements to be used for the pump station and for MH-3 as well as the anticipated groundwater seepage rate in the Pump Station SOE (outside the EC and not subject to this EMP) and the MH-3 SOE.

Based on the groundwater seepage analysis conducted in conjunction with the SOE design (see Table 2 of **Appendix D**), the estimated water generation rate at MH-3 SOE is 2,243 gallons per day. **Appendix D** Table 1 shows a seepage estimate of 3,723 gallons per day at the pump station/MH-2 SOE (outside the EC and EMP). Pump station construction is estimated to take approximately 105 days including approximately 85 days of dewatering at the PS/MH-2 SOE. The duration of dewatering at the MH-3 SOE is shorter (it will start later and end at approximately the same time).

With regard to water management, page 3 of the EC states:

> ”Excavation Encountering Groundwater: When conducting any excavation activities on the Property extending to the ground water table, the Property Owner shall implement the requirements of a site-specific health and safety plan in accordance with the Site Management Plan to ensure that worker protection measures are met. The encountered ground water shall be containerized during all dewatering activities at the property and shall be analyzed before disposal. The analytical results shall be the basis for appropriate disposition of the ground water in accordance with applicable local, State and federal laws and regulations.

This EC requirement is applicable to any water evacuated from secant pile boreholes at MH-3 as well as seepage water removed from the completed MH-3 SOE. Since this area of work abuts/crosses into the EC and site construction workers may come in contact with groundwater during the work, contractors are required to assure appropriate health and safety precautions presented in the contractors’ HASPs are followed.

The water extracted during construction activities at MH-3 will be containerized and tested for COPCs to assure proper handling and disposal. Due to the small amount of water estimated in the seepage analysis the contractor will dispose of all MH-3 area water at an off-site commercial disposal facility. Water will be pumped through a hose to two portable frac tanks located outside the floodplain (and therefore also outside the EC) as shown on **Figure**

4. When the first tank is between 20% and 100% full, the water will be sampled for fluoride plus any additional requirements of the disposal facility.

When results are received from the laboratory, they will be provided to the disposal facility for waste acceptance approval and will be sent to MDE for information. Because all MH-3 water will be disposed off-site, no further sampling is planned when the second and subsequent tanks are filled. The source of water is a defined single location, where water quality is not anticipated to vary significantly, and this water is not discharged on-site.

Groundwater will also be encountered in construction of the pump station wet well and MH-2. Since this water is outside the limits of the EC, this water will be managed as per the SWPPP, which requires containerization, testing and offsite disposal, as per **Section 2.1**.

Due to the sequence of construction, water will be managed at MH-2 (including sampling for off-site disposal) prior to MH-3. Because the MH-3 work is partially within the EC it has the potential to have higher COPC concentrations than the MH-2 water. Therefore, the first MH-3 water containerized/tested will be placed in a separate tank from MH-2 water for testing. All tanks will be labelled as to their contents. Once water from both areas has been tested and approved for disposal, the contractor may elect to store both in the same tank and/or ship water in the same load in order to limit the total number of tanks on-site. Any tank containing any EC water from MH-3 will be so labelled.

As noted above, the calculated groundwater seepage rate at MH-3 SOE is 2,243 gallons per day, and the seepage estimate at PS/MH-2 is 3,723 gallons per day. The PS/MH-2 SOE will be constructed first. By design, two frac tanks (nominally 40,000 gallons capacity) is equal to 10.7 days capacity, which should allow for receipt of lab data for disposal. At a minimum it gives adequate time to rent a third or fourth tank if needed. In the case that seepage rate is significantly higher than expected (the calculated number already includes a factor of safety), the design includes a contingency to pour a concrete base or implement additional grouting. Work could stop and the water level would not rise above natural groundwater elevation so there is no possibility of a surface discharge or need for emergency pumping. Once construction of the actual pump station commences it will be necessary to continuously dewater, but the rate will be controlled and known and water shipment can be scheduled to keep tank volumes low. Based on the established MH-2 flow rate, MH-3 will follow the same approach. For MH-3, 2 frac tanks is 17.8 days of capacity at the calculated rate.

Containerized water will be disposed at an appropriate disposal facility as determined by sampling results. The potential disposal facilities will be contacted to establish the necessary sampling and analysis requirements. Water recently collected from manhole MH-4 (groundwater seepage into a partially constructed sewer line generally near MH-3) was tested and shipped to Valicor Environmental Services under contract to Capitol Environmental Services, Inc. It is anticipated that water will go to the same Valicor facility if acceptable based on sample results:

Valicor Environmental Services
17551 Power House Road
Williamsport, MD 21795
(410) 463-7662

Capitol Environmental Services, Inc.
PO Box 37143
Baltimore, MD 21297-3143
Attn: Ben Sisti
(732) 672-9476

5.6 Capping

No activities for work covered by this EMP will be conducted within the SMA. Therefore, no capping activities are required for this work at this time.

5.7 Land Use Controls

Land use controls currently exist in the form of an EC that includes the area adjacent to MH-3, and closure documentation issued by the MDE LMA for the successful completion of EMP activities will also list land use controls. The existing land use controls for the area within the EC include but are not limited to the soil excavation controls and restrictions, as well as restrictions on the use of groundwater beneath the property. These land use controls are recorded in the local land records.

6. Contingencies

If site conditions observed during construction and/or remediation differ substantially from those described herein, modifications to this EMP may be necessary. Such differing conditions may warrant an adjustment of sampling procedures, analytical methods, remedial activities, etc. and such modifications will be addressed in an addendum or revision to this EMP. MDE will be notified of any newly discovered contamination, proposed changes to this EMP, or citations from other regulatory agencies.

Specifically, if newly discovered contamination is identified during site development, the following contingency measures will be taken:

- Notify MDE within 24 hours (verbally and written/email);
- Postpone implementation of the EMP;
- Evaluate new site conditions identified; and
- Amend EMP to address new site conditions identified.

Any amendments to the EMP must be approved by MDE prior to implementation

Notified departments will include:

MDE Land Restoration Program
Land and Materials Administration
1800 Washington Boulevard
Baltimore, Maryland 21230
(410) 537-3466
Attention: Anuradha Mohanty

In addition to the above, if there is evidence of an oil discharge at the Site in violations of applicable regulations, it must be reported within two hours as specified in COMAR 26.10.08.01, to the OCP (410-537-3442) or, if after normal business hours, to the 24-hour Spill Reporting Hotline (1-866-633-4646). The MDE will be verbally notified within 48 hours (72 hours in writing /email) of changes (planned or emergency) to the EMP implementation schedule, previously undiscovered contamination, and citations from regulatory entities related to health and safety practices. Notifications shall be made to the MDE project manager at 410-537-3466.

Any violations of State or Local permit requirements during implementation of the EMP in the EMP area must be reported to the CHS project manager by email within 24 hours of receipt of the violation notification.

7. ADMINISTRATIVE

7.1 Schedule

The preliminary schedule to implement the EMP is presented below. Note that this preliminary schedule is subject to change based on unforeseen conditions that are beyond the development team's control. Deviations from this proposed schedule will be communicated to MDE.

Table 3: Estimated Construction Schedule Relevant to EMP

Milestone	Estimated Schedule
EMP Review/Approval	December 2023
Submission of Weekly EMP Progress Reports	Weekly following initiation of work (due Tuesday of the following week))
MH-3 Secant Wall Installation	December 2023 – (30 days)
MH-3 Excavation	January 2024 (10 days)
Microtunneling/Utility Installation Activities	January/February 2024 (30 days)
MH-3 Backfill	February/March 2024 (10 days)
EMP Completion Report Submittal	April 2024
MDE review completed	May 2024

The MDE project manager will be notified in writing within five calendar days prior to the beginning of EMP implementation activities. Schedule updates will be provided when needed, during preparation of the progress reports discussed in **Section 7.2**.

If site conditions or other factors lead to a change in the scope of work or procedures MDE will be notified and an EMP modification will be provided to MDE for review and approval prior to implementation.

7.2 Documentation

After approval of the EMP and prior to the start of work under this EMP, QL and all site contractors working under this EMP (including the on-site environmental professionals) will review the EMP and sign the certification on the following page stating that they have received and read the EMP. All contractor certifications are to be submitted to the CHS project manager prior to EMP implementation.

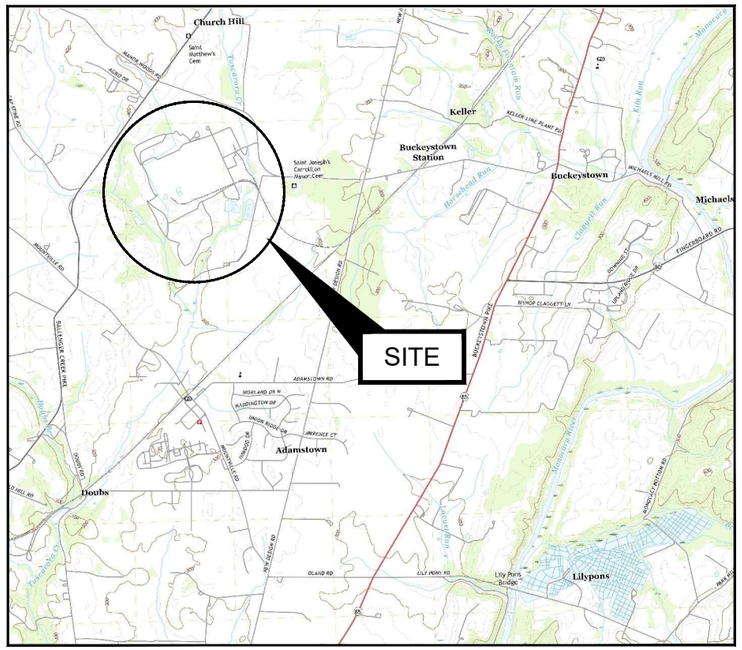
During implementation of this EMP, QL will prepare weekly progress reports summarizing the remedial activities occurring during that week and volume of groundwater collected and disposed of off-Site. These weekly progress reports will be submitted to the Client and to MDE by Tuesday of the following week, to demonstrate implementation of this EMP. At the conclusion of EMP implementation, QL will prepare an EMP Completion Report.

MH-3 EMP Certification

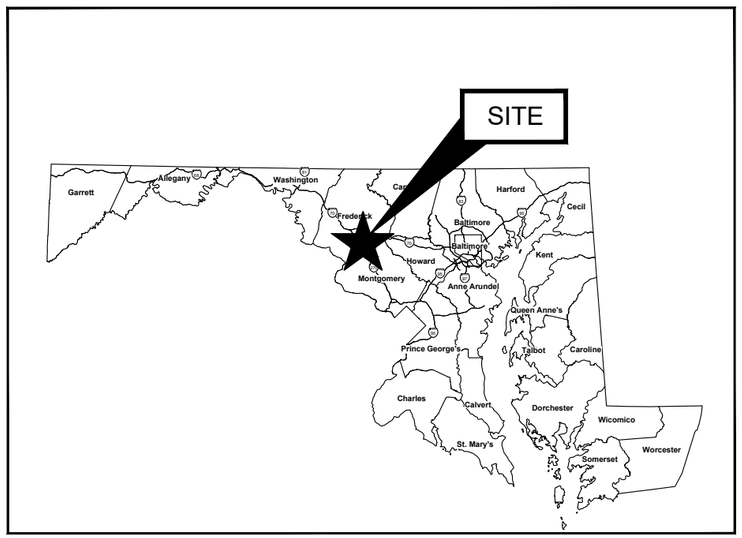
By signing below, I certify that I have read and understand the terms and conditions of the EMP for the above designated project and agree to follow the practices described in the EMP.

Name	Company	Signature

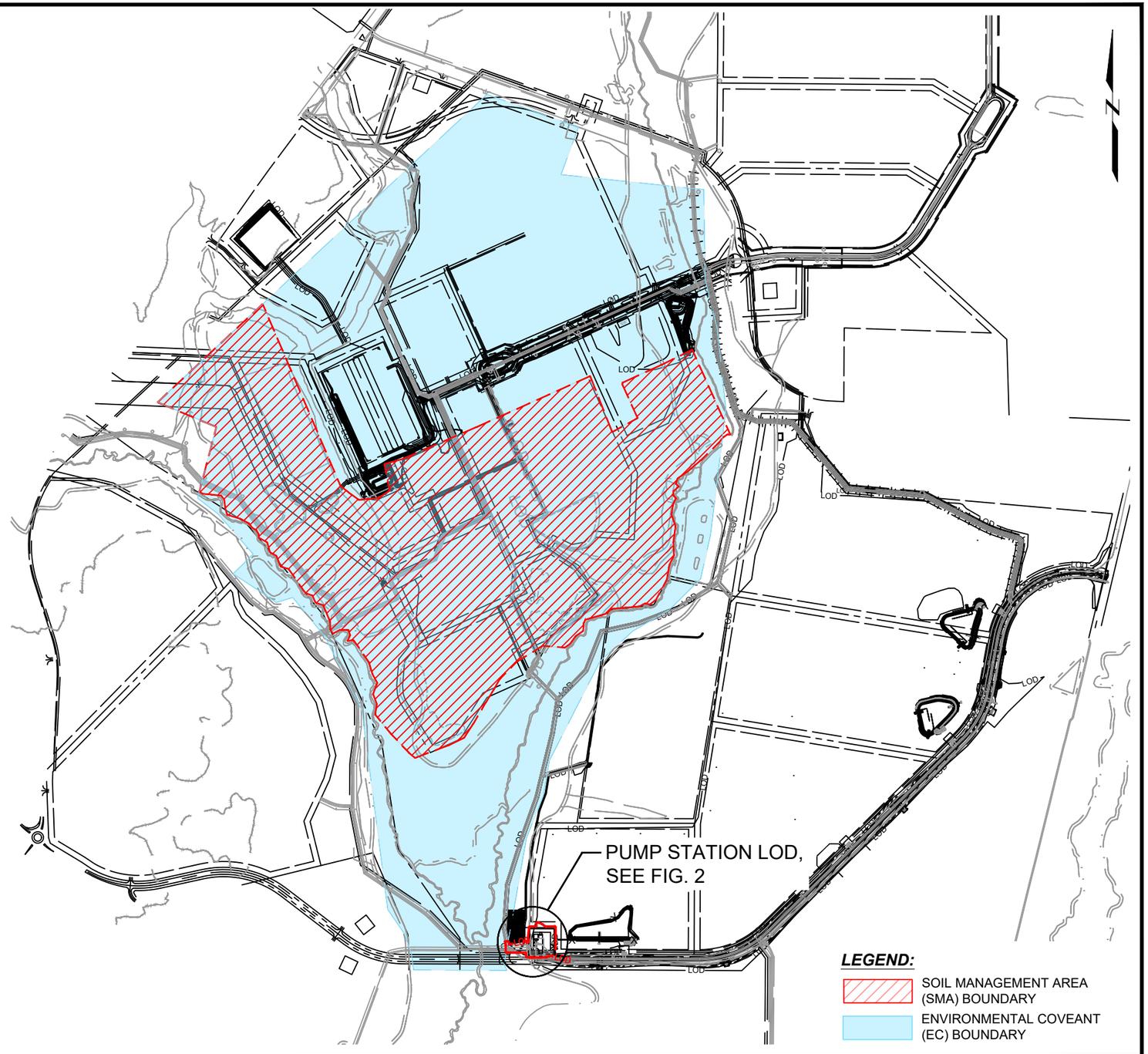
Figures



SOURCE:
MAP TAKEN FROM USGS.GOV.



STATE or COUNTY MAP
(NOT TO SCALE)



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Environmental Management Plan Quantum Loophole Frederick, MD	GEI Consultants	ENVIRONMENTAL MANAGEMENT PLAN PUMP STATION MH-3
Quantum Maryland Austin, TX	Project 2302756	October 2023 Fig. 1

MORTON, TIMOTHY \\geiconsultants.com\data\Data_Storage\Working\STRUCTURE TONE\2302756 STO Mission Critical - Frederick\00_CAD\Figures\EMP\MH-3 Site\Fig 1_EMP-Pump Station MH-3.dwg - 10/31/2023

AREA OF SUBSURFACE CONSTRUCTION UNDER THIS EMP. 50 FOOT BOUNDARY AROUND MH-3 SOE. SEE FIGURE 5 FOR MH-3 SOIL STOCKPILE AND WATER STORAGE LOCATIONS

APPROXIMATE LIMITS OF DISTURBANCE (OUTFALL 1A)

EXISTING 24" PIPE

SA1-A

100 YEAR FLOOD PLAIN

ENVIRONMENTAL COVENANT

APPROXIMATE LIMITS OF DISTURBANCE (AREA 1 - MASS GRADING)

APPROXIMATE LIMITS OF DISTURBANCE (PUMP STATION)

APPROXIMATE LIMITS OF DISTURBANCE (OUTFALL 1A)

GROUTED/SOE AREA MH-3

50'-0"

FUTURE 24" SEWER PIPE

SA6-A

GROUTED/SOE AREA PUMP STATION/MH-1 AND MH-2

APPROXIMATE LIMITS OF DISTURBANCE (HAPPY LANDING)

APPROXIMATE LIMITS OF DISTURBANCE (PUMP STATION)

SA5-A

LOD

N

LEGEND:

- SA 1 Boring Locations
- SA 5 Boring Locations
- SA 6 Boring Locations

NOTES:

1. BORING LOCATIONS ARE .....

SOURCE:

1. BORING LOCATION PLAN BASED ON 2022 PHASE II DRAWING PROVIDED BY GEO-TECHNOLOGY ASSOCIATES, INC., DATED OCTOBER 2022.

0 50 100

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Environmental Management Plan
Quantum Loophole
Frederick, MD

Quantum Maryland
Austin, TX

GEI Consultants

ENVIRONMENTAL MANAGEMENT PLAN
PUMP STATION LOD PLAN

Project 2302756 | October 2023 | Fig. 2

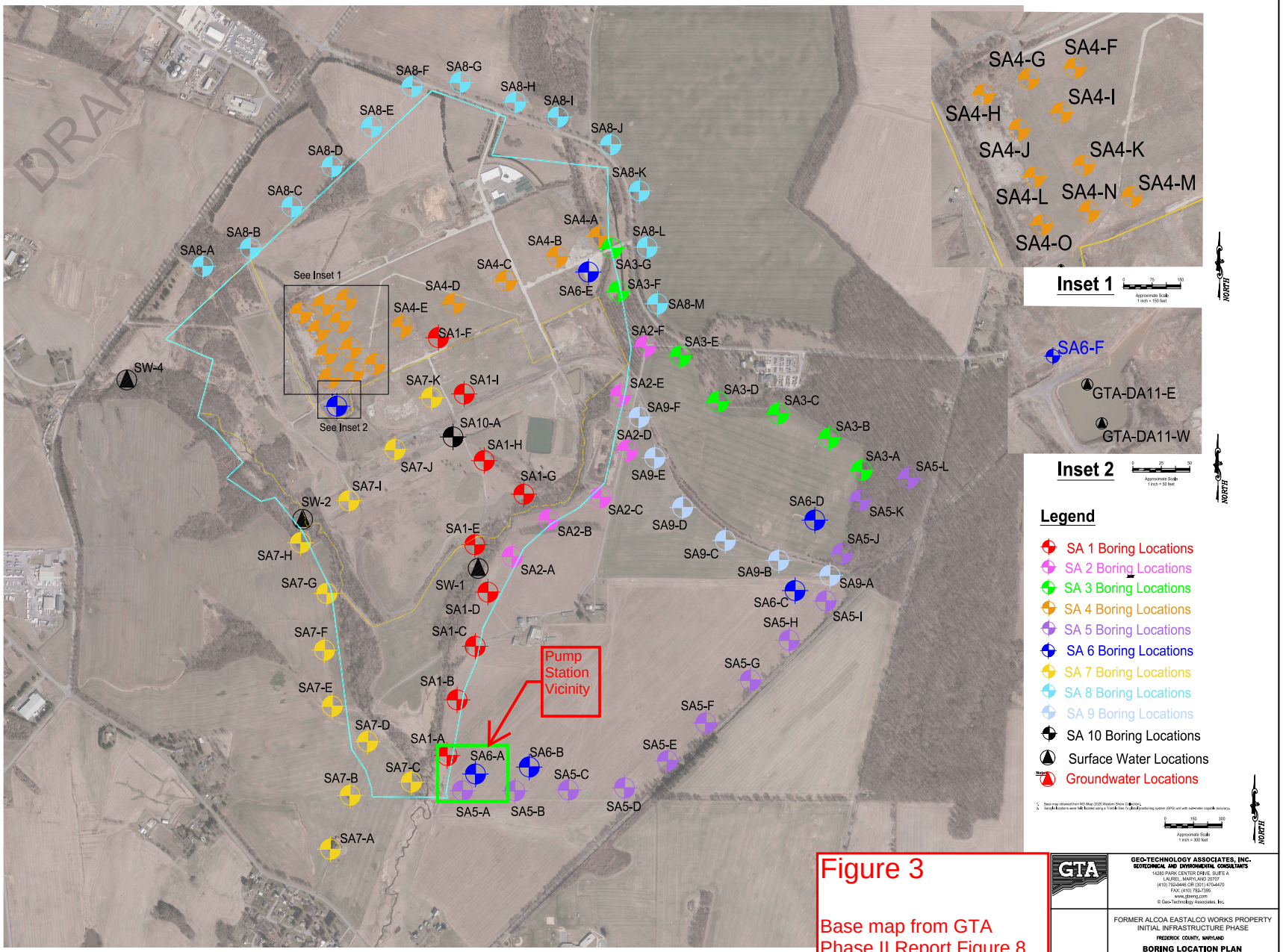

Figure 3

Base map from GTA Phase II Report Figure 8

GTA

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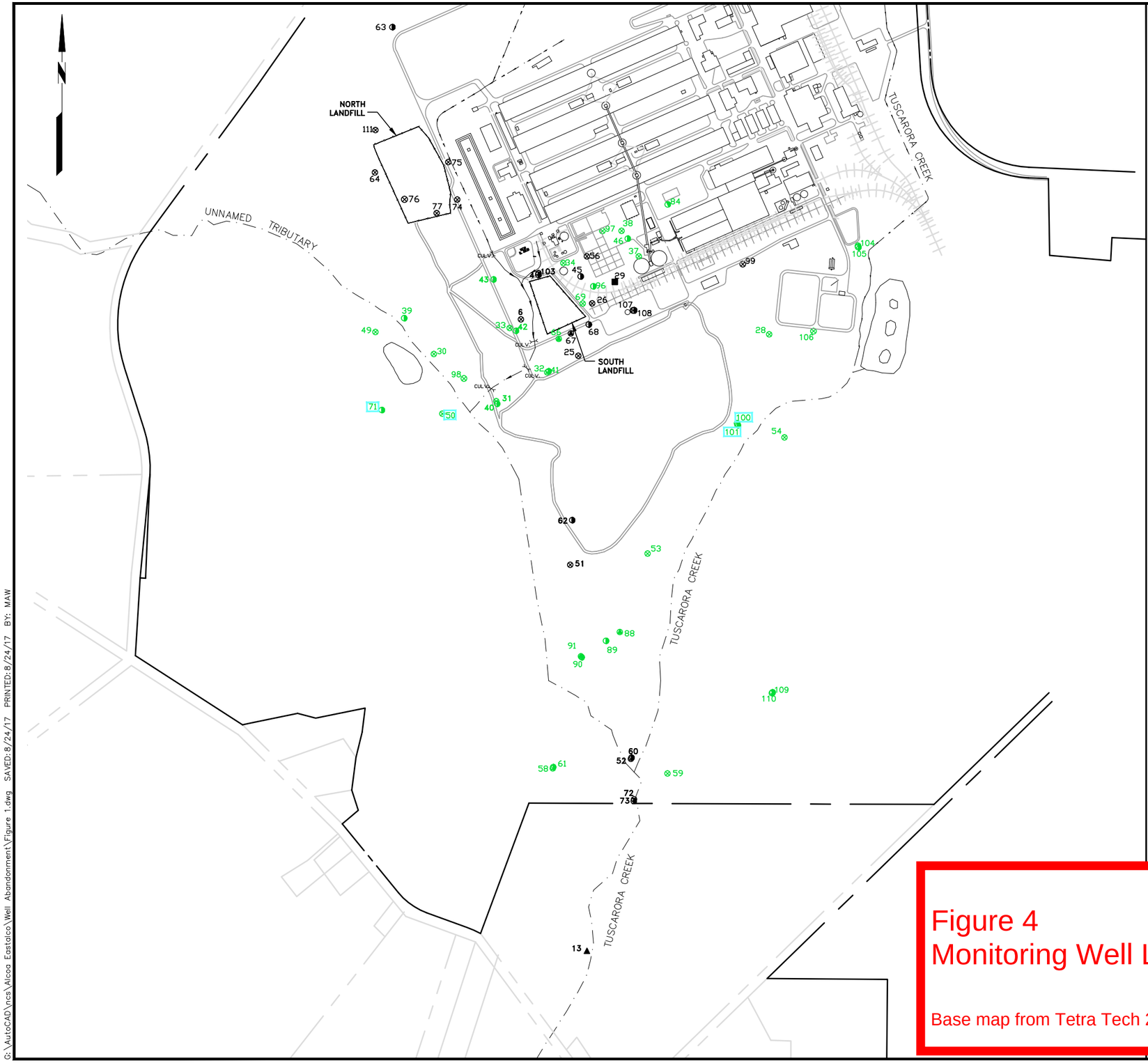
FORMER ALCOA EASTALCO WORKS PROPERTY
INITIAL INFRASTRUCTURE PHASE
FREDERICK COUNTY, MARYLAND

BORING LOCATION PLAN

PROJECT: 31101534 | DATE: October 2022 | SCALE: 1" = 300' | DESIGN BY: CMM | REVIEW BY: KPP | FIGURE: 3



LEGEND:

- SAMPLE TO BE COLLECTED PRIOR TO ABANDONMENT
- OVERBURDEN MONITORING WELL LOCATION PLANNED FOR ABANDONMENT
- OVERBURDEN/BEDROCK MONITORING WELL LOCATION PLANNED FOR ABANDONMENT
- BEDROCK MONITORING WELL LOCATION PLANNED FOR ABANDONMENT
- OVERBURDEN MONITORING WELL LOCATION (MAINTAIN FOR MONITORING)
- OVERBURDEN/BEDROCK MONITORING WELL LOCATION (MAINTAIN FOR MONITORING)
- BEDROCK MONITORING WELL LOCATION (MAINTAIN FOR MONITORING)
- OFF-PROPERTY/BEDROCK MONITORING WELL LOCATION (NOT OWNED BY EASTALCO)
- RECOVERY WELL
- PROPERTY LINE
- STREAM COURSE

NOTE:

1. THE SITE FEATURES ARE BASED ON PRE-DEMOLITION/CURTAILMENT PLANT CONDITIONS.

SCALE IN FEET
0 800

Figure 4
Monitoring Well Locations

Base map from Tetra Tech 2017

EASTALCO ALUMINUM COMPANY
FREDERICK, MD

FIGURE 1
PLANNED MONITORING WELL ABANDONMENT LOCATIONS

PROJECT	112C08228
DATE	AUGUST 2017
SCALE	1" = 800'

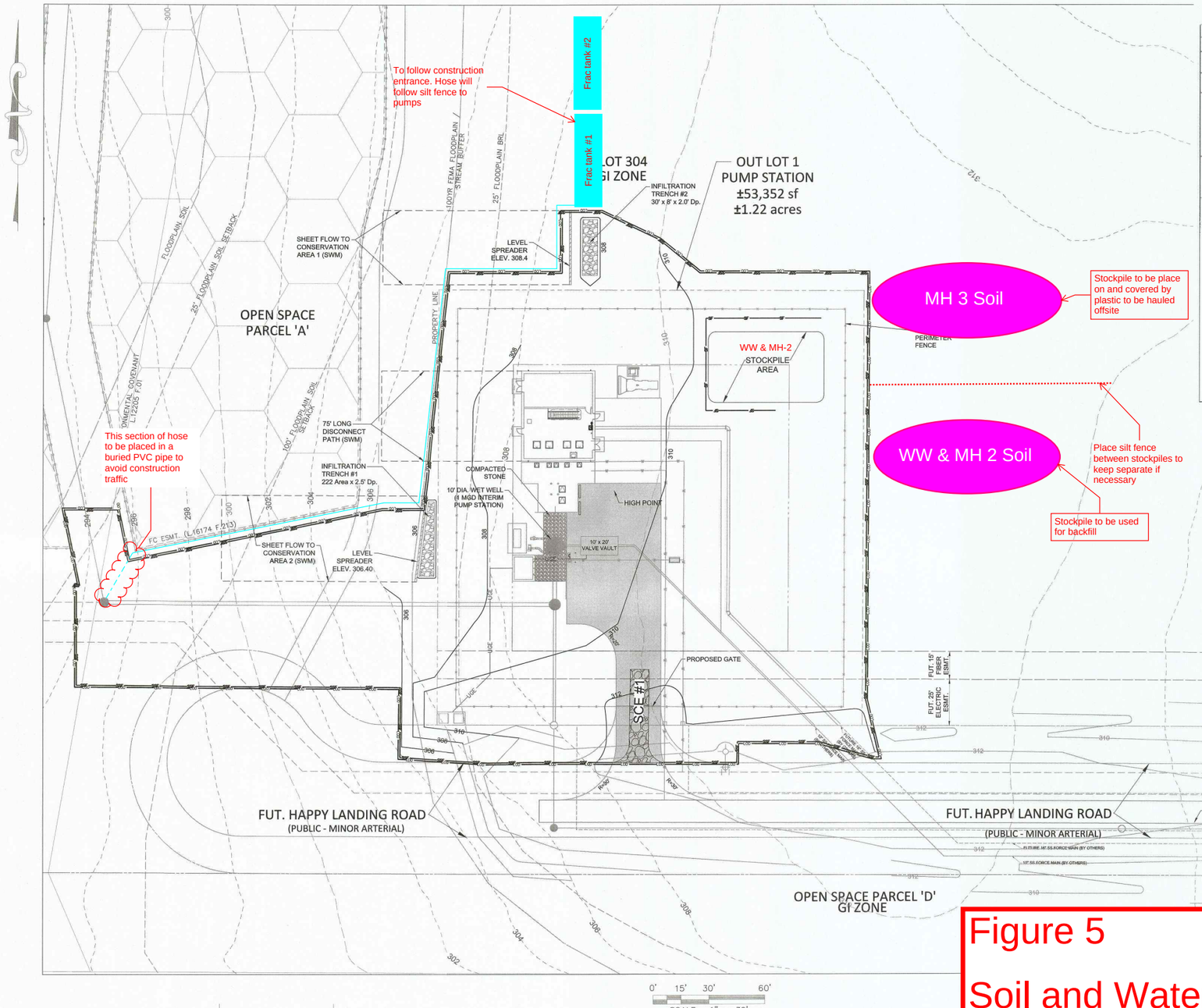
TETRA TECH

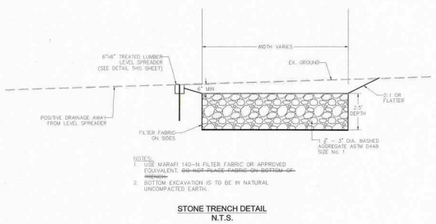
G:\AutoCAD\ncs\Alcoa Eastalco\Well Abandonment\Figure 1.dwg SAVED: 8/24/17 PRINTED: 8/24/17 BY: MAW

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/06/23

Signature:





STONE TRENCH DETAIL
N.T.S.

SEDIMENT CONTROL/ STORM WATER MANAGEMENT REQUIRED INSPECTIONS

YOU MUST NOTIFY THE SEDIMENT CONTROL AND STORMWATER MANAGEMENT OFFICE AT 301-694-1679 BEFORE 9:00 A.M.- 24 HOURS PRIOR TO THE REQUIRED INSPECTION.
FAILURE TO NOTIFY THIS OFFICE WILL RESULT IN A STOP WORK ORDER OR OTHER PENEALTIES AS OUTLINED IN FREDERICK COUNTY CODES.

**********NOTICE********

THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. THIS OFFICE ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THIS OFFICE RECOMMENDS THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

TYPE OF INSPECTION	MISC. COMMENTS /INITIALS
1. PRECONSTRUCTION MEETING	
2. COMPLETION OF SEDIMENT CONVTROL MEASURE (IF USING BASIN SEE #6 BELOW)	
3. PRIOR TO MODIFICATION OR REMOVAL OF SED. CONTRL.	
4. INFILTRATION SYSTEMS	
A. SITE READINESS PER SEQUENCE OF CONSTRUCTION	
B. INFILTRATION AREA. PROTECTED FROM SESIMENTATION	
C. DIMENSIONS	
D. FILTRATING MATERIAL	
E. FILL MATERIAL	
F. SIZE, PLACEMENT, TYPE OF PIPING	
G. OBSERVATION WELL	
H. COVER/STABILIZATION	
5. OPEN CHANNEL FLOW ATTENUATION	
A. SITE READINESS PER SEQUENCE OF CONSTUCTION	
B. CROSS SECTION CONFORMANCE	
C. MATERIAL (TYPE/SIZE)	
D. STABILIZATION	
6. RENTENTION/DETENTION STRUCTURES (BASIN/PONDS)	
A. SUBGRADE PREPARARTION	
1. CORE TRENCH	
2. SUITABLE MATERIAL/ COMPACTION	
B. EMBANKMENT CONSTRUCTION	
1. SUITABLE MATERIAL/COMPACTION	
2. SLOPE GRADE	
3. DIMENSIONS	
C. BARREL AND RISER ASSEMBLY	
1. CORRECT MATERIAL ONSITE	
2. SIZZING	
3. ANTI-SEEP COLLARS	
4. ANTI-FLOTATION DEVICE	
5. CONCRETE CRADLE (RCP ONLY)	
6. INSTALLATION /BASKFILL/COMPACTION	
D. CONCRETE STRUCTURES	
1. FOOTER DEMINSONS	
2. REINFORCING MATERIAL (TYPE, SIZE,PLACEMENT)	
3. WEIR POUR/MATERIAL/SLUMP TEST	
4. FORM STRIP AND FINISHING	
E. IMPOUNDING AREA.	
1. LOW FLOW CHANNELS/STABILIZATION	
2. DEWATERING DEVICE	
3. EMERGENCY SPILLWAY	
4. EXTENDED DETENTION DEVICE	
F. OUTFALL AREA (LEVEL SPREADER,RIPRAP CHANNEL, ECT.,	
G. VEGETATIVE STABILIZATION	
H. MISCELLANEOUS	

LEGEND:

EX TOPOGRAPHY	380
EX 100 YR FLOODPLAIN	
EX SOIL TYPE	BkD BgC
EX STREAM	
EX PARCEL LINES	
EX EDGE OF PAVEMENT	
EX WATER	8"W W
EX SEWER	8"S SS
EX BRUSHLINE	
EX TREELINE	
EX TREES	
PROP TOPOGRAPHY	380
PROP TOPOGRAPHY BY OTHERS	380
PROP BUILDINGS	
PROP LOT LINES	
PROP RIGHT-OF-WAY	
PROP ROAD CENTERLINE	
PROP WATER	
PROP FORCE MAIN	

ESC LEGEND:

SILT FENCE	SF
SUPER SILT FENCE	SSF
LIMITS OF DISTURBANCE	LOD
SEDIMENT CONTROL ENTRANCE	SCE #1

Figure 5

Soil and Water Management Plan

Base map from Dewberry pump station drawings for illustrative purposes - full approved set provided in Appendix C

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE
1MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S

FREDERICK COUNTY, MARYLAND
ELECTION DISTRICT NO. 01

SEAL

STATE OF MARYLAND
ALAN BARNEY
No. 29891
PROFESSIONAL ENGINEER
3/6/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

SEDIMENT CONTROL PLAN

PROJECT NO. 50151771

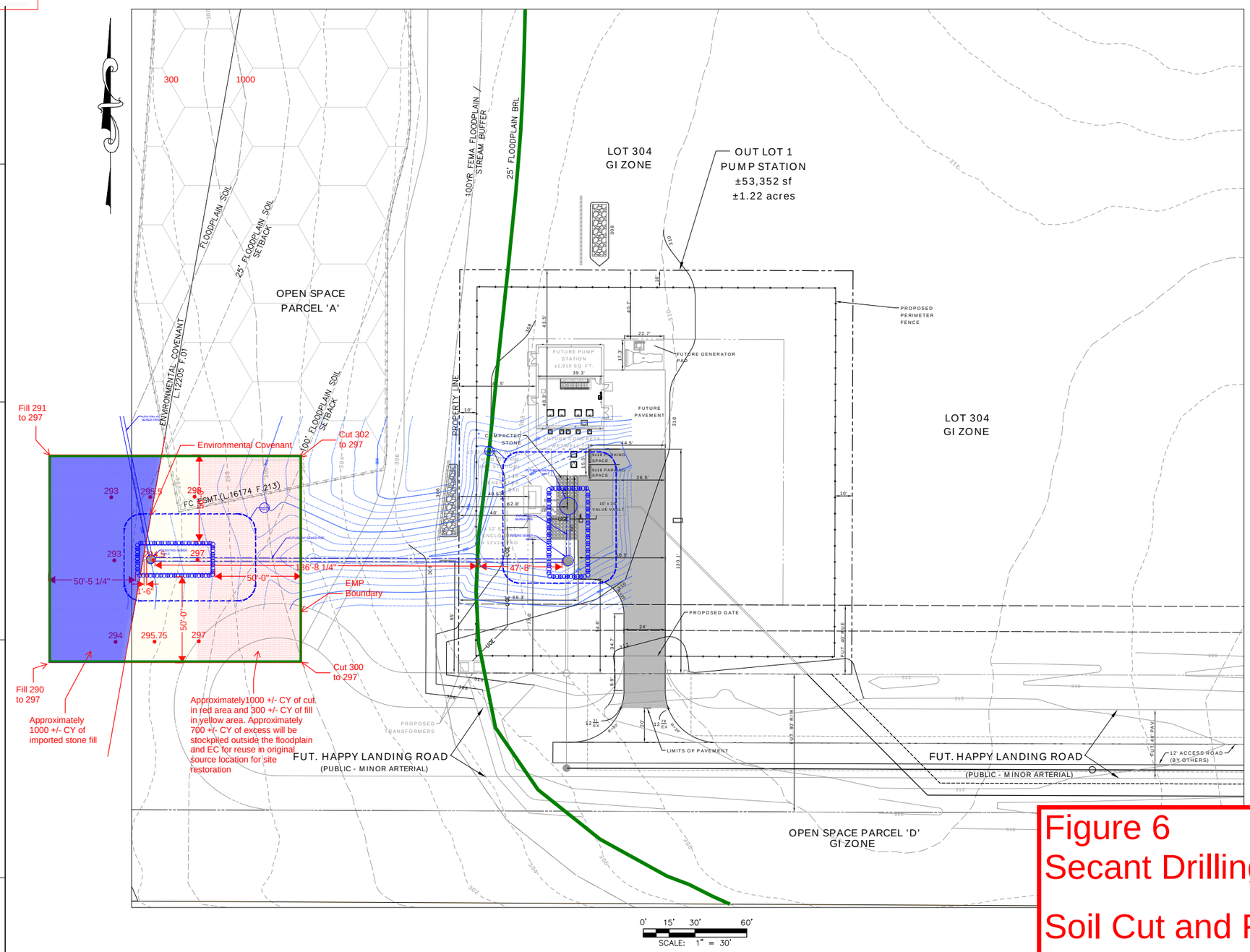
C-2

SHEET NO. 2 OF 37

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/03/23

Signature:



LEGEND:

EX TOPOGRAPHY
EX 100 YR FLOODPLAIN
EX SOIL TYPE
EX STREAM
EX PARCEL LINES
EX EDGE OF PAVEMENT
EX WATER
EX SEWER
EX BRUSHLINE
EX TREELINE
EX TREES

PROP TOPOGRAPHY
PROP TOPOGRAPHY BY OTHERS
PROP BUILDINGS
PROP LOT LINES
PROP RIGHT-OF-WAY
PROP FENCE

Figure 6
Secant Drilling Work Platform

Soil Cut and Fill

Base map from Dewberry pump station drawings for illustrative purposes - full approved set provided in Appendix C

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE
1MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND
MANOR WOODS ROADS
DWSU #601-S
ELECTION DISTRICT NO. 01
FREDERICK COUNTY, MARYLAND

SEAL

3/6/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891.

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

DIMENSION & PAVING PLAN

PROJECT NO. 50151771

C-4

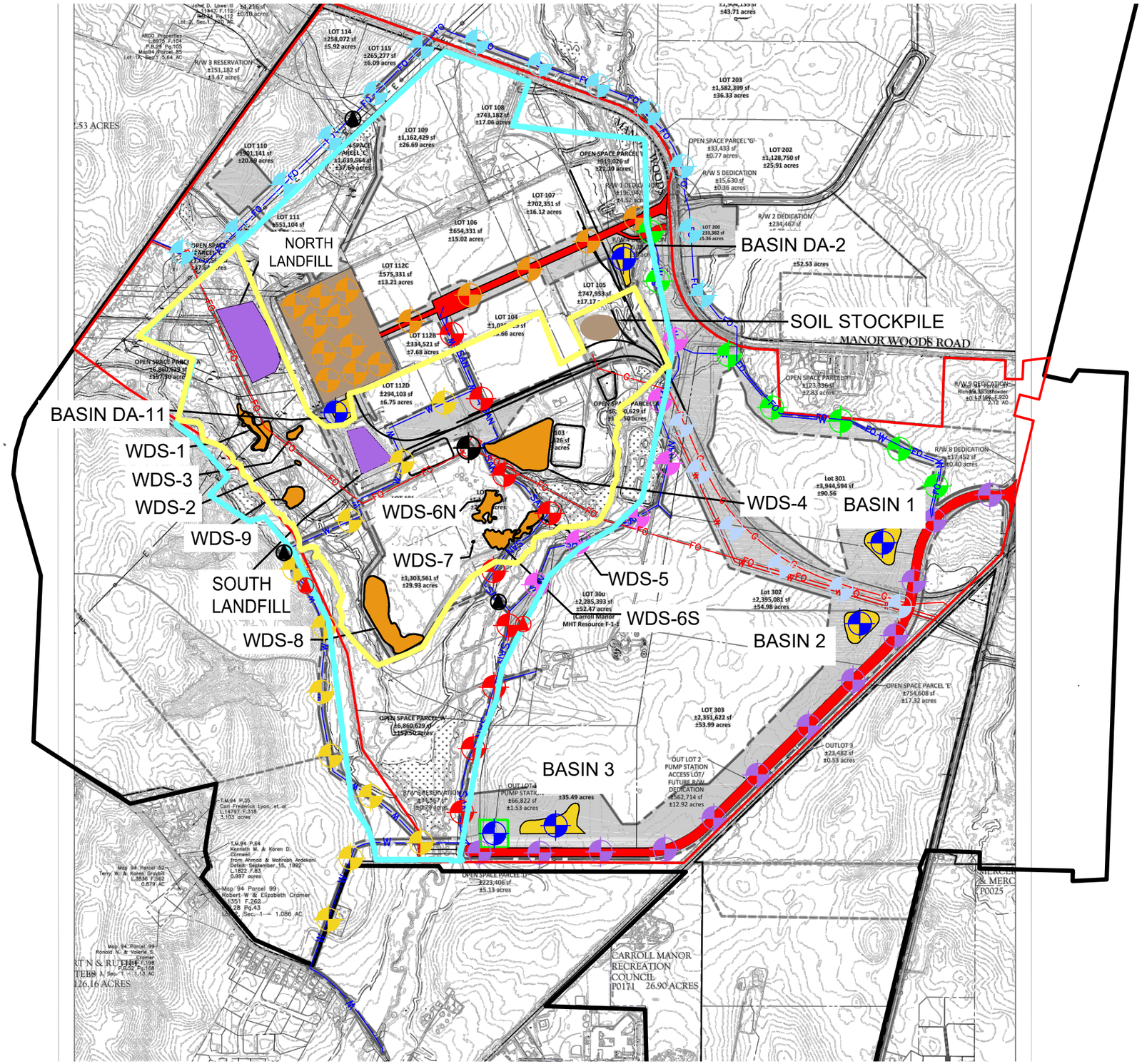
SHEET NO. 4 OF 37

P:\PROJECTS\2022 Feb\50151771 - Quantum Loophole\CAD\Civil\Improvement Plans\06b Dimensions & Paving.dwg, 2/16/2023 2:28:21 PM, AutoCAD PDF (Shadow Plots).pct

Appendix A

Phase II Environmental Site Assessment – Initial Infrastructure Phase

Figures 4 and 5 and Table 2



Legend

- SA 1 Boring Locations
- SA 2 Boring Locations
- SA 3 Boring Locations
- SA 4 Boring Locations
- SA 5 Boring Locations
- SA 6 Boring Locations
- SA 7 Boring Locations
- SA 8 Boring Locations
- SA 9 Boring Locations
- SA 10 Boring Locations
- Surface Water Locations
- Groundwater Locations

- Site Boundary
- SMP Boundary
- UEC Boundary
- Utilities to be installed permantly
- Utilities to be abandoned in place or removed
- Roadways
- Substation Pad
- Limit of Disturbance
- Landfills
- Waste Disposal Sites
- Basins
- W — Water lines
- SAN — Sanitary Lines
- G — Gas Lines
- FO — Dry Utlities

Notes

Base image obtained from "Quantum Frederick - Initial Infrastructure Grading Limits of Disturbance", drawn by Rodgers Consulting on 08-01-2022

0 400 800

Approximate Scale
1 inch = 800 feet

North

GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
14280 PARK CENTER DRIVE, SUITE A
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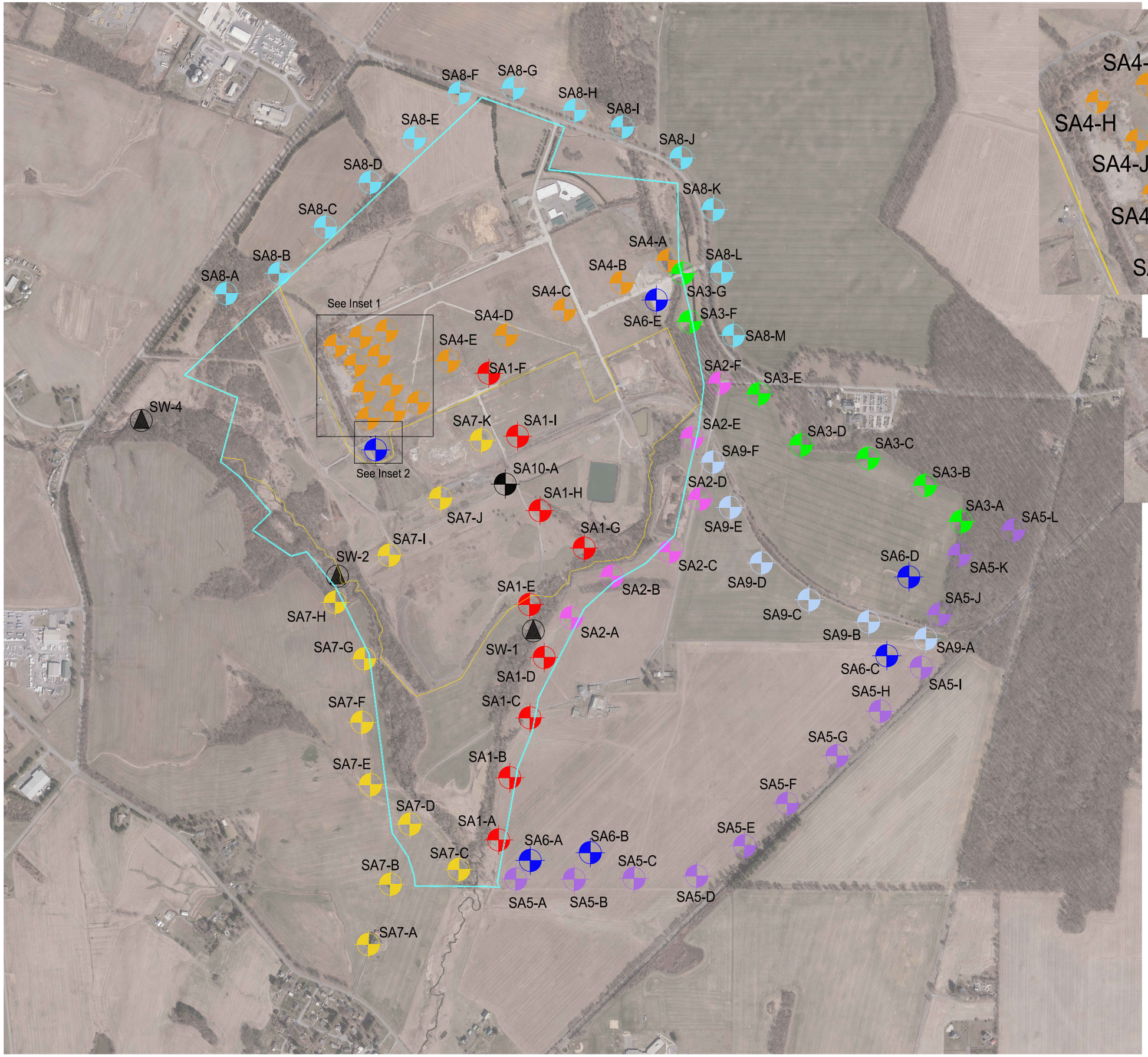
(410) 792-9446 OR (301) 470-4470
www.gtaeng.com

FORMER ALCOA EASTALCO WORKS PROPERTY
INITIAL INFRASTRUCTURE PHASE
FREDERICK COUNTY, MARYLAND

PROPOSED SAMPLING AREAS

PROJECT: 201536	DATE: AUGUST 2022	SCALE: 1" = 800'
DRAWN BY: NMT	REVIEW BY: PHH	FIGURE: 4



Legend

- SA 1 Boring Locations
- SA 2 Boring Locations
- SA 3 Boring Locations
- SA 4 Boring Locations
- SA 5 Boring Locations
- SA 6 Boring Locations
- SA 7 Boring Locations
- SA 8 Boring Locations
- SA 9 Boring Locations
- SA 10 Boring Locations
- Surface Water Locations
- Groundwater Locations

Notes:

1. Base map obtained from MD iMap (2020 Western Shore Collection).
2. Sample locations were field located using a Trimble Geo 7x global positioning system (GPS) unit with sub-meter capable accuracy.

0 150 300
Approximate Scale
1 inch = 300 feet
NORTH

GTA

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FORMER ALCOA EASTALCO WORKS PROPERTY
INITIAL INFRASTRUCTURE PHASE
FREDERICK COUNTY, MARYLAND

BORING LOCATION PLAN

PROJECT: 3120153	DATE: October 2022	SCALE: 1" = 300'	DESIGN BY: CMM	REVIEW BY: KPP	FIGURE: 8

Table 2
Soil Analysis Summary

Sample Identification	MDE NRCS	ATC Central	GTA-SA1-A	GTA-SA1-A	GTA-SA1-B	GTA-SA1-B
Sample Interval			0-1	1-6.5	0-1	1-5.5
Sample Type			Grab	Composite	Grab	Composite
Sampling Date			9/12/2022	9/12/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300	--	<0.0097	<0.011	<0.010	<0.011
Acenaphthene	4,500	--	<0.0097	<0.011	<0.010	<0.011
Acenaphthylene	NE	--	<0.0097	<0.011	<0.010	<0.011
Anthracene	23,000	--	<0.0097	<0.011	<0.010	<0.011
Benzo(a)anthracene	21	--	<0.0097	<0.011	<0.010	<0.011
Benzo(a)pyrene	2	--	<0.0097	<0.011	<0.010	<0.011
Benzo(b)fluoranthene	21	--	<0.0097	<0.011	<0.010	<0.011
Benzo(g,h,i)perylene	NE	--	<0.0097	<0.011	<0.010	<0.011
Benzo(k)fluoranthene	210	--	<0.0097	<0.011	<0.010	<0.011
Chrysene	2,100	--	<0.0097	<0.011	<0.010	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.0097	<0.011	<0.010	<0.011
Fluoranthene	3,000	--	<0.0097	<0.011	<0.010	<0.011
Fluorene	3,000	--	<0.0097	<0.011	<0.010	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.0097	<0.011	<0.010	<0.011
Naphthalene	17	--	<0.0097	<0.011	<0.010	<0.011
Phenanthrene	2,300	--	<0.0097	<0.011	<0.010	<0.011
Pyrene	2,300	--	<0.0097	<0.011	<0.010	<0.011
Priority Pollutant (PP) Metals						
Antimony	47	6.8	<2.0	<2.3	<2.3	<2.6
Arsenic	3.0/26.8*	4.9	2.7	7.5	5.4	4.0
Beryllium	230	1.6	<0.39	2.4	1.5	1.8
Cadmium	98	1.1	<0.39	<0.46	<0.47	<0.52
Chromium [3]	6.3	30	20	**44**	**36**	**45**
Copper	4,700	42	6.4	30	15	19
Lead	550	61	10	22	16	15
Mercury	4.6	0.14	<0.079	0.19	<0.094	<0.10
Nickel	2,200	22	8.1	52	25	37
Selenium	580	1.0	<0.39	<0.46	<0.47	<0.52
Silver	580	1.0	<0.39	<0.46	<0.47	<0.52
Thallium	1.2	1.5	<0.39	<0.46	<0.47	<0.52
Zinc	35,000	73	22	90	38	64
Organochlorine Pesticides						
4,4-DDD	2.5	--	<0.0047	--	<0.0049	--
4,4-DDE	9.3	--	<0.0047	--	<0.0049	--
4,4-DDT	8.5	--	<0.0047	--	<0.0049	--
Aldrin	0.18	--	<0.0047	--	<0.0049	--
Chlordane (n.o.s.)	7.7	--	<0.12	--	<0.12	--
Dieldrin	7.7	--	<0.0047	--	<0.0049	--
Endosulfan I	0.14	--	<0.0047	--	<0.0049	--
Endosulfan II	700	--	<0.0047	--	<0.0049	--
Endosulfan Sulfate	NE	--	<0.0047	--	<0.0049	--
Endrin	NE	--	<0.0047	--	<0.0049	--
Endrin Aldehyde	25	--	<0.0047	--	<0.0049	--
Endrin ketone	NE	--	<0.0047	--	<0.0049	--
Gamma-BHC (Lindane)	NE	--	<0.0047	--	<0.0049	--
Heptachlor	2.5	--	<0.0047	--	<0.0049	--
Heptachlor Epoxide	7.7	--	<0.0047	--	<0.0049	--
Methoxychlor	0.63	--	<0.0047	--	<0.0049	--
Toxaphene	0.33	--	<0.12	--	<0.12	--
alpha-BHC	410	--	<0.0047	--	<0.0049	--
beta-BHC	2.1	--	<0.0047	--	<0.0049	--
cis-Chlordane	0.36	--	<0.0047	--	<0.0049	--
delta-BHC	1.3	--	<0.0047	--	<0.0049	--
trans-Chlordane	NE	--	<0.0047	--	<0.0049	--
Chlorinated Herbicides						
2,4,5-T		--	<0.021	--	<0.023	--
2,4,5-TP (Silvex)		--	<0.021	--	<0.023	--
2,4-D		--	<0.21	--	<0.23	--
2,4-DB		--	<0.22	--	<0.24	--
Dalapon		--	<0.51	--	<0.56	--
Dicamba		--	<0.021	--	<0.023	--
Dichloroprop		--	<0.21	--	<0.23	--
Dinoseb		--	<0.11	--	<0.12	--
MCPA		--	<21	--	<23	--
MCPP		--	<21	--	<23	--
Total Petroleum Hydrocarbons (TPH)						
TPH DRO	620	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See the report text for background information, assumptions, limitations, e
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Standards for Soil and Groundwater; October 2018; Interim Final Guidanc
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA1-C	GTA-SA1-C	GTA-SA1-D	GTA-SA1-D
Sample Interval			0-1	1-7	0-1	1-7
Sample Type			Grab	Composite	Grab	Composite
Sampling Date			9/12/2022	9/12/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300	--	<0.010	<0.0098	<0.010	<0.010
Acenaphthene	4,500	--	<0.010	<0.0098	<0.010	<0.010
Acenaphthylene	NE	--	<0.010	<0.0098	<0.010	<0.010
Anthracene	23,000	--	<0.010	<0.0098	<0.010	<0.010
Benzo(a)anthracene	21	--	<0.010	<0.0098	<0.010	<0.010
Benzo(a)pyrene	2	--	<0.010	<0.0098	<0.010	<0.010
Benzo(b)fluoranthene	21	--	<0.010	<0.0098	<0.010	<0.010
Benzo(g,h,i)perylene	NE	--	<0.010	<0.0098	<0.010	<0.010
Benzo(k)fluoranthene	210	--	<0.010	<0.0098	<0.010	<0.010
Chrysene	2,100	--	<0.010	<0.0098	<0.010	<0.010
Dibenz(a,h)Anthracene	2.1	--	<0.010	<0.0098	<0.010	<0.010
Fluoranthene	3,000	--	<0.010	<0.0098	<0.010	<0.010
Fluorene	3,000	--	<0.010	<0.0098	<0.010	<0.010
Indeno(1,2,3-c,d)Pyrene	21	--	<0.010	<0.0098	<0.010	<0.010
Naphthalene	17	--	<0.010	<0.0098	<0.010	<0.010
Phenanthrene	2,300	--	<0.010	<0.0098	<0.010	<0.010
Pyrene	2,300	--	<0.010	<0.0098	<0.010	<0.010
Priority Pollutant (PP) Metals						
Antimony	47	6.8	<3.1	<2.6	<2.5	<2.9
Arsenic	3.0/26.8*	4.9	4.2	2.3	5.6	12
Beryllium	230	1.6	1.7	1.4	0.87	0.97
Cadmium	98	1.1	<0.62	<0.53	<0.51	<0.57
Chromium [3]	6.3	30	**38**	**31**	**39**	**33**
Copper	4,700	42	18	13	10	17
Lead	550	61	14	13	19	25
Mercury	4.6	0.14	<0.12	<0.11	<0.10	<0.11
Nickel	2,200	22	29	19	13	25
Selenium	580	1.0	<0.62	<0.53	<0.51	<0.57
Silver	580	1.0	<0.62	<0.53	<0.51	<0.57
Thallium	1.2	1.5	<0.62	<0.53	<0.51	<0.57
Zinc	35,000	73	48	47	34	39
Organochlorine Pesticides						
4,4-DDD	2.5	--	<0.0050	--	<0.0050	--
4,4-DDE	9.3	--	<0.0050	--	<0.0050	--
4,4-DDT	8.5	--	<0.0050	--	<0.0050	--
Aldrin	0.18	--	<0.0050	--	<0.0050	--
Chlordane (n.o.s.)	7.7	--	<0.12	--	<0.13	--
Dieldrin	7.7	--	<0.0050	--	<0.0050	--
Endosulfan I	0.14	--	<0.0050	--	<0.0050	--
Endosulfan II	700	--	<0.0050	--	<0.0050	--
Endosulfan Sulfate	NE	--	<0.0050	--	<0.0050	--
Endrin	NE	--	<0.0050	--	<0.0050	--
Endrin Aldehyde	25	--	<0.0050	--	<0.0050	--
Endrin ketone	NE	--	<0.0050	--	<0.0050	--
Gamma-BHC (Lindane)	NE	--	<0.0050	--	<0.0050	--
Heptachlor	2.5	--	<0.0050	--	<0.0050	--
Heptachlor Epoxide	7.7	--	<0.0050	--	<0.0050	--
Methoxychlor	0.63	--	<0.0050	--	<0.0050	--
Toxaphene	0.33	--	<0.12	--	<0.13	--
alpha-BHC	410	--	<0.0050	--	<0.0050	--
beta-BHC	2.1	--	<0.0050	--	<0.0050	--
cis-Chlordane	0.36	--	<0.0050	--	<0.0050	--
delta-BHC	1.3	--	<0.0050	--	<0.0050	--
trans-Chlordane	NE	--	<0.0050	--	<0.0050	--
Chlorinated Herbicides						
2,4,5-T		--	<0.024	--	<0.024	--
2,4,5-TP (Silvex)		--	<0.024	--	<0.024	--
2,4-D		--	<0.23	--	<0.23	--
2,4-DB		--	<0.24	--	<0.24	--
Dalapon		--	<0.57	--	<0.56	--
Dicamba		--	<0.023	--	<0.023	--
Dichloroprop		--	<0.23	--	<0.23	--
Dinoseb		--	<0.12	--	<0.12	--
MCPA		--	<23	--	<23	--
MCPP		--	<23	--	<23	--
Total Petroleum Hydrocarbons (TPH)						
TPH DRO	620	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t±tc.
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stane (Update No. 3)
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA1-E	GTA-SA1-E	GTA-SA1-F	GTA-SA1-F
Sample Interval			0-1	1-8	0-1	1-17
Sample Type			Grab	Composite	Grab	Composite
Sampling Date			9/15/2022	9/15/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300	--	<0.011	<0.011	<0.0085	<0.0094
Acenaphthene	4,500	--	0.012	<0.011	<0.0085	<0.0094
Acenaphthylene	NE	--	<0.011	<0.011	<0.0085	<0.0094
Anthracene	23,000	--	0.015	<0.011	<0.0085	<0.0094
Benzo(a)anthracene	21	--	0.11	<0.011	<0.0085	<0.0094
Benzo(a)pyrene	2	--	0.15	<0.011	<0.0085	<0.0094
Benzo(b)fluoranthene	21	--	0.14	<0.011	<0.0085	<0.0094
Benzo(g,h,i)perylene	NE	--	0.11	<0.011	<0.0085	<0.0094
Benzo(k)fluoranthene	210	--	0.11	<0.011	<0.0085	<0.0094
Chrysene	2,100	--	0.13	<0.011	<0.0085	<0.0094
Dibenz(a,h)Anthracene	2.1	--	0.034	<0.011	<0.0085	<0.0094
Fluoranthene	3,000	--	0.16	<0.011	0.0092	<0.0094
Fluorene	3,000	--	<0.011	<0.011	<0.0085	<0.0094
Indeno(1,2,3-c,d)Pyrene	21	--	0.11	<0.011	<0.0085	<0.0094
Naphthalene	17	--	<0.011	<0.011	<0.0085	<0.0094
Phenanthrene	2,300	--	0.055	<0.011	<0.0085	<0.0094
Pyrene	2,300	--	0.16	<0.011	0.0088	<0.0094
Priority Pollutant (PP) Metals						
Antimony	47	6.8	<2.9	<2.8	<2.1	<2.2
Arsenic	3.0/26.8*	4.9	7.9	7.0	2.7	4.8
Beryllium	230	1.6	1.5	1.3	<0.42	1.3
Cadmium	98	1.1	<0.57	<0.57	<0.42	<0.43
Chromium [3]	6.3	30	26	27	14	**33**
Copper	4,700	42	25	24	6.6	18
Lead	550	61	19	14	4.9	8.5
Mercury	4.6	0.14	<0.11	<0.11	<0.085	<0.087
Nickel	2,200	22	37	37	16	38
Selenium	580	1.0	<0.57	<0.57	<0.42	<0.43
Silver	580	1.0	<0.57	<0.57	<0.42	<0.43
Thallium	1.2	1.5	<0.57	<0.57	<0.42	<0.43
Zinc	35,000	73	75	65	41	57
Organochlorine Pesticides						
4,4-DDD	2.5	--	<0.0059	--	<0.0042	--
4,4-DDE	9.3	--	<0.0059	--	<0.0042	--
4,4-DDT	8.5	--	<0.0059	--	<0.0042	--
Aldrin	0.18	--	<0.0059	--	<0.0042	--
Chlordane (n.o.s.)	7.7	--	<0.15	--	<0.10	--
Dieldrin	7.7	--	<0.0059	--	<0.0042	--
Endosulfan I	0.14	--	<0.0059	--	<0.0042	--
Endosulfan II	700	--	<0.0059	--	<0.0042	--
Endosulfan Sulfate	NE	--	<0.0059	--	<0.0042	--
Endrin	NE	--	<0.0059	--	<0.0042	--
Endrin Aldehyde	25	--	<0.0059	--	<0.0042	--
Endrin ketone	NE	--		--	<0.0042	--
Gamma-BHC (Lindane)	NE	--	<0.0059	--	<0.0042	--
Heptachlor	2.5	--	<0.0059	--	<0.0042	--
Heptachlor Epoxide	7.7	--	<0.0059	--	<0.0042	--
Methoxychlor	0.63	--		--	<0.0042	--
Toxaphene	0.33	--	<0.15	--	<0.10	--
alpha-BHC	410	--	<0.0059	--	<0.0042	--
beta-BHC	2.1	--	<0.0059	--	<0.0042	--
cis-Chlordane	0.36	--	<0.0059	--	<0.0042	--
delta-BHC	1.3	--	<0.0059	--	<0.0042	--
trans-Chlordane	NE	--	<0.0059	--	<0.0042	--
Chlorinated Herbicides						
2,4,5-T		--	<0.023	--	<0.020	--
2,4,5-TP (Silvex)		--	<0.023	--	<0.020	--
2,4-D		--	<0.23	--	<0.20	--
2,4-DB		--	<0.24	--	<0.21	--
Dalapon		--	<0.56	--	<0.49	--
Dicamba		--	<0.023	--	<0.020	--
Dichloroprop		--	<0.23	--	<0.20	--
Dinoseb		--	<0.12	--	<0.10	--
MCPA		--	<23	--	<20	--
MCPP		--	<23	--	<20	--
Total Petroleum Hydrocarbons (TPH)						
TPH DRO	620	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Table 2
Soil Analysis Summary

Sample Identification	MDE NRCS	ATC Central	GTA-SA1-G	GTA-SA1-G	GTA-SA1-H	GTA-SA1-H
Sample Interval			0-1	1-19	0-1	1-19
Sample Type			Grab	Composite	Grab	Composite
Sampling Date			9/9/2022	9/9/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300	--	1.0	<0.010	<0.0095	<0.011
Acenaphthene	4,500	--	2.2	<0.010	<0.0095	<0.011
Acenaphthylene	NE	--	<0.094	<0.010	<0.0095	<0.011
Anthracene	23,000	--	3.0	<0.010	<0.0095	<0.011
Benzo(a)anthracene	21	--	6.1	<0.010	0.013	<0.011
Benzo(a)pyrene	2	--	**6.0**	<0.010	0.015	<0.011
Benzo(b)fluoranthene	21	--	6.3	<0.010	0.014	<0.011
Benzo(g,h,i)perylene	NE	--	3.7	<0.010	0.011	<0.011
Benzo(k)fluoranthene	210	--	4.9	<0.010	0.012	<0.011
Chrysene	2,100	--	5.9	<0.010	0.012	<0.011
Dibenz(a,h)Anthracene	2.1	--	1.3	<0.010	<0.0095	<0.011
Fluoranthene	3,000	--	16	<0.010	0.016	<0.011
Fluorene	3,000	--	2.7	<0.010	<0.0095	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	3.7	<0.010	0.011	<0.011
Naphthalene	17	--	0.77	<0.010	<0.0095	<0.011
Phenanthrene	2,300	--	15	<0.010	<0.0095	<0.011
Pyrene	2,300	--	11	<0.010	0.016	<0.011
Priority Pollutant (PP) Metals						
Antimony	47	6.8	<2.1	<2.6	<2.5	<2.9
Arsenic	3.0/26.8*	4.9	5.4	2.9	5.6	6.6
Beryllium	230	1.6	1.2	0.93	1.7	1.5
Cadmium	98	1.1	<0.41	<0.51	<0.49	<0.58
Chromium [3]	6.3	30	**33**	**46**	**32**	16
Copper	4,700	42	20	21	20	22
Lead	550	61	12	14	12	11
Mercury	4.6	0.14	<0.083	<0.10	<0.099	<0.12
Nickel	2,200	22	37	40	40	34
Selenium	580	1.0	<0.41	<0.51	<0.49	<0.58
Silver	580	1.0	<0.41	<0.51	<0.49	<0.58
Thallium	1.2	1.5	<0.41	<0.51	<0.49	<0.58
Zinc	35,000	73	65	72	75	50
Organochlorine Pesticides						
4,4-DDD	2.5	--	<0.0044	--	<0.0044	--
4,4-DDE	9.3	--	<0.0044	--	<0.0044	--
4,4-DDT	8.5	--	<0.0044	--	<0.0044	--
Aldrin	0.18	--	<0.0044	--	<0.0044	--
Chlordane (n.o.s.)	7.7	--	<0.11	--	<0.11	--
Dieldrin	7.7	--	<0.0044	--	<0.0044	--
Endosulfan I	0.14	--	<0.0044	--	<0.0044	--
Endosulfan II	700	--	<0.0044	--	<0.0044	--
Endosulfan Sulfate	NE	--	<0.0044	--	<0.0044	--
Endrin	NE	--	<0.0044	--	<0.0044	--
Endrin Aldehyde	25	--	<0.0044	--	<0.0044	--
Endrin ketone	NE	--	<0.0044	--	<0.0044	--
Gamma-BHC (Lindane)	NE	--	<0.0044	--	<0.0044	--
Heptachlor	2.5	--	<0.0044	--	<0.0044	--
Heptachlor Epoxide	7.7	--	<0.0044	--	<0.0044	--
Methoxychlor	0.63	--	<0.0044	--	<0.0044	--
Toxaphene	0.33	--	<0.11	--	<0.11	--
alpha-BHC	410	--	<0.0044	--	<0.0044	--
beta-BHC	2.1	--	<0.0044	--	<0.0044	--
cis-Chlordane	0.36	--	<0.0044	--	<0.0044	--
delta-BHC	1.3	--	<0.0044	--	<0.0044	--
trans-Chlordane	NE	--	<0.0044	--	<0.0044	--
Chlorinated Herbicides						
2,4,5-T		--	<0.021	--	<0.022	--
2,4,5-TP (Silvex)		--	<0.021	--	<0.022	--
2,4-D		--	<0.20	--	<0.22	--
2,4-DB		--	<0.21	--	<0.23	--
Dalapon		--	<0.49	--	<0.54	--
Dicamba		--	<0.020	--	<0.022	--
Dichloroprop		--	<0.20	--	<0.22	--
Dinoseb		--	<0.10	--	<0.11	--
MCPA		--	<20	--	<22	--
MCPP		--	<20	--	<22	--
Total Petroleum Hydrocarbons (TPH)						
TPH DRO	620	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Table 2
Soil Analysis Summary

Sample Identification	MDE NRCS	ATC Central	GTA-SA1-I	GTA-SA1-I	GTA-SA2-A	GTA-SA2-A	GTA-SA2-B	GTA-SA2-B	GTA-SA2-C
Sample Interval			0-1	1-12.5	0-1	1-18	0-1	1-18	0-1
Sample Type			Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/9/2022	9/9/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)									
2-Methylnaphthalene	300	--	<0.0090	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Acenaphthene	4,500	--	<0.0090	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Acenaphthylene	NE	--	<0.0090	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Anthracene	23,000	--	0.013	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Benzo(a)anthracene	21	--	0.032	0.096	<0.010	<0.011	<0.0099	<0.012	<0.010
Benzo(a)pyrene	2	--	0.028	0.092	<0.010	<0.011	<0.0099	<0.012	<0.010
Benzo(b)fluoranthene	21	--	0.033	0.19	<0.010	<0.011	<0.0099	<0.012	<0.010
Benzo(g,h,i)perylene	NE	--	0.020	0.085	<0.010	<0.011	<0.0099	<0.012	<0.010
Benzo(k)fluoranthene	210	--	0.025	0.080	<0.010	<0.011	<0.0099	<0.012	<0.010
Chrysene	2,100	--	0.036	0.18	<0.010	<0.011	<0.0099	<0.012	<0.010
Dibenz(a,h)Anthracene	2.1	--	<0.0090	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Fluoranthene	3,000	--	0.075	0.081	<0.010	<0.011	<0.0099	<0.012	<0.010
Fluorene	3,000	--	<0.0090	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Indeno(1,2,3-c,d)Pyrene	21	--	0.019	0.074	<0.010	<0.011	<0.0099	<0.012	<0.010
Naphthalene	17	--	<0.0090	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Phenanthrene	2,300	--	0.070	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Pyrene	2,300	--	0.060	0.14	<0.010	<0.011	<0.0099	<0.012	<0.010
Priority Pollutant (PP) Metals									
Antimony	47	6.8	<2.5	<2.1	<2.6	<2.4	<2.1	<2.6	<2.4
Arsenic	3.0/26.8*	4.9	3.2	3.2	6.8	8.3	5.9	4.6	5.6
Beryllium	230	1.6	0.65	0.45	0.83	0.90	0.99	1.1	0.76
Cadmium	98	1.1	<0.51	<0.43	<0.52	<0.48	<0.42	<0.53	<0.48
Chromium [3]	6.3	30	24	18	**43**	26	**33**	16	**31**
Copper	4,700	42	13	13	19	16	17	31	17
Lead	550	61	18	27	16	22	16	11	15
Mercury	4.6	0.14	<0.10	<0.085	<0.10	<0.096	<0.084	<0.11	<0.095
Nickel	2,200	22	19	14	19	21	24	46	24
Selenium	580	1.0	<0.51	<0.43	<0.52	<0.48	<0.42	<0.53	<0.48
Silver	580	1.0	<0.51	<0.43	<0.52	<0.48	<0.42	<0.53	<0.48
Thallium	1.2	1.5	<0.51	<0.43	<0.52	<0.48	<0.42	<0.53	<0.48
Zinc	35,000	73	53	41	46	36	50	50	43
Organochlorine Pesticides									
4,4-DDD	2.5	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
4,4-DDE	9.3	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
4,4-DDT	8.5	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Aldrin	0.18	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Chlordane (n.o.s.)	7.7	--	<0.11	--	<0.12	--	<0.12	--	<0.12
Dieldrin	7.7	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Endosulfan I	0.14	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Endosulfan II	700	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Endosulfan Sulfate	NE	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Endrin	NE	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Endrin Aldehyde	25	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Endrin ketone	NE	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Gamma-BHC (Lindane)	NE	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Heptachlor	2.5	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Heptachlor Epoxide	7.7	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Methoxychlor	0.63	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Toxaphene	0.33	--	<0.11	--	<0.12	--	<0.12	--	<0.12
alpha-BHC	410	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
beta-BHC	2.1	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
cis-Chlordane	0.36	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
delta-BHC	1.3	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
trans-Chlordane	NE	--	<0.0043	--	<0.0050	--	<0.0048	--	<0.0048
Chlorinated Herbicides									
2,4,5-T		--	<0.020	--	<0.023	--	<0.022	--	<0.023
2,4,5-TP (Silvex)		--	<0.020	--	<0.023	--	<0.022	--	<0.023
2,4-D		--	<0.20	--	<0.23	--	<0.22	--	<0.23
2,4-DB		--	<0.20	--	<0.23	--	<0.22	--	<0.24
Dalapon		--	<0.48	--	<0.55	--	<0.53	--	<0.56
Dicamba		--	<0.020	--	<0.023	--	<0.022	--	<0.023
Dichloroprop		--	<0.20	--	<0.23	--	<0.22	--	<0.23
Dinoseb		--	<0.099	--	<0.12	--	<0.11	--	<0.12
MCPA		--	<19	--	<23	--	<22	--	<23
MCPP		--	<20	--	<23	--	<22	--	<23
Total Petroleum Hydrocarbons (TPH)									
TPH DRO	620	--	--	--	--	--	--	--	--

Notes:
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Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA2-C	GTA-SA2-D	GTA-SA2-D	GTA-SA2-E	GTA-SA2-E
Sample Interval			1-18	0-1	1-5	0-1	1-5
Sample Type			Composite	Grab	Composite	Grab	Composite
Sampling Date			9/12/2022	9/12/2022	9/12/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)							
2-Methylnaphthalene	300	--	<0.011	<0.011	<0.010	<0.011	<0.011
Acenaphthene	4,500	--	<0.011	<0.011	<0.010	<0.011	<0.011
Acenaphthylene	NE	--	<0.011	<0.011	<0.010	<0.011	<0.011
Anthracene	23,000	--	<0.011	<0.011	<0.010	<0.011	<0.011
Benzo(a)anthracene	21	--	<0.011	0.086	<0.010	<0.011	<0.011
Benzo(a)pyrene	2	--	<0.011	0.11	<0.010	<0.011	<0.011
Benzo(b)fluoranthene	21	--	<0.011	0.096	<0.010	<0.011	<0.011
Benzo(g,h,i)perylene	NE	--	<0.011	0.077	<0.010	<0.011	<0.011
Benzo(k)fluoranthene	210	--	<0.011	0.082	<0.010	<0.011	<0.011
Chrysene	2,100	--	<0.011	0.090	<0.010	<0.011	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.011	0.021	<0.010	<0.011	<0.011
Fluoranthene	3,000	--	<0.011	0.12	<0.010	<0.011	<0.011
Fluorene	3,000	--	<0.011	<0.011	<0.010	<0.011	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.011	0.071	<0.010	<0.011	<0.011
Naphthalene	17	--	<0.011	<0.011	<0.010	<0.011	<0.011
Phenanthrene	2,300	--	<0.011	0.043	<0.010	<0.011	<0.011
Pyrene	2,300	--	<0.011	0.12	<0.010	<0.011	<0.011
Priority Pollutant (PP) Metals							
Antimony	47	6.8	<3.1	<3.1	<2.7	<2.9	<2.9
Arsenic	3.0/26.8*	4.9	2.3	8.1	8.3	7.6	9.6
Beryllium	230	1.6	<0.61	1.4	1.8	1.5	2.3
Cadmium	98	1.1	<0.61	<0.62	<0.54	<0.59	<0.58
Chromium [3]	6.3	30	6.4	**36**	**37**	29	29
Copper	4,700	42	13	17	17	21	31
Lead	550	61	7.2	19	18	19	17
Mercury	4.6	0.14	<0.12	<0.12	<0.11	<0.12	<0.12
Nickel	2,200	22	8.9	32	33	36	34
Selenium	580	1.0	<0.61	<0.62	<0.54	<0.59	<0.58
Silver	580	1.0	<0.61	<0.62	<0.54	<0.59	<0.58
Thallium	1.2	1.5	<0.61	<0.62	<0.54	<0.59	<0.58
Zinc	35,000	73	21	71	61	65	57
Organochlorine Pesticides							
4,4-DDD	2.5	--	--	<0.0053	--	<0.0053	--
4,4-DDE	9.3	--	--	<0.0053	--	<0.0053	--
4,4-DDT	8.5	--	--	<0.0053	--	<0.0053	--
Aldrin	0.18	--	--	<0.0053	--	<0.0053	--
Chlordane (n.o.s.)	7.7	--	--	<0.13	--	<0.13	--
Dieldrin	7.7	--	--	<0.0053	--	<0.0053	--
Endosulfan I	0.14	--	--	<0.0053	--	<0.0053	--
Endosulfan II	700	--	--	<0.0053	--	<0.0053	--
Endosulfan Sulfate	NE	--	--	<0.0053	--	<0.0053	--
Endrin	NE	--	--	<0.0053	--	<0.0053	--
Endrin Aldehyde	25	--	--	<0.0053	--	<0.0053	--
Endrin ketone	NE	--	--	<0.0053	--	<0.0053	--
Gamma-BHC (Lindane)	NE	--	--	<0.0053	--	<0.0053	--
Heptachlor	2.5	--	--	<0.0053	--	<0.0053	--
Heptachlor Epoxide	7.7	--	--	<0.0053	--	<0.0053	--
Methoxychlor	0.63	--	--	<0.0053	--	<0.0053	--
Toxaphene	0.33	--	--	<0.13	--	<0.13	--
alpha-BHC	410	--	--	<0.0053	--	<0.0053	--
beta-BHC	2.1	--	--	<0.0053	--	<0.0053	--
cis-Chlordane	0.36	--	--	<0.0053	--	<0.0053	--
delta-BHC	1.3	--	--	<0.0053	--	<0.0053	--
trans-Chlordane	NE	--	--	<0.0053	--	<0.0053	--
Chlorinated Herbicides							
2,4,5-T		--	--	<0.024	--	<0.025	--
2,4,5-TP (Silvex)		--	--	<0.024	--	<0.025	--
2,4-D		--	--	<0.23	--	<0.24	--
2,4-DB		--	--	<0.24	--	<0.25	--
Dalapon		--	--	<0.57	--	<0.59	--
Dicamba		--	--	<0.023	--	<0.024	--
Dichloroprop		--	--	<0.23	--	<0.24	--
Dinoseb		--	--	<0.12	--	<0.12	--
MCPA		--	--	<23	--	<24	--
MCPP		--	--	<23	--	<24	--
Total Petroleum Hydrocarbons (TPH)							
TPH DRO	620	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan
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Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA2-F	GTA-SA2-F	GTA-SA3-A	GTA-SA3-A
Sample Interval			0-1	1-7	0-1	1-7
Sample Type			Grab	Composite	Grab	Composite
Sampling Date			9/9/2022	9/9/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300	--	<0.0096	<0.0094	<0.011	<0.011
Acenaphthene	4,500	--	<0.0096	<0.0094	<0.011	<0.011
Acenaphthylene	NE	--	<0.0096	<0.0094	<0.011	<0.011
Anthracene	23,000	--	<0.0096	<0.0094	<0.011	<0.011
Benzo(a)anthracene	21	--	<0.0096	<0.0094	<0.011	<0.011
Benzo(a)pyrene	2	--	<0.0096	<0.0094	<0.011	<0.011
Benzo(b)fluoranthene	21	--	<0.0096	<0.0094	<0.011	<0.011
Benzo(g,h,i)perylene	NE	--	<0.0096	<0.0094	<0.011	<0.011
Benzo(k)fluoranthene	210	--	<0.0096	<0.0094	<0.011	<0.011
Chrysene	2,100	--	<0.0096	<0.0094	<0.011	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.0096	<0.0094	<0.011	<0.011
Fluoranthene	3,000	--	<0.0096	<0.0094	<0.011	<0.011
Fluorene	3,000	--	<0.0096	<0.0094	<0.011	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.0096	<0.0094	<0.011	<0.011
Naphthalene	17	--	<0.0096	<0.0094	<0.011	<0.011
Phenanthrene	2,300	--	<0.0096	<0.0094	<0.011	<0.011
Pyrene	2,300	--	<0.0096	<0.0094	<0.011	<0.011
Priority Pollutant (PP) Metals						
Antimony	47	6.8	<2.3	<2.4	<2.8	<2.7
Arsenic	3.0/26.8*	4.9	6.5	7.0	9.9	8.5
Beryllium	230	1.6	<0.47	1.1	2.2	3.7
Cadmium	98	1.1	<0.47	<0.47	<0.57	<0.54
Chromium [3]	6.3	30	**37**	**38**	**74**	**61**
Copper	4,700	42	13	21	34	33
Lead	550	61	15	12	17	14
Mercury	4.6	0.14	<0.094	<0.094	0.19	0.16
Nickel	2,200	22	17	57	56	53
Selenium	580	1.0	<0.47	<0.47	<0.57	<0.54
Silver	580	1.0	<0.47	<0.47	<0.57	<0.54
Thallium	1.2	1.5	<0.47	<0.47	<0.57	<0.54
Zinc	35,000	73	48	73	77	81
Organochlorine Pesticides						
4,4-DDD	2.5	--	<0.0045	--	<0.0051	--
4,4-DDE	9.3	--	<0.0045	--	<0.0051	--
4,4-DDT	8.5	--	<0.0045	--	<0.0051	--
Aldrin	0.18	--	<0.0045	--	<0.0051	--
Chlordane (n.o.s.)	7.7	--	<0.11	--	<0.13	--
Dieldrin	7.7	--	<0.0045	--	<0.0051	--
Endosulfan I	0.14	--	<0.0045	--	<0.0051	--
Endosulfan II	700	--	<0.0045	--	<0.0051	--
Endosulfan Sulfate	NE	--	<0.0045	--	<0.0051	--
Endrin	NE	--	<0.0045	--	<0.0051	--
Endrin Aldehyde	25	--	<0.0045	--	<0.0051	--
Endrin ketone	NE	--	<0.0045	--	<0.0051	--
Gamma-BHC (Lindane)	NE	--	<0.0045	--	<0.0051	--
Heptachlor	2.5	--	<0.0045	--	<0.0051	--
Heptachlor Epoxide	7.7	--	<0.0045	--	<0.0051	--
Methoxychlor	0.63	--	<0.0045	--	<0.0051	--
Toxaphene	0.33	--	<0.11	--	<0.13	--
alpha-BHC	410	--	<0.0045	--	<0.0051	--
beta-BHC	2.1	--	<0.0045	--	<0.0051	--
cis-Chlordane	0.36	--	<0.0045	--	<0.0051	--
delta-BHC	1.3	--	<0.0045	--	<0.0051	--
trans-Chlordane	NE	--	<0.0045	--	<0.0051	--
Chlorinated Herbicides						
2,4,5-T		--	<0.022	--	<0.024	--
2,4,5-TP (Silvex)		--	<0.022	--	<0.024	--
2,4-D		--	<0.21	--	<0.23	--
2,4-DB		--	<0.22	--	<0.24	--
Dalapon		--	<0.52	--	<0.57	--
Dicamba		--	<0.021	--	<0.023	--
Dichloroprop		--	<0.21	--	<0.23	--
Dinoseb		--	<0.11	--	<0.12	--
MCPA		--	<21	--	<23	--
MCPP		--	<21	--	<23	--
Total Petroleum Hydrocarbons (TPH)						
TPH DRO	620	--	--	--	--	--

Notes:
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Samples collected Between September 8, 2022 and September 15, 2022
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NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Table 2
Soil Analysis Summary

Sample Identification	MDE NRCS	ATC Central	GTA-SA3-B	GTA-SA3-B	GTA-SA3-C
Sample Interval			0-1	1-8	0-1
Sample Type			Grab	Composite	Grab
Sampling Date			9/13/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)					
2-Methylnaphthalene	300	--	<0.010	<0.011	<0.010
Acenaphthene	4,500	--	<0.010	<0.011	<0.010
Acenaphthylene	NE	--	<0.010	<0.011	<0.010
Anthracene	23,000	--	<0.010	<0.011	<0.010
Benzo(a)anthracene	21	--	<0.010	<0.011	<0.010
Benzo(a)pyrene	2	--	<0.010	<0.011	<0.010
Benzo(b)fluoranthene	21	--	<0.010	<0.011	<0.010
Benzo(g,h,i)perylene	NE	--	<0.010	<0.011	<0.010
Benzo(k)fluoranthene	210	--	<0.010	<0.011	<0.010
Chrysene	2,100	--	<0.010	<0.011	<0.010
Dibenz(a,h)Anthracene	2.1	--	<0.010	<0.011	<0.010
Fluoranthene	3,000	--	<0.010	<0.011	<0.010
Fluorene	3,000	--	<0.010	<0.011	<0.010
Indeno(1,2,3-c,d)Pyrene	21	--	<0.010	<0.011	<0.010
Naphthalene	17	--	<0.010	<0.011	<0.010
Phenanthrene	2,300	--	<0.010	<0.011	<0.010
Pyrene	2,300	--	<0.010	<0.011	<0.010
Priority Pollutant (PP) Metals					
Antimony	47	6.8	<2.4	<3.2	<2.2
Arsenic	3.0/26.8*	4.9	7.5	12	6.3
Beryllium	230	1.6	1.2	1.7	0.99
Cadmium	98	1.1	<0.48	<0.63	<0.44
Chromium [3]	6.3	30	**36**	**40**	31
Copper	4,700	42	24	32	18
Lead	550	61	19	18	16
Mercury	4.6	0.14	<0.097	<0.13	<0.088
Nickel	2,200	22	33	64	22
Selenium	580	1.0	<0.48	<0.63	<0.44
Silver	580	1.0	<0.48	<0.63	<0.44
Thallium	1.2	1.5	<0.48	<0.63	<0.44
Zinc	35,000	73	56	99	49
Organochlorine Pesticides					
4,4-DDD	2.5	--	<0.0048	--	<0.0048
4,4-DDE	9.3	--	<0.0048	--	<0.0048
4,4-DDT	8.5	--	<0.0048	--	<0.0048
Aldrin	0.18	--	<0.0048	--	<0.0048
Chlordane (n.o.s.)	7.7	--	<0.12	--	<0.12
Dieldrin	7.7	--	<0.0048	--	<0.0048
Endosulfan I	0.14	--	<0.0048	--	<0.0048
Endosulfan II	700	--	<0.0048	--	<0.0048
Endosulfan Sulfate	NE	--	<0.0048	--	<0.0048
Endrin	NE	--	<0.0048	--	<0.0048
Endrin Aldehyde	25	--	<0.0048	--	<0.0048
Endrin ketone	NE	--	<0.0048	--	<0.0048
Gamma-BHC (Lindane)	NE	--	<0.0048	--	<0.0048
Heptachlor	2.5	--	<0.0048	--	<0.0048
Heptachlor Epoxide	7.7	--	<0.0048	--	<0.0048
Methoxychlor	0.63	--	<0.0048	--	<0.0048
Toxaphene	0.33	--	<0.12	--	<0.12
alpha-BHC	410	--	<0.0048	--	<0.0048
beta-BHC	2.1	--	<0.0048	--	<0.0048
cis-Chlordane	0.36	--	<0.0048	--	<0.0048
delta-BHC	1.3	--	<0.0048	--	<0.0048
trans-Chlordane	NE	--	<0.0048	--	<0.0048
Chlorinated Herbicides					
2,4,5-T		--	<0.023	--	<0.024
2,4,5-TP (Silvex)		--	<0.023	--	<0.024
2,4-D		--	<0.23	--	<0.24
2,4-DB		--	<0.24	--	<0.25
Dalapon		--	<0.56	--	<0.58
Dicamba		--	<0.023	--	<0.024
Dichloroprop		--	<0.23	--	<0.24
Dinoseb		--	<0.12	--	<0.12
MCPA		--	<23	--	<24
MCPP		--	<23	--	<24
Total Petroleum Hydrocarbons (TPH)					
TPH DRO	620	--	--	--	--

Notes:
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NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Table 2
Soil Analysis Summary

Sample Identification	MDE NRCS	ATC Central	GTA-SA3-C	GTA-SA3-D	GTA-SA3-D	GTA-SA3-E
Sample Interval			1-8	0-1	1-8	0-1
Sample Type			Composite	Grab	Composite	Grab
Sampling Date			9/13/2022	9/13/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300	--	<0.011	<0.011	<0.011	<0.011
Acenaphthene	4,500	--	<0.011	<0.011	<0.011	<0.011
Acenaphthylene	NE	--	<0.011	<0.011	<0.011	<0.011
Anthracene	23,000	--	<0.011	<0.011	<0.011	<0.011
Benzo(a)anthracene	21	--	<0.011	<0.011	<0.011	<0.011
Benzo(a)pyrene	2	--	<0.011	<0.011	<0.011	<0.011
Benzo(b)fluoranthene	21	--	<0.011	<0.011	<0.011	<0.011
Benzo(g,h,i)perylene	NE	--	<0.011	<0.011	<0.011	<0.011
Benzo(k)fluoranthene	210	--	<0.011	<0.011	<0.011	<0.011
Chrysene	2,100	--	<0.011	<0.011	<0.011	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.011	<0.011	<0.011	<0.011
Fluoranthene	3,000	--	<0.011	<0.011	<0.011	<0.011
Fluorene	3,000	--	<0.011	<0.011	<0.011	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.011	<0.011	<0.011	<0.011
Naphthalene	17	--	<0.011	<0.011	<0.011	<0.011
Phenanthrene	2,300	--	<0.011	<0.011	<0.011	<0.011
Pyrene	2,300	--	<0.011	<0.011	<0.011	<0.011
Priority Pollutant (PP) Metals						
Antimony	47	6.8	<2.6	<2.7	<2.9	<2.5
Arsenic	3.0/26.8*	4.9	8.8	6.2	6.4	7.4
Beryllium	230	1.6	3.6	1.1	1.0	0.90
Cadmium	98	1.1	<0.53	<0.54	<0.59	<0.51
Chromium [3]	6.3	30	24	19	16	**36**
Copper	4,700	42	30	28	30	18
Lead	550	61	23	16	17	18
Mercury	4.6	0.14	<0.11	<0.11	<0.12	<0.10
Nickel	2,200	22	42	31	36	20
Selenium	580	1.0	<0.53	<0.54	<0.59	<0.51
Silver	580	1.0	<0.53	<0.54	<0.59	<0.51
Thallium	1.2	1.5	<0.53	<0.54	<0.59	<0.51
Zinc	35,000	73	65	59	73	47
Organochlorine Pesticides						
4,4-DDD	2.5	--	--	<0.0052	--	<0.0051
4,4-DDE	9.3	--	--	<0.0052	--	<0.0051
4,4-DDT	8.5	--	--	<0.0052	--	<0.0051
Aldrin	0.18	--	--	<0.0052	--	<0.0051
Chlordane (n.o.s.)	7.7	--	--	<0.13	--	<0.13
Dieldrin	7.7	--	--	<0.0052	--	<0.0051
Endosulfan I	0.14	--	--	<0.0052	--	<0.0051
Endosulfan II	700	--	--	<0.0052	--	<0.0051
Endosulfan Sulfate	NE	--	--	<0.0052	--	<0.0051
Endrin	NE	--	--	<0.0052	--	<0.0051
Endrin Aldehyde	25	--	--	<0.0052	--	<0.0051
Endrin ketone	NE	--	--	<0.0052	--	<0.0051
Gamma-BHC (Lindane)	NE	--	--	<0.0052	--	<0.0051
Heptachlor	2.5	--	--	<0.0052	--	<0.0051
Heptachlor Epoxide	7.7	--	--	<0.0052	--	<0.0051
Methoxychlor	0.63	--	--	<0.0052	--	<0.0051
Toxaphene	0.33	--	--	<0.13	--	<0.13
alpha-BHC	410	--	--	<0.0052	--	<0.0051
beta-BHC	2.1	--	--	<0.0052	--	<0.0051
cis-Chlordane	0.36	--	--	<0.0052	--	<0.0051
delta-BHC	1.3	--	--	<0.0052	--	<0.0051
trans-Chlordane	NE	--	--	<0.0052	--	<0.0051
Chlorinated Herbicides						
2,4,5-T		--	--	<0.026	--	<0.024
2,4,5-TP (Silvex)		--	--	<0.026	--	<0.024
2,4-D		--	--	<0.26	--	<0.23
2,4-DB		--	--	<0.26	--	<0.24
Dalapon		--	--	<0.62	--	<0.57
Dicamba		--	--	<0.026	--	<0.023
Dichloroprop		--	--	<0.26	--	<0.23
Dinoseb		--	--	<0.13	--	<0.12
MCPA		--	--	<25	--	<23
MCPP		--	--	<26	--	<23
Total Petroleum Hydrocarbons (TPH)						
TPH DRO	620	--	--	--	--	--

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* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA3-E	GTA-SA3-F	GTA-SA3-F	GTA-SA3-G	GTA-SA3-G	GTA-SA4-A	GTA-SA4-A	GTA-SA4-B	GTA-SA4-B
Sample Interval			1-8	0-1	1-8	0-1	1-8	0-1	1-15	0-1	1-15
Sample Type			Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/13/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Acenaphthene	4,500	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Acenaphthylene	NE	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Anthracene	23,000	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Benzo(a)anthracene	21	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Benzo(a)pyrene	2	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Benzo(b)fluoranthene	21	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Benzo(g,h,i)perylene	NE	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Benzo(k)fluoranthene	210	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Chrysene	2,100	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Fluoranthene	3,000	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Fluorene	3,000	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Naphthalene	17	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Phenanthrene	2,300	--	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Pyrene	2,300	--	<0.011	<0.0097	<0.010	0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<3.0	<2.5	<2.9	<3.0	<3.4	<2.7	<2.3	<2.8	<2.3
Arsenic	3.0/26.8*	4.9	7.1	6.7	5.4	6.7	9.2	5.8	7.0	7.0	8.9
Beryllium	230	1.6	3.4	0.82	0.69	0.63	1.7	1.0	0.73	0.83	1.7
Cadmium	98	1.1	<0.60	<0.49	<0.59	<0.59	<0.69	<0.53	<0.45	<0.56	<0.46
Chromium [3]	6.3	30	26	**37**	30	**47**	**32**	28	28	25	**57**
Copper	4,700	42	39	11	16	18	24	11	16	24	28
Lead	550	61	13	19	12	13	24	16	18	14	17
Mercury	4.6	0.14	<0.12	<0.098	<0.12	0.25	<0.14	<0.11	<0.090	<0.11	<0.092
Nickel	2,200	22	77	16	23	22	35	16	17	23	31
Selenium	580	1.0	<0.60	<0.49	<0.59	<0.59	<0.69	<0.53	<0.45	<0.56	<0.46
Silver	580	1.0	<0.60	<0.49	<0.59	<0.59	<0.69	<0.53	<0.45	<0.56	<0.46
Thallium	1.2	1.5	<0.60	<0.49	<0.59	<0.59	<0.69	<0.53	<0.45	<0.56	<0.46
Zinc	35,000	73	130	42	37	43	68	43	45	44	58
Organochlorine Pesticides											
4,4-DDD	2.5	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
4,4-DDE	9.3	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
4,4-DDT	8.5	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Aldrin	0.18	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Chlordane (n.o.s.)	7.7	--	--	<0.12	--	<0.12	--	<0.12	--	<0.11	--
Dieldrin	7.7	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Endosulfan I	0.14	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Endosulfan II	700	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Endosulfan Sulfate	NE	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Endrin	NE	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Endrin Aldehyde	25	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Endrin ketone	NE	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Gamma-BHC (Lindane)	NE	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Heptachlor	2.5	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Heptachlor Epoxide	7.7	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Methoxychlor	0.63	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Toxaphene	0.33	--	--	<0.12	--	<0.12	--	<0.12	--	<0.11	--
alpha-BHC	410	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
beta-BHC	2.1	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
cis-Chlordane	0.36	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
delta-BHC	1.3	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
trans-Chlordane	NE	--	--	<0.0048	--	<0.0049	--	<0.0047	--	<0.0046	--
Chlorinated Herbicides											
2,4,5-T		--	--	<0.023	--	<0.023	--	<0.022	--	<0.022	--
2,4,5-TP (Silvex)		--	--	<0.023	--	<0.023	--	<0.022	--	<0.022	--
2,4-D		--	--	<0.23	--	<0.23	--	<0.22	--	<0.22	--
2,4-DB		--	--	<0.23	--	<0.23	--	<0.22	--	<0.22	--
Dalapon		--	--	<0.55	--	<0.55	--	<0.53	--	<0.53	--
Dicamba		--	--	<0.023	--	<0.023	--	<0.022	--	<0.022	--
Dichloroprop		--	--	<0.23	--	<0.23	--	<0.22	--	<0.22	--
Dinoseb		--	--	<0.12	--	<0.11	--	<0.11	--	<0.11	--
MCPA		--	--	<23	--	<22	--	<22	--	<22	--
MCPP		--	--	<23	--	<23	--	<22	--	<22	--
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA4-C	GTA-SA4-C	GTA-SA4-D	GTA-SA4-D	GTA-SA4-E	GTA-SA4-E	GTA-SA4-F	GTA-SA4-F	GTA-SA4-G
Sample Interval			0-1	1-5.5	0-1	1-6	0-1	1-15	0-1	1-15	0-1
Sample Type			Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	<0.010	<0.0099
Acenaphthene	4,500	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	<0.010	<0.0099
Acenaphthylene	NE	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	<0.010	<0.0099
Anthracene	23,000	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.014	<0.0099
Benzo(a)anthracene	21	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.046	0.013
Benzo(a)pyrene	2	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.048	0.013
Benzo(b)fluoranthene	21	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.033	<0.0099
Benzo(g,h,i)perylene	NE	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.049	0.015
Benzo(k)fluoranthene	210	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.064	0.016
Chrysene	2,100	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.048	0.011
Dibenz(a,h)Anthracene	2.1	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.046	0.013
Fluoranthene	3,000	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.033	<0.0099
Fluorene	3,000	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	<0.010	<0.0099
Indeno(1,2,3-c,d)Pyrene	21	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.052	0.015
Naphthalene	17	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	<0.010	<0.0099
Phenanthrene	2,300	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.013	<0.0099
Pyrene	2,300	--	<0.0098	<0.012	<0.0093	<0.0099	<0.0091	<0.010	<0.50	0.039	<0.0099
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.6	<2.8	<2.4	<2.2	<1.9	<2.5	<2.3	<2.1	<2.4
Arsenic	3.0/26.8*	4.9	4.9	7.8	2.7	4.1	3.2	6.0	6.7	4.0	5.1
Beryllium	230	1.6	0.74	2.4	0.59	0.75	1.2	2.4	1.8	1.2	3.9
Cadmium	98	1.1	<0.52	<0.57	<0.48	<0.43	<0.38	<0.49	<0.46	<0.42	<0.48
Chromium [3]	6.3	30	26	30	17	23	**37**	29	27	28	30
Copper	4,700	42	21	32	8.1	13	14	25	28	9.3	12
Lead	550	61	9.7	15	8.5	10	13	16	12	8.6	9.7
Mercury	4.6	0.14	<0.10	<0.11	<0.095	<0.087	<0.077	<0.098	<0.093	<0.083	<0.096
Nickel	2,200	22	32	49	14	24	29	44	40	36	54
Selenium	580	1.0	<0.52	<0.57	<0.48	<0.43	<0.38	<0.49	<0.46	<0.42	<0.48
Silver	580	1.0	<0.52	<0.57	<0.48	<0.43	<0.38	<0.49	<0.46	<0.42	<0.48
Thallium	1.2	1.5	<0.52	<0.57	<0.48	<0.43	<0.38	<0.49	<0.46	<0.42	<0.48
Zinc	35,000	73	58	86	33	83	71	78	70	69	75
Organochlorine Pesticides											
4,4-DDD	2.5	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
4,4-DDE	9.3	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
4,4-DDT	8.5	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Aldrin	0.18	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Chlordane (n.o.s.)	7.7	--	<0.11	--	<0.11	--	<0.11	--	<0.11	--	<0.12
Dieldrin	7.7	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Endosulfan I	0.14	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Endosulfan II	700	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Endosulfan Sulfate	NE	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Endrin	NE	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Endrin Aldehyde	25	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Endrin ketone	NE	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Gamma-BHC (Lindane)	NE	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Heptachlor	2.5	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Heptachlor Epoxide	7.7	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Methoxychlor	0.63	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Toxaphene	0.33	--	<0.11	--	<0.11	--	<0.11	--	<0.11	--	<0.12
alpha-BHC	410	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
beta-BHC	2.1	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
cis-Chlordane	0.36	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
delta-BHC	1.3	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
trans-Chlordane	NE	--	<0.0045	--	<0.0045	--	<0.0042	--	<0.0046	--	<0.0046
Chlorinated Herbicides											
2,4,5-T		--	<0.022	--	<0.021	--	<0.021	--	<0.023	--	<0.023
2,4,5-TP (Silvex)		--	<0.022	--	<0.021	--	<0.021	--	<0.023	--	<0.023
2,4-D		--	<0.22	--	<0.21	--	<0.21	--	<0.23	--	<0.23
2,4-DB		--	<0.22	--	<0.21	--	<0.21	--	<0.23	--	<0.23
Dalapon		--	<0.52	--	<0.50	--	<0.50	--	<0.55	--	<0.55
Dicamba		--	<0.022	--	<0.021	--	<0.021	--	<0.023	--	<0.023
Dichloroprop		--	<0.22	--	<0.21	--	<0.21	--	<0.23	--	<0.23
Dinoseb		--	<0.11	--	<0.10	--	<0.10	--	<0.11	--	<0.11
MCPA		--	<21	--	<20	--	<21	--	<22	--	<22
MCPP		--	<22	--	<21	--	<21	--	<23	--	<23
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA4-G	GTA-SA4-H	GTA-SA4-H	GTA-SA4-I	GTA-SA4-I	GTA-SA4-J	GTA-SA4-J	GTA-SA4-K	GTA-SA4-K
Sample Interval			1-15	0-1	1-11	0-1	1-15	0-1	1-9	0-1	1-15
Sample Type			Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	<0.011
Acenaphthene	4,500	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.012
Acenaphthylene	NE	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	<0.011
Anthracene	23,000	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.023
Benzo(a)anthracene	21	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.024
Benzo(a)pyrene	2	--	<0.011	<0.010	<0.011	<0.0087	<0.011	0.010	<0.011	<0.0087	0.018
Benzo(b)fluoranthene	21	--	<0.011	<0.010	<0.011	<0.0087	<0.011	0.0093	<0.011	<0.0087	0.015
Benzo(g,h,i)perylene	NE	--	<0.011	<0.010	<0.011	<0.0087	<0.011	0.014	<0.011	<0.0087	<0.011
Benzo(k)fluoranthene	210	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.017
Chrysene	2,100	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.022
Dibenz(a,h)Anthracene	2.1	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	<0.011
Fluoranthene	3,000	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.069
Fluorene	3,000	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.019
Indeno(1,2,3-c,d)Pyrene	21	--	<0.011	<0.010	<0.011	<0.0087	<0.011	0.011	<0.011	<0.0087	<0.011
Naphthalene	17	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	<0.011
Phenanthrene	2,300	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.085
Pyrene	2,300	--	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.053
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.3	<2.9	<3.2	<2.1	<2.9	<2.5	<3.0	<2.1	<3.3
Arsenic	3.0/26.8*	4.9	4.7	6.4	3.3	2.7	9.4	3.1	4.7	2.6	15
Beryllium	230	1.6	1.6	2.5	0.74	0.55	2.1	0.63	2.0	0.56	4.1
Cadmium	98	1.1	<0.46	<0.58	<0.63	<0.41	<0.59	<0.51	<0.59	<0.43	<0.66
Chromium [3]	6.3	30	**38**	**46**	30	21	27	18	**37**	13	**36**
Copper	4,700	42	19	15	7.6	9.3	27	9.1	12	5.9	19
Lead	550	61	7.4	12	10	5.9	13	9.4	9.5	4.0	15
Mercury	4.6	0.14	<0.093	<0.12	<0.13	<0.083	<0.12	<0.10	<0.12	<0.085	<0.13
Nickel	2,200	22	53	54	40	19	75	17	40	12	89
Selenium	580	1.0	<0.46	<0.58	<0.63	<0.41	<0.59	<0.51	<0.59	<0.43	<0.66
Silver	580	1.0	<0.46	<0.58	<0.63	<0.41	<0.59	<0.51	<0.59	<0.43	<0.66
Thallium	1.2	1.5	<0.46	<0.58	<0.63	<0.41	<0.59	<0.51	<0.59	<0.43	<0.66
Zinc	35,000	73	85	100	67	35	120	54	70	24	170
Organochlorine Pesticides											
4,4-DDD	2.5	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
4,4-DDE	9.3	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
4,4-DDT	8.5	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Aldrin	0.18	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Chlordane (n.o.s.)	7.7	--	--	<0.12	--	<0.10	--	<0.11	--	<0.11	--
Dieldrin	7.7	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Endosulfan I	0.14	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Endosulfan II	700	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Endosulfan Sulfate	NE	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Endrin	NE	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Endrin Aldehyde	25	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Endrin ketone	NE	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Gamma-BHC (Lindane)	NE	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Heptachlor	2.5	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Heptachlor Epoxide	7.7	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Methoxychlor	0.63	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Toxaphene	0.33	--	--	<0.12	--	<0.10	--	<0.11	--	<0.11	--
alpha-BHC	410	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
beta-BHC	2.1	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
cis-Chlordane	0.36	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
delta-BHC	1.3	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
trans-Chlordane	NE	--	--	<0.0049	--	<0.0041	--	<0.0046	--	<0.0042	--
Chlorinated Herbicides											
2,4,5-T		--	--	<0.023	--	<0.020	--	<0.022	--	<0.020	--
2,4,5-TP (Silvex)		--	--	<0.023	--	<0.020	--	<0.022	--	<0.020	--
2,4-D		--	--	<0.23	--	<0.20	--	<0.21	--	<0.20	--
2,4-DB		--	--	<0.23	--	<0.20	--	<0.22	--	<0.21	--
Dalapon		--	--	<0.55	--	<0.47	--	<0.52	--	<0.49	--
Dicamba		--	--	<0.023	--	<0.020	--	<0.021	--	<0.020	--
Dichloroprop		--	--	<0.23	--	<0.20	--	<0.21	--	<0.20	--
Dinoseb		--	--	<0.12	--	<0.099	--	<0.11	--	<0.10	--
MCPA		--	--	<23	--	<19	--	<21	--	<20	--
MCPP		--	--	<23	--	<20	--	<21	--	<20	--
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Table 2
Soil Analysis Summary

Sample Identification	MDE NRCS	ATC Central	GTA-SA4-L	GTA-SA4-L	GTA-SA4-M
Sample Interval			0-1	1-15	0-1
Sample Type			Grab	Composite	Grab
Sampling Date			9/8/2022	9/8/2022	9/8/2022
Polycyclic Aromatic Hydrocarbons (PAHs)					
2-Methylnaphthalene	300	--	<0.0100	<0.011	<0.0094
Acenaphthene	4,500	--	<0.0100	<0.011	<0.0094
Acenaphthylene	NE	--	<0.0100	<0.011	<0.0094
Anthracene	23,000	--	<0.0100	<0.011	<0.0094
Benzo(a)anthracene	21	--	<0.0100	<0.011	<0.0094
Benzo(a)pyrene	2	--	<0.0100	<0.011	<0.0094
Benzo(b)fluoranthene	21	--	<0.0100	<0.011	<0.0094
Benzo(g,h,i)perylene	NE	--	<0.0100	<0.011	<0.0094
Benzo(k)fluoranthene	210	--	<0.0100	<0.011	<0.0094
Chrysene	2,100	--	<0.0100	<0.011	<0.0094
Dibenz(a,h)Anthracene	2.1	--	<0.0100	<0.011	<0.0094
Fluoranthene	3,000	--	<0.0100	<0.011	<0.0094
Fluorene	3,000	--	<0.0100	<0.011	<0.0094
Indeno(1,2,3-c,d)Pyrene	21	--	<0.0100	<0.011	<0.0094
Naphthalene	17	--	<0.0100	<0.011	<0.0094
Phenanthrene	2,300	--	<0.0100	<0.011	<0.0094
Pyrene	2,300	--	<0.0100	<0.011	<0.0094
Priority Pollutant (PP) Metals					
Antimony	47	6.8	<2.9	<2.4	<2.5
Arsenic	3.0/26.8*	4.9	6.6	3.0	1.8
Beryllium	230	1.6	1.1	1.5	<0.49
Cadmium	98	1.1	<0.57	<0.48	<0.49
Chromium [3]	6.3	30	**33**	21	8.5
Copper	4,700	42	18	14	6.2
Lead	550	61	17	8.5	3.9
Mercury	4.6	0.14	<0.11	<0.096	<0.099
Nickel	2,200	22	23	54	8.3
Selenium	580	1.0	<0.57	<0.48	<0.49
Silver	580	1.0	<0.57	<0.48	<0.49
Thallium	1.2	1.5	<0.57	<0.48	<0.49
Zinc	35,000	73	54	74	85
Organochlorine Pesticides					
4,4-DDD	2.5	--	<0.0046	--	<0.0044
4,4-DDE	9.3	--	<0.0046	--	<0.0044
4,4-DDT	8.5	--	<0.0046	--	<0.0044
Aldrin	0.18	--	<0.0046	--	<0.0044
Chlordane (n.o.s.)	7.7	--	<0.11	--	<0.11
Dieldrin	7.7	--	<0.0046	--	<0.0044
Endosulfan I	0.14	--	<0.0046	--	<0.0044
Endosulfan II	700	--	<0.0046	--	<0.0044
Endosulfan Sulfate	NE	--	<0.0046	--	<0.0044
Endrin	NE	--	<0.0046	--	<0.0044
Endrin Aldehyde	25	--	<0.0046	--	<0.0044
Endrin ketone	NE	--	<0.0046	--	<0.0044
Gamma-BHC (Lindane)	NE	--	<0.0046	--	<0.0044
Heptachlor	2.5	--	<0.0046	--	<0.0044
Heptachlor Epoxide	7.7	--	<0.0046	--	<0.0044
Methoxychlor	0.63	--	<0.0046	--	<0.0044
Toxaphene	0.33	--	<0.11	--	<0.11
alpha-BHC	410	--	<0.0046	--	<0.0044
beta-BHC	2.1	--	<0.0046	--	<0.0044
cis-Chlordane	0.36	--	<0.0046	--	<0.0044
delta-BHC	1.3	--	<0.0046	--	<0.0044
trans-Chlordane	NE	--	<0.0046	--	<0.0044
Chlorinated Herbicides					
2,4,5-T		--	<0.022	--	<0.022
2,4,5-TP (Silvex)		--	<0.022	--	<0.022
2,4-D		--	<0.21	--	<0.22
2,4-DB		--	<0.22	--	<0.22
Dalapon		--	<0.52	--	<0.53
Dicamba		--	<0.021	--	<0.022
Dichloroprop		--	<0.21	--	<0.22
Dinoseb		--	<0.11	--	<0.11
MCPA		--	<21	--	<22
MCPP		--	<21	--	<22
Total Petroleum Hydrocarbons (TPH)					
TPH DRO	620	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA4-M	GTA-SA4-N	GTA-SA4-N	GTA-SA4-O	GTA-SA4-O	GTA-SA5-A	GTA-SA5-A
Sample Interval			1-15	0-1	1-15	0-1	1-15	0-1	1-7.5
Sample Type			Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)									
2-Methylnaphthalene	300	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Acenaphthene	4,500	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Acenaphthylene	NE	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Anthracene	23,000	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Benzo(a)anthracene	21	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Benzo(a)pyrene	2	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Benzo(b)fluoranthene	21	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Benzo(g,h,i)perylene	NE	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Benzo(k)fluoranthene	210	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Chrysene	2,100	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Fluoranthene	3,000	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Fluorene	3,000	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Naphthalene	17	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Phenanthrene	2,300	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Pyrene	2,300	--	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Priority Pollutant (PP) Metals									
Antimony	47	6.8	<2.9	<2.7	<2.3	<3.0	<2.5	<2.3	<2.5
Arsenic	3.0/26.8*	4.9	4.8	3.6	8.0	6.4	5.5	5.2	6.2
Beryllium	230	1.6	1.9	1.6	4.0	0.94	1.9	1.0	0.90
Cadmium	98	1.1	<0.58	<0.54	<0.47	<0.61	<0.51	<0.45	<0.50
Chromium [3]	6.3	30	21	25	22	**33**	30	28	30
Copper	4,700	42	13	64	25	28	26	18	15
Lead	550	61	13	12	7.9	18	12	14	15
Mercury	4.6	0.14	<0.12	<0.11	<0.093	0.21	<0.10	<0.090	<0.10
Nickel	2,200	22	52	40	73	31	57	28	36
Selenium	580	1.0	<0.58	<0.54	<0.47	<0.61	<0.51	<0.45	<0.50
Silver	580	1.0	<0.58	<0.54	<0.47	<0.61	<0.51	<0.45	<0.50
Thallium	1.2	1.5	<0.58	<0.54	<0.47	<0.61	<0.51	<0.45	<0.50
Zinc	35,000	73	110	69	120	53	110	60	52
Organochlorine Pesticides									
4,4-DDD	2.5	--	--	<0.0050	--	<0.0048	--	<0.0049	--
4,4-DDE	9.3	--	--	<0.0050	--	<0.0048	--	<0.0049	--
4,4-DDT	8.5	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Aldrin	0.18	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Chlordane (n.o.s.)	7.7	--	--	<0.12	--	<0.12	--	<0.12	--
Dieldrin	7.7	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Endosulfan I	0.14	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Endosulfan II	700	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Endosulfan Sulfate	NE	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Endrin	NE	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Endrin Aldehyde	25	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Endrin ketone	NE	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Gamma-BHC (Lindane)	NE	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Heptachlor	2.5	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Heptachlor Epoxide	7.7	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Methoxychlor	0.63	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Toxaphene	0.33	--	--	<0.12	--	<0.12	--	<0.12	--
alpha-BHC	410	--	--	<0.0050	--	<0.0048	--	<0.0049	--
beta-BHC	2.1	--	--	<0.0050	--	<0.0048	--	<0.0049	--
cis-Chlordane	0.36	--	--	<0.0050	--	<0.0048	--	<0.0049	--
delta-BHC	1.3	--	--	<0.0050	--	<0.0048	--	<0.0049	--
trans-Chlordane	NE	--	--	<0.0050	--	<0.0048	--	<0.0049	--
Chlorinated Herbicides									
2,4,5-T		--	--	<0.022	--	<0.025	--	<0.023	--
2,4,5-TP (Silvex)		--	--	<0.022	--	<0.025	--	<0.023	--
2,4-D		--	--	<0.22	--	<0.24	--	<0.23	--
2,4-DB		--	--	<0.23	--	<0.25	--	<0.23	--
Dalapon		--	--	<0.54	--	<0.59	--	<0.55	--
Dicamba		--	--	<0.022	--	<0.024	--	<0.023	--
Dichloroprop		--	--	<0.22	--	<0.24	--	<0.23	--
Dinoseb		--	--	<0.11	--	<0.12	--	<0.12	--
MCPA		--	--	<22	--	<24	--	<23	--
MCPP		--	--	<22	--	<24	--	<23	--
Total Petroleum Hydrocarbons (TPH)									
TPH DRO	620	--	--	--	--	--	--	<12	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA5-B	GTA-SA5-B	GTA-SA5-C	GTA-SA5-C	GTA-SA5-D	GTA-SA5-D	GTA-SA5-E	GTA-SA5-E	GTA-SA5-F
Sample Interval			0-1	1-10.5	0-1	1-11.5	0-1	1-14.25	0-1	1-8	0-1
Sample Type			Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Acenaphthene	4,500	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Acenaphthylene	NE	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Anthracene	23,000	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Benzo(a)anthracene	21	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Benzo(a)pyrene	2	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Benzo(b)fluoranthene	21	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Benzo(g,h,i)perylene	NE	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Benzo(k)fluoranthene	210	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Chrysene	2,100	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Fluoranthene	3,000	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Fluorene	3,000	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Naphthalene	17	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Phenanthrene	2,300	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Pyrene	2,300	--	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.5	<3.1	<2.2	<2.5	<2.1	<2.7	<3.0	<2.5	<2.4
Arsenic	3.0/26.8*	4.9	6.7	5.5	8.6	13	5.3	8.7	8.7	7.3	8.0
Beryllium	230	1.6	1.1	1.9	1.4	2.6	1.2	1.5	1.5	1.9	3.2
Cadmium	98	1.1	<0.49	<0.62	<0.44	<0.50	<0.43	<0.53	<0.60	<0.49	<0.48
Chromium [3]	6.3	30	**37**	**43**	**41**	**36**	**44**	**52**	**44**	**58**	**58**
Copper	4,700	42	16	19	26	32	9.7	26	30	27	30
Lead	550	61	20	12	13	18	20	12	16	12	14
Mercury	4.6	0.14	<0.099	<0.12	0.089	0.15	<0.086	<0.11	<0.12	<0.099	0.17
Nickel	2,200	22	18	40	32	57	20	51	36	64	46
Selenium	580	1.0	<0.49	<0.62	<0.44	<0.50	<0.43	<0.53	<0.60	<0.49	<0.48
Silver	580	1.0	<0.49	<0.62	<0.44	<0.50	<0.43	<0.53	<0.60	<0.49	<0.48
Thallium	1.2	1.5	<0.49	<0.62	<0.44	<0.50	<0.43	<0.53	<0.60	<0.49	<0.48
Zinc	35,000	73	46	79	59	72	48	89	61	94	71
Organochlorine Pesticides											
4,4-DDD	2.5	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
4,4-DDE	9.3	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
4,4-DDT	8.5	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Aldrin	0.18	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Chlordane (n.o.s.)	7.7	--	<0.12	--	<0.13	--	<0.12	--	<0.13	--	<0.13
Dieldrin	7.7	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Endosulfan I	0.14	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Endosulfan II	700	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Endosulfan Sulfate	NE	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Endrin	NE	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Endrin Aldehyde	25	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Endrin ketone	NE	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Gamma-BHC (Lindane)	NE	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Heptachlor	2.5	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Heptachlor Epoxide	7.7	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Methoxychlor	0.63	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Toxaphene	0.33	--	<0.12	--	<0.13	--	<0.12	--	<0.13	--	<0.13
alpha-BHC	410	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
beta-BHC	2.1	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
cis-Chlordane	0.36	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
delta-BHC	1.3	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
trans-Chlordane	NE	--	<0.0049	--	<0.0051	--	<0.0047	--	<0.0053	--	<0.0050
Chlorinated Herbicides											
2,4,5-T		--	<0.023	--	<0.024	--	<0.023	--	<0.026	--	<0.024
2,4,5-TP (Silvex)		--	<0.023	--	<0.024	--	<0.023	--	<0.026	--	<0.024
2,4-D		--	<0.23	--	<0.24	--	<0.22	--	<0.25	--	<0.24
2,4-DB		--	<0.23	--	<0.25	--	<0.23	--	<0.26	--	<0.24
Dalapon		--	<0.56	--	<0.59	--	<0.54	--	<0.61	--	<0.58
Dicamba		--	<0.023	--	<0.024	--	<0.022	--	<0.025	--	<0.024
Dichloroprop		--	<0.23	--	<0.24	--	<0.22	--	<0.25	--	<0.24
Dinoseb		--	<0.12	--	<0.12	--	<0.11	--	<0.13	--	<0.12
MCPA		--	<23	--	<24	--	<22	--	<25	--	<24
MCPP		--	<23	--	<24	--	<22	--	<25	--	<24
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	<12	--	<13	--	<12	--	<13	--	<13

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Table 2
Soil Analysis Summary

Sample Identification	MDE NRCS	ATC Central	GTA-SA5-F	GTA-SA5-G	GTA-SA5-G	GTA-SA5-H	GTA-SA5-H	GTA-SA5-I	GTA-SA5-I	GTA-SA5-J	GTA-SA5-J
Sample Interval			1-9.8	0-1	1-9	0-1	1-15	0-1	1-13	0-1	1-8.5
Sample Type			Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/12/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Acenaphthene	4,500	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Acenaphthylene	NE	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Anthracene	23,000	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Benzo(a)anthracene	21	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Benzo(a)pyrene	2	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Benzo(b)fluoranthene	21	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Benzo(g,h,i)perylene	NE	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Benzo(k)fluoranthene	210	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Chrysene	2,100	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Fluoranthene	3,000	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Fluorene	3,000	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Naphthalene	17	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Phenanthrene	2,300	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Pyrene	2,300	--	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.6	<2.7	<2.4	<2.1	<3.0	<3.0	<2.4	<2.0	<2.4
Arsenic	3.0/26.8*	4.9	14	12	13	8.3	10	8.8	8.4	3.9	7.7
Beryllium	230	1.6	5.3	6.8	5.0	1.9	3.7	2.0	2.7	1.3	2.2
Cadmium	98	1.1	<0.53	<0.54	<0.49	<0.43	<0.60	<0.60	<0.48	<0.40	<0.49
Chromium [3]	6.3	30	29	**43**	**63**	**38**	**42**	**45**	**64**	24	**56**
Copper	4,700	42	29	22	29	25	29	29	27	12	21
Lead	550	61	15	15	16	15	12	13	12	16	10
Mercury	4.6	0.14	<0.11	<0.11	<0.098	0.12	<0.12	0.14	<0.095	<0.080	<0.098
Nickel	2,200	22	53	45	53	33	51	38	55	18	49
Selenium	580	1.0	<0.53	<0.54	<0.49	<0.43	<0.60	<0.60	<0.48	<0.40	<0.49
Silver	580	1.0	<0.53	<0.54	<0.49	<0.43	<0.60	<0.60	<0.48	<0.40	<0.49
Thallium	1.2	1.5	<0.53	<0.54	<0.49	<0.43	<0.60	<0.60	<0.48	<0.40	<0.49
Zinc	35,000	73	68	53	77	53	73	58	76	49	72
Organochlorine Pesticides											
4,4-DDD	2.5	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
4,4-DDE	9.3	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
4,4-DDT	8.5	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Aldrin	0.18	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Chlordane (n.o.s.)	7.7	--	--	<0.11	--	<0.13	--	<0.12	--	<0.12	--
Dieldrin	7.7	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Endosulfan I	0.14	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Endosulfan II	700	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Endosulfan Sulfate	NE	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Endrin	NE	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Endrin Aldehyde	25	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Endrin ketone	NE	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Gamma-BHC (Lindane)	NE	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Heptachlor	2.5	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Heptachlor Epoxide	7.7	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Methoxychlor	0.63	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Toxaphene	0.33	--	--	<0.11	--	<0.13	--	<0.12	--	<0.12	--
alpha-BHC	410	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
beta-BHC	2.1	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
cis-Chlordane	0.36	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
delta-BHC	1.3	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
trans-Chlordane	NE	--	--	<0.0043	--	<0.0050	--	<0.0050	--	<0.0047	--
Chlorinated Herbicides											
2,4,5-T		--	--	<0.020	--	<0.023	--	<0.024	--	<0.024	--
2,4,5-TP (Silvex)		--	--	<0.020	--	<0.023	--	<0.024	--	<0.024	--
2,4-D		--	--	<0.20	--	<0.23	--	<0.24	--	<0.24	--
2,4-DB		--	--	<0.20	--	<0.24	--	<0.25	--	<0.24	--
Dalapon		--	--	<0.47	--	<0.56	--	<0.59	--	<0.57	--
Dicamba		--	--	<0.020	--	<0.023	--	<0.024	--	<0.024	--
Dichloroprop		--	--	<0.20	--	<0.23	--	<0.24	--	<0.24	--
Dinoseb		--	--	<0.099	--	<0.12	--	<0.12	--	<0.12	--
MCPA		--	--	<19	--	<23	--	<24	--	<23	--
MCPP		--	--	<20	--	<23	--	<24	--	<24	--
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	<11	--	<13	--	<13	--	<12	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA5-K	GTA-SA5-K	GTA-SA5-L	GTA-SA5-L	GTA-SA6-A	GTA-SA6-A	GTA-SA6-B	GTA-SA6-B	GTA-SA6-C
Sample Interval			0-1	1-5.5	0-1	1-9	0-1	1-20	0-1	1-15	0-1
Sample Type			Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/13/2022	9/13/2022	9/15/2022	9/15/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.010	<0.0098	<0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Acenaphthene	4,500	--	<0.010	<0.0098	<0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Acenaphthylene	NE	--	<0.010	<0.0098	<0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Anthracene	23,000	--	<0.010	<0.0098	<0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Benzo(a)anthracene	21	--	<0.010	<0.0098	0.024	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Benzo(a)pyrene	2	--	<0.010	<0.0098	0.030	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Benzo(b)fluoranthene	21	--	<0.010	<0.0098	0.024	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Benzo(g,h,i)perylene	NE	--	<0.010	<0.0098	0.022	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Benzo(k)fluoranthene	210	--	<0.010	<0.0098	0.023	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Chrysene	2,100	--	<0.010	<0.0098	0.025	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Dibenz(a,h)Anthracene	2.1	--	<0.010	<0.0098	<0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Fluoranthene	3,000	--	<0.010	<0.0098	0.031	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Fluorene	3,000	--	<0.010	<0.0098	<0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Indeno(1,2,3-c,d)Pyrene	21	--	<0.010	<0.0098	0.021	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Naphthalene	17	--	<0.010	<0.0098	<0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Phenanthrene	2,300	--	<0.010	<0.0098	0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Pyrene	2,300	--	<0.010	<0.0098	0.031	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.9	<2.5	<3.4	<2.4	<2.3	<3.1	<2.4	<2.6	<2.8
Arsenic	3.0/26.8*	4.9	7.3	8.5	6.4	4.2	6.7	7.7	8.2	7.5	9.3
Beryllium	230	1.6	2.6	3.8	1.6	0.66	1.2	2.0	1.2	2.2	2.5
Cadmium	98	1.1	<0.58	<0.51	<0.68	<0.48	<0.46	<0.63	<0.48	<0.53	<0.57
Chromium [3]	6.3	30	**48**	**47**	21	20	28	12	**38**	29	**52**
Copper	4,700	42	27	28	12	16	26	32	22	24	24
Lead	550	61	17	13	23	12	17	21	15	12	18
Mercury	4.6	0.14	0.14	<0.10	<0.14	<0.097	<0.092	<0.13	<0.097	<0.11	<0.11
Nickel	2,200	22	46	56	35	19	32	38	38	47	42
Selenium	580	1.0	<0.58	<0.51	<0.68	<0.48	<0.46	<0.63	0.59	<0.53	<0.57
Silver	580	1.0	<0.58	<0.51	<0.68	<0.48	<0.46	<0.63	<0.48	<0.53	<0.57
Thallium	1.2	1.5	<0.58	<0.51	<0.68	<0.48	<0.46	<0.63	<0.48	<0.53	<0.57
Zinc	35,000	73	89	71	84	37	54	71	66	62	69
Organochlorine Pesticides											
4,4-DDD	2.5	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
4,4-DDE	9.3	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
4,4-DDT	8.5	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Aldrin	0.18	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Chlordane (n.o.s.)	7.7	--	<0.12	--	<0.15	--	<0.13	--	<0.13	--	<0.12
Dieldrin	7.7	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Endosulfan I	0.14	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Endosulfan II	700	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Endosulfan Sulfate	NE	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Endrin	NE	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Endrin Aldehyde	25	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Endrin ketone	NE	--	<0.0047	--		--	<0.0052	--	<0.0052	--	<0.0048
Gamma-BHC (Lindane)	NE	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Heptachlor	2.5	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Heptachlor Epoxide	7.7	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Methoxychlor	0.63	--	<0.0047	--		--	<0.0052	--	<0.0052	--	<0.0048
Toxaphene	0.33	--	<0.12	--	<0.15	--	<0.13	--	<0.13	--	<0.12
alpha-BHC	410	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
beta-BHC	2.1	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
cis-Chlordane	0.36	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
delta-BHC	1.3	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
trans-Chlordane	NE	--	<0.0047	--	<0.0059	--	<0.0052	--	<0.0052	--	<0.0048
Chlorinated Herbicides											
2,4,5-T		--	<0.023	--	<0.027	--	<0.024	--	<0.023	--	<0.024
2,4,5-TP (Silvex)		--	<0.023	--	<0.027	--	<0.024	--	<0.023	--	<0.024
2,4-D		--	<0.23	--	<0.27	--	<0.23	--	<0.23	--	<0.24
2,4-DB		--	<0.23	--	<0.27	--	<0.24	--	<0.23	--	<0.24
Dalapon		--	<0.55	--	<0.64	--	<0.57	--	<0.55	--	<0.57
Dicamba		--	<0.023	--	<0.027	--	<0.023	--	<0.023	--	<0.024
Dichloroprop		--	<0.23	--	<0.27	--	<0.23	--	<0.23	--	<0.24
Dinoseb		--	<0.12	--	<0.13	--	<0.12	--	<0.11	--	<0.12
MCPA		--	<23	--	<26	--	<23	--	<22	--	<23
MCPP		--	<23	--	<27	--	<23	--	<23	--	<24
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	<12	--	<14	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Table 2
Soil Analysis Summary

Sample Identification	MDE NRCS	ATC Central	GTA-SA6-C	GTA-SA6-D	GTA-SA6-D	GTA-SA6-E	GTA-SA6-E	GTA-SA6-F	GTA-SA6-F	GTA-SA7-A	GTA-SA7-A
Sample Interval			1-8.5	0-1	1-8.8'	0-1	1-15	0-1	1-15	0-1	1-5
Sample Type			Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/13/2022	9/13/2022	9/13/2022	9/8/2022	9/8/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Acenaphthene	4,500	--	<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Acenaphthylene	NE	--	<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Anthracene	23,000	--	<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Benzo(a)anthracene	21	--	<0.011	<0.010	<0.011	0.11	<0.010	<0.010	<0.011	<0.010	<0.010
Benzo(a)pyrene	2	--	0.011	<0.010	<0.011	0.14	<0.010	<0.010	<0.011	<0.010	<0.010
Benzo(b)fluoranthene	21	--	<0.011	<0.010	<0.011	0.12	<0.010	<0.010	<0.011	<0.010	<0.010
Benzo(g,h,i)perylene	NE	--	<0.011	<0.010	<0.011	0.10	<0.010	<0.010	<0.011	<0.010	<0.010
Benzo(k)fluoranthene	210	--	<0.011	<0.010	<0.011	0.10	<0.010	<0.010	<0.011	<0.010	<0.010
Chrysene	2,100	--	<0.011	<0.010	<0.011	0.11	<0.010	<0.010	<0.011	<0.010	<0.010
Dibenz(a,h)Anthracene	2.1	--	<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Fluoranthene	3,000	--	<0.011	<0.010	<0.011	0.14	<0.010	<0.010	<0.011	<0.010	<0.010
Fluorene	3,000	--	<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Indeno(1,2,3-c,d)Pyrene	21	--	<0.011	<0.010	<0.011	0.097	<0.010	<0.010	<0.011	<0.010	<0.010
Naphthalene	17	--	<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Phenanthrene	2,300	--	<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Pyrene	2,300	--	0.011	<0.010	<0.011	0.14	<0.010	<0.010	<0.011	<0.010	<0.010
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.6	<2.3	<3.3	<2.1	<2.6	<1.9	<2.9	<2.0	<2.9
Arsenic	3.0/26.8*	4.9	10	7.2	16	4.1	9.3	10	7.0	5.7	7.2
Beryllium	230	1.6	2.9	1.2	1.4	0.76	<0.52	1.1	2.0	0.84	1.1
Cadmium	98	1.1	<0.53	<0.46	<0.65	<0.42	<0.52	<0.39	<0.58	<0.41	<0.58
Chromium [3]	6.3	30	**53**	**38**	**120**	27	**41**	**35**	26	**44**	**34**
Copper	4,700	42	26	21	23	15	29	40	14	20	85
Lead	550	61	20	15	34	20	17	28	9.5	18	24
Mercury	4.6	0.14	<0.11	<0.092	<0.13	<0.085	<0.10	0.19	<0.12	0.21	0.15
Nickel	2,200	22	43	28	37	19	27	44	58	25	34
Selenium	580	1.0	<0.53	<0.46	<0.65	<0.42	<0.52	0.53	<0.58	0.61	<0.58
Silver	580	1.0	<0.53	<0.46	<0.65	<0.42	<0.52	<0.39	<0.58	<0.41	<0.58
Thallium	1.2	1.5	<0.53	<0.46	<0.65	<0.42	<0.52	0.44	<0.58	<0.41	<0.58
Zinc	35,000	73	67	58	49	63	60	60	90	40	50
Organochlorine Pesticides											
4,4-DDD	2.5	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
4,4-DDE	9.3	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
4,4-DDT	8.5	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Aldrin	0.18	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Chlordane (n.o.s.)	7.7	--	--	<0.12	--	<0.53	--	<0.12	--	<0.13	--
Dieldrin	7.7	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Endosulfan I	0.14	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Endosulfan II	700	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Endosulfan Sulfate	NE	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Endrin	NE	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Endrin Aldehyde	25	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Endrin ketone	NE	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Gamma-BHC (Lindane)	NE	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Heptachlor	2.5	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Heptachlor Epoxide	7.7	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Methoxychlor	0.63	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Toxaphene	0.33	--	--	<0.12	--	<0.53	--	<0.12	--	<0.13	--
alpha-BHC	410	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
beta-BHC	2.1	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
cis-Chlordane	0.36	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
delta-BHC	1.3	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
trans-Chlordane	NE	--	--	<0.0049	--	<0.021	--	<0.0049	--	<0.0051	--
Chlorinated Herbicides											
2,4,5-T		--	--	<0.024	--	<0.019	--	<0.023	--	<0.023	--
2,4,5-TP (Silvex)		--	--	<0.024	--	<0.019	--	<0.023	--	<0.023	--
2,4-D		--	--	<0.24	--	<0.19	--	<0.23	--	<0.22	--
2,4-DB		--	--	<0.24	--	<0.19	--	<0.23	--	<0.23	--
Dalapon		--	--	<0.57	--	<0.46	--	<0.55	--	<0.54	--
Dicamba		--	--	<0.024	--	<0.019	--	<0.023	--	<0.022	--
Dichloroprop		--	--	<0.24	--	<0.19	--	<0.23	--	<0.22	--
Dinoseb		--	--	<0.12	--	<0.095	--	<0.12	--	<0.11	--
MCPA		--	--	<23	--	<19	--	<23	--	<22	--
MCPP		--	--	<24	--	<19	--	<23	--	<22	--
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Table 2
Soil Analysis Summary

Sample Identification	MDE NRCS	ATC Central	GTA-SA7-B	GTA-SA7-B	GTA-SA7-C	GTA-SA7-C	GTA-SA7-D	GTA-SA7-D	GTA-SA7-E	GTA-SA7-E	GTA-SA7-F
Sample Interval			0-1	1-5	0-1	1-5	0-1	1-5	0-1	1-5	0-1
Sample Type			Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Acenaphthene	4,500	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Acenaphthylene	NE	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Anthracene	23,000	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Benzo(a)anthracene	21	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Benzo(a)pyrene	2	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Benzo(b)fluoranthene	21	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	0.0095	<0.0098	<0.010
Benzo(g,h,i)perylene	NE	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Benzo(k)fluoranthene	210	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Chrysene	2,100	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Dibenz(a,h)Anthracene	2.1	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Fluoranthene	3,000	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Fluorene	3,000	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Indeno(1,2,3-c,d)Pyrene	21	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Naphthalene	17	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Phenanthrene	2,300	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Pyrene	2,300	--	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	0.0095	<0.0098	<0.010
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.8	<2.5	<2.4	<2.5	<2.5	<2.9	<2.6	<2.3	<2.7
Arsenic	3.0/26.8*	4.9	8.9	7.6	4.3	2.8	3.9	6.7	3.8	2.9	4.8
Beryllium	230	1.6	0.63	1.1	1.3	0.92	1.6	1.7	1.2	1.3	0.97
Cadmium	98	1.1	<0.56	<0.51	<0.48	<0.49	<0.50	<0.58	<0.52	<0.47	<0.54
Chromium [3]	6.3	30	**45**	**32**	24	**31**	26	**51**	**32**	27	**46**
Copper	4,700	42	29	57	12	9.3	14	21	9.9	7.4	22
Lead	550	61	24	18	17	13	21	19	16	11	21
Mercury	4.6	0.14	<0.11	<0.10	<0.096	<0.098	<0.10	<0.12	<0.10	<0.093	<0.11
Nickel	2,200	22	28	32	17	16	20	54	22	18	36
Selenium	580	1.0	0.56	<0.51	<0.48	<0.49	<0.50	<0.58	<0.52	<0.47	<0.54
Silver	580	1.0	<0.56	<0.51	<0.48	<0.49	<0.50	<0.58	<0.52	<0.47	<0.54
Thallium	1.2	1.5	<0.56	<0.51	<0.48	<0.49	<0.50	<0.58	<0.52	<0.47	<0.54
Zinc	35,000	73	51	52	44	47	65	92	55	43	77
Organochlorine Pesticides											
4,4-DDD	2.5	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
4,4-DDE	9.3	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
4,4-DDT	8.5	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Aldrin	0.18	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Chlordane (n.o.s.)	7.7	--	<0.12	--	<0.13	--	<0.13	--	<0.11	--	<0.13
Dieldrin	7.7	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Endosulfan I	0.14	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Endosulfan II	700	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Endosulfan Sulfate	NE	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Endrin	NE	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Endrin Aldehyde	25	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Endrin ketone	NE	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Gamma-BHC (Lindane)	NE	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Heptachlor	2.5	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Heptachlor Epoxide	7.7	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Methoxychlor	0.63	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Toxaphene	0.33	--	<0.12	--	<0.13	--	<0.13	--	<0.11	--	<0.13
alpha-BHC	410	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
beta-BHC	2.1	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
cis-Chlordane	0.36	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
delta-BHC	1.3	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
trans-Chlordane	NE	--	<0.0048	--	<0.0051	--	<0.0054	--	<0.0045	--	<0.0051
Chlorinated Herbicides											
2,4,5-T		--	<0.023	--	<0.022	--	<0.025	--	<0.023	--	<0.024
2,4,5-TP (Silvex)		--	<0.023	--	<0.022	--	<0.025	--	<0.023	--	<0.024
2,4-D		--	<0.22	--	<0.22	--	<0.25	--	<0.23	--	<0.24
2,4-DB		--	<0.23	--	<0.22	--	<0.25	--	<0.23	--	<0.25
Dalapon		--	<0.54	--	<0.53	--	<0.60	--	<0.55	--	<0.58
Dicamba		--	<0.022	--	<0.022	--	<0.025	--	<0.023	--	<0.024
Dichloroprop		--	<0.22	--	<0.22	--	<0.25	--	<0.23	--	<0.24
Dinoseb		--	<0.11	--	<0.11	--	<0.12	--	<0.11	--	<0.12
MCPA		--	<22	--	<22	--	<24	--	<22	--	<24
MCPP		--	<22	--	<22	--	<25	--	<23	--	<24
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA7-F	GTA-SA7-G	GTA-SA7-G	GTA-SA7-H	GTA-SA7-H	GTA-SA7-I	GTA-SA7-I	GTA-SA7-J	GTA-SA7-J
Sample Interval			1-5	0-1	1-5	0-1	1-5	0-1	1-5	0-1	1-5
Sample Type			Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.0094	<0.010	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Acenaphthene	4,500	--	<0.0094	<0.010	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Acenaphthylene	NE	--	<0.0094	<0.010	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Anthracene	23,000	--	<0.0094	<0.010	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Benzo(a)anthracene	21	--	<0.0094	0.029	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Benzo(a)pyrene	2	--	<0.0094	0.036	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Benzo(b)fluoranthene	21	--	<0.0094	0.034	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Benzo(g,h,i)perylene	NE	--	<0.0094	0.030	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Benzo(k)fluoranthene	210	--	<0.0094	0.029	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Chrysene	2,100	--	<0.0094	0.032	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.0094	<0.010	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Fluoranthene	3,000	--	<0.0094	0.038	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Fluorene	3,000	--	<0.0094	<0.010	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.0094	0.028	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Naphthalene	17	--	<0.0094	<0.010	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Phenanthrene	2,300	--	<0.0094	0.012	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Pyrene	2,300	--	<0.0094	0.040	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.3	<2.3	<2.4	<2.4	<2.2	<2.3	<2.2	<2.2	<3.1
Arsenic	3.0/26.8*	4.9	3.2	3.5	3.2	4.5	5.9	5.4	4.4	5.5	5.1
Beryllium	230	1.6	0.92	1.1	1.0	1.8	1.9	1.5	1.6	1.4	0.99
Cadmium	98	1.1	<0.45	<0.46	<0.48	<0.47	<0.44	<0.47	<0.44	<0.44	<0.62
Chromium [3]	6.3	30	29	**35**	**44**	**56**	**55**	22	28	21	17
Copper	4,700	42	12	11	8.7	18	24	27	22	31	27
Lead	550	61	15	16	13	22	24	11	11	7.9	8.3
Mercury	4.6	0.14	<0.091	<0.091	<0.096	<0.094	<0.087	<0.093	<0.089	<0.087	<0.12
Nickel	2,200	22	21	31	28	52	46	32	34	30	25
Selenium	580	1.0	<0.45	<0.46	<0.48	<0.47	<0.44	<0.47	<0.44	<0.44	<0.62
Silver	580	1.0	<0.45	<0.46	<0.48	<0.47	<0.44	<0.47	<0.44	<0.44	<0.62
Thallium	1.2	1.5	<0.45	<0.46	<0.48	<0.47	<0.44	<0.47	<0.44	<0.44	<0.62
Zinc	35,000	73	44	75	61	120	110	58	62	42	34
Organochlorine Pesticides											
4,4-DDD	2.5	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
4,4-DDE	9.3	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
4,4-DDT	8.5	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Aldrin	0.18	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Chlordane (n.o.s.)	7.7	--	--	<0.13	--	<0.12	--	<0.12	--	<0.13	--
Dieldrin	7.7	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Endosulfan I	0.14	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Endosulfan II	700	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Endosulfan Sulfate	NE	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Endrin	NE	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Endrin Aldehyde	25	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Endrin ketone	NE	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Gamma-BHC (Lindane)	NE	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Heptachlor	2.5	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Heptachlor Epoxide	7.7	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Methoxychlor	0.63	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Toxaphene	0.33	--	--	<0.13	--	<0.12	--	<0.12	--	<0.13	--
alpha-BHC	410	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
beta-BHC	2.1	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
cis-Chlordane	0.36	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
delta-BHC	1.3	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
trans-Chlordane	NE	--	--	<0.0051	--	<0.0047	--	<0.0047	--	<0.0051	--
Chlorinated Herbicides											
2,4,5-T		--	--	<0.023	--	<0.021	--	<0.022	--	<0.023	--
2,4,5-TP (Silvex)		--	--	<0.023	--	<0.021	--	<0.022	--	<0.023	--
2,4-D		--	--	<0.23	--	<0.21	--	<0.22	--	<0.23	--
2,4-DB		--	--	<0.23	--	<0.21	--	<0.22	--	<0.23	--
Dalapon		--	--	<0.55	--	<0.51	--	<0.53	--	<0.55	--
Dicamba		--	--	<0.023	--	<0.021	--	<0.022	--	<0.023	--
Dichloroprop		--	--	<0.23	--	<0.21	--	<0.22	--	<0.23	--
Dinoseb		--	--	<0.12	--	<0.11	--	<0.11	--	<0.12	--
MCPA		--	--	<23	--	<21	--	<22	--	<23	--
MCPP		--	--	<23	--	<21	--	<22	--	<23	--
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
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Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
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Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA7-K	GTA-SA7-K	GTA-SA8-A	GTA-SA8-A	GTA-SA8-B	GTA-SA8-B	GTA-SA8-C	GTA-SA8-C	GTA-SA8-D
Sample Interval			0-1	1-11	0-1	1-4	0-1	1-4	0-1	1-4	0-1
Sample Type			Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/9/2022	9/9/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.0091	<0.011	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Acenaphthene	4,500	--	<0.0091	<0.011	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Acenaphthylene	NE	--	<0.0091	<0.011	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Anthracene	23,000	--	<0.0091	0.036	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Benzo(a)anthracene	21	--	0.050	0.030	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Benzo(a)pyrene	2	--	0.043	0.022	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Benzo(b)fluoranthene	21	--	0.11	0.018	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Benzo(g,h,i)perylene	NE	--	0.049	0.014	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Benzo(k)fluoranthene	210	--	0.055	0.021	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Chrysene	2,100	--	0.085	0.028	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Dibenz(a,h)Anthracene	2.1	--	0.012	<0.011	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Fluoranthene	3,000	--	0.048	0.079	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Fluorene	3,000	--	<0.0091	0.020	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Indeno(1,2,3-c,d)Pyrene	21	--	0.039	0.014	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Naphthalene	17	--	<0.0091	<0.011	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Phenanthrene	2,300	--	0.015	0.10	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Pyrene	2,300	--	0.048	0.063	<0.0099	<0.0095	<0.0097	<0.0093	<0.0097	<0.0094	<0.0097
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.5	<2.3	<2.4	<2.8	<2.4	<2.1	<2.2	<2.2	<2.8
Arsenic	3.0/26.8*	4.9	4.3	11	3.4	4.3	2.9	2.9	4.5	4.1	4.3
Beryllium	230	1.6	1.0	2.5	1.1	1.00	1.3	1.5	1.9	1.5	1.8
Cadmium	98	1.1	<0.50	<0.46	<0.49	<0.56	<0.49	<0.42	<0.44	<0.44	<0.56
Chromium [3]	6.3	30	21	**31**	**37**	30	**61**	**79**	**50**	**52**	**43**
Copper	4,700	42	13	25	8.4	8.2	16	19	13	20	14
Lead	550	61	20	22	16	13	14	23	22	20	20
Mercury	4.6	0.14	<0.10	<0.093	<0.097	<0.11	<0.097	<0.084	<0.088	<0.089	<0.11
Nickel	2,200	22	21	44	26	17	47	59	41	42	36
Selenium	580	1.0	<0.50	<0.46	<0.49	<0.56	<0.49	<0.42			
Silver	580	1.0	<0.50	<0.46	<0.49	<0.56	<0.49	<0.42	<0.44	<0.44	<0.56
Thallium	1.2	1.5	<0.50	<0.46	<0.49	<0.56	<0.49	<0.42	<0.44	<0.44	<0.56
Zinc	35,000	73	71	70	70	52	96	130	100	92	94
Organochlorine Pesticides											
4,4-DDD	2.5	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
4,4-DDE	9.3	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
4,4-DDT	8.5	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Aldrin	0.18	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Chlordane (n.o.s.)	7.7	--	<0.53	--	<0.12	--	<0.11	--	<0.11	--	<0.11
Dieldrin	7.7	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Endosulfan I	0.14	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Endosulfan II	700	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Endosulfan Sulfate	NE	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Endrin	NE	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Endrin Aldehyde	25	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Endrin ketone	NE	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Gamma-BHC (Lindane)	NE	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Heptachlor	2.5	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Heptachlor Epoxide	7.7	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Methoxychlor	0.63	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Toxaphene	0.33	--	<0.53	--	<0.12	--	<0.11	--	<0.11	--	<0.11
alpha-BHC	410	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
beta-BHC	2.1	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
cis-Chlordane	0.36	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
delta-BHC	1.3	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
trans-Chlordane	NE	--	<0.021	--	<0.0047	--	<0.0045	--	<0.0045	--	<0.0046
Chlorinated Herbicides											
2,4,5-T		--	<0.021	--	<0.022	--	<0.021	--	<0.023	--	<0.023
2,4,5-TP (Silvex)		--	<0.021	--	<0.022	--	<0.021	--	<0.023	--	<0.023
2,4-D		--	<0.21	--	<0.22	--	<0.21	--	<0.22	--	<0.23
2,4-DB		--	<0.21	--	<0.22	--	<0.22	--	<0.23	--	<0.23
Dalapon		--	<0.51	--	<0.52	--	<0.51	--	<0.54	--	<0.55
Dicamba		--	<0.021	--	<0.022	--	<0.021	--	<0.022	--	<0.023
Dichloroprop		--	<0.21	--	<0.22	--	<0.21	--	<0.22	--	<0.23
Dinoseb		--	<0.11	--	<0.11	--	<0.11	--	<0.11	--	<0.12
MCPA		--	<21	--	<21	--	<21	--	<22	--	<23
MCPP		--	<21	--	<22	--	<21	--	<22	--	<23
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
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Samples collected Between September 8, 2022 and September 15, 2022
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Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA8-D	GTA-SA8-E	GTA-SA8-E	GTA-SA8-F	GTA-SA8-F	GTA-SA8-G	GTA-SA8-G	GTA-SA8-H	GTA-SA8-H
Sample Interval			1-4	0-1	1-4	0-1	1-4	0-1	1-4	0-1	1-4
Sample Type			Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Acenaphthene	4,500	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Acenaphthylene	NE	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Anthracene	23,000	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Benzo(a)anthracene	21	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Benzo(a)pyrene	2	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Benzo(b)fluoranthene	21	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Benzo(g,h,i)perylene	NE	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Benzo(k)fluoranthene	210	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Chrysene	2,100	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Dibenz(a,h)Anthracene	2.1	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Fluoranthene	3,000	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Fluorene	3,000	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Indeno(1,2,3-c,d)Pyrene	21	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Naphthalene	17	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Phenanthrene	2,300	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Pyrene	2,300	--	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.4	<2.3	<2.6	<2.2	<2.3	<2.1	<2.4	<2.4	<2.1
Arsenic	3.0/26.8*	4.9	3.9	6.3	4.9	6.4	5.0	7.8	7.0	6.8	6.1
Beryllium	230	1.6	1.6	1.8	2.2	1.4	1.9	1.4	2.4	1.4	1.0
Cadmium	98	1.1	<0.48	<0.47	<0.53	<0.44	<0.46	<0.42	<0.49	<0.47	<0.42
Chromium [3]	6.3	30	**44**	27	**41**	**46**	**61**	**49**	**35**	**55**	**43**
Copper	4,700	42	15	11	27	18	27	23	31	19	17
Lead	550	61	20	15	19	26	23	25	13	18	15
Mercury	4.6	0.14	<0.096	<0.094	<0.11	<0.088	<0.091	<0.085	<0.098	<0.094	<0.085
Nickel	2,200	22	37	26	72	35	52	36	40	26	23
Selenium	580	1.0				<0.44	<0.46	0.49	<0.49	0.60	<0.42
Silver	580	1.0	<0.48	<0.47	<0.53	<0.44	<0.46	<0.42	<0.49	<0.47	<0.42
Thallium	1.2	1.5	<0.48	<0.47	<0.53	<0.44	<0.46	<0.42	<0.49	<0.47	<0.42
Zinc	35,000	73	91	69	130	87	100	83	82	64	66
Organochlorine Pesticides											
4,4-DDD	2.5	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
4,4-DDE	9.3	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
4,4-DDT	8.5	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Aldrin	0.18	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Chlordane (n.o.s.)	7.7	--	--	<0.12	--	<0.11	--	<0.11	--	<0.12	--
Dieldrin	7.7	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Endosulfan I	0.14	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Endosulfan II	700	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Endosulfan Sulfate	NE	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Endrin	NE	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Endrin Aldehyde	25	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Endrin ketone	NE	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Gamma-BHC (Lindane)	NE	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Heptachlor	2.5	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Heptachlor Epoxide	7.7	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Methoxychlor	0.63	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Toxaphene	0.33	--	--	<0.12	--	<0.11	--	<0.11	--	<0.12	--
alpha-BHC	410	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
beta-BHC	2.1	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
cis-Chlordane	0.36	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
delta-BHC	1.3	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
trans-Chlordane	NE	--	--	<0.0049	--	<0.0045	--	<0.0045	--	<0.0047	--
Chlorinated Herbicides											
2,4,5-T		--	--	<0.025	--	<0.022	--	<0.023	--	<0.022	--
2,4,5-TP (Silvex)		--	--	<0.025	--	<0.022	--	<0.023	--	<0.022	--
2,4-D		--	--	<0.25	--	<0.22	--	<0.23	--	<0.22	--
2,4-DB		--	--	<0.26	--	<0.22	--	<0.23	--	<0.23	--
Dalapon		--	--	<0.61	--	<0.53	--	<0.55	--	<0.54	--
Dicamba		--	--	<0.025	--	<0.022	--	<0.023	--	<0.022	--
Dichloroprop		--	--	<0.25	--	<0.22	--	<0.23	--	<0.22	--
Dinoseb		--	--	<0.13	--	<0.11	--	<0.11	--	<0.11	--
MCPA		--	--	<25	--	<21	--	<22	--	<22	--
MCPP		--	--	<25	--	<22	--	<23	--	<22	--
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA8-I	GTA-SA8-I	GTA-SA8-J	GTA-SA8-J	GTA-SA8-K	GTA-SA8-K	GTA-SA8-L	GTA-SA8-L	GTA-SA8-M
Sample Interval			0-1	1-4	0-1	1-4	0-1	1-4	0-1	1-4	0-1
Sample Type			Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Acenaphthene	4,500	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Acenaphthylene	NE	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Anthracene	23,000	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Benzo(a)anthracene	21	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Benzo(a)pyrene	2	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Benzo(b)fluoranthene	21	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Benzo(g,h,i)perylene	NE	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Benzo(k)fluoranthene	210	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Chrysene	2,100	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Dibenz(a,h)Anthracene	2.1	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Fluoranthene	3,000	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Fluorene	3,000	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Indeno(1,2,3-c,d)Pyrene	21	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Naphthalene	17	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Phenanthrene	2,300	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Pyrene	2,300	--	<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.2	<2.4	<2.7	<3.1	<2.8	<2.8	<2.3	<3.1	<2.9
Arsenic	3.0/26.8*	4.9	2.4	6.7	7.2	3.1	9.9	14	4.5	6.9	8.7
Beryllium	230	1.6	1.1	1.6	1.3	1.1	1.4	1.7	0.65	0.75	0.93
Cadmium	98	1.1	<0.43	<0.48	<0.54	<0.63	<0.55	<0.55	<0.46	<0.63	<0.58
Chromium [3]	6.3	30	**33**	**47**	**46**	**40**	**48**	**50**	29	**43**	**44**
Copper	4,700	42	9.5	26	21	15	22	23	8.6	18	19
Lead	550	61	11	16	15	13	17	16	13	14	22
Mercury	4.6	0.14	<0.086	<0.097	<0.11	<0.13	<0.11	<0.11	<0.092	<0.13	<0.12
Nickel	2,200	22	19	52	29	27	29	35	13	24	22
Selenium	580	1.0	<0.43	<0.48	<0.54	<0.63	<0.55	<0.55	0.48	<0.63	<0.58
Silver	580	1.0	<0.43	<0.48	<0.54	<0.63	<0.55	<0.55	<0.46	<0.63	<0.58
Thallium	1.2	1.5	<0.43	<0.48	<0.54	<0.63	<0.55	<0.55	<0.46	<0.63	<0.58
Zinc	35,000	73	50	76	68	55	86	83	29	39	56
Organochlorine Pesticides											
4,4-DDD	2.5	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
4,4-DDE	9.3	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
4,4-DDT	8.5	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Aldrin	0.18	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Chlordane (n.o.s.)	7.7	--	<0.12	--	<0.12	--	<0.12	--	<0.12	--	<0.12
Dieldrin	7.7	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Endosulfan I	0.14	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Endosulfan II	700	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Endosulfan Sulfate	NE	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Endrin	NE	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Endrin Aldehyde	25	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Endrin ketone	NE	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Gamma-BHC (Lindane)	NE	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Heptachlor	2.5	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Heptachlor Epoxide	7.7	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Methoxychlor	0.63	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Toxaphene	0.33	--	<0.12	--	<0.12	--	<0.12	--	<0.12	--	<0.12
alpha-BHC	410	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
beta-BHC	2.1	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
cis-Chlordane	0.36	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
delta-BHC	1.3	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
trans-Chlordane	NE	--	<0.0046	--	<0.0048	--	<0.0047	--	<0.0047	--	<0.0046
Chlorinated Herbicides											
2,4,5-T		--	<0.023	--	<0.022	--	<0.025	--	<0.023	--	<0.022
2,4,5-TP (Silvex)		--	<0.023	--	<0.022	--	<0.025	--	<0.023	--	<0.022
2,4-D		--	<0.23	--	<0.22	--	<0.24	--	<0.23	--	<0.21
2,4-DB		--	<0.23	--	<0.22	--	<0.25	--	<0.23	--	<0.22
Dalapon		--	<0.56	--	<0.53	--	<0.59	--	<0.55	--	<0.52
Dicamba		--	<0.023	--	<0.022	--	<0.024	--	<0.023	--	<0.021
Dichloroprop		--	<0.23	--	<0.22	--	<0.24	--	<0.23	--	<0.21
Dinoseb		--	<0.12	--	<0.11	--	<0.12	--	<0.11	--	<0.11
MCPA		--	<23	--	<22	--	<24	--	<22	--	<21
MCPP		--	<23	--	<22	--	<24	--	<23	--	<21
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA8-M	GTA-SA9-A	GTA-SA9-A	GTA-SA9-B	GTA-SA9-B	GTA-SA9-C	GTA-SA9-C	GTA-SA9-D	GTA-SA9-D
Sample Interval			1-4	0-1	1-5	0-1	1-5	0-1	1-5	0-1	1-5
Sample Type			Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/9/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Acenaphthene	4,500	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Acenaphthylene	NE	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Anthracene	23,000	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Benzo(a)anthracene	21	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Benzo(a)pyrene	2	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Benzo(b)fluoranthene	21	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Benzo(g,h,i)perylene	NE	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Benzo(k)fluoranthene	210	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Chrysene	2,100	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Fluoranthene	3,000	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Fluorene	3,000	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Naphthalene	17	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Phenanthrene	2,300	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Pyrene	2,300	--	<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.8	<2.5	<2.6	<2.0	<2.4	<2.4	<2.6	<2.9	<2.7
Arsenic	3.0/26.8*	4.9	7.4	8.1	9.6	6.9	6.8	5.7	7.0	6.8	5.3
Beryllium	230	1.6	0.82	1.4	1.9	0.95	1.0	1.3	1.5	1.9	2.8
Cadmium	98	1.1	<0.55	<0.49	<0.51	<0.41	<0.48	<0.49	<0.52	<0.58	<0.54
Chromium [3]	6.3	30	**33**	**33**	**50**	**54**	**41**	**34**	**36**	**35**	**37**
Copper	4,700	42	23	15	22	14	20	14	19	32	31
Lead	550	61	13	22	17	17	13	17	13	15	12
Mercury	4.6	0.14	0.14	<0.099	<0.10	<0.082	<0.096	<0.097	<0.10	<0.12	<0.11
Nickel	2,200	22	28	24	30	19	28	24	27	40	49
Selenium	580	1.0	<0.55	<0.49	<0.51	<0.41	<0.48	<0.49	<0.52	<0.58	<0.54
Silver	580	1.0	<0.55	<0.49	<0.51	<0.41	<0.48	<0.49	<0.52	<0.58	<0.54
Thallium	1.2	1.5	<0.55	<0.49	<0.51	<0.41	<0.48	<0.49	<0.52	<0.58	<0.54
Zinc	35,000	73	48	59	60	43	53	52	48	71	75
Organochlorine Pesticides											
4,4-DDD	2.5	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
4,4-DDE	9.3	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
4,4-DDT	8.5	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Aldrin	0.18	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Chlordane (n.o.s.)	7.7	--	--	<0.12	--	<0.11	--	<0.13	--	<0.13	--
Dieldrin	7.7	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Endosulfan I	0.14	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Endosulfan II	700	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Endosulfan Sulfate	NE	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Endrin	NE	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Endrin Aldehyde	25	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Endrin ketone	NE	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Gamma-BHC (Lindane)	NE	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Heptachlor	2.5	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Heptachlor Epoxide	7.7	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Methoxychlor	0.63	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Toxaphene	0.33	--	--	<0.12	--	<0.11	--	<0.13	--	<0.13	--
alpha-BHC	410	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
beta-BHC	2.1	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
cis-Chlordane	0.36	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
delta-BHC	1.3	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
trans-Chlordane	NE	--	--	<0.0047	--	<0.0046	--	<0.0051	--	<0.0053	--
Chlorinated Herbicides											
2,4,5-T		--	--	<0.022	--	<0.023	--	<0.023	--	<0.024	--
2,4,5-TP (Silvex)		--	--	<0.022	--	<0.023	--	<0.023	--	<0.024	--
2,4-D		--	--	<0.22	--	<0.23	--	<0.23	--	<0.24	--
2,4-DB		--	--	<0.23	--	<0.23	--	<0.23	--	<0.24	--
Dalapon		--	--	<0.53	--	<0.55	--	<0.55	--	<0.57	--
Dicamba		--	--	<0.022	--	<0.023	--	<0.023	--	<0.024	--
Dichloroprop		--	--	<0.22	--	<0.23	--	<0.23	--	<0.24	--
Dinoseb		--	--	<0.11	--	<0.11	--	<0.11	--	<0.12	--
MCPA		--	--	<22	--	<22	--	<22	--	<23	--
MCPP		--	--	<22	--	<23	--	<23	--	<24	--
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620	--	--	--	--	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Sample Identification	MDE NRCS	ATC Central	GTA-SA9-E	GTA-SA9-E	GTA-SA9-F	GTA-SA9-F	GTA-SA10	GTA-SA10
Sample Interval			0-1	1-5	0-1	1-5	0-1	1-10
Sample Type			Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)								
2-Methylnaphthalene	300	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Acenaphthene	4,500	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Acenaphthylene	NE	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Anthracene	23,000	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Benzo(a)anthracene	21	--	0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Benzo(a)pyrene	2	--	0.012	<0.0098	<0.010	<0.010	<0.0098	<0.011
Benzo(b)fluoranthene	21	--	0.011	<0.0098	<0.010	<0.010	<0.0098	<0.011
Benzo(g,h,i)perylene	NE	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Benzo(k)fluoranthene	210	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Chrysene	2,100	--	0.011	<0.0098	<0.010	<0.010	<0.0098	<0.011
Dibenz(a,h)Anthracene	2.1	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Fluoranthene	3,000	--	0.013	<0.0098	<0.010	<0.010	<0.0098	<0.011
Fluorene	3,000	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Indeno(1,2,3-c,d)Pyrene	21	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Naphthalene	17	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Phenanthrene	2,300	--	<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Pyrene	2,300	--	0.013	<0.0098	<0.010	<0.010	<0.0098	<0.011
Priority Pollutant (PP) Metals								
Antimony	47	6.8	<2.9	<2.8	<2.0	<2.7	<2.6	<2.8
Arsenic	3.0/26.8*	4.9	5.2	6.3	5.6	4.3	6.2	5.4
Beryllium	230	1.6	1.0	1.8	1.2	1.4	1.1	2.3
Cadmium	98	1.1	<0.58	<0.55	<0.41	<0.53	<0.52	<0.56
Chromium [3]	6.3	30	22	7.8	23	20	**34**	17
Copper	4,700	42	21	24	23	22	13	20
Lead	550	61	16	19	15	12	17	14
Mercury	4.6	0.14	<0.12	<0.11	<0.081	<0.11	<0.10	<0.11
Nickel	2,200	22	26	39	27	28	23	30
Selenium	580	1.0	<0.58	<0.55	<0.41	<0.53	0.53	<0.56
Silver	580	1.0	<0.58	<0.55	<0.41	<0.53	<0.52	<0.56
Thallium	1.2	1.5	<0.58	<0.55	<0.41	<0.53	<0.52	<0.56
Zinc	35,000	73	45	95	43	41	49	54
Organochlorine Pesticides								
4,4-DDD	2.5	--	<0.0047	--	<0.0049	--	<0.0047	--
4,4-DDE	9.3	--	<0.0047	--	<0.0049	--	<0.0047	--
4,4-DDT	8.5	--	<0.0047	--	<0.0049	--	<0.0047	--
Aldrin	0.18	--	<0.0047	--	<0.0049	--	<0.0047	--
Chlordane (n.o.s.)	7.7	--	<0.12	--	<0.12	--	<0.12	--
Dieldrin	7.7	--	<0.0047	--	<0.0049	--	<0.0047	--
Endosulfan I	0.14	--	<0.0047	--	<0.0049	--	<0.0047	--
Endosulfan II	700	--	<0.0047	--	<0.0049	--	<0.0047	--
Endosulfan Sulfate	NE	--	<0.0047	--	<0.0049	--	<0.0047	--
Endrin	NE	--	<0.0047	--	<0.0049	--	<0.0047	--
Endrin Aldehyde	25	--	<0.0047	--	<0.0049	--	<0.0047	--
Endrin ketone	NE	--	<0.0047	--	<0.0049	--	<0.0047	--
Gamma-BHC (Lindane)	NE	--	<0.0047	--	<0.0049	--	<0.0047	--
Heptachlor	2.5	--	<0.0047	--	<0.0049	--	<0.0047	--
Heptachlor Epoxide	7.7	--	<0.0047	--	<0.0049	--	<0.0047	--
Methoxychlor	0.63	--	<0.0047	--	<0.0049	--	<0.0047	--
Toxaphene	0.33	--	<0.12	--	<0.12	--	<0.12	--
alpha-BHC	410	--	<0.0047	--	<0.0049	--	<0.0047	--
beta-BHC	2.1	--	<0.0047	--	<0.0049	--	<0.0047	--
cis-Chlordane	0.36	--	<0.0047	--	<0.0049	--	<0.0047	--
delta-BHC	1.3	--	<0.0047	--	<0.0049	--	<0.0047	--
trans-Chlordane	NE	--	<0.0047	--	<0.0049	--	<0.0047	--
Chlorinated Herbicides								
2,4,5-T		--	<0.024	--	<0.023	--	<0.022	--
2,4,5-TP (Silvex)		--	<0.024	--	<0.023	--	<0.022	--
2,4-D		--	<0.23	--	<0.22	--	<0.22	--
2,4-DB		--	<0.24	--	<0.23	--	<0.23	--
Dalapon		--	<0.56	--	<0.54	--	<0.53	--
Dicamba		--	<0.023	--	<0.022	--	<0.022	--
Dichloroprop		--	<0.23	--	<0.22	--	<0.22	--
Dinoseb		--	<0.12	--	<0.11	--	<0.11	--
MCPA		--	<23	--	<22	--	<22	--
MCPP		--	<23	--	<22	--	<22	--
Total Petroleum Hydrocarbons (TPH)								
TPH DRO	620	--	--	--	--	--	--	--

Notes:
This table is only to be used in conjunction with the report for which it was prepared. See t
Samples collected Between September 8, 2022 and September 15, 2022
Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan
ATC = Anticipated Typical Concentration for soils in Eastern Maryland
Shaded and bold values represent exceedance of MDE RCS
NA = Not applicable
NE = MDE standard not established
* = Risk-based calculated value
The comparison value for mercury is referenced as the elemental mercury RCS/NRCS.

Appendix B

Analytical Data for Groundwater Collected at Pump Station

PHASE SEPARATION SCIENCE

6630 Baltimore National Pike
Baltimore, MD 21228
410-747-8770
800-932-9047
www.phaseonline.com

Certificate of Analysis

Project Name: 31222314
PSS Project No.: 23052316

May 23, 2023

Kevin Plocek
GTA - Baltimore
1414 Key Highway, Ste. 201P
Baltimore, MD 21230

Reference: PSS Project No: **23052316**
Project Name: 31222314
Project Location: Frederick, MD
Project ID.: 31222314

Dear Kevin Plocek:

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Project number(s) **23052316**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on June 27, 2023, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Cathy Thompson
QA Officer

PHASE SEPARATION SCIENCE

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800-932-9047
www.phaseonline.com

Explanation of Qualifiers

Project Name: 31222314
PSS Project No.: 23052316

Project ID: 31222314

The following samples were received under chain of custody by Phase Separation Science (PSS) on 05/23/2023 at 02:20 pm

PSS Sample ID	Sample ID	Matrix	Date/Time Collected
23052316-001	EMP-GW1	GROUND WATER	05/23/23 00:00
23052316-002	EMP-GW2	GROUND WATER	05/23/23 00:00
23052316-003	EMP-GW3	GROUND WATER	05/23/23 00:00

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

B	A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C	Results Pending Final Confirmation.
E	The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail	The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J	The target analyte was positively identified below the reporting limit but greater than the MDL.
MDL	This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is the minimum result, which can be reliably discriminated from a blank with a predetermined confidence level. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific. instrumentation and among different analysts. An LOD is analyte and matrix specific.
ND	Not Detected at or above the reporting limit.
RL	PSS Reporting Limit.
U	Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156
State Certifications: MD 179, WV 303
Regulated Soil Permit: P330-12-00268
NSWC USCG Accepted Laboratory
LDBE MWAA LD1997-0041-2015

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Certificate of Analysis

Project Name: 31222314
PSS Project No.: 23052316

Sample ID: EMP-GW1 **Date/Time Sampled: 05/23/2023 00:00** **PSS Sample ID: 23052316-001**
Matrix: GROUND WATER **Date/Time Received: 05/23/2023 14:20**

Inorganic Anions: Fluoride — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

Qualifier(s): See Sample Receipt section on Case Narrative.

	Result	Units	RL	Flag	Dil	MDL	Prepared	Analyzed	Analyst
Fluoride	**0.14**	mg/L	0.25	J	1	0.04	05/23/23	05/23/23 14:41	1053

Sample ID: EMP-GW2 **Date/Time Sampled: 05/23/2023 00:00** **PSS Sample ID: 23052316-002**
Matrix: GROUND WATER **Date/Time Received: 05/23/2023 14:20**

Inorganic Anions: Fluoride — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

Qualifier(s): See Sample Receipt section on Case Narrative.

	Result	Units	RL	Flag	Dil	MDL	Prepared	Analyzed	Analyst
Fluoride	**5.6**	mg/L	0.25		1	0.04	05/23/23	05/23/23 15:04	1053

Sample ID: EMP-GW3 **Date/Time Sampled: 05/23/2023 00:00** **PSS Sample ID: 23052316-003**
Matrix: GROUND WATER **Date/Time Received: 05/23/2023 14:20**

Inorganic Anions: Fluoride — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

Qualifier(s): See Sample Receipt section on Case Narrative.

	Result	Units	RL	Flag	Dil	MDL	Prepared	Analyzed	Analyst
Fluoride	**0.36**	mg/L	0.25		1	0.04	05/23/23	05/23/23 15:27	1053

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Project Name: 31222314

PSS Project No.: 23052316

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

No sampling time recorded on COC or container labels.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.

PHASE SEPARATION SCIENCE

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Lab Chronology

Project Name: 31222314
PSS Project No.: 23052316

Method	Client Sample ID	Analysis Type	PSS Sample ID	Mtx	Prep Batch	Analytical Batch	Prepared	Analyzed
EPA 300.0	EMP-GW1	Initial	23052316-001	W	95542	203706	05/23/2023 14:32	05/23/2023 14:41
	EMP-GW2	Initial	23052316-002	W	95542	203706	05/23/2023 14:32	05/23/2023 15:04
	EMP-GW3	Initial	23052316-003	W	95542	203706	05/23/2023 14:32	05/23/2023 15:27
	95542-1-BKS	BKS	95542-1-BKS	W	95542	203706	05/23/2023 10:24	05/23/2023 12:00
	95542-1-BLK	BLK	95542-1-BLK	W	95542	203706	05/23/2023 10:24	05/23/2023 11:37
	20230522-104 S	MS	23052218-002 S	W	95542	203706	05/23/2023 10:59	05/23/2023 13:09
	20230522-104 SD	MSD	23052218-002 S	W	95542	203706	05/23/2023 10:59	05/23/2023 13:32

PHASE SEPARATION SCIENCE

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QC Summary

Project Name 31222314
PSS Project No.: 23052316

Analytical Method: EPA 300.0

Prep Method: E300.0P
Seq Number: 203706
Matrix: Water
Date Prep: 05/23/23
MB Sample Id: 95542-1-BLK
LCS Sample Id: 95542-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Flag
Fluoride	<0.04000	2.500	2.466	99	90-110	mg/L	

F = RPD exceeded the laboratory control limits
X = Recovery of MS, MSD or both outside of QC Criteria
H= Recovery of BS,BSD or both exceeded the laboratory control limits
L = Recovery of BS,BSD or both below the laboratory control limits

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QC Summary

Project Name 31222314
PSS Project No.: 23052316

Analytical Method: EPA 300.0
Seq Number: 203706 Matrix: Water
CCV Sample Id: CCV-01 Analyzed Date: 05/23/23 10:51

Parameter	Spike Amount	CCV Result	CCV %Rec	Limits	Units	Flag
Fluoride	2.500	2.508	100	90-110	mg/L	

Analytical Method: EPA 300.0
Seq Number: 203706 Matrix: Water
CCV Sample Id: CCV-02 Analyzed Date: 05/23/23 13:55

Parameter	Spike Amount	CCV Result	CCV %Rec	Limits	Units	Flag
Fluoride	2.500	2.557	102	90-110	mg/L	

Analytical Method: EPA 300.0
Seq Number: 203706 Matrix: Water
CCV Sample Id: CCV-03 Analyzed Date: 05/23/23 15:50

Parameter	Spike Amount	CCV Result	CCV %Rec	Limits	Units	Flag
Fluoride	2.500	2.530	101	90-110	mg/L	

Analytical Method: EPA 300.0
Seq Number: 203318 Matrix: Water
Parent Sample Id: ICV-01 ICV Sample Id: ICV-01 Analyzed Date: 05/08/23 16:22

Parameter	Spike Amount	ICV Result	ICV %Rec	Limits	Units	Flag
Fluoride	2.500	2.491	100	90-110	mg/L	

X = Recovery outside of QC Criteria

PHASE SEPARATION SCIENCE

CHAIN OF CUSTODY FORM

All fields must be completed accurately. Shaded sections for lab use only.

www.phaseonline.com ~ info@phaseonline.com

6630 Baltimore National Pike • Suite 103-A • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047

① PSS CLIENT: GTA | OFFICE LOCATION: BALTIMORE | PSS Work Order #: 23052316 | PAGE 1 OF 1

BILL TO (if different): | PHONE #: 443 286 5506

CONTACT: KEVIN FLOCEK | EMAIL: kflocek@gtaeng.com

PROJECT NAME: 31222314 | PROJECT #: 31222314

SITE LOCATION: FREDERICK, MD | P.O. #: 31222314

SAMPLER(S): KF | DW CERT #:

Matrix Codes: **SW**=Surface Water **DW**=Drinking Water **GW**=Ground Water **WW**=Waste Water **O**=Oil **S**=Soil **SOL**=Solid **A**=Air **WI**=Wipe

Preservative Codes: 1 - HCL; 2 - H_2SO_4; 3 - HNO_3; 4 - NaOH; 5 - E624KIT; 6 - ICE; 7 - Sodium Thiosulfate; 8 - Ascorbic Acid; 9 - TerraCore Kit

② ③

PSS ID	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX Use Codes	# OF CONTAINERS	SAMPLE TYPE: C=COMPOSITE G=GRAB	Preservatives Use Codes / Analysis/ Method Required: FLORIDE
1	EMP-GW1	5/23/23		GW	1	G	/
2	EMP-GW2	↓		↓	1	G	/
3	EMP-GW3	↓		↓	1	G	/

④

⑤

	Date	Time	Received By:
Relinquished By: (1) KEVIN FLOCEK	5/23/23	2:20 PM	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

Requested TAT (One TAT per COC)
☐ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☒ Emergency ☐ Other

STATE RESULTS REPORTED TO:
☐ MD ☐ DE ☐ PA ☐ VA ☐ WV
☐ OTHER

COMPLIANCE?
☐ DW ☐ WW

EDD FORMAT TYPE

Special Instructions:

Ice Present: ABS

Custody Seal: ABS

Coolers: 0 Temp: 22.9-24.3°C

Shipping Carrier: Client

This chain of custody is a legal document. The client (PSS Client), by signing, or having client's agent sign, this "Chain of Custody Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary.

PHASE SEPARATION SCIENCE

6630 Baltimore National Pike
Baltimore, MD 21228
410-747-8770
800-932-9047
www.phaseonline.com

Sample Receipt Checklist

Project Name: 31222314
PSS Project No.: 23052316

Client Name GTA - Baltimore
Disposal Date 06/27/2023

Received By Tyler Enwright
Date Received 05/23/2023 02:20:00 PM
Delivered By Client
Tracking No Not Applicable
Logged In By Tyler Enwright

Shipping Container(s)
No. of Coolers 0

		Ice	Absent
Custody Seal(s) Intact?	N/A	Temp (deg C)	24.3
Seal(s) Signed / Dated?	N/A	Temp Blank Present	No

Documentation

		Sampler Name	Kevin Plocek
COC agrees with sample labels?	Yes	MD DW Cert. No.	N/A
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

Holding Time

		Total No. of Samples Received	3
All Samples Received Within Holding Time(s)?	Yes	Total No. of Containers Received	3

Preservation

Total Metals	(pH<2)	N/A
Dissolved Metals, filtered within 15 minutes of collection	(pH<2)	N/A
Orthophosphorus, filtered within 15 minutes of collection		N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, DOC (field filtered), COD, Phenols	(pH<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A
624 VOC (Rcvd at least one unpreserved VOA vial)		N/A
524 VOC (Rcvd with trip blanks)	(pH<2)	N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

No sampling time recorded on COC or container labels.

Samples Inspected/Checklist Completed By: Tyler Enwright — Date: 05/23/2023

PM Review and Approval: Lynn Jackson — Date: 05/23/2023

Appendix C

Pump Station Improvement Plan Drawings

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/06/23

Signature:

COMBINED SWM DEVELOPMENT AND IMPROVEMENT PLAN FOR QUANTUM FREDERICK

OUT LOT 1

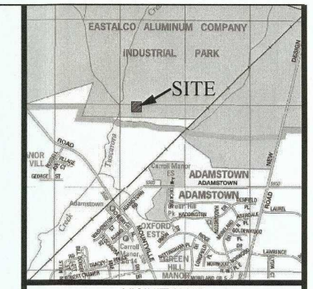
FOR 1 MGD SEWER PUMP STATION (SPS)

DWSU # 601-S

PREPARED FOR:

QUANTUM MARYLAND, LLC
500 E 4TH STREET SUITE 333
AUSTIN, TX 78701

DECEMBER 2022

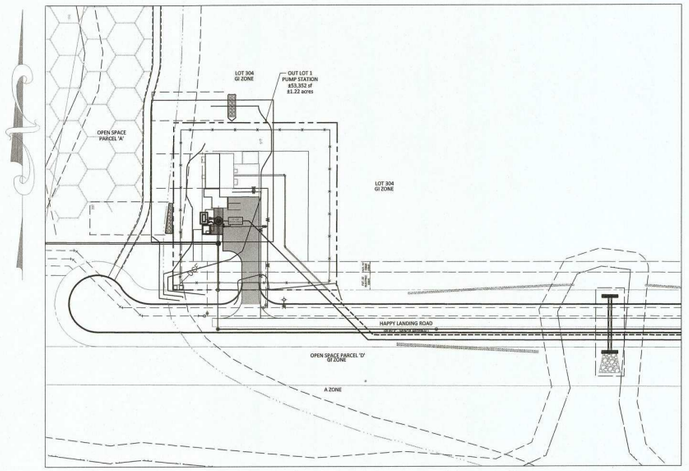


VICINITY MAP
SCALE: 1"=2000'
TAX MAP: 94 ; PARCEL: 70
TAX ACCOUNT #01-000152
ADC MAP 4685
VICINITY MAP © ADC - KAPPA MAP GROUP LLC / GIS INTEGRATED SOLUTIONS LLC 2014

LEGEND:

EX TOPOGRAPHY	380 / 378
EX 100 YR FLOODPLAIN	EkD EpD
EX SOIL TYPE	
EX STREAM	
EX PARCEL LINES	
EX EDGE OF PAVEMENT	
EX WATER	8"W
EX SEWER	8"S SS
PROP TOPOGRAPHY BY OTHERS	378
PROP BUILDINGS	
PROP LOT LINES	
PROP RIGHT-OF-WAY	
PROP ROAD CENTERLINE	
PROP WATER	8"W
PROP FORCE MAIN	

SHEET INDEX



0' 50' 100' 200'

SCALE: 1" = 100'

GENERAL NOTES:

Project Summary: The purpose of this site plan is for the layout and design of a temporary MGD interim pump station, associated gravity sewer, force main, driveway entrance from the temporary 12' wide access drive, pavement and associated infrastructure; and a future one story, 5 MGD sewer pump station (Future Governmental Utility).

1. Total area of the Site Plan = +/-1.22 Acres and is zoned GI and is in the Adamstown Planning Region with a land use designation of General Industrial per the 2010 Comprehensive Plan.
2. This Site Plan is comprised of Outlot 1, Tax Map 94 recorded in Liber 15038 at folio 393.
3. The property is located on Frederick County Tax Maps 94 and Frederick County Soils Maps 94.
4. Boundary information as shown on this plan was taken from August 2021 field boundary surveys conducted by Rodgers Consulting,Inc., and other available deed and plat information.
5. Topography is shown hereon at 2 foot contour intervals per photogrammetric mapping compiled by McKenzieSnyder, Inc., based on aerial photography and LiDAR data collected in April 2021.
6. Survey datum is the Maryland Coordinate System [NAD83(2011), SPCS zone 1900(MD), U.S. Survey Feet], based on static GPS observations post-processed by the National Geodetic Survey's Online Positioning User Service (OPUS). Measured points include RCI control points 9501 and 9504. The average combined (map scale x elevation) factor for the site is 0.99997061.
   9501 N 609450.579 E 1184241.605
   9504 N 604476.704 E 1174468.799
   Vertical datum is NAVD88, based on static GPS observations post-processed by the National Geodetic Survey's Online Positioning User Service (OPUS). Measured points include RCI control points 9501 and 9504.
   9501 NAVD88 orthometric height 300.656
   9504 NAVD88 orthometric height 377.729
7. This property is to be served by public water & sewer. The current water & sewer classification for the GI zoned property is W/3 and S/4.
8. The 100 Year Floodplain as shown is a compilation of several sources of data per Section 1-19-9.100 of the Frederick County Zoning Code. The line shown represents the greatest extent of the following: FEMA, Frederick County Floodplain Soils, and wetlands adjacent to other floodplain sources. A minimum setback of 25 feet shall be provided from all Floodplain district boundaries, except as otherwise approved through the mitigation process described in §1-19-9.110(B)(7), or a minimum setback of 50 feet shall be provided from the bank of any perennial or intermittent stream, whichever is greater. All setback areas shall be maintained or planted with natural vegetation. A floodplain revision is currently under review.
9. Wetlands were delineated in September of 1996 and reconfirmed in Spring 2021 by RCI staff, in conformance with the 1987 U.S.Corps of Engineers' delineation manual.
10. A Final Forest Conservation Plan was approved under F271158 on 2022.07.27.
11. Environmental site design will be provided to the MEP for all improvements. End of line treatment of water quality (WQv) and channel protection (CPv) will be provided because many drainage areas associated with the permitted uses may not be small enough for treatment by micro-scale practices. Qp10 Control will be provided in end of line facilities. ESDv proposed where practicable.
12. Existing roadways are bituminous material, depth varies.
13. Although on-site water quality may be provided with the site plan, water quality for public roads will be required with Improvement Plans.
14. The Ballenger Mckinney Waste Water Treatment Facility provides sanitary sewage treatment for this project & the New Design Water Treatment Plant provides potable water service for this project.
15. The location, orientation, grading through and around all water and sewer easements outside of the public right of way are subject to approval by the Division of Water and Sewer Utilities with the Improvement Plans. In the event of conflicting requirements between agencies, the developer agrees that a revision of this Site Plan may be necessary.
16. Non-governmental users shall dedicate the floodplain areas to a Lot Owners Association in open space parcels.
17. This site is subject to the overall Quantum Frederick Project APFO (A266569 & PP266504) requirements for roads, water and sewer, this site is exempt from schools. The overall development is projected to generate 3317 am and 2877 pm weekday peak hour trips, as outlined in the traffic impact analysis (TIA) submitted by Wells & Associates, dated November 11,2021, and meets the threshold for APFO testing (1-20-30). The proposed development will require multiple mitigation measures to address traffic related issues. These mitigation measures will be constructed in a phased schedule as defined in the Letter of Understanding associated with the project.
18. All signage and markings will be in accordance to Maryland MUTCD.
19. No buildings, structures, or impervious surfaces, and no activities requiring clearing or grading over 5,000 square feet will be permitted in waterbody buffers, except for stormwater management facilities, structures and appurtenant conveyances; environmental restoration or mitigation projects; utilities; public and private roads; driveways; bikeways, and trails unless otherwise permitted per1-19-9.400.
20. The waterbody buffers shown on this plan were delineated based on Section 1-19-9.400(C) of the Frederick County Code (the waterbody buffer ordinance). First, a minimum 100' buffer was delineated on each side of intermittent and perennial streams. Second, 175-foot cross-sections were taken at 50-foot intervals along each stream. The buffer was expanded to 150 feet along these cross sections when 60% of the cross-section contained slopes between 15%- >25%. The buffer was expanded to 175 feet along these cross sections when 60% of the cross-section contained slopes 25% and greater. The buffer was adjusted to the top of the crest per the waterbody buffer ordinance when applicable. The streams shown on this plan are located outside of hte Linganore Watershed Protection Area. After the cross-sections were taken the waterbody buffer was expanded to include wetlands and floodplains, including flooding soils, that extend outside of the calculated waterbody buffer area.
21. All easements necessary to provide public access/maintenance/etc will be recorded and referenced on the final plats.
22. Two 9' x 18' parking spaces provided.
23. MDE Permit numbers for gravity sewer construction: 202260706/22-NT-3094 & 202260907/22-NT-3124.
24. MDE NOI #MDRCK06AA.

Fire & Rescue Notes:

1. Fire Department access roads shall be accessible during all types of weather and at all times.
2. Fire Department access roads shall be capable of supporting Fire apparatus at all times and be a minimum of 20 feet wide (with the exception of the 12' wide access drive as approved on IP # PW273379).
3. Fire Department access shall be provided and maintained to all structures undergoing construction, alteration, or demolition.
4. The access roadways shall provide a minimum turning radii of 40 to 45 feet.
5. Fire lanes shall be established by the Fire Marshall.

DH.

APPROVED FREDERICK SOIL CONSERVATION DISTRICT

DISTRICT MANAGER — DATE 3/1/2023

REVIEWED FOR FREDERICK S.C.D. & MEETS TECHNICAL REQUIREMENTS

SCD APPROVAL FOR SEDIMENT & EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

File # : SP22-04
A/P # : PW273866
Due Dates:

ENGINEER/ARCHITECT DESIGN CERTIFICATION

"I hereby certify that the plans have been designed in accordance with local ordinances, COMAR 26.17.01, and 2011 Maryland Standards and Specifications for Soil and Sediment Control."

Signature — 29891 Reg. No. — 10/25/2022 Date

OWNER'S/DEVELOPER'S CERTIFICATION

I/We hereby certify that any clearing, grading, construction and/or development will be done pursuant to this plan and that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the Project.

Quantum Maryland, LLC A.D Robison
Owner/Developer (Name & Title Printed)

(Signature) — 530-417-7496 Telephone

DISTURBED AREA QUANTITIES

I hereby certify that the estimated total amount of excavation and fill as shown on these plans has been computed to be 173 c.y. of excavation, 1,260 c.y. of fill and the total area to be disturbed as shown on these plans has been determined to be 80,430 square feet or 1.85 acres.

Design Engineer Signature — 02/16/2023 Date

Alan Barney — 29891
Printed Name — Registration Number

Note: These figures are estimated quantities for Sediment Control purposes only, i.e., Not for bidding purposes.

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE
1MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND — ALAN BARNEY — 29891 — PROFESSIONAL ENGINEER — 3/6/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

COVER

PROJECT NO. 50151771

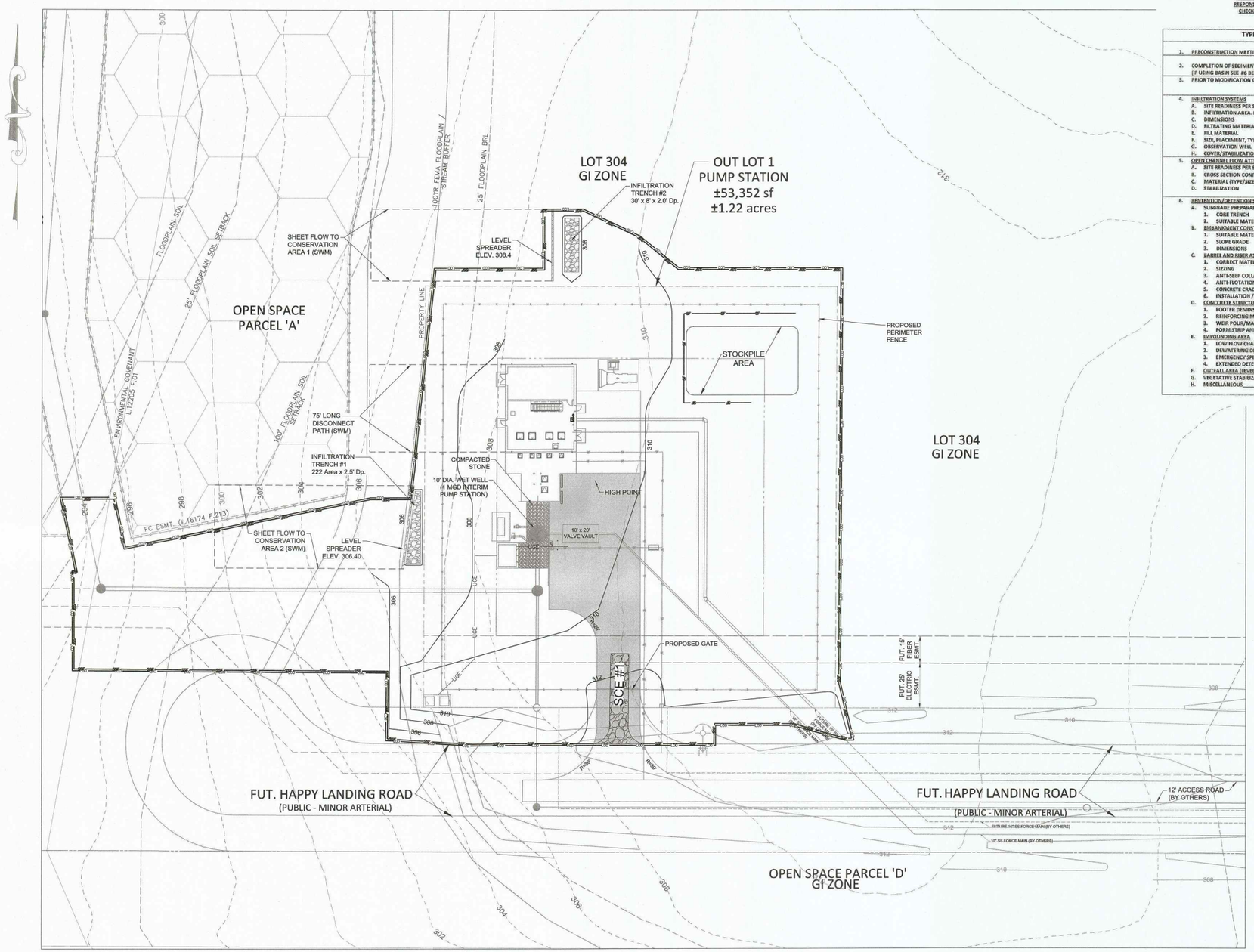
C-1

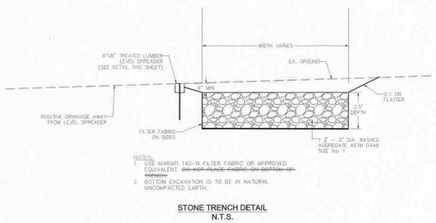
SHEET NO. 1 OF 37

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/06/23

Signature:





STONE TRENCH DETAIL
N.T.S.

SEDIMENT CONTROL/ STORM WATER MANAGEMENT REQUIRED INSPECTIONS

YOU MUST NOTIFY THE SEDIMENT CONTROL AND STORMWATER MANAGEMENT OFFICE AT 301-694-1679 BEFORE 9:00 A.M.- 24 HOURS PRIOR TO THE REQUIRED INSPECTION.
FAILURE TO NOTIFY THIS OFFICE WILL RESULT IN A STOP WORK ORDER OR OTHER PENALTIES AS OUTLINED IN FREDERICK COUNTY CODES.

**********!!OTICE!!*********

THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. THIS OFFICE ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THIS OFFICE RECOMMENDS THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

TYPE OF INSPECTION	MISC. COMMENTS /INITIALS
1. PRECONSTRUCTION MEETING	
2. COMPLETION OF SEDIMENT CONYTROL MEASURE (IF USING BASIN SEE #6 BELOW)	
3. PRIOR TO MODIFICATION OR REMOVAL OF SED. CONTRL.	
4. INFILTRATION SYSTEMS	
A. SITE READINESS PER SEQUENCE OF CONSTRUCTION	
B. INFILTRATION AREA. PROTECTED FROM SESIMENTATION	
C. DIMENSIONS	
D. FILTRATING MATERIAL	
E. FILL MATERIAL	
F. SIZE, PLACEMENT, TYPE OF PIPING	
G. OBSERVATION WELL	
H. COVER/STABILIZATION	
5. OPEN CHANNEL FLOW ATTENUATION	
A. SITE READINESS PER SEQUENCE OF CONSTUCTION	
B. CROSS SECTION CONFORMANCE	
C. MATERIAL (TYPE/SIZE)	
D. STABILIZATION	
6. RENTENTION/DETENTION STRUCTURES (BASIN/PONDS)	
A. SUBGRADE PREPARARTION	
1. CORE TRENCH	
2. SUITABLE MATERIAL/ COMPACTION	
B. EMBANKMENT CONSTRUCTION	
1. SUITABLE MATERIAL/COMPACTION	
2. SLOPE GRADE	
3. DIMENSIONS	
C. BARREL AND RISER ASSEMBLY	
1. CORRECT MATERIAL ONSITE	
2. SIZZING	
3. ANTI-SEEP COLLARS	
4. ANTI-FLOTATION DEVICE	
5. CONCRETE CRADLE (RCP ONLY)	
6. INSTALLATION /BASKRILL/COMPACTION	
D. CONCRETE STRUCTURES	
1. FOOTER DEMINSONS	
2. REINFORCING MATERIAL (TYPE, SIZE,PLACEMENT)	
3. WEIR POUR/MATERIAL/SLUMP TEST	
4. FORM STRIP AND FINISHING	
E. IMPOUNDING AREA	
1. LOW FLOW CHANNELS/STABILIZATION	
2. DEWATERING DEVICE	
3. EMERGENCY SPILLWAY	
4. EXTENDED DETENTION DEVICE	
F. OUTFALL AREA (LEVEL SPREADER,RIPRAP CHANNEL, ECT.,	
G. VEGETATIVE STABILIZATION	
H. MISCELLANEOUS	

LEGEND:

EX TOPOGRAPHY	380
EX 100 YR FLOODPLAIN	
EX SOIL TYPE	BkD BgC
EX STREAM	
EX PARCEL LINES	
EX EDGE OF PAVEMENT	
EX WATER	8"W W
EX SEWER	8"S SS
EX BRUSHLINE	
EX TREELINE	
EX TREES	
PROP TOPOGRAPHY	380
PROP TOPOGRAPHY BY OTHERS	380
PROP BUILDINGS	
PROP LOT LINES	
PROP RIGHT-OF-WAY	
PROP ROAD CENTERLINE	
PROP WATER	W
PROP FORCE MAIN	

ESC LEGEND:

SILT FENCE	SF
SUPER SILT FENCE	SSF
LIMITS OF DISTURBANCE	LOD
SEDIMENT CONTROL ENTRANCE	SCE #1

APPROVED FREDERICK SOIL CONSERVATION DISTRICT

DISTRICT MANAGER — DATE 3/1/2023

REVIEWED FOR FREDERICK S.C.D. & MEETS TECHNICAL REQUIREMENTS

SCD APPROVAL FOR SEDIMENT & EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

D.H.

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE
1MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL

STATE OF MARYLAND — ALAN BARNEY — NO. 29891 — REGISTERED PROFESSIONAL ENGINEER

3/6/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

SEDIMENT CONTROL PLAN

PROJECT NO. 50151771

C-2

SHEET NO. 2 OF 37

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/04/23

Signature:

STOCKPILE NOTES

1. NO STOCKPILING ALLOWED ON ASPHALT.
2. ALL STOCKPILES LEFT AT THE END OF THE WEEK (7 DAYS)NEED TO BE STABILIZED UNTIL THE NEXT RE-DISTURBANCE.

GENERAL NOTE

1. DEPENDING ON SITE CONDITIONS, PHASING OR CONSTRUCTION SEQUENCING, AND STABILIZATION METHODS, ADDITIONAL SEDIMENT CONTROLS (OTHER THAN AS SHOWN HEREON) MAY BE REQUIRED BY THE INSPECTOR.

TEMPORARY SEEDING NOTES

GENERAL

1. SCOPE: PLANTING SHORT TERM VEGETATION TO STABILIZED, CLEARED OR GRADED AREAS SUBJECT TO EROSION FOR A PERIOD OF 14 DAYS OR MORE.

2. STANDARDS: TEMPORARY SEEDING SHALL CONFORM TO ALL REQUIREMENTS OF "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION SEDIMENT CONTROL" PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, NATURAL RESOURCES CONSERVATION SERVICE, AND THE STATE SOIL CONSERVATION COMMITTEE.

3. SEDIMENT & EROSION CONTROL: ALL PERIMETER CONTROL MUST BE STABILIZED IN 3 DAYS. ALL INTERIOR CONTROLS MUST BE STABILIZED IN 7 DAYS.

SPECIFICATIONS

1. SITE PREPARATIONS:
   A.) PRIOR TO SEEDING INSTALL ALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES.
   B.) FINAL GRADING NOT REQUIRED FOR TEMPORARY SEEDING.

2. SOIL AMENDMENTS:
   A.) FERTILIZER SHALL BE APPLIED AT THE RATE OF 800 LBS/ACRES USING 10-10-10 OR EQUIVALENT.
   B.) ACID SOILS SHALL BE LIMED.

3. SEEDBED PREPARATION:
   A.) SOIL SHALL BE LOOSENED TO A DEPTH OF 3 INCHES BY RAKING, DISKING, OR OTHER ACCEPTABLE MEANS PRIOR TO SEEDING.

4. SEEDING:
   A.) SELECT A MIXTURE FROM TABLE 23, 25 OR 26 IN STANDARD SPECIFICATIONS.
   B.) APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER DRILL, CULTIPACKER OR HYDRO SEEDER.

5. MULCHING:
   A.) MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING. MULCH MATERIALS AND APPLICATIONS SHALL CONFORM TO THE STANDARD SPECIFICATIONS.

PERMANENT SEEDING & SOD NOTES

GENERAL

1. SCOPE: PLANTING PERMANENT, LONG LIVED VEGETATIVE COVER ON GRADED OR CLEARED AREAS.

2. STANDARDS: PERMANENT SEEDING SHALL CONFORM TO ALL REQUIREMENTS OF "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION SEDIMENT CONTROL" PUBLISHED JOINTLY BT WATER RESOURCES ADMINISTRATION, NATURAL RESOURCES CONSERVATION SERVICE, AND THE STATE SOIL CONSERVATION COMMITTEE.

SPECIFICATIONS

1. SITE PREPARATIONS:
   A.) PRIOR TO SEEDING INSTALL ALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES.
   B.) FINAL GRADING NOT REQUIRED FOR TEMPORARY SEEDING.

2. SOIL AMENDMENTS:
   A.) FERTILIZER SHALL BE APPLIED AT THE RATE OF 1000 LBS/ACRES USING 10-10-10 OR EQUIVALENT.
   B.) ACID SOILS SHALL BE LIMED.

3. SEEDBED PREPARATION:
   A.) SOIL SHALL BE LOOSENED TO A DEPTH OF 3 INCHES BY RAKING, DISKING, OR OTHER ACCEPTABLE MEANS PRIOR TO SEEDING.
   B.) APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER DRILL, CULTIPACKER OR HYDRO SEEDER (SLURRY INCLUDES SEED AND FERTILIZER ON A FIRM, MOIST SEEDBED.) MAXIMUM SEEDING DEPTH SHOULD BE 1/4" INCH ON CLAYEY SOILS AND 1/2 INCH ON SANDY SOILS, WHEN USING OTHER THAN HYDROSEEDER METHOD OF APPLICATION. NOTE: IF HYDROSEEDING IS USED AND THE SEED AND FERTILIZER IS MIXED, THEY WILL BE MIXED ON SITE AND THE SEEDING SHALL BE IMMEDIATE WITHOUT INTERRUPTION.

PERMANENT STABILIZATION WITH SOD

1. ALL SPECIFICATIONS, SITE PREPARATION, INSTALLATION AND MAINTENANCE OF SOD FOR PERMANENT, LONG LIVED VEGETATIVE COVER SHALL CONFORM TO SECTION B-4-5.B OF "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION SEDIMENT CONTROL" PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, NATURAL RESOURCES CONSERVATION

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON PROJECT SITE NOT UNDER ACTIVE GRADING.

FOR UTILITY WORK & OFF-SITE UTILITY WORK

1. DISTURBANCE OUTSIDE OF THE LOD CANNOT EXCEED 5,000 SQUARE FEET.
2. PLACE ALL EXCAVATED MATERIAL ON THE HIGH SIDE OF THE TRENCH.
3. ONLY DO AS MUCH WORK AS CAN BE DONE ON ONE DAY SO BACKFILLING, FINAL GRADING, SEEDING AND MULCHING CAN OCCUR.
4. ANY SEDIMENT CONTROL MEASURES DISTURBED BY CONSTRUCTION SHALL BE REPAIRED THE SAME DAY.

FOR SECONDARY UTILITY WORK

1. ALL DISTURBANCE FROM SECONDARY UTILITIES SUCH AS PHONE, CABLE, ELECTRICAL CABLE, T.V. CABLE, ETC. WILL BE SUBCONTRACTORS RESPONSIBILITY TO BRING WORK AREA BACK TO GRADE LEVEL THAT WAS EXISTING AND SEED AND MULCH ANY DISTURBANCE FROM INSTALLATION OF LINES OR CONDUITS.
2. SUBCONTRACTORS WILL BE RESPONSIBLE FOR RE-INSTALLING OR REPAIRING ANY SILT FENCE OR SEDIMENT CONTROLS THAT WERE EXISTING TO MAINTAIN PROPER SEDIMENT CONTROL.

EROSION AND SEDIMENT CONTROL NOTES

1. ALL EROSION / SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE LATEST VERSION OF THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL PUBLISHED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION IN ASSOCIATION WITH THE MARYLAND ASSOCIATION OF SOIL CONSERVATION DISTRICTS AND AS APPROVED BY FREDERICK COUNTY. (REFERENCED HEREIN AS THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS)
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN CONTINUOUS COMPLIANCE WITH THE LATEST VERSION OF THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
3. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AT THE INITIATION OF GRADING.
4. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTRUBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:
   4.1. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1); AND
   4.2. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING. THIS DOES NOT APPLY TO THOSE AREAS THAT ARE ACTIVELY BEING USED FOR MATERIAL STORAGE OR FOR THOSE AREAS ON WHICH ACTUAL CONSTRUCTION ACTIVITIES ARE CURRENTLY BEING PERFORMED. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE THAT STABILIZED AREAS CONTINUOUSLY MEET THE APPROPRIATE REQUIREMENTS OF THE LATEST VERSION OF THE MARYLAND STANDARDS AND SPECIFICATIONS.
5. ALL EARTH BERMS AND SEDIMENT EMBANKMENTS ARE TO BE SEEDED AND MULCHED WITHIN THREE (3) CALENDAR DAYS AFTER GRADING. ALL SOIL STOCKPILES NOT SUBJECT TO ACTIVE GRADING ARE TO BE SEEDED AND MULCHED WITHIN THREE (3) CALENDAR DAYS.
6. ALL UTILITIES, SUCH AS STORM DRAIN, PUBLIC WATER, SANITARY SEWER, ELECTRIC POWER, TELEPHONE, CABLE AND GAS LINES, THAT ARE NOT IN PAVED AREAS AND ARE NOT UNDERGOING ACTIVE GRADING SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 3 DAYS OF INITIAL DISTURBANCE.
7. NO SLOPE SHALL BE GREATER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).
8. AFTER FINE GRADING, ALL DISTURBED AREAS ARE TO BE PERMANENTLY SEEDED AND MULCHED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST VERSION OF THE MARYLAND STANDARDS AND SPECIFICATIONS.
9. FOR SPECIFICATIONS OF PERMANENT OR TEMPORARY STABILIZATION, SEE SECTION B-4-4 AND B-4-5 OF THE LATEST EDITION OF THE MARYLAND STANDARDS AND SPECIFICATIONS.
10. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL SEDIMENT AND EROSION CONTROL MEASURES UNTIL THE DISTURBED AREAS ARE PERMANENTLY STABILIZED.
11. THE OWNER/DEVELOPER OR THEIR DESIGNATE IS RESPONSIBLE FOR CONDUCTING ROUTINE INSPECTIONS AND REQUIRED MAINTENANCE. THE SITE AND CONTROLS SHOULD BE INSPECTED WEEKLY AND THE NEXT DAY AFTER EACH RAIN EVENT**. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN A SUITABLE AREA AND SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED.
12. ALL DISTURBED AREAS THAT DO NOT DRAIN TO AN APPROVED SEDIMENT CONTROL DEVISE MUST BE STABILIZED THE SAME DAY.

**ANY PROJECT THAT HAS A STATE ISSUED N.O.I. PERMIT MUST DOCUMENT EACH INSPECTION AND MAINTAIN AN INSPECTION LOG (PLEASE SEE THE N.O.I. FOR DETAILS.)

SEQUENCE OF CONSTRUCTION

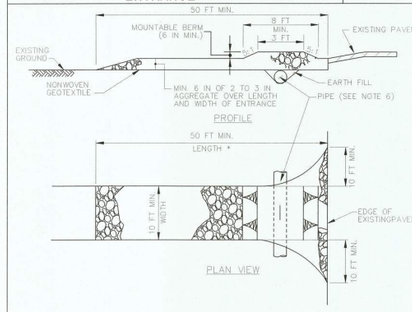
1. OBTAIN ALL REQUIRED PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. CONTRACTOR SHALL CONTACT MISS UTILITY AT 800-257-7777, FREDERICK COUNTY ENVIRONMENTAL COMPLIANCE SECTION AT 301-600-3507, TO SET UP A PRE-CONSTRUCTION MEETING AT LEAST FIVE (5) DAYS PRIOR TO BEGINNING CONSTRUCTION. THE LIMITS OF DISTURBANCE SHALL BE STAKED IN THE FIELD PRIOR TO THE PRE-CONSTRUCTION MEETING. ADDITIONAL SEDIMENT CONTROL MEASURES MAY BE REQUIRED AS A RESULT OF THE PRE-CONSTRUCTION MEETING. STOCKPILE AND/OR STAGING LOCATIONS TO BE DISCUSSED DURING THE PRE-CONSTRUCTION MEETING.
2. NOI MUST BE OBTAINED AND FURNISHABLE PRIOR TO STARTING OF ANY CONSTRUCTION TO SOIL CONSERVATION DISTRICT (SCD).
3. CONTRACTOR SHALL HAVE ALL LIMITS OF DISTURBANCE, TREE SAVE MEASURES, AND ALL SEDIMENT CONTROL MEASURES STAKED OUT PRIOR TO THE PRE-CONSTRUCTION MEETING.
4. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON THE PLAN.
5. UPON INSPECTOR'S APPROVAL, CLEAR AND GRUB AS NECESSARY FOR THE INSTALLATION OF THE SEDIMENT CONTROL MEASURES. INSTALL PERIMETER CONTROLS - SUPER SILT FENCE. PROVIDE TEMPORARY STABILIZATION FOR ALL DISTURBED AREAS; SEE TEMPORARY STABILIZATION NOTES, THIS SHEET.
6. STABILIZE ALL DISTURBED AREAS. PERMANENTLY STABILIZE ALL DISTURBED AREAS OF THE SITE; SEE PERMANENT STABILIZATION NOTES, THIS SHEET.
7. WITH INSPECTOR'S APPROVAL AND NOTICE TO PROCEED GRANTED, COMPLETE ALL REMAINING CLEARING AND GRUBBING WITHIN THE LOD AND BEGIN MASS GRADING EFFORTS.
8. WITH INSPECTOR'S APPROVAL AND NOTICE TO PROCEED GRANTED, BEGIN INSTALLATION OF PROPOSED WATER AND SEWER. BEGIN PUMP STATION CONSTRUCTION CONCURRENTLY WITH THE UTILITIES; IF DESIRED.
9. INSTALL PAVING ON APPROVED SUB-GRADE.
10. ONCE ALL CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED (SEE PERMANENT SEEDING AND SOD NOTES, THIS SHEET), BEGIN INSTALLATION OF THE PROPOSED STORMWATER MANAGEMENT FACILITIES (INFILTRATION TRENCHES AND LEVEL SPREADERS).
11. UPON COMPLETION OF THE STORMWATER MANAGEMENT FACILITY INSTALLATIONS, NOTIFY THE SEDIMENT CONTROL INSPECTOR AND OBTAIN PERMISSION TO REMOVE THE REMAINING SEDIMENT CONTROL MEASURES. PERMANENTLY STABILIZE ALL DISTURBED AREAS FOR THE SITE TO BE DEEMED COMPLETE.

FOR SITES 1.0 ACRE OR MORE, THE FOLLOWING ARE REQUIRED:

1. MARYLAND DEPARTMENT OF THE ENVIRONMENT, GENERAL PERMIT FOR STORMWATER WITH A CONSTRUCTION ACTIVITY, NPDES PERMIT NUMBER MDR10, STATE DISCHARGE PERMIT NUMBER 09GP, OR AN INDIVIDUAL PERMIT
2. THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (GENERAL / INDIVIDUAL PERMIT - NOTICE OF INTENT - NOI) APPLICATION AND PERMIT SHALL BE POSTED AND/ OR AVAILABLE ON-SITE AT ALL TIMES
3. DURING CONSTRUCTION, ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES (BMP'S) SHALL BE INSPECTED AND RECORDED ON THE "STANDARD INSPECTION FORM, GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY" PER THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (GENERAL/ INDIVIDUAL PERMIT- NOTICE OF INTENT - NOI).
4. ONCE ALL PORTIONS OF A SITE HAVE BEEN PERMANENTLY STABILIZED, AND ALL STORMWATER DISCHARGES FROM CONSTRUCTION SITES THAT ARE AUTHORIZED BY THE PERMIT ARE ELIMINATED, THE AUTHORIZED PERMITTEE SHALL SUBMIT THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, GENERAL/ INDIVIDUAL PERMIT- NOTICE OF TERMINATION- NOT.

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

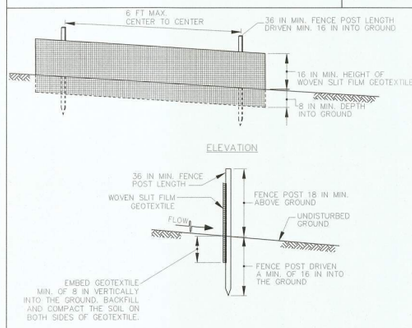
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*50 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF



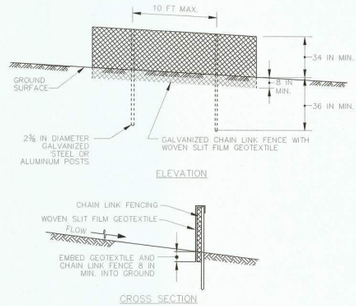
1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HOG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1⅜ X 1⅜ ± 3/16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN; OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DH.

APPROVED FREDERICK SOIL CONSERVATION DISTRICT

DISTRICT MANAGER — DATE 3/1/2023

REVIEWED FOR FREDERICK S.C.D. & MEETS TECHNICAL REQUIREMENTS

SCD APPROVAL FOR SEDIMENT & EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE 1MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL

STATE OF MARYLAND — BARNES — NO. 29891 — PROFESSIONAL ENGINEER

3/6/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

SEDIMENT CONTROL NOTES & DETAILS

PROJECT NO. 50151771

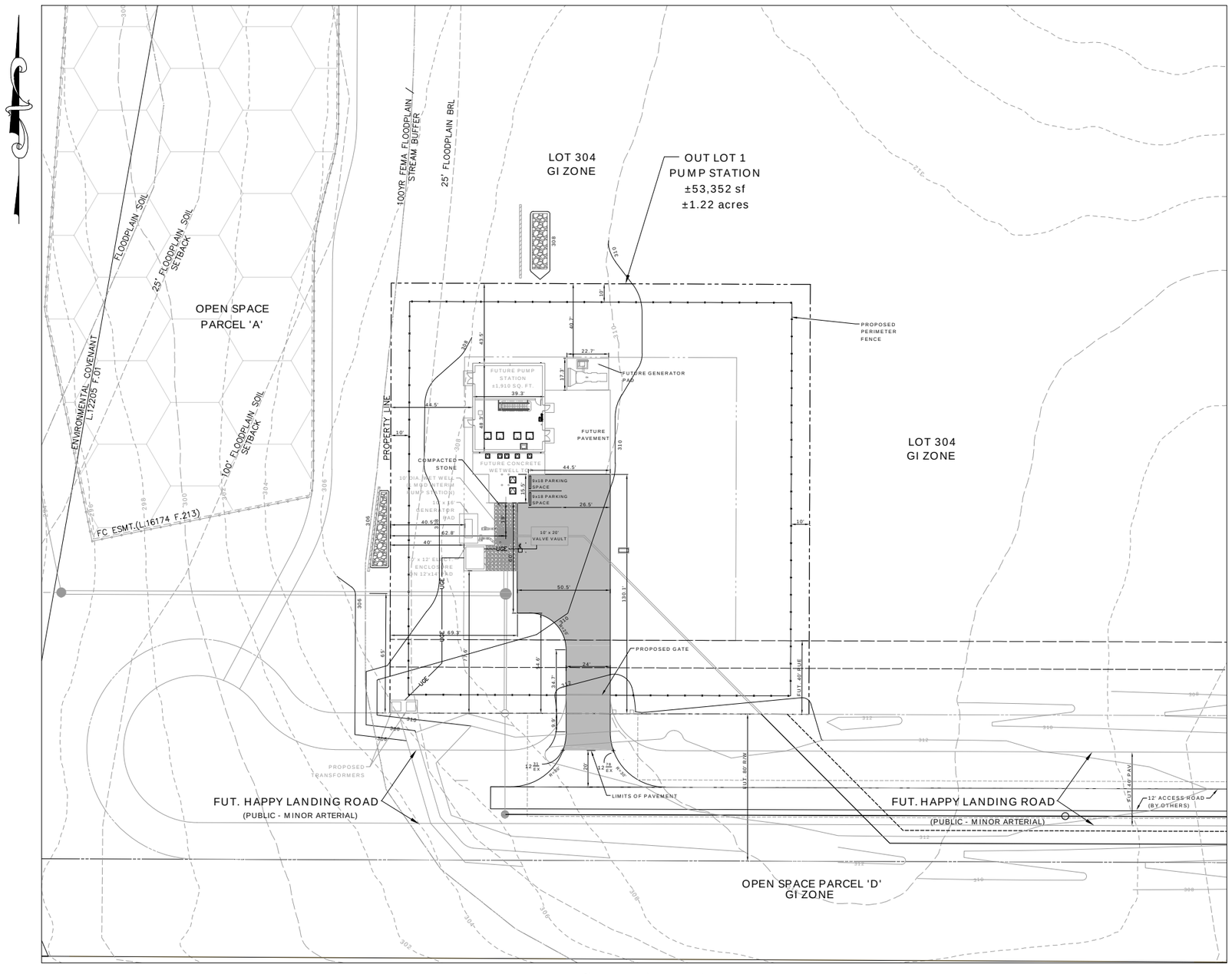
C-3

SHEET NO. 3 OF 37

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/03/23

Signature:



0' 15' 30' 60'

SCALE: 1" = 30'

LEGEND:

- EX TOPOGRAPHY
- EX 100 YR FLOODPLAIN
- EX SOIL TYPE
- EX STREAM
- EX PARCEL LINES
- EX EDGE OF PAVEMENT
- EX WATER
- EX SEWER
- EX BRUSHLINE
- EX TREELINE
- EX TREES
- PROP TOPOGRAPHY
- PROP TOPOGRAPHY BY OTHERS
- PROP BUILDINGS
- PROP LOT LINES
- PROP RIGHT-OF-WAY
- PROP FENCE

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Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE 1MGD SEWAGE PUMPING STATION

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DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND
ALAN BARNES
No. 29891
REGISTERED
PROFESSIONAL ENGINEER

3/6/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

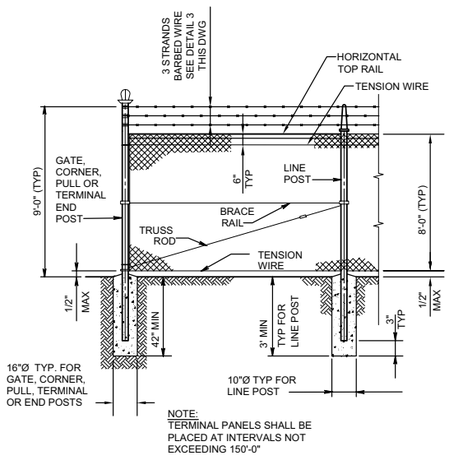
DIMENSION & PAVING PLAN

PROJECT NO. 50151771

C-4

SHEET NO. 4 OF 37

P:\PROJECT\2023 File\50151771 - Quantum Loophole\CAD\Civil\Improvement Plans\004 Dimensions & Paving.dwg, 3/16/2023 2:29:31 PM, AutoCAD PDF (Smallest File).pc3



1 CHAIN LINK FENCE TERMINAL PANEL DETAIL
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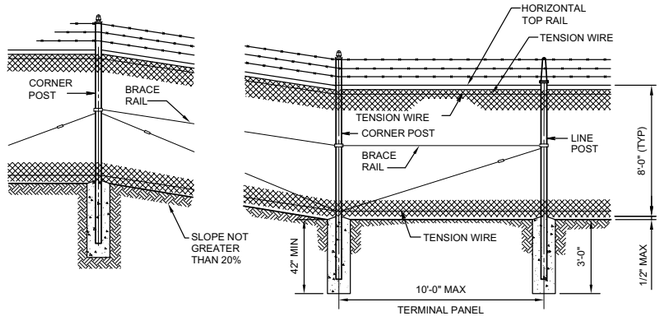

2 STANDARD CHAIN LINK FENCE DETAIL
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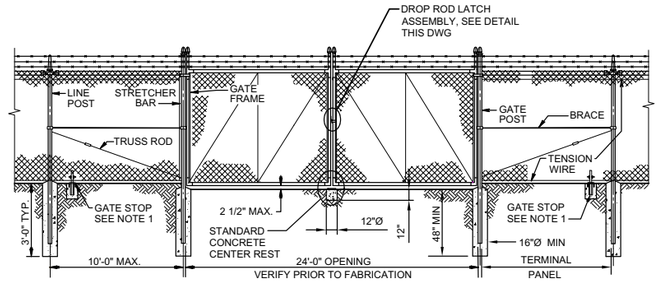
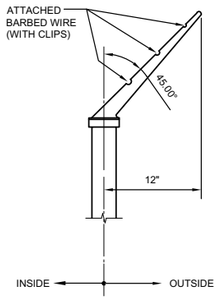
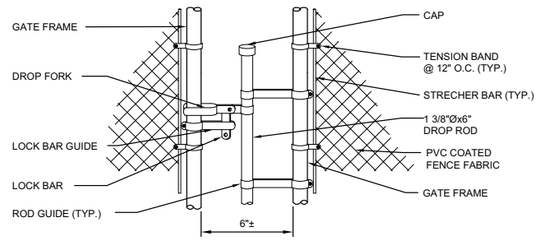


NOTES:
1. LOCATE GATE STOP AT FULL OPEN POSITION.
2. PROVIDE 3 EXTRA HEAVY DUTY HINGES FOR EACH GATE LEAF.
3. CONTRACTOR TO SUPPLY SEPARATE LOCKING HARDWARE FOR OWNER AND APPROVED FIRE DISTRICT REQUIREMENTS.

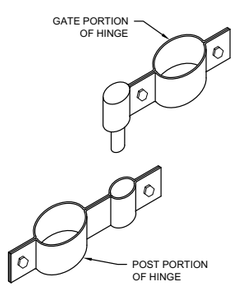
3 CHAIN LINK FENCE DOUBLE SWING GATE DETAIL
SCALE: N.T.S.



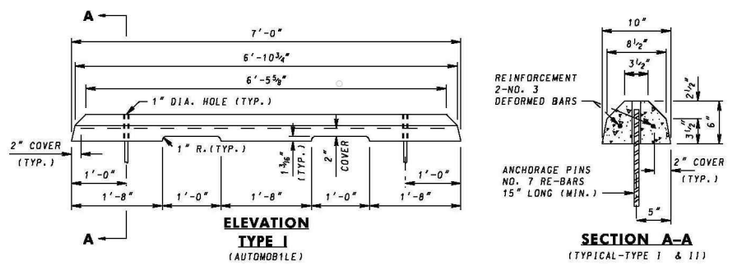
4 3 STRAND BARBED WIRE
SCALE: N.T.S.



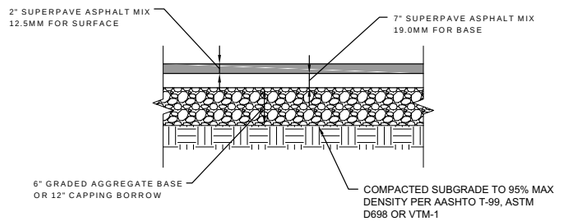
5 GATE DROP ROD ASSEMBLY
SCALE: N.T.S.



6 GATE HINGE
SCALE: N.T.S.



7 AUTOMOBILE WHEELSTOP
SCALE: N.T.S.



8 PAVEMENT DETAIL
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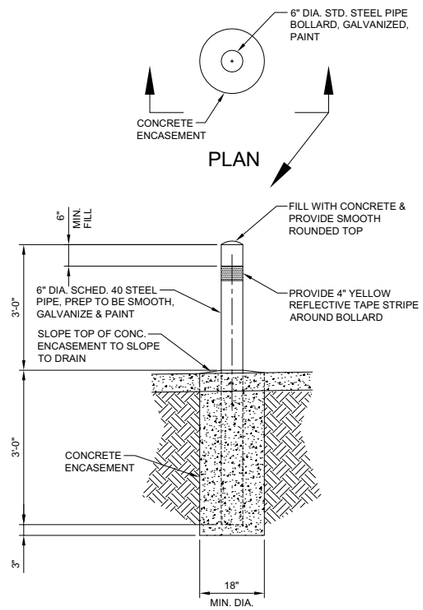

9 PIPE BOLLARD
SCALE NTS

Dewberry

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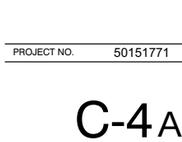
ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL



Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

CIVIL

STANDARD DETAILS

PROJECT NO. 50151771

C-4A

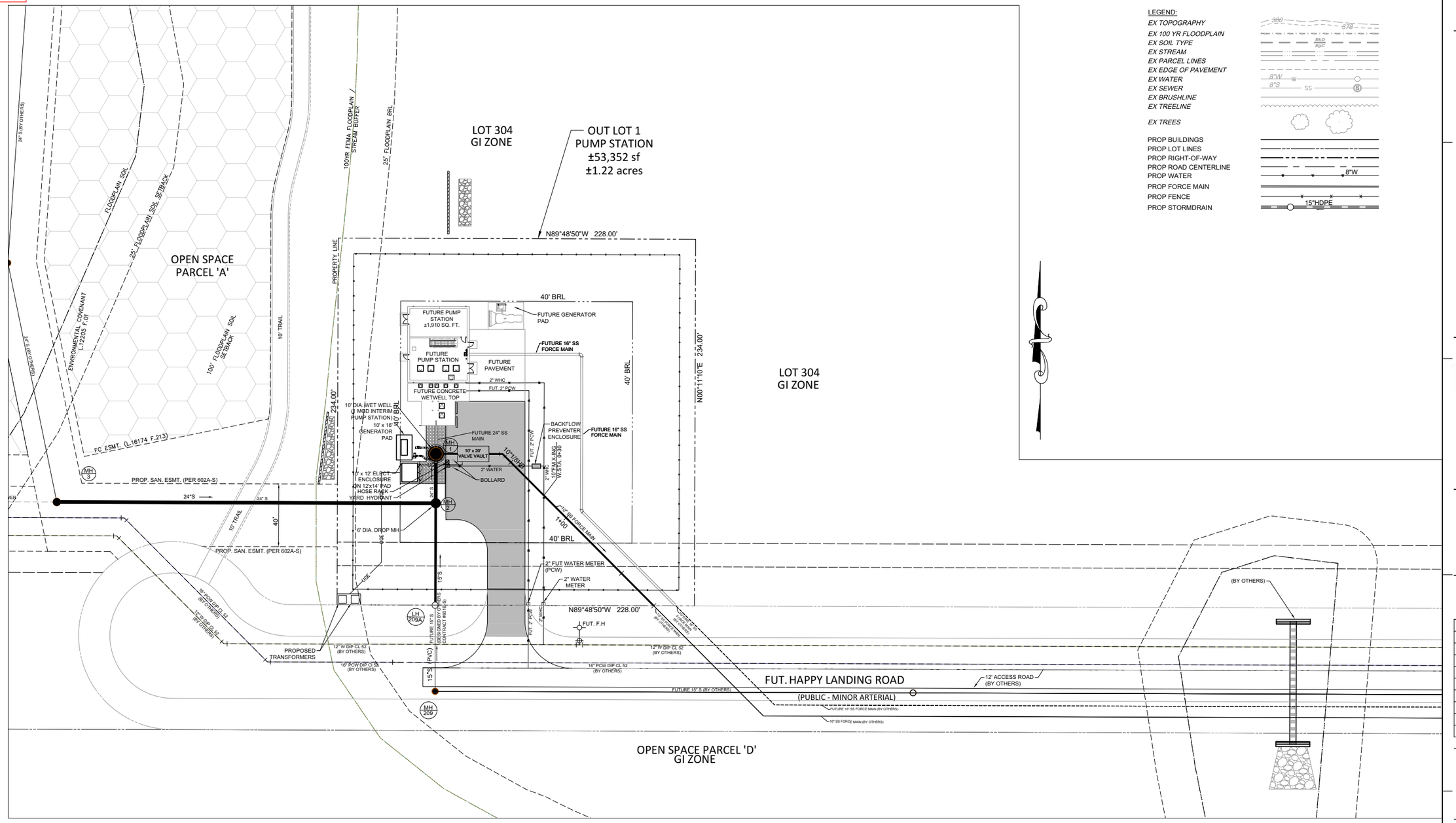
SHEET NO. 5 OF 37

Jan 16, 2023 – 1:24pm
Drawing name: Q:\50151771\CAD\Civil\DESIGN\C-4 STANDARD DETAILS.dwg

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/03/23

Signature:



LEGEND:

- EX TOPOGRAPHY
- EX 100 YR FLOODPLAIN
- EX SOIL TYPE
- EX STREAM
- EX PARCEL LINES
- EX EDGE OF PAVEMENT
- EX WATER
- EX SEWER
- EX BRUSHLINE
- EX TREELINE
- EX TREES
- PROP BUILDINGS
- PROP LOT LINES
- PROP RIGHT-OF-WAY
- PROP ROAD CENTERLINE
- PROP WATER — 8"W
- PROP FORCE MAIN
- PROP FENCE
- PROP STORMDRAIN — 15"HDPE

NOTES:

1. THE CONTRACTOR SHALL ENSURE 2" WATER SERVICE CONNECTION MAINTAIN MAINTAIN A MINIMUM 3.5' OF COVER.
2. ALL SANITARY MANHOLES ARE TO HAVE WATER TIGHT FRAMES & COVERS. SEE DETAIL NO. 5.1

0' 15' 30' 60'
SCALE: 1" = 30'

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE 1MGD SEWAGE PUMPING STATION

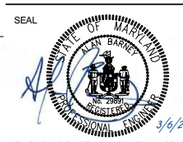
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL



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Expiration Date: 01/14/2024.

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QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

WATER & SEWER PLAN

PROJECT NO. 50151771

C-5

SHEET NO. 6 OF 37

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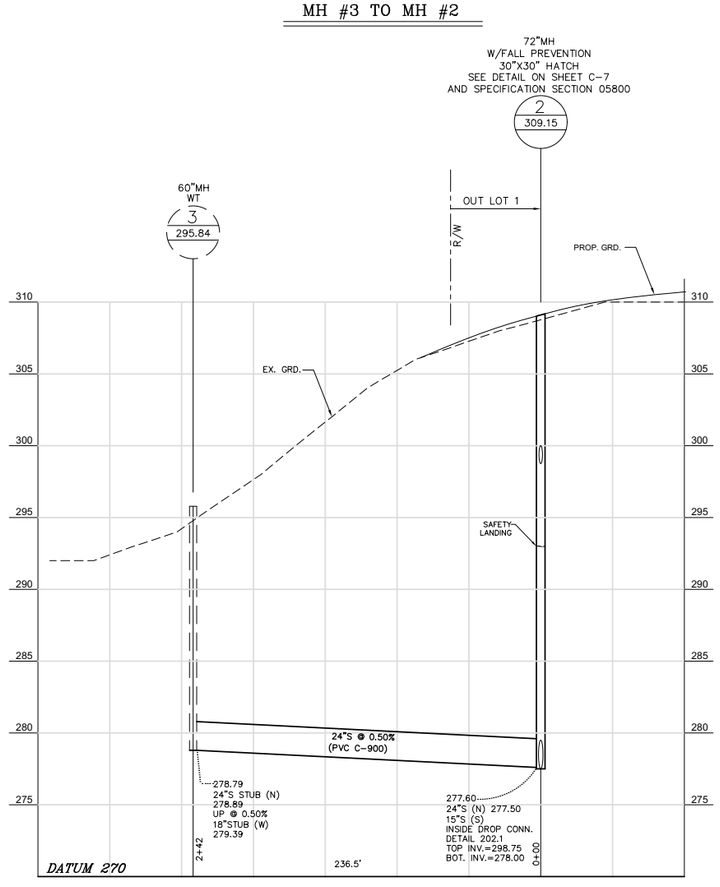
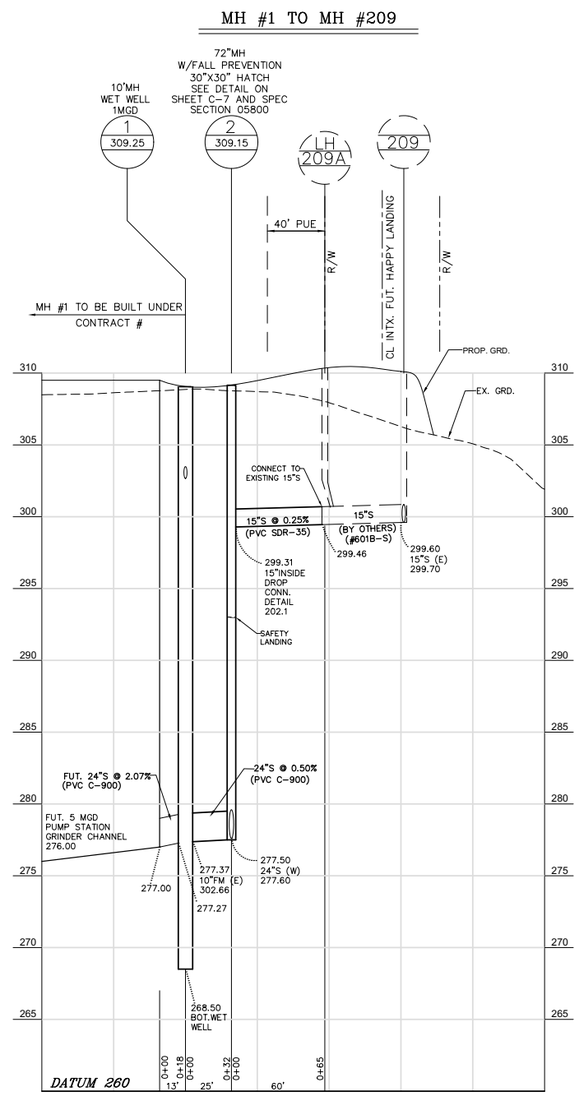
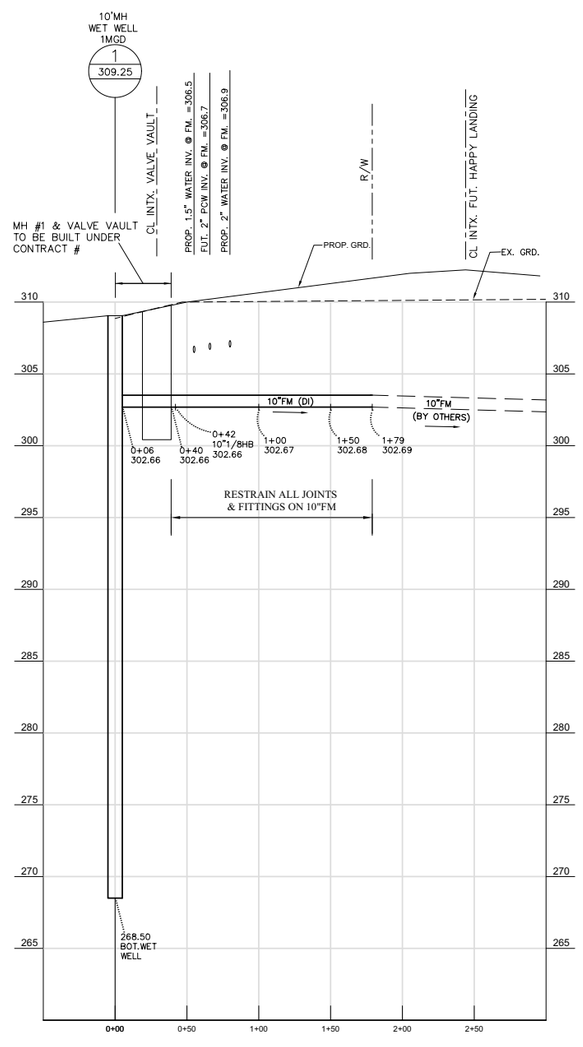
MH #3 TO MH #2



MH #1 TO MH #209



10" FORCE MAIN



NOTES:

1. MH 3 TO HAVE A WATER TIGHT LID.
2. MH 2 TO HAVE A 30"X30" DOUBLE LEAF ACCESS HATCH, H20 LOAD RATED WITH LOCKING MECHANISM. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS MODEL NUMBER H2W3030 OR ENGINEER APPROVED EQUAL. PROVIDE AND INSTALL FALL PROTECTION SYSTEM, HALLIDAY RETRO-GRATE PROTECTIVE GRATING SYSTEM OR ENGINEER APPROVED EQUAL.
3. FORCE MAIN TO BE RESTRAINED USING MECHANICAL JOINTS.
4. ALL FILL MATERIAL SHALL BE COMPACTED TO AASHTO T-180 STANDARDS.
5. PUMP STATION STRUCTURES TO BE BACKFILLED WITH A CRUSHER RUN (CR-6) MIXED WITH 30% (BY VOLUME) OF ON-SITE EXCAVATED CLAYEY SOILS. IF THE CR-D MATERIAL IS IMPORTED FROM OFF-SITE SOURCES, THE MIX SHOULD INCLUDE A MINIMUM OF 15% FINES. THE UPPER 2 FEET OF BACKFILL NEAR THE EXISTING GROUND SURFACE SHOULD CONSIST OF THE ON-SITE CLAYEY SOILS. ALL BACKFILL MATERIALS SHOULD BE PLACED IN CONTROLLED LIFTS AND COMPACTED TO MINIMUM 90% OF THE MAXIMUM DRY DENSITY PER ASTM D-1578 (THE MODIFIED STANDARD PROCTOR). THE USE OF NO. 57 STONE OR SIMILAR OPEN-GRADED STONE TO BACKFILL THE PUMP STATION STRUCTURES IS NOT PERMISSIBLE.
6. USE OF CONTROLLED, COMPACTED SOIL FILL IS RECOMMENDED FOR BACKFILLING OVER-EXCAVATION FOR UTILITIES. UTILITY BACKFILL SHOULD BE PLACED IN 8-INCH LOOSE LIFTS AND COMPACTED TO THE REQUIRED COMPACTION LEVEL (90 TO 97%, DEPENDING ON AREA TYPE) USING THE MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (AASHTO T-180). LIFT THICKNESS SHOULD BE REDUCED TO MAXIMUM 4 INCHES WHEN COMPACTING WITH LIGHTWEIGHT EQUIPMENT AND AROUND STRUCTURES.
7. ON-SITE CRUSHING OF EXCAVATED ROCK ALONG WITH EXCAVATED SOILS SHOULD BE CONSIDERED TO GENERATE SUITABLE MATERIALS FOR USE AS UTILITY TRENCH BACKFILL AND FOR USE AS STRUCTURAL FILL WITHIN THE OVERALL QUANTUM FREDERICK DEVELOPMENT.
8. REFER TO SPECIFICATIONS BOOK WITH GEOTECH REPORT FOR SUPPLEMENTAL INFORMATION.

HORIZONTAL 1"=50'
0' 50' 100'
0' 5' 10'
VERTICAL 1"=5'

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE
1MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL

STATE OF MARYLAND
ALAN BARNARD
No. 29891
REGISTERED
PROFESSIONAL ENGINEER
3/6/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
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CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

WATER & SEWER PROFILES

PROJECT NO. 50151771

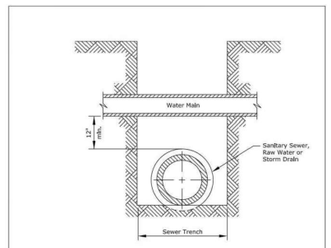
C-6

SHEET NO. 7 OF 37

Division of Planning and Permitting
Department of Development
Review Engineering

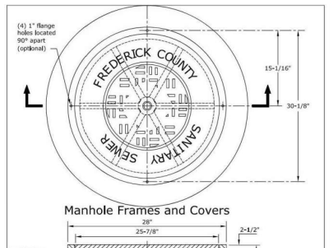
APPROVED: 04/03/23

Signature:



Notes:
1. If clearance is less than 12 Inches - Encase the lower of the two pipe lines in concrete 10 feet minimum each side of crossing. Concrete shall extend to the face of the bells if both ends of the encasement.
2. If joint on exposed existing water main is within the limits of newly constructed sewer trench, a bell clamp joint shall be provided on the water main joint.
3. If water main is below sanitary sewer line, encasement is required as per note No. 1 above, regardless of clearance. An alternative to the above encasement is the use of 20 foot lengths of pipe so that no joint is within 10 feet of crossing.

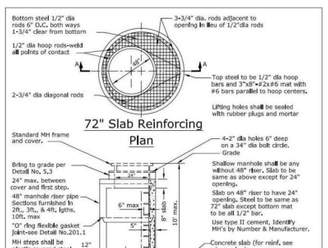
Frederick County Division of Utilities & Solid Waste Management / Department of Engineering & Planning	Revisions: Date / Note	Water and Sewer Line Crossing	Detail No. 4.1	Date: 03-04-2013



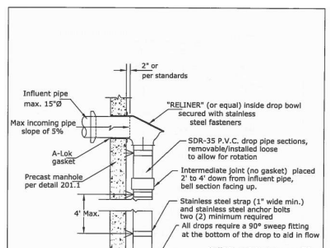
Frame & outer cover - cast iron ASTM A-48, class 30 and designed for H-20 loading. Inner cover, hinges & locking bar - steel ASTM A-36. Neoprene "O" ring endless gasket, glued in place. Inner cover lift handles are hinged type to prevent breakage. Recessed pocket permits installation and removal of inner cover. Locking bolt to have a 3/4" dia. shank. Weight - approximately 480 lbs. (frame & cover).

Notes:
1. When frame and cover are used for water structures, replace "Sanitary Sewer" with "Water".
2. Standard frame and cover does not include inner cover or rubber gasket. Watertight frame and cover includes the inner cover and rubber gasket as shown. Use of a 4" frame may NOT be used with watertight installations. A 4-inch frame may be used, if approved by the County prior to installation, which is attributed to unforeseen field conditions or design changes beyond the control of the contractor.
3. Detail 5.1 acceptable except when specific contract documents dictate otherwise.

Frederick County Division of Utilities & Solid Waste Management / Department of Engineering & Planning	Revisions: Date / Note	Manhole Frame and Cover for Water & Sewer	Detail No. 5.1	Date: 03-04-2013



Frederick County Division of Utilities & Solid Waste Management / Department of Engineering & Planning	Revisions: Date / Note	Precast Concrete Manhole Detail 72" Diameter	Detail No. 201.2	Date: 03-04-2013

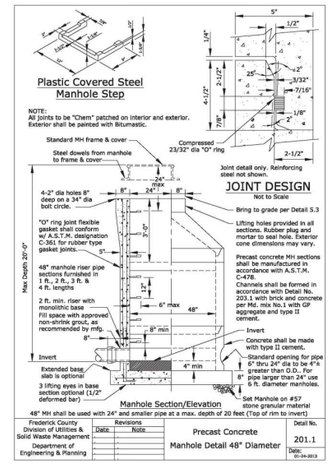


Notes:
1. 48" diameter Manhole may be used with one (1) 8" inside drop.
2. 72" diameter Manhole required when two (2) or more inside drops.
3. Drop pipe dia. same as incoming pipe dia. (up to 8"Ø), for larger pipe downsize the drop pipe dia.

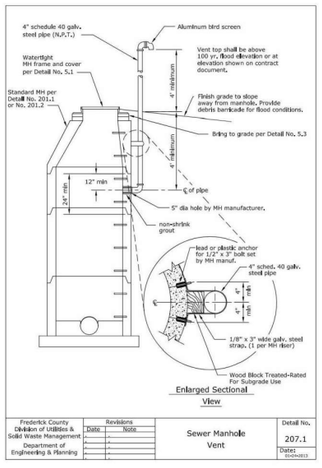
Frederick County Division of Utilities & Solid Waste Management / Department of Engineering & Planning	Revisions: Date / Note	Inside Drop Manhole	Detail No. 202.1	Date: 03-04-2013

WATER AND SEWER NOTES:

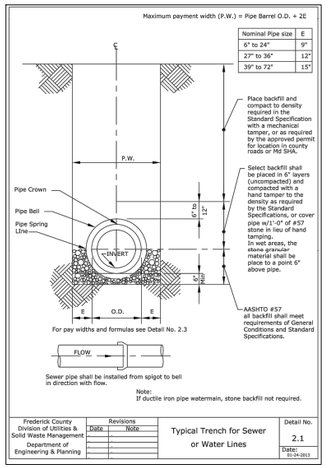
1. ALL SEWER PIPE DEEPER THAN 14 FEET TO BE PVC C-900, ALL OTHER SEWER PIPE TO BE PVC SDR35 PER FREDERICK COUNTY STANDARD SPECIFICATIONS.
2. ALL 10" FORCE MAIN TO BE DUCTILE IRON CL.52 -DOUBLE CEMENT LINED. .
3. ALL WATER SERVICE CONNECTIONS TO BE 2" TYPE "K" COPPER TUBING. CONFORM TO STANDARD DETAIL 110.4 UNLESS OTHERWISE NOTED ON THIS PLAN. WATER SERVICE METERS TO BE SET 1'-0" INSIDE PROPERTY LINE OR EASEMENT LINE.
4. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE INDICATED.
5. DEVELOPER SHALL SET ALL PROPERTY PIPES AND C/L STATIONS NECESSARY TO STAKE OUT THIS CONSTRUCTION.
6. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH FREDERICK COUNTY (DUSWM) GENERAL CONDITIONS AND STANDARD SPECIFICATIONS AND DETAILS FOR WATER MAINS, SANITARY SEWERS AND RELATED STRUCTURES, SPECIAL PROVISIONS AND AMENDMENTS THERETO. FOR DETAILS NOT SHOWN ON THE CONTRACT DRAWINGS, SEE FREDERICK COUNTY (DUSWM) STANDARD DETAILS.
7. THE CONTRACTOR SHALL NOT TAP OR PENETRATE EXISTING WATER AND/ OR SEWER MAINS WITHOUT APPROVAL FROM FREDERICK COUNTY DIVISION OF UTILITIES AND SOLID WASTE MANAGEMENT (DSWU).
8. THE CONTRACTOR SHALL NOT OPERATE VALVES ON EXISTING COUNTY OWNED MAINS.
9. THE CONTRACTOR IS RESPONSIBLE TO AVOID THE SPILLAGE OF RAW SEWAGE. THE CONTRACTOR SHALL FURNISH NECESSARY EQUIPMENT (SEWER PLUGGING, PUMPING, CONTAINMENT, ETC.) TO PREVENT SPILLAGE.
10. CONTRACTOR TO ASSUME ALL RESPONSIBILITY IN VERIFYING LOCATIONS AND ELEVATIONS OF ALL EXISTING UNDERGROUND UTILITIES IN THE VICINITY OF THIS CONSTRUCTION. THE CONTRACTOR SHALL LOCATE EXISTING UTILITIES A MINIMUM OF TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS IN THE VICINITY OF PROPOSED UTILITIES AND AT HIS OWN EXPENSE.
11. EXISTING UTILITIES ARE SHOWN FROM BEST AVAILABLE RECORDS. THE CONTRACTOR SHALL TEST PIT IN THE AREA OF KNOWN UTILITIES TO VERIFY SIZE, ELEVATION, LOCATION, AND TYPE PRIOR TO PERFORMING ANY WORK. ANY UTILITY, WHETHER SHOWN OR NOT, THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED IMMEDIATELY AT NO EXPENSE TO THE OWNER SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE OWNER/ENGINEER IS TO BE NOTIFIED IMMEDIATELY. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT THE AUTHORIZATION OF THE OWNER, THEN THE CONTRACTOR ASSUMES THE RESPONSIBILITY FOR SAID CORRECTIONS OR ADJUSTMENTS.
12. CLEAR ALL UTILITIES BY A MINI MUM OF 1'-0" VERTICALLY. CLEAR ALL POLES BY 7'-0" HORIZONTALLY OR TUNNEL AS REQUIRED. COST FOR TUNNELING AND BRACING IS INCLUDED IN THE UNIT PRICE BID FOR WATER & SEWER CONSTRUCTION.
13. ANY NECESSARY ADJUSTMENTS TO EXISTING MANHOLES, VALVE BOXES, ETC., ARE TO BE DONE SO BY THE CONTRACTOR THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING ANY EXISTING FENCES, DRIVEWAYS, SIGNS, DRAINAGE PIPES, MAILBOXES, SHRUBS, TREES, ETC. DAMAGED OR REMOVED DURING CONSTRUCTION. ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION OR BETTER.
14. THE CONTRACTOR SHALL NOTIFY MISS UTILITY (1-800-257-7777) 5 DAYS PRIOR TO START OF CONSTRUCTION.
15. ALL MATERIAL STOCKPILES LEFT AT THE END OF EACH WORK DAY REQUIRE STABILIZATION UNTIL THE NEXT RE-DISTURBANCE.
16. CONTRACTOR SHALL REPAIR/REPLACE ANY DAMAGED SEDIMENT CONTROL DEVICES DURING THE SAME WORKING DAY.
17. MAINTAIN A MINIMUM OF 10'-0" HORIZONTAL CLEARANCE BETWEEN WATER AND SEWER MAINS, AND 5'-0" HORIZONTAL BETWEEN ALL OTHER UTILITIES.
18. FOR DETAILS NOT SHOWN ON THE CONTRACT DRAWINGS, SEE FREDERICK COUNTY STANDARD DETAILS
19. FOR MATERIALS AND CONSTRUCTION METHODS, USE FREDERICK COUNTY STANDARD SPECIFICATIONS OR CONTRACT DOCUMENTS.
20. DURING PUMPING OPERATION, NO WATER WILL BE DISCHARGED DIRECTLY ACROSS THE GROUND OR INTO ANY EXISTING BODY OF WATER OR STREAM, WITHOUT FIRST BEING PUMPED TO AN APPROVED TEMPORARY SEDIMENT TRAP/DESILTING STRUCTURE. SEE SCD APPROVED SEDIMENT CONTROL PLAN.
21. FOR REQUIRED SEDIMENT CONTROL MEASURES SEE SCD APPROVED SEDIMENT CONTROL PLAN.
22. ALL VALVES SPECIFIED MUST BE RESILIENT SEAT GATE VALVES. MINIMUM DISTANCE BETWEEN VALVE AND TEE OR CROSS IS 18 INCHES.
23. THE DEVELOPER SHALL ROUGH GRADE TO WLTH-IN ONE HALF FOOT OF FINISHED SUB-GRADE IN AREAS OF WATER AND SEWER INSTALLATION PRIOR TO STARTING ANY TRENCHING WORK FOR THE WATER AND SEWER LINES.
24. OWNER/ DEVELOPER/ CONTRACTOR RESPONSIBILITIES FOR SUB-GRADE:
    A. THE CONTRACTOR SHALL ENSURE THAT THE GROUND ELEVATION OVER THE WATER AND/OR SEWER LINE LOCATIONS, IS WITHIN SIX (6) INCHES OF FINISHED GRADE (OUTSIDE ROADWAY) OR AT THE ROAD SUB-GRADE ELEVATION (WITHIN ROADWAY) PRIOR TO THE START OF ANY EXCAVATION OR TRENCHING OF WATER AND/ OR SEWER LINES. CUT SHEETS PREPARED BY THE CONTRACTOR SHALL BE PRESENTED TO THE INSPECTOR SUFFICIENTLY IN ADVANCE OF THE WORK BEING DONE (THIS ADVANCE NOTICE TO BE DETERMINED BY THE INSPECTOR DURING THE PRE-CONSTRUCTION MEETING) THE INSPECTOR RESERVES THE RIGHT TO WITHHOLD PAYMENT AND/OR TO STOP WORK IF CUT SHEETS ARE NOT PROVIDED IN A TIMELY FASHION.
    B. IF AFTER INSTALLATION OFWATERAND/OR SEWER FACILITIES THERE EXISTS A CONFLICT WITH OTHER UTILITIES (SHOWN AS FUTURE), THE RELOCATION, ADJUSTMENT, REPLACEMENT, ETC. OF SAID WATER AND SEWER WILL BE AFFECTED PURSUANT TO ARTICLE 16 OF THE GENERAL CONDITIONS AND STANDARD SPECIFICATIONS.
    C. IF SUB-GRADE IS SHOWN AS CONTROLLED FILL OR FILL BENEATH THE WATER AND/OR SANITARY SEWER, THE MASS GRADING ENGINEER OF RECORD SHALL CERTIFY THE ENTIRE PORTION OF THE MASS GRADED AREA HAS BEEN INSTALLED PURSUANT TO THE SECTION 2200 WHERE WATER AND/OR SEWER LINES ARE TO BE INSTALLED.
28. ALL WATER LINE TO BE BUILT TO THREE AND ONE HALF FOOT MINIMUM COVER BELOW FINISHED GRADE.
29. ALL PROPOSED WATER AND SEWER SHOWN ON THIS PLAN TO BE INSTALLED BY OPEN CUT METHOD.
30. EXCAVATION WITHIN A COUNTY ROAD RIGHT OF WAY FOR THE PURPOSE OF THE INSTALLATION OF UTILITIES, STORM DRAINS, ETC. SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS IN THE PERMIT ISSUED BY THE FREDERICK COUNTY DIVISION OF HIGHWAY OPERATIONS.
31. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING SILT AND DEBRIS OUT OF THE STORM DRAINAGE SYSTEM FOR THE DURATION OF THE CONTRACT.
32. ALL MANHOLES CALLED OUT TO BE WATERTIGHT ARE TO UTILIZE A FRAME AND COVER BY EAST JORDAN IRONWORKS. THE FRAME MENTIONED IS A STRAIGHT THROUGH DESIGN. CONTRACT MARK BAUM AT EAST JORDAN IRONWORKS AT 800-418-3549 OR WWW.EJIW.COM FOR MORE INFORMATION.
33. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTY OWNERS AT ALL TIMES.THECONTRACTOR, WITH OWNER APPROVAL, WILL COORDINATE WITH PROPERTY OWNERS IF ACCESS MUST BE INTERRUPTED FOR SHORT TIME PERIODS.
34. REQUIREMENTS FOR TELEVISING SANITARY SEWER LINES: ALL PUBLIC GRAVITY SEWER LINES AND LATERALS SHALL BE TELEVISED AS A CONDITION OF INSPECTION IN ORDER TO OBTAIN CONDITIONAL/OPERATIONAL ACCEPTANCE. TELEVISING SHALL BE DONE IN ACCORDANCE WITH SECTION 2571.II.A.2. TELEVISING FIRMS MUST BE SUBMITTED AND APPROVED BY THE DUSWM PRIOR TO THEIR USE. THE DVD MUST BE VIEWED AND APPROVED BY THE DUSWM PRIOR TO ACCEPTANCE OF THE SEWER MAINS AND LATERALS AND PLACING ANY PORTION OF THE SYSTEM INTO SERVICE. THE FOLLOWING PROCEDURES MUST BE FOLLOWED: 1) ALL SEWER MAINS AND LATERALS FOR THE PROJECT MUST BE INSTALLED, BACKFILLED AND COMPACTION TESTS REVIEWED AND APPROVED BY THE DUSWM PRIOR TO TELEVISING.2) COMPLETE ALL PRESSURE TESTS, DEFLECTION TESTS AND MH VACUUM TESTS PRIOR TO TELEVISING. 3) ALL MAINS AND LATERALS SHALL BE FLUSHED IN A MANNER SUFFICIENT TO REMOVE ALL DIRT AND DEBRIS AND PROVIDE ENOUGH WATER TO DISCERN ANY STANDING WATER FLUSHING WILL TAKE PLACE NO EARLIER THAN 48 HR PRIOR TO TELEVISING AND WILL BE WITNESSED BY THE DUSWM INSPECTOR. CONTRACTOR SHALL ENSURE THAT NO CONSTRUCTION DEBRIS IS FLUSHED INTO THE RECEIVING SEWER. 4) STAND PIPES TO LATERALS WILL BE LABELED WITH LOT #. ETC.WITH A BOLD, BLACK, PERMANENT MARKER BY THE CONTRACTOR AND VERIFIED BY THE INSPECTOR AS CORRECT. PAN THE LOT # WITH THE CAMERA PRIOR TO INSERTING CAMERA INTO THE CLEAN-OUT STACK. 5) PROJECT NAME, NUMBER, DATE, TIME, TYPE AND SIZE OF PIPE AND MH#-MH # OR LOT # WILL BE DISPLAYED ON THE SCREEN AT ALL TIMES AND NOT OBSCURE THE VIEW OF THE SEWER PIPE.THERE WILL BE A RUNNING COUNT OF THE LINEAR FOOTAGE SHOWN ON THE SCREEN. 6) AFTER TELEVISING AND PRIOR TO CONDITIONAL ACCEPTANCE.IF THE DUSWM DETERMINES THAT ANY INFILTRATION, DEBRIS OR DAMAGE MAY HAVE OCCURRED TO ANY MAIN OR LATERAL THEY WILL BE FLUSHED AND TELEVISED AGAIN. 7) ALL LINES AND LATERALS WILL BE PLACED ON ONE DVD IF SPACE PERMITS (IF NOT PLACE MAIN ON ONE DVD AND LATERALS ON ANOTHER) IN A FORMAT THAT CAN BE VIEWED ON WINDOWS MEDIA PLAYER OR REAL PLAYER A WRITTEN REPORT WILL BE PROVIDED FROM THE TELEVISING COMPANY CONTAINING A LOG NOTING THE INFORMATION IN ITEM 5 ABOVE, THE GENERAL CONDITION OF THE LINE/LATERAL AND ANY SPECIFIC FEATURES. THE MAINLINES AND LATERALS LOG WILL BE IN THE SAME SEQUENCE AS SHOWN ON THE DVD.8) TOLERANCES: NO DIRT, STONE OR OTHER DEBRIS PERMITTED IN MAINS OR LATERALS -NO STANDING WATER IN LATERALS -THE DECISION TO ALLOW ANY STANDING WATER IN MAINS WILL BE DETERMINED BY THE DUSWM BASED ON PIPE DIAMETER, % SLOPE AND/OR OTHER FACTORS AS DETERMINED BY THE DUSWM.
35. WATERLINE BACTERIAL TESTING REQUIREMENT: DISINFECTION AND VERIFICATION TESTING WILL BE PERFORMED IN ACCORDANCE WITH AWWA C651-05, OR LATEST EDITION. THE CONTRACTOR SHALL BE REQUIRED TO HAVE BACTERIAL TESTING PERFORMED ON ALL NEW WATER MAINS TO DEMONSTRATE BACTERIAL LEVELS MEET STATE MDE REQUIREMENTS PRIOR TO THE COUNTY GRANTING CONDITIONAL ACCEPTANCE OF THE CONTRACT. REQUIREMENTS INCLUDE BUT ARE NOT LIMITED TO OBTAINING TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES THAT ARE COLLECTED A MINIMUM OF 24 HOURS APART. ONE SAMPLE SHALL BE COLLECTED FOR EVERY 1200 FEET, END OF EACH BRANCH, AND THE END OF THE LINE FOR RESIDUAL CHLORINE, TOTAL CHLOROFORM, AND E.COLI ANALYSIS. AFTER DISINFECTION THE LINE MUST BE FLUSHED. CHLORINE RESIDUAL SAMPLES MUST YIELD A RESULT OF 1.0 PPM OR LESS BEFORE TOTAL CHLOROFORM OR E.COLI ANALYSIS MAY BE PERFORMED. ALL SAMPLE COLLECTIONS SHALL BE PERFORMED BY INDIVIDUALS CERTIFIED FOR DRINKING WATER SAMPLE COLLECTION BY THE MARYLAND DEPARTMENT OF ENVIRONMENT. LABORATORIES UTILIZED FOR THE ANALYSIS SHALL BE CERTIFIED BY THE MARYLAND DEPARTMENT OF ENVIRONMENT FOR TOTAL CHLOROFORM AND E COLI ANALYSIS. IF THE CONTRACTOR HAS ALLOWED CONTAMINANTS TO ENTER THE PIPE DURING CONSTRUCTION (THIS SHALL BE DETERMINED BY INSPECTOR) THEN SAMPLING MAY BE REQUIRED AT REDUCED DISTANCE INTERVALS AS DETERMINED BY THE DUSWM. DISINFECTED WATER (OF CHLORINE RESIDUAL 1.0 PPM OR LESS) WILL STAND IN THE LINE FOR AT LEAST 16 HOURS AFTER A FINAL FLUSH. CERTIFIED BACTERIAL TEST RESULTS SHALL BE PROVIDED TO THE DUSWM AND SHALL INCLUDE CERTIFICATION INFORMATION FOR BOTH THE SAMPLE COLLECTOR AND LABORATORY.



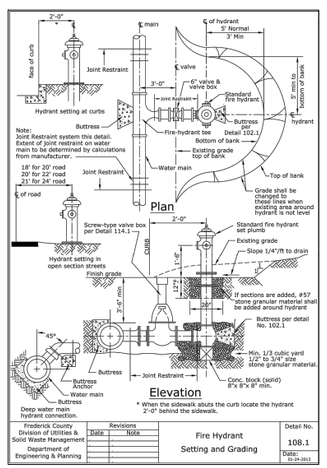
Frederick County Division of Utilities & Solid Waste Management / Department of Engineering & Planning	Revisions: Date / Note	Manhole Detail 48" Diameter	Detail No. 201.1	Date: 01-24-2013



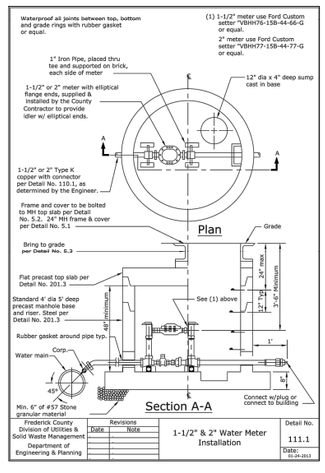
Frederick County Division of Utilities & Solid Waste Management / Department of Engineering & Planning	Revisions: Date / Note	Sewer Manhole Vent	Detail No. 207.1	Date: 03-04-2013



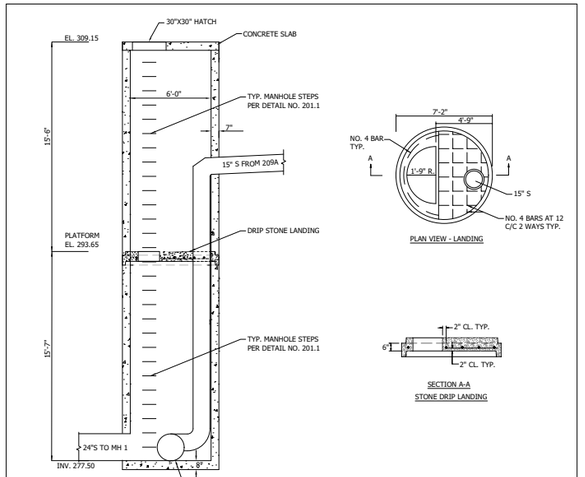
Frederick County Division of Utilities & Solid Waste Management / Department of Engineering & Planning	Revisions: Date / Note	Typical Trench for Sewer or Water Lines	Detail No. 2.1	Date: 03-04-2013



Frederick County Division of Utilities & Solid Waste Management / Department of Engineering & Planning	Revisions: Date / Note	Fire Hydrant Setting and Grading	Detail No. 108.1	Date: 03-04-2013



Frederick County Division of Utilities & Solid Waste Management / Department of Engineering & Planning	Revisions: Date / Note	1-1/2" & 2" Water Meter Installation	Detail No. 111.1	Date: 03-04-2013



MH2 SAFETY LANDING DETAIL NOT TO SCALE

NOTES:
1. CONCRETE SHALL BE MIX NO. 6 (4500 PSI).
2. REINFORCEMENT SHALL MEET ASTM A 615 GRADE 60.
3. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN.
4. LIFT EYES SHALL BE PROVIDED FOR HANDLING.
5. COST FOR THE DRIP STONE LANDING IS INCIDENTAL TO THE COST OF THE MANHOLE.

Report of Geotechnical Exploration — *Quantum Frederick – Proposed Sewer Pump Station*
March 3, 2023 — *GTA Project No. 31201516*

SUMMARY OF FREDERICK COUNTY TRENCH BACKFILL REQUIREMENTS*

Area Designation/Description*	Material Requirements	Max. Stone Size	Minimum, Max. Dry Density	Compaction and Moisture Requirements and other requirements
Pipe Embedment Zone				
Bedding/haunches (to spring line)	No. 57 Stone	N/A	N/A	Wrap No.57 stone with geotextile, required in Type IV and wet areas
Initial Backfill (spring line to 6" to 12" above the pipe)	No. 57 Stone allowed in lieu of Select Fill; required in Wet areas	N/A	N/A	
	Select Fill allowed in non-wet areas	1 in.	100 PCF	See below
Type I Area – Paved areas, public right of ways and areas within five feet of structures.				
Initial Backfill above pipe springline to 2 feet above pipe	No. 57 Stone, or Select Fill	1 in.	100 PCF	92% per T-180, +/-2% of Optimum moisture
Above Pipe Embedment Zone to 12" below final subgrade	Select Fill, Well Graded, <25% retained on #4 Sieve	3.99 in.	100 PCF	92% per T-180, +/- 2% of Optimum moisture
Top 12" of subgrade	Select Fill, Well Graded, <25% retained on #4 Sieve, LL<40, PI<15	3.0 in.	105 PCF	97% per T-180, +/-2% of Optimum moisture
Type II - Unimproved areas and Type III - Nonpaved improved areas				
Above Pipe Embedment Zone	Select Fill, Well Graded, <25% retained on #4 Sieve	3.99 in.	100 PCF	90% per T-180
Type IV -Wetlands or wetland Suffers				
Above Pipe Embedment Zone	Excavated native soils including organic matter free of deleterious materials	3.99 in.	N/A	Place and compact in 12" loose lifts**

* This is a general summary of the County requirements. Refer to the County Specifications for additional details and requirements.
** Compaction to 90% per T-180 should be considered and is recommended by GTA to meet the County trench settlement tolerance.
N/A – Not applicable or specified; LL= Liquid Limit, PI = Plasticity Index.

NOTES:

1. UTILITY BEDDING AND INITIAL BACKFILL EXTENDING TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE SHOULD CONSIST OF NO. 57 CRUSHED STONE. DUE TO WET CONDITIONS, GTA RECOMMENDS THAT STONE SHOULD BE WRAPPED IN A HIGH STRENGTH, NON-WOVEN GEOTEXTILE, SUCH AS MIRAFI 1100N OR EQUIVALENT.
2. REFER TO SPECIFICATIONS BOOK WITH GEOTECH REPORT FOR SUPPLEMENTAL INFORMATION.

Dewberry

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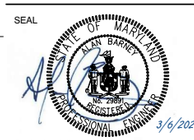
QUANTUM LOOPHOLE
1MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #B01-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL



Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891.

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

WATER & SEWER NOTES & DETAILS

PROJECT NO. 50151771

C-7

SHEET NO. 8 OF 37

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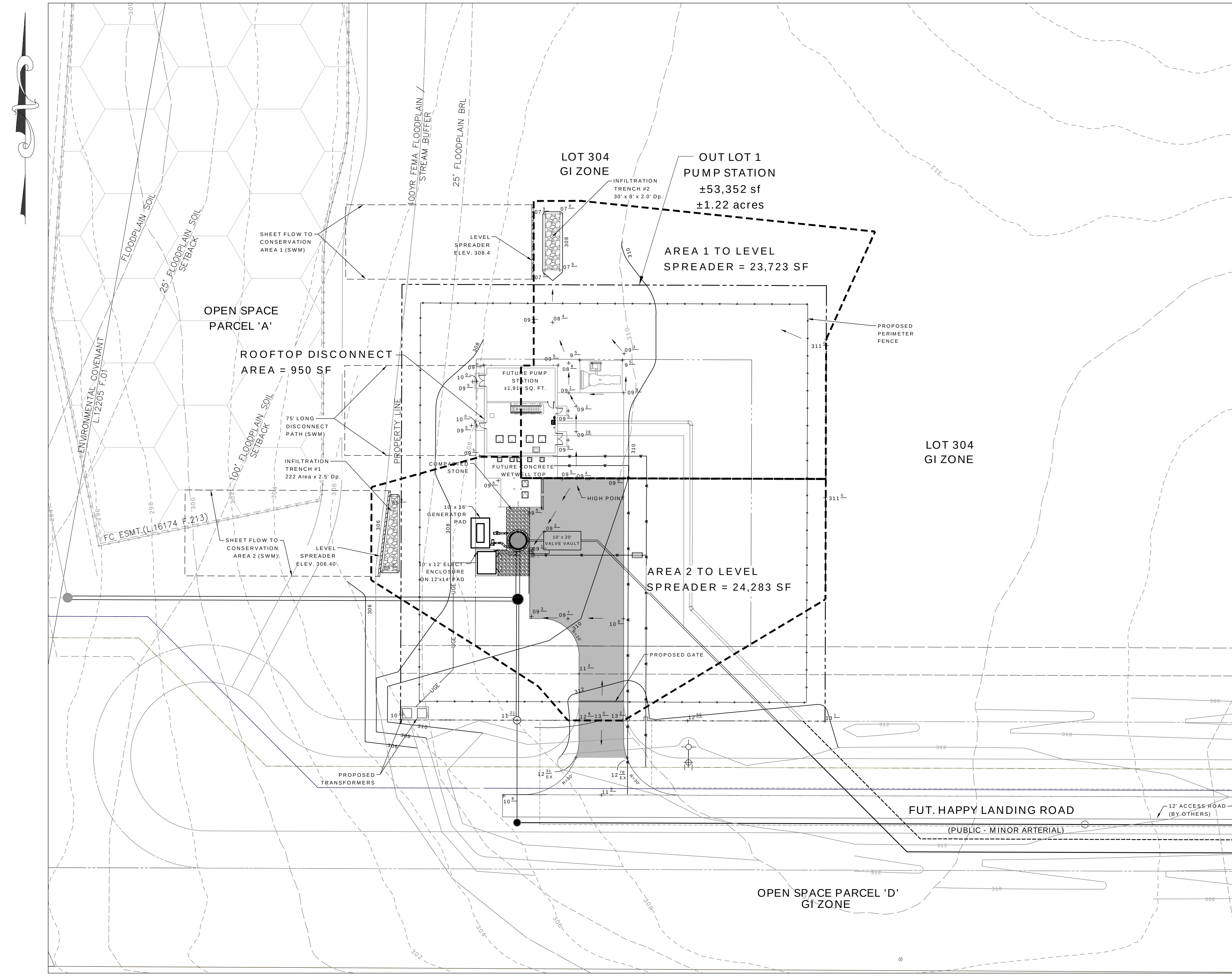
Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/03/23

Signature:



0' 15' 30' 60'
SCALE: 1" = 30'

LEGEND:

- EX TOPOGRAPHY
- EX 100 YR FLOODPLAIN
- EX SOIL TYPE
- EX STREAM
- EX PARCEL LINES
- EX EDGE OF PAVEMENT
- EX WATER
- EX SEWER
- EX BRUSHLINE
- EX TREELINE
- EX TREES
- PROP TOPOGRAPHY
- PROP TOPOGRAPHY BY OTHERS
- PROP BUILDINGS
- PROP LOT LINES
- PROP RIGHT-OF-WAY
- PROP ROAD CENTERLINE
- PROP WATER
- PROP FORCE MAIN
- PROP FENCE

SWM LEGEND:

- DRAINAGE DIVIDE TO PROPOSED STORMWATER FACILITIES
- STORMWATER MANAGEMENT INFILTRATION TRENCH
- LEVEL SPREADER

SWM SUMMARY TABLE:

FACILITY	SHEET FLOW TO CONSERVATION AREA #1	SHEET FLOW TO CONSERVATION AREA #2	DISCONNECTION OF ROOFTOP RUNOFF (2 DS)
DRAINAGE AREA TO FACILITY :	24,283 SF	23,723 SF	950 SF (TOTAL)
IMPERVIOUS AREA TREATED BY FACILITY :	6,709 SF	3,213 SF	950 SF
TARGET Pe :	1.2"		
TARGET ESDv :	1,199 CU-FT		
PROVIDED Pe :	1"		
PROVIDED ESDv PER FACILITY :	604 CU-FT	340 CU-FT	75 CU-FT (TOTAL)
TOTAL PROVIDED ESDv :	1,019 CU-FT		
PRE-DEVELOPED RCN :	55		
POST DEVELOPED CN :	68		

SINCE ESD REQUIREMENTS ARE NOT MET, ADDITIONAL STORAGE WILL BE PROVIDED USING BMP'S (INFILTRATION TRENCHES) AS OUTLINED IN CHAPTER 5, ENVIRONMENTAL SITE DESIGN, OF THE MARYLAND STORMWATER DESIGN MANUAL, VOLUME I (SEE COMPUTATIONS REPORT).

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QUANTUM LOOPHOLE 1MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

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500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

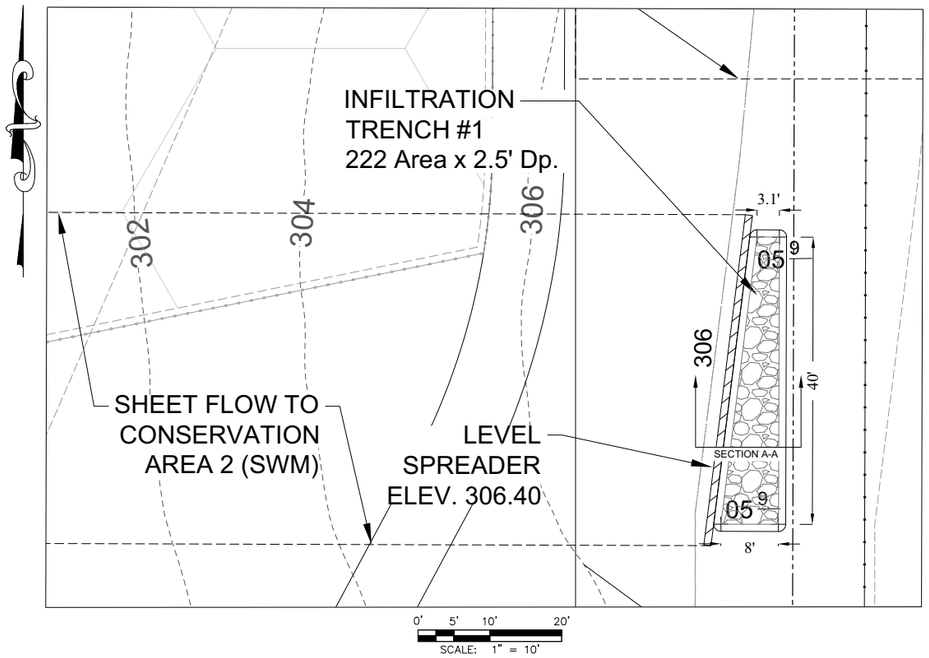
TITLE

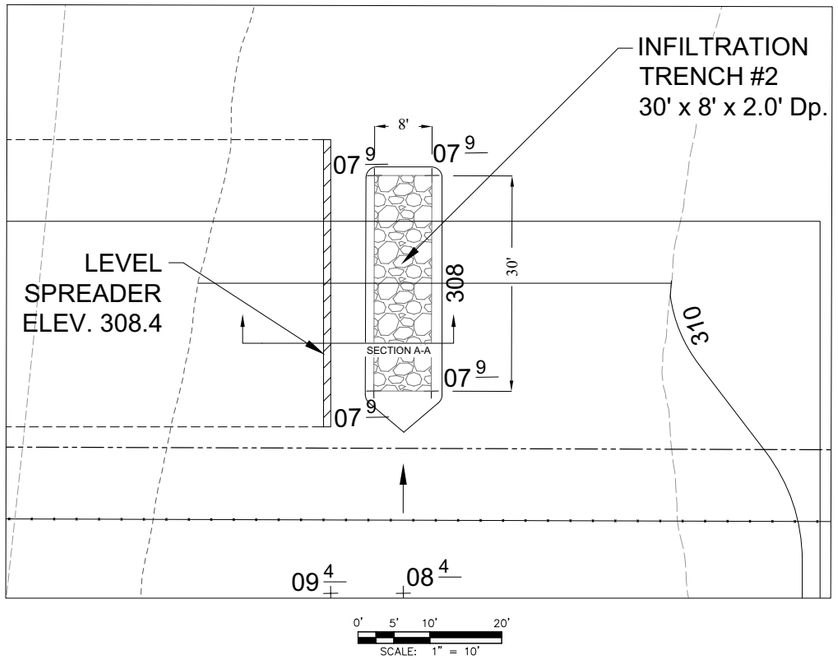
SWM DRAINAGE AREA MAP

PROJECT NO. 50151771

C-8

SHEET NO. 9 OF 37





SWM LEGEND:

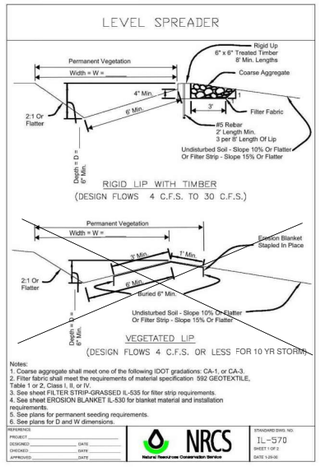
DRAINAGE DIVIDE TO PROPOSED STORMWATER FACILITIES

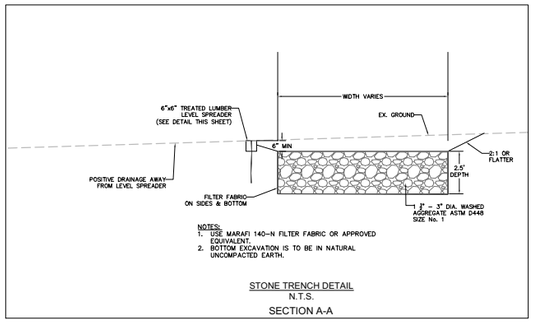
STORMWATER MANAGEMENT INFILTRATION TRENCH

LEVEL SPREADER

FREDERICK COUNTY STORMWATER MANAGEMENT NOTES:

1. STORMWATER QUALITY MANAGEMENT SHALL BE ADDRESSED THROUGH THE USE OF VEGETATED FILTERING AND OTHER BEST MANAGEMENT PRACTICES AS OUTLINED IN THE MARYLAND STORMWATER DESIGN MANUAL, CHAPTER 5 (LATEST REVISION)
2. THE AREA DISTURBED SHALL NOT INFRINGE UPON WOODED AREA OR DEGRADE THE CURRENT LAND USE.
3. ALL DISTURBED AREA SHALL BE RETURNED TO COMPARABLE OR BETTER CONDITION THAN WHAT PREVIOUSLY EXISTED.
4. RE-GRADED AREAS SHALL NOT FURTHER IMPACT OTHER PROPERTIES WITH RESPECT TO DRAINAGE.
5. THE TOP SIX-INCH BACKFILL LAYER LOCATED WITHIN GRASS AND/OR PERVIOUS AREAS IS NOT TO BE COMPACTED.





STONE TRENCH DETAIL
N.T.S.
SECTION A-A

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MANOR WOODS ROADS
DWSU #601-S

FREDERICK COUNTY, MARYLAND
ELECTION DISTRICT NO. 01

SEAL

STATE OF MARYLAND
JEFFREY ALAN BARNES
No. 29891
REGISTERED
PROFESSIONAL ENGINEER

3/6/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

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AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

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CHECKED BY

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SWM PLAN - NOTES & DETAILS

PROJECT NO. 50151771

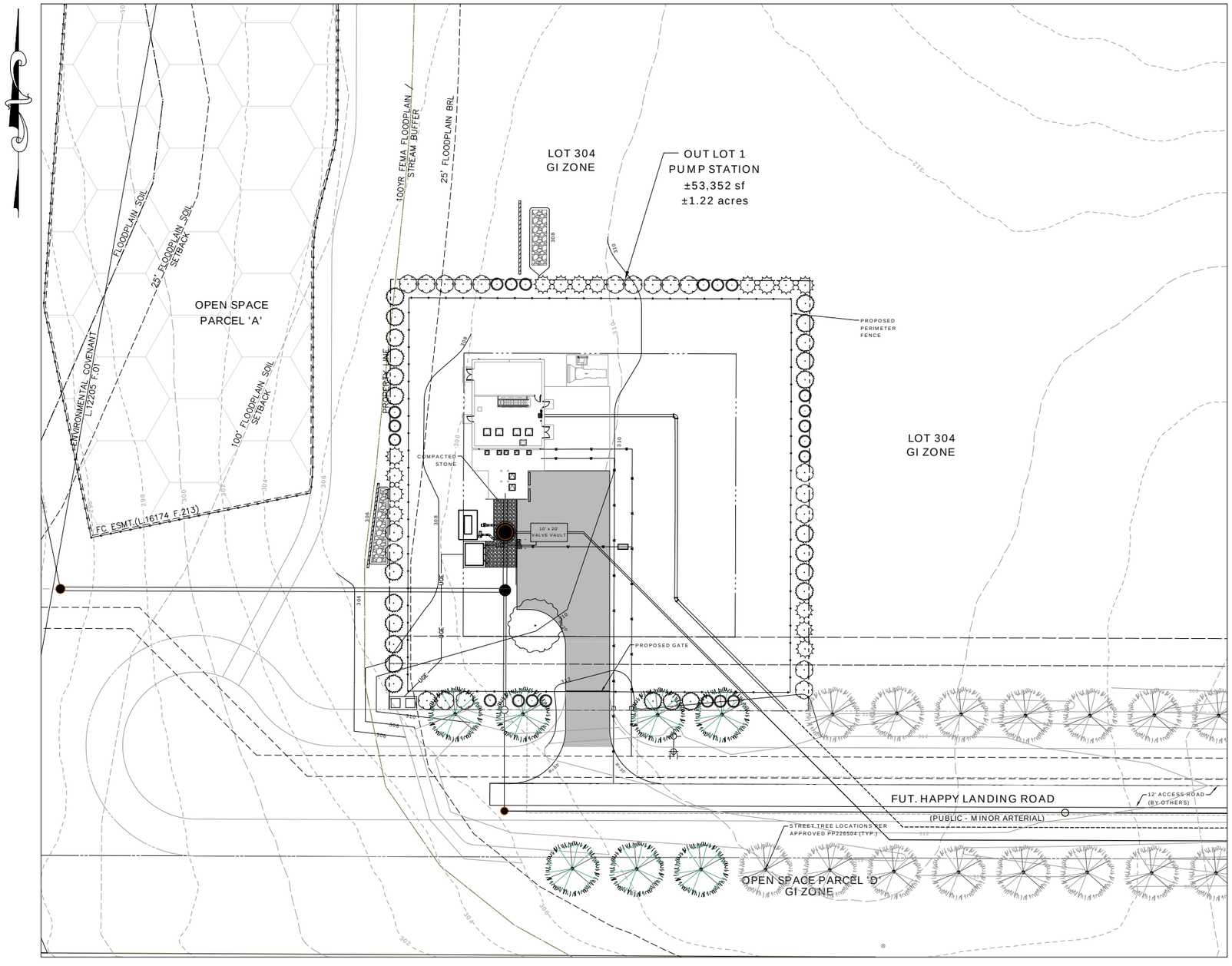
C-9

SHEET NO. 10 OF 37

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/03/23

Signature:



0' 15' 30' 60'

SCALE: 1" = 30'

LEGEND:

EX TOPOGRAPHY
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EX SOIL TYPE
EX STREAM
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PROP ROAD CENTERLINE
PROP WATER
PROP FORCE MAIN
PROP FENCE
PROP STORMDRAIN
PROP TREELINE
PROP LIGHTS & SIGNS
PROP TREES

PLANT SCHEDULE

STREET TREE PLANTING SCHEDULE

SYMBOL	QUANTITY	BOTANICAL / COMMON NAME	SIZE	ROOT	NATIVE
	4	Taxodium distichum Bald Cypress	2.5" - 3" Caliper	B&B	YES

OUTLOT BUFFERING PLANTING SCHEDULE

SYMBOL	QUANTITY	BOTANICAL / COMMON NAME	SIZE	ROOT	NATIVE
	15	Thuja x 'Green Giant' Green Giant Arborvitae	6' Height	B&B	YES
	24	Ilex opaca American Holly	6' Height	B&B	YES
	20	Juniperus virginiana Eastern Red Cedar	6' Height	B&B	YES
	21	Cercis canadensis Eastern Redbud	1.0" -1.5" Caliper / 5' Height	B&B	YES

20% CANOPY COVERAGE FOR PARKING AREA PLANTING SCHEDULE

SYMBOL	QUANTITY	BOTANICAL / COMMON NAME	SIZE	ROOT	NATIVE
	1	Acer saccharum Sugar Maple	1.5" - 2" Caliper	B&B	YES

LANDSCAPE REQUIREMENTS

Note: Landscaping shall be maintained in a living condition.

Category	Required	Provided
Street Trees	1-19-6.400(A) 1 tree for every 35' of roadway frontage *Minimum 6' in height at time of planting 228 LF of roadway frontage / 35 = 7 Trees Required	4 Trees Provided (Modification Requested)
Parking Area Landscaping	1-19-6.400(D)(2) 20% Canopy Coverage at Maturity // Based on 324 SF a New Parking Area 324 SF x 20% = 65 (min.) Required; 122 SF Provided = 38%	1 Tree (38%) Provided

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DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

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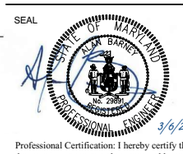

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STREET TREE PLAN

PROJECT NO. 50151771

C-10

SHEET NO. 11 OF 37

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PLANTING NOTES

A) Landscape specifications shall be outlined below. Any item or procedure not mentioned below shall be as specified in the Landscape Specification Guidelines published by the Landscape Contractors Association (latest edition).

B) Plant Materials

The landscape contractor shall furnish and intall and/or dig, ball, burlap, and transplant all of the plant materials call for on the drawings or listed on the plant schedule.

1) Plant Names

All plant materials shall be equal to or better than the requirements of the "American Standard for Nursery Stock" (latest edition), as published by the American Association of Nurserymen (hereafter referred to as the 'AAN Standards'). All plants shall be typical of their species and variety, shall have a normal habit of growth, and shall be first quality, with a sound, vigorous, well-branched and healthy root system. All plants shall be free of disease, insects or other pests, and any mechanical issues.

a) All plants shall be nursery grwon and have been grown under the same climate conditions as the location of this project for at least 2 years before planting. Neither heeled-in plants nor plants from cold storage will be accepted

b) Collected plants or transplanted trees may be call for by the Landscape Architect and used, provided that the locations and the soil conditions will permit proper balling.

2) Plant Measurements

All plants shall conform to the measurements specified in the plant schedule.

a) Caliper measurements shall be taken six inches (6") above grade for trees under four inches (4") caliper and twelve inches (12") above grade for trees four inches (4") in caliper and over.

b) Minimum branching height for all shade trees shall six feet (6').

C) Planting Methods

All proposed plant material that meets the specifications in Section B: (1)(A)(B), 2(A)(B), as shown above are to be planted in accordnace with the following planting methods during the proper seasons as described below.

1) Planting Seasons

A professional horticulturalist / nurserymen shall be consulted to determine the proper time, based on plant species and weather conditions, to move and install particular plant material to minimize stree to the plant. Planting of decidious material may be continues during the winter months provided there is no frost in the ground and frost-free top soil planting mixtures are used.

2) Digging

All plant material shall be dug, balled, and burlapped (B&B) or bare root in accordance with the 'AAN Standards'

3) Excavation of Plant Pits

The landscape contractor shall excavate all plant pits, vine pits, hedge trenches, and shrub beds as follows:

a) All pits shall be circular in outline, with vertical sides. The tree pit shall be deep enough to allow 1/8 of the ball to be above the existing grade. Plants shall be rest on undisturbed existing soil or well compacted backfill. The tree pit must be a minimum of nine (9) inches larger on every side than the ball of the tree.

b) If areas are designated as shrub beds or hedge trenches, they shall be cultivated to at least 18" depth minimum. Areas designated for ground covers and vines shall be cultivated to at least 12" depth minimum.

4) Staking, Guying, and Wrapping - See the 'AAN Standards' Landscape Specification Guidelines

5) Plant Pruning, Edging, and Mulching

a) Each tree, shrub or vine shall be pruned in an appropriate manner to its particular requirements, in accordance with accepted standard practice. Broken or bruised branches shall be removed with clean cuts made on an angle from the bark ridge to the branch collar, no flush cuts, to minimize the area cut. All cuts shall be made with sharp tools. Trim edges smooth. No tree wound dressing shall be applied.

b) All trenches and shrub beds shall be edged and cultivated to the lines shown on the drawing. The areas around isolated plants shall be edges and cultivated to the full diameter of the pit. Sod which has been removed and stacked shall be used to trim the edges of all excavated areas to the neat lines of the plant pit saucers, the edges of shrub areas, hedge trenches, and vine pockets.

c) After installation, all plant materials shall be mulched with 2"-3" layer of bark mulch, shredded hardwood mulch, or another approved material over the entire area of the bed or saucer.

D) Seeding and Sodding

All seeding and sodding shall be per the Landscape Contractor's Association and Landscape Specifications Guidelines (latest edition).

E) Warranty

1) Warranty trees, shrubs, plants, and all lawn areas for a period of one year after date of written acceptance by the owner, against defects including death and unstatisfactory growth, except for defects resulting in neglect by owner, abuse or damage by others, or unsual phenomena or incidents beyond the installer's control.

2) Remove and replace trees, shrubs, plants, and lawn areas found to be dead or unhealthy condition during warranty period. Make replacements during growth season following the end of warranty period. Replace any plants which are in doubtful condition at the end of the warranty period. Replace any plants which are in doubtful condition at the end of the warranty period; unless in opinion of owner, it is advisable to extend warranty period for a full growing season. Warranty extension contingent on contract terms of landscape contractor.

F) Maintenance

1) Plantings must be watered immediately following installation.

2) Plantings must be watered at least once per week for 45 days following the installation to insure that the plant material gets established.

3) All landscaping shall be kepy in a living condition for 18 months after planting.

GENERAL LANDSCAPE PLAN NOTES

A) This landscape plan has been prepared by Dewberry. Changes shall not be made to this plan without permission from Dewberry. Any unauthorized changes from other parties will not be the responsibility of Dewberry.

B) This plan is for landscape purposes only.

C) All plants (B&B or Container) shall be properly identified by weatherproof labels securely attached thereto before delivery to project site. Labels shall identify plants by name, species, and size. Labels shall not be removed until the final inspection by the landscape architect.

D) Any materials and/or work may be rejected by the landscape architect if it does not meet the requirements of the specifications. All rejected materials shall be removed from the site by the contractor.

E) Plant quantities shown in the plant schedule are for landscape architects convenience only or for jurisdictional review. Prior to submitting a bid or estimate, the contractor shall verify that total quantities shown on the plan match the quantities shown in the plant list. Should discrepancies occur, plan information shall take priority and the landscape architect shall be notified immediately.

F) The contractor shall furnish all plants to complete the work as indicated on the plan and specified in the plant schedule.

G) Substitutions in plant species or size shall not be premitted except with the written approval of the landscape architect.

H) All soil areas not shown to receive plant materials shall be seeded for lawn.

I) The contractor shall contact Miss Utility (1-800-257-7777) prior to any excavation and shall take all necessary precautions to protect the existing utilities and maintain uninterrupted services. Any damage incurred due to the contractors operation shall be repaired immediately at the contractor's expense.

J) The contractor shall verify all utility locations prior to construction. Should any conflicts occur between proposed construction or plantings and actual utility locations, the owner and the landscape architect must be notified prior to any excavation or grading. All entrance walls, piers, and planting bed locations must be field staked by the contractor and the location approved by the owner prior to construction.

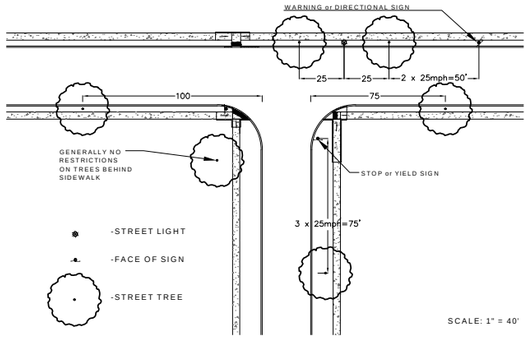
K) Plants shall be located as shown on the drawings and by scaling or as designated in the field by the landscape architect. All locations of plants and planting beds are to be staked and approved by landscape architect prior to installation.

L) If utility lines are encountered in excavation of tree pits, other locations for trees shall be selected by landscape architet. Such changes shall be made by the contractor without additional compensation. No changes of location shall be made without the approval of the landscape architect.

M) No work is public right-of-way shall be done unless all the required permits are obtained.

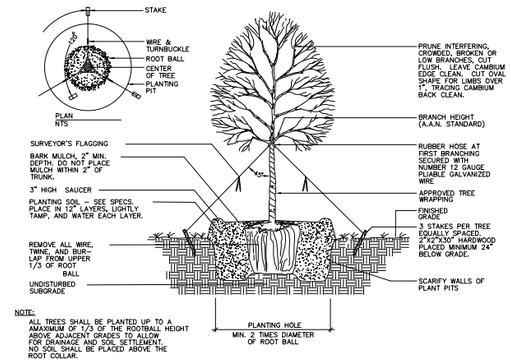
N) All equipment and tools shall be placed so not to interfere or hinder the pedestrian and vehicular traffic flow.

O) During planting operations excess and waste materials shall be disposed of properly offsite at no extra cost to the owner.



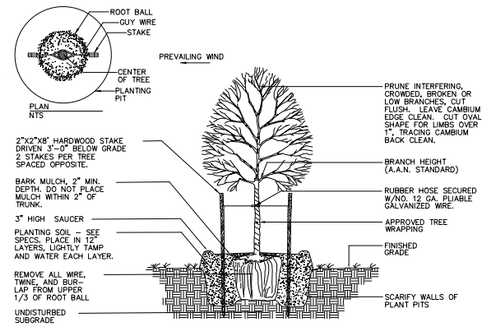
STREET TREE PLACEMENT GENERAL GUIDELINES

TAKEN FROM FIG. 2 OF GUIDELINES FOR TRAFFIC CONTROL DEVICES, STREET LIGHTS AND STREET TREES FOR NEW DEVELOPMENTS



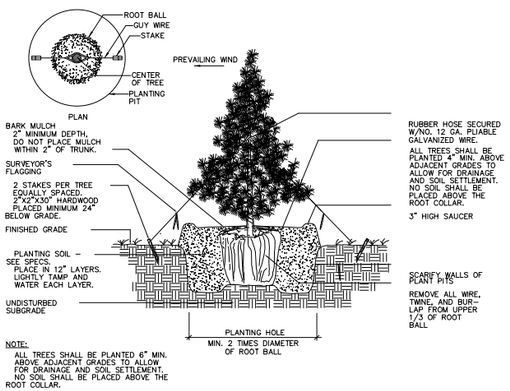
TYPICAL LARGE TREE PLANTING DETAIL

NOT TO SCALE



TYPICAL ORNAMENTAL TREE PLANTING DETAIL

NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

STREET TREE NOTES & DETAILS

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321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE
1MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND
MANOR WOODS ROADS
DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891.

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

LANDSCAPE DETAILS

PROJECT NO. 50151771

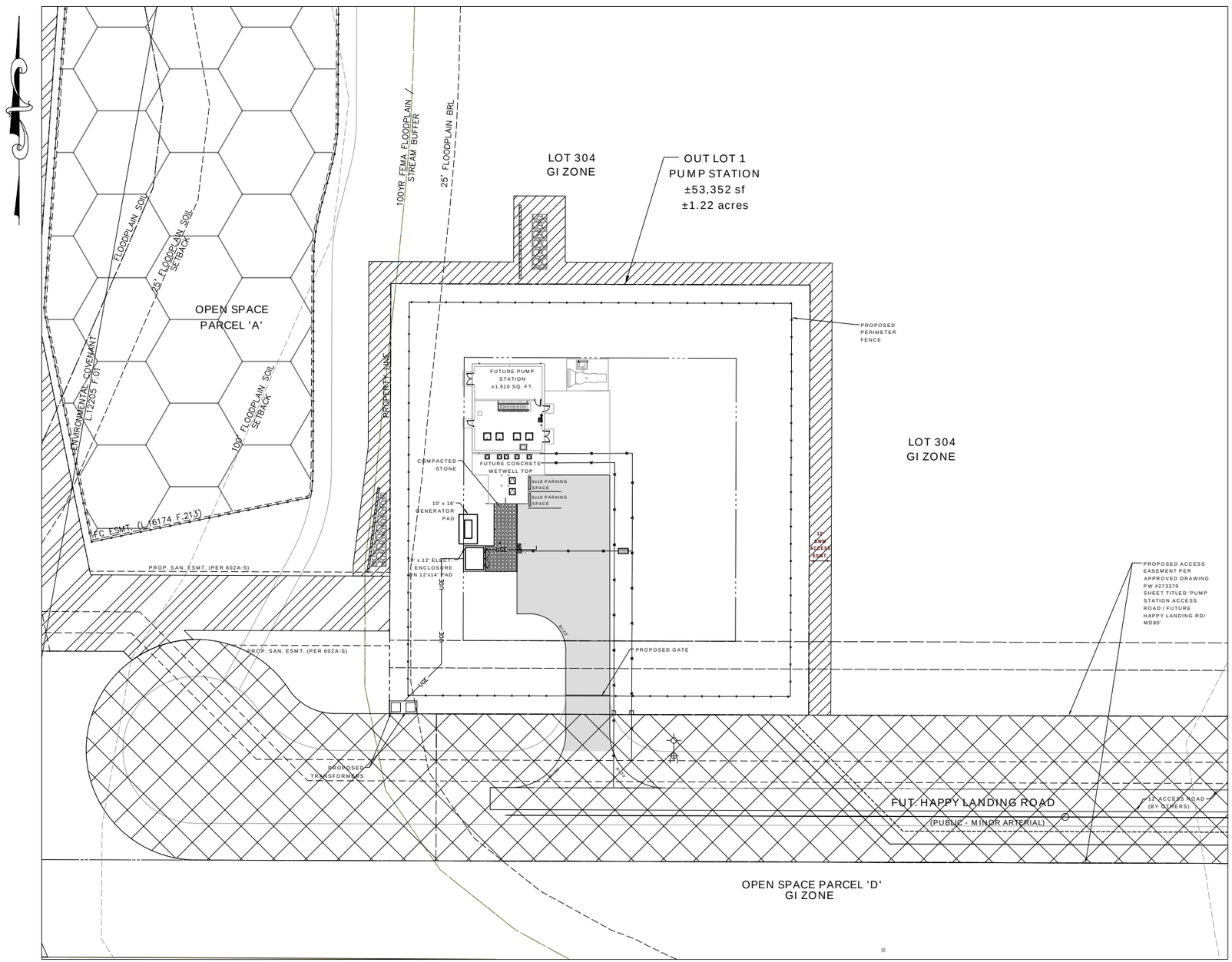
C-11

SHEET NO. 12 OF 37

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/03/23

Signature:



Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE 1MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND
SEAN BARNEY
No. 29891
REGISTERED
PROFESSIONAL ENGINEER

3/6/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

DATE

TITLE

EASEMENT PLAN

PROJECT NO. 50151771

C-12

SHEET NO. 13 OF 37

P:\PROJECT\2023 File\50151771 - Quantum Loophole\CAD\Civil\Improvement Plans\C12 Easement.dwg, 2/16/2023 2:37:05 PM, AutoCAD PDF (Smallest File).pc3

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/03/23

Signature:

1 2 3 4 5

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D

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B

A

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE
1MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND
MANOR WOODS ROADS

DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND
ALAN BARNES
No. 29891
REGISTERED
PROFESSIONAL ENGINEER

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered landscape architect under the laws of the State of Maryland,

License No. 29891,

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY

DESIGNED BY

CHECKED BY

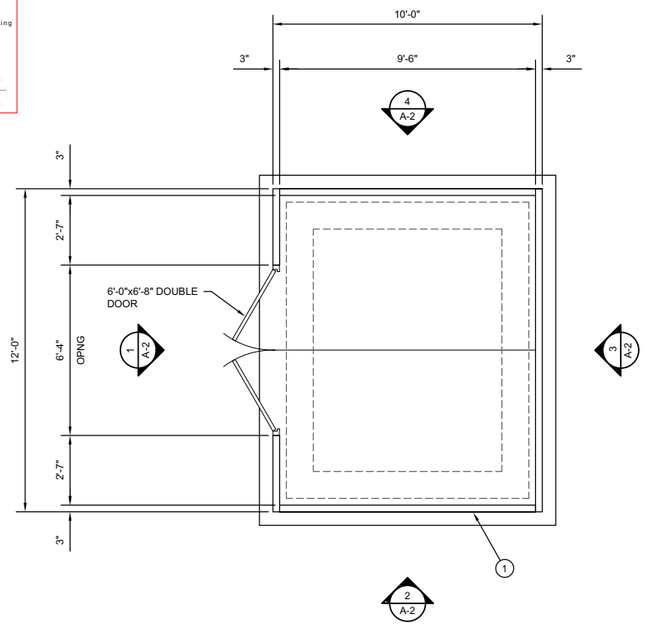
DATE

TITLE

PROJECT NO. 50151771

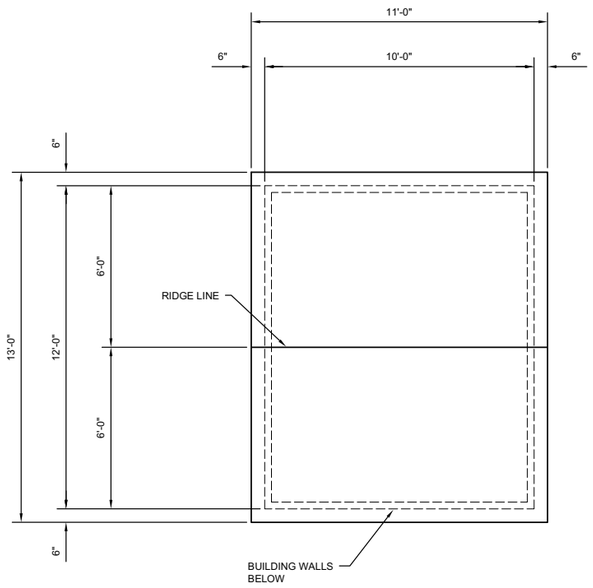
C-13

SHEET NO. 14 OF 37



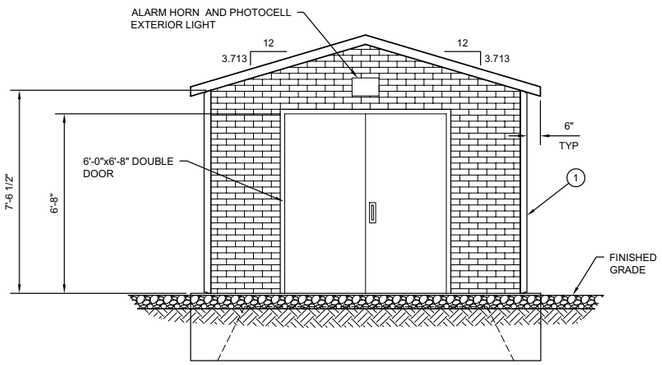
FLOOR PLAN
SCALE: 3/8" = 1' - 0"

TRUE NORTH

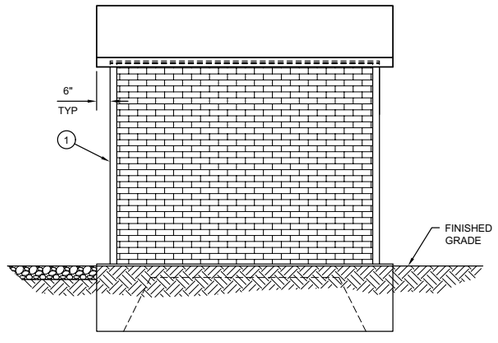


ROOF PLAN
SCALE: 3/8" = 1' - 0"

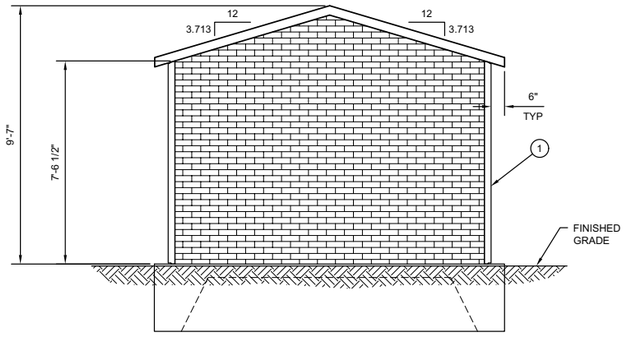
TRUE NORTH



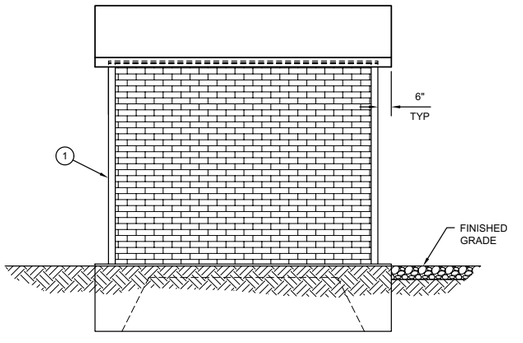
1 FRONT ELEVATION
SCALE: 3/8"=1'-0"



2 RIGHT SIDE ELEVATION
SCALE: 3/8"=1'-0"



3 BACK ELEVATION
SCALE: 3/8"=1'-0"



4 LEFT SIDE ELEVATION
SCALE: 3/8"=1'-0"

PREFABRICATED ELECTRICAL ENCLOSURE NOTES:

1. PREFABRICATED ELECTRICAL ENCLOSURE SHALL BE AS MANUFACTURED BY SMITH-MIDLAND, P.O. BOX 300 MIDLAND, VA 22728, (540) 439-3266, PRODUCT 12' x 10' EASI-SET.
2. COORDINATE ELECTRICAL ENCLOSURE COLOR, EXTERIOR FINISH AND DOOR COLOR WITH OWNER.
3. ALL REQUIRED OPENINGS FOR ELECTRIC, MECHANICAL, LOUVERS, ETC. MUST BE SIZED AND LOCATED BY BUYER ON THE MANUFACTURERS SUBMITTAL DRAWING (OPENING SIZES AND LOCATIONS MAY HAVE TO BE ALTERED IF THEY INTERFERE WITH CONNECTIONS OR REINFORCING).
4. ALL VIEWS ARE FROM THE EXTERIOR.
5. A SIGNED COPY OF THE MANUFACTURERS SUBMITTAL DRAWING MUST BE RETURNED BEFORE ELECTRICAL ENCLOSURE CAN BE RELEASED FOR PRODUCTION.

KEY NOTES:

(1) PREFABRICATED ELECTRICAL ENCLOSURE, SEE PREFABRICATED ELECTRICAL ENCLOSURE NOTES, THIS DRAWING.

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 55320,

Expiration Date: 12/12/2023.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE
0' 2' 4' 6'
SCALE: 3/8" = 1' - 0"

No.	DATE	BY	Description

REVISIONS

DRAWN BY	JRA
DESIGNED BY	CB
CHECKED BY	MAK
DATE	MARCH 2023

TITLE

ARCHITECTURAL ELECTRICAL ENCLOSURE PLANS AND ELEVATIONS

PROJECT NO. PLANS AND

A-1

SHEET NO. 15 OF 37

STRUCTURAL ABBREVIATION LIST

A.F.F.	ABOVE FINISHED FLOOR	KSI	KIPS PER SQUARE INCH
ARCH.	ARCHITECTURAL	LLH	LONG LEG HORIZONTAL
B.S.	BOTH SIDES	LLV	LONG LEG VERTICAL
BOT.	BOTTOM	MAX.	MAXIMUM
C=	CAMBER=	MECH.	MECHANICAL
CF	CUBIC FOOT	MIN.	MINIMUM
CMU	CONCRETE MASONRY UNIT	MPH	MILES PER HOUR
CLR.	CLEAR	N.T.S.	NOT TO SCALE
COL.	COLUMN	NO. #	NUMBER NUMBER
CONC.	CONCRETE	O.C.	ON CENTER
CONT.	CONTINUOUS	OPP.	OPPOSITE
DET.	DETAIL	PSI	POUNDS PER SQUARE INCH
DIA.	DIAMETER	PSF	POUNDS PER SQUARE FOOT
DIM.	DIMENSION	R	RADIUS
EA.	EACH	REINF.	REINFORCING
ELEV.	ELEVATION	REQ'D	REQUIRED
EQ.	EQUAL	SIM.	SIMILAR
EQUIP.	EQUIPMENT	S.S.	STAINLESS STEEL
EXIST.	EXISTING	STD.	STANDARD
EXP.	EXPANSION	STRU.	STRUCTURAL
EXT.	EXTERIOR	TS	TUBE STEEL
FIN.	FINISH	T.O.S.	TOP OF STEEL
FTG.	FOOTING	TYP.	TYPICAL
GALV.	GALVANIZED	U.N.O.	UNLESS NOTED OTHERWISE
GA.	GAUGE	V.I.F.	VERIFY IN FIELD
HSS	HOLLOW STRUCTURAL SECTION	VERT.	VERTICAL
HORIZ.	HORIZONTAL	W.W.F.	WELDED WIRE FABRIC
INT.	INTERIOR	W.P.	WORK POINT
J.B.	JOIST BEARING		

REBAR SPLICE AND HOOK SCHEDULE

REBAR SPLICE AND HOOK DIMENSIONS IN REINF. CONCRETE

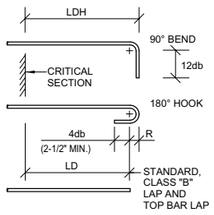
F'c = 4,500 PSI

ASTM BAR SIZE	LD	CLASS B LAP	TOP BAR LAP	LDH
3	12"	12"	16"	7"
4	12"	14"	19"	9"
5	14"	18"	24"	12"
6	17"	21"	28"	14"
7	26"	34"	45"	16"
8	34"	44"	58"	18"

NOTES:

TOP BAR - DEFINED AS A BAR LOCATED SUCH THAT 12 IN. OR MORE OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE SPLICE.

MINIMUM OUTSIDE RADIUS OF BEND, R, SHALL BE 4db.



LD - STANDARD DEVELOPMENT LENGTH OF BAR

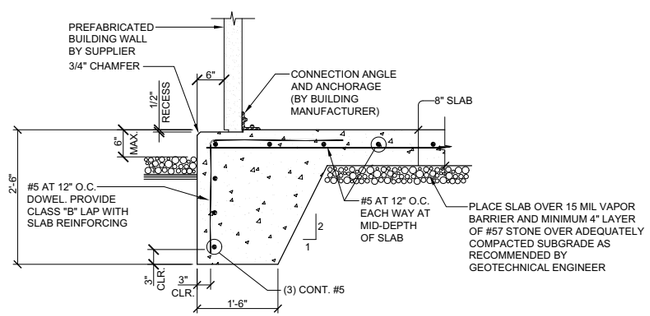
LDH - STANDARD DEVELOPMENT LENGTH OF HOOK

F'c - SPECIFIED COMPRESSIVE STRENGTH OF CONCRETE

db - BAR DIAMETER PER ASTM

2 GENERATOR PAD DETAIL

SCALE: N.T.S.



1 PRE-ENGINEERED BUILDING SLAB DETAIL

SCALE: 3/4" = 1'-0"

GENERAL STRUCTURAL NOTES

1. DESIGN:

1. THE GENERAL STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATIONS, AND GENERAL STRUCTURAL NOTES, THE STRICTEST PROVISION SHALL GOVERN.

2. STRUCTURAL DESIGN CONFORMS TO THE REQUIREMENTS OF THE BUILDING CODE 2018 OF MARYLAND (IBC 2018 WITH MARYLAND AMENDMENTS).

3. DESIGN LOADS AND DESIGN DATA FOR NEW CONSTRUCTION ARE AS FOLLOWS:

A. FLOOR LIVE LOADS: 200 PSF

B. ROOF LIVE LOAD: 20 PSF

C. ROOF SNOW LOAD:

GROUND SNOW LOAD (Pg)	30 PSF
SNOW EXPOSURE FACTOR (Ce)	0.9
SNOW LOAD IMPORTANCE FACTOR (I)	1.1
THERMAL FACTOR (Ct)	1.0
FLAT ROOF SNOW LOAD (Pf)	21 PSF

D. WIND LOAD:

BASIC WIND SPEED (3 SECOND GUST)	118 MPH
BUILDING RISK CATEGORY	III
INTERNAL PRESSURE COEFFICIENT (ENCLOSED)	±0.18
WIND EXPOSURE CATEGORY	C

E. SEISMIC DESIGN DATA:

BUILDING RISK CATEGORY	III
SEISMIC IMPORTANCE FACTOR (ALL BUILDINGS)	1.25
MAPPED SPECTRAL RESPONSE ACCELERATIONS, S_S	0.132
MAPPED SPECTRAL RESPONSE ACCELERATIONS, S_1	0.043
SPECTRAL RESPONSE COEFF. S_{DS}	0.211
SPECTRAL RESPONSE COEFF. S_{D1}	0.120
SITE CLASS	E
SEISMIC DESIGN CATEGORY (ALL BUILDINGS)	B

FOUNDATIONS:

1. FOUNDATION DESIGN IS BASED ON A SUBSURFACE EXPLORATION REPORT BY GTA, INC. DATED JUNE 17, 2022 (GTA PROJECT NUMBER 31201536).

2. THE STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR SUBSURFACE CONDITIONS ENCOUNTERED IN THE FIELD CONTRARY TO THOSE ASSUMED FOR DESIGN.

3. FOUNDATION BEARING PRESSURE USED IN DESIGN (POUNDS PER SQUARE FOOT):

MAT FOUNDATIONS ON SOIL	2,000 PSF
MAT FOUNDATIONS ON UNWEATHERED BEDROCK (PRECAST VAULT)	10,000 PSF

4. ALL COMPACTED FILL, EXCAVATIONS, AND SUBGRADES SHALL BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF MARYLAND (OR A QUALIFIED GEOTECHNICAL TECHNICIAN WORKING UNDER THE DIRECT SUPERVISION OF A REGISTERED ENGINEER) TO VERIFY SPECIFIED GEOTECHNICAL CONFORMANCE REQUIREMENTS. CONTRACTOR SHALL COORDINATE TESTING WITH OWNER AS DECLARED IN THE CONTRACT DOCUMENTS.

5. COMPACTED STRUCTURAL FILL SHALL BE AS FOLLOWS:

A. INSPECTED AND APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER.
B. DIRTY CRUSHER RUN (CR-D) APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER SHALL BE USED AS BACKFILL. CR-D SHALL BE COMPRISED OF CRUSHER RUN (CR-6) AND MINIMUM OF 30 PERCENT (BY VOLUME) OF ON-SITE CLAYEY (CL, CH, ML, AND MH). IF THE CR-D BACKFILL MATERIAL IS IMPORTED FROM OFFSITE SOURCES, THE MIX SHALL INCLUDE A MINIMUM OF 15 PERCENT FINES (SOILS PASSING THE #200 SIEVE).
C. SUITABLE, NON-ORGANIC ON-SITE SOILS APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER.
D. FREE OF ORGANIC MATTER, DEBRIS, AND SHOULD CONTAIN NO PARTICLE SIZES GREATER THAN 4 INCHES IN DIAMETER.
E. OPEN GRADED MATERIALS, SUCH AS GRAVELS (GW AND GP), WHICH CONTAIN VOID SPACE IN THEIR MASS SHOULD NOT BE USED IN STRUCTURAL FILLS UNLESS PROPERLY ENCAPSULATED WITH FILTER FABRIC.
F. PLACED IN LOOSE LIFTS NOT EXCEEDING 8 INCHES IN THICKNESS.
G. WALL BACKFILL SHALL BE COMPACTED TO MINIMUM 90 PERCENT OF THE MAXIMUM DRY DENSITY PER ASTM D-1578.
H. MOISTURE CONTENT AND PLASTICITY INDEX AS RECOMMENDED BY GEOTECHNICAL ENGINEER.

6. THE GEOTECHNICAL ENGINEER OF RECORD SHALL DOCUMENT THAT PROPER FILL COMPACTION HAS BEEN ACHIEVED.

7. FILL MATERIALS SHALL NOT BE PLACED ON FROZEN SOILS, ON FROST-HEAVED SOILS, AND/OR ON EXCESSIVELY WET SOILS. BORROW FILL MATERIALS SHOULD NOT CONTAIN FROZEN MATERIALS AT THE TIME OF PLACEMENT, AND ALL FROZEN OR FROST-HEAVED SOILS SHALL BE REMOVED PRIOR TO PLACEMENT OF STRUCTURAL FILL OR OTHER FILL SOILS AND AGGREGATES. EXCESSIVELY WET SOILS OR AGGREGATES SHOULD BE SCARIFIED, AERATED, AND MOISTURE CONDITIONED.

8. AT THE END OF EACH WORK DAY, ALL FILL AREAS SHOULD BE GRADED TO FACILITATE DRAINAGE OF ANY PRECIPITATION AND THE SURFACE SHOULD BE SEALED BY USE OF A SMOOTH-DRUM ROLLER TO LIMIT INFILTRATION OF SURFACE WATER. DURING PLACEMENT AND COMPACTION OF NEW FILL AT THE BEGINNING OF EACH WORKDAY, THE CONTRACTOR MAY NEED TO SCARIFY EXISTING SUBGRADES TO A DEPTH ON THE ORDER OF FOUR INCHES SO THAT A WEAK PLANE WILL NOT BE FORMED BETWEEN THE NEW FILL AND EXISTING SUBGRADE SOILS.

9. DRYING AND COMPACTION OF WET SOILS IS TYPICALLY DIFFICULT DURING THE COLD, WINTER MONTHS. ACCORDINGLY, EARTHWORK SHOULD BE PERFORMED DURING THE WARMER, DRIER TIMES OF THE YEAR, IF PRACTICAL. PROPER DRAINAGE SHOULD BE MAINTAINED DURING THE EARTHWORK PHASES OF CONSTRUCTION TO PREVENT PONDING OF WATER WHICH HAS A TENDENCY TO DEGRADE SUBGRADE SOILS. ALTERNATIVELY, IF THESE SOILS CANNOT BE STABILIZED BY CONVENTIONAL METHODS AS PREVIOUSLY DISCUSSED, ADDITIONAL MODIFICATIONS TO THE SUBGRADE SOILS SUCH AS LIME OR CEMENT STABILIZATION MAY BE UTILIZED TO ADJUST THE MOISTURE CONTENT. IF LIME OR CEMENT ARE UTILIZED TO CONTROL MOISTURE CONTENTS AND/OR FOR STABILIZATION, QUICK LIME, CALCIMENT, OR REGULAR TYPE 1 CEMENT CAN BE USED. THE CONSTRUCTION TESTING LABORATORY SHOULD EVALUATE PROPOSED LIME OR CEMENT SOIL MODIFICATION PROCEDURES, SUCH AS QUANTITY OF ADDITIVE AND MIXING AND CURING PROCEDURES, BEFORE IMPLEMENTATION. THE CONTRACTOR SHOULD BE REQUIRED TO MINIMIZE DUSTING OR IMPLEMENT DUST CONTROL MEASURES, AS REQUIRED.

10. DURING FILLING AND BACKFILLING, DENSITY TESTING SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 (OR EQUIVALENT) TO MONITOR COMPACTION LEVELS AND MOISTURE CONTENTS. FREQUENCY OF DENSITY TESTING SHALL BE AS DIRECTED BY GEOTECHNICAL ENGINEER TO VERIFY SPECIFIED COMPACTION AND MOISTURE CONTENT REQUIREMENTS WITH A MINIMUM OF ONE TEST PER 2,500 SQUARE FEET.

11. CARE SHALL BE EXERCISED DURING EXCAVATION FOR FOUNDATIONS SO THAT AS LITTLE DISTURBANCE AS POSSIBLE OCCURS AT THE FOUNDATION LEVEL. LOOSE OR SOFT SOILS SHALL BE CAREFULLY CLEANED FROM THE BOTTOM OF THE EXCAVATIONS BEFORE PLACING CONCRETE. AFTER REMOVING ALL UNSUITABLE SURFACE MATERIALS, CUTTING TO THE PROPOSED GRADE, AND PRIOR TO THE PLACEMENT OF ANY STRUCTURAL FILL OR OTHER CONSTRUCTION MATERIALS, THE EXPOSED SUBGRADE SHALL BE OBSERVED BY THE PROJECT GEOTECHNICAL ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE. THE EXPOSED SUBGRADE SHALL BE THOROUGHLY PROOFROLLED WITH PREVIOUSLY APPROVED CONSTRUCTION EQUIPMENT HAVING A MINIMUM AXLE LOAD OF TEN TONS (E.G. A FULLY LOADED TANDEM-AXLE DUMP TRUCK).

12. PRIOR TO THE PLACEMENT OF STRUCTURAL FILL, SUBGRADES BELOW PROPOSED FOUNDATIONS, SLABS, AND PAVEMENTS SHALL BE PROOF-ROLLED WITH A LOADED, TANDEM-AXLE DUMP TRUCK OR MINIMUM 10-TON SMOOTH DRUM ROLLER. THE PROOF ROLLING SHALL BE PERFORMED IN THE PRESENCE OF A GEOTECHNICAL ENGINEER. ANY UNSUITABLE MATERIALS ENCOUNTERED SHALL BE OVER-EXCAVATED TO A COMPETENT BEARING STARTUM PRIOR TO THE PLACEMENT OF STRUCTURAL FILL.

13. EXPOSURE TO THE ENVIRONMENT MAY WEAKEN THE SOILS AT THE FOOTING BEARING LEVEL IF THE FOUNDATION EXCAVATIONS REMAIN OPEN FOR TOO LONG A TIME. THEREFORE, FOUNDATION CONCRETE SHOULD BE PLACED THE SAME DAY THAT EXCAVATIONS ARE MADE. IF THE BEARING SOILS ARE SOFTENED BY SURFACE WATER INTRUSION OR EXPOSURE, THE SOFTENED SOILS MUST BE REMOVED FROM THE FOUNDATION EXCAVATION BOTTOM IMMEDIATELY PRIOR TO PLACEMENT OF CONCRETE. IF THE EXCAVATION MUST REMAIN OPEN OVERNIGHT, OR IF RAINFALL BECOMES IMMINENT WHILE THE BEARING SOILS ARE EXPOSED, A ONE TO THREE INCH THICK "MUD MAT" OF LEAN CONCRETE SHOULD BE PLACED ON THE BEARING SOILS BEFORE THE PLACEMENT OF REINFORCING STEEL.

14. MOST OF THE SOILS AT THE FOUNDATION BEARING ELEVATION ARE ANTICIPATED TO BE SUITABLE FOR SUPPORT OF THE PROPOSED STRUCTURE. IT WILL BE IMPORTANT TO HAVE THE GEOTECHNICAL ENGINEER OF RECORD OBSERVE THE FOUNDATION SUBGRADE PRIOR TO PLACING FOUNDATION CONCRETE, TO CONFIRM THE BEARING SOILS ARE WHAT WAS ANTICIPATED. IF SOFT OR UNSUITABLE SOILS ARE OBSERVED AT THE FOOTING BEARING ELEVATIONS, THE UNSUITABLE SOILS SHOULD BE UNDERCUT AND REMOVED. ANY UNDERCUT SHOULD BE BACKFILLED WITH SUITABLE LIFTS OF COMPACTED STRUCTURAL FILL OR LEAN CONCRETE (F'C > 1,000 PSI AT 28 DAYS) UP TO THE ORIGINAL DESIGN BOTTOM OF FOOTING ELEVATION; THE ORIGINAL FOOTING SHALL BE CONSTRUCTED ON TOP OF THE HARDENED LEAN CONCRETE.

15. CONTRACTOR SHALL CONTROL SITE GROUNDWATER AND/OR SURFACE WATER BY ALL MEANS NECESSARY TO MAINTAIN A WATER LEVEL ONE FOOT BELOW SLAB SUBGRADE SO AS TO NOT DAMAGE FOUNDATION EXCAVATIONS.

16. ANY SUBGRADE SOILS WHICH HAVE BEEN WEAKENED DUE TO SATURATION OR DISTURBANCE SHALL BE RECOMPACTED OR REMOVED AND REPLACED WITH STRUCTURAL FILL AS DIRECTED BY THE GEOTECHNICAL ENGINEER. CONCRETE STRUCTURES SHALL BE CONSTRUCTED IN AN EXPEDIENT MANNER ONCE EXCAVATIONS ARE MADE TO AVOID WEATHER DAMAGE.

17. ALL EXCAVATIONS SHALL CONFORM TO APPLICABLE OSHA REGULATIONS.

REINFORCED CONCRETE:

1. UNLESS NOTED OTHERWISE, ALL CONCRETE WORK, DETAILING, FABRICATION, AND PLACING OF REINFORCING AND CONCRETE SHALL BE GOVERNED BY THE LATEST REVISIONS OF:

A. ACI 301, ACI 315, AND ACI 318.
B. CRSI RECOMMENDED PRACTICE OF PLACING REINFORCING BARS.
C. ACI 306 AND ACI 305 FOR COLD AND HOT WEATHER CONCRETING, RESPECTIVELY.

2. ALL CONCRETE SHALL BE NORMAL WEIGHT WITH A MAXIMUM UNIT WEIGHT OF 150 POUNDS PER CUBIC FOOT AND SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,500 PSI

3. PROVIDE A 3/4" CHAMFER AT ALL EXPOSED CONCRETE CORNERS.

4. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, AND SHALL BE GRADE 60 U.N.O.

5. REINFORCING BAR LAP SPLICES AND HOOK DIMENSIONS SHALL BE AS REQUIRED PER THE SCHEDULE ON SHEET S-1 UNLESS NOTED OTHERWISE.

6. WHERE SLEEVES ARE SHOWN, CONTRACTOR SHALL SLIGHTLY ADJUST STEEL LOCATION AROUND SLEEVE AS MUCH AS PRACTICABLE. STEEL SHALL NOT BE CUT UNLESS SHOWN OTHERWISE ON THE DRAWINGS, OR UNLESS AGREED TO BY THE OWNER'S REPRESENTATIVE ON A CASE BY CASE BASIS.

COORDINATION:

1. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH, AND COORDINATED WITH CIVIL, MECHANICAL, ELECTRICAL, ARCHITECTURAL, AND OTHER CONTRACT DOCUMENTS.

2. COORDINATE THE EXACT SIZE AND LOCATION OF ALL SLEEVED OPENINGS THROUGH CONCRETE SLABS AND CONCRETE WALLS WITH CIVIL, MECHANICAL, AND ELECTRICAL DRAWINGS. SLEEVES SHALL BE ASTM A 53 SCHEDULE 40 STEEL WITH A DIAMETER NOT GREATER THAN 12 INCHES AND SHALL BE GALVANIZED AFTER CUTTING. SEE DETAIL 5/S-003 FOR REINFORCING REQUIREMENTS FOR OPENINGS LARGER THAN 12 INCHES IN DIAMETER.

3. THE DRAWINGS HAVE BEEN PREPARED USING SOME DIMENSIONS AND ELEMENTS FROM A PARTICULAR EQUIPMENT MANUFACTURER. AS ALLOWED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR MAY IN FACT PROVIDE A DIFFERENT PIECE OF EQUIPMENT WHICH HAS DIFFERENT DIMENSIONS AND ELEMENTS. THE CONTRACTOR SHALL VERIFY ALL HOIST BEAM DIMENSIONS WITH HOIST MANUFACTURER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GAINING APPROVAL OF THE DIFFERENT DIMENSIONS AND ELEMENTS PRIOR TO ANY CONSTRUCTION AND ALL CHANGES SHALL BE MADE AT THE CONTRACTOR'S EXPENSE. THE SALIENT FEATURES SHALL NOT BE COMPROMISED. THE HYDRAULIC PERFORMANCE OF THE PLANT SHALL NOT BE CHANGED.

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE
1MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND
MANOR WOODS ROADS
DWSU #601-S
FREDERICK COUNTY, MARYLAND
ELECTION DISTRICT NO. 01

SEAL

3/3/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 56615,

Expiration Date: 10/27/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	ARP
DESIGNED BY	ADM
CHECKED BY	JAW
DATE	3/3/2023

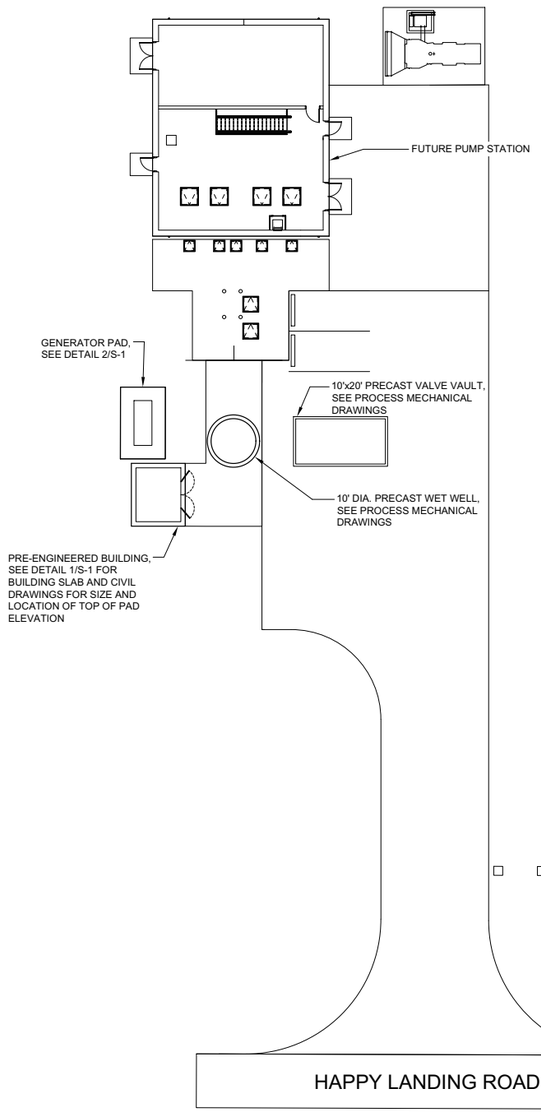
TITLE

STRUCTURAL GENERAL NOTES AND DETAILS

PROJECT NO. 50151771

S-1

SHEET NO. 16 OF 37



1 STRUCTURAL SITE PLAN
SCALE: 1/16" = 1'-0"

Dewberry

Dewberry Engineers, Inc
321 Ballenger Center Drive
Suite 103
Frederick, MD 21703

QUANTUM LOOPHOLE 1MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL

ANTHONY D. MILLER
STATE OF MARYLAND
PROFESSIONAL ENGINEER

3/3/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 56615,

Expiration Date: 10/27/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TX 78701

CONTACT: AD ROBISON
PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY ARP
DESIGNED BY ADM
CHECKED BY JAW
DATE 3/3/2023

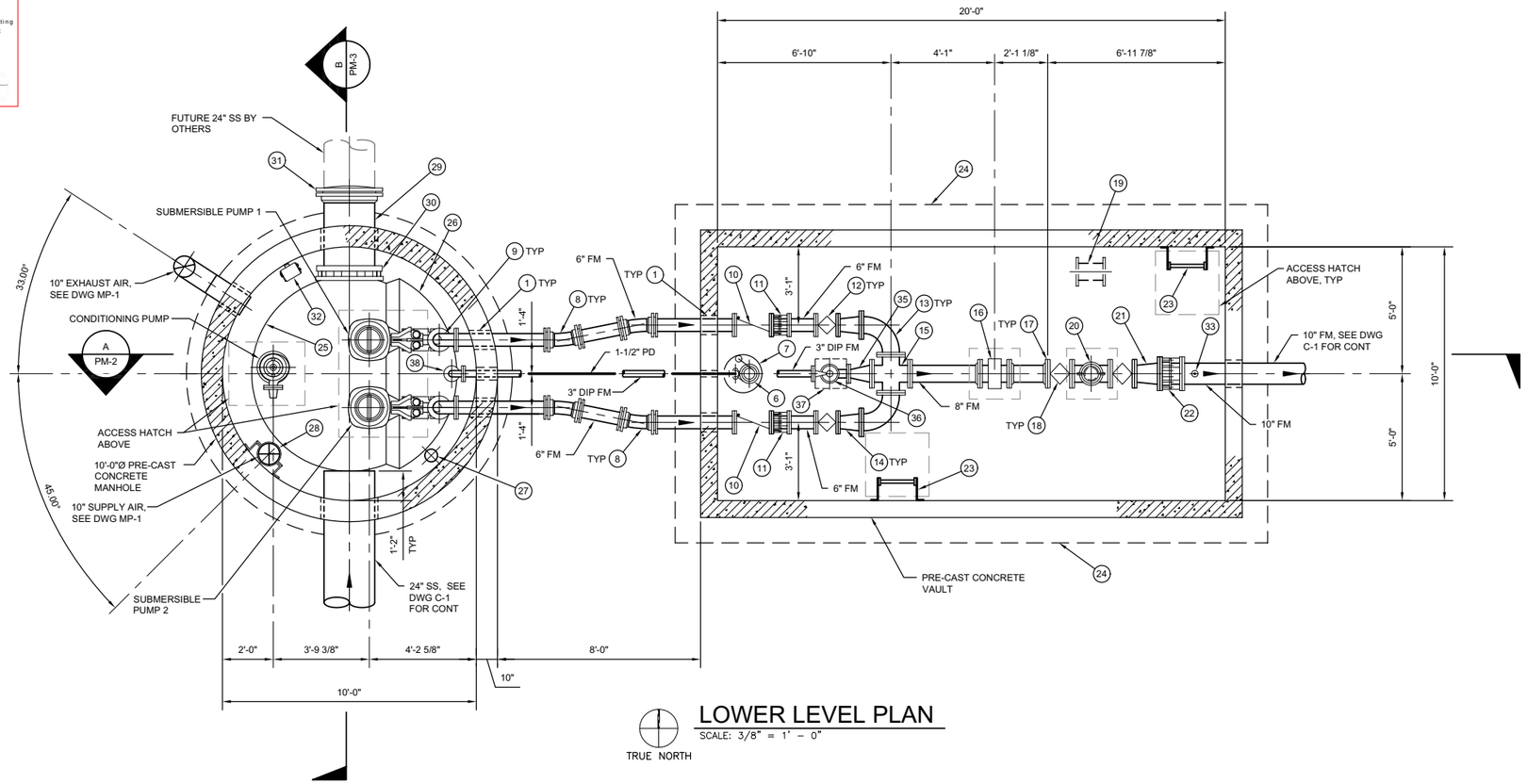
TITLE

STRUCTURAL SITE PLAN

PROJECT NO. 50151771

S-2

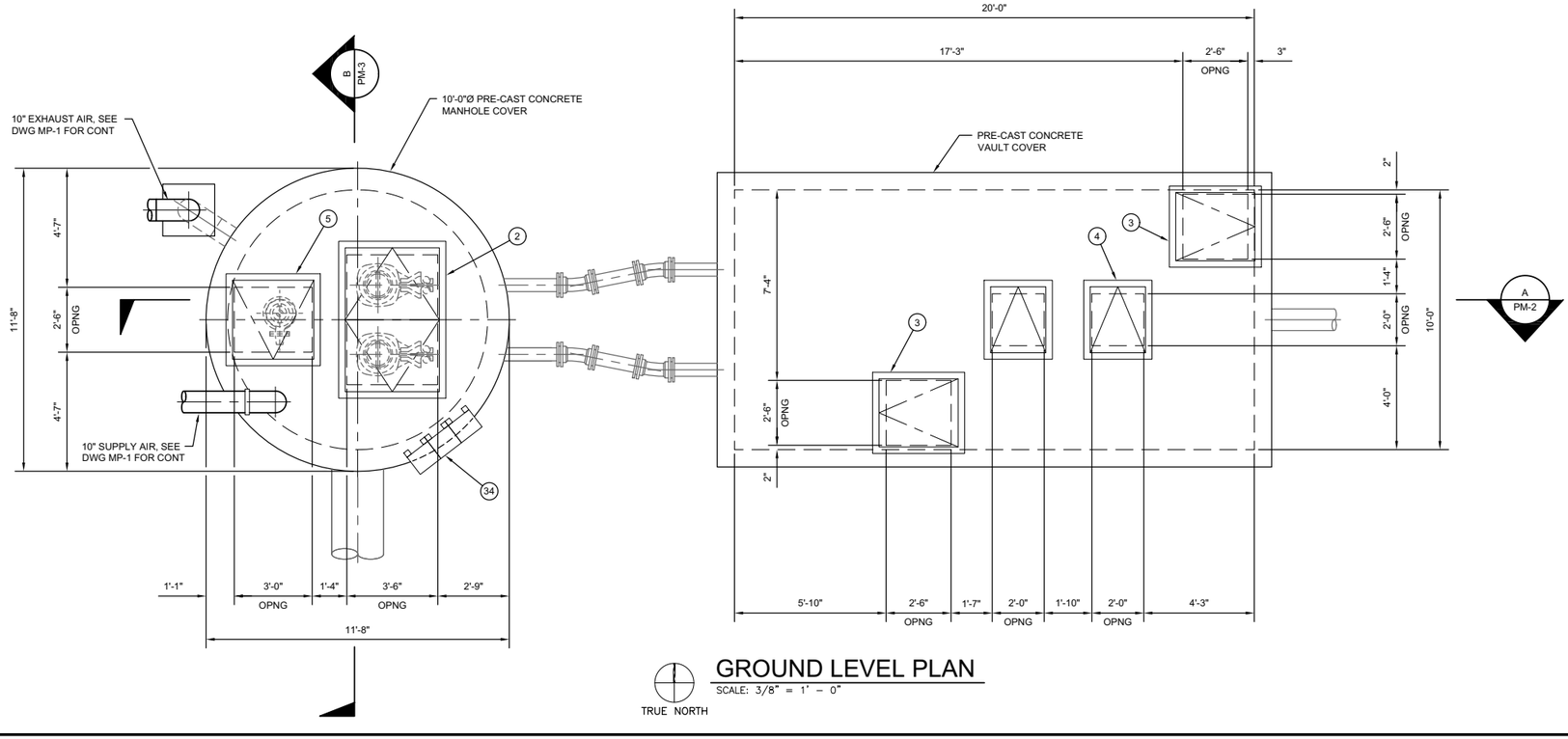
SHEET NO. 17 OF 37



LOWER LEVEL PLAN

SCALE: 3/8" = 1' – 0"

TRUE NORTH



GROUND LEVEL PLAN

SCALE: 3/8" = 1' – 0"

TRUE NORTH

GENERAL NOTES:

1. ALL BURIED PIPING SHALL HAVE RESTRAINED JOINTS.
2. MAGNETIC FLOW METERS SHALL BE INSTALLED WITH A STRAIGHT UNINTERUPTED PIPE RUN OF 5 PIPE DIAMETERS UPSTREAM AND 2 PIPE DIAMETERS DOWNSTREAM MINIMUM UNLESS NOTED OTHERWISE ON DRAWINGS.
3. ALL INTERIOR SURFACES OF WETWELL SHALL BE COATED WITH RAVEN 405 EPOXY COATING SYSTEM AS MANUFACTURED BY RAVEN LINING SYSTEMS. INTERIOR COATING SYSTEM FOR WETWELL SHALL BE APPLIED IN ACCORDANCE WITH THE COATING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS. FOR SURFACE PREPARATION AND COATING THICKNESS SEE SPECIFICATIONS.
4. ALL JOINTS IN PRECAST CONCRETE STRUCTURES SHALL BE SEALED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE PRECAST STRUCTURE VENDORS WRITTEN RECOMMENDATIONS.
5. 3" CAST IRON SOIL PIPE (CISP) DRAIN PIPING AND FITTINGS SHALL BE NO-HUB WITH STANDARD NO-HUB COUPLINGS. COUPLINGS SHALL BE PROVIDED WITH STAINLESS STEEL SHIELDS AND HARDWARE.
6. ALL EQUIPMENT, FITTINGS, FABRICATIONS, HOUSINGS IDENTIFIED AS STAINLESS STEEL AND ALL FASTENERS INCLUDING ANCHOR BOLTS AND ADHESIVE SET ANCHORS INSTALLED INTERNAL TO THE VALVE/METER VAULT AND WETWELL SHALL BE TYPE 316 STAINLESS STEEL.

KEY NOTES:

1. PIPE PENETRATION THROUGH WALL, SEE DETAIL 1/PM-4.
2. 42"x60" DOUBLE LEAF ACCESS HATCH, H20 LOAD RATED WITH LOCKING MECHANISM. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS MODEL NUMBER H2W4260 OR ENGINEER APPROVED EQUAL. PROVIDE AND INSTALL FALL PROTECTION SYSTEM, HALLIDAY RETRO-GRATE PROTECTIVE GRATING SYSTEM OR ENGINEER APPROVED EQUAL.
3. 30"x30" SINGLE LEAF ACCESS HATCH, H20 LOAD RATED WITH LOCKING MECHANISM. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS MODEL NUMBER H1W3030 OR ENGINEER APPROVED EQUAL.
4. 24"x24" SINGLE LEAF ACCESS HATCH, H20 LOAD RATED WITH LOCKING MECHANISM. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS MODEL NUMBER H1W2424 OR ENGINEER APPROVED EQUAL.
5. 30"x36" SINGLE LEAF ACCESS HATCH, H20 LOAD RATED WITH LOCKING MECHANISM. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS MODEL NUMBER H1W3036 OR ENGINEER APPROVED EQUAL. PROVIDE AND INSTALL FALL PROTECTION SYSTEM, HALLIDAY RETRO-GRATE PROTECTIVE GRATING SYSTEM OR ENGINEER APPROVED EQUAL.
6. SUMP PUMP, 1/2"HP, EXPLOSION PROOF WITH 1-1/2" FNPT VERTICAL DISCHARGE CONNECTION. SUMP PUMP SHALL BE ZOELLER X163 SERIES EFFLUENT PUMP OR ENGINEER APPROVED EQUAL.
7. 18"Ø x 2" DEEP SUMP CAST INTO VAULT BASE BY PRECAST CONCRETE VAULT SUPPLIER.
8. 6" DUCTILE IRON MECHANICAL JOINT 11.25° BEND.
9. 6" DUCTILE IRON FLANGED 90° BEND, SEE SPECIFICATIONS.
10. 6" FLANGED SWING CHECK VALVE, SEE SPECIFICATIONS.
11. 6" DISMANTLING JOINT, SEE SPECIFICATIONS.
12. 6" FLANGED PLUG VALVE, SEE SPECIFICATIONS.
13. 8" DUCTILE IRON FLANGED LONG RADIUS 90° BEND, SEE SPECIFICATIONS.
14. 6"x8" DUCTILE IRON FLANGED INCREASER, SEE SPECIFICATIONS.
15. 8" DUCTILE IRON FLANGED CROSS, SEE SPECIFICATIONS
16. 8" FLANGED MAGNETIC FLOW METER, ENDRESS+HAUSER PROMAG W 400 OR ENGINEER APPROVED EQUAL.
17. 8" GROOVED END FLANGE ADAPTER, SEE SPECIFICATIONS.
18. 8" FLANGED PLUG VALVE, SEE SPECIFICATIONS.
19. CONTRACTOR SHALL PROVIDE TO OWNER AN 8" DUCTILE IRON FLANGE x FLANGE SPOOL, LENGTH SPOOL TO MATCH LENGTH OF MAGNETIC FLOW METER.
20. 6" FEMALE BAUER TYPE B QUICK CONNECT, SEE SPECIFICATIONS.
21. 8"x10" DUCTILE IRON FLANGED INCREASER, SEE SPECIFICATIONS.
22. 10" DISMANTLING JOINT, SEE SPECIFICATIONS.
23. FRP ACCESS LADDER WITH TELESCOPING LADDER SAFETY POST, SEE DETAIL 6/PM-4.
24. CONCRETE SLAB EXTENSION BY PRECAST CONCRETE VAULT VENDOR. THE SLAB EXTENSION SHALL BE DESIGNED BY THE PRECAST CONCRETE VAULT VENDOR IN ACCORDANCE WITH THE SITE SOILS REPORT TO RESIST BUOYANCY. ADDITIONAL DESIGN CRITERIA SHALL BE A SAFETY FACTOR 1.5 FOR BOUYANCY AND THE GROUND WATER LINE SHALL BE CONSIDERED TO BE THE FINISHED GRADE ELEVATION. THE SLAB EXTENSION IS SHOWN FOR BIDDING PURPOSES ONLY, COORDINATE FINAL CONFIGURATION WITH PRECAST CONCRETE VAULT VENDOR DURING THE SUBMITTAL PHASE OF THE PROJECT.
25. FORMED CONCRETE GROUT FILLET.
26. FORMED CONCRETE GROUT PUMP SUPPORT SHELF.
27. PRESSURE TRANSDUCER WITH WEIGHT, SEE ELECTRICAL DRAWINGS.
28. PIPE SUPPORT AT 5'-0" ON CENTER, SEE DETAIL 1/PM-3.
29. 24" PLAIN END x MECHANICAL JOINT SPOOL THROUGH WALL FOR FUTURE 24" SS CONNECTION.
30. 24" RESTRAINED FLANGE ADAPTER, EBAA IRON INC SERIES 2100 OR ENGINEER APPROVED EQUAL.
31. 24" MECHANICAL JOINT PLUG, SEE SPECIFICATIONS.
32. FLOAT LEVEL ELEMENT CABLE BOX, SEE ELECTRICAL DRAWINGS.
33. PROVIDE THREADED TAP PIPE FOR PRESSURE GAUGE ASSEMBLY, SEE DETAIL 2/PM-3.
34. JUNCTION BOXES AND PULL BOX, SEE ELECTRICAL DRAWINGS.
35. 8"x4" DUCTILE IRON FLANGED ECCENTRIC REDUCER, FLAT ON TOP, SEE SPECIFICATIONS.
36. 3" ELBOW SEWAGE RELIEF VALVE, GA INDUSTRIES, LLC FIGURE NUMBER 625-D OR ENGINEER APPROVED EQUAL.
37. EXTENTS OF VALVE ACTUATOR SYSTEM.
38. 3" DUCTILE IRON FLANGED 90° BEND, SEE SPECIFICATIONS.

Dewberry®

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND · CARMEN BESHE · REGISTERED · PROFESSIONAL ENGINEER

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 55320,

Expiration Date: 12/12/2023.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE

AS NOTED

No.	DATE	BY	Description

REVISIONS

DRAWN BY	JRA
DESIGNED BY	CB
CHECKED BY	MAK
DATE	MARCH 2023

TITLE

PROCESS MECHANICAL

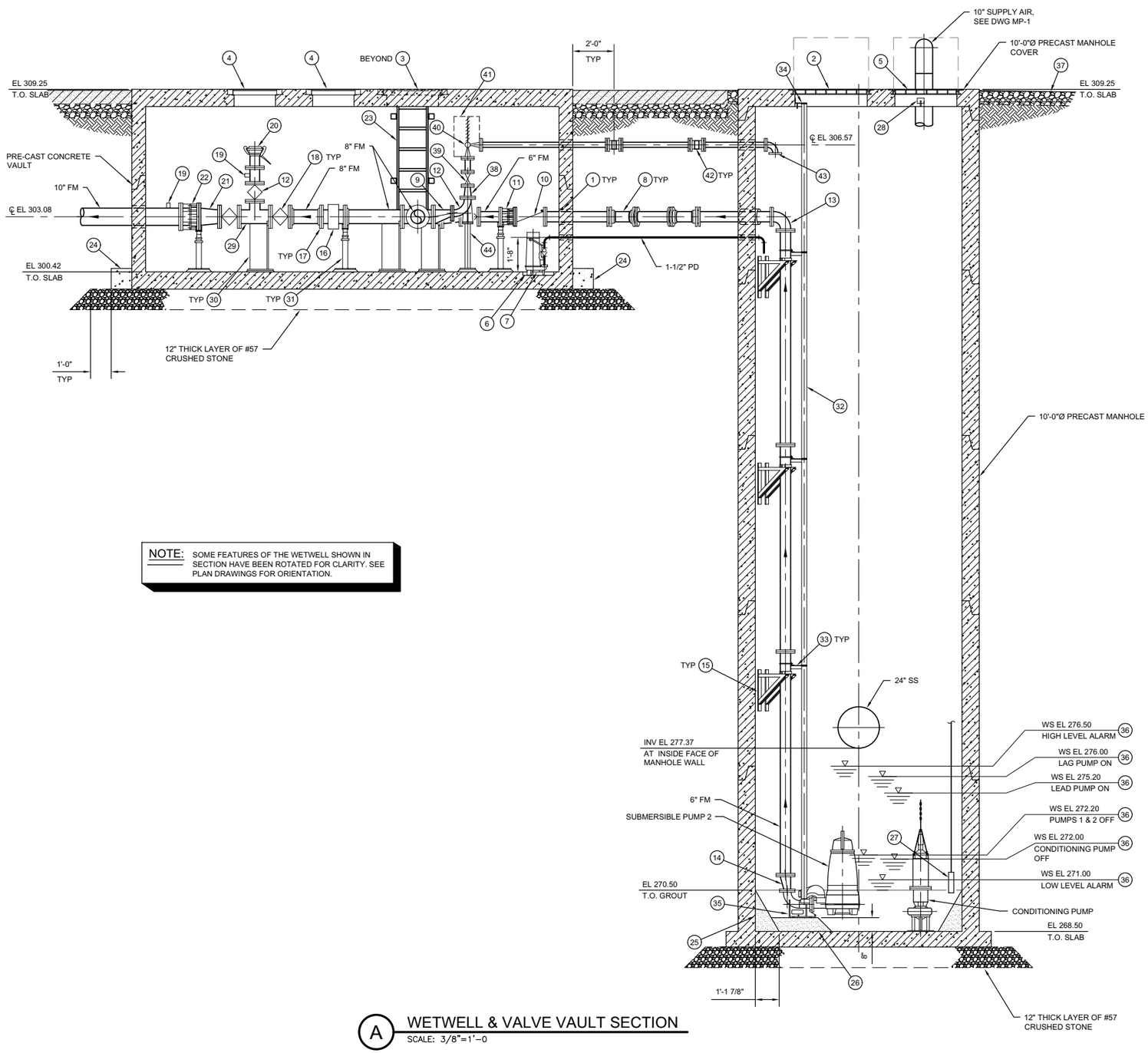
LOWER & GROUND LEVEL PLANS

PROJECT NO. 50151771

PM-1

SHEET NO. 18 OF 37

Mar 24, 2023 - 12:33pm
Drawing name: \\bighorn\res\MEED\MEED\50151771 Quantum Loophole Frederick\1 MGD SPS\CAD\Mech\PM-1 LOWER & GROUND LEVEL PLANS.dwg



NOTE: SOME FEATURES OF THE WETWELL SHOWN IN SECTION HAVE BEEN ROTATED FOR CLARITY. SEE PLAN DRAWINGS FOR ORIENTATION.

A WETWELL & VALVE VAULT SECTION
SCALE: 3/8"=1'-0

KEY NOTES:

1. PIPE PENETRATION THROUGH WALL, SEE DETAIL 1/PM-4.
2. 42"x60" DOUBLE LEAF ACCESS HATCH, H20 LOAD RATED WITH LOCKING MECHANISM. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS MODEL NUMBER H2W4260 OR ENGINEER APPROVED EQUAL. PROVIDE AND INSTALL FALL PROTECTION SYSTEM, HALLIDAY RETRO-GRATE PROTECTIVE GRATING SYSTEM OR ENGINEER APPROVED EQUAL.
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5. 30"x36" SINGLE LEAF ACCESS HATCH, H20 LOAD RATED WITH LOCKING MECHANISM. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS MODEL NUMBER H1W3036 OR ENGINEER APPROVED EQUAL. PROVIDE AND INSTALL FALL PROTECTION SYSTEM, HALLIDAY RETRO-GRATE PROTECTIVE GRATING SYSTEM OR ENGINEER APPROVED EQUAL.
6. 18"Ø x 2" DEEP SUMP CAST INTO VAULT BASE BY PRECAST CONCRETE VAULT SUPPLIER.
7. SUMP PUMP, 1/2"HP, EXPLOSION PROOF WITH 1-1/2" FNPT VERTICAL DISCHARGE CONNECTION. SUMP PUMP SHALL BE ZOELLER X163 SERIES EFFLUENT PUMP OR ENGINEER APPROVED EQUAL.
8. 6" DUCTILE IRON MECHANICAL JOINT 11.25° BEND.
9. 8"x4" DUCTILE IRON FLANGED ECCENTRIC REDUCER, FLAT ON TOP, SEE SPECIFICATIONS.
10. 6" FLANGED SWING CHECK VALVE, SEE SPECIFICATIONS.
11. 6" DISMANTLING JOINT, SEE SPECIFICATIONS.
12. 4" FLANGED DUCTILE IRON LONG RADIUS 90° BASE BEND, SEE SPECIFICATIONS.
13. 6" DUCTILE IRON FLANGED 90° BEND, SEE SPECIFICATIONS.
14. 4"x6" DUCTILE IRON FLANGED ECCENTRIC INCREASER, SEE SPECIFICATIONS.
15. PIPE SUPPORTS AT 10'-0" ON CENTER, SEE DETAIL 3/PM-3.
16. 8" FLANGED MAGNETIC FLOW METER, ENDRESS+HAUSER PROMAG W 400 OR ENGINEER APPROVED EQUAL.
17. 8" GROOVED END FLANGE ADAPTER, SEE SPECIFICATIONS.
18. 8" FLANGED PLUG VALVE, SEE SPECIFICATIONS.
19. PROVIDE THREADED TAP PIPE FOR PRESSURE GAUGE ASSEMBLY, SEE DETAIL 2/PM-3.
20. 6" FEMALE BAUER TYPE B QUICK CONNECT, SEE SPECIFICATIONS.
21. 8"x10" DUCTILE IRON FLANGED CONCENTRIC INCREASER, SEE SPECIFICATIONS.
22. 10" DISMANTLING JOINT, SEE SPECIFICATIONS.
23. FRP ACCESS LADDER WITH TELESCOPING LADDER SAFETY POST, SEE DETAIL 6/PM-4.
24. CONCRETE SLAB EXTENSION BY PRECAST CONCRETE VAULT VENDOR. THE SLAB EXTENSION SHALL BE DESIGNED BY THE PRECAST CONCRETE VAULT VENDOR IN ACCORDANCE WITH THE SITE SOILS REPORT TO RESIST BUOYANCY. ADDITIONAL DESIGN CRITERIA SHALL BE A SAFETY FACTOR 1.5 FOR BOUYANCY AND THE GROUND WATER LINE SHALL BE CONSIDERED TO BE THE FINISHED GRADE ELEVATION. THE SLAB EXTENSION IS SHOWN FOR BIDDING PURPOSES ONLY, COORDINATE FINAL CONFIGURATION WITH PRECAST CONCRETE VAULT VENDOR DURING THE SUBMITTAL PHASE OF THE PROJECT.
25. FORMED CONCRETE GROUT FILLET.
26. FORMED CONCRETE GROUT PUMP SUPPORT SHELF.
27. PRESSURE TRANSDUCER WITH WEIGHT, SEE ELECTRICAL DRAWINGS.
28. PUMP CABLE UPPER ATTACHMENT AND RACK, COORDINATE WITH SUBMERSIBLE PUMP VENDOR.
29. 8"X6" DUCTILE IRON FLANGED TEE, SEE SPECIFICATIONS.
30. RIGID PIPE FLANGE SUPPORT, SEE DETAIL 3/PM-4.
31. ADJUSTABLE FLANGE SUPPORT, SEE DETAIL 5/PM-4.
32. SUBMERSIBLE PUMP GUIDE RAILS SHALL BE INCLUDED BY SUPPLIER AS PART OF THE SUBMERSIBLE PUMP PACKAGE, INSTALL IN ACCORDANCE WITH PUMP MANUFACTURERS WRITTEN INSTRUCTIONS.
33. PUMP GUIDE RAIL INTERMEDIATE SUPPORT BRACKET, COORDINATE WITH SUBMERSIBLE PUMP VENDOR.
34. PUMP GUIDE RAIL UPPER SUPPORT BRACKET WITH CABLE RACK, COORDINATE WITH SUBMERSIBLE PUMP VENDOR.
35. SUBMERSIBLE PUMP DISCHARGE CONNECTION SHALL BE INCLUDED BY SUPPLIER AS PART OF THE SUBMERSIBLE PUMP PACKAGE.
36. WATER SURFACE ELEVATION SHOWN IS SET POINT FOR WETWELL PRESSURE TRANSDUCER ONLY, SEE DRAWING PM-3 FOR FLOAT SET POINTS.
37. SLOPE GRAVEL AWAY FROM TOP OF WETWELL AT 2% TO PROVIDE POSITIVE DRAINAGE AWAY FROM WETWELL.
38. 4"x3" FLANGED DUCTILE IRON CONCENTRIC REDUCER, SEE SPECIFICATIONS.
39. 3" FLANGED GATE VALVE, SEE SPECIFICATIONS.
40. 3" ELBOW SEWAGE RELIEF VALVE, GA INDUSTRIES, LLC FIGURE NUMBER 625-D OR ENGINEER APPROVED EQUAL.
41. EXTENTS OF VALVE ACTUATOR SYSTEM.
42. 3" RESTRAINED MECHANICAL JOINT SOLID SLEEVE, SEE SPECIFICATIONS.
43. 3" DUCTILE IRON FLANGED 90° BEND, SEE SPECIFICATIONS.
44. BASE BEND SUPPORT, SEE DETAIL 7/PM-4.

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND · CARMEN SERVE · NO. 55320 · REGISTERED · PROFESSIONAL ENGINEER

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 55320,

Expiration Date: 12/12/2023.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE

AS NOTED

No.	DATE	BY	Description

REVISIONS

DRAWN BY	JRA
DESIGNED BY	CB
CHECKED BY	MAK
DATE	MARCH 2023

TITLE

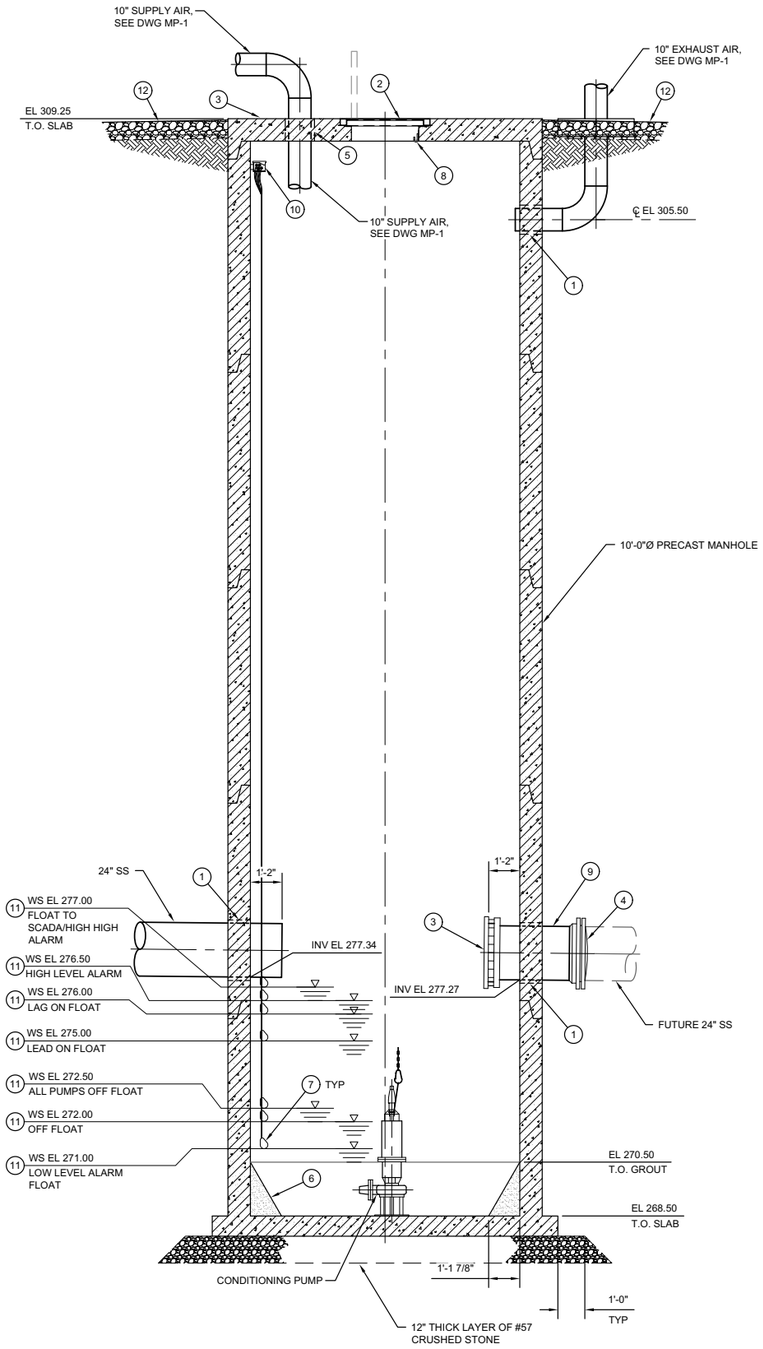
PROCESS MECHANICAL

SECTION

PROJECT NO. 50151771

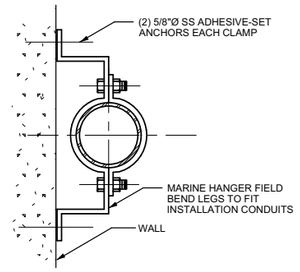
PM-2

SHEET NO. 19 OF 37

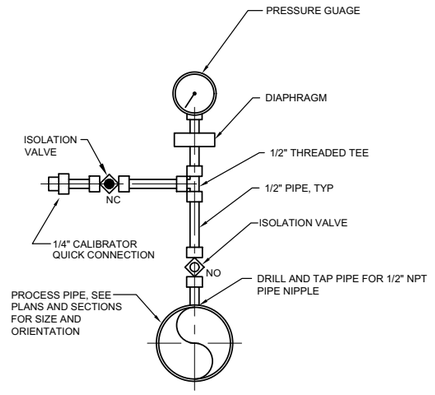


NOTE: SOME FEATURES OF THE WETWELL SHOWN IN SECTION HAVE BEEN ROTATED FOR CLARITY. SEE PLAN DRAWINGS FOR ORIENTATION.

B WETWELL SECTION
SCALE: 3/8"=1'-0

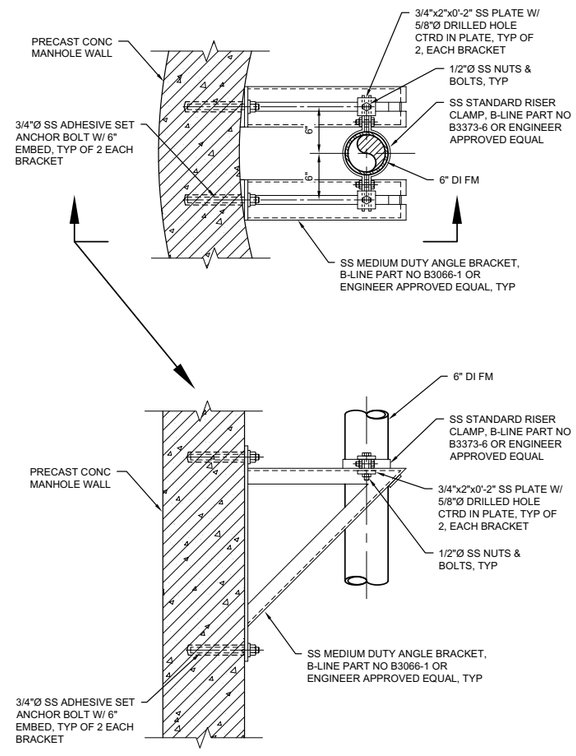


1 OFFSET PIPE CLAMP
SCALE: N.T.S.



NOTES:
1. ALL INSTRUMENT PIPE, FITTINGS AND VALVES ARE 1/2"Ø. INSTALL PIPING, VALVES, FITTINGS, AND PRESSURE GAUGE PER SPECIFICATION.
2. INSTALL PRESSURE INSTRUMENT PER SPECIFICATION.

2 PRESSURE GAUGE ASSEMBLY
SCALE: N.T.S.



3 PIPE SUPPORT DETAIL
SCALE: N.T.S.

KEY NOTES:

1. PIPE PENETRATION THROUGH WALL, SEE DETAIL 1/PM-4.
2. 30"x36" SINGLE LEAF ACCESS HATCH, H20 LOAD RATED WITH LOCKING MECHANISM. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS MODEL NUMBER H1W3036 OR ENGINEER APPROVED EQUAL. PROVIDE AND INSTALL FALL PROTECTION SYSTEM, HALLIDAY RETRO-GRATE PROTECTIVE GRATING SYSTEM OR ENGINEER APPROVED EQUAL.
3. 24" RESTRAINED FLANGE ADAPTER, EBAA IRON INC SERIES 2100 OR ENGINEER APPROVED EQUAL.
4. 24" MECHANICAL JOINT PLUG, SEE SPECIFICATIONS.
5. PIPE PENETRATION THROUGH SLAB, SEE DETAIL 7/PM-4.
6. FORMED CONCRETE GROUT FILLET.
7. FLOAT LEVEL ELEMENT, SEE ELECTRICAL DRAWINGS.
8. PUMP CABLE UPPER ATTACHMENT AND RACK, COORDINATE WITH SUBMERSIBLE PUMP VENDOR.
9. 24" PLAIN END x MECHANICAL JOINT SPOOL THROUGH WALL FOR FUTURE 24" SS CONNECTION, SEE SPECIFICATIONS.
10. FLOAT LEVEL ELEMENT CABLE BOX, SEE ELECTRICAL DRAWINGS.
11. WATER SURFACE ELEVATION SHOWN IS SET POINT FOR BACKUP FLOAT CONTROLS ONLY, SEE DRAWING PM-2 FOR PRESSURE TRANSDUCER SET POINTS.
12. SLOPE GRAVEL AWAY FROM TOP OF WETWELL AT 2% TO PROVIDE POSITIVE DRAINAGE AWAY FROM WETWELL.

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ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

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License No. 55320,

Expiration Date: 12/12/2023.

DEVELOPER / OWNER:

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500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE

AS NOTED

No.	DATE	BY	Description

REVISIONS

DRAWN BY	JRA
DESIGNED BY	CB
CHECKED BY	MAK
DATE	MARCH 2023

TITLE

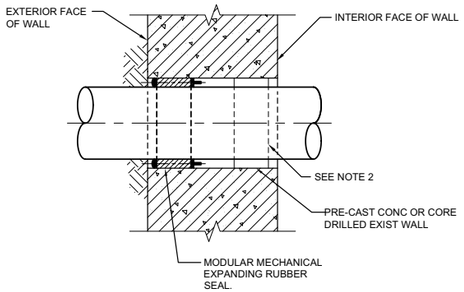
PROCESS MECHANICAL

SECTION & DETAILS

PROJECT NO. 50151771

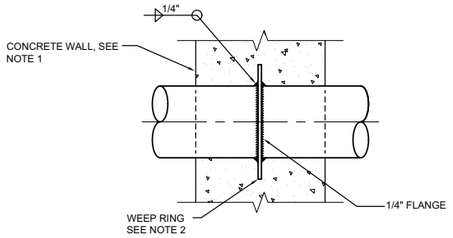
PM-3

SHEET NO. 20 OF 37



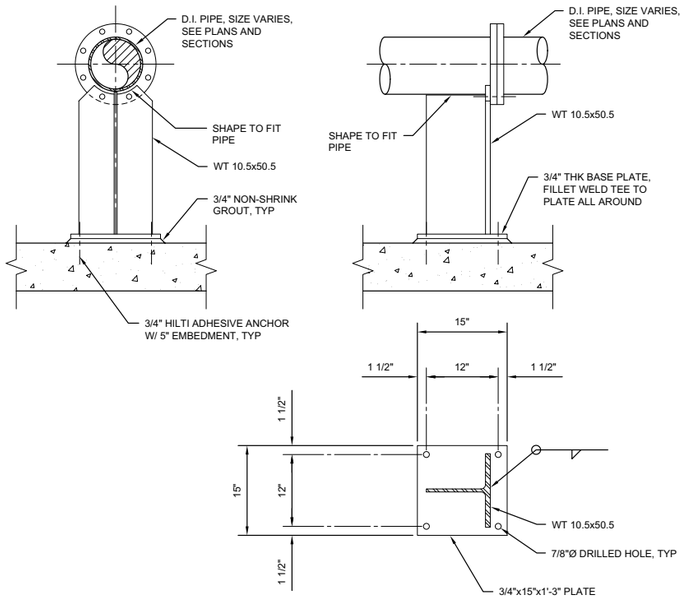
NOTES:
1. CORE DRILL DIAMETER SHALL BE AS RECOMMENDED BY THE MECHANICAL SEAL MANUFACTURER.
2. FOR WALLS THICKER THAN 12" DOUBLE MODULAR EXPANDING RUBBER SEALS SHALL BE INSTALLED.

1 PIPE PENETRATION - PRECAST CONCRETE WALLS
SCALE: N.T.S.

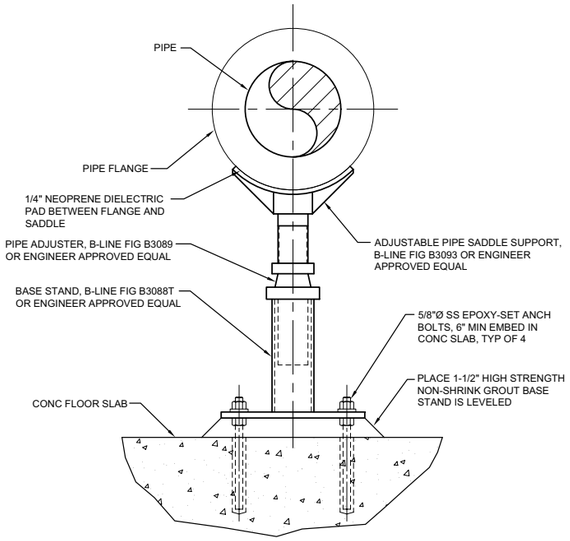


NOTES:
1. PROVIDE A MINIMUM OF 3" CLEARANCE BETWEEN REINFORCING STEEL AND FERROUS METAL PENETRATIONS.
2. WEEP RINGS SHALL HAVE MINIMUM DIAMETER EQUAL TO PIPE DIAMETER PLUS 3 INCHES.

2 PIPE PENETRATION - CAST IN PLACE CONCRETE WALLS
SCALE: N.T.S.

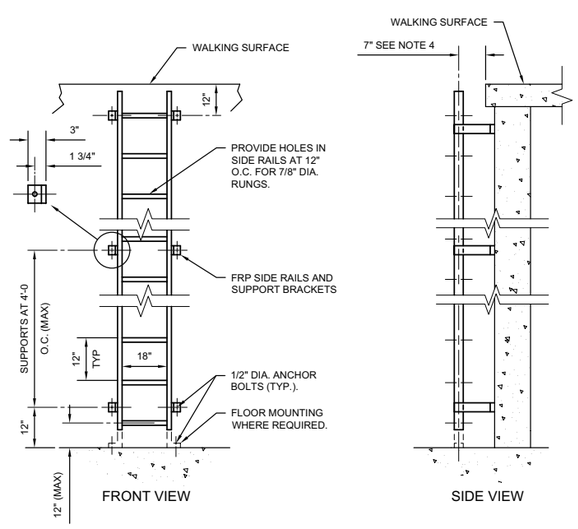


3 RIGID FLANGE SUPPORT
SCALE: N.T.S.



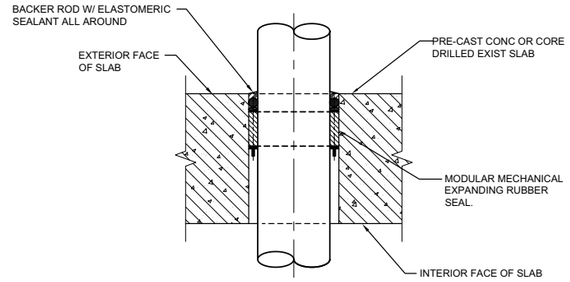
NOTES:
1. ALL COMPONENTS OF ADJUSTABLE PIPE SUPPORT SHALL BE SIZED FOR FLANGE OUTSIDE DIAMETER.

4 ADJUSTABLE FLANGE SUPPORT
SCALE: N.T.S.



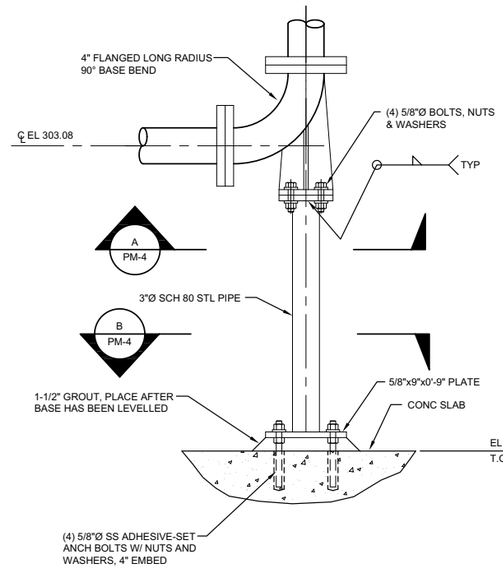
NOTES:
1. LADDER TO BE MANUFACTURED BY MTH INDUSTRIAL SOLUTIONS INC., OR ENGINEER APPROVED EQUAL.
2. EACH LADDER SHALL BE EQUIPPED WITH A MODEL 4 LADDER UP TELESCOPING SAFETY POST AS MANUFACTURED BY BILCO OR ENGINEER APPROVED EQUAL.
3. LADDER MOUNTING HARDWARE SHALL BE STAINLESS STEEL PER SPECIFICATIONS.
4. DIMENSION IS FROM FACE OF CONCRETE WALL OR EDGE OF ACCESS HATCH OPENING AS APPLICABLE, SEE PLANS AND SECTIONS FOR APPLICABLE CONDITION AT EACH LADDER.

5 FRP LADDER
SCALE: N.T.S.

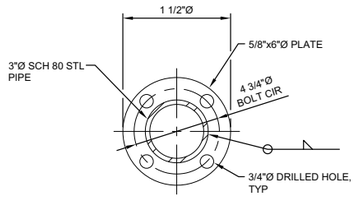


NOTES:
1. CORE DRILL DIAMETER SHALL BE AS RECOMMENDED BY THE MECHANICAL SEAL MANUFACTURER.

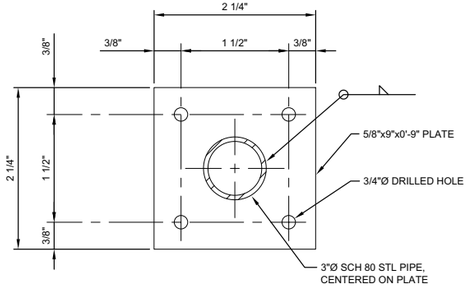
6 PIPE PENETRATION - PRECAST CONCRETE SLABS
SCALE: N.T.S.



7 BASE BEND SUPPORT
SCALE: 1-1/2"=1'-0



A TOP PLATE
SCALE: 3"=1'-0



A BASE PLATE
SCALE: 3"=1'-0

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S
ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 55320,

Expiration Date: 12/12/2023.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE
AS NOTED

No.	DATE	BY	Description

REVISIONS

DRAWN BY	JRA
DESIGNED BY	CB
CHECKED BY	MAK
DATE	MARCH 2023

TITLE

PROCESS MECHANICAL DETAILS

PROJECT NO. 50151771

PM-4

SHEET NO. 21 OF 37

PUMP STATION DESIGN CRITERIA

PUMP STATION DESIGN CALCULATIONS - DIP FORCE MAIN

PUMP STATION DISCHARGE PIPING MATERIAL	CLASS 52 DIP
PUMP STATION DISCHARGE PIPING SIZE	10"
PUMP STATION DISCHARGE PIPING INNER DIAMETER	10.28"
TOTAL LENGTH OF FORCEMAIN ("C" VALUE 100)	17,086 FT
ELEVATION OF FORCEMAIN AT TERMINAL MANHOLE	330.26 FT
PUMP "OFF" ELEVATION	272.00 FT
TOTAL STATIC HEAD	58.26 FT

WET WELL DESIGN CALCULATIONS

WET WELL DIAMETER	10 FT
TOP SLAB ELEVATION	309.25 FT
GRADE ELEVATION	309.17 FT
TOP ELEVATION - INSIDE	308.41 FT
SEWER INVERT IN	278.00 FT
HIGH WATER LEVEL	277.00 FT
LAG PUMP "ON"	276.00 FT
LEAD PUMP "ON"	275.20 FT
PUMP "OFF"	272.20 FT
MINIMUM WATER LEVEL	271.00 FT
BOTTOM ELEVATION	268.50 FT
REQUIRED VOLUME (BETWEEN ON AND OFF)	1735 GAL
AVAILABLE VOLUME (BETWEEN ON AND OFF)	1762 GAL
GALLON PER FOOT	587 GAL
PUMP RATE	694 GPM

HYDRAULICS CALCULATION SPREADSHEET

PUMP ID :	EXAMPLE SPS		**JOB NO :** 50151771
CONDITION :	LOW WATER LEVEL		**DONE BY:** CB
INLET EL. (ft) :	272	Pump OFF Elevation	**DATE :** 10/9/2022
OUTLET EL. (ft) :	330.26	Level at FM Disch.	**CHK. BY:** MAK
P REQMT (PSI) :	0	Zero for Gravity Disch.	**DATE :** 1/8/2023
TOTAL FLOW (gpm:	694		

PIPE FRICTION CALCULATIONS

SEGMENT	STATION LOSS (USE CAP. Y OR N)	Suct, Disch or Pump	Flow Split Factor for Parallel Pumping	PIPE TYPE	HAZ-WILL "C"	PIPE ID (in)	FLOW (gpm)	PIPE LNGH (ft)	HYD RAD (ft)	VEL. (fps)	SLOPE HGL (ft/ft)	PIPE FR. HL (ft)
SEGMENT 1	N	S	1		100	4.00	0	0	0.0833	0.00	0.0000	0.00
SEGMENT 2	N	S	1	Suction to Pump	100	4.00	694	1	0.0833	17.72	0.4418	0.44
SEGMENT 3	N	P	1	Pump Discharge	100	4.00	694	1	0.0833	17.72	0.4418	0.44
SEGMENT 4	N	D	1	Discharge Line	100	6.16	694	48	0.1283	7.47	0.0539	2.59
SEGMENT 5	N	D	1	Valve Vault	100	8.27	694	14	0.1723	4.15	0.0128	0.18
SEGMENT 6	N	D	1	VV to Edge of Site	100	10.28	694	159	0.2142	2.68	0.0045	0.71
SEGMENT 7	N	D	1	Proposed FM	100	10.28	694	6447	0.2142	2.68	0.0045	28.71
SEGMENT 8	N	D	1	Existing FM	100	10.28	694	10480	0.2142	2.68	0.0045	46.67

TDH FROM BELOW: 146.22 TOTAL PIPE FRICTION HL: 79.75

FITTING LOSS CALCULATIONS

FITTING TYPE	LOSS COEFF. "K" TYP	SEG 1	SEG 2	SEG 3	SEG 4	SEG 5	SEG 6	SEG 7	SEG 8
		QUANTITY OF FITTINGS PER SEGMENT							
ENTRANCE	0.50	1	1	0	0	0	0	0	0
OUTLET	1.00	0	0	0	0	0	0	0	1
90 DEG EL	0.30	1	0	1	0	1	0	1	0
45 DEG EL	0.20	0	0	0	0	0	2	7	2
"T" RUN	0.30	0	0	0	0	1	0	0	0
"T" BRCH	0.75	0	0	0	0	1	0	0	1
SW CHK	2.00	0	0	1	0	0	0	0	0
PLG VALVE	1.00	1	0	0	1	2	0	0	0
GLB VALVE	5.00	0	0	0	0	0	0	0	0
GAT VALVE	0.30	0	0	0	0	0	0	0	0
REDUCER (MUST LIST QUANTITY IN DOWNSTREAM SEGMENT)	0.03	0	0	0	0	0	0	0	0
MAGMETER	0.30	0	0	0	0	0	0	0	0
OTHER	0.00	0	0	0	0	0	0	0	0

INCREASERS (MUST LIST QUANTITY IN DOWNSTREAM SEGMENT; Formulae from PS Design, Table B-6)	Diam. Upstr.	Diam. Down.	Lay Length	Theta	K'=K(1-D1^2/D2^2)								
INCREASER	4	6	9	0.221	0.32	0	0	0	0	1	0	0	0
INCREASER	6	8	11	0.181	0.19	0	0	0	0	0	1	0	0
INCREASER	8	10	12	0.166	0.14	0	0	0	0	0	0	1	0
INCREASER	12	18	19	0.313	0.49	0	0	0	0	0	0	0	0
SUM "K"						1.80	0.5	0.3	3.32	3.54	0.54	1.7	2.15
V^2/2G						0.00	4.88	4.88	0.87	0.27	0.11	0.11	0.11
HL						0.00	2.44	1.46	2.88	0.95	0.06	0.19	0.24

TOTAL FITTING HL: 8.22

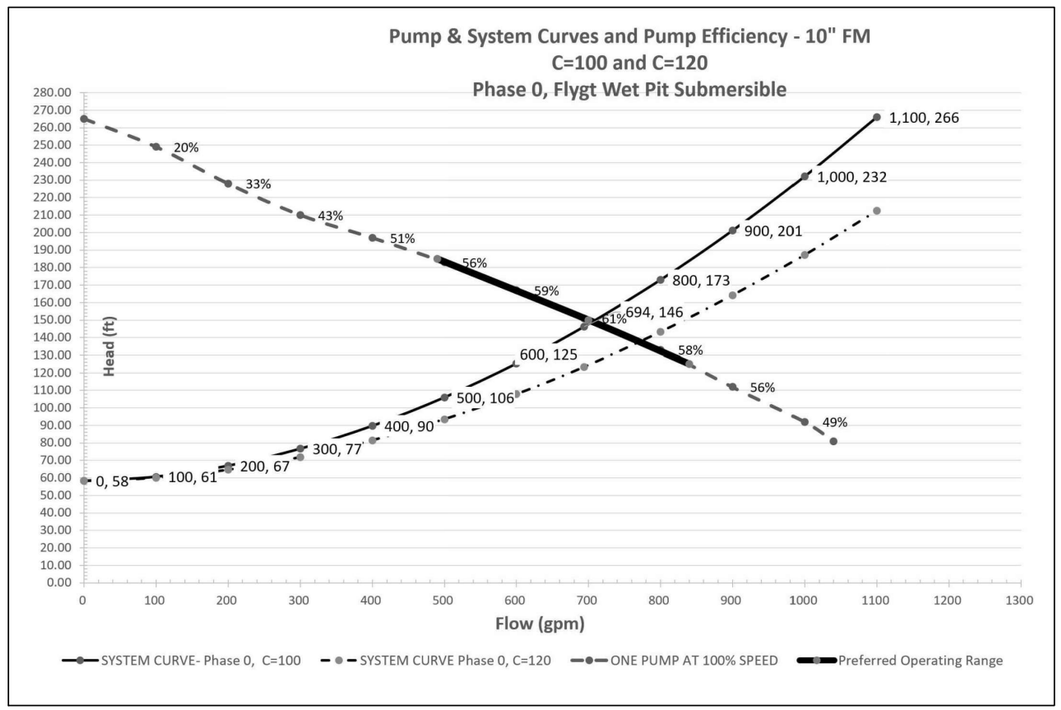
SUMMARY

PRESSURE REQUIREMENT:	0.00
STATIC HEAD:	58.26
HL FROM PIPE FRICTION:	79.75
HL FROM FITTINGS:	8.22
TDH:	146.22

Use these 3 Rows for NPSHa Calcs:

Suction Pipe Losses:	0.44
Suction Fitting Losses:	2.44
Total Suction Losses:	2.88

TOTAL DYNAMIC HEAD CALCULATIONS - DIP FORCE MAIN - "C" VALUE 100



TDH = 146
Static Head = 32
Shut Off = 265

PUMP AND SYSTEM CURVE - DIP FORCE MAIN

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND
MANOR WOODS ROADS
DWSU #601-S
ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 55320,

Expiration Date: 12/12/2023.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701
CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE

AS NOTED

No.	DATE	BY	Description

REVISIONS

DRAWN BY	FP
DESIGNED BY	CB
CHECKED BY	MAK
DATE	MARCH 2023

TITLE

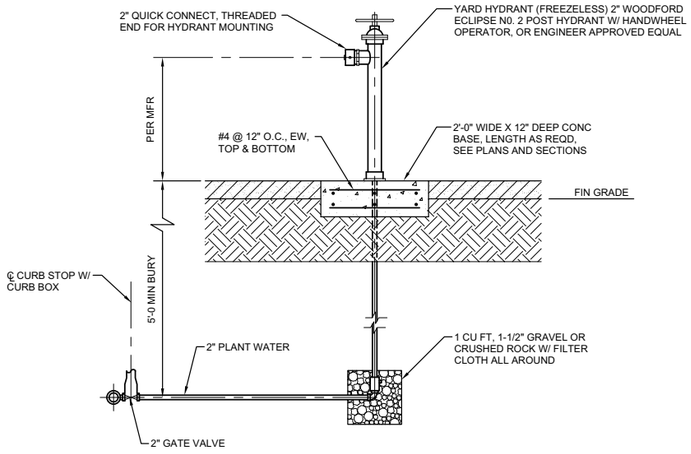
PROCESS MECHANICAL

DESIGN CRITERIA

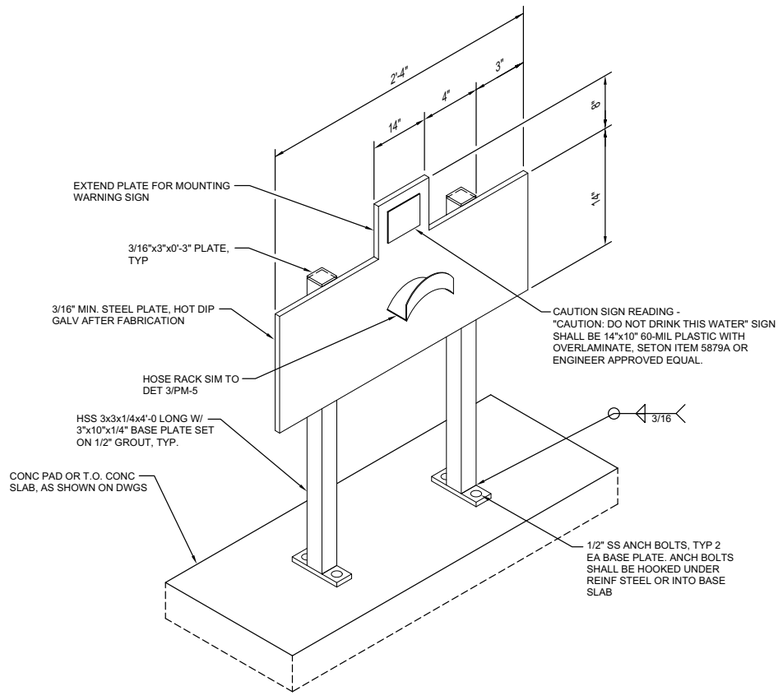
PROJECT NO. 50151771

PM-6

SHEET NO. 23 OF 37



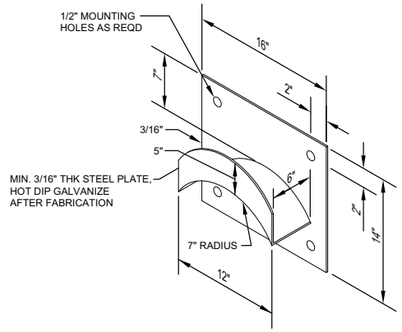
1 YARD HYDRANT
SCALE: N.T.S.



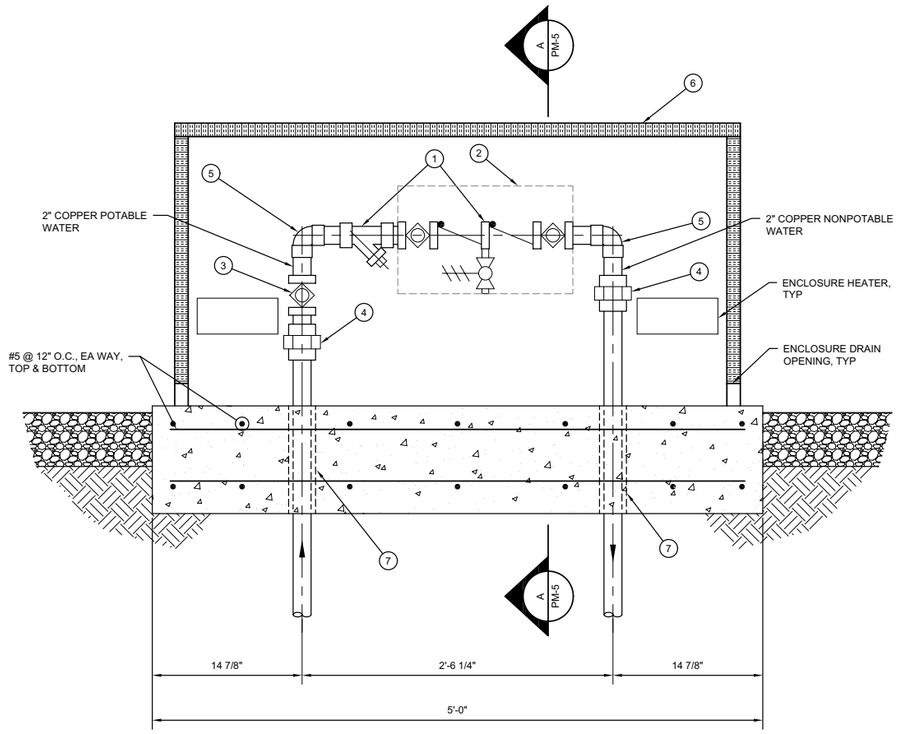
2 POST MOUNTED HOSE RACK
SCALE: N.T.S.

HOSE RACK NOTES:

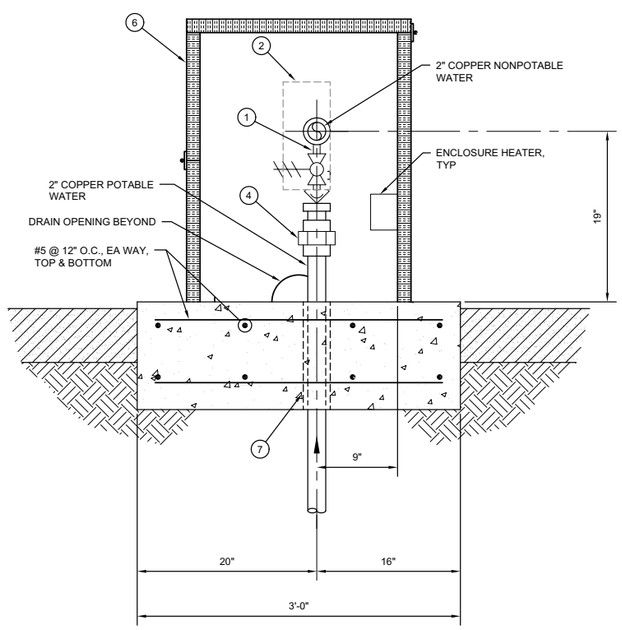
1. HOSE RACK SHALL BE OF ALL WELDED CONSTRUCTION.
2. ALL FASTENERS AND MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
3. WARNING SIGNS SHALL BE PROVIDED AT EACH UTILITY STATION.
4. HOSE RACK SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
5. WHERE HOSE RACK IS POST MOUNTED OMIT BACK PLATE AS SHOWN ON DETAIL 3/PM-5.



3 HOSE RACK
SCALE: N.T.S.



4 RPZ BACKFLOW PREVENTER ELEVATION
SCALE: N.T.S.



A RPZ BACKFLOW PREVENTER SECTION
SCALE: N.T.S.

KEY NOTES:

1. 2" REDUCED PRESSURE ZONE BACKFLOW PREVENTER WITH ISOLATION VALVES AND STRAINER, WATTS SERIES LF909QT-S OR ENGINEER APPROVED EQUAL.
2. BACKFLOW PREVENTER MANUFACTURERS MINIMUM REQUIRED CLEARANCE.
3. 2" THREADED BALL VALVE.
4. 2" UNION.
5. 2" WROT COPPER SHORT RADIUS 90° BEND.
6. HEATED, HINGED, LOCKABLE ANUMINUM ENCLOSURE WITH 1-1/2" INSULATION, AND (2) 90W, 120VENCLOSURE HEATERS. ENCLOSURE SHALL BE HOT BOX DURA FOLD ALUMINUM ENCLOSURE, CATALOG PART NUMBER HD022060030, MODEL NUMBER DF2.5H OR ENGINEER APPROVED EQUAL.
7. PROVIDE AND INSTALL SINGLE LAYER OF VISQUENE BOND BREAK, ALL AROUND, FULL HEIGHT.

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S
ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 55320,

Expiration Date: 12/12/2023.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE
AS NOTED

No.	DATE	BY	Description

REVISIONS

DRAWN BY	JRA
DESIGNED BY	CB
CHECKED BY	MAK
DATE	MARCH 2023

TITLE

PROCESS MECHANICAL DETAILS

PROJECT NO. 50151771

PM-5

SHEET NO. 22 OF 37

Division of Planning and Permitting
Department of Development
Review Engineering

APPROVED: 04/03/23

Signature:

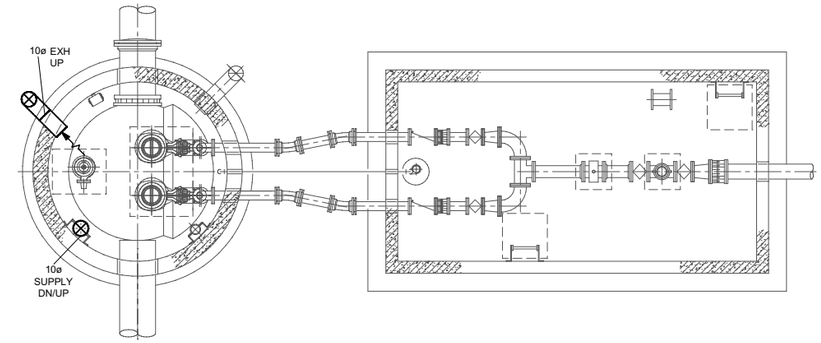
GENERAL NOTES

1. ALL DUCT MATERIALS TO BE NONMETAL.

2. PROVIDE ABILITY TO MONITOR AND CONTROL VENTILATION SYSTEM VIA THE PLC. CORODINATE WITH ELECTRICAL, INSTRUMENTATION AND CONTROL DRAWINGS.

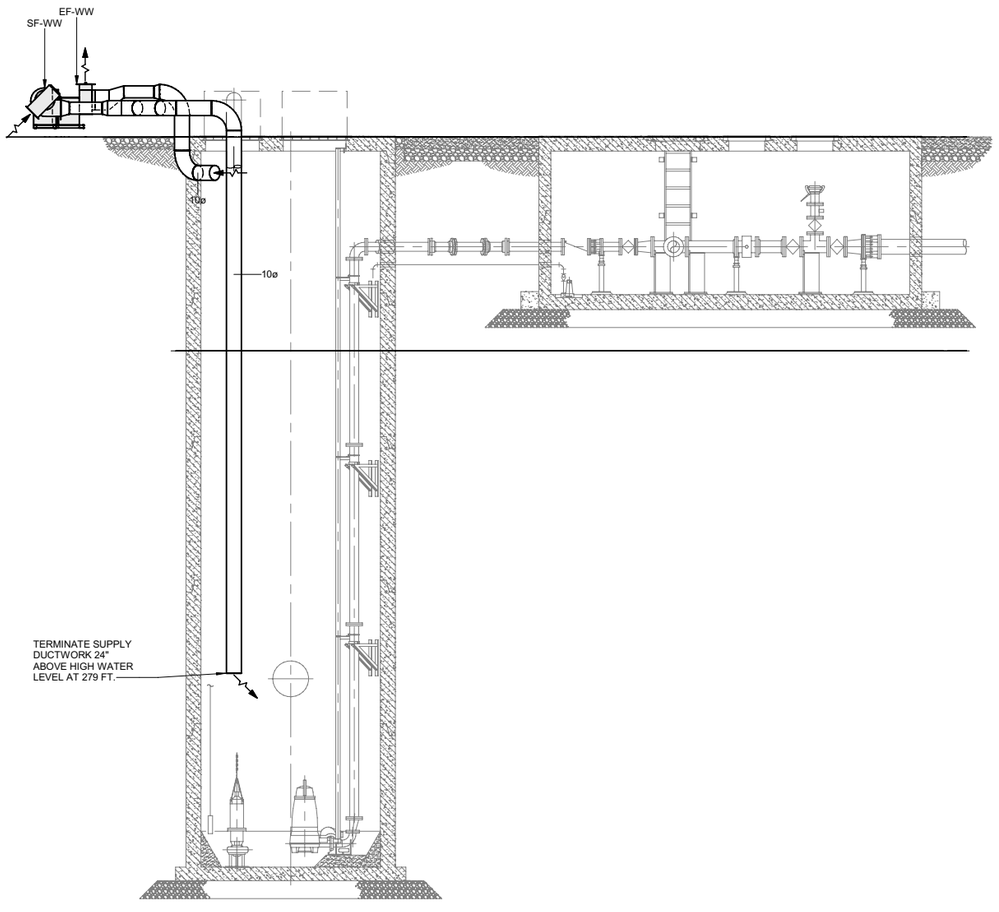
3. MECHANICAL CONTRACTOR TO PROVIDE NECESSARY WIRE, CONDUIT AND POWER TO CONNECT THERMOSTATS TO THERMOSTATICALLY CONTROLLED EQUIPMENT.

4. REFER TO DIVISION 15 SPECIFICATIONS FOR FURTHER REQUIREMENTS.

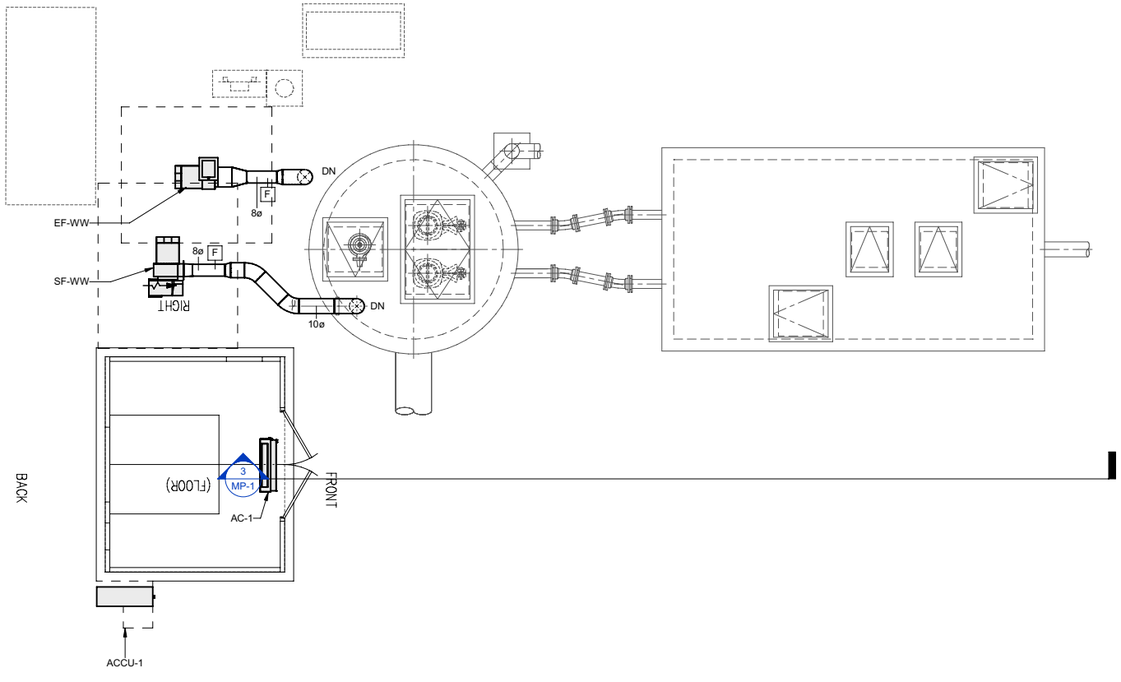


3
MP-1

1 LOWER LEVEL PLAN
Scale: 1/4" = 1'-0"



3 1 MGD SECTION
Scale: 1/4" = 1'-0"



2 GROUND LEVEL PLAN
Scale: 1/4" = 1'-0"

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE 1MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRIC NO. 01

SEAL

STATE OF MARYLAND · MATTHEW R. MYERS · 43498 · PROFESSIONAL ENGINEER

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 43498 ,

Expiration Date: 05/07/2023 .

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701
CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	MRM
DESIGNED BY	-
CHECKED BY	-
DATE	03/03/2023

TITLE

1 MGD SPS PLANS AND SECTIONS

PROJECT NO. 50151771

MP-1

SHEET NO. 24 OF 37

SCHEDULE OF FANS

EQUIPMENT ID	SERVICE	FAN TYPE	DRIVE TYPE	AIR FLOW (CFM)	TOTAL STATIC PRESSURE (IN WG)	FAN SPEED (RPM)	FAN POWER (BHP) (WATTS)	MOTOR (HP)	VOLTAGE	PHASE	ACCESSORIES
SF-WW	WET WELL	USF	BELT	630	0.25	1,082	0.09	1/4	120	1	VFC
EF-WW	WET WELL	USF	BELT	630	0.25	1,082	0.09	1/4	120	1	VFC

NOTES:

1. REFER TO SPECIFICATION 15838.
2. EQUIPMENT SHALL HAVE AMCA TYPE B SPARK-RESISTANT CONSTRUCTION.

FAN TYPE:

AXF	AXIAL FAN
CF	CABINET FAN
CGEF	CEILING EXHAUST FAN
CREF	CENTRIFUGAL ROOF EXHAUST FAN
CRSF	CENTRIFUGAL ROOF SUPPLY FAN
MFF	MIXED FLOW FAN
PTF	PROPELLER TRANSFER FAN
PWF	PROPELLER WALL FAN
SCF	SQUARE CENTRIFUGAL FAN
TCF	TUBULAR CENTRIFUGAL FAN
USF	UTILITY SET FAN

ACCESSORIES:

AD	AUTOMATIC DAMPER
BG	BOTTOM INLET WITH BOTTOM INLET GRILLE
BS	BIRDSCREEN
BD	BACKDRAFT DAMPER
DC	DISCHARGE CONE
DS	DISCHARGE SILENCER
ECM	ELECTRONICALLY COMMUTATED MOTOR
FF	FLAT FILTER FRAME WITH TYPE B MEDIA
IB	INLET BELL
IC	INLET CONE
IG	INLET GUARD
IS	INLET SILENCER
PRC	PREFABRICATED ROOF CURB
SC	SOUND ATTENUATING CURB
SSSC	SOLID STATE SPEED CONTROLLER
VFC	VARIABLE FREQUENCY CONTROLLER
VP	VARIABLE PITCH FAN BLADES
WH	WEATHERPROOF MOTOR HOUSING

SCHEDULE OF SPLIT TYPE AIR CONDITIONING SYSTEMS

INDOOR UNIT DESIGNATION	AC-1
SUPPLY AIR VOLUME - CFM	431
OUTSIDE AIR VOLUME - CFM	0
FAN TYPE	FC
FAN QUANTITY	1
EXTERNAL STATIC PRESSURE INCL. FILTERS - IN WG	N/A
FAN MOTOR HP	N/A
FAN CONTROL TYPE	CS
COOLING COIL AIR VOLUME - CFM	431
MAXIMUM COIL FACE VELOCITY - FPM	500
ROOM DESIGN TEMPERATURE - °F DB	80
ROOM SENSIBLE HEAT, COOLING - BTU/HR	8550
ROOM LATENT HEAT, COOLING - BTU/HR	250
RETURN AIR SENSIBLE HEAT, COOLING - BTU/HR	500
SENSIBLE HEAT CREDIT, COOLING - BTU/HR	-500
OUTSIDE AIR TEMPERATURE - °F DB/WB	N/A
OUTSIDE AIR SENSIBLE HEAT, COOLING - BTU/HR	N/A
OUTSIDE AIR LATENT HEAT, COOLING - BTU/HR	N/A
TOTAL SENSIBLE HEAT, COOLING - BTU/HR	8,900
GRAND TOTAL HEAT, COOLING - BTU/HR	8,900
COOLING COIL LEAVING AIR TEMPERATURE - °F DB	55
HEATING COIL AIR VOLUME - CFM	431
OUTSIDE AIR TEMPERATURE - °F DB	17
HEATING CAPACITY - BTU/HR	5,700
UNIT ARRAGEMENT TYPE	HDT
FILTER TYPE	MERV 8
CONTROL SEQUENCE TYPE	N/A
CASING TYPE	N/A
UNIT DIMENSIONS - IN (L x W x H)	12x31x10
SERVICE	ELEC
INDOOR UNIT VOLTAGE / PHASE	208/1
INDOOR UNIT FLA	0.30
OUTDOOR UNIT DESIGNATION	ACCU-1
CONDENSER FAN QUANTITY	1
COMPRESSOR QUANTITY	1
AMBIENT AIR TEMPERATURE - °F DB	95
ENERGY EFFICIENCY RATIO - EER	12
OUTDOOR UNIT VOLTAGE / PHASE	208 / 1
OUTDOOR UNIT FLA	0.36
OUTDOOR UNIT MOP	

NOTES:

1. FAN TYPE:
   FC - FORWARD CURVED FAN
   BI - BACKWARD INCLINED FAN
   PLENUM - PLENUM FAN
2. FAN SPEED CONTROL TYPE:
   VS - VARIABLE SPEED
   CS - CONSTANT SPEED
   TS - TWO SPEED
3. UNIT ARRANGEMENT TYPE (FAN POSITION WITH RESPECT TO COOLING COIL POSITION):
   HDT - HORIZONTAL DRAW-THROUGH
   VDT - VERTICAL DRAW-THROUGH
   HBT - HORIZONTAL BLOW-THROUGH
   VBT - VERTICAL BLOW-THROUGH
4. CASING TYPE:
   1 - 1 INCH THICK UNIT CONSTRUCTION
   2 - 2 INCH THICK UNIT CONSTRUCTION
   3 - 3 INCH THICK UNIT CONSTRUCTION
   4 - 4 INCH THICK UNIT CONSTRUCTION
5. EXTERNAL STATIC PRESSURE INCLUDES AIR FILTER LOSSES.
6. UNIT SHALL HAVE SINGLE POINT ELECTRICAL CONNECTION.
7. UNIT SHALL HAVE FACTORY INSTALLED INTEGRAL CONDENSATE PUMP.
8. UNIT SHALL DUAL INDEPENDENTLY CIRCUITED COMPRESSORS EACH WITH SUCTION LINE ACCUMULATOR, LIQUID REFRIGERANT STORAGE RECEIVER, HOT GAS BYPASS, MODULATING HOT GAS REHEAT COIL, AND FLOODED CONDENSER HEAD PRESSURE CONTROLS.
9. UNIT SHALL BE PROVIDED WITH MANUFACTURER'S MICROPROCESSOR BASED CONTROLLER WITH OUTSIDE AIR DEW POINT TEMPERATURE CONTROL LOGIC WITH REHEAT/HEAT CONTROL.
10. UNIT SHALL BE PROVIDED WITH WATER LEAK DETECTOR FOR FIELD INSTALLATION IN AUXILIARY DRAIN PAN.
11. CONDENSING UNIT SHALL BE PROVIDED BY THE SAME MANUFACTURER AS THAT OF THE INDOOR EVAPORATOR SECTION.
12. *PROVIDE WITH HOT GAS BYPASS, LOW AMBIENT OPERATION CONTROLS, FAN DELAY RELAY KITS, REFRIGERANT PIPING AND CHARGE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

Dewberry

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500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701
CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY MRM
DESIGNED BY -
CHECKED BY -
DATE 03/03/2023

TITLE

1 MGD EQUIPMENT SCHEDULES

PROJECT NO. 50151771

MP-2

SHEET NO. 25 OF 37

ELECTRICAL LEGEND:

LIGHTING:

- X DENOTES FIXTURE TYPE (TYP.) SEE FIXTURE SCHEDULE
- # DENOTES CIRCUIT NUMBER (TYP.)
- RECTANGULAR FIXTURE
- CEILING-MOUNTED FIXTURE
- WALL-MOUNTED FIXTURE
- WALL-MOUNTED EXIT SIGN: SHADED PORTION DENOTES SIGN FACE
- POLE-MOUNTED FIXTURE

RECEPTACLES:

- X DENOTES RECEPTACLE TYPE (TYP.): GFCI: GROUND FAULT CIRCUIT INTERRUPT; UPS: UNINTERRUPTIBLE POWER SUPPLY; WPCR: WEATHERPROOF CORROSION RESISTANT; EXP: EXPLOSIONPROOF
- # DENOTES CIRCUIT NUMBER (TYP.)
- DUPLEX RECEPTACLE
- SIMLEX RECEPTACLE

SWITCHES

- WALL SWITCH: X DENOTES TYPE: NO SUBSCRIPT: SINGLE-POLE SWITCH; 3: 3-WAY SWITCH; 4: 4-WAY SWITCH; M: MANUAL MOTOR STARTER
- # DENOTES CIRCUIT NUMBER
- COMBINATION MOTOR STARTER
- DISCONNECT SWITCH
- LOCAL CONTROL STATION

WIRING

- PROPOSED
- EXISTING
- CONDUIT EXPOSED
- UGE — CONDUIT UNDERGROUND
- CONDUIT HOMERUN

MISC PLAN VIEW SYMBOLS

- (E) EQUIPMENT CONNECTION
- (K) KIRK KEY INTERLOCK
- X / # INSTRUMENT TAG: X DENOTES INSTRUMENT TYPE; # DENOTES INSTRUMENT NUMBER
- P-XXXX CONDUIT TAGS: P DENOTES POWER; C DENOTES CONTROL; I DENOTES INSTRUMENTATION; XXXX DENOTES CONDUIT ID
- (T) THERMOSTAT
- HORN/LIGHT DEVICE

EQUIPMENT/DEVICE LOCATION SYMBOLS

- △ LOCATED IN FIELD

GROUNDING

- GROUND RODS: LEFT: BURIED; RIGHT: IN TESTWELL
- CAD WELD TERMINATION
- #4/0 BCC

SINGLE-LINE DIAGRAMS

- TRANSFORMER ID; 45kVA; 480-120/208V
- TRANSFORMER
- 3P/4W DRY TRANS
- MOTOR & TYP. ADDITIONAL DEVICES: TSH: TEMPERATURE SWITCH; MSH: MOTOR SPACE HEATER; CF: COOLING FAN; TE: TEMPERATURE ELEMENT; ME: MOISTURE DETECTOR
- INSTRUMENT TAG: X DENOTES INSTRUMENT TYPE; Y DENOTES INSTRUMENT NUMBER
- 100A FUSE
- 30A 3P DISCONNECT SWITCH
- 100 AF / 100 AT LOW-VOLTAGE MOLDED CASE CIRCUIT BREAKER
- 30A MCP MOTOR CIRCUIT PROTECTOR
- GROUND
- 600:5 (3) CT: NUMBERS DENOTE CT WINDING RATIO AND CT QUANTITY
- 480:120 (2) PT: NUMBERS DENOTE PT WINDING VOLTAGES AND PT QUANTITY
- #% LEFT: RESISTOR; RIGHT: LINE REACTOR: #% DENOTES IMPEDANCE
- SPD XXXkA SURGE PROTECTIVE DEVICE
- 30 A MCP / X FVNR STARTER: X DENOTES NEMA SIZE
- 250 A MCP / VFD VFD
- N.C. / N.C. 800AF, 800AP, 800AT, LSIG, CTR LOW-VOLTAGE POWER CIRCUIT BREAKER: LEFT: FIXED-MOUNT; RIGHT: DRAWOUT; E.O. DENOTES ELECTRICALLY OPERATED; LSIG DENOTES INSTALLED TRIP FUNCTIONS: L DENOTES LONG-TIME; S DENOTES SHORT-TIME; I DENOTES INSTANTANEOUS; G DENOTES GROUND FAULT; CTR DENOTES BREAKER-SPECIFIC CT AND RATIOS
- << DRAW-OUT ELEMENT

ELEMENTARY CONTROL SCHEMATICS

- H O A / XOO / OOX 3-POSITION SELECTOR SWITCH: HOA DENOTES HAND/OFF/AUTO; LOR DENOTES LOCAL/OFF/REMOTE; FOR DENOTES FORWARD/OFF/REVERSE
- E-STOP MUSHROOM HEAD EMERGENCY STOP PUSHBUTTON SWITCH N.C. MAINTAINED: TEXT DENOTES LEGEND PLATE
- OL THERMAL OVERLOAD RELAY

	NO	NC
DISCONNECT SWITCHES		
CONTACTS	X	X
LIMIT SWITCHES	LS	LS

NOTATION LEGEND: NO/NC: NORMALLY OPEN/CLOSED; RO/RC: RISE-TO-OPEN/CLOSE; FO/FC: FALL-TO-OPEN/CLOSE; TO/TC: TIME-OPEN/CLOSE

CONTACTS: TEXT DENOTES COIL ID

SWITCHES: TEXT DENOTES TAG NUMBER

	NORC	NOFC	NCRO	NCFO
TEMPERATURE SWITCHES/ THERMOSTATS	TS	-	TS	-
PRESSURE SWITCHES	PS	PS	PS	PS

	NOTC	NOTO	NCTO	NCTC
TIME DELAY SWITCHES	TD	TD	TD	TD

- G PTT G INDICATOR LIGHT: LEFT: STANDARD/RIGHT: PUSH-TO-TEST; X DENOTES COLOR
- ETM RUN TIME METER
- SV SOLENOID VALVE
- MPR MOTOR PROTECTION RELAY
- 100 VA / 480/120 V CONTROL POWER TRANSFORMER
- MECHANICAL INTERLOCK CONNECTION
- MSH MOTOR SPACE HEATER
- XX / YYY COIL: X DENOTES TYPE: M DENOTES MOTOR STARTER; CR DENOTES CONTROL RELAY; TD DENOTES TIME DELAY RELAY; PR DENOTES INTERPOSING PILOT RELAY; LC DENOTES LIGHTING CONTACTOR; Y DENOTES REFERENCE LINE NUMBER

ABBREVIATIONS:

AIC	AMPERE INTERRUPTING CAPACITY
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AT	AMPERE TRIP
BCC	BARE COPPER CONDUCTOR
BKR	BREAKER
CJB	CONTROL JUNCTION BOX
CMS	COMBINATION MOTOR STARTER
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CP	CONTROL PANEL
CV	CHECK VALVE
DB	DUCTBANK
DSW	DISCONNECT SWITCH
ECB	ENCLOSED CIRCUIT BREAKER
EHH	ELECTRICAL HANDHOLE
ETU	ELECTRONIC TRIP UNIT
EX	EXISTING
EXP	EXPLOSIONPROOF
FE	FLOW ELEMENT
FIT	FLOW INDICATING TRANSMITTER
FVNR	FULL VOLTAGE NON-REVERSING
G/GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPT
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
ISO	INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
HOA	HAND-OFF-AUTO
JBX	JUNCTION BOX
LCS	LOCAL CONTROL STATION
LP	LIGHTING PANEL
LS	LEVEL SWITCH/LIMIT SWITCH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW-LOW
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH-HIGH
MANUF	MANUFACTURER
MCP	MOTOR CIRCUIT PROTECTOR
MSH	MOTOR SPACE HEATER
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MWTS	MOTOR WINDING TEMPERATURE SWITCH
N4X	NEMA 4X SST
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NTS	NOT TO SCALE
OL	OVERLOAD
PBX	PULLBOX
PC	PHOTOCELL
PIT	PRESSURE INDICATING TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PP	POWER PANEL
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PT	POTENTIAL TRANSFORMER/PRESSURE TRANSDUCER
QLPS	QUANTUM LOOP PUMP STATION
RECP	RECEPTACLE
RTU	REMOTE TELEMETRY UNIT
RVSS	REDUCED VOLTAGE SOFT STARTER
S.E.	SERVICE ENTRANCE
SP C.	SPARE CONDUIT
SPD	SURGE PROTECTIVE DEVICE
SST	STAINLESS STEEL
SV	SOLENOID VALVE
TSP	TWISTED SHIELDED PAIR
TX	TRANSFORMER
TYP	TYPICAL
VAP	VENTILATION ALARM PANEL
VFD	VARIABLE FREQUENCY DRIVE
VV	VALVE VAULT
WPCR	WEATHER PROOF CORROSION RESISTANT
XFMR	TRANSFORMER
WW	WET WELL

GENERAL NOTES:

1. THESE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT SHOW ALL DETAILS REQUIRED FOR THE COMPLETE SYSTEM. THEY SHOULD HOWEVER BE FOLLOWED AS CLOSELY AS POSSIBLE IN THE GENERAL ARRANGEMENT AND LOCATION OF EQUIPMENT. ALL DIMENSIONS SHALL BE CHECKED AT THE BUILDING AND ALL STRUCTURAL AND FINISH CONDITIONS INVESTIGATED. THE CONTRACTOR SHALL ARRANGE HIS WORK TO MEET THESE CONDITIONS AND PROVIDED SUCH EQUIPMENT AND ACCESSORIES AS MAY BE REQUIRED.
2. PROPERLY SUPPORT ALL WORK AND EQUIPMENT INSTALLED UNDER THIS CONTRACT PLUMB AND PARALLEL. STUDY ALL GENERAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS, SHOP DRAWINGS, AND CATALOG DATA TO DETERMINE HOW EQUIPMENT, ACCESSORIES, PIPING, FIXTURES, AND RELATED ITEMS ARE TO BE SUPPORTED, MOUNTED, OR SUSPENDED. PROVIDE ALL BOLTS, INSERTS, PIPE STANDS, BRACKETS, STRUCTURAL SUPPORTS, AND ACCESSORIES FOR PROPER SUPPORT OF EQUIPMENT FURNISHED UNDER THIS CONTRACT. COORDINATE THE ELECTRICAL WORK WITH ALL OTHER CONTRACTORS BEFORE BEGINNING WORK TO ENSURE THAT THE ELECTRICAL WORK DOES NOT INTERFERE WITH OTHER WORK.
3. NOTIFY THE ENGINEER IN WRITING IMMEDIATELY UPON DISCOVERY OF ANY DISCREPANCY OR POINTS OF CONFLICT IN THE DRAWINGS OR THE SPECIFICATIONS.
4. UNLESS SPECIFICALLY NOTED OTHERWISE, ALL UNDERGROUND CONCRETE ENCASED ELECTRICAL CONDUITS SHALL BE PER STANDARD DETAILS.
5. THE INSTALLATION OF ALL CONCRETE ENCASED ELECTRICAL CONDUITS SHALL COMPLY WITH ACI 318, SECTION 6.3. CONTRACTOR SHALL SUPPLY EXPANSION JOINT FITTINGS AS REQUIRED FOR THERMAL EXPANSION AND DEFLECTION.
6. BOND ALL CONCRETE ENCASED GROUND CONDUCTORS TO EXISTING GROUND CONDUCTORS IN ALL MANHOLES, PULL BOXES, CABLE TRAYS, AND SIMILAR LOCATIONS WHERE APPLICABLE.
7. UNLESS OTHERWISE SPECIFIED OR NOTED, ALL WALL MOUNTED ELECTRICAL PANELS, ENCLOSURES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED 6'-6" (MAX) FROM THE TOP OF THE PANEL TO FINISHED FLOOR OR GRADE.
8. UNLESS OTHERWISE NOTED. ALL LIGHTING SWITCHES, CONTROL SWITCHES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED WITH THEIR CENTERLINE APPROXIMATELY 4'-0" ABOVE FINISHED FLOOR, SLAB, OR GRADE. THERMOSTATS SHALL BE MOUNTED 4'-4" ABOVE FINISHED FLOOR.
9. A SEPARATE EQUIPMENT GROUNDING CONDUCTOR SHALL BE PROVIDED FOR EACH CIRCUIT (SEPARATE CONDUCTOR IN THE CONDUIT). THE CONDUCTOR SHALL BE TERMINATED AT THE PROPER DEVICE, TERMINAL, OR LUG AT THE POWER SOURCE (MCC GROUND BUS, PANELBOARD GROUND BUS, ETC.). GROUND CONDUCTOR SIZE SHALL BE PER THE LATEST EDITION OF THE NEC.
10. ELECTRICAL SYSTEMS INSTALLED IN HAZARDOUS LOCATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CHAPTER 5, ARTICLE 500 OF THE LATEST EDITION OF THE NEC. CONTRACTOR SHALL SEAL ALL CONDUITS LEAVING HAZARDOUS AREAS. WALL AND FLOOR OPENINGS SHALL BE SEALED WITH FIREPROOF COMPOUND.
11. ALL EQUIPMENT LOCATED IN HAZARDOUS AREAS SHALL BE SUITABLE FOR THE CLASS, DIVISION, AND GROUP RATING OF THE LOCATION.
12. ALL CONDUIT HOMERUNS ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL REFER TO CONDUIT AND WIRE SCHEDULE, RISER DIAGRAMS, SINGLE LINE DIAGRAMS, AND OTHER DRAWINGS FOR CONDUIT AND WIRE REQUIREMENTS.

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S
ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND · MATTHEW FERGEN · REGISTERED PROFESSIONAL ENGINEER
3/3/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 59922,

Expiration Date: 09/15/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701
CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY S. BLUCHER
DESIGNED BY S. BLUCHER
CHECKED BY M. FERGEN
DATE MARCH 2023

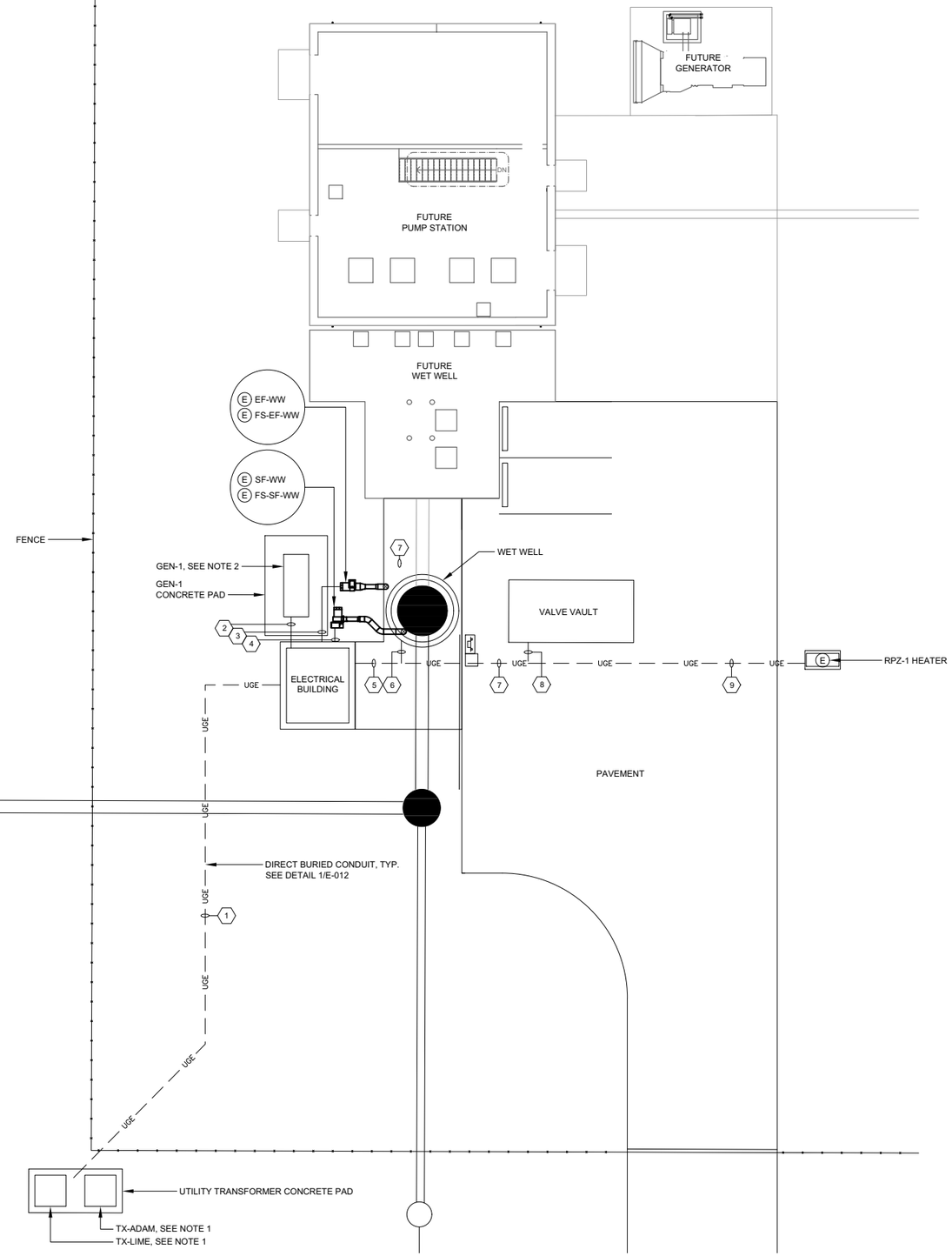
TITLE

LEGEND, ABBREVIATIONS, & GENERAL NOTES

PROJECT NO.

E-001

SHEET NO. 26 OF 37



1 SITE PLAN
SCALE: 1"=10'

NOTES:

1. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL UTILITY METERING EQUIPMENT WITH THE LOCAL ELECTRIC UTILITY. COORDINATION SHALL INCLUDE, BUT NOT BE LIMITED TO: SECONDARY CONDUIT & WIRE, METERING CABINET & EQUIPMENT, AND SECONDARY DISCONNECTING MEANS. ALL COSTS RELATED TO UTILITY REQUIREMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. FURNISH AND INSTALL A GROUND RING AROUND THE GENERATOR WITH A GROUND ROD AT EACH CORNER. GROUNDING CONDUCTOR SHALL BE #4/0 BCC. BOND GENERATOR TO GROUND RING. BOND THE GENERATOR GROUND RING TO THE ELECTRICAL BUILDING GROUND RING.

DUCTBANK ROUTING SCHEDULE

1	P-1000	P-1003	
2	P-1007	C-1001	I-1000
	P-1029	C-1026	
	P-1030		
	P-1031		
3	P-1025	C-1022	
4	P-1024	C-1023	
5	INCLUDES CONDUIT & WIRE FROM DUCTBANKS 6 & 7		
6	P-1011	C-1007	I-1007
	P-1014	C-1014	
	P-1017	C-1025	
		C-1028	
		C-1030	
		C-1032	
7	P-1026	I-1006	
	P-1032		
	P-1033		
	P-1028		
	1" SP. C		
8	P-1026	I-1006	
	P-1032		
	P-1033		
	1" SP. C		
9	P-1028		

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8401 Arlington Boulevard
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703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND
MATTHEW FERGEN
PROFESSIONAL ENGINEER
REGISTERED

3/3/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 59922,

Expiration Date: 09/15/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE

0' 10' 20'
SCALE: 1" = 10'

No.	DATE	BY	Description

REVISIONS

DRAWN BY	S. BLUCHER
DESIGNED BY	S. BLUCHER
CHECKED BY	M. FERGEN
DATE	MARCH 2023

TITLE

SITE PLAN

PROJECT NO.

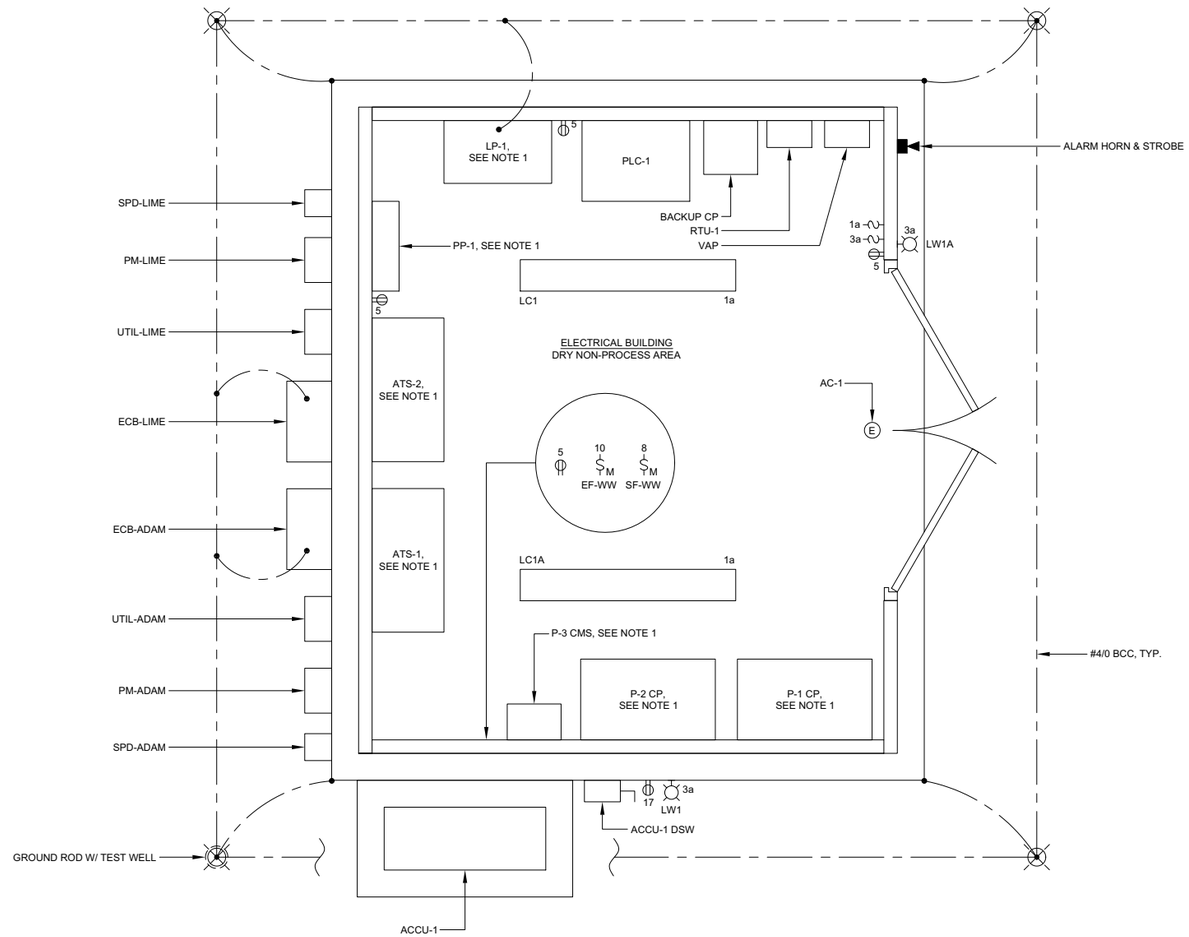
E-002

SHEET NO. 27 OF 37

FILE: \\RAL-FS\RALEIGH\PROJECTS\50151777\CAD\ELEC\1MGD - E-002 SITE PLAN.DWG; SAVED BY: SBLUCHER; SAVE DATE: 3/2/2023 6:28 PM;
PLOT DATE: 3/2/2023 6:47 PM; BY: SBLUCHER

NOTES:

1. EQUIPMENT FOR EARLY PROCUREMENT.



1 ELECTRICAL BUILDING PLAN
SCALE: 3/4"=1'-0"

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S

FREDERICK COUNTY, MARYLAND
ELECTION DISTRICT NO. 01

SEAL

STATE OF MARYLAND
MATTHEW FERGEN
No. 59922
REGISTERED
PROFESSIONAL ENGINEER

3/3/2023

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License No. 59922,

Expiration Date: 09/15/2024.

DEVELOPER / OWNER:

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500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE 0' 1' 2' 3'
SCALE: 3/4" = 1'-0"

No.	DATE	BY	Description

REVISIONS

DRAWN BY S. BLUCHER
DESIGNED BY S. BLUCHER
CHECKED BY M. FERGEN
DATE MARCH 2023

TITLE

ELECTRICAL BUILDING PLAN

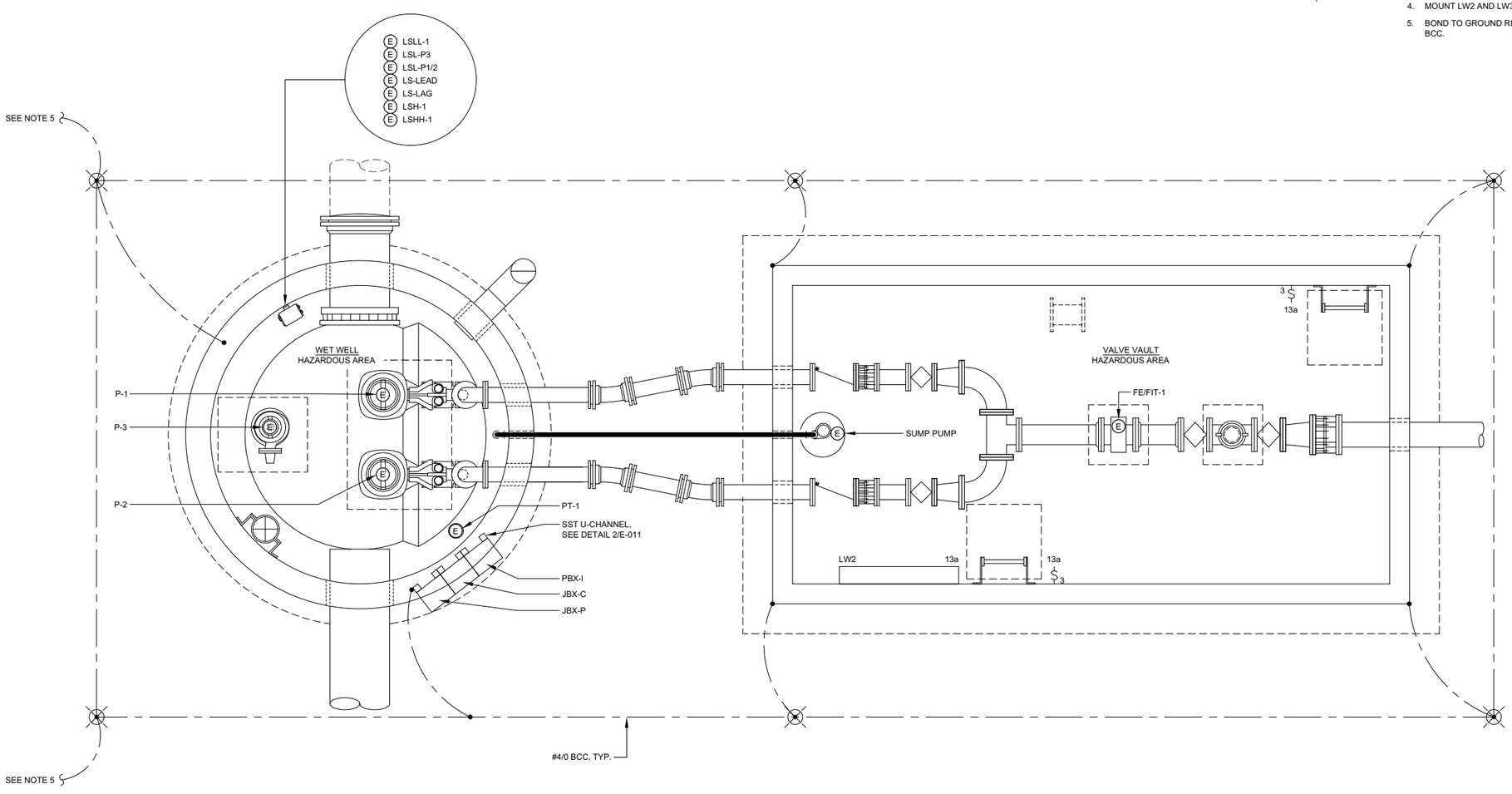
PROJECT NO.

E-003

SHEET NO. 28 OF 37

NOTES:

1. THE WET WELL SHALL BE RATED CLASS I, DIVISION 2, GROUP D IN ACCORDANCE WITH THE 2020 EDITION OF NFPA-820, TABLE 4.2.2, ROW 14, LINE b.
2. THE VALVE VAULT SHALL BE RATED CLASS I, DIVISION 2, GROUP D IN ACCORDANCE WITH THE 2020 EDITION OF NFPA-820, TABLE 4.2.2, ROW 29, LINE a.
3. MOUNT LIGHT SWITCHES IN THE VALVE VAULT 6" BELOW HATCH DOORS. LIGHT SWITCHES SHALL BE RATED FOR HAZARDOUS, CLASS I, DIVISION 2 AREAS.
4. MOUNT LW2 AND LW3 FIXTURES 12" BELOW CEILING.
5. BOND TO GROUND RING. GROUNDING CONDUCTOR SHALL BE #4/0 BCC.



1 VALVE VAULT & WET WELL PLAN
SCALE: 1/2"=1'-0"

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND
MATTHEW FERGEN
No. 59922
REGISTERED
PROFESSIONAL ENGINEER

3/3/2023

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License No. 59922,

Expiration Date: 09/15/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE

0' 1' 2' 4'

SCALE: 1/2" = 1'-0"

No.	DATE	BY	Description

REVISIONS

DRAWN BY	S. BLUCHER
DESIGNED BY	S. BLUCHER
CHECKED BY	M. FERGEN
DATE	MARCH 2023

TITLE

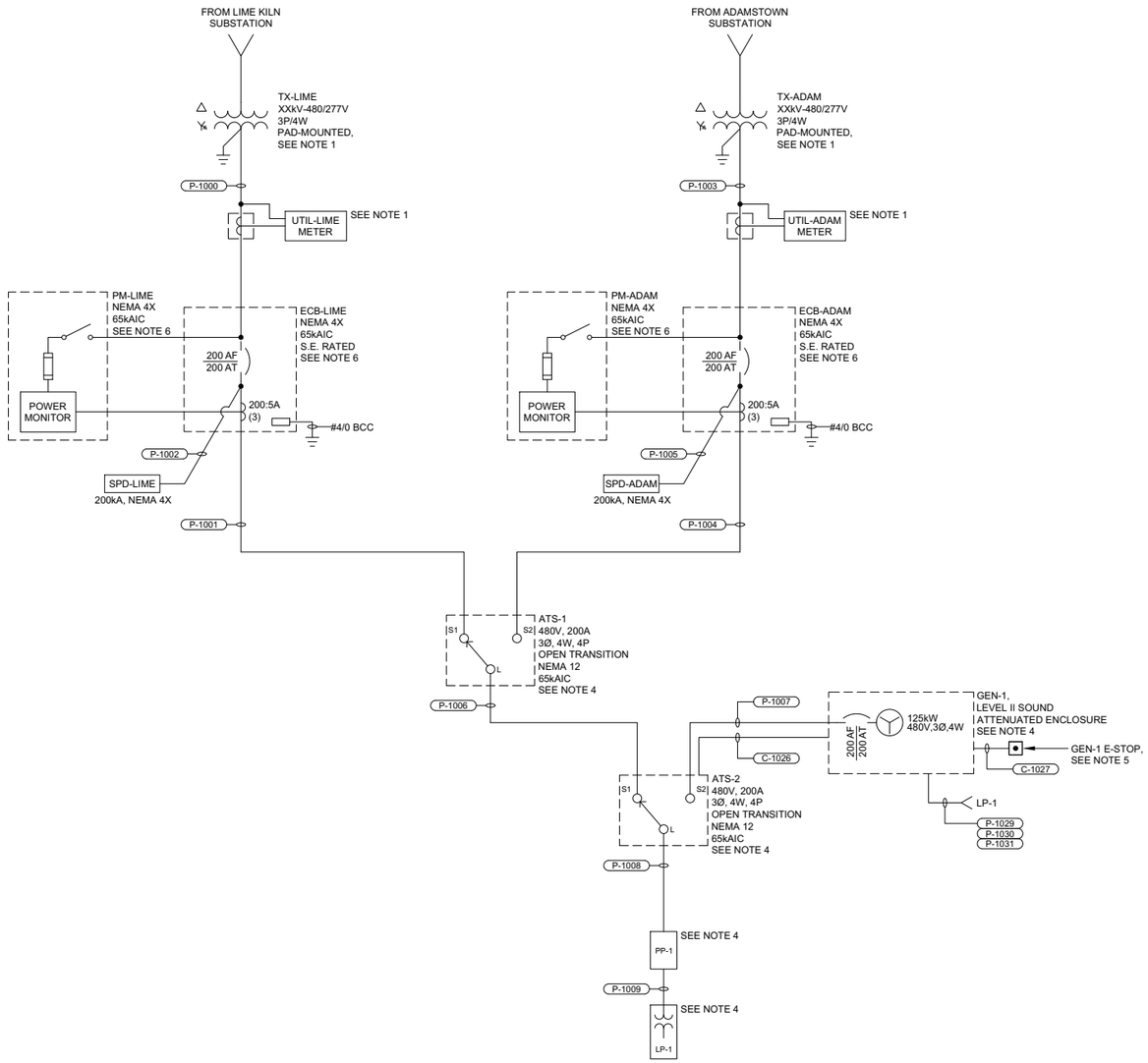
VALVE VAULT & WET WELL PLANS

PROJECT NO.

E-004

SHEET NO. 29 OF 37

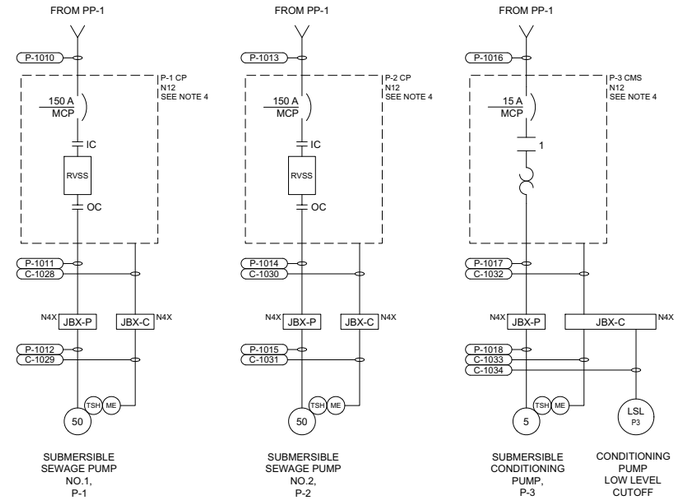
FILE: \\RAL-FS\RALEIGH\PROJECTS\50151777\CAD\ELEC\1MGD - E-004 - VALVE VAULT & WET WELL PLANS.DWG; SAVED BY: SBLUCHER; SAVE DATE: 2/10/2023 12:04 PM;
PLOT DATE: 3/2/2023 6:47 PM; BY: SBLUCHER



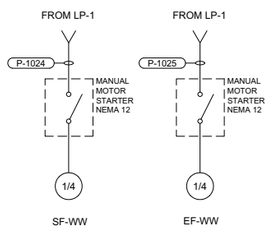
1 QUANTUM LOOP 1MGD SEWAGE PUMP STATION
SINGLE LINE DIAGRAM

NOTES:

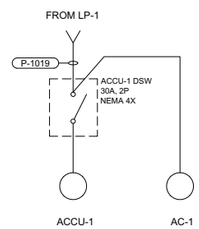
1. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL UTILITY METERING EQUIPMENT WITH THE LOCAL ELECTRIC UTILITY. COORDINATION SHALL INCLUDE, BUT NOT BE LIMITED TO: SECONDARY CONDUIT & WIRE, METERING CABINET & EQUIPMENT, AND SECONDARY DISCONNECTING MEANS. ALL COSTS RELATED TO UTILITY REQUIREMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. ALL EQUIPMENT, ELECTRICAL MATERIALS, AND WIRING METHODS IN THE CLASSIFIED AREAS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC.
3. CONTRACTOR SHALL FURNISH AND INSTALL A NEMA 4X SST JUNCTION BOX AS SHOWN. PROVIDE TERMINAL STRIPS FOR THE TRANSITION OF SUBMERSIBLE CABLE TO INDIVIDUAL CONDUCTORS. CONTRACTOR SHALL MAINTAIN SEPARATION OF POWER, CONTROL, AND INSTRUMENTATION CABLING. INSTALL BARRIERS WITHIN JUNCTION BOXES AS NEEDED TO MAINTAIN SEPARATION. CONTRACTOR SHALL MOUNT THE JUNCTION BOX SO THE BOTTOM OF THE ENCLOSURE IS 2'-0" ABOVE THE FINISHED ELEVATION OF THE WET WELL. REFERENCE STANDARD DETAILS.
4. EQUIPMENT FOR EARLY PROCUREMENT.
5. E-STOP SHALL BE PROVIDED WITH AN AUXILIARY CONTACT TO REPORT STATUS TO THE PLC.
6. ECB AND POWER MONITORS SHALL BE PROVIDED WITH AUXILIARY CONTACTS TO REPORT HARDWIRED STATUS TO THE RTU.



2 SUBMERSIBLE PUMPS
RISER DIAGRAMS



3 SUPPLY FAN AND EXHAUST FAN
RISER DIAGRAMS



3 ELECTRICAL BUILDING HVAC
RISER DIAGRAM

Dewberry

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8401 Arlington Boulevard
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703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL

STATE OF MARYLAND
MATTHEW FERGEN
PROFESSIONAL ENGINEER
3/3/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 59922,

Expiration Date: 09/15/2024.

DEVELOPER / OWNER:

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500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	S. BLUCHER
DESIGNED BY	S. BLUCHER
CHECKED BY	M. FERGEN
DATE	MARCH 2023

TITLE

SINGLE LINE & RISER DIAGRAMS

PROJECT NO.

E-005

SHEET NO. 30 OF 37

FILE: \\RAL-FS\RALEIGH\PROJECTS\50151777\CAD\ELEC\1MGD - E-005 SINGLE LINE & RISER DIAGRAMS.DWG; SAVED BY: SBLUCHER; SAVE DATE: 1/13/2023 8:18 PM;
PLOT DATE: 3/2/2023 6:47 PM; BY: SBLUCHER

480/277 VOLTS 3 PHASE, 4 WIRE 65kAIC				PANEL PP-1 MAIN BREAKER 200A 3P										TYPE: NEMA 12 MOUNT: SURFACE SPD: 200kA
DESCRIPTION	WIRE	TRIP	POLE	No.	VOLT-AMPERES A	VOLT-AMPERES B	VOLT-AMPERES C	VOLT-AMPERES A	VOLT-AMPERES B	VOLT-AMPERES C	No.	POLE	TRIP	WIRE	DESCRIPTION
				1	18,000			---			2				
SEWAGE PUMP P-1	P-1010	100	3	3		18,000			---		4	3	20		SPARE
				5			18,000			---	6				
				7	18,000			---			8				
SEWAGE PUMP P-2	P-1013	100	3	9		18,000			---		10	3	20		SPARE
				11			18,000			---	12				
				13	2,200			---			14				
CONDITIONING PUMP P-3	P-1016	20	3	15		2,200			---		16				SPACE
				17			2,200			---	18				
				19	---			---			20				
SPACE				21		---			---		22				SPACE
				23			---			---	24				
				25	---			---			26				
SPACE				27		---			---		28				SPACE
				29			---			---	30				
				31	---			---			32				
SPACE				33		---			---		34				SPACE
				35			---			---	36				
				37	---			---			38				SPACE
SPACE				39		---			4,340		40	2	40	P-1009	LP-1
				41			---			3,010	42				
			TOTAL		38,200	38,200	38,200	0	4,340	3,010	TOTAL				
					PHASE TOTAL			TOTAL LOAD							
					38,200	42,540	41,210	121,950							

NOTES:

TOTAL LOAD (AMPS)
146.7
73.3%

480-240/120 VOLTS 1 PHASE, 3 WIRE 10kAIC					PANEL LP-1 PRIMARY MAIN BREAKER: 40A 2P SECONDARY MAIN BREAKER: 80A 2P								TYPE: NEMA 3R MOUNT: SURFACE SPD: 100kA
DESCRIPTION	WIRE	TRIP	POLE	No.	VOLT-AMPERES A	VOLT-AMPERES B	VOLT-AMPERES A	VOLT-AMPERES B	No.	POLE	TRIP	WIRE	DESCRIPTION
ELEC BLDG RECEPTACLES	2#12, #12G, 3/4"C	20	1	1	720		1,000		2	1	20	P-1021	PLC-1
ELEC BLDG INTERIOR LIGHTS	2#12, #12G, 3/4"C	20	1	3		60		250	4	1	20	P-1022	BACKUP CP
ELEC BLDG EXTERIOR LIGHTS	2#12, #12G, 3/4"C	20	1	5	30		250		6	1	20	P-1023	RTU-1
AC-1	P-1019	20	2	7		1,100		150	8	1	20	P-1024	SF-WW
				9	1,100		150		10	1	20	P-1025	EF-WW
SPARE		20	1	11		---		100	12	1	20	P-1026	FE/FIT-1
VALVE VAULT LIGHT	P-1032	20	1	13	60		100		14	1	20	P-1027	VENTILATION ALARM PANEL
VALVE VAULT SUMP PUMP	P-1033	20	1	15		250		100	16	1	20	P-1028	RPZ-1 HEATER
ACCU-1 CONVENIENCE RECEPT.	2#12, #12G, 3/4"C	20G	1	17	180		---		18	1	20		SPARE
SPARE		20	1	19		---		---	20	1	20		SPARE
SPARE		20	1	21	---		---		22	1	20		SPARE
SPARE		20	1	23		---		500	24	1	20	P-1029	GEN-1 SHORE POWER
SPARE		20	1	25	---		250		26	1	20	P-1030	GEN-1 BATTERY CHARGER
SPARE		20	1	27		---		500	28	2	20	P-1031	GEN-1 JACKET HEATER
SPARE		20	1	29	---		500		30				
			TOTAL		2,090	1,410	2,250	1,600	TOTAL				
					PHASE TOTAL		TOTAL LOAD						
					4,340	3,010	7,350						

NOTES:
COMBINATION POWER UNIT - 15kVA
G: GFCI BREAKER

TOTAL LOAD (AMPS)
30.6
38.3%

FIXTURE SCHEDULE

FIXTURE TYPE	FIXTURE WATTAGE	DESCRIPTION	MANUFACTURER AND MODEL
LC1	31W (max)	CEILING-MOUNTED, 120-277Vac, LED LIGHT FIXTURE, COLOR TEMPERATURE OF 4000K, LINEAL RIBBED FROSTED ACRYLIC LENS, SPREAD DISTRIBUTION, GASKETED FIBERGLASS HOUSING, STAINLESS STEEL LATCHES, 4FT, 4,000 LUMEN MINIMUM, AND WET LOCATION LISTED.	HOLOPHANE EMS LED SERIES, COOPER VAPORTITE LED SERIES, OR LITHONIA FEM LED SERIES.
LC1A	31W (max)	SIMILAR TO TYPE LC1 EXCEPT EQUIPPED WITH EMERGENCY BATTERY BACKUP.	SAME AS LC1
LW1A	28W (max)	WALL-MOUNTED, 120-277Vac, LED LIGHT FIXTURE, COLOR TEMPERATURE OF 4000K, IESNA TYPE III MEDIUM DISTRIBUTION, BLACK DIE-CAST ALUMINUM HOUSING, FULL CUT-OFF OPTICS, 3,000 LUMEN MINIMUM, INTEGRAL PHOTOCELL WITH EMERGENCY BATTERY BACKUP.	HOLOPHANE WALLPACK FULL CUTOFF LED, HUBBELL LMC SERIES, OR APPROVED EQUAL
LW2	40W (max)	WALL-MOUNTED AT 45 DEGREES, 120-277Vac, LED LIGHT FIXTURE, COLOR TEMPERATURE OF 4000K, LINEAL FROSTED POLYCARBONATE LENS, SPREAD DISTRIBUTION, POLYESTER POWDER COATED CAST & EXTRUDED ALUMINUM ENCLOSURE, MOLDED SILICONE GASKETING, STAINLESS STEEL LATCHES, 4FT, 6,000 LUMEN MINIMUM, 80 CRI, UL LISTED FOR USE IN CLASS I, DIVISION 2, GROUP D AREAS.	HOLOPHANE EMXH LED SERIES OR ENGINEER APPROVED EQUAL

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S
ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND · MATTHEW FERGEN · 59922 · REGISTERED · PROFESSIONAL ENGINEER

3/3/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 59922,

Expiration Date: 09/15/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY S. BLUCHER
DESIGNED BY S. BLUCHER
CHECKED BY M. FERGEN
DATE MARCH 2023

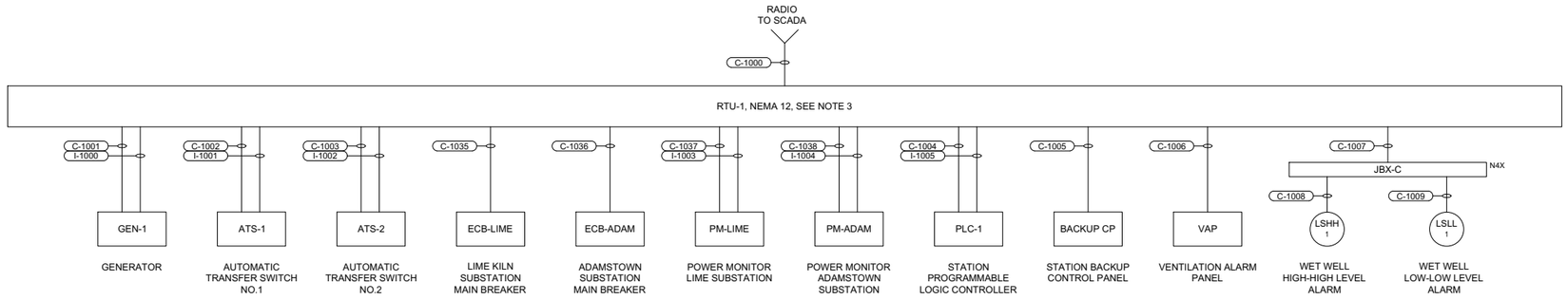
TITLE

PANELBOARD & FIXTURE SCHEDULES

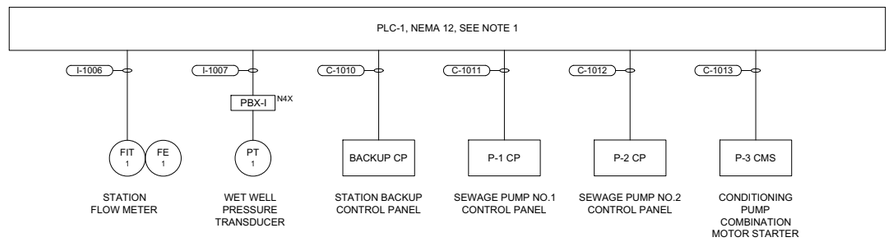
PROJECT NO.

E-006

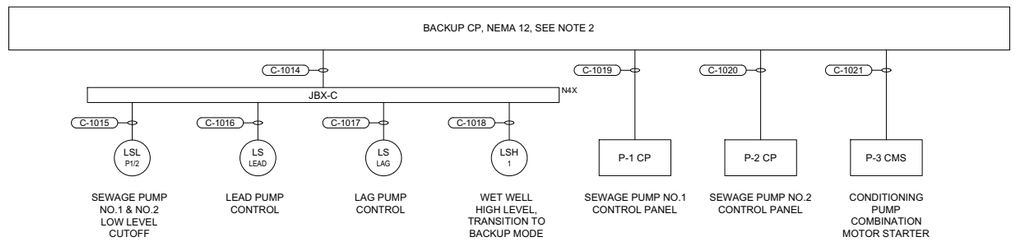
SHEET NO. 31 OF 37



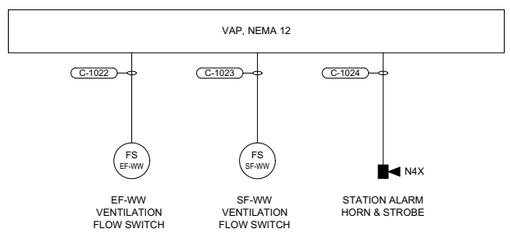
1 RTU-1
CONTROL ONE-LINE DIAGRAM



2 PLC-1
CONTROL ONE-LINE DIAGRAM



3 BACKUP CONTROL PANEL
CONTROL ONE-LINE DIAGRAM



4 VENTILATION ALARM PANEL (VAP)
CONTROL ONE-LINE DIAGRAM

NOTES:

1. STATION PLC SHALL BE SIEMENS LC150, NO OR EQUAL.
2. BACKUP FLOAT CONTROLLER SHALL BE PRIMEX PC-240, NO OR EQUAL. PROVIDE RELAY FOR LSL-P1/2.
3. STATION RTU SHALL BE MOTOROLA 800MHz ACE3600 RTU, NO OR EQUAL.

Dewberry

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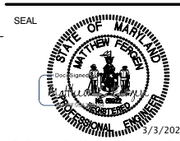
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION
SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL



3/3/2023

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Expiration Date: 09/15/2024.

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500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

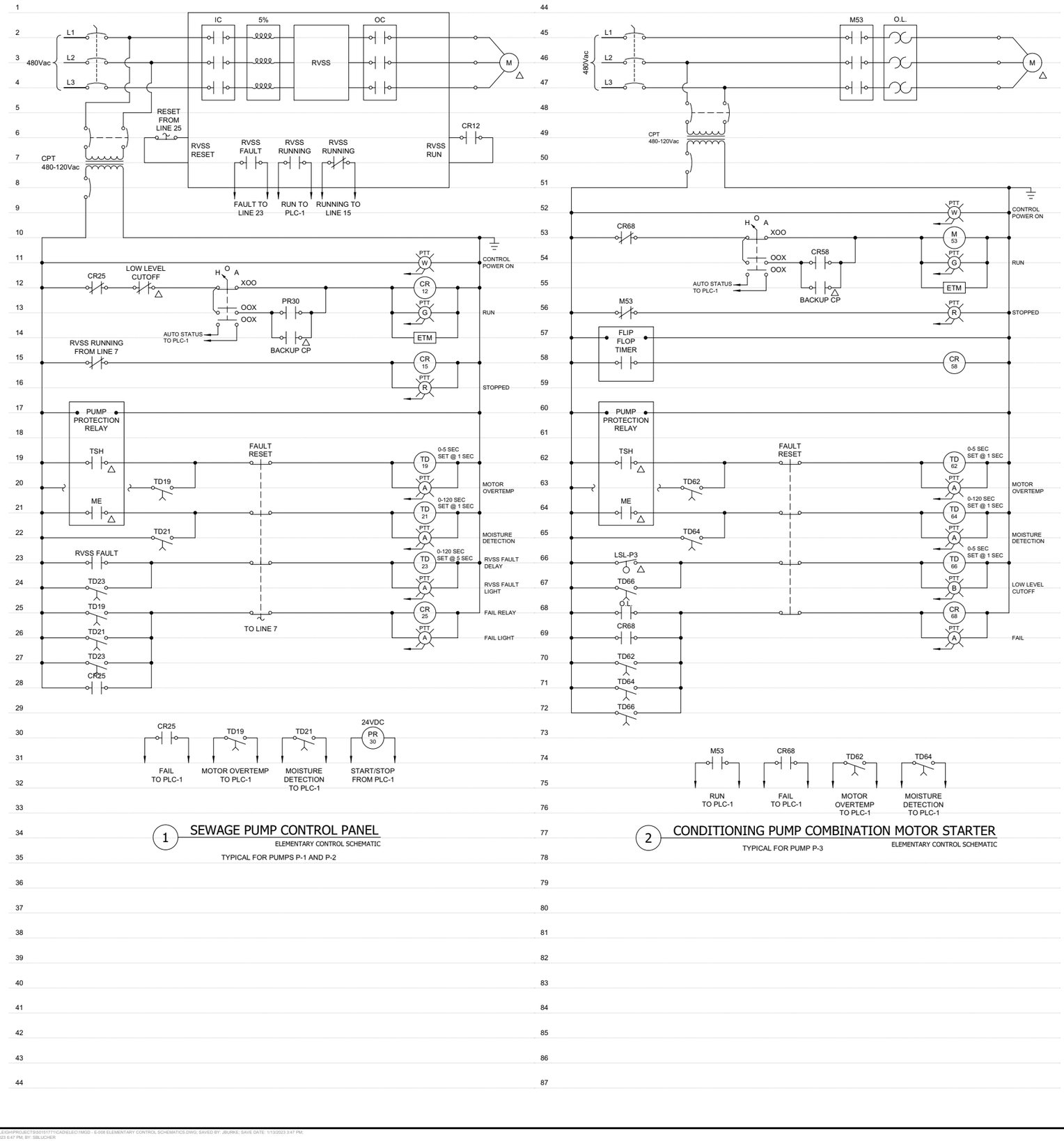
DRAWN BY	S. BLUCHER
DESIGNED BY	S. BLUCHER
CHECKED BY	M. FERGEN
DATE	MARCH 2023

TITLE

CONTROL ONE-LINE DIAGRAMS

PROJECT NO.

E-007



1 SEWAGE PUMP CONTROL PANEL
ELEMENTARY CONTROL SCHEMATIC
TYPICAL FOR PUMPS P-1 AND P-2

2 CONDITIONING PUMP COMBINATION MOTOR STARTER
ELEMENTARY CONTROL SCHEMATIC
TYPICAL FOR PUMP P-3

Dewberry

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8401 Arlington Boulevard
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QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION

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DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND
MATTHEW FERGEN
No. 59922
PROFESSIONAL ENGINEER

3/3/2023

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AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY S. BLUCHER
DESIGNED BY S. BLUCHER
CHECKED BY M. FERGEN
DATE MARCH 2023

TITLE

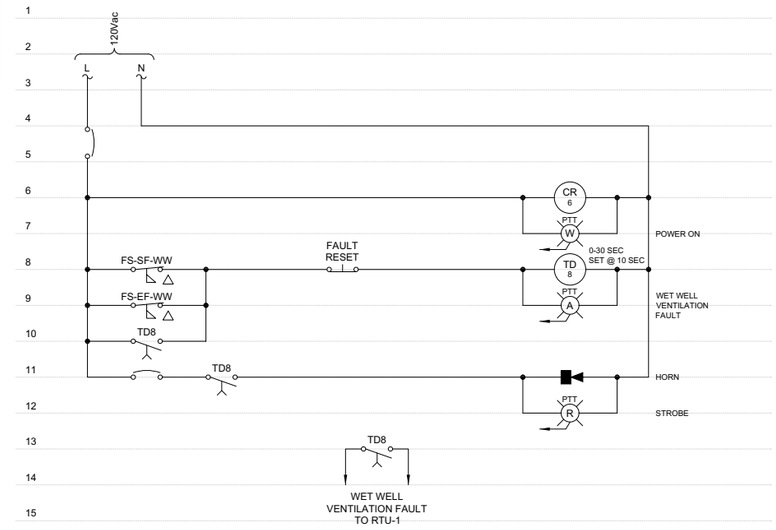
ELEMENTARY CONTROL SCHEMATICS

PROJECT NO.

E-008

SHEET NO. 33 OF 37

FILE: \\RAL-FS\RALE\SHP\PROJECTS\50151777\CAD\ELEC\1MGD - E-008 ELEMENTARY CONTROL SCHEMATICS.DWG, SAVED BY: JBURKE, SAVE DATE: 1/13/2023 3:47 PM.
PLOT DATE: 3/2/2023 6:47 PM; BY: SBLUCHER



1 VENTILATION ALARM PANEL (VAP)
ELEMENTARY CONTROL SCHEMATIC

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL

STATE OF MARYLAND
MATTHEW FERGEN
REGISTERED
PROFESSIONAL ENGINEER

3/3/2023

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License No. 59922,

Expiration Date: 09/15/2024.

DEVELOPER / OWNER:

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500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY	S. BLUCHER
DESIGNED BY	S. BLUCHER
CHECKED BY	M. FERGEN
DATE	MARCH 2023

TITLE

ELEMENTARY CONTROL SCHEMATICS

PROJECT NO.

E-009

SHEET NO. 34 OF 37

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
P-1000	2"	TX-LIME	ECB-LIME	4#4/0	VIA UTILITY METER
P-1001	2"	ECB-LIME	ATS-1	4#4/0, #6G	
P-1002	1"	SPD	ECB-LIME	4#6, #10G	
P-1003	2"	TX-ADAM	ECB-ADAM	4#4/0	VIA UTILITY METER
P-1004	2"	ECB-ADAM	ATS-1	4#4/0, #6G	
P-1005	1"	SPD	ECB-ADAM	4#6, #10G	
P-1006	2"	ATS-1	ATS-2	4#4/0, #6G	
P-1007	2"	GEN-1	ATS-2	4#4/0, #6G	
P-1008	2"	ATS-2	PP-1	4#4/0, #6G	
P-1009	1"	PP-1	LP-1	2#8, #10G	
P-1010	1-1/2"	PP-1	P-1 CP	3#2, #8G	
P-1011	1-1/2"	P-1 CP	JBX-P	3#2, #8G	
P-1012	---	JBX-P	P-1	CABLE BY MANUF.	
P-1013	1-1/2"	PP-1	P-2 CP	3#2, #8G	
P-1014	1-1/2"	P-2 CP	JBX-P	3#2, #8G	
P-1015	---	JBX-P	P-2	CABLE BY MANUF.	
P-1016	1"	PP-1	P-3 CMS	3#12, #12G	
P-1017	1"	P-3 CMS	JBX-P	3#12, #12G	
P-1018	---	JBX-P	P-3 CMS	CABLE BY MANUF.	
P-1019	1"	LP-1	ELEC BLDG AC UNIT	2#12, #12G	
P-1020				NOT USED	
P-1021	1"	LP-1	PLC-1	2#12, #12G	
P-1022	1"	LP-1	BACKUP CP	2#12, #12G	
P-1023	1"	LP-1	RTU-1	2#12, #12G	
P-1024	1"	LP-1	SF-WW	2#12, #12G	VIA MANUAL MOTOR STARTER
P-1025	1"	LP-1	EF-WW	2#12, #12G	VIA MANUAL MOTOR STARTER
P-1026	1"	LP-1	FE/FIT-1	2#12, #12G	
P-1027	1"	LP-1	VENTILATION ALARM PANEL	2#12, #12G	
P-1028	1"	LP-1	RPZ-1 HEATER	2#12, #12G	
P-1029	1"	LP-1	GEN-1 SHORE POWER	2#12, #12G	
P-1030	1"	LP-1	GEN-1 BATTERY CHARGER	2#12, #12G	
P-1031	1"	LP-1	GEN-1 JACKET HEATER	2#12, #12G	
P-1032	1"	LP-1	VALVE VAULT LIGHT	2#12, #12G	
P-1033	1"	LP-1	VALVE VAULT SUMP PUMP	2#12, #12G	
P-1034				NOT USED	
P-1035				NOT USED	

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
C-1000	2"	SCADA	RTU-1	COORD. WITH SYS. INTEGRATOR	
C-1001	1"	RTU-1	GEN-1	8#14, #14G	
C-1002	1"	RTU-1	ATS-1	14#14, #14G	
C-1003	1"	RTU-1	ATS-2	14#14, #14G	
C-1004	2"	RTU-1	PLC-1	40#14, #14G	
C-1005	1"	RTU-1	BACKUP CP	6#14, #14G	
C-1006	1"	RTU-1	VAP	4#14, #14G	
C-1007	1"	RTU-1	JBX-C	6#14, #14G	
C-1008	---	JBX-C	LSHH-1	CABLE BY MANUF.	
C-1009	---	JBX-C	LSLL-1	CABLE BY MANUF.	
C-1010	1"	PLC-1	BACKUP CP	6#14, #14G	
C-1011	1"	PLC-1	P-1 CP	14#14, #14G	
C-1012	1"	PLC-1	P-2 CP	14#14, #14G	
C-1013	1"	PLC-1	P-3 CMS	14#14, #14G	
C-1014	1"	BACKUP CP	JBX-C	10#14, #14G	
C-1015	---	JBX-C	LSL-P1/2	CABLE BY MANUF.	
C-1016	---	JBX-C	LS LEAD	CABLE BY MANUF.	
C-1017	---	JBX-C	LS LAG	CABLE BY MANUF.	
C-1018	---	JBX-C	LSH-1	CABLE BY MANUF.	
C-1019	1"	BACKUP CP	P-1 CP	4#14, #14G	
C-1020	1"	BACKUP CP	P-2 CP	4#14, #14G	
C-1021	1"	BACKUP CP	P-3 CMS	4#14, #14G	
C-1022	1"	VAP	FS-EF-WW	4#14, #14G	
C-1023	1"	VAP	FS-SF-WW	4#14, #14G	
C-1024	1"	VAP	ALARM HORN & STROBE	4#14, #14G	
C-1025				NOT USED	
C-1026	1"	GEN-1	ATS-2	14#14, #14G	
C-1027	1"	GEN-1	GEN-1 E-STOP	4#14, #14G	
C-1028	1"	P-1 CP	JBX-C	6#14, #14G	
C-1029	---	JBX-C	P-1	CABLE BY MANUF.	
C-1030	1"	P-2 CP	JBX-C	6#14, #14G	
C-1031	---	JBX-C	P-2	CABLE BY MANUF.	
C-1032	1"	P-3 CMS	JBX-C	8#14, #14G	
C-1033	---	JBX-C	P-3	CABLE BY MANUF.	
C-1034	---	JBX-C	LSL-P3	CABLE BY MANUF.	
C-1035	3/4"	ECB-LIME	RTU-1	4#14, #14G	
C-1036	3/4"	ECB-ADAM	RTU-1	4#14, #14G	
C-1037	3/4"	PM-LIME	RTU-1	1-CAT6 ENET, #14G	
C-1038	3/4"	PM-ADAM	RTU-1	1-CAT6 ENET, #14G	
C-1039				NOT USED	
C-1040				NOT USED	

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
I-1000	1"	RTU-1	GEN-1	EMPTY W/ PULLSTRING	
I-1001	1"	RTU-1	ATS-1	EMPTY W/ PULLSTRING	
I-1002	1"	RTU-1	ATS-2	EMPTY W/ PULLSTRING	
I-1003	1"	RTU-1	PM-LIME	1-CAT6 ENET, #14G	
I-1004	1"	RTU-1	PM-ADAM	1-CAT6 ENET, #14G	
I-1005	1"	RTU-1	PLC-1	1-CAT6 ENET, #14G	
I-1006	1"	PLC-1	FE/FIT-1	2#16TSP, #14G	
I-1007	1"	PLC-1	PT-1	2#16TSP, #14G	
I-1008				NOT USED	
I-1009				NOT USED	

Dewberry

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1 MGD SEWAGE PUMPING STATION
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Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 59922,

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DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701
CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY S. BLUCHER
DESIGNED BY S. BLUCHER
CHECKED BY M. FERGEN
DATE MARCH 2023

TITLE

CONDUIT & WIRE SCHEDULES

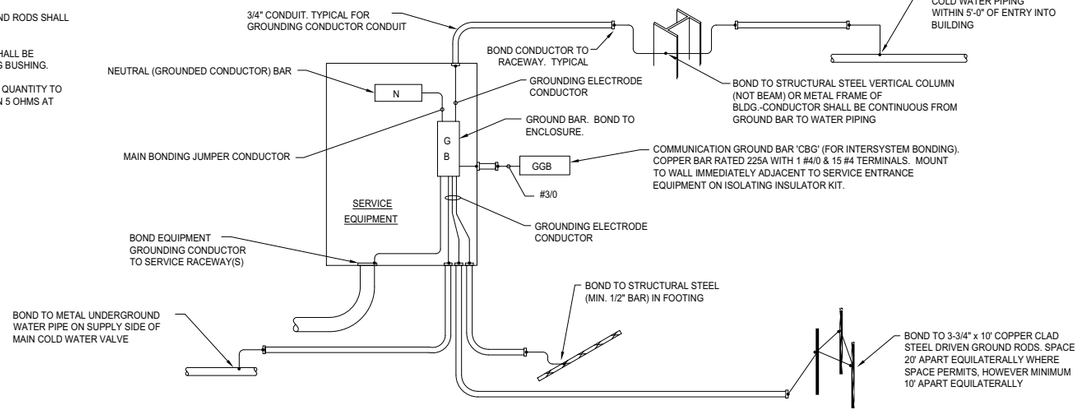
PROJECT NO.

E-010

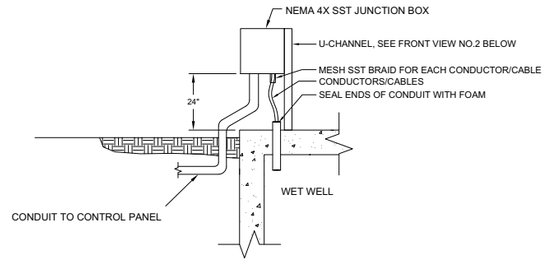
SHEET NO. 35 OF 37

NOTES:

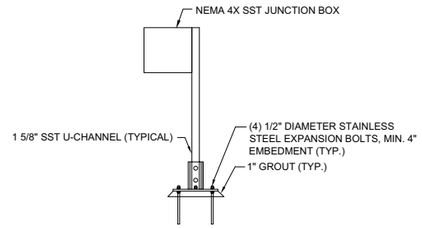
1. GROUNDING CONDUCTORS AND MAIN BONDING JUMPER SHALL BE BARE COPPER UNO AND SHALL BE SIZED AS INDICATED IN ELECTRICAL RISER AND THIS DETAIL.
2. CONNECTIONS TO STRUCTURAL STEEL AND GROUND RODS SHALL BE EXOTHERMICALLY WELDED.
3. GROUNDING ELECTRODE CONDUCTOR CONDUIT SHALL BE BONDED AT EACH END BY MEANS OF A GROUNDING BUSHING.
4. PROVIDE GROUND ROD LENGTH (MINIMUM 10') AND QUANTITY TO ACHIEVE GROUND ROD RESISTANCE OF LESS THAN 5 OHMS AT SERVICE EQUIPMENT.



1 GROUNDING/BONDING DETAIL
NTS



FRONT VIEW NO.1

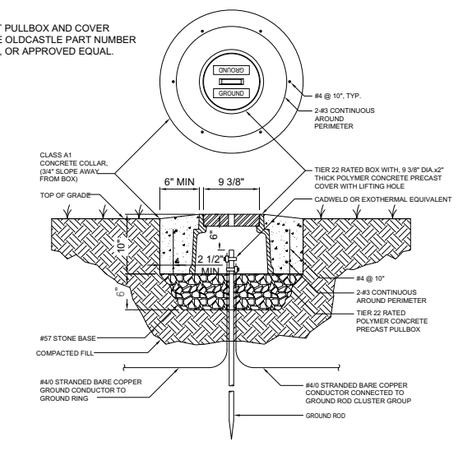


FRONT VIEW NO.2

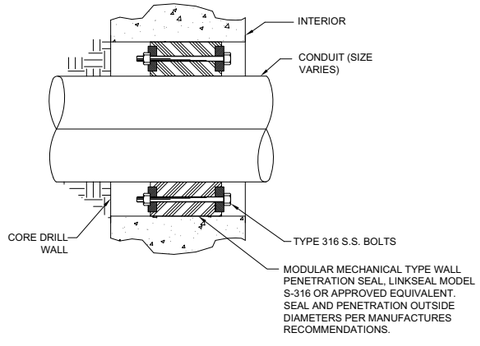
2 WET WELL JUNCTION BOX DETAIL
NTS

NOTES:

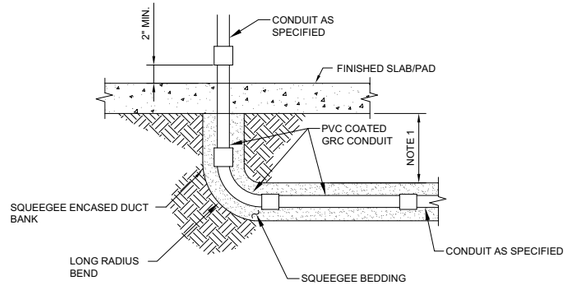
1. PRECAST PULLBOX AND COVER SHALL BE OLDCASTLE PART NUMBER 09101187, OR APPROVED EQUAL.



3 GROUND ROD TEST WELL DETAIL
NTS



4 CONDUIT PENETRATION DETAIL
NTS



NOTES:

1. 36" DEEP FOR POWER, 24" DEEP FOR NON-POWER, 2" MINIMUM EMBEDMENT DEPTH IN CONCRETE WALKWAYS.

5 CONDUIT THROUGH CONCRETE PAD DETAIL
NTS

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE
1 MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS
DWSU #601-S

ELECTION DISTRICT NO. 01 FREDERICK COUNTY, MARYLAND

SEAL

STATE OF MARYLAND
MATTHEW FERGEN
PROFESSIONAL ENGINEER

3/3/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 59922,

Expiration Date: 09/15/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE: 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY S. BLUCHER
DESIGNED BY S. BLUCHER
CHECKED BY M. FERGEN
DATE MARCH 2023

TITLE

STANDARD DETAILS

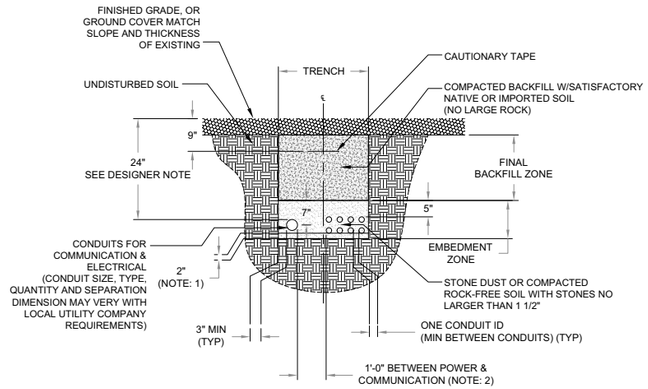
PROJECT NO.

E-011

SHEET NO. 36 OF 37

NOTE:

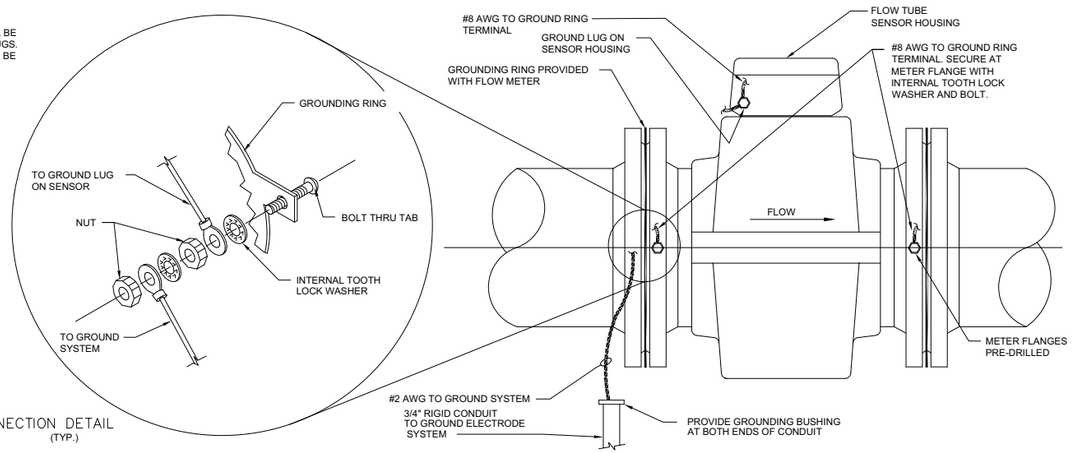
1. THE BOTTOM OF THE TRENCH MUST BE FREE OF ROCK, CINDERS OR SHARP OBJECTS.
2. SEPARATION BETWEEN ELECTRICAL CONDUITS AND COMMUNICATION CONDUITS SHALL BE 12" MINIMUM. GREATER SEPARATION SHALL BE MAINTAINED WHERE PRACTICAL. LOCAL COMPANIES MAY REQUIRE GREATER GREATER SEPARATION. THIS SHOULD BE DETERMINED IN ADVANCED BY THE SUBCONTRACTOR.
3. THE BACKFILLED TRENCH SHALL BE FREE OF PEAT, MARL, HIGHLY PLASTIC CLAY (CH PER ASTM D-2487), OR OTHER UNSUITABLE MATERIAL SUCH AS TRASH, DEBRIS, BRUSH, FROZEN MATERIAL OR ICE.
4. PLACE EMBEDMENT ZONE MATERIAL IN 3 OR MORE LIFTS AS SHOWN AND TAMP TO ELIMINATE VOIDS AND ASSURE FULL CONTACT WITH THE CONDUIT PERIMETER.
5. PLACE FINAL BACKFILL ZONE MATERIAL IN 6-INCH LIFTS AND COMPACT WITH MULTIPLE PASSES OF A MACHINE TAMPER, ROLLER, OR VIBRATORY EQUIPMENT (FOR USE ON SAND AND GRAVEL ONLY) THAT IS SPECIFICALLY DESIGNED FOR SOIL COMPACTION. COMPACT UNTIL VOIDS ARE ELIMINATED AND THE COMPACTED SURFACE NO LONGER VISIBLY YIELDS BENEATH THE COMPACTION EQUIPMENT.
6. ALL CONDUITS SHALL BE BURIED A MINIMUM OF 24" BELOW GRADE TO TOP OF CONDUIT.



1 DIRECT BURIED CONDUIT DETAIL
NTS

NOTES:

1. ALL GROUND CONDUCTORS SHALL BE PROVIDED WITH RING TONGUE LUGS.
2. ALL FASTENING HARDWARE SHALL BE STAINLESS STEEL.



GROUND RING CONNECTION DETAIL
(TYP.)

2 FLOW METER GROUNDING DETAIL
NTS

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard
Fairfax, VA 22031-4666
703.849.0100

QUANTUM LOOPHOLE 1 MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

DWSU #601-S

FREDERICK COUNTY, MARYLAND

ELECTION DISTRICT NO. 01

SEAL

3/3/2023

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 59922,

Expiration Date: 09/15/2024.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC
500 E 4TH STREET, SUITE 333
AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS

DRAWN BY S. BLUCHER
DESIGNED BY S. BLUCHER
CHECKED BY M. FERGEN
DATE MARCH 2023

TITLE

STANDARD DETAILS

PROJECT NO.

E-012

SHEET NO. 37 OF 37

Appendix D

Seepage Analysis Memo with Pump Station SOE Design

D1 - Seepage Analysis Memo

D2 - SOE Final Design

Appendix D1

Appendix D1 - Seepage Analysis Memo

Memo

To: Peter McCabe (STO Mission Critical)

From: Christophe Locussol, P.E. (GEI)

c: Giovanni Bonita, Ph.D., P.E.; Albin Rosado, EIT (GEI)

Date: October 13, 2023

Re: Dewatering Assessment – 1 MGD Pump Station SOE
Quantum Maryland, LLC
Frederick, MD

This memorandum describes the design approach used to estimate the volume of groundwater and associated drawdown associated with the extraction of water within the proposed temporary Support of Excavation (SOE) systems in the 1MGD Sewage Pumping Station area. One SOE system is proposed around MH-1 and MH-2, with MH-1 serving as the wet well for the temporary 1 MGD sewage pumping station. Another SOE system is proposed around the existing MH-3, located approximately 240 feet west of MH-2. The two SOE systems will also serve as launch and retrieval shafts for microtunneling activities. The analysis considers the engineering control measures developed for the project that limit groundwater pumping and discharge in these areas.

Our design was based on the subsurface information provided in the Geo-Technology Associates, Inc. (GTA) geotechnical reports titled *Report of Geotechnical Exploration – Quantum Frederick Property Proposed Sewer Pump Station* dated March 3, 2023 and *Report of Geotechnical Exploration – Quantum Frederick Property Proposed Sewer Outfall A* dated August 29, 2022.

Existing Conditions

The proposed development is located within the larger Quantum Maryland, LLC property consisting of approximately 2,200 acres. The proposed pump station is located approximately 2,500 feet north of the intersection of Mountville Road and Adamstown Road. The site was previously agricultural farmland prior to start of grading operations. Construction was halted by regulatory agencies due to permitting issues relating to dewatering after grading operations started. The excavations had not reached subgrade elevations but had encountered groundwater. Steep slopes in the proposed MH-1 and MH-2 area are currently present, with the excavation filled with water up to El. +295 feet.

Subsurface Conditions

Subsurface conditions throughout the site were developed from the soil borings advanced for the project and presented in the GTA geotechnical reports. One geotechnical boring was drilled at the existing MH-3 location, and one geotechnical boring drilled at the proposed MH-1/MH-2 location. Air track probes within the footprint of MH-1 were also advanced into the bedrock to identify cavities in the rock. The top of rock elevation varies significantly across the site and GEI has requested additional subsurface investigation within the proposed work area to better understand the conditions.

The following provides a brief summary of the typical subsurface stratigraphy at the site:

Stratum 1 – Residual Soils (El. +311 feet to El. +277 feet):

The residual layer generally consists of moderate to high-plasticity cohesive soils classified as lean clay (CL), fat clay (CH), elastic silt (ML) and high-plasticity silt (MH). SPT N-values in this layer ranged from 5 blows per foot (bpf) to 17 bpf. Soft layers were encountered at depth near the transition between residual soils and weathered rock.

Based on the air-track probes, the bottom of the residual soils vary significantly in the vicinity of the proposed MH-1 and MH-2 locations. The boring advanced within the MH-1 and MH-2 footprint has bottom of residual soils at El. +277 feet. The boring advanced within the MH-3 footprint has bottom of residual soils at El. + 285.5 feet.

Stratum 2 – Highly Weathered Rock (El. +277 feet to El. +274.5 feet):

The Residual Soils are underlain by a thin layer of highly weathered rock, defined as Stratum 1 soils with SPT N-values between 51 bpf and 50 blows for 1 inch of split spoon penetration. Borings within the MH-1/MH-2 footprint and within the MH-3 footprint encountered 2.5 feet and 3 feet of highly weathered rock, respectively.

Stratum 3 –Rock (El. +274.5 feet):

The Highly Weathered Rock is underlain by the Cambrian-age Frederick Formation, which consists of thin-bedded, laminated limestone. This formation is particularly susceptible to developing karst features. Top of rock is defined as auger refusal. Rock coring was not performed in either of the borings advanced within the footprint of the proposed work. However, from other borings advanced within the proposed Pump Station, Rock Quality Designation (RQD) for the rock ranged from 0% to 100%, with the majority of the rock above El. +265 feet with RQDs less than 50%.

Air track probes were also advanced within the MH-1 footprint and encountered cavities up to 10 feet in depth below the top of rock.

Groundwater was encountered within the Residual Soils layer at elevations ranging between El. +295.3 feet and El. +291 feet.

Relevant boring logs and subsurface data are included as Attachment 1 for reference.

Proposed Construction

The proposed construction consists of a new manhole (MH-2), a wet well, and approximately 275 lineal feet of 24-inch diameter sewer pipe. The wet well will be 10-foot in diameter and will serve as a 1 million gallon per day (MGD) temporary pump station. The 24-inch diameter sewer pipe connects MH-2 to the wet well and MH-2 to the existing MH-3, which was installed under a previous contract.

Watertight SOE systems in conjunction with a low-mobility grouting (LMG) program are proposed to minimize the amount of groundwater that will be extracted during construction.

A secant pile wall system is proposed as the perimeter excavation support system from the wet well to MH-2 and around MH-3. The purpose of the secant pile wall is to provide a lateral cutoff to water flow into the excavation. The secant pile wall consists of a continuous wall of overlapping concrete circular shafts. Steel W section members are placed in alternating shafts to provide structural lateral support during the excavation. Excerpt drawings from the SOE package have been included as Attachment 2 for illustration.

The secant pile wall system will also serve as the launch and retrieval shafts for microtunneling activities. One secant pile wall will encompass both the wet well and MH-2 while the other will be installed around the existing MH-3. The SOE system around the wet well and MH-2 will serve as the

retrieval shaft and will have two subgrades given the difference in bottom elevations. The excavation within the wet well will extend to El. +266.5 feet while the excavation within MH-2 will extend to El. +275.5 feet. The SOE system around MH-3 will serve as the launch shaft and will extend to El. +275.5 feet.

A LMG program will be performed within the rock along the alignment of the SOE systems and within the proposed excavations to fill cavities and soil seams and restrict water flow into the excavation. The intent of the LMG program is to restrict the amount of groundwater from entering the excavation and aid in the installation of the SOE systems. Additional grouting based on field conditions and grout takes might be required.

Analysis Approach

A numerical model was prepared using the geometry of the proposed excavations, groundwater elevations and stratigraphy discussed above to estimate the flow that will enter the excavations. The computer program, SEEP/W, developed by Geoslope International, a Bentley company, was used to perform the analysis. SEEP/W is a finite element software product for modelling two-dimensional groundwater flow in porous media.

SEEP/W uses permeability properties of the subsurface layers to estimate the flow rate of the groundwater through these layers. As mentioned previously in the subsurface conditions section, three different soil layers were modeled in SEEP/W based on the available boring logs.

The permeability value for Stratum 1 (Residual Soils) layer was estimated using laboratory data in the publication “Hydrogeology of the Carbonate Rocks, Frederick and Hagerstown Valleys, Maryland” by LJ Nutter for the Maryland Geological Survey (Nutter 1973). Hydraulic conductivity tests were performed on residual soil samples from the Eastalco Plant, approximately 1 mile north of the proposed construction site. The hydraulic conductivity test results are within the range of typical permeability values of silty soils presented in NAVFAC DM 7.1 (2022 Manual). The maximum hydraulic conductivity test value was conservatively used in the analysis. The permeability values of the Stratum 2 (Weathered Rock) and Stratum 3 (Rock) layers were estimated using hydraulic conductivity values of well graded gravel (GW) and limestone, respectively presented in NAVFAC DM 7.1.

The LMG program requires that the treated areas achieve a permeability of 10^{-6} cm/sec (3.28×10^{-8} ft/sec) or less. This permeability value was used in the seepage analysis for the LMG zone.

The permeability of the concrete associated with the secant pile wall is traditionally very low. But the general nature of the construction process results in the formation of concrete cold joints between adjacent piles. The permeability of the secant pile walls used in the analysis took into consideration these joints by assuming higher than normal flows through water-producing hairline cracks. The permeability of the secant pile walls also considered the permeability of the soil layer behind the cold joints.

The NAVFAC DM 7 manual indicates that the ratio of vertical to horizontal permeability (K_y/K_x) can be on the order of 0.1 for stratified soil deposits.

Table 1 summarizes the permeability properties of the various elements used in the SEEP/W analysis.

Table 1. Permeability Properties

Layer	Name	Saturated Horiz. Permeability, K_x (ft/sec)
1	Fine Grained Residual Soils	$3.13x10^{-7}$
2	Weathered Rock	$3.28x10^{-3}$
3	Limestone	$4.92x10^{-4}$
4	Secant Piles – Residual Soils	$1.11x10^{-10}$
5	Secant Piles -Weathered Rock	$1.09x10^{-6}$
6	Secant Piles - Limestone	$1.64x10^{-7}$
7	LMG Treated Areas	$3.28x10^{-8}$

The analysis was set up as a two-dimensional SEEP/W model section view, modeling both excavations and conservatively using the deeper excavation at the wet well. At the wet well and MH-2 excavation, the top of the model was set at a grade elevation of El. +300. A constant water head of +295.5 feet was set as the boundary condition to the East of the wet well and MH-2. At the MH-3 excavation, the top of the model was set at a grade elevation of El. +297. A constant water head of +292.0 feet was set as the boundary condition to the West of MH-3. A no flow boundary condition was set along the bottom of the limestone layer in the SEEP/W model.

In the SEEP/W model, zero pressure nodes along the width of the excavation were used to model drainage trenches and sump pits. The nodes were placed at relatively equal horizontal distances and were set to target stabilized groundwater depths of two to three feet below the excavation subgrade. The flow rate was then plotted for each of the nodes to estimate the anticipated flow into the excavations.

Grouting along the alignment of the microtunnel is anticipated as part of the LMG program to fill up soil cavities. Note that although the microtunneling process will be designed as a self contained sealed system, some minor leakage into the excavation may occur through entry portal during the microtunneling process. Given the sealed nature of the construction method, the LMG pre-treatment, and the limited construction duration of the microtunneling process, the amount of seepage from this construction activity is considered negligible.

The results of the SEEP/W analyses at the wet well/MH-2 and MH-3 locations are included as Attachment 3. The results of the analysis indicates that about 26 gallons per day per foot of wall (gpd/ft) will leak into the excavation at the wet well/MH-2 and 19 gpd/ft will enter the excavation at MH-3. These flow rates were then multiplied by the total perimeter lengths of the respective excavations to estimate the total flow into the SOE systems. The total flow at the wet well/MH-2 and MH-3 were 3,750 gpd and 2,250 gpd, respectively. The two SOE systems are anticipated to extract a maximum steady state total flow of about 6,000 gpd. The SEEP/W model shows a maximum decrease in the water table of 0.2 feet outside of the excavations, which is considered negligible. Figure 1 shows the extent of the groundwater drawdown beyond the limits of the SOE systems.

Closing

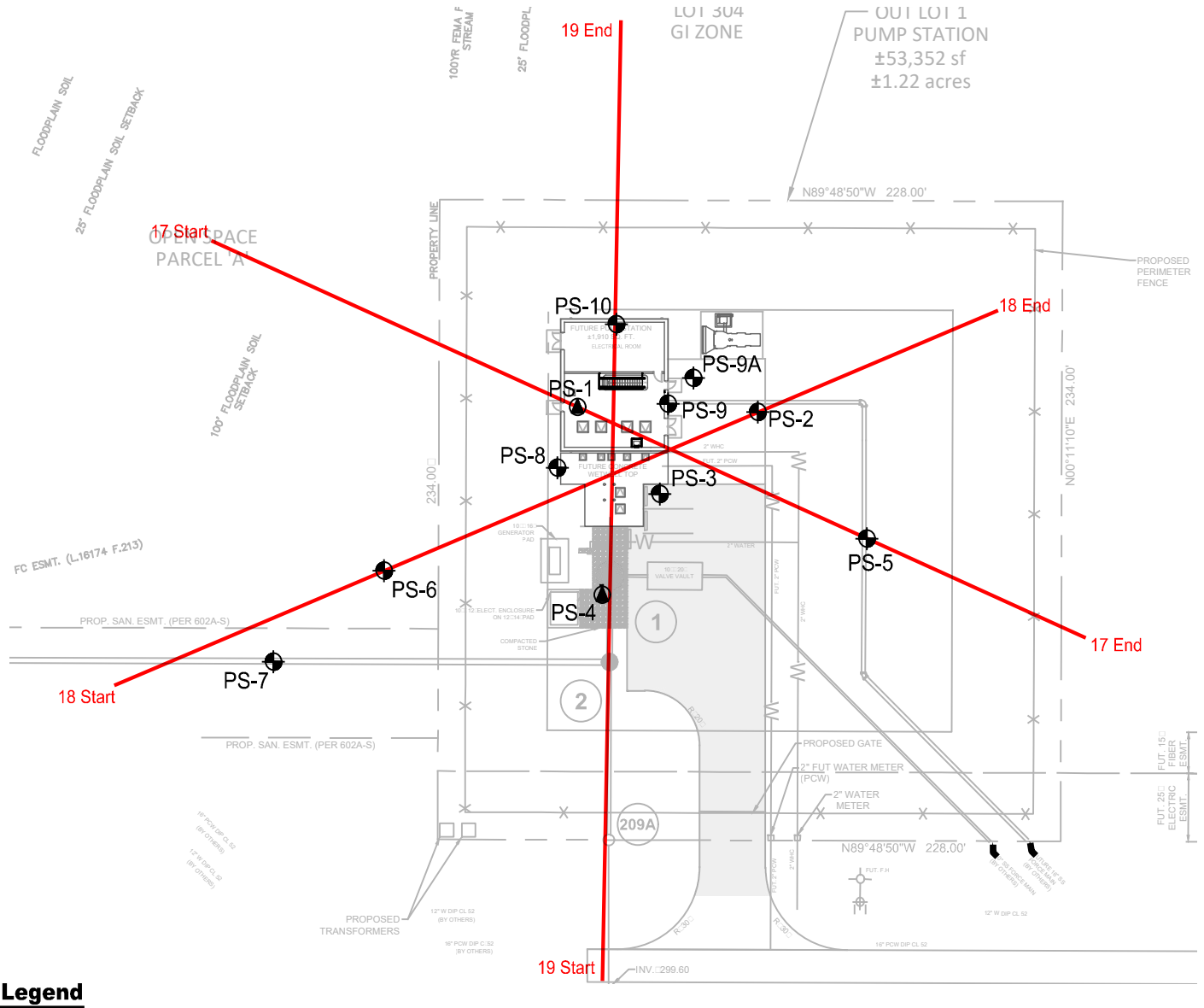
The estimated equilibrated maximum total flow of groundwater into the excavation is expected to be 6,000 gpd average over the period of time that the excavation remains open. Although considerations were made in the analysis to account for potential construction contingencies, the actual flow will be dependent on the implementation of the LMG program and the secant pile installation. Additional grouting identified either during the LMG program or during excavation may be required, and a robust special inspection program is necessary to ensure that the construction meets the design intent.

Attachments:
Attachment 1 – Subsurface Information
Attachment 2 – Secant Pile Wall and LMG Grouting General Design
Attachment 3 – Calculation Package – SOE Seepage Analysis

[arr:chl:□□□]
\\bos-pzcc-1\DATA_STORAGE\Working\STRUCTURE TONE\2302756 STO Mission Critical - Frederick\11_Seepage Analysis\Pump Station and Manhole 3\Quantum Loop PS Seepage Analysis Memo.docx

GEI Consultants

Attachment 1 – Subsurface Information



Legend

PS-1 — Identification and approximate location of Standard Penetration Test (SPT) borings performed by GTA and converted to groundwater monitoring wells in May of 2022.

PS-2 — Identification and approximate location of SPT borings performed by GTA in May of 2022.

PS-7 — Identification and approximate location of SPT borings performed by GTA in November of 2022.

Identification and approximate alignment of Electrical Resistivity Imaging (ERI) survey runs performed in May of 2022.

NOTES

1. Base image was adapted from the electronic version of the site plan prepared and provided by dewberry, the project civil engineer.
2. The exploration locations were selected by GTA and others and were staked in the field by GTA using a hand-held GPS unit. Exploration locations should be considered accurate only to the degree implied by the method used.

0 30 60

Approximate Scale
1 inch = 60 feet

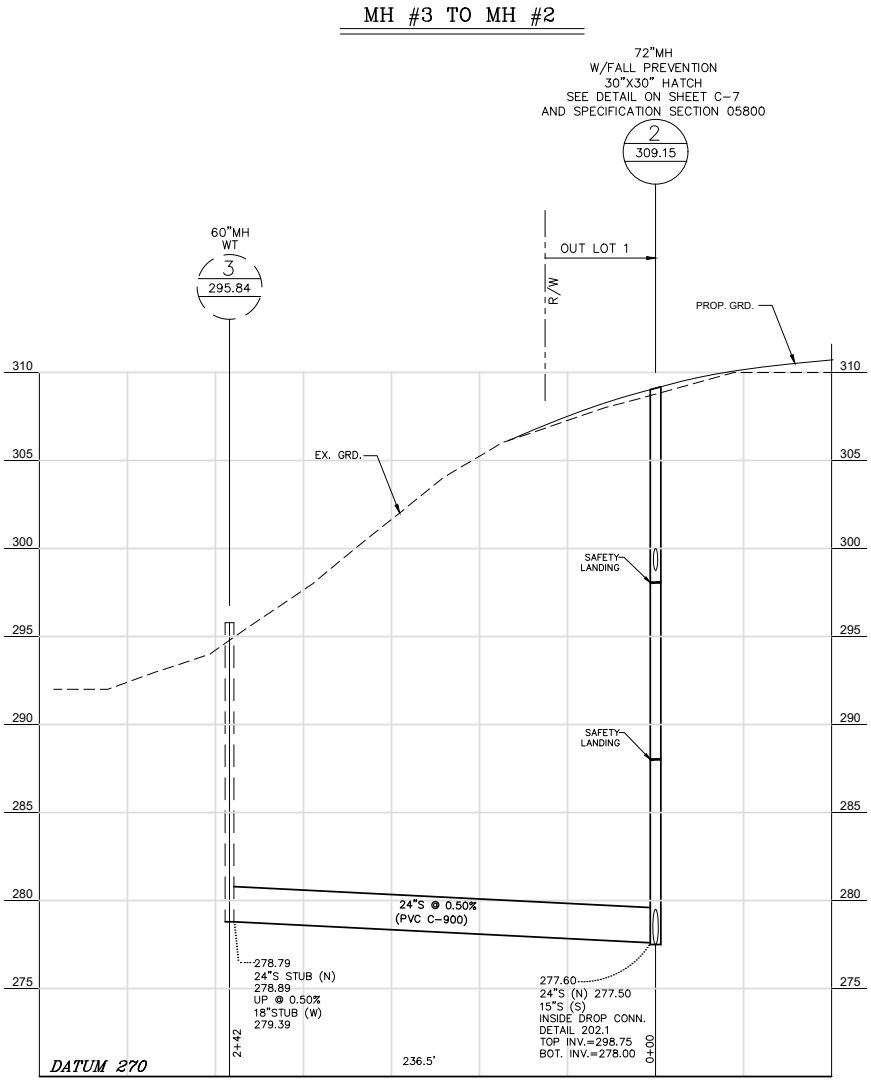
North

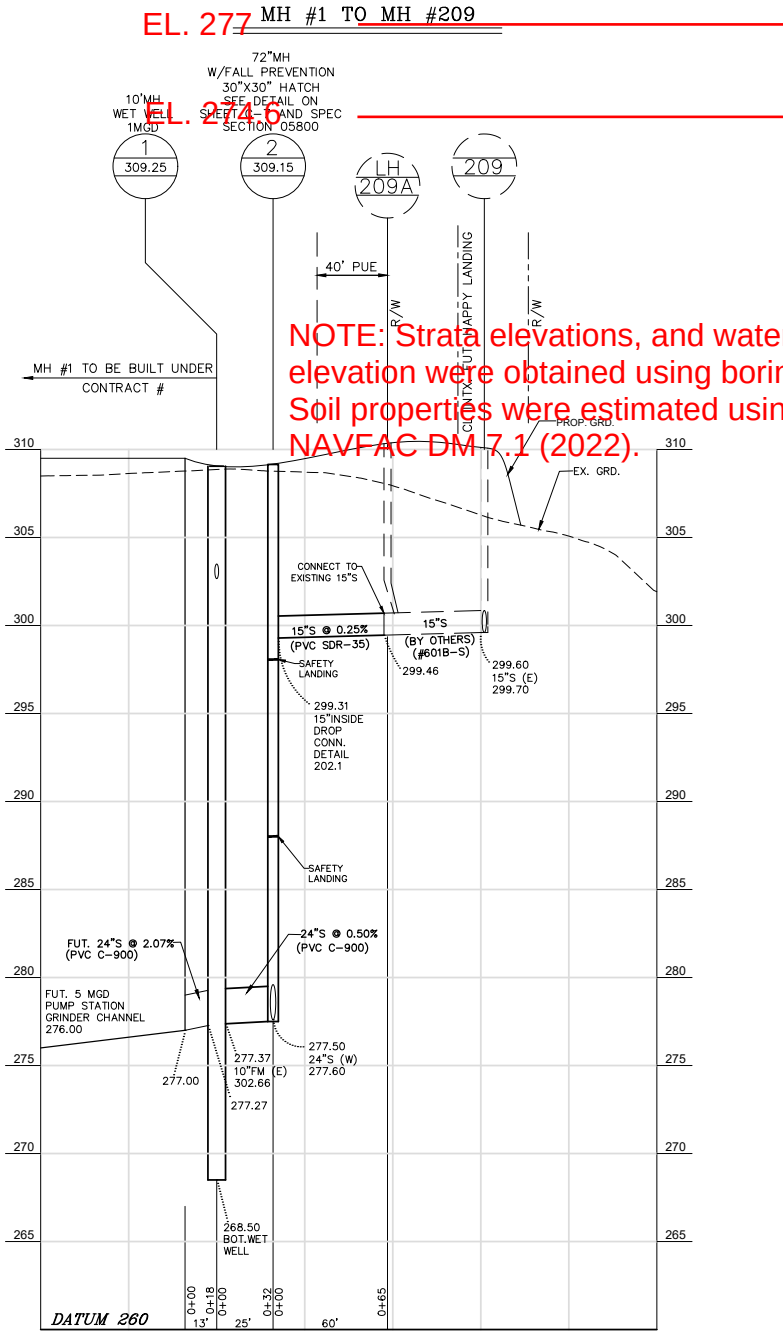
GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
14280 PARK CENTER DRIVE, SUITE A
LAUREL, MARYLAND 20707
(410) 792-9446 OR (301) 470-4470
www.gtaeng.com

QUANTUM FREDERICK
PROPOSED SEWER PUMP STATION
FREDERICK COUNTY, MARYLAND

EXPLORATION LOCATION PLAN

PROJECT: 201536	DATE: FEBRUARY 2023	SCALE: 1" = 100'	DRAWN BY: DCG	REVIEW BY: RPM	FIGURE: 3





NOTE: Strata elevations, and wate
elevation were obtained using borin
Soil properties were estimated usin
NAVFAC DM 7.1 (2022).

305	-5	30	280	10	27	283	NE	---	13.5	297	16.0	294	N/A	---	22.4	288
257	-52	49.0	260	8	32	277	35.0	274	28.5	281	16.8	292	N/A	---	28.5	281
268	-41	34.4	275	10	32	277	34.4	275	13.5	296	14.2	295	13.7	295	Well	---
305	-5	30	280	10	NE	---	NE	---	18.5	292	18.3	292	N/A	---	25.4	285
N/A	0	29.0	277	8	17	289	19.5	287	18.5	288	13.8	292	N/A	---	14.8	291
278	-26	30.0	274	3	12	292	15.5	288	8.5	295	N/A	---	N/A	---	N/A	---
257	-51	60.0	248	4	NE	---	11.0	297	Dry	<248	N/A	---	N/A	---	N/A	---
257	-52	62.0	247	4	N/A	---	11.8	297	Dry	<247	N/A	---	N/A	---	N/A	---
257	-52	25.8	283	4	9.5	300	25.8	283	13.5	296	16.5	293	N/A	---	17.2	292
257	-52	60.8	248	4	NE	---	16.8	292	13.5	295	N/A	---	N/A	---	N/A	---

pon encountering auger refusal

able

r Borings PS-1 through PS-6 were estimated based on the *Utility Plan* (Sheet 30 of the *Improvement Plan* for Pump Station Access Road/ Future Happy Landing Rd/MD80), dated July of 2022, prepared by Dewberry. The existing ground surface elevations for Borings PS-7 through
g via an instrumented survey. Borings PS-9 and PS-9A were offset from the staked location. The existing ground surface elevation at these locations were visually estimated based on the staked elevation.

were obtained from the available plans. The proposed force main invert elevations at the locations of Boring PS-2 and PS-5 are assumed to be 5 feet below proposed grades.

ered in Boring PS-1 at a depth of approximately 4 feet, which was inferred to be a boulder. Highly weathered rock was encountered again at a depth of approximately 17 feet.

at a depth of 6.5 feet at the staked location. A second boring attempt was offset 10 feet north and encountered auger refusal at 6.3 feet. A third boring attempt was offset 5 feet west of the second attempt. The boring information above was obtained from the third boring attempt.

rilling are the shallowest observed in each boring.

were installed in Borings PS-1 and PS-4. Cave-in depth/elevations could not be measured. Cave-in depths and groundwater depths were not measured after drilling in Borings PS-7 through PS-10, since water is pumped into the hole during coring.

LOG OF WELL NO. PS-4

PROJECT: **Quantum Frederick - Sewer Pump Station**
PROJECT NO.: **201536**
PROJECT LOCATION: **Frederick County, Maryland**

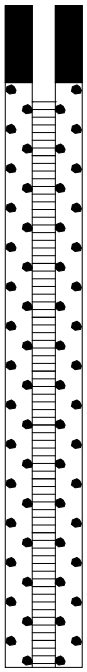
WATER LEVEL (ft): 14.2 | 13.7 | 18.1
DATE: 05/23/2022 | 05/24/2022 | 11/09/2022
CAVED (ft): Pipe | Pipe | Pipe

DATE STARTED: **05/23/2022**
DATE COMPLETED: **05/23/2022**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
EQUIPMENT: **Diedrich D-50**
DRILLER: **K. Kozak**
DRILLING METHOD: **3.25" HSA**
BORING DIA (in): **6**
CASING TYPE: **Sch. 40**
SCREEN TYPE: **Sch. 40**

WATER ENCOUNTERED DURING DRILLING (ft): **13.5**
GROUND SURFACE ELEVATION: **309**
DATUM: **Topo**
LOGGED BY: **DCG**
SAMPLING METHOD: **Split Spoon/Auto**
CHECKED BY: **ADM**
CASING DIA (in.): **1**
CASING LEN. (ft): **5**
SCREEN SLOT SIZE(in): **0.02**
SCREEN LEN. (ft): **29.4**

SAMPLE NUMBER	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	PID READING	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S-1	12	2-1-3	4	309.0	0		CH		Brown, moist, soft, Sandy Fat CLAY.	Topsoil: 10 in.
				306.5					Same, stiff, with Rock Fragments (Limestone)	
S-2	12	4-5-7	12	305.0			MH		Light Brown, moist, medium stiff, Elastic SILT with Sand.	
S-3	12	2-2-3	5							
S-4	18	2-2-2	4	300.5	10				Same, soft, Sandy	
				297.0			ML		Brown, moist, soft, Sandy SILT.	
S-5	12	WOH-1-2	3							
				292.0			CH		Brown, moist, soft, Sandy Fat CLAY.	
S-6	18	2-1-2	3		20					
S-7	0	WOH/18"	WOH/18	285.5					No Recovery	
				284.0			MH		Reddish Brown, moist, very soft, Sandy Elastic SILT.	
S-8	10	WOH/18"	WOH/18		30					
				277.0					Brown, wet, very dense, Highly Weathered ROCK.	
S-9	6	50/6"	50/6"	274.6					Auger refusal encountered at 34.4 feet.	
				274.6	40				1-in. PVC groundwater monitoring well installed at 34.4 feet.	
					50					

WELL CONSTRUCTION DETAILS



NOTES:

GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, MD 20707

LOG OF BORING NO. PS-4

LOG OF BORING NO. PS-6

PROJECT: **Quantum Frederick - Sewer Pump Station**
PROJECT NO.: **201536**
PROJECT LOCATION: **Frederick County, Maryland**

WATER LEVEL (ft): 13.8 | 14.5
DATE: 05/23/2022 | 05/24/2022
CAVED (ft): 14.8 | 15.4

DATE STARTED: **05/23/2022**
DATE COMPLETED: **05/25/2022**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **K. Kozak**
DRILLING METHOD: **3.25" HSA**
SAMPLING METHOD: **Split Spoon/Automatic Hammer**

WATER ENCOUNTERED DURING DRILLING (ft) ▽ **18.5**
GROUND SURFACE ELEVATION: **306**
DATUM: **Topo**
EQUIPMENT: **Diedrich D-50**
LOGGED BY: **DCG**
CHECKED BY: **ADM**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S-1	0.0	10	2-2-3	5	306.0	0	CH		Brown, moist, medium stiff, Fat CLAY with Sand.	Topsoil: 8 in.
S-2	2.5	18	4-7-10	17					Same, very stiff	
S-3	5.0	18	5-5-5	10	302.0		ML		Brown, moist, stiff, Sandy SILT with Rock Fragments (Limestone).	
S-4	8.5	18	2-2-2	4	299.0		SM		Brown, moist, very loose, Silty SAND with Rock Fragments (Limestone).	
S-5	13.5	10	18-7-3	10		10			Same, Dark Gray, loose	▽ Hard drilling from 13 to 14 feet.
S-6	18.5	0.5	50/0.5"	50/0.5	289.0				Dark Gray, moist, very dense, Partially Weathered ROCK.	▽ Very hard drilling from 18 to 19.5 feet.
R-1	19.5	40	RQD=19%		286.5	20	ROCK		Auger refusal encountered at 19.5 feet.	
R-2	24.0	60	RQD=68%		282.0		ROCK		Moderately hard, slightly weathered, moderately fractured, gray to light gray, LIMESTONE. (Recovery = 74%)	
					277.0	30			Hard, fresh, moderately fractured, dark gray with white, LIMESTONE. (Recovery = 100%)	
									Boring terminated at 29.0 feet.	
						40				
						50				
						60				

NOTES:

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LOG OF BORING NO. PS-6

LOG OF BORING NO. PS-7

PROJECT: **Quantum Frederick - Sewer Pump Station**
PROJECT NO.: **201536**
PROJECT LOCATION: **Frederick County, Maryland**

WATER LEVEL (ft): **N/A***
DATE:
CAVED (ft): **N/A**

DATE STARTED: **11/08/2022**
DATE COMPLETED: **11/08/2022**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **M. Rey**
DRILLING METHOD: **3.25" HSA**
SAMPLING METHOD: **Split Spoon/Automatic Hammer**

WATER ENCOUNTERED DURING DRILLING (ft) ▽ **8.5**
GROUND SURFACE ELEVATION: **303.7**
DATUM: **Survey**
EQUIPMENT: **Diedrich D-50**
LOGGED BY: **DCG**
CHECKED BY: **ADM**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S-1	0.0	7	5-4-6	10	303.7	0	ML		Brown, moist, stiff, Sandy SILT.	Topsoil: 3 in.
S-2	2.5	15	3-3-5	8					Same, Light Brown, medium stiff	
S-3	5.0	18	3-5-6	11					Same, stiff, with Sand	
S-4	8.5	18	4-5-6	11						▽
					291.7	12			Brown, moist, very dense, Highly Weathered ROCK.	
S-5	13.5	0	50/1"	50/1"					Auger refusal encountered at 15.5 feet.	
					288.2		ROCK		Hard, slightly weathered, highly fractured, gray and white, LIMESTONE with Quartz. (Recovery = 72%)	
R-1	15.5	47	RQD=50%		286.7		ROCK		Hard, slightly weathered, moderately fractured, white with gray, QUARTZ with Limestone. (Recovery = 100%)	
R-2	20.0	60	RQD=79%		281.2		ROCK		Moderately hard, moderately weathered, moderately fractured, gray to dark gray, LIMESTONE. (Recovery = 100%)	
R-3	25.0	60	RQD=93%		278.7	24	ROCK		Moderately hard, moderately weathered, moderately fractured, gray to dark gray, LIMESTONE. (Recovery = 100%)	
					273.7				Boring terminated at 30 feet.	
						36				
						48				
						60				
						72				

NOTES: ***Water is pumped into boring during rock coring. Groundwater levels not measured after drilling.**

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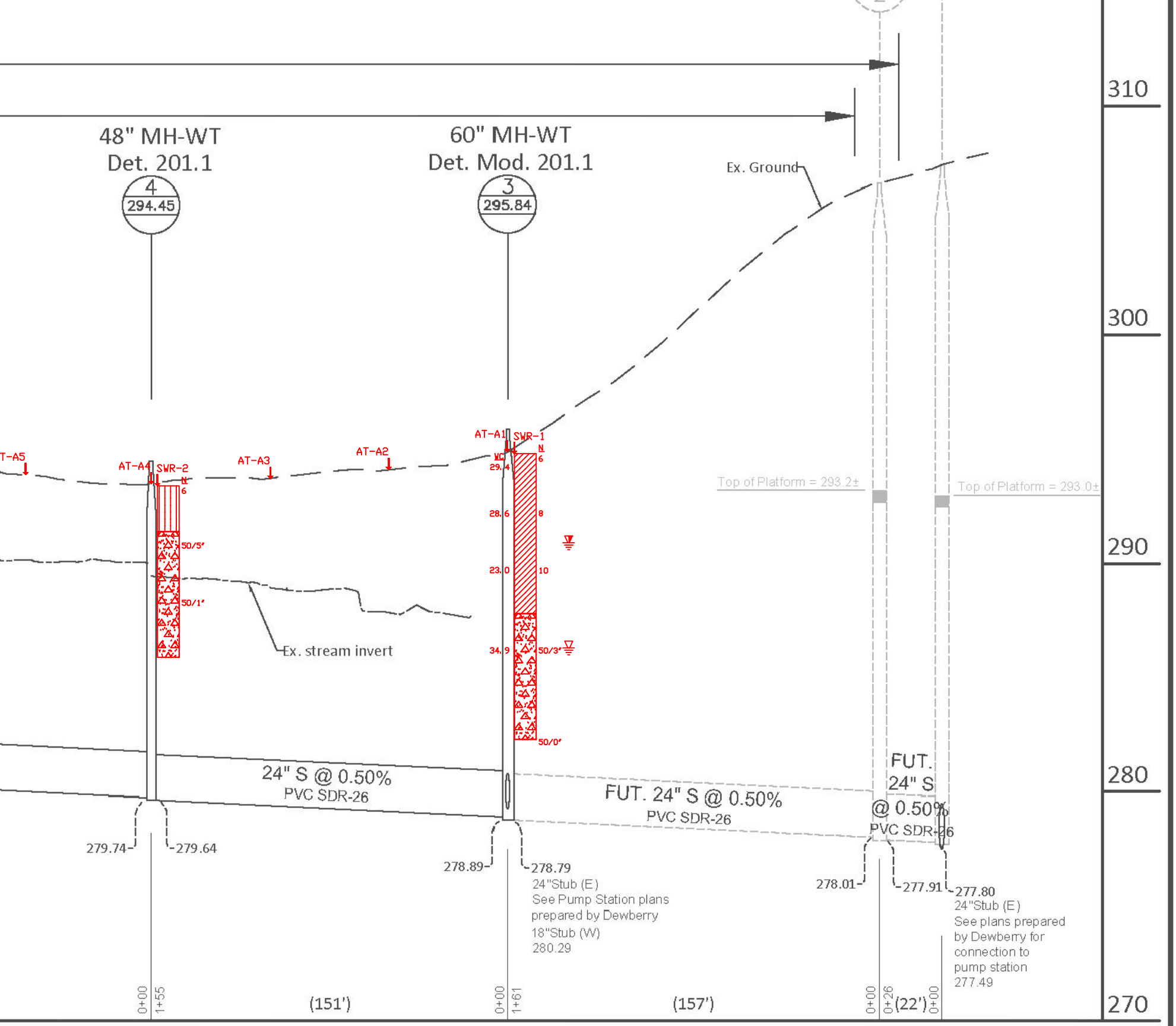
LOG OF BORING NO. PS-7


48" MH-WT
Det. 201.1
4
294.45
60" MH-WT
Det. Mod. 201.1
3
295.84
Ex. Ground
310
300
290
280
270
AT-A5
AT-A4
SWR-2
N
6
50/5"
50/1"
AT-A3
AT-A2
AT-A1
SWR-1
WC
N
29.4
6
28.6
8
23.0
10
34.9
50/3"
50/0"
Ex. stream invert
Top of Platform = 293.2±
Top of Platform = 293.0±
24" S @ 0.50%
PVC SDR-26
FUT. 24" S @ 0.50%
PVC SDR-26
FUT.
24" S
@ 0.50%
PVC SDR-26
279.74
279.64
278.89
278.79
24"Stub (E)
See Pump Station plans
prepared by Dewberry
18"Stub (W)
280.29
278.01
277.91
277.80
24"Stub (E)
See plans prepared
by Dewberry for
connection to
pump station
277.49
0+00
1+55
(151')
0+00
1+61
(157')
0+00
0+26
(22')
0+00

LOG OF BORING NO. SWR-1

PROJECT: **Quantum Frederick - Sewer Outfall**
PROJECT NO.: **201536**
PROJECT LOCATION: **Frederick County, Maryland**

WATER LEVEL (ft):	Dry	3.9	
DATE:	06/28/22	06/29/22	
CAVED (ft):	Pipe	Pipe	

DATE STARTED: **06/28/22**
DATE COMPLETED: **06/28/22**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **M. Lyons**
DRILLING METHOD: **3.25" HSA**
SAMPLING METHOD: **Split Spoon/Automatic Hammer**

WATER ENCOUNTERED DURING DRILLING (ft): **8.5**
GROUND SURFACE ELEVATION: **295**
DATUM: **Topo**
EQUIPMENT: **Diedrich D-50**
LOGGED BY: **XAH**
CHECKED BY: **DCG**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S-1	0.0	14	3-3-3	6	295.0	0	CL		Brown, moist, medium stiff, Sandy Lean CLAY.	Topsoil: 7 in.
S-2	2.5	12	1-4-4	8					Same, Light Brown, stiff, with Sand	▽
S-3	5.0	6	4-6-4	10		5			Same, stiff, with Rock Fragments (Quartz)	
S-4	8.5	2	5-6-50/3"	50/3"	285.5	10			Light Brown, wet, very dense, Highly Weathered ROCK.	▽
S-5	12.5	0	50/0"	50/0"	282.5	12.5			Auger refusal encountered at 12.5 feet. Boring offset 10 feet north of staked location. Auger refusal encountered in offset boring at 12.0 feet.	
						15				
						20				
						25				
						30				

NOTES:

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LOG OF BORING NO. SWR-1

LOG OF BORING NO. SWR-2

PROJECT: **Quantum Frederick - Sewer Outfall**
PROJECT NO.: **201536**
PROJECT LOCATION: **Frederick County, Maryland**

WATER LEVEL (ft):	Dry	Dry	Dry
DATE:	06/29/22	06/30/22	06/29/22
CAVED (ft):	4.3	3.9	Augers

DATE STARTED: **06/28/22**
DATE COMPLETED: **06/28/22**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **M. Lyons**
DRILLING METHOD: **3.25" HSA**
SAMPLING METHOD: **Split Spoon/Automatic Hammer**

WATER ENCOUNTERED DURING DRILLING (ft) ▽ **Dry**
GROUND SURFACE ELEVATION: **294**
DATUM: **Topo**
EQUIPMENT: **Diedrich D-50**
LOGGED BY: **XAH**
CHECKED BY: **DCG**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S-1	0.0	10	3-3-3	6	294.0	0	ML		Brown, moist, medium stiff, SILT with Sand.	Topsoil: 8 in.
S-2	2.5	5	3-50/5"	50/5"	291.0	5			Brown, moist, very dense, Highly Weathered ROCK.	
S-3	5.0	0	50/1"	50/1"	286.5	10			Auger refusal encountered at 7.5 feet. Boring offset 10 feet north of staked location. Auger refusal encountered in offset boring at 7.5 feet.	
						15				
						20				
						25				
						30				

NOTES:

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LOG OF BORING NO. SWR-2

Table No. 2
Subsurface Exploration Summary - Air Track Probes
Quantum Sewer Outfall A
GTA Project No. 201536

Air Track Probe ID	Location	Approximate Depth to Sewer Invert (ft.)	Probe Depth (ft.)	Estimated Soil Depth[1] (ft.)	Estimated Rock Depth[1] (ft.)	Remarks[1]
AT-A1	MH3	16	21	0-11	11-21	
AT-A2	MH3 0+52	15	20	0-9.5	9.5-20	
AT-A3	MH3 1+04	14	19	0-4.5	4.5-19	
AT-A4	MH4	14	19	0-3.5	3.5-19	
AT-A5	MH4 0+55	14	19	0-3	3-19	
AT-A6	MH4 1+10	15	20	0-6	6-20	Soil seam 9-9.5 ft.
AT-A7	MH4 1+65	15	20	0-7.5	7.5-20	
AT-A8	MH4 2+20	16	21	0-5	5-21	
AT-A9	MH4 2+75	16	21	0-7	7-21	
AT-A10	MH4 3+30	15	20	0-5	5-20	
AT-A11	MH5	14	19	0-7, 15-19	7-15	
AT-A12	MH5 0+49	15	20	0-9	9-20	
AT-A13	MH5 0+98	15	20	0-6	6-20	
AT-A14	MH5 1+47	15	20	0-20	NE	
AT-A15	MH5 1+96	16	21	0-7	7-21	
AT-A16	MH5 2+45	16	21	0-7	7-21	
AT-A17	MH5 2+94	16	21	0-6	6-21	
AT-A18	MH5 3+43	15	20	0-5	5-20	
AT-A19	MH6	14	19	0-4.5	4.5-19	
AT-A20	MH6 0+50	14	19	0-4.5	4.5-19	
AT-A21	MH6 1+00	13	18	0-5	5-18	
AT-A22	MH6 1+50	13	18	0-5	5-18	
AT-A23	MH6 2+00	13	18	0-6	6-18	
AT-A24	MH6 2+50	13	18	0-6	6-18	
AT-A25	MH6 3+00	13	18	0-7	7-18	
AT-A26	MH6 3+50	13	18	0-8	8-18	
AT-A27	MH7	12	17	0-8	8-17	
AT-A28	MH7 0+46	11	16	0-9	9-16	
AT-A29	MH7 0+91	12	17	0-7	7-17	Broke through rock at 17 ft.
AT-A30	MH7 1+37	12	17	0-7	7-17	
AT-A31	MH8	12	17	0-11.5	11.5-17	
AT-A32	MH8 0+49 (MH175)	6	11	0-8	8-11	
AT-A33	MH8 0+98 (MH175)	6	11	0-6	6-11	
AT-A34	MH8 1+47 (MH175)	6	11	0-8.5	8.5-11	
AT-A35	MH8 1+96 (MH175)	7	12	0-9	9-12	
AT-A36	MH8 2+45 (MH175)	7	12	0-12	NE	
AT-A37	MH8 2+94 (MH175)	7	12	0-12	NE	
AT-A38	MH8 3+43 (MH175)	9	14	0-14	NE	Rock at 14 ft.
AT-A39	MH8 0+48 (MH9)	13	18	0-13	13-18	
AT-A40	MH8 0+96 (MH9)	13	18	0-9	9-18	Soil seam 13-14.
AT-A41	MH8 1+43 (MH9)	14	19	0-19	NE	Boulder 5-8 ft.
AT-A42	MH8 1+91 (MH9)	14	19	0-8	8-19	Sporadic rock 8-19 ft.
AT-A43	MH8 2+39 (MH9)	14	19	0-6	6-19	
AT-A44	MH8 2+87 (MH9)	15	20	0-6	6-20	
AT-A45	MH8 3+34 (MH9)	15	20	0-6.5	6.5-20	
AT-A46	MH9	14	19	0-6.5	6.5-19	
AT-A47	MH9 0+49	14	19	0-6.5	6.5-19	
AT-A48	MH9 0+98	13	18	0-6	6-18	
AT-A49	MH9 1+47	12	17	0-6	6-17	
AT-A50	MH9 1+96	11	16	0-5	5-16	
AT-A51	MH9 2+45	10	15	0-15	NE	
AT-A52	MH10	10	15	0-6.5	6.5-15	
AT-A53	MH10 0+50	9	14	0-12	12-14	
AT-A54	MH10 0+99	9	14	0-7	7-14	

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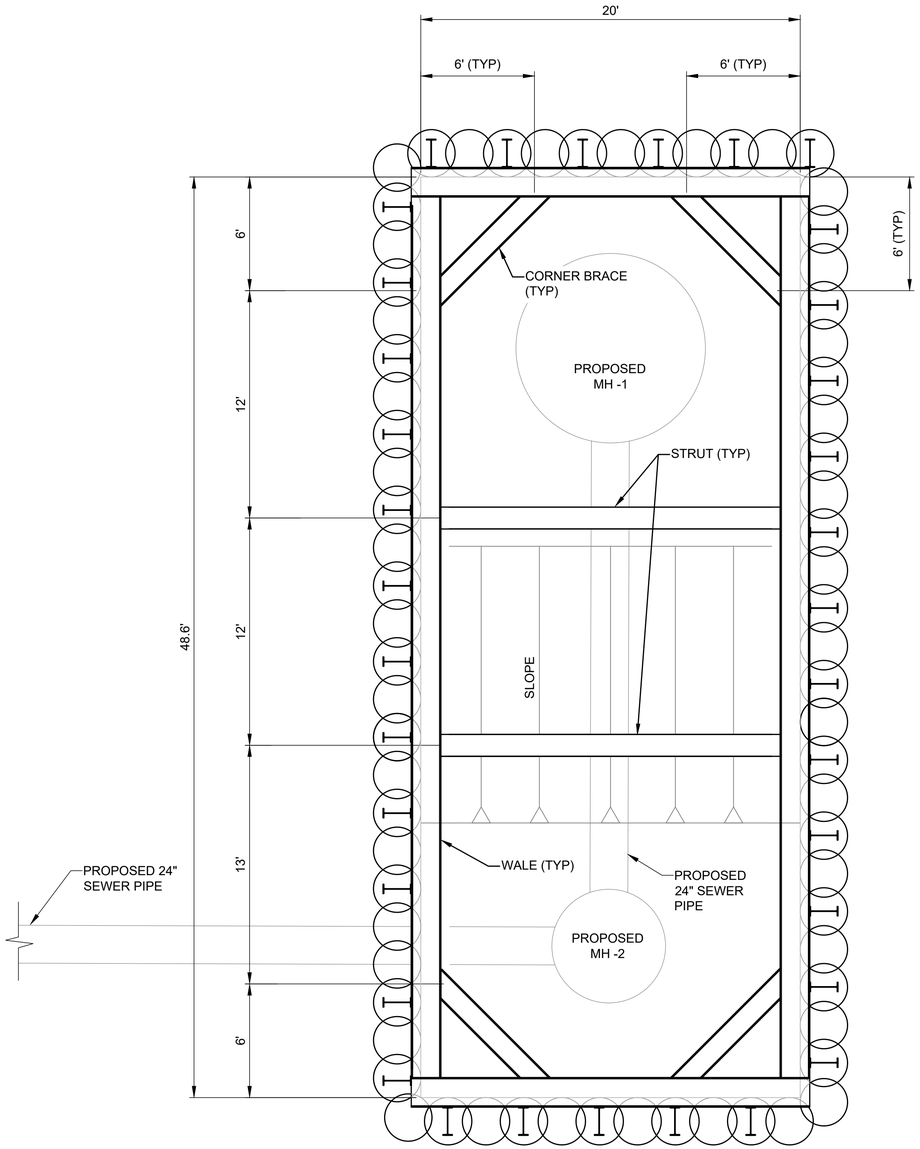
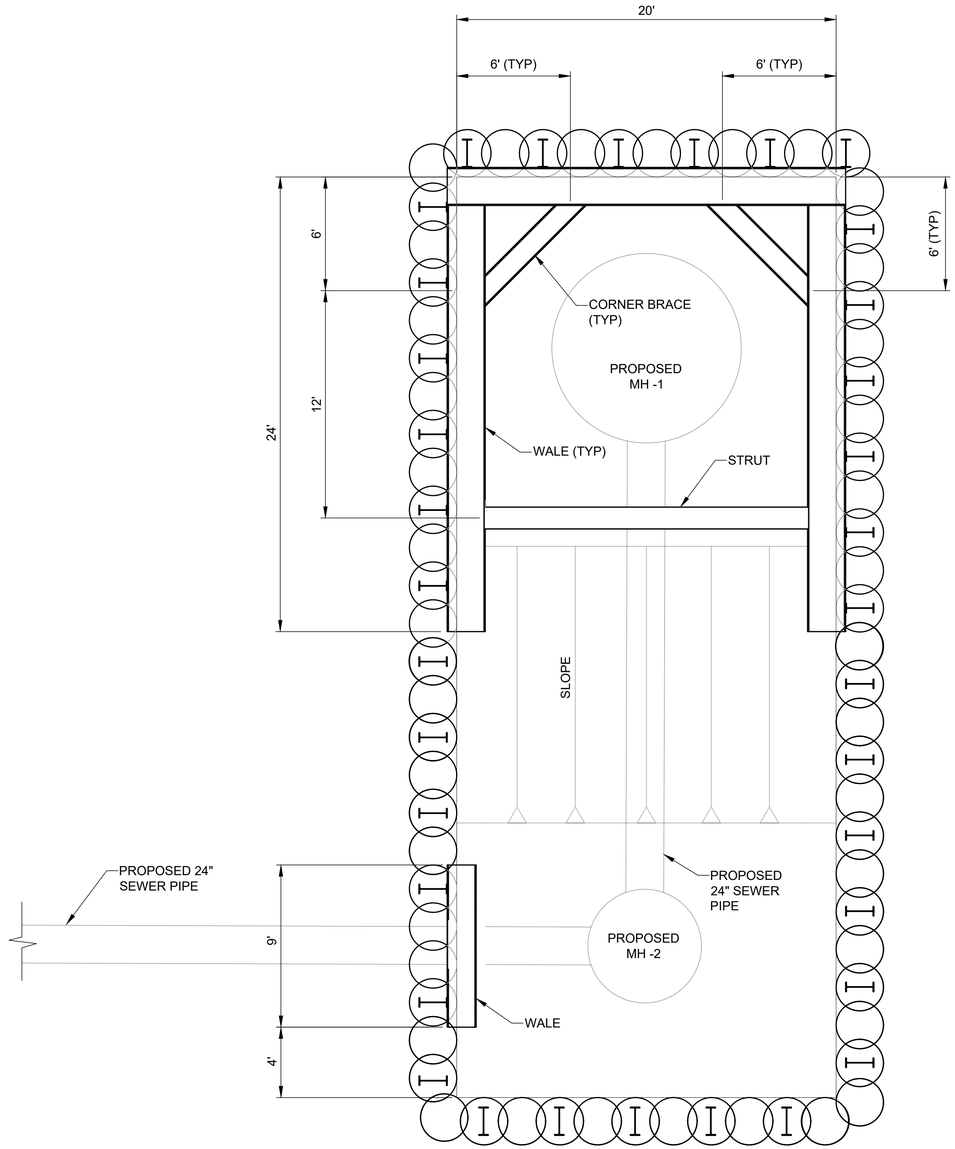
Attachment 2 - Secant Pile Wall and LMG Grouting General Design



2 SOE PLAN - MH-1 AND MH-2 - BRACE LEVEL 1

SCALE: 1" = 4'



1 SOE PLAN - MH-1 AND MH-2 - BRACE LEVEL 2

SCALE: 1" = 4'

0 4 8

SCALE, FEET

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

GEI Consultants
6010 EXECUTIVE BLVD
SUITE 702
ROCKVILLE, MD 20854
(202)609-7677

QUANTUM MARYLAND LLC

5601 MANOR WOODS ROAD
FREDERICK, MD

QUANTUM LOOPHOLE PUMP STATION WATER CONTROL CONCEPT PLANS

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SHEET NAME

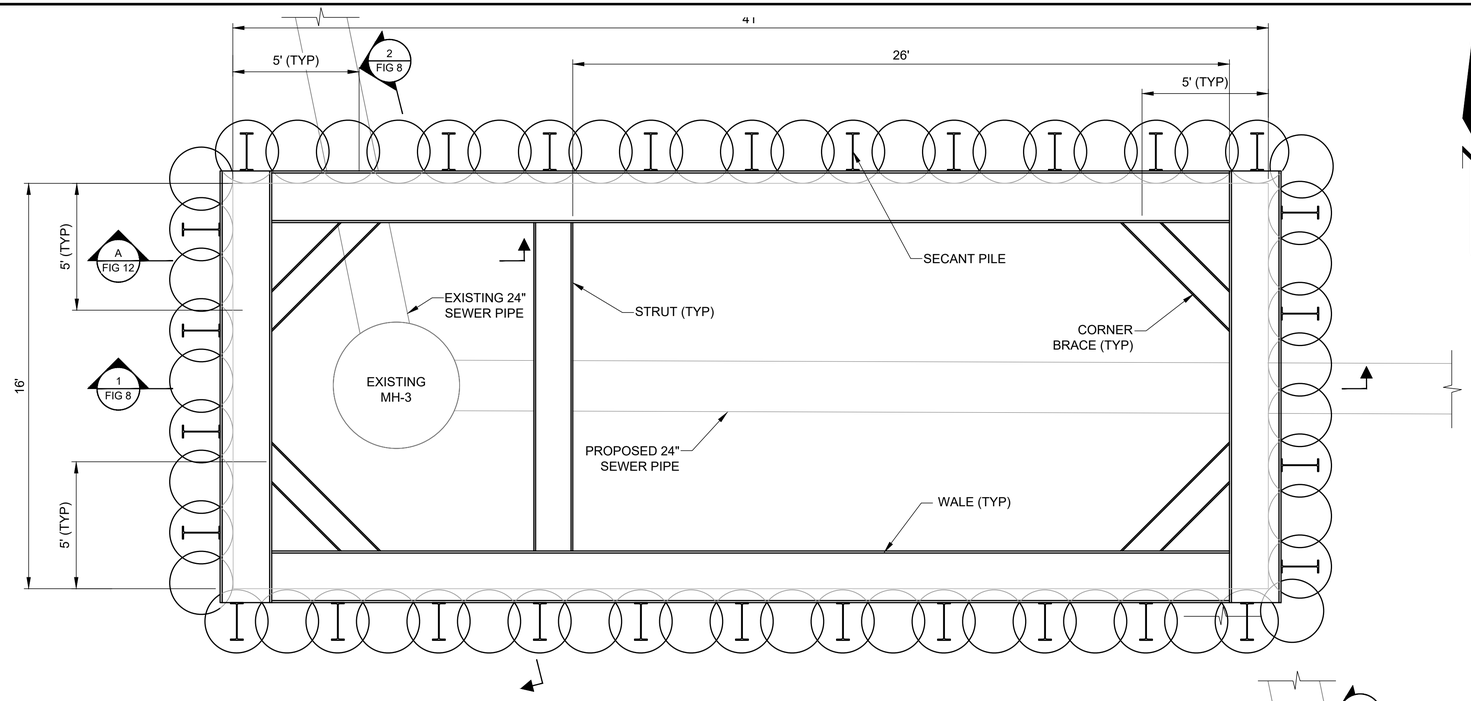
ENLARGED SOE PLAN AT MH-1 AND MH-2

FIG. NO.

FIGURE 4

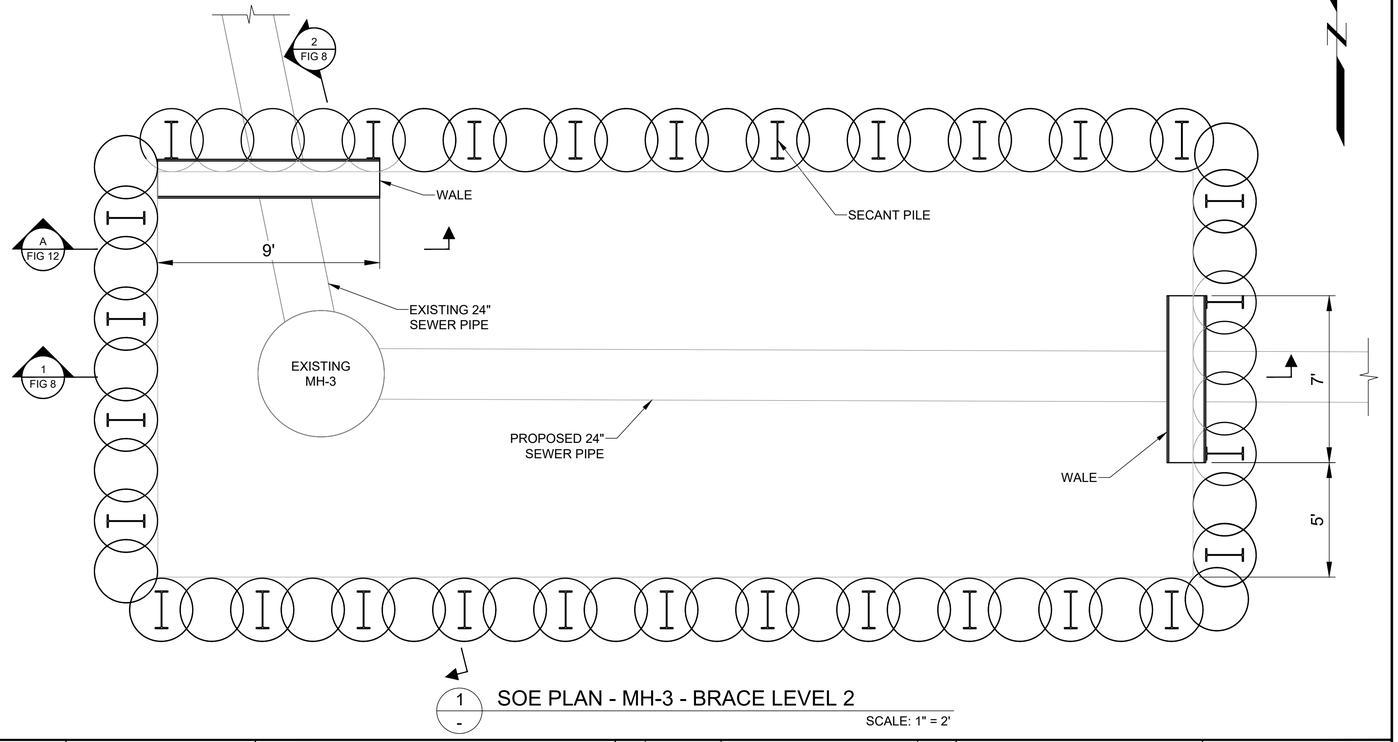
DWG. NO.

4 OF 12



1 - SOE PLAN - MH-3 - BRACE LEVEL 1

SCALE: 1" = 2'



1 - SOE PLAN - MH-3 - BRACE LEVEL 2

SCALE: 1" = 2'

0 2 4

SCALE, FEET

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
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SHEET NAME

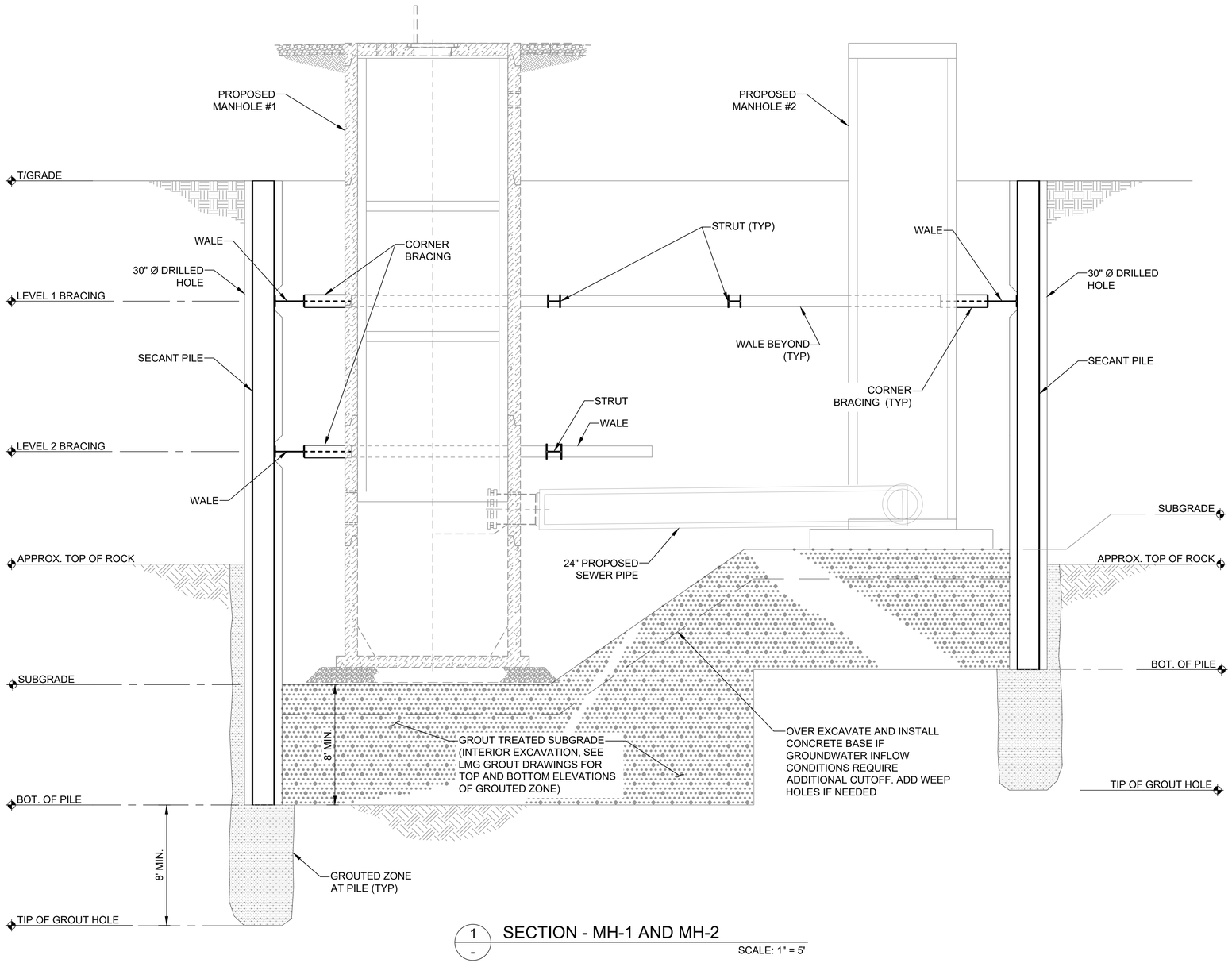
ENLARGED SOE PLAN AT MH-3

FIG. NO.

FIGURE 5

DWG. NO.

5 OF 12



1 - SECTION - MH-1 AND MH-2

SCALE: 1" = 5'

0 5 10

SCALE, FEET

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
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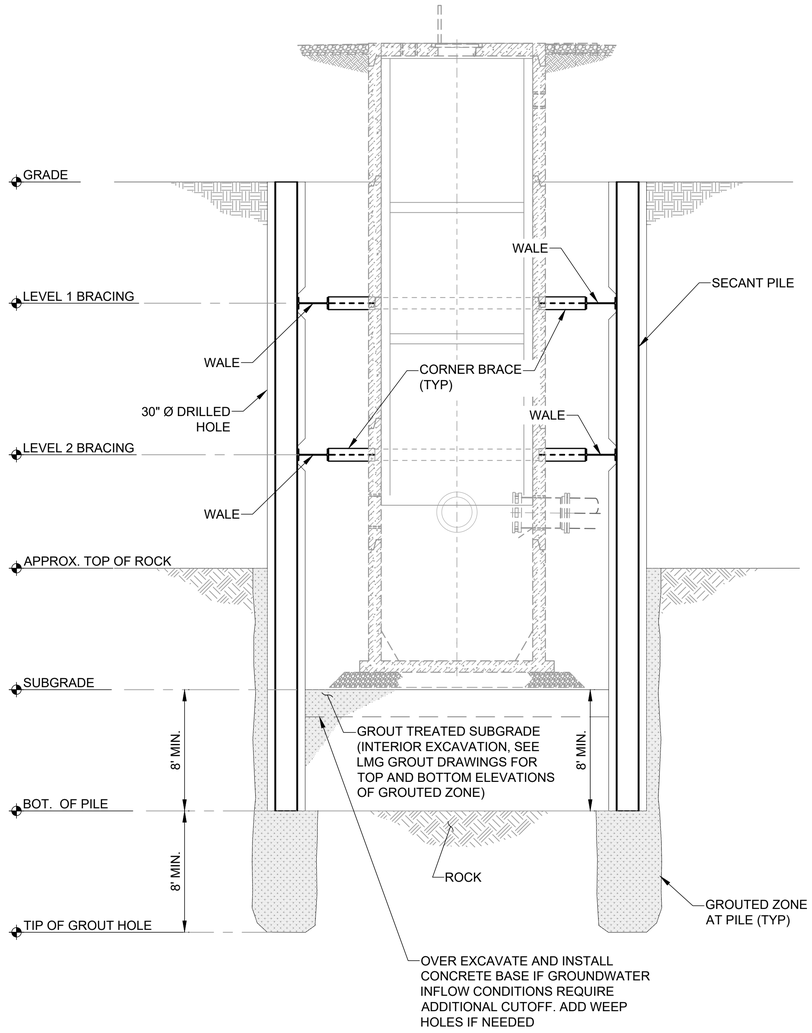
SECTIONS AT MH-1 AND MH-2

FIG. NO.

FIGURE 6

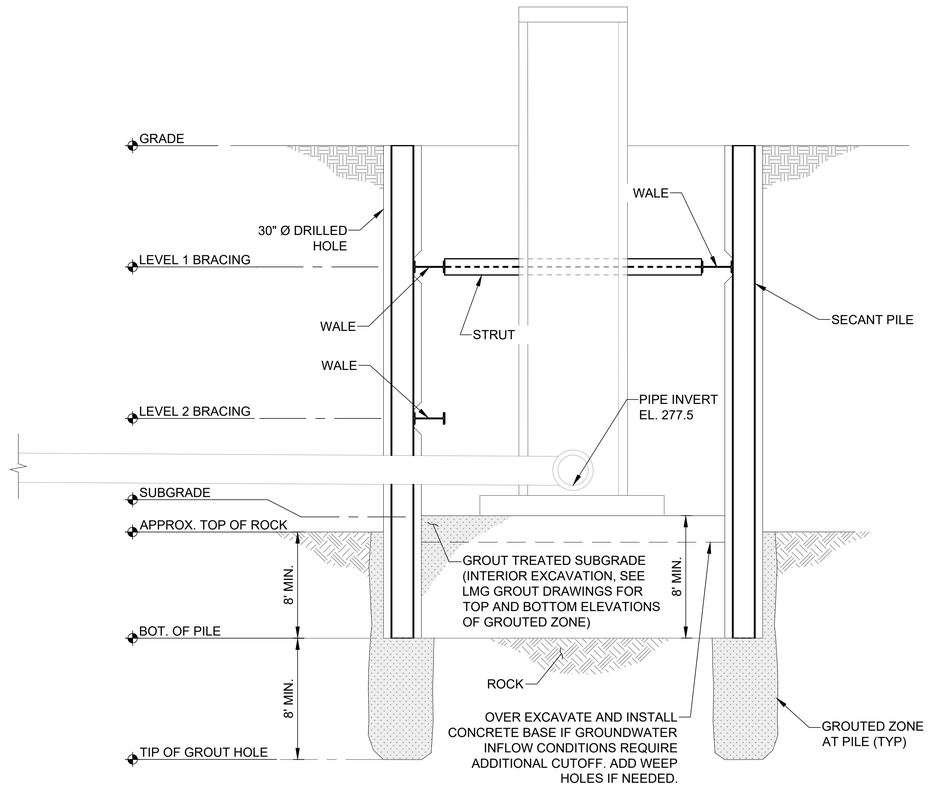
DWG. NO.

6 OF 12



1 - SECTION- MH-1

SCALE: 1" = 5'



2 - SECTION - MH-2

SCALE: 1" = 5'

0 5 10

SCALE, FEET

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
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SHEET NAME

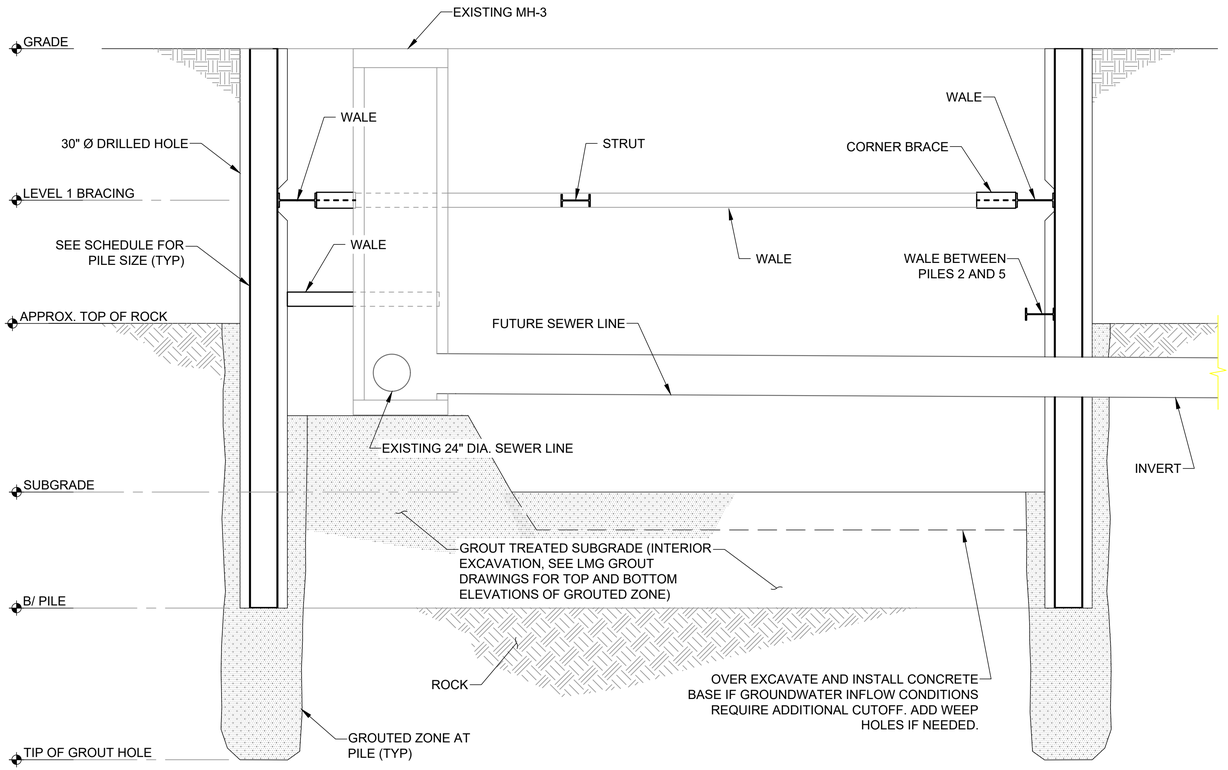
SECTIONS AT MH-1 AND MH-2

FIG. NO.

FIGURE 7

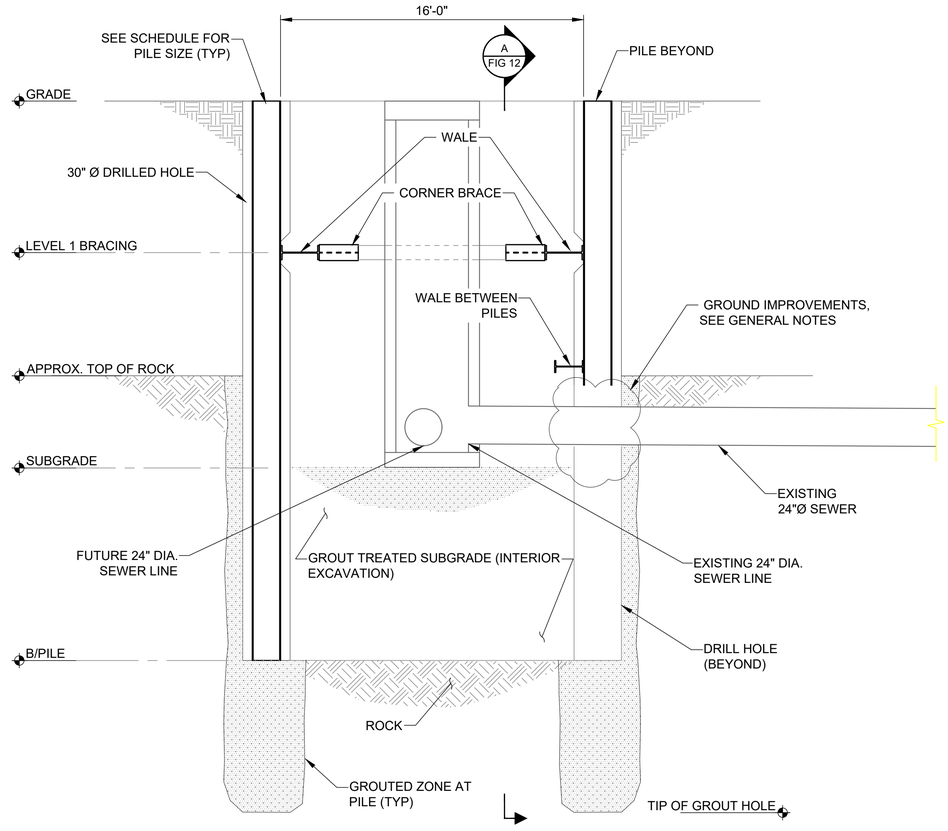
DWG. NO.

7 of 12



1 - SECTION - MH-3

SCALE: 1" = 4'



2 - SECTION - MH-3

SCALE: 1" = 4'

0 5 10
SCALE, FEET

0 10 20
SCALE, FEET

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

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SHEET NAME

SECTIONS AT MH-3

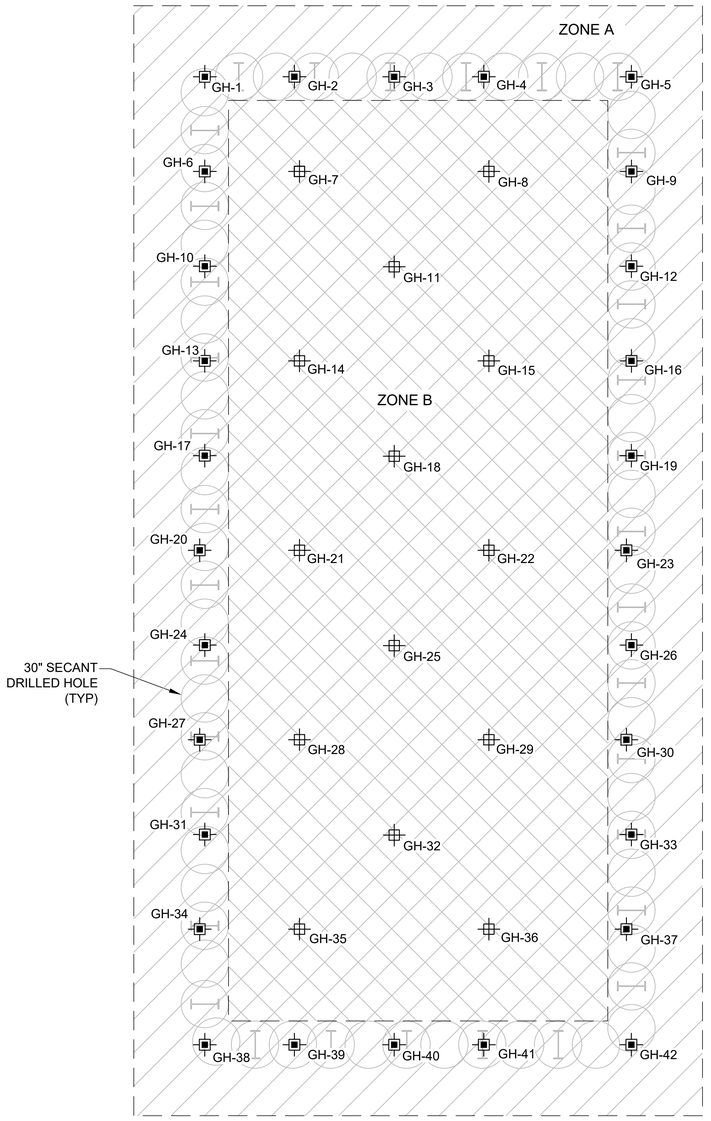
FIG. NO.

FIGURE 8

DWG. NO.

8 of 12

TABLE 1 - TOP OF LMG GROUTING PROGRAM AT MH-1 AND MH-2	
ZONE A	FROM TIP EL. TO 2 FEET ABOVE TOP OF ROCK
ZONE B	FROM TIP EL. TO PROPOSED BOTTOM OF EXCAVATION



1 - GROUTING PLAN - MH-1 AND MH-2

SCALE: 1" = 4'

NOTES:

1. THE LMG PROGRAM MUST BE COMPLETED PRIOR TO THE START OF THE SUPPORT OF EXCAVATION INSTALLATION AND EXCAVATION.
2. ONLY PRIMARY GROUT INJECTION LOCATIONS ARE SHOWN. ADDITIONAL INJECTION LOCATIONS WILL BE RECOMMENDED IN THE FIELD BASED ON GROUT TAKES AND SUBSURFACE CONDITIONS OBSERVED.
3. ALL GROUTING WORK SHALL BE PERFORMED IN THE PRESENCE OF A GEI REPRESENTATIVE.
4. HEIGHT OF GROUT INJECTION SHALL CONFORM TO CRITERIA IN TABLE 1.

LEGEND:

- ZONE A
- ZONE B
- GH-1 PRIMARY GROUT HOLE - ZONE A
- GH-1 PRIMARY GROUT HOLE - ZONE B

0 4 8
SCALE, FEET

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

GEI Consultants
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QUANTUM LOOPHOLE PUMP STATION WATER CONTROL CONCEPT PLANS

NO	DATE	ISSUE/REVISION	APP
0	10/3/2023	CONCEPT PLANS	DPP

SHEET NAME

GROUTING LAYOUT PLAN AT MH-1 AND MH-2

FIG. NO.

FIGURE 10

DWG. NO.

10 OF 12

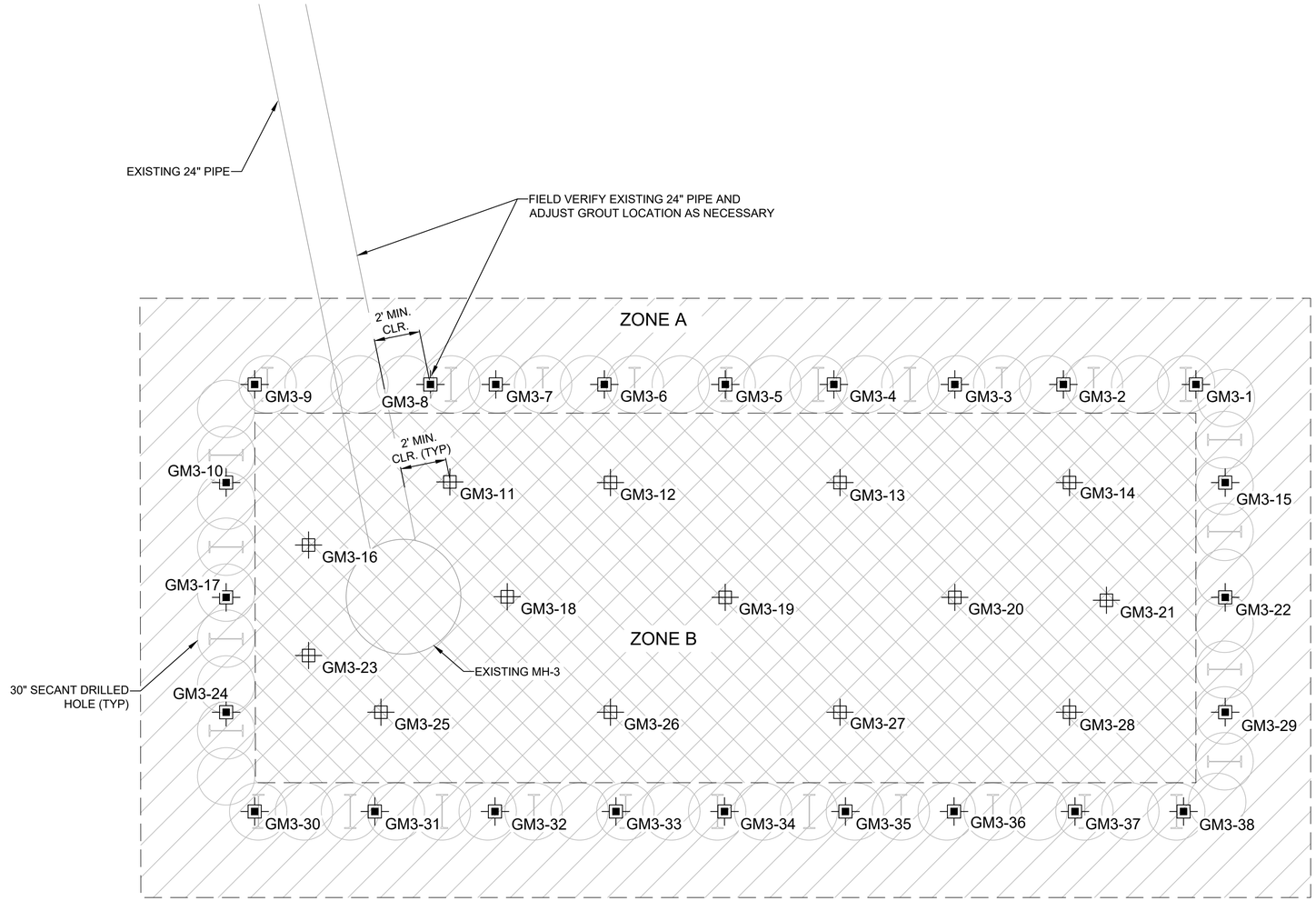


TABLE 1 - TOP OF LMG GROUTING PROGRAM AT MH-1 AND MH-2	
ZONE A	FROM TIP EL. TO 2 FEET ABOVE TOP OF ROCK
ZONE B	FROM TIP EL. TO PROPOSED BOTTOM OF EXCAVATION

NOTES:

1. THE LMG PROGRAM MUST BE COMPLETED PRIOR TO THE START OF THE SUPPORT OF EXCAVATION INSTALLATION AND EXCAVATION.
2. ONLY PRIMARY GROUT INJECTION LOCATIONS ARE SHOWN. ADDITIONAL INJECTION LOCATIONS WILL BE RECOMMENDED IN THE FIELD BASED ON GROUT TAKES AND SUBSURFACE CONDITIONS OBSERVED.
3. ALL GROUTING WORK SHALL BE PERFORMED IN THE PRESENCE OF A GEI REPRESENTATIVE.
4. HEIGHT OF GROUT INJECTION SHALL CONFORM TO CRITERIA IN TABLE 1.
5. MAINTAIN 2 FOOT CLEARANCE BETWEEN GROUT INJECTION LOCATION AND EXISTING MH-3 AND PIPE.
6. MONITOR MH-3 AND PIPE FOR LATERAL AND VERTICAL MOVEMENT. LIMIT MOVEMENT TO 1/2 INCH LATERAL AND VERTICAL MOVEMENT.
7. REFER TO GENERAL NOTES FOR GROUTING REQUIREMENTS UNDER EXISTING 24-INCH DIAMETER PIPE.

1 / - GROUTING PLAN - MH-3

SCALE: 1" = 3'

LEGEND:

- ZONE A
- ZONE B
- GH-1 PRIMARY GROUT HOLE - ZONE A
- GH-1 PRIMARY GROUT HOLE - ZONE B

0 3 6

SCALE, FEET

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

GEI Consultants
6010 EXECUTIVE BLVD
SUITE 702
ROCKVILLE, MD 20854
(202)609-7677

QUANTUM MARYLAND LLC

5601 MANOR WOODS ROAD
FREDERICK, MD

QUANTUM LOOPHOLE PUMP STATION WATER CONTROL CONCEPT PLANS

NO	DATE	ISSUE/REVISION	APP
0	10/3/2023	CONCEPT PLANS	DPP

SHEET NAME

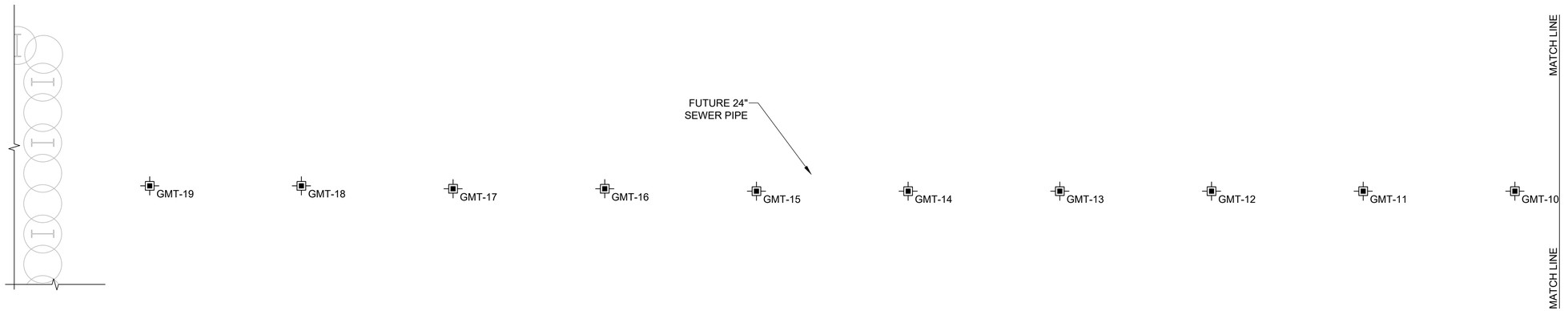
GROUTING LAYOUT PLAN AT MH-3

FIG. NO.

FIGURE 11

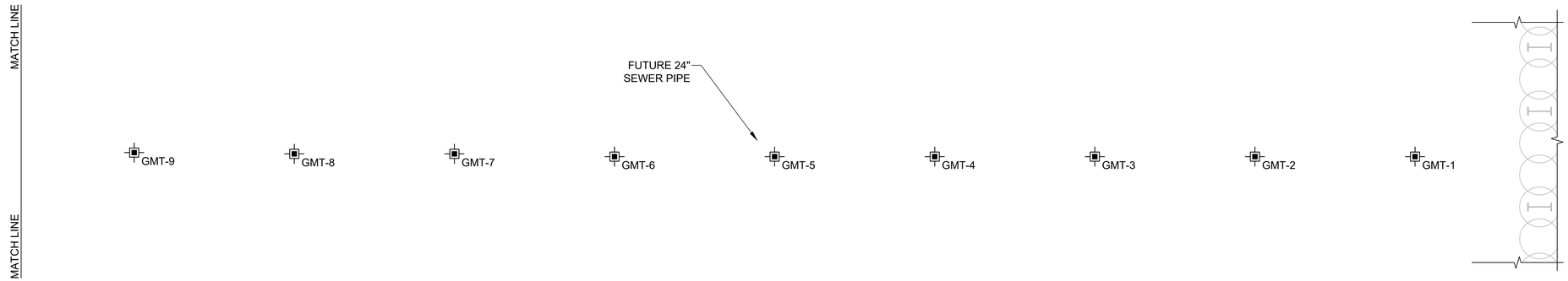
DWG. NO.

11 OF 12



1 - GROUTING LAYOUT PLAN - PROPOSED PIPE ALIGNMENT

SCALE: 1" = 4'



2 - GROUTING LAYOUT PLAN - PROPOSED PIPE ALIGNMENT

SCALE: 1" = 4'

NOTES:

1. REFER TO THE GROUTING NOTES ON SHEET G-01 FOR REQUIREMENTS OF THE LOW MOBILITY GROUTING (LMG) PROGRAM.
2. THE LMG PROGRAM MUST BE COMPLETED PRIOR TO THE START OF MICROTUNNELING ACTIVITIES.
3. ALL GROUT HOLES WITHIN THE PIPE ALIGNMENT SHALL EXTEND FROM EL 275 TO AT LEAST TWO PIPE DIAMETERS ABOVE THE PIPE INVERT.
4. ALL GROUT HOLES WITHIN THE INTERIOR OF THE EXCAVATION SHALL EXTEND TO THE TIP ELEVATION NOTED IN THE GROUT HOLE TABLE (ZONE B).
5. ONLY PRIMARY GROUT INJECTION LOCATIONS ARE SHOWN. ADDITIONAL INJECTION LOCATIONS (SECONDARY, TERTIARY) WILL BE RECOMMENDED IN THE FIELD BASED ON GROUT TAKES AND SUBSURFACE CONDITIONS OBSERVED.
6. ALL GROUTING WORK SHALL BE PERFORMED IN THE PRESENCE OF A GEI REPRESENTATIVE.
7. MODIFICATIONS TO THE GROUTING PROGRAM ALONG THE ALIGNMENT MIGHT BE REQUIRED BASED ON THE FINDINGS OF THE PROPOSED SUBSURFACE INVESTIGATION NOTED ON DRAWING C-01.
8. 8. THE LAYOUT, SPACING AND DEPTHS OF THE GROUT HOLES AND THE NEED FOR THE GROUTING PROGRAM SHALL BE CONFIRMED OR REVISED BY THE MICROTUNNEL CONTRACTOR RETAINED FOR THE WORK.

LEGEND:

GH-1 PRIMARY GROUT HOLE - ZONE A

0 4 8
SCALE, FEET

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

GEI Consultants
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QUANTUM MARYLAND LLC

5601 MANOR WOODS ROAD
FREDERICK, MD

QUANTUM LOOPHOLE PUMP STATION WATER CONTROL CONCEPT PLANS

NO	DATE	ISSUE/REVISION	
0	10/3/2023	CONCEPT PLANS	DPP

SHEET NAME

GROUTING LAYOUT PLAN ALONG PROPOSED PIPE ALIGNMENT

FIG. NO.

FIGURE 12

DWG. NO.

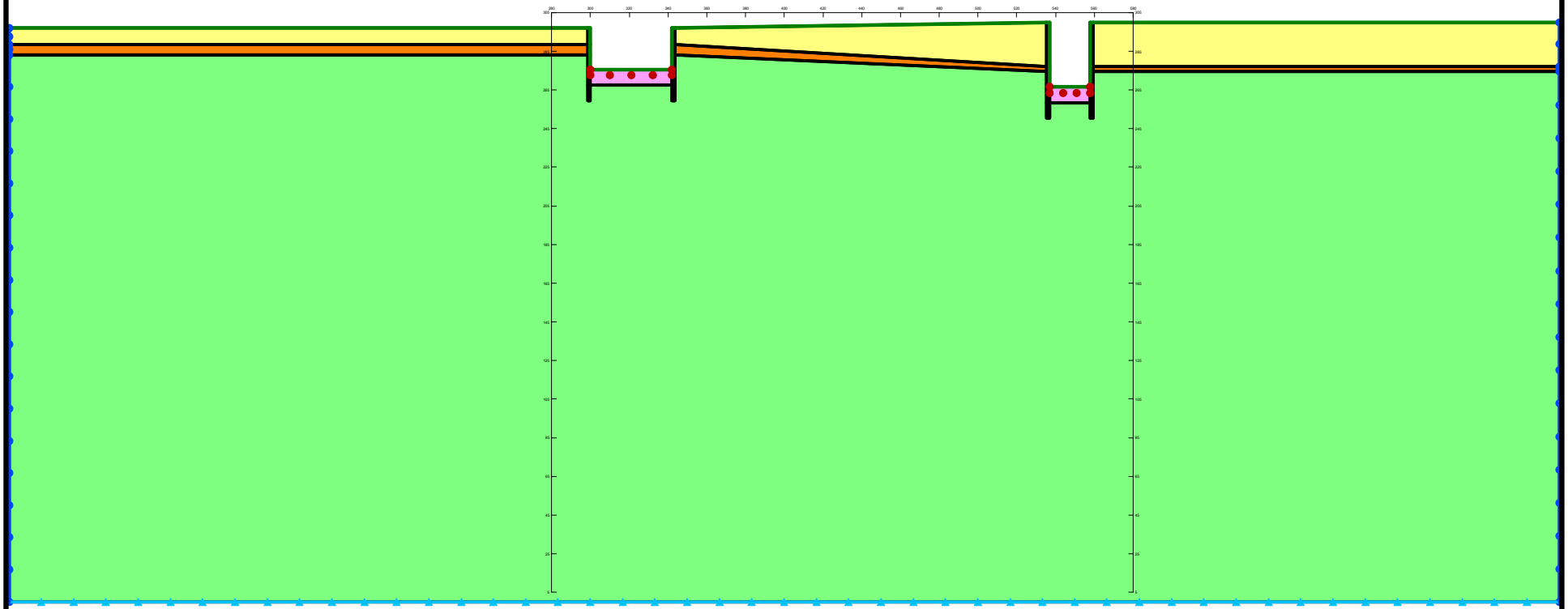
12 OF 12

GEI Consultants

Attachment 3 – Calculation Package – SOE Seepage Analysis

Color	Name	Hydraulic Material Model	Sat Kx (ft/sec)	Ky'/Kx' Ratio
	Limestone	Saturated Only	0.000492	0.1
	LMG Treated Area	Saturated Only	3.28e-08	0.1
	Residual Soils	Saturated Only	3.13e-07	0.1
	Secant Piles-LS	Saturated Only	1.64e-07	0.1
	Secant Piles-RS	Saturated Only	1.11e-10	0.1
	Secant Piles-WR	Saturated Only	1.09e-06	0.1
	Weathered Rock	Saturated Only	0.00328	0.1

Color	Name	Category	Kind	Parameters
	East of MH1	Hydraulic	Water Total Head	296.1 ft
	No Flow	Hydraulic	Water Rate	0 ft³/sec
	West of MH3	Hydraulic	Water Total Head	291.25 ft
	Zero Pressure	Hydraulic	Water Pressure Head	0 ft



Seepage Assessment
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Frederick, MD

STO Mission Critical
New York, NY

GEI Consultants

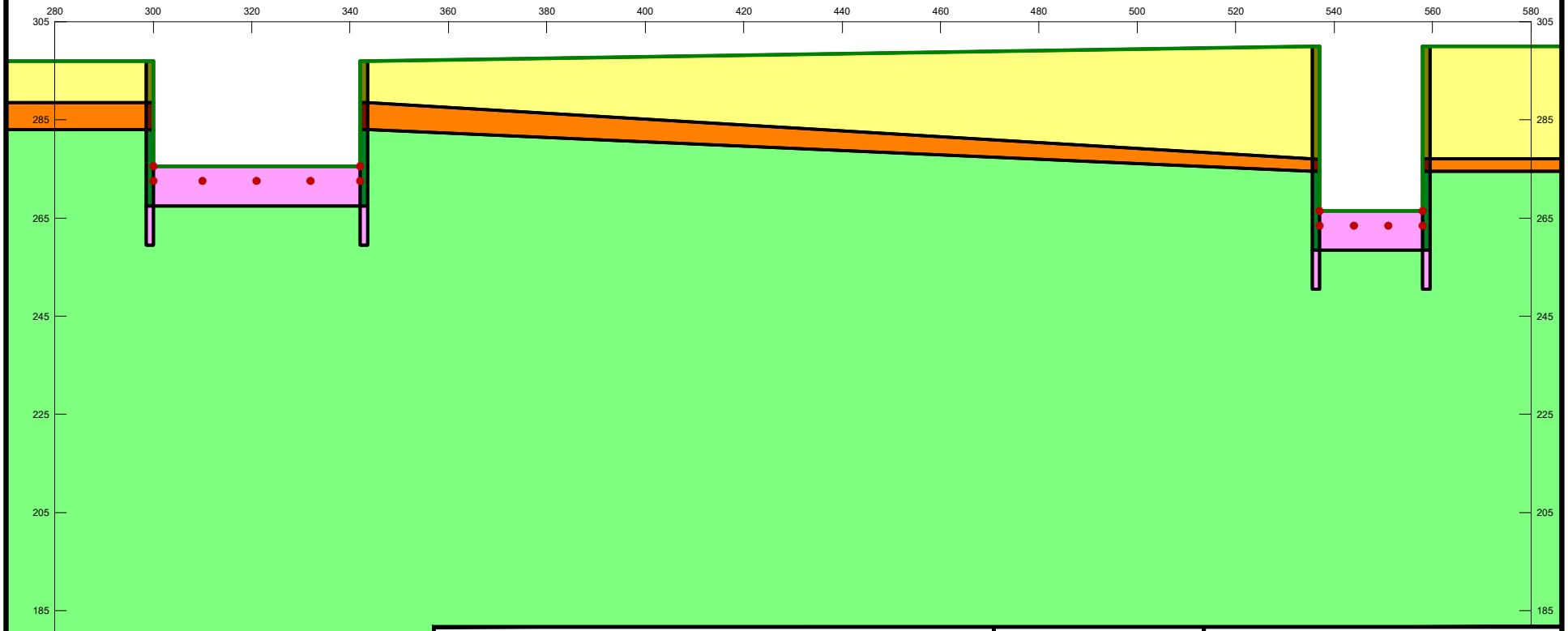
Project 2302756

Full Extent of SEEP/W Model

October 13 2023 Fig. 1

Color	Name	Hydraulic Material Model	Sat Kx (ft/sec)	Ky'/Kx' Ratio
	Limestone	Saturated Only	0.000492	0.1
	LMG Treated Area	Saturated Only	3.28e-08	0.1
	Residual Soils	Saturated Only	3.13e-07	0.1
	Secant Piles-LS	Saturated Only	1.64e-07	0.1
	Secant Piles-RS	Saturated Only	1.11e-10	0.1
	Secant Piles-WR	Saturated Only	1.09e-06	0.1
	Weathered Rock	Saturated Only	0.00328	0.1

Color	Name	Category	Kind	Parameters
	East of MH1	Hydraulic	Water Total Head	296.1 ft
	No Flow	Hydraulic	Water Rate	0 ft³/sec
	West of MH3	Hydraulic	Water Total Head	291.25 ft
	Zero Pressure	Hydraulic	Water Pressure Head	0 ft



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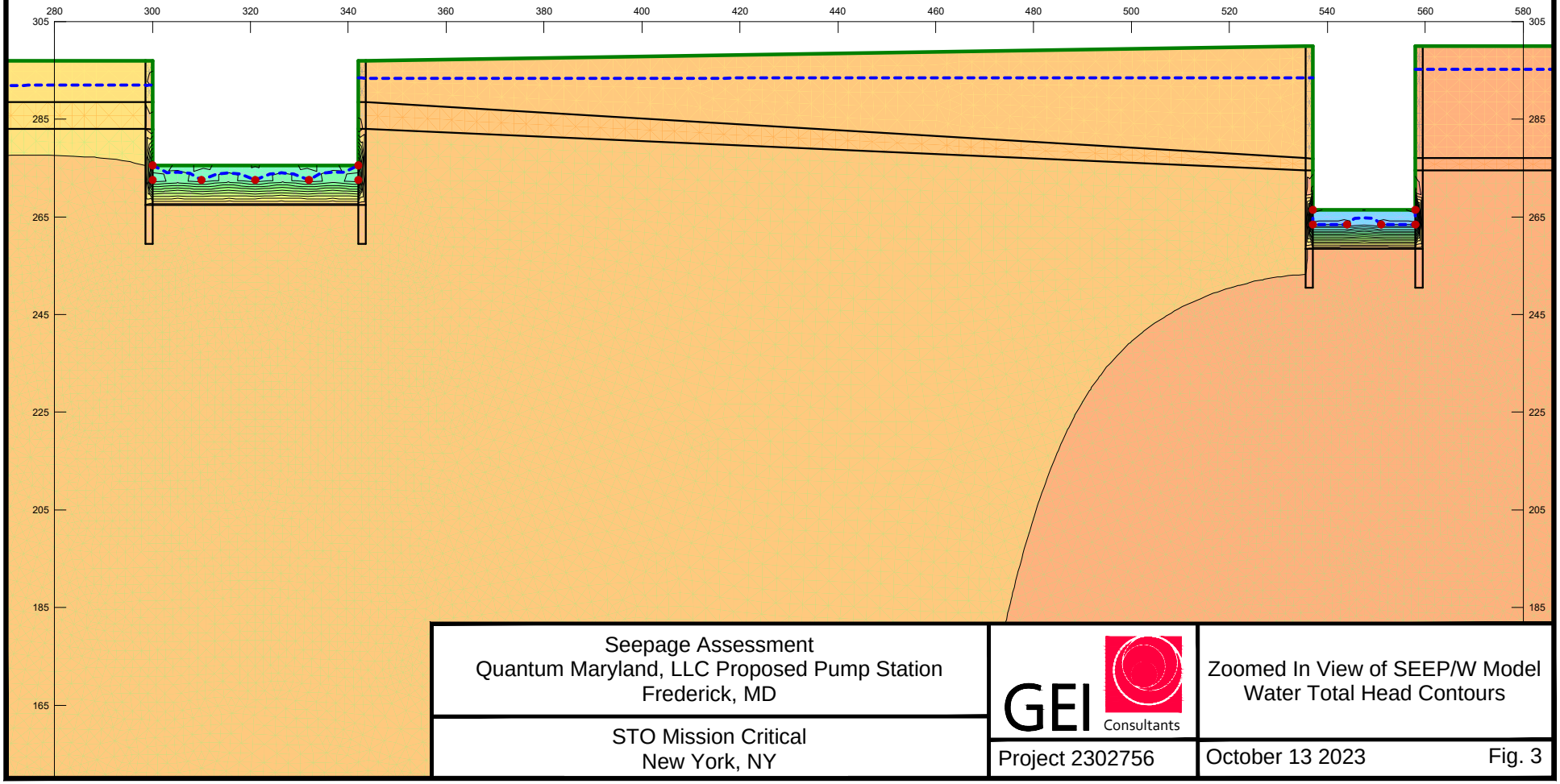
Zoomed In View of SEEP/W Model Geometry

October 13 2023 Fig. 2

Color	Name	Hydraulic Material Model	Sat Kx (ft/sec)	Ky'/Kx' Ratio
	Grout Treated Area	Saturated Only	3.28e-08	0.1
	Residual Soils	Saturated Only	3.13e-07	0.1
	Rock	Saturated Only	0.000492	0.1
	Secant Piles-LS	Saturated Only	1.64e-07	0.1
	Secant Piles-RS	Saturated Only	1.11e-10	0.1
	Secant Piles-WR	Saturated Only	1.09e-06	0.1
	Weathered Rock	Saturated Only	0.00328	0.1

Color	Name	Category	Kind	Parameters
	East of MH1	Hydraulic	Water Total Head	296.1 ft
	No Flow	Hydraulic	Water Rate	0 ft³/sec
	West of MH3	Hydraulic	Water Total Head	291.25 ft
	Zero Pressure	Hydraulic	Water Pressure Head	0 ft



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Frederick, MD

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New York, NY

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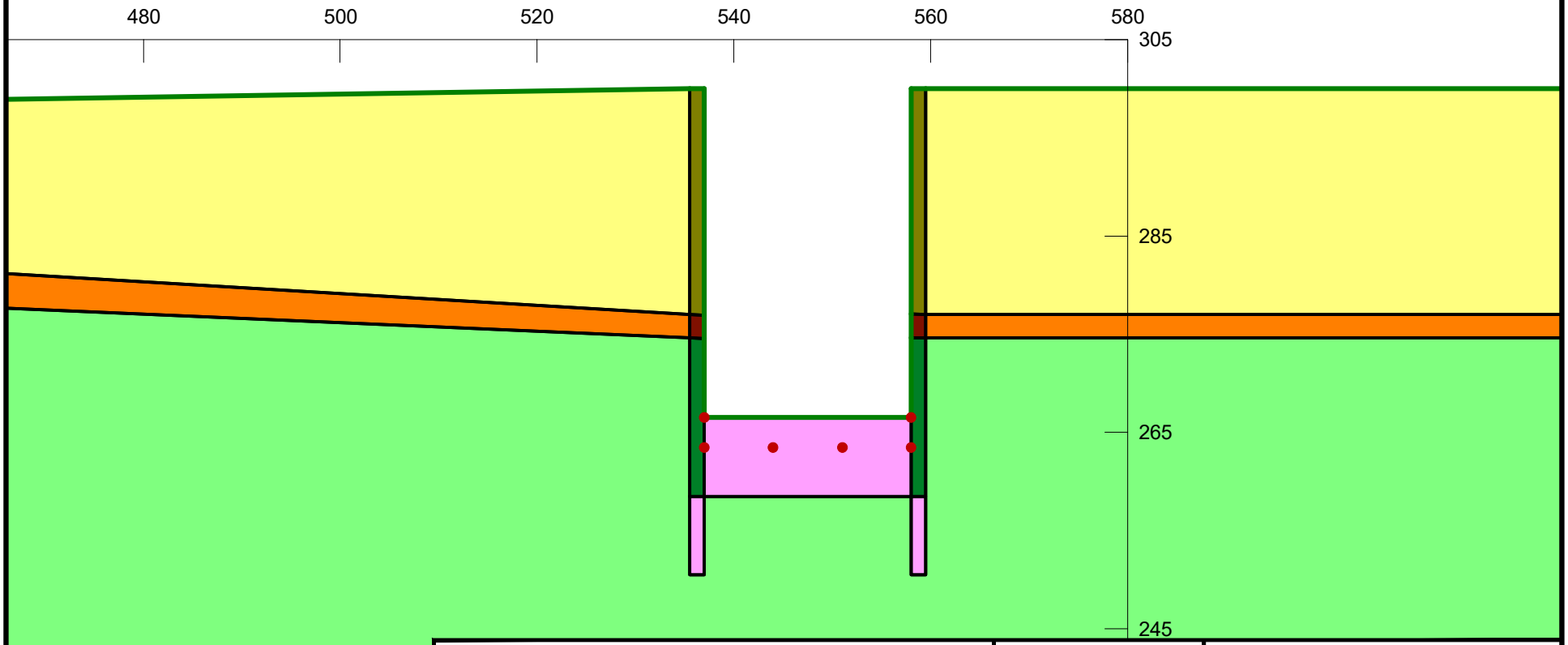
Zoomed In View of SEEP/W Model
Water Total Head Contours

October 13 2023 Fig. 3

Color	Name	Hydraulic Material Model	Sat Kx (ft/sec)	Ky'/Kx' Ratio
	Limestone	Saturated Only	0.000492	0.1
	LMG Treated Area	Saturated Only	3.28e-08	0.1
	Residual Soils	Saturated Only	3.13e-07	0.1
	Secant Piles-LS	Saturated Only	1.64e-07	0.1
	Secant Piles-RS	Saturated Only	1.11e-10	0.1
	Secant Piles-WR	Saturated Only	1.09e-06	0.1
	Weathered Rock	Saturated Only	0.00328	0.1

Color	Name	Category	Kind	Parameters
	East of MH1	Hydraulic	Water Total Head	296.1 ft
	No Flow	Hydraulic	Water Rate	0 ft³/sec
	West of MH3	Hydraulic	Water Total Head	291.25 ft
	Zero Pressure	Hydraulic	Water Pressure Head	0 ft



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New York, NY

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SEEP/W Model MH-1 Geometry

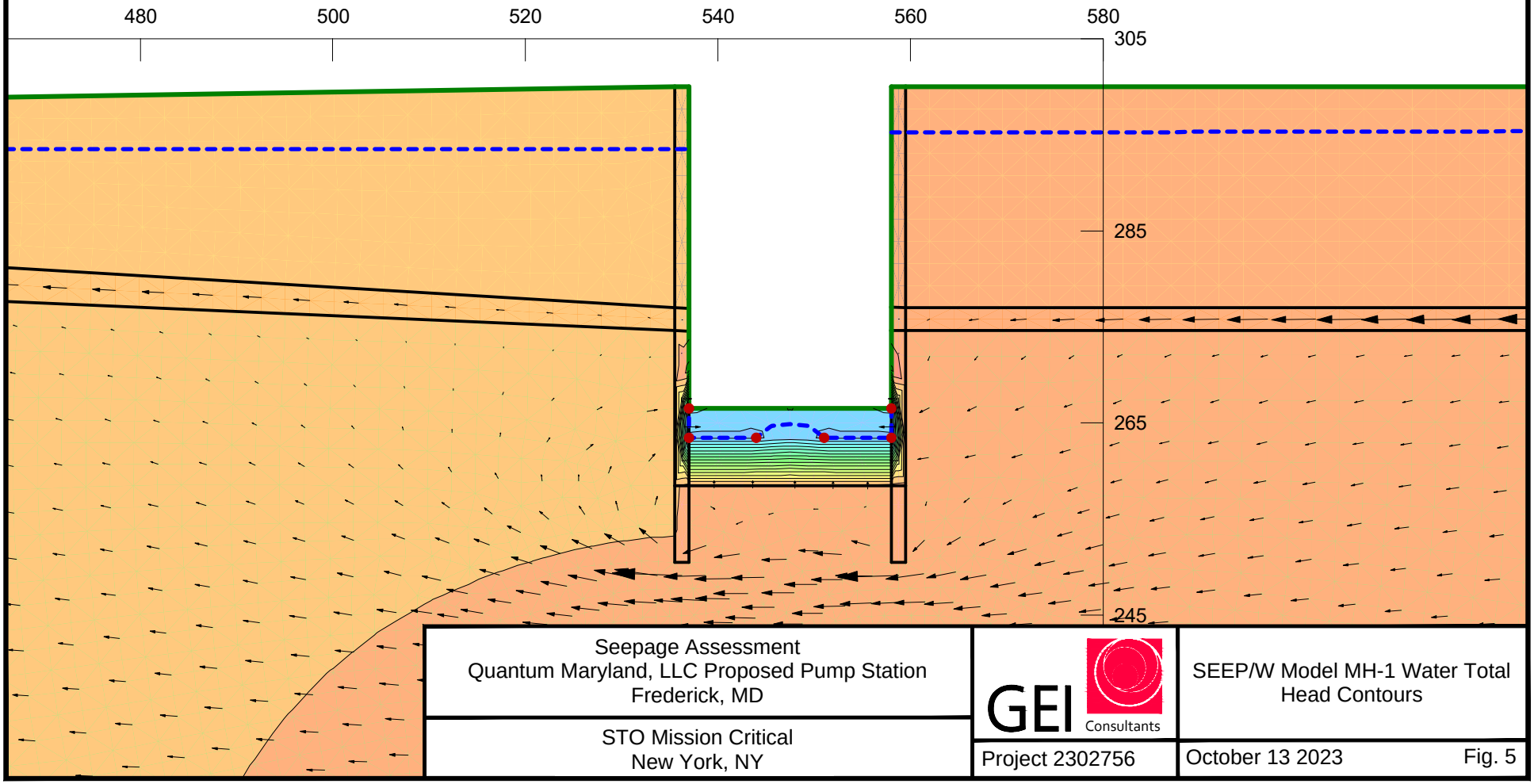
Project 2302756

October 13 2023

Fig. 4

Color	Name	Hydraulic Material Model	Sat Kx (ft/sec)	Ky'/Kx' Ratio
	Grout Treated Area	Saturated Only	3.28e-08	0.1
	Residual Soils	Saturated Only	3.13e-07	0.1
	Rock	Saturated Only	0.000492	0.1
	Secant Piles-LS	Saturated Only	1.64e-07	0.1
	Secant Piles-RS	Saturated Only	1.11e-10	0.1
	Secant Piles-WR	Saturated Only	1.09e-06	0.1
	Weathered Rock	Saturated Only	0.00328	0.1

Color	Name	Category	Kind	Parameters
	East of MH1	Hydraulic	Water Total Head	296.1 ft
	No Flow	Hydraulic	Water Rate	0 ft³/sec
	West of MH3	Hydraulic	Water Total Head	291.25 ft
	Zero Pressure	Hydraulic	Water Pressure Head	0 ft



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Frederick, MD

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New York, NY

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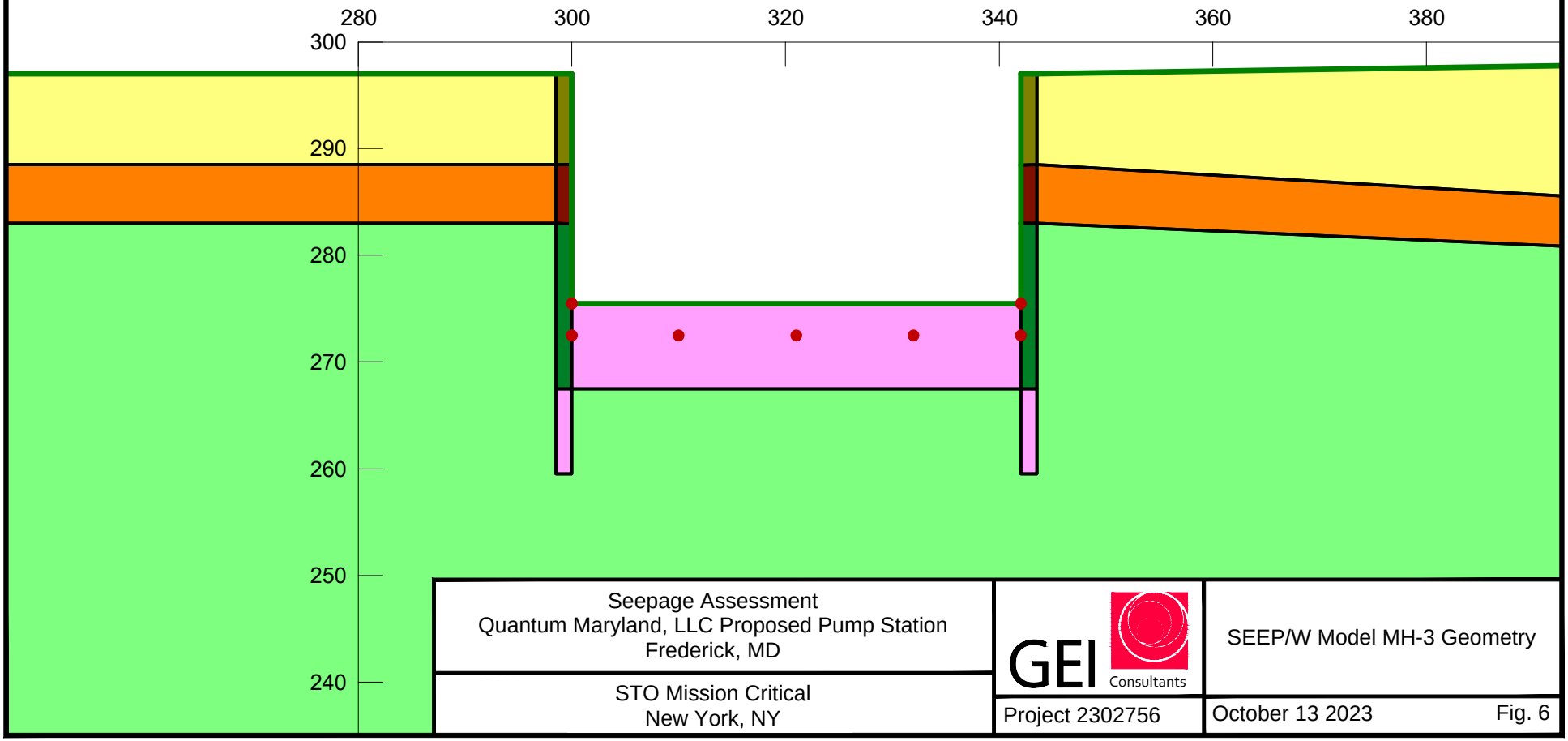
SEEP/W Model MH-1 Water Total Head Contours

October 13 2023 Fig. 5

Color	Name	Hydraulic Material Model	Sat Kx (ft/sec)	Ky'/Kx' Ratio
	Limestone	Saturated Only	0.000492	0.1
	LMG Treated Area	Saturated Only	3.28e-08	0.1
	Residual Soils	Saturated Only	3.13e-07	0.1
	Secant Piles-LS	Saturated Only	1.64e-07	0.1
	Secant Piles-RS	Saturated Only	1.11e-10	0.1
	Secant Piles-WR	Saturated Only	1.09e-06	0.1
	Weathered Rock	Saturated Only	0.00328	0.1

Color	Name	Category	Kind	Parameters
	East of MH1	Hydraulic	Water Total Head	296.1 ft
	No Flow	Hydraulic	Water Rate	0 ft³/sec
	West of MH3	Hydraulic	Water Total Head	291.25 ft
	Zero Pressure	Hydraulic	Water Pressure Head	0 ft



Seepage Assessment
Quantum Maryland, LLC Proposed Pump Station
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SEEP/W Model MH-3 Geometry

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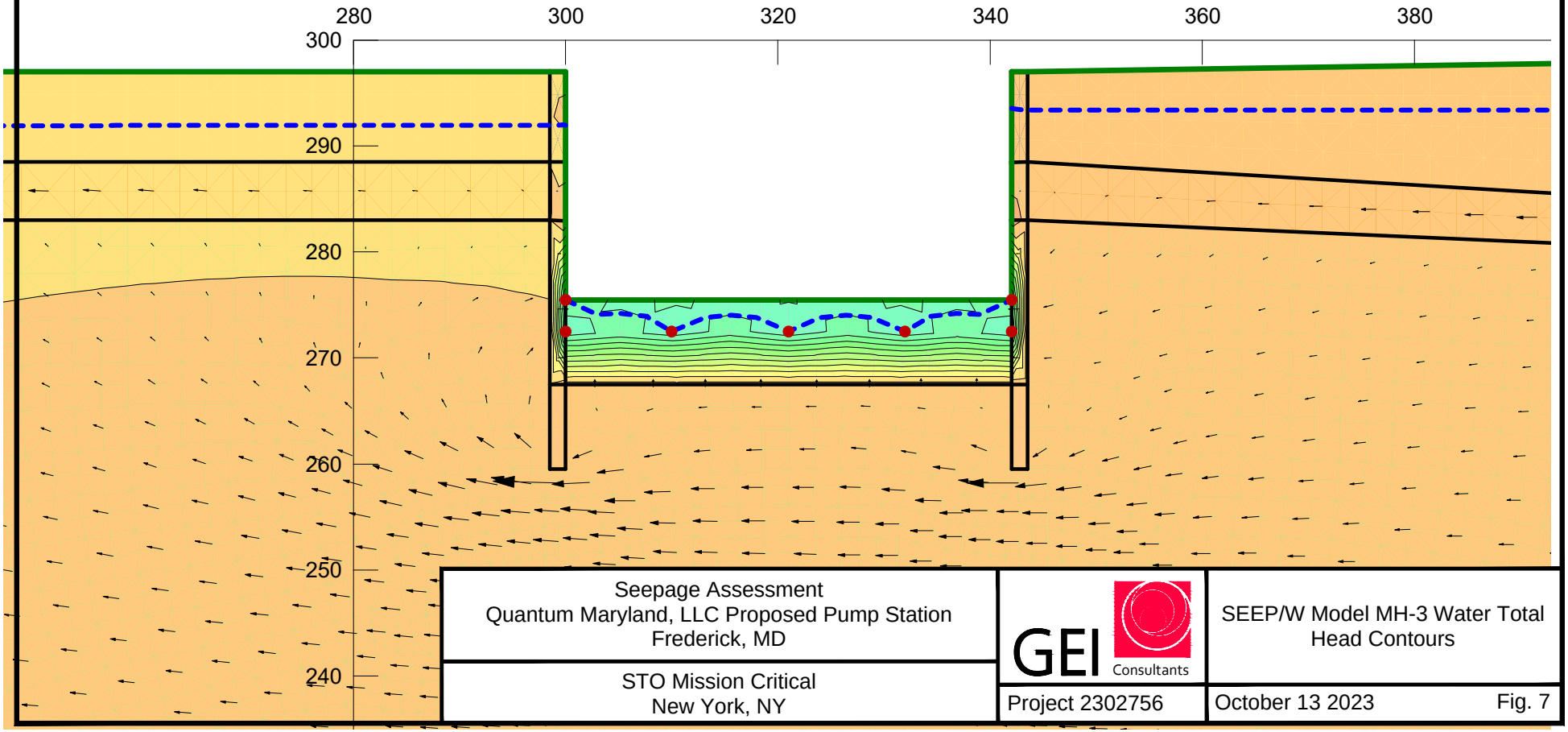
October 13 2023

Fig. 6

Color	Name	Hydraulic Material Model	Sat Kx (ft/sec)	Ky'/Kx' Ratio
	Grout Treated Area	Saturated Only	3.28e-08	0.1
	Residual Soils	Saturated Only	3.13e-07	0.1
	Rock	Saturated Only	0.000492	0.1
	Secant Piles-LS	Saturated Only	1.64e-07	0.1
	Secant Piles-RS	Saturated Only	1.11e-10	0.1
	Secant Piles-WR	Saturated Only	1.09e-06	0.1
	Weathered Rock	Saturated Only	0.00328	0.1

Color	Name	Category	Kind	Parameters
	East of MH1	Hydraulic	Water Total Head	296.1 ft
	No Flow	Hydraulic	Water Rate	0 ft³/sec
	West of MH3	Hydraulic	Water Total Head	291.25 ft
	Zero Pressure	Hydraulic	Water Pressure Head	0 ft



Seepage Assessment
Quantum Maryland, LLC Proposed Pump Station
Frederick, MD

STO Mission Critical
New York, NY

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SEEP/W Model MH-3 Water Total Head Contours

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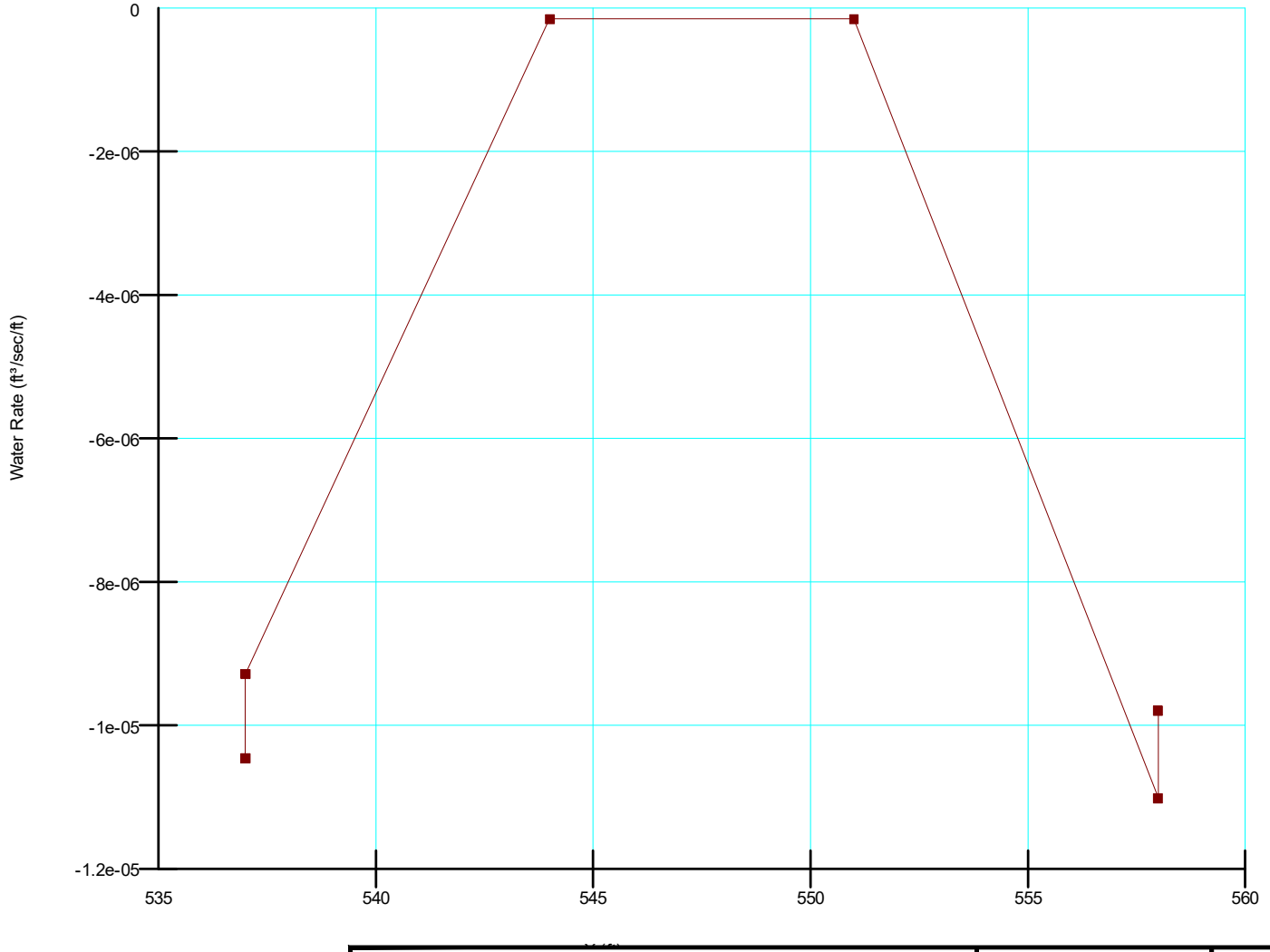
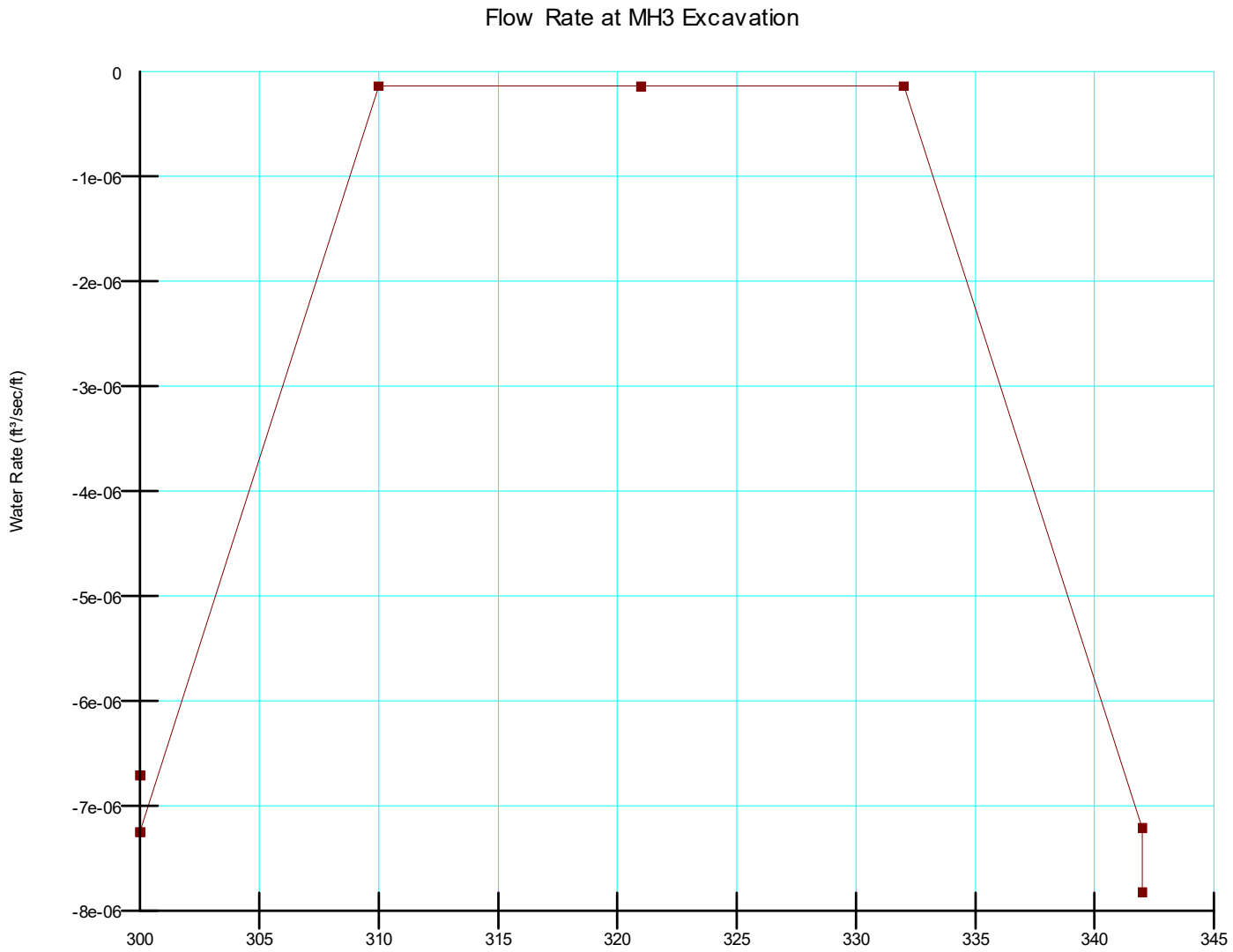
October 13 2023

Fig. 7

Flow Rate at MH1 Excavation



Seepage Assessment Quantum Maryland, LLC Proposed Pump Station Frederick, MD	GEI Consultants	MH1 Flow Rate Graph
STO Mission Critical New York, NY	Project 2302756	October 13 2023 Fig. 8



Seepage Assessment Quantum Maryland, LLC Proposed Pump Station Frederick, MD	GEI Consultants	MH3 Flow Rate Graph
STO Mission Critical New York, NY	Project 2302756	October 13 2023 Fig. 9

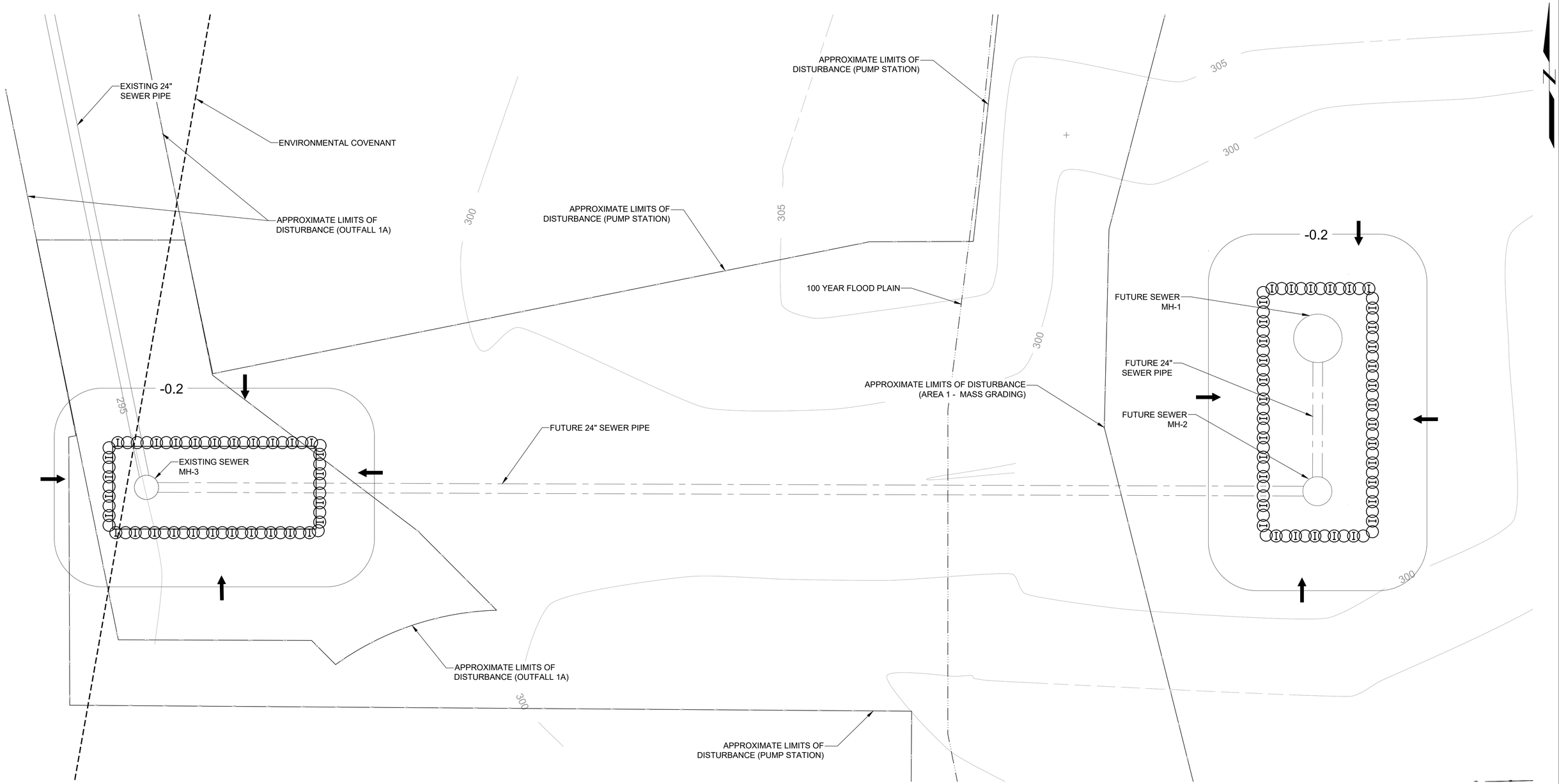
Table 1: Water Flow Rate Results at MH-1 from SEEP/W Model

X (ft)	Water Rate ($ft^3/sec/ft$)	Perimeter Length (ft)	Flow rate (gpd)	Flow Rate Sum (gpd)
537	1.05E-05	141	953.24	3723.31
537	9.29E-06	141	846.32	
544	1.50E-07	141	13.69	
551	1.50E-07	141	13.70	
558	1.10E-05	141	1003.80	
558	9.80E-06	141	892.57	

Seepage Assessment Quantum Maryland, LLC Proposed Pump Station Frederick, MD	GEI Consultants	Full Extent of SEEP/W Model
STO Mission Critical New York, NY	Project 2302756	October 13 2023 Table 1

Table 2: Water Flow Rate Results at MH-3 from SEEP/W Model

X (ft)	Water Rate ($ft^3/sec/ft$)	Perimeter Length (ft)	Flow rate (gpd)	Flow Rate Sum (gpd)
300	7.25E-06	118	552.95	2243.45
300	6.71E-06	118	511.80	
310	1.37E-07	118	10.43	
321	1.40E-07	118	10.71	
332	1.37E-07	118	10.45	
342	7.22E-06	118	550.28	
342	7.83E-06	118	596.85	



NOTES:

1. BASE PLAN PROVIDED BY DEWBERRY.
2. CONTOUR UNITS ARE IN FEET BELOW CURRENT GROUNDWATER ELEVATIONS.
3. LIMITS OF SUPPORT OF EXCAVATION SYSTEMS PER GEI DESIGN.

EXTENT OF GROUNDWATER DRAWDOWN

SCALE: 1" = 10'

LEGEND:

-0.2 GROUNDWATER DRAWNDOWN CONTOUR

GROUNDWATER FLOW DIRECTION

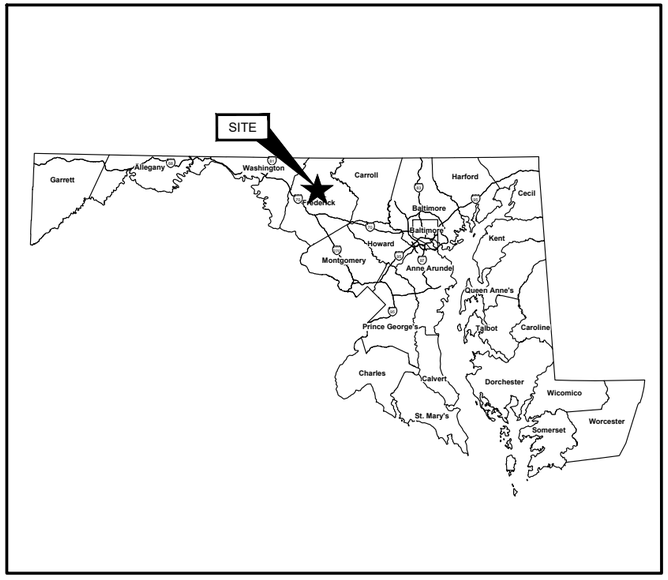
SEEPAGE ANALYSIS QUANTUM MARYLAND, LLC FREDERICK, MD	GEI Consultants	GROUNDWATER DRAWDOWN PUMP STATION AND MH-3
STO Misson Critical New York, NY	Project 2302756	October 2023 Fig. 1

Appendix D2

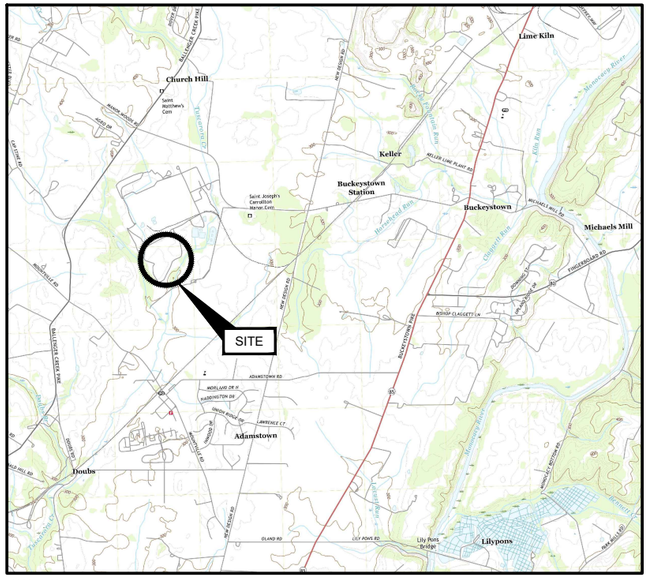
Appendix D2 - SOE Final Design

QUANTUM LOOP PUMP STATION

SUPPORT OF EXCAVATION
FREDERICK, MARYLAND



STATE or COUNTY MAP
(NOT TO SCALE)



SOURCE:
MAP TAKEN FROM USGS.GOV.

SITE LOCATION MAP
(NOT TO SCALE)

SHEET INDEX

SHEET NO.	DRAWING NO.	TITLE
1	G-01	COVER SHEET
2	G-02	GENERAL NOTES
3	C-01	EXISTING CONDITIONS SITE PLAN
4	C-02	PROPOSED CONDITIONS SITE PLAN
5	C-03	AIR TRACK PROBE PROFILES
6	C-04	BORING LOGS
7	SOE-01	ENLARGED SOE PLANS PLAN AT MH-1 AND MH-2
8	SOE-02	ENLARGED SOE PLANS AT MH-3
9	SOE-03	SECTIONS AT MH-1 AND MH-2
10	SOE-04	SECTIONS AT MH-1 AND MH-2
11	SOE-05	SECTIONS AT MH-3
12	SOE-06	DETAILS
13	SOE-07	SECANT PILE SCHEDULES

PREPARED FOR:

CLARK FOUNDATIONS GROUP LLC
7900 WESTPARK DRIVE
SUITE T300
MCLEAN, VA 22102

PREPARED BY:

6010 EXECUTIVE BLVD.
SUITE 702
ROCKVILLE, MD 20854
(202)609-7677

GEI Consultants

GEI PROJECT NO. 2303753

NO.	DATE	ISSUE/REVISION	APP
0	10/16/2023	100% DESIGN	GAB

STATE OF MARYLAND
CHRISTOPHE LOCUSSOL
No. 27970
REGISTERED PROFESSIONAL ENGINEER

DWG. NO.
G-01

SHEET NO.
1 OF 13

SUPPORT OF EXCAVATION WALL NOTES

GENERAL

1. THESE DRAWINGS CORRESPOND TO THE DESIGN AND CONSTRUCTION OF TEMPORARY SUPPORT OF EXCAVATION (SOE) SYSTEMS FOR THE CONSTRUCTION OF MANHOLE (MH) 1 (ALSO KNOWN AS THE WET WELL), MH-2 AND MH-3. THE SOE SYSTEMS WILL ALSO SERVE AS LAUNCH AND RETRIEVAL SHAFTS FOR MICROTUNNELING ACTIVITIES BETWEEN MH-2 AND MH-3.
2. THE DRAWINGS DO NOT ADDRESS SAFETY ISSUES RELATED TO THE WORK. SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE DESIGN OF THE SOE SYSTEMS IS BASED ON INFORMATION PRESENTED IN THE FOLLOWING:
   A. *REPORT OF GEOTECHNICAL EXPLORATION - QUANTUM FREDERICK PROPERTY PROPOSED SEWER PUMP STATION* BY GEO-TECHNOLOGY ASSOCIATES, INC. (GTA) DATED MARCH 3, 2023
   B. *REPORT OF GEOTECHNICAL EXPLORATION - QUANTUM FREDERICK PROPERTY PROPOSED SEWER OUTFALL A* BY GEO-TECHNOLOGY ASSOCIATES, INC. (GTA) DATED AUGUST 29, 2022
   C. *COMBINED SWM DEVELOPMENT AND IMPROVEMENT PLAN FOR QUANTUM FREDERICK* BY DEWBERRY DATED MARCH 6, 2023
   D. MINIMUM CLEAR DIMENSIONS PROVIDED BY CLARK CONSTRUCTION FOR THE MICROTUNNELING EQUIPMENT
4. IF SITE CONDITIONS DIFFER FROM THOSE PRESENTED IN THE GTA GEOTECHNICAL REPORTS, THE DRAWINGS OR INFORMATION PROVIDED, IT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE DESIGNER OF THE TEMPORARY SOE, GEI CONSULTANTS, INC. (GEI).
5. THE SOE SYSTEM AROUND MH-1 AND MH-2 IS CONSIDERED THE RETRIEVAL SHAFT AND THE SOE SYSTEM AROUND MH-3 IS CONSIDERED THE LAUNCH SHAFT FOR MICROTUNNELING ACTIVITIES.
6. THE SOE SYSTEMS FOR BOTH EXCAVATIONS CONSIST OF INTERNALLY BRACED CONCRETE SECANT PILES.
7. THE SOE WILL BE CONSTRUCTED BY CLARK FOUNDATIONS, LLC (CLARK FOUNDATIONS) OR THEIR SUBCONTRACTOR. THE DESIGN OF THE SOE SYSTEMS FOR THE TEMPORARY CONDITIONS WAS PERFORMED BY GEI. CLARK CONSTRUCTION GROUP, LLC (CLARK CONSTRUCTION) IS SERVING AS THE GENERAL CONTRACTOR FOR THE WORK. THE DESIGN OF THE MANHOLES FOR PERMANENT CONDITIONS, CONNECTIONS TO PIPING, MICROTUNNEL JACKING SYSTEM AND MICROTUNNEL IS BY OTHERS.
8. GENERAL CONTRACTOR IS TO ENSURE THAT ALL EXISTING UTILITIES ARE LOCATED AND REMOVED/RELOCATED PRIOR TO THE INSTALLATION OF THE SOE SYSTEMS. SOE SYSTEM IS NOT DESIGNED TO INTERFACE WITH ANY EXISTING UTILITIES OTHER THAN THOSE SHOWN ON THE DRAWINGS.
9. SITE TO BE BACKFILLED TO EL. 300 FEET TO CREATE A STABLE WORKING PLATFORM. ENSURE THAT THE BACKFILL MATERIAL, COMPACTION EFFORTS AND GEO-REINFORCING, IF REQUIRED, WILL PROVIDE A SAFE AND STABLE PLATFORM FOR THE ANTICIPATED EQUIPMENT NEEDED TO PERFORM THE WORK. DESIGN OF THE WORKING PLATFORM IS THE RESPONSIBILITY OF OTHERS.
10. A LOW MOBILITY GROUTING (LMG) PROGRAM PROVIDED UNDER SEPARATE COVER SHALL BE PERFORMED IN CONJUNCTION WITH THE SECANT PILE WALL CONSTRUCTION TO FILL CAVITIES AND SOIL SEAMS IDENTIFIED IN THE GTA GEOTECHNICAL REPORTS.
11. THE SOE SYSTEMS SHOWN ON THE DRAWINGS ARE DESIGNED BY GEI USING THE CONSTRUCTION SEQUENCE INDICATED ON THE DRAWINGS. LOADING CONDITIONS PRODUCED BY A DIFFERENT EXCAVATION SCHEME OR SEQUENCE, OR OTHER DESIGN COMPONENTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF GEI FOR REVIEW AND ACCEPTANCE.
12. A VERTICAL CONSTRUCTION SURCHARGE OF 650 PSF LOCATED 5 FEET AWAY FROM THE BACK FACE OF THE SECANT PILE WALLS WAS INCORPORATED INTO THE DESIGN.
13. JACKING LOADS FROM THE MICROTUNNELING EFFORT WERE NOT INCLUDED IN THE DESIGN OF THE SOE SYSTEMS. JACKING MUST BE PERFORMED OFF THE SUBGRADE. IF THE MICROTUNNELING SUBCONTRACTOR REQUIRES JACKING OFF THE SOE SYSTEM, ADDITIONAL COORDINATION AND ANALYSIS WILL BE REQUIRED.
14. SECANT PILES SHALL BE EXTENDED TO THE TIP ELEVATIONS NOTED ON THE DRAWINGS.
15. CONTRACTOR SHALL PROVIDE FULL-TIME OPERATORS AND SUPERVISORY STAFF WHO ARE EXPERIENCED IN THE INSTALLATION OF SECANT PILES.
16. CONTRACTOR SHALL KEEP A RECORD OF ALL SECANT PILES INSTALLED TO INCLUDE PLAN LOCATION, DRILL DEPTH, VERTICALITY, CONCRETE VOLUME PLACED WITH DEPTH, AND STEEL REINFORCING PLACEMENT, AT A MINIMUM.
17. CONTRACTOR SHALL ADVANCE THE SECANT PILE EXCAVATION THROUGH OBSTRUCTIONS BY METHODS APPROVED BY GEI. OFFSETS DUE TO OBSTRUCTIONS REQUIRE PRIOR APPROVAL BY GEI.
18. INSTALL SECANT PILES IN PLUMB POSITION SUCH THAT EACH SECANT PILE INSTALLED IS IN LINE WITH ADJACENT SECANT PILE OVER ITS ENTIRE LENGTH.
19. AT CUT-OFF LEVEL, THE MAXIMUM PERMITTED DEVIATION OF THE SECANT PILE CENTER FROM THE CENTER POINT SHOWN ON THE DESIGN DRAWINGS SHALL BE 0.1 FEET IN ANY DIRECTION.
20. CONTROL VIBRATIONS AND NOISE ASSOCIATED WITH THE INSTALLATION. DO NOT USE DROP WEIGHTS TO ADVANCE CASING FOR PILE INSTALLATION.
21. PRIMARY PILES ARE UNREINFORCED PILES AND ARE INSTALLED BEFORE THE REINFORCED SECONDARY PILES. SEE PILE SCHEDULE FOR REINFORCEMENT IN SECONDARY PILES. EQUIVALENT SIZE MEMBER OR GREATER IS ACCEPTABLE PER GEI APPROVAL.
22. NO PRIMARY PILE EXCAVATION SHALL COMMENCE WITHIN 5 FEET EDGE TO EDGE OF ANY PILE WHICH HAS NOT CURED FOR A MINIMUM OF 24 HOURS, UNLESS OTHERWISE APPROVED BY GEI.
23. CONTRACTOR SHALL IMPLEMENT ALL NECESSARY MEASURES, INCLUDING THE PROVISION OF ALL MATERIALS, LABOR AND PLANT, FOR MAINTAINING THE STABILITY OF THE SIDES OF BOREHOLES DURING SECANT PILE INSTALLATION AND SUCCESSFUL COMPLETION OF THE SECANT PILES.
24. CONTRACTOR SHALL TAKE MEASURES TO AVOID SEGREGATION AND BLEEDING SO THAT THE CONCRETE AT THE BOTTOM OF THE SECANT PILE IS NOT DEFICIENT IN CEMENT. THE CONCRETE SHALL BE PLACED IN CLEAN AND DRY HOLES OR USING TREMIE METHODS IF GROUNDWATER IS PRESENT IN HOLE. THE CONCRETE SHALL BE PLACED AS QUICKLY AS POSSIBLE WHERE THE GROUND IS LIABLE TO DETERIORATE ON EXPOSURE.
25. IRRESPECTIVE OF THE PRESENCE OF GROUND WATER, THE SIDES OF ALL BOREHOLES SHALL BE KEPT INTACT AND NO LOOSE MATERIAL SHALL BE PERMITTED TO FALL INTO THE BOTTOM OF THE BOREHOLES.
26. CASE PRIMARY PILES BASED ON SUBSURFACE CONDITIONS ENCOUNTERED DURING THE LMG PROGRAM. THE USE OF A TEMPORARY CASING IS RECOMMENDED FOR PRIMARY PILES TO MAINTAIN THE STABILITY OF A BOREHOLE AND CONTROL CONCRETE VOLUMES. THE BOTTOM OF CASING SHALL BE KEPT A MINIMUM OF 3 FT BELOW THE UNSTABLE STRATA TO PREVENT THE INFLOW OF SOIL AND THE FORMATION OF CAVITIES IN THE SURROUNDING GROUND. THE PROCESS OF ADVANCING THE BOREHOLE AND THE TEMPORARY CASING SHALL BE SUCH THAT SOIL IS NOT DRAWN INTO THE BOREHOLE FROM OUTSIDE THE AREA OF THE PILE AND CAVITIES ARE NOT CREATED OUTSIDE THE TEMPORARY CASING.
27. TEMPORARY CASINGS SHALL BE THIN-WALLED MILD STEEL CASING, SPIRALLY WELDED OR OTHER SIMILAR CONSTRUCTION. THE DIMENSIONS AND QUALITY OF THE CASING SHALL BE ADEQUATE TO WITHSTAND, WITHOUT DAMAGE OR DISTORTION, ALL HANDLING, CONSTRUCTION AND GROUND STRESSES TO WHICH THEY WILL BE SUBJECTED, INCLUDING PREVENTING CONCRETE FROM WITHIN THE PILE FROM DISPLACING SOFT SOIL OR SOIL SQUEEZING IN AND DISPLACING FRESH CONCRETE. CASINGS SHALL BE FREE OF SIGNIFICANT DISTORTION, SHALL HAVE UNIFORM CROSS-SECTION THROUGHOUT EACH CONTINUOUS LENGTH AND SHALL BE FREE FROM INTERNAL PROJECTIONS AND ENCRUSTED CONCRETE WHICH MIGHT PREVENT THE PROPER FORMATION OF SECANT PILES. THE JOINTS OF CASINGS SHALL BE REASONABLY WATERTIGHT.
28. IF TEMPORARY CASINGS ARE DAMAGED DURING INSTALLATION IN A MANNER WHICH PREVENTS THE PROPER FORMATION OF THE PILE, SUCH CASINGS SHALL BE WITHDRAWN FROM THE BOREHOLE BEFORE CONCRETE IS PLACED, REPAIRED IF NECESSARY OR OTHER ACTION TAKEN AS MAY BE APPROVED TO CONTINUE THE CONSTRUCTION OF THE PILE.
29. DEPTH OF PILE EXCAVATIONS SHALL BE MEASURED FOR THEIR FULL LENGTH BEFORE CONCRETING.
30. INSPECTION SHALL BE CARRIED OUT FROM THE GROUND LEVEL PRIOR TO CONCRETE BEING PLACED IN THE BOREHOLE. IN THE COURSE OF INSPECTION ANY LOOSE OR SOFT MATERIAL IN THE BOREHOLE WHICH IS LIKELY TO AFFECT THE PERFORMANCE OF THE PILE SHALL BE REMOVED TO THE SATISFACTION OF GEI.
31. THE BASE OF THE PILES SHALL BE OBSERVED BY APPROVED MEANS TO ENSURE THAT ALL LOOSE, DISTURBED AND/OR REMOLDED SOIL IS REMOVED AND THAT THE SIDES OF THE BORING WILL REMAIN STABLE DURING THE SUBSEQUENT CONCRETING OPERATIONS. THE VERTICALITY AND POSITION OF THE BORING SHALL BE CHECKED TO ENSURE THAT THEY MEET THE SPECIFIED TOLERANCES.
32. ALL BOREHOLES SHALL BE PROTECTED FROM THE POSSIBILITY OF ANY SURFACE WATER ENTERING THE HOLE.
33. ALL BOREHOLES SHALL BE CONCRETED WITHIN THE SAME DAY.
34. CONCRETE PLACEMENT SHALL BE HALTED SHOULD A DELAY OR BREAKDOWN OCCUR DURING THE CONCRETING OPERATION WHICH IN THE OPINION OF GEI, COULD CAUSE A COLD JOINT, ENTRAPMENT, OR OTHERWISE LEAD TO DEFECTIVE CONCRETE.
35. TEMPORARY CASINGS SHALL BE EXTRACTED WHILE THE CONCRETE WITHIN REMAINS SUFFICIENTLY WORKABLE TO ENSURE THAT THE CONCRETE IS NOT LIFTED AND THAT THE RESULTANT PILE IS CONTINUOUS AND OF FULL SECTION. TEMPORARY CASINGS SHALL BE FULLY EXTRACTED ONCE THE CONCRETE PLACEMENT IS COMPLETE.
36. WHEN CASINGS AND LININGS ARE WITHDRAWN AS CONCRETING PROCEEDS, A MINIMUM OF 5 FEET OF CONCRETE HEAD ABOVE THE BOTTOM OF CASING SHALL BE MAINTAINED TO PREVENT THE ENTRY OF GROUND WATER WHICH MAY CAUSE REDUCTION OF CROSS-SECTION OF THE PILE. CONCRETE SHALL BE PLACED CONTINUOUSLY AS THE CASING IS EXTRACTED WHILE MAINTAINING THE DESIRED HEAD OF CONCRETE.
37. ADEQUATE PRECAUTIONS SHALL BE TAKEN IN ALL CASES WHERE THE WITHDRAWAL OF CASING COULD RESULT IN AN EXCESS HEAD OF WATER. EXCESS PRESSURE HEADS ARE CAUSED BY THE DISPLACEMENT OF WATER OR FLUID BY CONCRETE AS THE CONCRETE FLOWS INTO ITS FINAL POSITION AGAINST THE WALL OF THE SHAFT. PRECAUTIONS SUCH AS THE USE OF TWO OR MORE DISCONTINUOUS LENGTHS OF CASING (DOUBLE CASING) SHALL BE DEEMED AN ACCEPTABLE METHOD OF CONSTRUCTION IN THIS CASE.
38. THE TOP OF THE SECANT PILE SHALL BE SOUND CONCRETE AT THE CUT-OFF ELEVATION. CONCRETE LAITANCE SHALL BE REMOVED FROM THE TOP OF PILE AND REPLACED WITH FRESH FLUID CONCRETE. DEFECTIVE CONCRETE SHALL BE CHIPPED OR CUT AWAY AND REPLACED WITH NEW CONCRETE WELL BONDED INTO THE OLD CONCRETE, AS DIRECTED BY GEI. CARE SHALL BE IMPLEMENTED TO AVOID DAMAGE TO ADJACENT STRUCTURES DURING REMEDIATION WORK.
39. FOR PILES WITH CUTOFF BELOW EXISTING GRADE, ON COMPLETION OF CONCRETING, THE REMAINING EMPTY BOREHOLE SHALL BE BACKFILLED WITH SAND OR LEAN CONCRETE UNLESS OTHERWISE AGREED TO BY GEI.
40. CONTRACTOR SHALL PERFORM CHIPPING, CUTTING, OR SHAVING OF CONCRETE BULGES OR PROJECTION OF SECANT PILE CONCRETE WITHIN THE EXCAVATION THAT PREVENT THE INSTALLATION OF BRACING OR INHIBIT THE WORK WITHIN THE EXCAVATION.
41. SITE EXCAVATION SHALL NOT COMMENCE ADJACENT TO SECANT PILES THAT HAVE NOT REACHED A MINIMUM OF 75% OF THE DESIGN COMPRESSIVE STRENGTH.
42. GENERAL CONTRACTOR SHALL TAKE MEASURES TO PREVENT SURFACE WATER FROM ENTERING EXCAVATIONS BY GRADING, DIKES, OR OTHER MEANS.
43. EXCAVATION WITHIN THE SHAFT SHALL BE UNIFORM, WITH A MAXIMUM 10-FOOT HEIGHT DIFFERENTIAL ACROSS THE SHAFT.
44. EXCAVATION BELOW A PROPOSED BRACE SHALL NOT EXTEND MORE THAN 2- FEET BELOW THE PROPOSED BRACE ELEVATION.
45. CONSTRUCTION DEWATERING SHALL BE PERFORMED BY OTHERS INSIDE THE EXCAVATION AREA. WATER LEVELS SHALL BE KEPT A MINIMUM OF TWO FEET BELOW THE EXCAVATION LEVEL DURING THE EXCAVATION. DURING EXCAVATION AND ONCE EXCAVATION REACHES SUBGRADE, GROUNDWATER CONDITIONS SHALL BE ASSESSED TO DETERMINE WHETHER ADDITIONAL GROUTING OUTSIDE THE SECANT PILE WALL OR WITHIN THE EXCAVATION IS WARRANTED TO LIMIT GROUNDWATER FLOW.
46. DURING EXCAVATION SOME WATER SEEPAGE THROUGH THE SECANT PILE WALL IS ANTICIPATED. IF THE SEEPAGE IS EXCESSIVE OR SHOWS SIGNS OF EROSION OR GROUND LOSS BEHIND THE WALL, IMMEDIATELY CONTACT CONTRACTOR AND GEI FOR EVALUATION.
47. CONTRACTOR SHALL ADHERE TO THE GENERAL REQUIREMENTS FOR QUALITY CONTROL NOTED IN THESE GENERAL NOTES AND THEIR WORK PLAN.

DESIGN CRITERIA

1. THE DESIGN OF THE SECANT PILE WALL WAS PERFORMED IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:
   A. 2018 MARYLAND BUILDING CODE
   B. AMERICAN CONCRETE INSTITUTE 318-19
   C. AMERICAN INSTITUTE OF STEEL CONSTRUCTION STEEL CONSTRUCTION MANUAL, 16TH EDITION
   D. AMERICAN WELDING SOCIETY D1.1
   E. FEDERAL HIGHWAY ADMINISTRATION, GEOETECHNICAL ENGINEERING CIRCULAR NO. 4, GROUND ANCHORS AND ANCHORED SYSTEMS, JUNE 1999.
2. THE LOADS ON THE SOE IN THE TEMPORARY LOADING CONDITIONS DESIGNED BY GEI ARE THOSE FROM SOIL, ROCK, WATER, AND CONSTRUCTION SURCHARGES AS NOTED HEREIN.
3. FLOOD ELEVATIONS WERE NOT CONSIDERED IN THE DESIGN OF THE SOE FOR TEMPORARY LOADING CONDITIONS.
4. THE DESIGN INCORPORATED A MAXIMUM VERTICALITY TOLERANCE OF 0.5% PER PILE.
5. A MINIMUM 6-INCH OVERLAP OF INDIVIDUAL PILES AT THE TOP OF THE PILES IS REQUIRED.
6. THE OVERLAP OF INDIVIDUAL PILES WAS DETERMINED TO MAINTAIN A MINIMUM 2-INCH OVERLAP OVER THE LENGTH OF THE SECANT PILE WALL TO MINIMIZE WATER SEEPAGE.
7. THE SECANT PILE WALL IS INTENDED FOR TEMPORARY SUPPORT OF EXCAVATION AND GROUNDWATER INFLOW MITIGATION. STRUCTURAL ELEMENTS FOR PERMANENT LATERAL SUPPORT AND GROUNDWATER CONTROL WILL BE DESIGNED AND INSTALLED BY OTHERS.

MATERIALS

1. GENERAL CONTRACTOR SHALL PROVIDE BARRIERS AND FENCING AROUND THE SITE AND THE EXCAVATION IN ACCORDANCE WITH THE REQUIREMENTS OF OSHA AND OTHER GOVERNING AGENCIES.
2. STRUCTURAL MEMBERS SHALL BE NEW OR, IF USED, IN SOUND CONDITIONS.
3. STEEL PILES IN SECANT PILE WALL SHALL BE ASTM A572 OR A992 GRADE 50.
4. STEEL REINFORCING IN GUIDEWALLS SHALL BE ASTM A615 GRADE 60.
5. CONCRETE FOR PRIMARY SECANT PILES (UNREINFORCED) SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 1,000 PSI.
6. CONCRETE FOR SECONDARY SECANT PILES (REINFORCED) SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI WITH A MINIMUM WATER TO CEMENT RATIO OF 0.40.
7. CONCRETE FOR GUIDEWALLS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI.
8. CONCRETE SUPPLIER SHALL PREPARE DESIGN MIXTURES FOR EACH TYPE AND STRENGTH OF CONCRETE, PROPORTIONED ON THE BASIS OF LABORATORY TRIAL MIXTURE OR FIELD TEST DATA, OR BOTH, ACCORDING TO ACI 301 AND TO BE REVIEWED BY GEI.
9. USE ADMIXTURES ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
   A. USE ADMIXTURE IN CONCRETE, AS REQUIRED, FOR PLACEMENT AND WORKABILITY.
   B. USE WATER-REDUCING AND RETARDING ADMIXTURE WHEN REQUIRED BY HIGH TEMPERATURES, LOW HUMIDITY, OR OTHER ADVERSE PLACEMENT CONDITIONS.
10. GROUND IMPROVEMENT MIX BY SPECIALTY CONTRACTOR TO BE REVIEWED BY GEI.

GUIDEWALLS

1. CONTRACTOR SHALL CONSTRUCT THE GUIDEWALLS BASED ON THE DESIGN SHOWN ON THE DRAWINGS OR PROVIDE AN ALTERNATIVE FOR GEI'S REVIEW AND APPROVAL.
2. FIXED GUIDE WALLS, OR A MUTUALLY APPROVED ALTERNATE, SHALL BE USED TO MAINTAIN THE ALIGNMENT AND LOCATION OF THE SECANT PILES.
3. CRESCENT SHAPED GUIDE WALLS SHALL BE CONSTRUCTED BY USING REINFORCED CONCRETE. USE STYROFOAM OR AN APPROVED EQUIVALENT MATERIAL TO MAKE THE CRESCENT SHAPE OF THE GUIDEWALL.
4. REINFORCEMENT SHALL BE FREE FROM RUST AND MUD AND NOT BE PLACED UNTIL OBSERVED AND ACCEPTED.
5. THE MINIMUM COVER TO ALL REINFORCEMENT SHALL NOT BE LESS THAN 2 INCHES.
6. CONCRETE SPACERS SHALL BE PROVIDED TO MAINTAIN ADEQUATE COVER IN THE HOLE.

GROUND IMPROVEMENT BELOW EXISTING UTILITY

1. GROUND IMPROVEMENT, INCLUDING BUT NOT LIMITED TO JET GROUTING, PERMEATION GROUTING OR CHEMICAL GROUTING SHALL BE PERFORMED AROUND THE EXISTING 24-IN DIAMETER PIPE CONNECTED TO MH-3 AFTER SECANT PILE INSTALLATION AND PRIOR TO START OF EXCAVATION. GROUND IMPROVEMENT METHOD SHALL BE SELECTED AND IMPLEMENTED BY THE CONTRACTOR TO AVOID MOVEMENT OR DAMAGE OF THE EXISTING PIPE. GEI TO REVIEW AND APPROVE GROUND IMPROVEMENT SUBMITTAL SUBMITTED BY CONTRACTOR PRIOR TO START OF WORK.
2. CONTRACTOR TO CONSIDER EXISTING SUBSURFACE CONDITIONS AROUND EXISTING PIPE, INCLUDING WIDTH AND DEPTH OF TRENCH CUT TO INSTALL PIPE AND BACKFILL MATERIAL AROUND PIPE IN SELECTION OF GROUND IMPROVEMENT SYSTEM.
3. GROUND IMPROVEMENT SYSTEM SHALL PROVIDE A PERMEABILITY OF 10^{-6} CM/S OR LESS.

CONSTRUCTION SEQUENCE

1. PERFORM PRE-CONSTRUCTION VIDEO SURVEY OF EXISTING MANHOLE AND PIPE AT MH-3.
2. EARTHWORK PERFORMED AT THE MH-1/MH-2 WORK AREA TO RAISE THE GROUND SURFACE TO EL. 300 FEET FOR A SAFE AND STABLE WORK PLATFORM.
3. PERFORM GROUTING PROGRAM USING LOW MOBILITY GROUT (LMG) TO FILL CAVITIES AND SOIL SEAMS IDENTIFIED IN GTA'S GEOTECHNICAL REPORTS. SEE LMG PACKAGE FOR ADDITIONAL INFORMATION. ALTERNATIVELY, PERFORM GROUTING PROGRAM DURING OR AFTER INSTALLATION OF SECANT PILES.
4. INSTALL TEMPLATES, GUIDEWALLS OR OTHER APPROVED ALIGNMENT GUIDES.
5. DRILL PRIMARY AND SECONDARY SECANT PILES USING TEMPORARY CASING AS NEEDED AND PLACE CONCRETE USING APPROVED METHODS.
6. PERFORM GROUND IMPROVEMENT UNDER EXISTING UTILITY LINE AT MH-3.
7. REMOVE WATER WITHIN THE EXCAVATION WITH THE USE OF SUMP PUMPS AND DRAINAGE TRENCHES.
8. UNIFORMLY EXCAVATE WITHIN THE EXCAVATION.
9. EXCAVATE UP TO 2 FEET BELOW BRACE ELEVATION, INSTALL BRACING AND REPEAT UNTIL EXCAVATION REACHES SUBGRADE. REMOVE ROCK WITHOUT DAMAGING SECANT PILES.
10. ONCE EXCAVATION REACHES SUBGRADE, ASSESS WHETHER GROUNDWATER INFLOW REQUIRES ADDITIONAL MITIGATION. ADDITIONAL GROUTING OR BASE PLUG WITH PRESSURE RELIEF HOLES ARE GROUNDWATER MITIGATION ALTERNATIVES.
11. ASSEMBLE TUNNELING EQUIPMENT, INCLUDING JACKING FRAME, THRUST BLOCK AND WATER SEALANT METHODS AROUND PENETRATION.
12. BEGIN MICROTUNNELING OPERATIONS.
13. PERFORM 24-INCH DIAMETER PIPE TIE-IN TO MANHOLES.
14. PERFORM POST-CONSTRUCTION VIDEO SURVEY OF EXISTING MANHOLE AND PIPE AT MH-3. PERFORM REPAIRS AS NEEDED.
15. BACKFILL AROUND MANHOLES TO GRADE.

MONITORING

1. AN INSTRUMENTATION PLAN CONSISTING OF OPTICAL SURVEY PRISMS SHALL BE INSTALLED AND MONITORED TO VERIFY THE PERFORMANCE OF THE SECANT PILE SHAFT.
2. SURVEY PRISMS SHALL BE INSTALLED ON THE TOP OF EVERY OTHER SECANT PILES WITH A MAXIMUM SPACING AROUND THE EXCAVATION OF 10 FEET.
3. SURVEY PRISMS SHALL BE READ TWICE WEEKLY FROM START OF EXCAVATION UNTIL BACKFILL TO GRADE IS COMPLETE. PLOT DATA TO IDENTIFY MOVEMENT TRENDS AND PROVIDE INSTRUMENTATION READINGS TO GEI ON A WEEKLY BASIS.
4. INSTRUMENTATION PLAN SHALL BE REVIEWED AND APPROVED BY GEI.

INSPECTIONS

1. INSPECTIONS SHALL BE PERFORMED BY GEI ON THE FOLLOWING ITEMS:
   A. LOCATION AND VERTICALITY OF PILES
   B. FINAL TIP ELEVATION OF EACH PILE
   C. VOLUME OF CONCRETE PLACED AND HEAD MAINTAINED DURING CASING REMOVAL
   D. TRACKING PLACED CONCRETE WITH THEORETICAL CONCRETE VOLUMES
   E. CONCRETE SAMPLING AND TESTING
   F. PLACEMENT OF STEEL REINFORCING
   G. INSTALLATION AND CONNECTIONS OF STEEL BRACING SYSTEM
   H. OBSERVATION OF EXCAVATION
2. THE OWNER SHALL RETAIN AN INDEPENDENT TESTING AGENCY TO PROVIDE SPECIAL INSPECTIONS AND FOR MATERIALS TESTING RELATED TO CONCRETE WORK.

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

STATE OF MARYLAND — CHRISTOPHER J. BOWMAN — No. 27970 — PROFESSIONAL ENGINEER

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

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QUANTUM LOOP PUMP STATION SUPPORT OF EXCAVATION PACKAGE

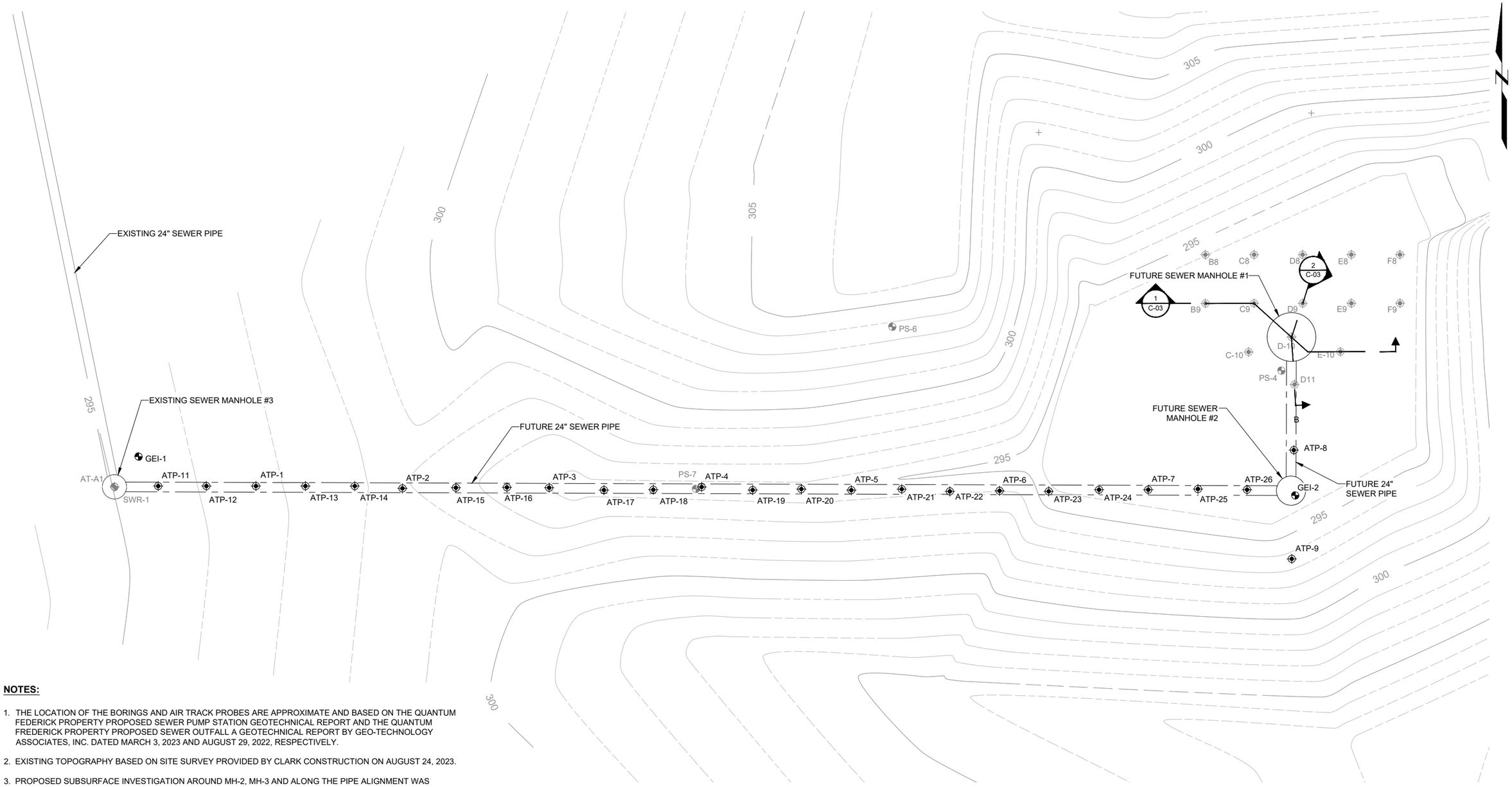
FREDERICK, MD

NO	DATE	ISSUE/REVISION	APP
0	10/16/2023	100% DESIGN	GAB

SHEET NAME: **GENERAL NOTES**

SHEET NO.: G-02

DWG. NO.: 2 OF 13



NOTES:

1. THE LOCATION OF THE BORINGS AND AIR TRACK PROBES ARE APPROXIMATE AND BASED ON THE QUANTUM FEDERICK PROPERTY PROPOSED SEWER PUMP STATION GEOTECHNICAL REPORT AND THE QUANTUM FREDERICK PROPERTY PROPOSED SEWER OUTFALL A GEOTECHNICAL REPORT BY GEO-TECHNOLOGY ASSOCIATES, INC. DATED MARCH 3, 2023 AND AUGUST 29, 2022, RESPECTIVELY.
2. EXISTING TOPOGRAPHY BASED ON SITE SURVEY PROVIDED BY CLARK CONSTRUCTION ON AUGUST 24, 2023.
3. PROPOSED SUBSURFACE INVESTIGATION AROUND MH-2, MH-3 AND ALONG THE PIPE ALIGNMENT WAS REQUESTED BY GEI. DESIGN MODIFICATIONS TO THIS PACKAGE MAY BE REQUIRED BASED ON THE FINDINGS OF THE PROPOSED SUBSURFACE INVESTIGATION.

LEGEND:

- PS — EXISTING GEOTECHNICAL BORING
- GEI — PROPOSED GEOTECHNICAL BORING
- C — EXISTING AIR TRACK PROBES
- ATP — PROPOSED AIR TRACK PROBES

0 10 20
SCALE, FEET

EXISTING AND PROPOSED CONDITIONS SITE PLAN

SCALE: 1" = 10'

Attention:
0 1"
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STATE OF MARYLAND — CHRISTOPHER T. LOCUSSOL — No. 27970 — PROFESSIONAL ENGINEER

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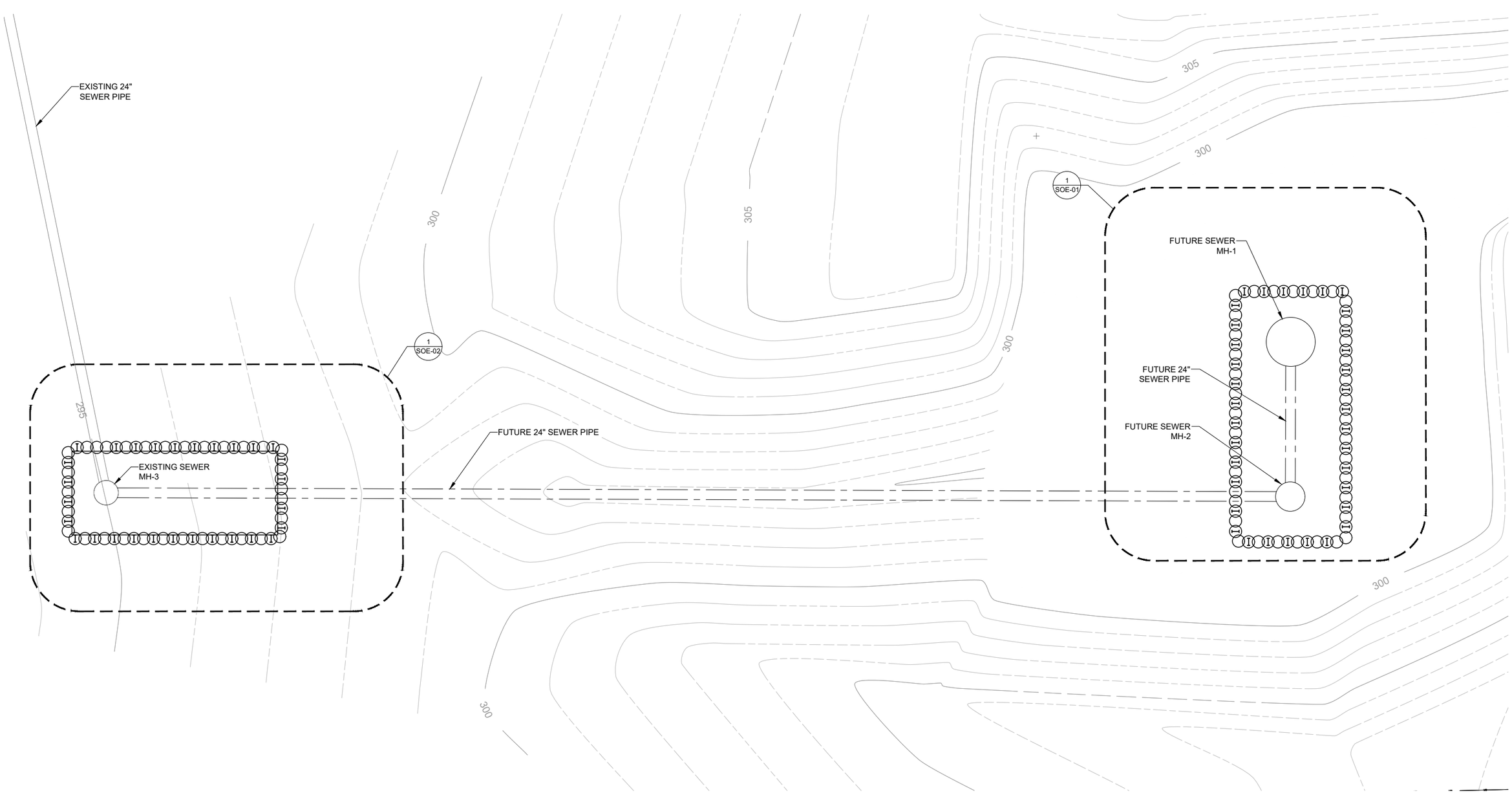
SHEET NAME: **EXISTING CONDITIONS SITE PLAN**

SHEET NO.: C-01

DWG. NO.: 3 OF 13



NOTES:

1. MODIFICATIONS TO GRADING FOR WORK PLATFORM AT MH-1 AND MH-2 ARE APPROXIMATE. FINAL WORK PLATFORM GRADING TO BE DESIGNED BY OTHERS TAKING INTO CONSIDERATION RAMPS FOR EQUIPMENT TO ACCESS WORK PLATFORM.

PROPOSED CONDITIONS SITE PLAN

SCALE: 1" = 10'

0 10 20
SCALE, FEET

Attention:
0 1"
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STATE OF MARYLAND · CHRISTOPHER A. BOWMAN · No. 27970 · PROFESSIONAL ENGINEER

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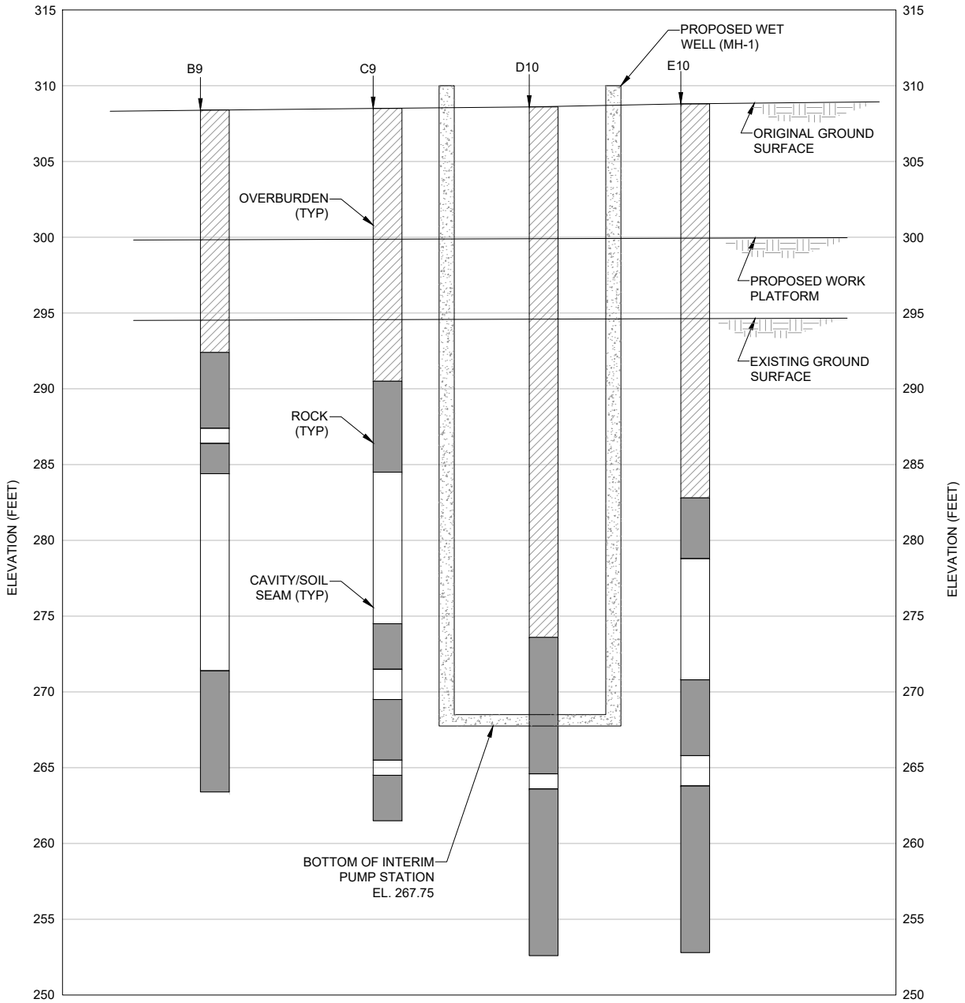
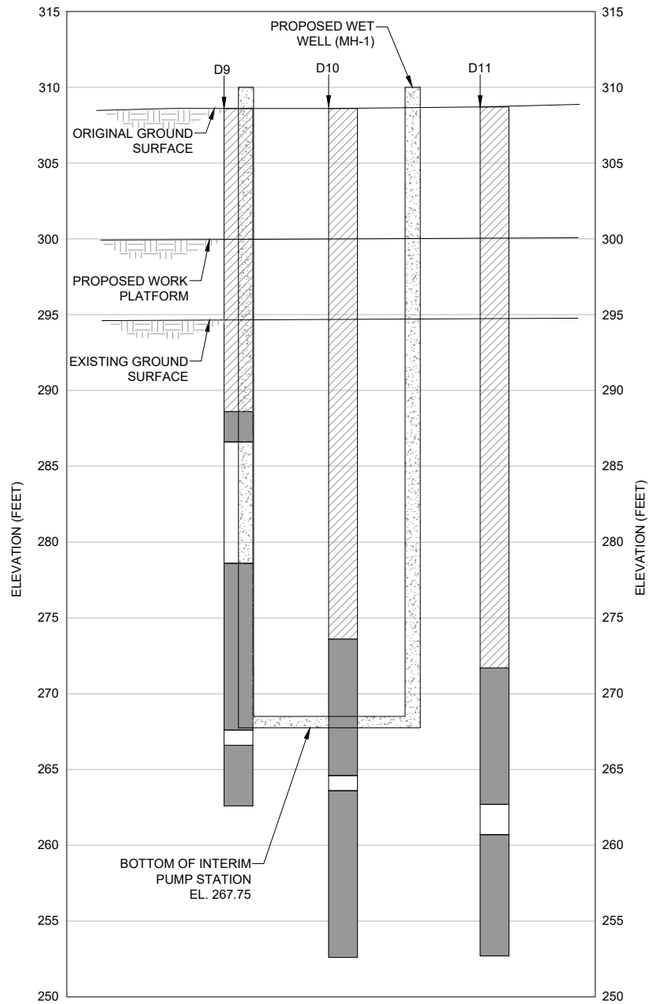
SHEET NAME
PROPOSED CONDITIONS SITE PLAN

SHEET NO.
C-02

DWG. NO.
4 OF 13



1 - SECTION



2 - SECTION

SYMBOL DESCRIPTION

- OVERBURDEN
- ROCK
- CAVITY / SOIL SEAM
- APPROXIMATE HORIZONTAL LOCATION OF EXPLORATION

NOTES:
1. BORING LOGS AND AIR TRACK PROBE SECTIONS TAKEN DIRECTLY FROM "QUANTUM FREDERICK PROPERTY PROPOSED SEWER OUTFALL A GEOTECHNICAL REPORT" AND "PROPOSED SEWER PUMP STATION GEOTECHNICAL REPORT" BY GEO-TECHNOLOGY ASSOCIATES, INC. DATED AUGUST 29, 2022 AND MARCH 3, 2022, RESPECTIVELY.

HORIZONTAL SCALE, FEET
0 5 10
0 5 10
VERTICAL SCALE, FEET
NOTE:NO VERTICAL EXAGGERATION

Attention:
0 1"
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STATE OF MARYLAND — JOSEPH T. HOWARD — No. 27970 — PROFESSIONAL ENGINEER

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QUANTUM LOOP PUMP STATION SUPPORT OF EXCAVATION PACKAGE

FREDERICK, MD

NO	DATE	ISSUE/REVISION	APP
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SHEET NAME
AIR TRACK PROBE PROFILES

SHEET NO.
C-03

DWG. NO.
5 OF 13

LOG OF WELL NO. PS-4

Sheet 1 of 1

PROJECT: **Quantum Frederick - Sewer Pump Station**
PROJECT NO.: **201536**
PROJECT LOCATION: **Frederick County, Maryland**

WATER LEVEL (ft): 14.2 / 13.7 / 18.1
DATE: 05/23/2022 / 05/24/2022 / 11/09/2022
CAVED (ft): Pipe / Pipe / Pipe

DATE STARTED: **05/23/2022**
DATE COMPLETED: **05/23/2022**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
EQUIPMENT: **Diedrich D-50**
DRILLER: **K. Kozak**
DRILLING METHOD: **3.25" HSA**
BORING DIA (in): **6**
CASING TYPE: **Sch. 40**
SCREEN TYPE: **Sch. 40**
SAMPLING METHOD: **Split Spoon/Auto**
CASING DIA (in.): **1**
SCREEN SLOT SIZE(in): **0.02**

WATER ENCOUNTERED DURING DRILLING (ft): **13.5**
GROUND SURFACE ELEVATION: **309**
DATUM: **Topo**
LOGGED BY: **DCG**
CHECKED BY: **ADM**
CASING LEN. (ft): **5**
SCREEN LEN. (ft): **29.4**

SAMPLE NUMBER	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	PID READING	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS	WELL CONSTRUCTION DETAILS
S-1	12	2-1-3	4	309.0	0		CH		Brown, moist, soft, Sandy Fat CLAY.	Topsoil: 10 in.	
S-2	12	4-5-7	12	306.5							
S-3	12	2-2-3	5	305.0			MH		Same, stiff, with Rock Fragments (Limestone).		
S-4	18	2-2-2	4	300.5					Light Brown, moist, medium stiff, Elastic SILT with Sand.		
									Same, soft, Sandy		
S-5	12	WOH-1-2	3	297.0	10		ML		Brown, moist, soft, Sandy SILT.		
S-6	18	2-1-2	3	292.0			CH		Brown, moist, soft, Sandy Fat CLAY.		
S-7	0	WOH/18"	WOH/ 18	285.5					No Recovery		
S-8	10	WOH/18"	WOH/ 18	284.0	20		MH		Reddish Brown, moist, very soft, Sandy Elastic SILT.		
S-9	6	50/6"	50/6"	277.0					Brown, wet, very dense, Highly Weathered ROCK.		
				274.6	30				Auger refusal encountered at 34.4 feet.		
									1-in. PVC groundwater monitoring well installed at 34.4 feet.		
					40						
					50						

NOTES:

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LOG OF BORING NO. PS-4

Sheet 1 of 1

LOG OF BORING NO. PS-6

Sheet 1 of 1

PROJECT: **Quantum Frederick - Sewer Pump Station**
PROJECT NO.: **201536**
PROJECT LOCATION: **Frederick County, Maryland**

WATER LEVEL (ft): 13.8 / 14.5
DATE: 05/23/2022 / 05/24/2022
CAVED (ft): 14.8 / 15.4

DATE STARTED: **05/23/2022**
DATE COMPLETED: **05/25/2022**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **K. Kozak**
DRILLING METHOD: **3.25" HSA**
SAMPLING METHOD: **Split Spoon/Automatic Hammer**

WATER ENCOUNTERED DURING DRILLING (ft) **18.5**
GROUND SURFACE ELEVATION: **306**
DATUM: **Topo**
EQUIPMENT: **Diedrich D-50**
LOGGED BY: **DCG**
CHECKED BY: **ADM**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S-1	0.0	10	2-2-3	5	306.0	0	CH		Brown, moist, medium stiff, Fat CLAY with Sand.	Topsoil: 8 in.
S-2	2.5	18	4-7-10	17	302.0				Same, very stiff	
S-3	5.0	18	5-5-5	10	299.0		ML		Brown, moist, stiff, Sandy SILT with Rock Fragments (Limestone).	
S-4	8.5	18	2-2-2	4		10	SM		Brown, moist, very loose, Silty SAND with Rock Fragments (Limestone).	
S-5	13.5	10	18-7-3	10					Same, Dark Gray, loose	Hard drilling from 13 to 14 feet.
S-6	18.5	0.5	50/0.5"	50/0.5	289.0				Dark Gray, moist, very dense, Partially Weathered ROCK.	
					286.5	20	ROCK		Auger refusal encountered at 19.5 feet.	Very hard drilling from 18 to 19.5 feet.
R-1	19.5	40	RQD=19%						Moderately hard, slightly weathered, moderately fractured, gray to light gray, LIMESTONE. (Recovery = 74%)	
R-2	24.0	60	RQD=68%		282.0		ROCK		Hard, fresh, moderately fractured, dark gray with white, LIMESTONE. (Recovery = 100%)	
					277.0	30			Boring terminated at 29.0 feet.	
						40				
						50				
						60				

NOTES:

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LOG OF BORING NO. PS-6

Sheet 1 of 1

LOG OF BORING NO. PS-7

Sheet 1 of 1

PROJECT: **Quantum Frederick - Sewer Pump Station**
PROJECT NO.: **201536**
PROJECT LOCATION: **Frederick County, Maryland**

WATER LEVEL (ft): N/A* / / /
DATE: / / /
CAVED (ft): N/A / / /

DATE STARTED: **11/08/2022**
DATE COMPLETED: **11/08/2022**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **M. Rey**
DRILLING METHOD: **3.25" HSA**
SAMPLING METHOD: **Split Spoon/Automatic Hammer**

WATER ENCOUNTERED DURING DRILLING (ft) **8.5**
GROUND SURFACE ELEVATION: **303.7**
DATUM: **Survey**
EQUIPMENT: **Diedrich D-50**
LOGGED BY: **DCG**
CHECKED BY: **ADM**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S-1	0.0	7	5-4-6	10	303.7	0	ML		Brown, moist, stiff, Sandy SILT.	Topsoil: 3 in.
S-2	2.5	15	3-3-5	8					Same, Light Brown, medium stiff	
S-3	5.0	18	3-5-6	11					Same, stiff, with Sand	
S-4	8.5	18	4-5-6	11						
					291.7	12			Brown, moist, very dense, Highly Weathered ROCK.	
S-5	13.5	0	50/1"	50/1"	288.2		ROCK		Auger refusal encountered at 15.5 feet.	
R-1	15.5	47	RQD=50%		286.7		ROCK		Hard, slightly weathered, highly fractured, gray and white, LIMESTONE with Quartz. (Recovery = 72%)	
R-2	20.0	60	RQD=79%		281.2				Hard, slightly weathered, moderately fractured, white with gray, QUARTZ with Limestone. (Recovery = 100%)	
R-3	25.0	60	RQD=93%		278.7	24	ROCK		Moderately hard, moderately weathered, moderately fractured, gray to dark gray, LIMESTONE. (Recovery = 100%)	
					273.7		ROCK		Moderately hard, moderately weathered, moderately fractured, gray to dark gray, LIMESTONE. (Recovery = 100%)	
						36			Boring terminated at 30 feet.	
						48				
						60				
						72				

NOTES: ***Water is pumped into boring during rock coring. Groundwater levels not measured after drilling.**

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LOG OF BORING NO. PS-7

Sheet 1 of 1

LOG OF BORING NO. SWR-1

Sheet 1 of 1

PROJECT: **Quantum Frederick - Sewer Outfall**
PROJECT NO.: **201536**
PROJECT LOCATION: **Frederick County, Maryland**

WATER LEVEL (ft): Dry / 3.9 / /
DATE: 06/28/22 / 06/29/22 / /
CAVED (ft): Pipe / Pipe / /

DATE STARTED: **06/28/22**
DATE COMPLETED: **06/28/22**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **M. Lyons**
DRILLING METHOD: **3.25" HSA**
SAMPLING METHOD: **Split Spoon/Automatic Hammer**

WATER ENCOUNTERED DURING DRILLING (ft) **8.5**
GROUND SURFACE ELEVATION: **295**
DATUM: **Topo**
EQUIPMENT: **Diedrich D-50**
LOGGED BY: **XAH**
CHECKED BY: **DCG**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
S-1	0.0	14	3-3-3	6	295.0	0	CL		Brown, moist, medium stiff, Sandy Lean CLAY.	Topsoil: 7 in.
S-2	2.5	12	1-4-4	8					Same, Light Brown, stiff, with Sand	
S-3	5.0	6	4-6-4	10		5			Same, stiff, with Rock Fragments (Quartz)	
S-4	8.5	2	5-6-50/3"	50/3"	285.5					
						10			Light Brown, wet, very dense, Highly Weathered ROCK.	
S-5	12.5	0	50/0"	50/0"	282.5				Auger refusal encountered at 12.5 feet.	
						15			Boring offset 10 feet north of staked location. Auger refusal encountered in offset boring at 12.0 feet.	
						20				
						25				
						30				

NOTES:

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Laurel, MD 20707

LOG OF BORING NO. SWR-1

Sheet 1 of 1

Air Track Probe ID	Location	Approximate Existing Ground Surface Elevation[1] (El.)	Probe Depth (ft.)	Depth of Overburden[2] (ft.)	Depth of Rock Encountered[2] (ft.)	Depth of Cavities/Soil Seams Encountered[2] (ft.)
B8	Influent Channel	308.3	45	17	17-26, 31-37, 38-45	26-31, 37-38
B9	Influent Channel	308.4	45	16	16-21, 22-24, 37-45	21-22, 24-37
C8	Influent Channel	308.5	47	35	35-43.5, 44-47	43.5-44
C9	Influent Channel	308.5	47	18	18-24, 34-37, 39-43, 44-47	24-34, 37-39, 43-44
C10	Interim Station	308.5	56	34	34-40, 42-56	40-42
D8	Influent Channel	308.4	45	30	30-41, 42-45	41-42
D9	Influent Channel	308.6	46	20	20-22, 30-41, 42-46	22-30, 41-42
D10	Interim Station	308.6	56	35	35-44, 45-56	44-45
D11	Interim Station	308.7	56	37	37-46, 48-56	46-48
E8	Influent Channel	308.7	46	42	42-46	NE
E9	Influent Channel	308.8	46	41	41-46	NE
E10	Interim Station	308.8	56	26	26-30, 38-43, 45-56	30-38, 43-45
F8	Influent Channel	308.9	46	>46	NE	NE
F9	Influent Channel	309.0	46	42	42-46	NE

Notes:
NE = Not Encountered
Air-track probes were drilled using a CAT MD5090 Rock Drill.
[1] The existing ground surface elevations were provided by Rodgers Consulting based on an instrumented survey.
[2] The estimated overburden, rock, and cavity/soil seam depths presented above were based on observations of the drilling rate and behavior made by GTA personnel and the drilling operator. The depths were based on the length of the rods exposed at the ground surface and should be considered approximate.

NOTES:
1. BORING LOGS AND AIR TRACK PROBE SECTIONS TAKEN DIRECTLY FROM "QUANTUM FREDERICK PROPERTY PROPOSED SEWER OUTFALL A GEOTECHNICAL REPORT" AND "PROPOSED SEWER PUMP STATION GEOTECHNICAL REPORT" BY GEO-TECHNOLOGY ASSOCIATES, INC. DATED AUGUST 29, 2022 AND MARCH 3, 2022, RESPECTIVELY.

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

STATE OF MARYLAND — CHRISTOPHER M. GAVONIA — No. 27970 — PROFESSIONAL ENGINEER

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

GEI Consultants
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SUITE 702
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(202)609-7677

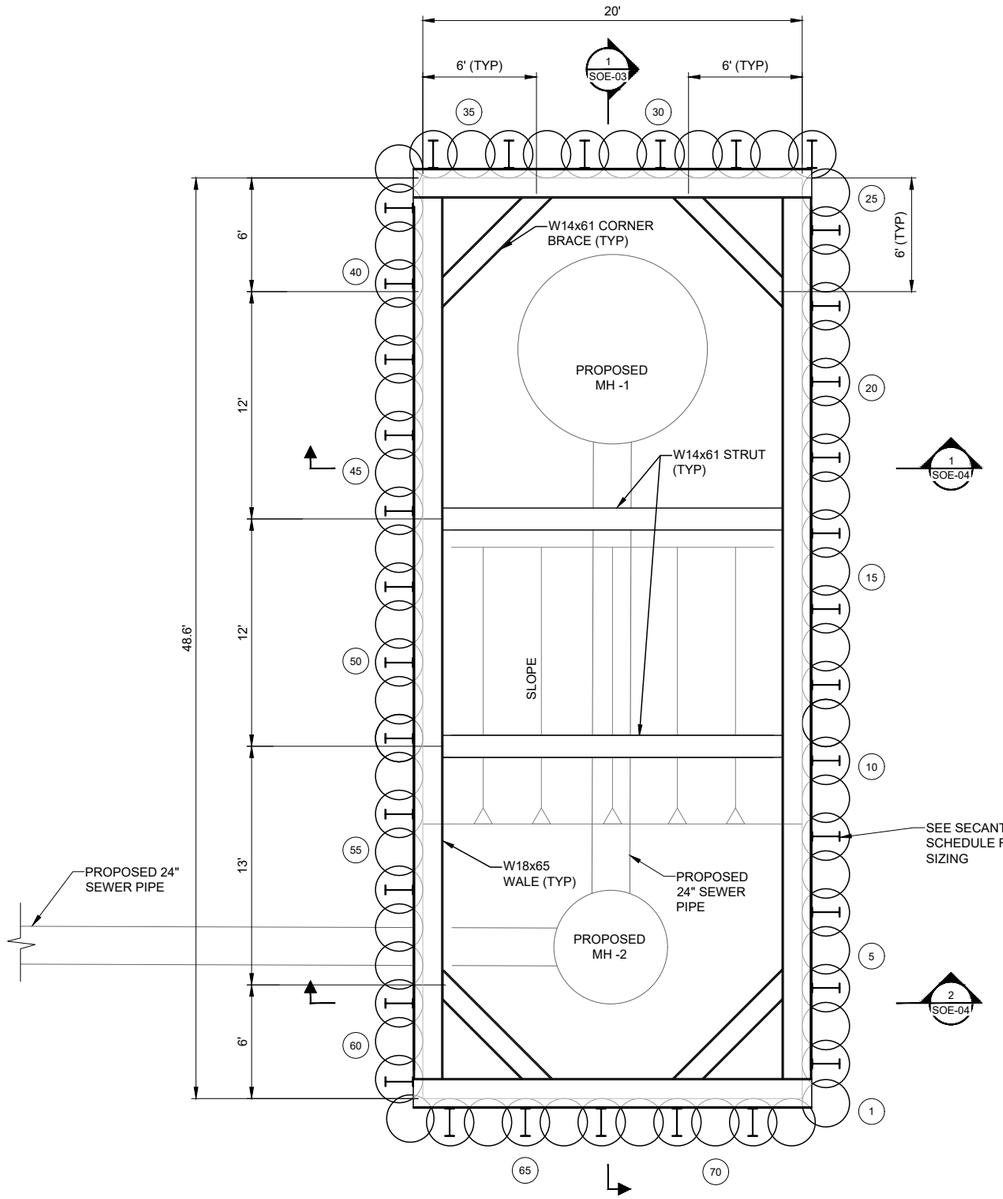
CLARK FOUNDATIONS GROUP LLC
7900 WESTPARK DRIVE
SUITE T300
MCLEAN, VA 22102

QUANTUM LOOP PUMP STATION SUPPORT OF EXCAVATION PACKAGE
FREDERICK, MD

NO	DATE	ISSUE/REVISION	APP
0	10/16/2023	100% DESIGN	GAB

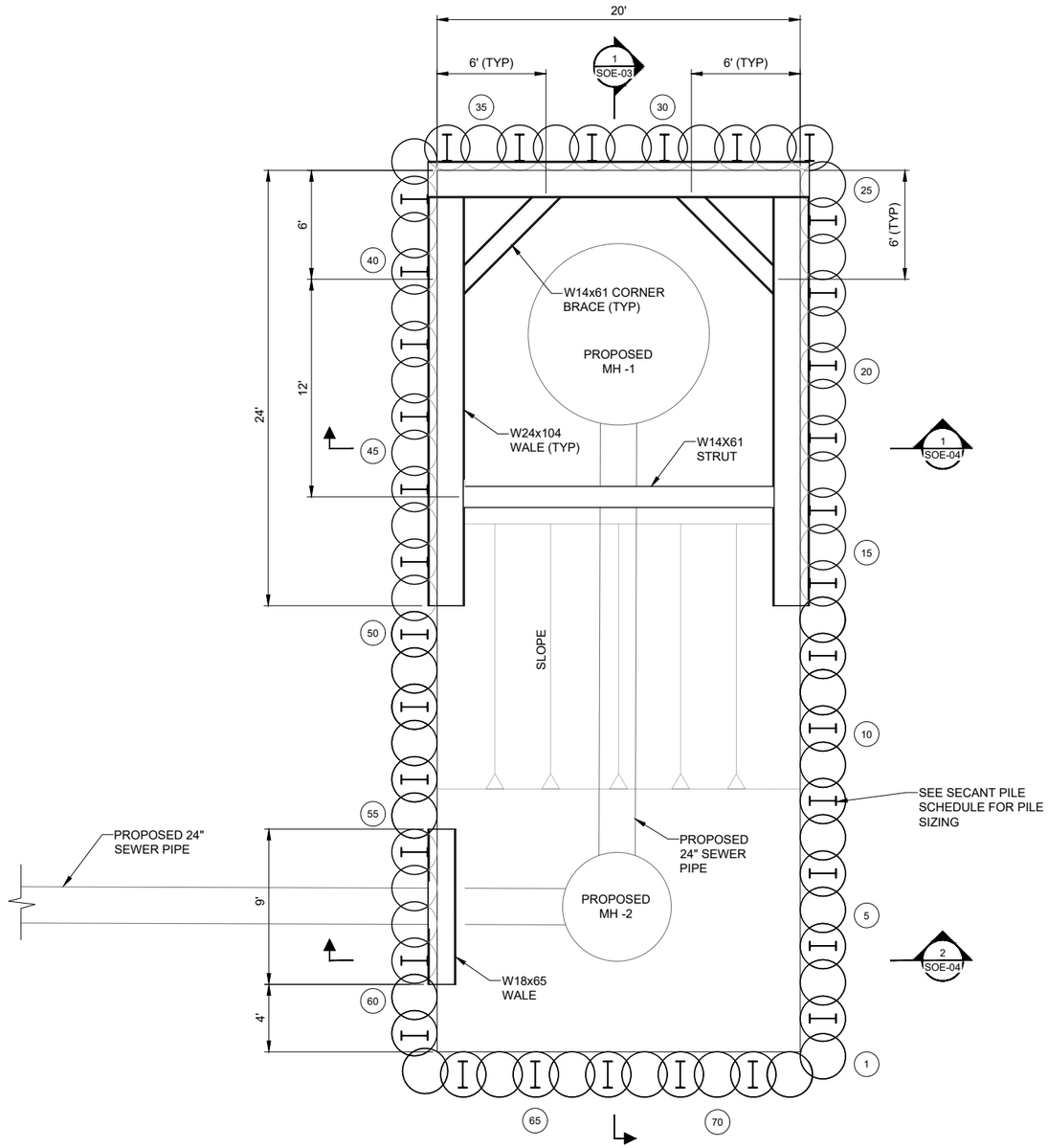
SHEET NAME: **BORING LOGS**
SHEET NO.: C-04
DWG. NO.: 6 OF 13

LOC:\\SOL_CHRISTOPHE B:\Working\CLARK FOUNDATIONS GROUP LLC\2303753 Quantum Loop GW Cutoff\00_CAD\Design\Sheets\C-04_Boring Logs.dwg - 10/16/2023



2 - SOE PLAN - MH-1 AND MH-2 - EL. +292.0'

SCALE: 1" = 4'



1 - SOE PLAN - MH-1 AND MH-2 - EL. +282.0'

SCALE: 1" = 4'

0 4 8
SCALE, FEET

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

STATE OF MARYLAND
GEORGE A. BONITA
No. 27970
PROFESSIONAL ENGINEER

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SHEET NAME

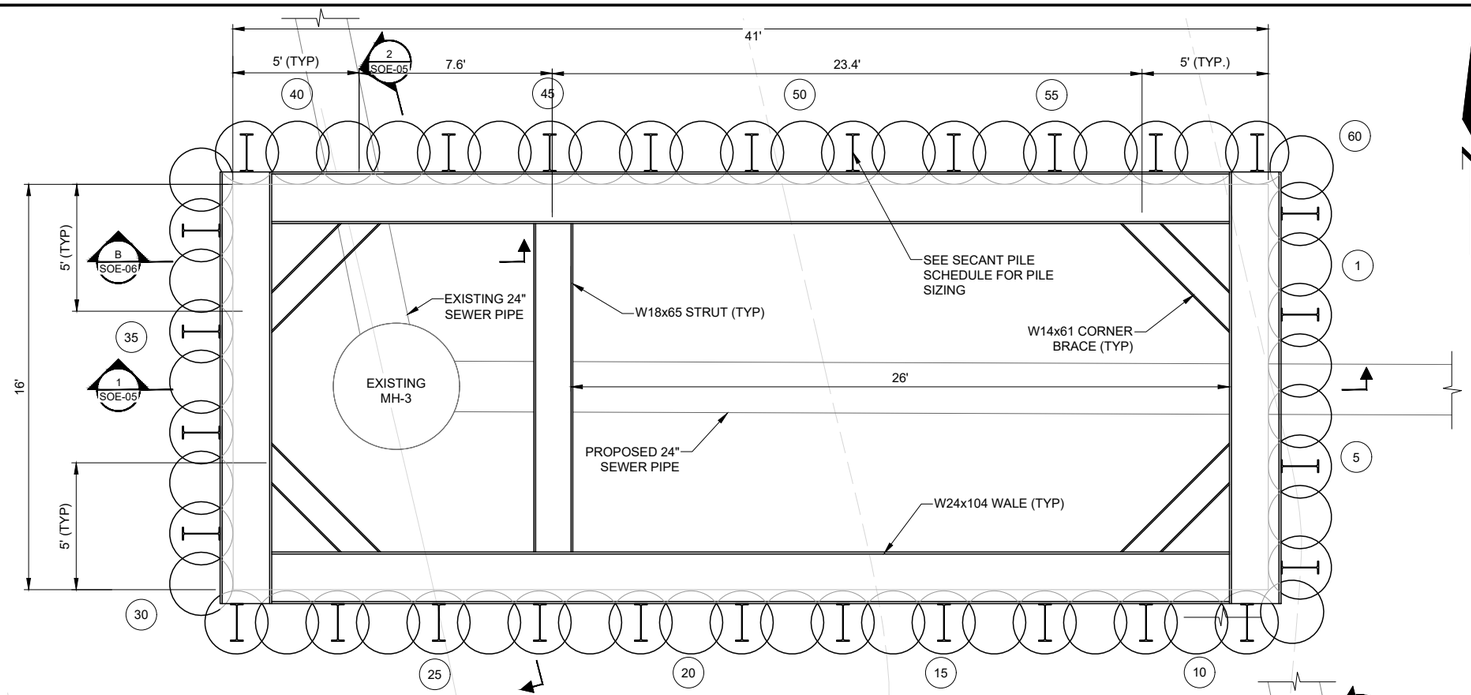
ENLARGED SOE PLAN AT MH-1 AND MH-2

SHEET NO.

SOE-01

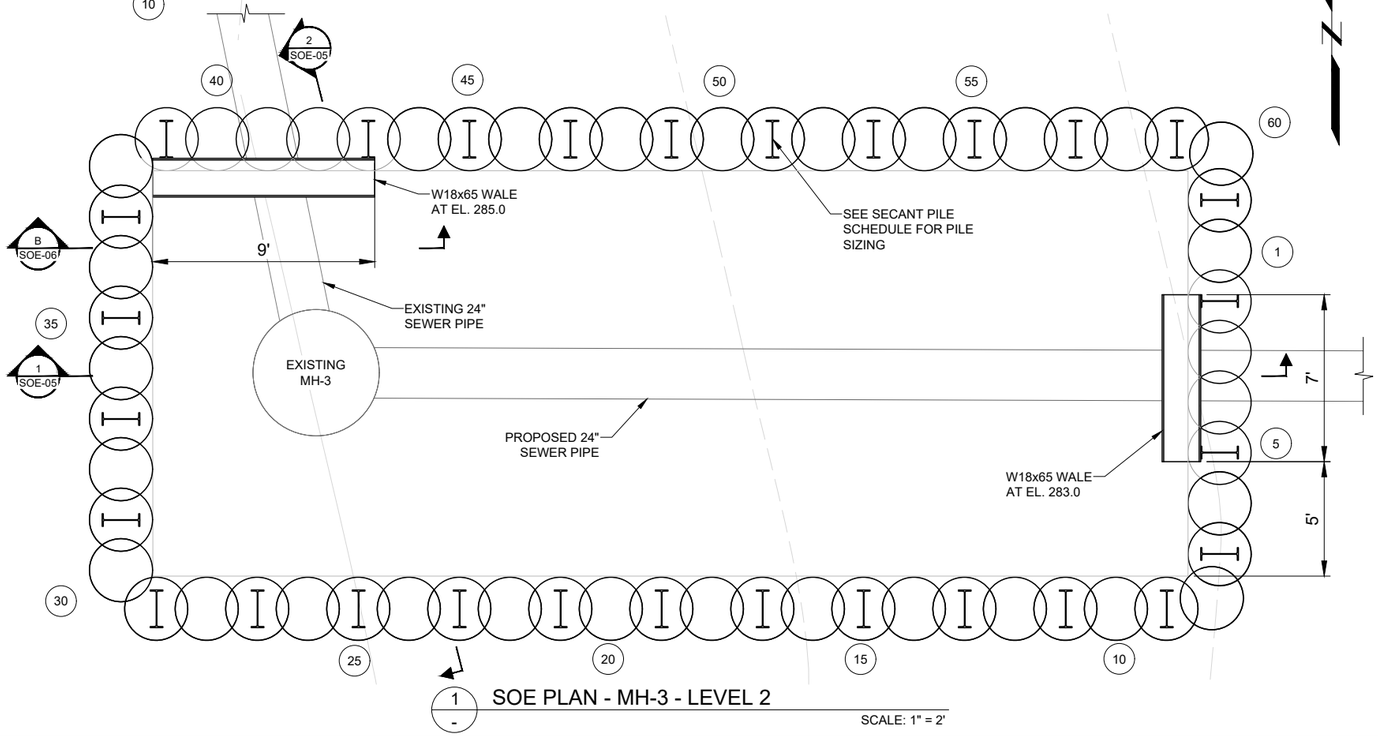
DWG. NO.

7 OF 13



1 / - SOE PLAN - MH-3 - LEVEL 1 EL. +289.0

SCALE: 1" = 2'



1 / - SOE PLAN - MH-3 - LEVEL 2

SCALE: 1" = 2'

0 2 4

SCALE, FEET

Attention:

0 1"

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STATE OF MARYLAND — GABRIEL A. BONITA — No. 27970 — PROFESSIONAL ENGINEER

Designed:	JTH/ARR
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Approved:	GAB
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FREDERICK, MD

NO	DATE	ISSUE/REVISION	APP
0	10/16/2023	100% DESIGN	GAB

SHEET NAME

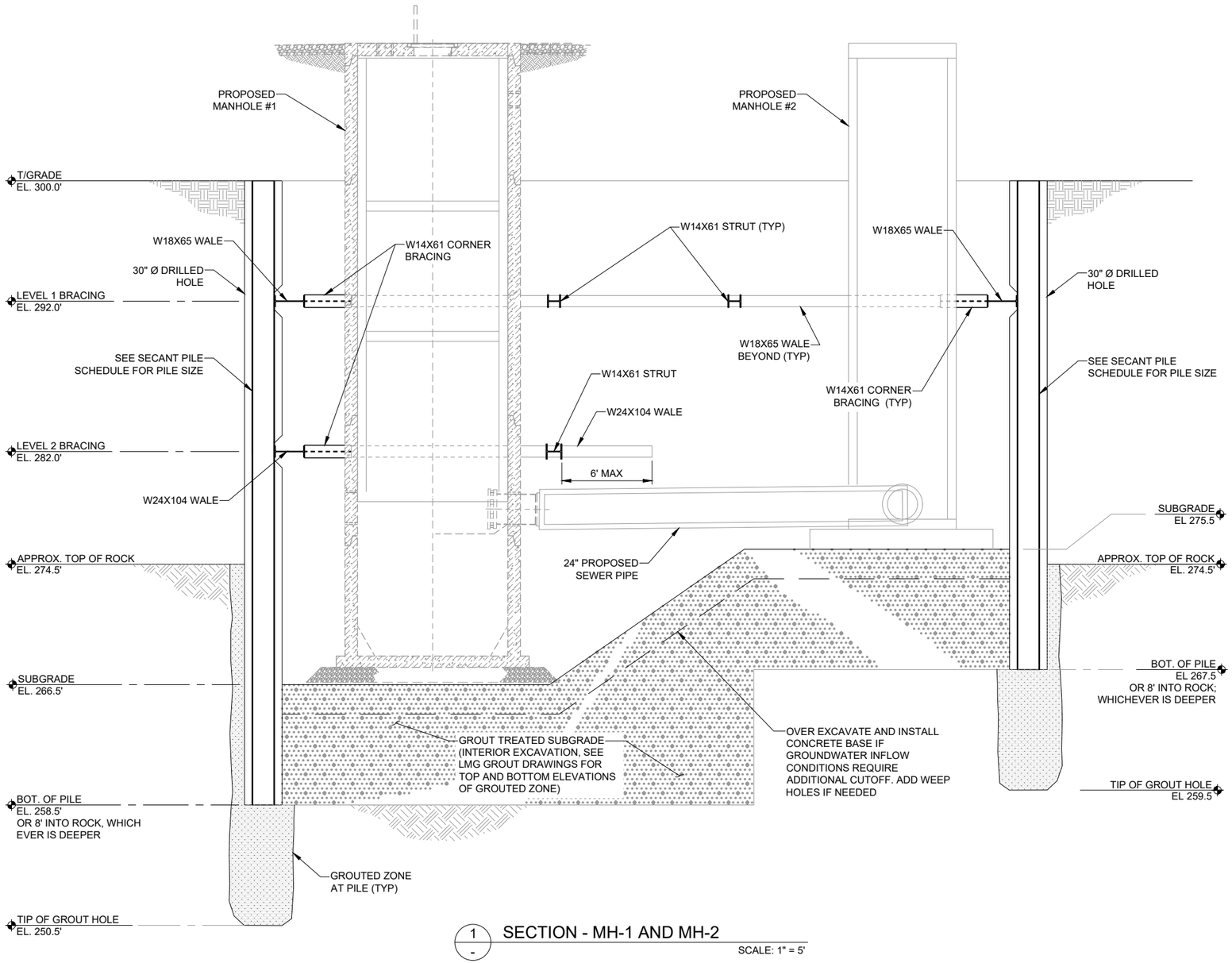
ENLARGED SOE PLAN AT MH-3

SHEET NO.

SOE-02

DWG. NO.

8 OF 13



1 - SECTION - MH-1 AND MH-2

SCALE: 1" = 5'

0 5 10

SCALE, FEET

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

STATE OF MARYLAND — COMMONWEALTH OF VIRGINIA — PROFESSIONAL ENGINEER — No. 27970

Designed:	JTH/ARR
Drawn:	TM
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P.E. No:	###
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0	10/16/2023	100% DESIGN	GAB

SHEET NAME

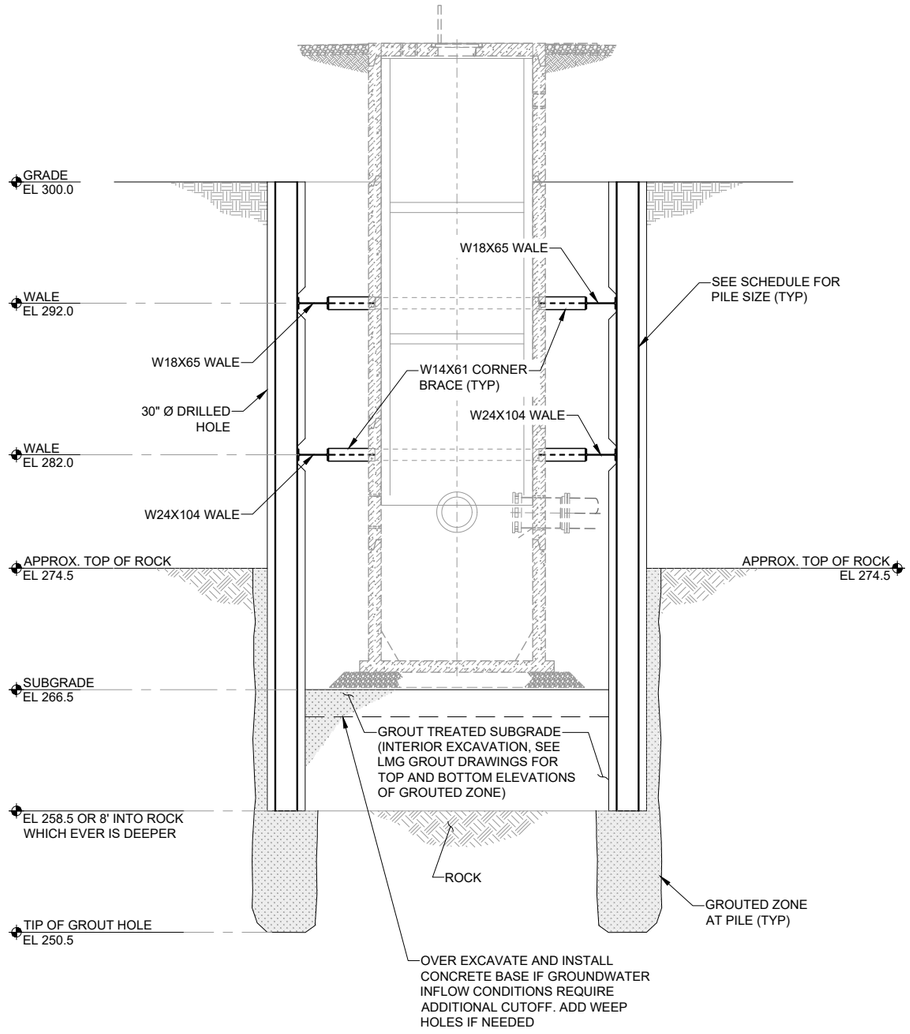
SECTIONS AT MH-1 AND MH-2

SHEET NO.

SOE-03

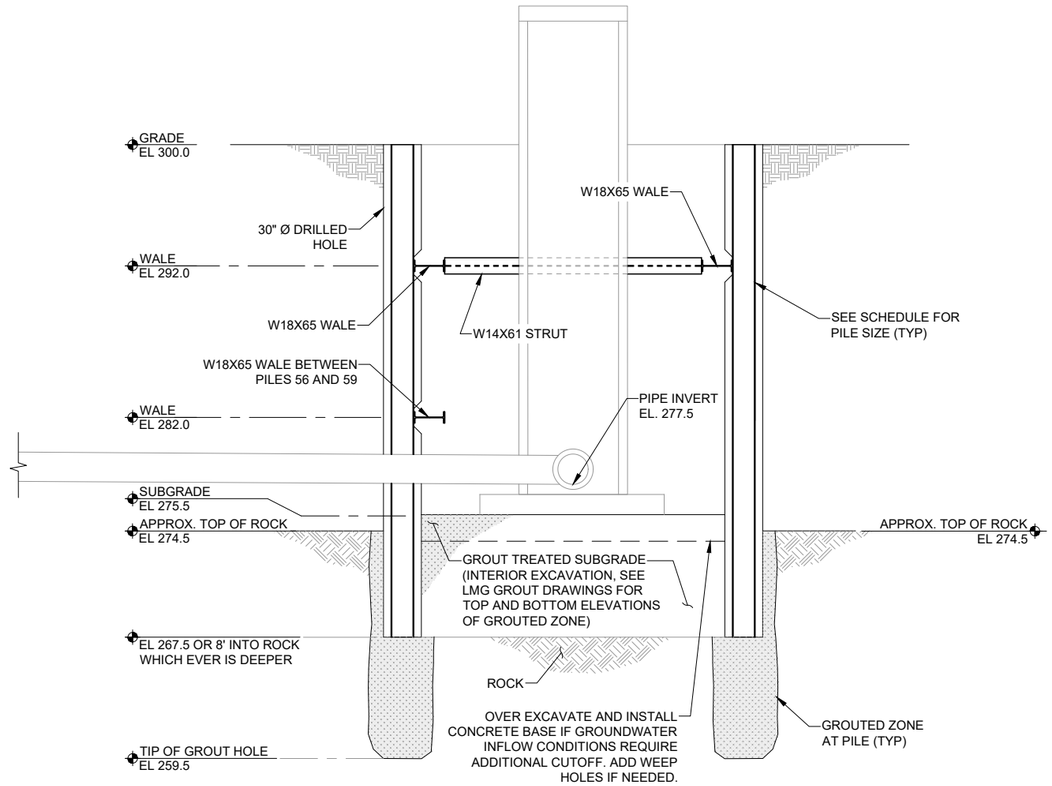
DWG. NO.

9 OF 13



1 - SECTION- MH-1

SCALE: 1" = 5'



2 - SECTION - MH-2

SCALE: 1" = 5'

0 5 10

SCALE, FEET

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

STATE OF MARYLAND · CHRISTOPHER H. LOCUSSOL · No. 27970 · PROFESSIONAL ENGINEER

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

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QUANTUM LOOP PUMP STATION SUPPORT OF EXCAVATION PACKAGE

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SHEET NAME

SECTIONS AT MH-1 AND MH-2

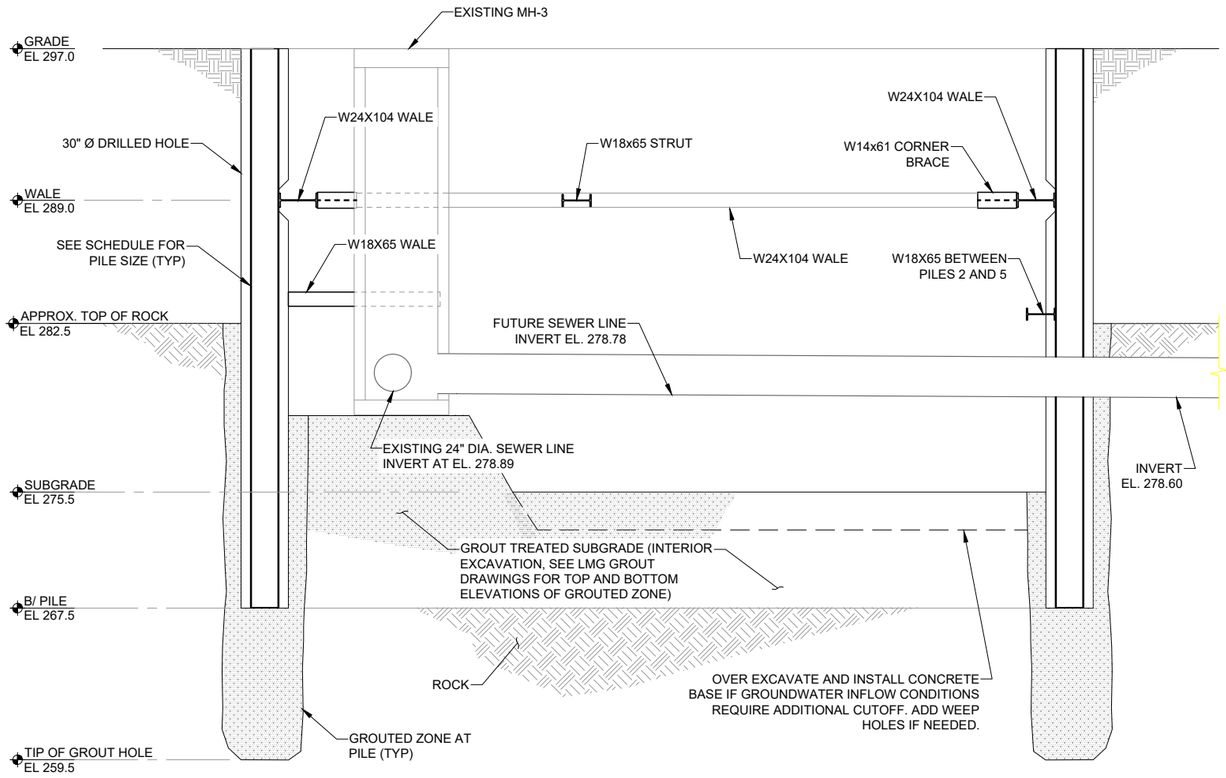
SHEET NO.

SOE-04

DWG. NO.

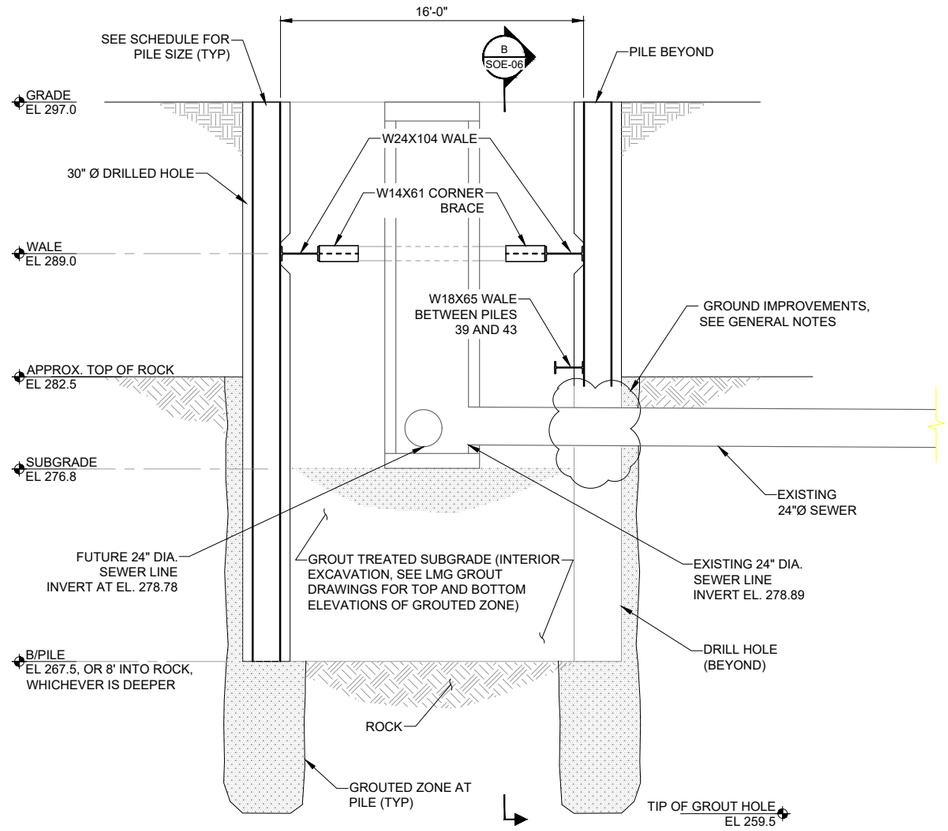
10 of 13

LOCUSSOL, CHRISTOPHE B:\Working\CLARK FOUNDATIONS GROUP LLC\2303753 Quantum Loop GW Cutoff\00_CAD\Design\Sheets\SOE-03_SOE-04_SOE-05 Sections.dwg - 10/16/2023



1 / - SECTION - MH-3

SCALE: 1" = 4'



2 / - SECTION - MH-3

SCALE: 1" = 4'

0 5 10
SCALE, FEET

0 10 20
SCALE, FEET

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

STATE OF MARYLAND — CHRISTOPHER T. BOWMAN — No. 27970 — PROFESSIONAL ENGINEER

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

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QUANTUM LOOP PUMP STATION SUPPORT OF EXCAVATION PACKAGE

FREDERICK, MD

NO	DATE	ISSUE/REVISION	APP
0	10/16/2023	100% DESIGN	GAB

SHEET NAME

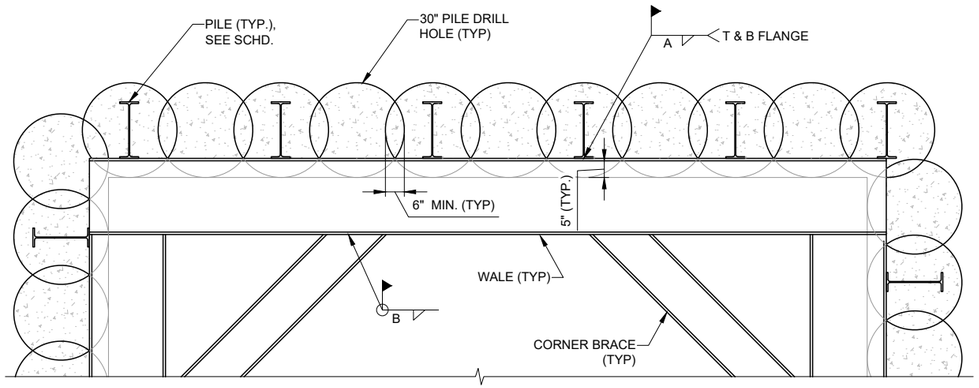
SECTIONS AT MH-3

SHEET NO.

SOE-05

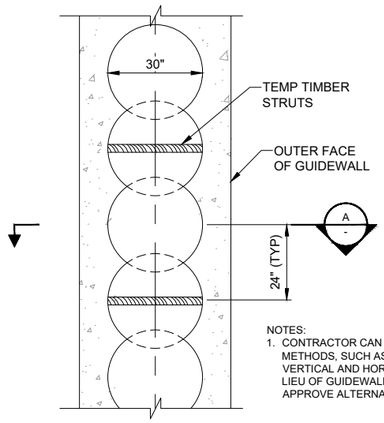
DWG. NO.

11 of 13



1 / - TYPICAL SOE PLAN LAYOUT

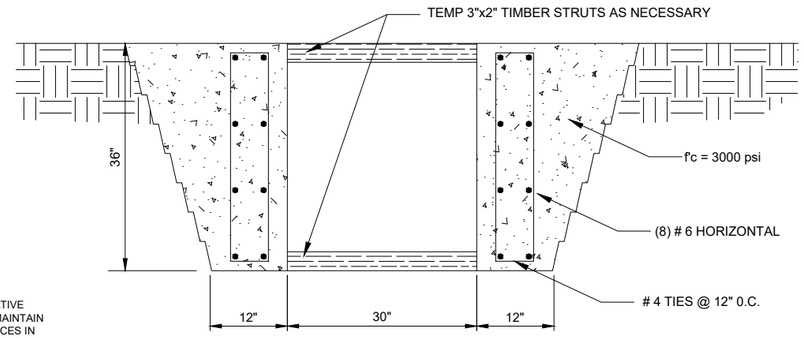
SCALE: 1" = 2'



NOTES:
1. CONTRACTOR CAN PROVIDE ALTERNATIVE METHODS, SUCH AS TEMPLATES, TO MAINTAIN VERTICAL AND HORIZONTAL TOLERANCES IN LIEU OF GUIDEWALLS. GEI TO REVIEW AND APPROVE ALTERNATIVE METHODS.

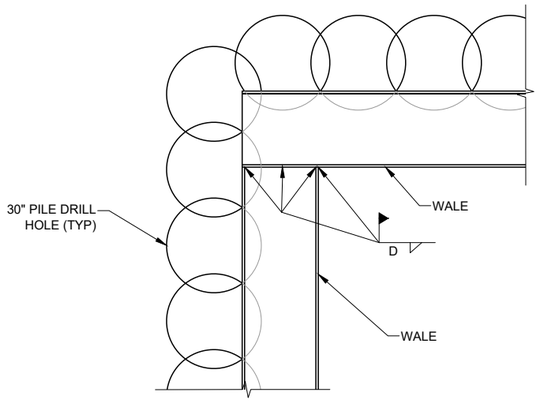
GUIDEWALL DETAIL PLAN (TYP)

NO SCALE



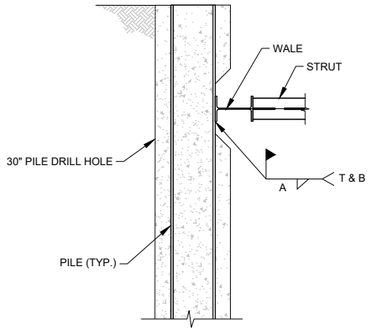
A / - TYP GUIDEWALL DETAIL SECTION

NO SCALE



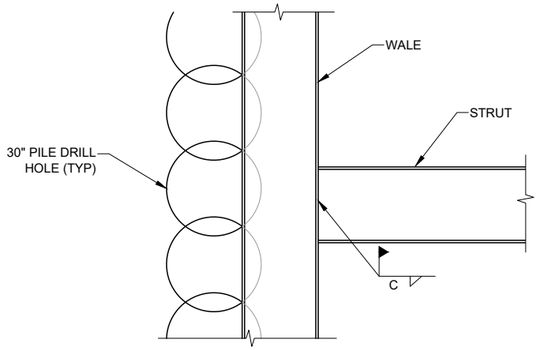
2 / - TYPICAL WALE TO WALE CONNECTION

SCALE: 1" = 2'



3 / - DETAIL

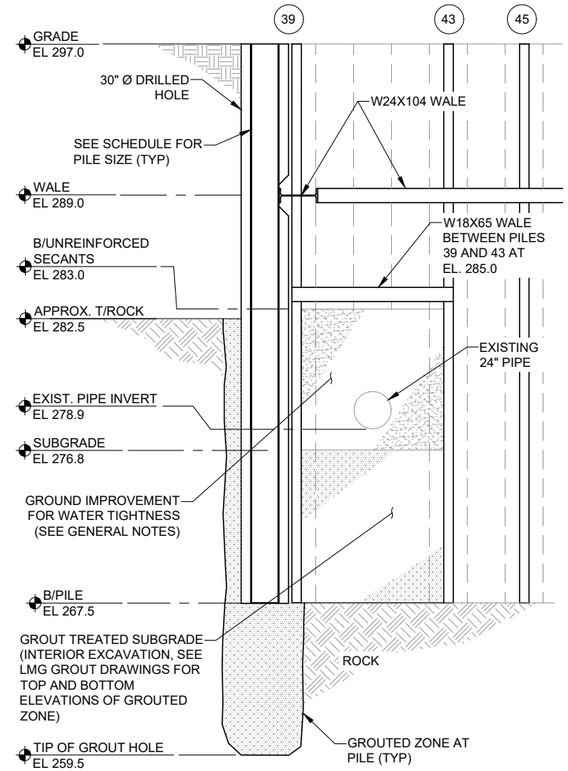
SCALE: 1" = 2'



4 / - TYPICAL WALE TO STRUT CONNECTION

SCALE: 1" = 2'

WELD SIZE SCHEDULE			
WELD CALLOUT	MH #3	MH #1/ MH-#2 LEVEL 1	MH #1/ MH-#2 LEVEL 2
A	1/4"	1/4"	1/4"
B	1/4"	5/16"	5/16"
C	1/4"	1/4"	1/4"
D	1/4"	3/16"	5/16"



B / - ELEVATION - MH-3

SCALE: 1" = 4'

0 4 8

SCALE, FEET

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

STATE OF MARYLAND — JOHN T. HUNTER — No. 27970 — PROFESSIONAL ENGINEER

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

GEI Consultants
6010 EXECUTIVE BLVD
SUITE 702
ROCKVILLE, MD 20854
(202)609-7677

CLARK FOUNDATIONS GROUP LLC

7900 WESTPARK DRIVE
SUITE T300
MCLEAN, VA 22102

QUANTUM LOOP PUMP STATION SUPPORT OF EXCAVATION PACKAGE

FREDERICK, MD

NO	DATE	ISSUE/REVISION	APP
0	10/16/2023	100% DESIGN	GAB

SHEET NAME

DETAILS

SHEET NO.

SOE-06

DWG. NO.

12 OF 13

PILE NUMBER	PILE SIZE	TOP OF PILE ELEVATION (FEET)	BOTTOM OF WALL ELEVATION (FEET)	MAXIMUM RETAINED HEIGHT (FEET)	EMBEDMENT (FEET)	PILE TIP ELEVATION (FEET)	PILE LENGTH (FEET)
1	-	300.0	275.5	24.5	8.0	267.5	32.5
2	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
3	-	300.0	275.5	24.5	8.0	267.5	32.5
4	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
5	-	300.0	275.5	24.5	8.0	267.5	32.5
6	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
7	-	300.0	275.5	24.5	8.0	267.5	32.5
8	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
9	-	300.0	275.5	24.5	8.0	267.5	32.5
10	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
11	-	300.0	266.5	33.5	8.0	258.5	41.5
12	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
13	-	300.0	266.5	33.5	8.0	258.5	41.5
14	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
15	-	300.0	266.5	33.5	8.0	258.5	41.5
16	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
17	-	300.0	266.5	33.5	8.0	258.5	41.5
18	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
19	-	300.0	266.5	33.5	8.0	258.5	41.5
20	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
21	-	300.0	266.5	33.5	8.0	258.5	41.5
22	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
23	-	300.0	266.5	33.5	8.0	258.5	41.5
24	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
25	-	300.0	266.5	33.5	8.0	258.5	41.5
26	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
27	-	300.0	266.5	33.5	8.0	258.5	41.5
28	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
29	-	300.0	266.5	33.5	8.0	258.5	41.5
30	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
31	-	300.0	266.5	33.5	8.0	258.5	41.5
32	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
33	-	300.0	266.5	33.5	8.0	258.5	41.5
34	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
35	-	300.0	266.5	33.5	8.0	258.5	41.5
36	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
37	-	300.0	266.5	33.5	8.0	258.5	41.5
38	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
39	-	300.0	266.5	33.5	8.0	258.5	41.5
40	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
41	-	300.0	266.5	33.5	8.0	258.5	41.5
42	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
43	-	300.0	266.5	33.5	8.0	258.5	41.5
44	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
45	-	300.0	266.5	33.5	8.0	258.5	41.5
46	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
47	-	300.0	266.5	33.5	8.0	258.5	41.5
48	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
49	-	300.0	266.5	33.5	8.0	258.5	41.5
50	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
51	-	300.0	266.5	33.5	8.0	258.5	41.5
52	W18X46	300.0	266.5	33.5	8.0	258.5	41.5
53	-	300.0	275.5	24.5	8.0	267.5	32.5
54	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
55	-	300.0	275.5	24.5	8.0	267.5	32.5
56	-	300.0	275.5	24.5	8.0	267.5	32.5
57	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
58	-	300.0	275.5	24.5	8.0	267.5	32.5
59	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
60	-	300.0	275.5	24.5	8.0	267.5	32.5
61	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
62	-	300.0	275.5	24.5	8.0	267.5	32.5
63	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
64	-	300.0	275.5	24.5	8.0	267.5	32.5
65	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
66	-	300.0	275.5	24.5	8.0	267.5	32.5
67	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
68	-	300.0	275.5	24.5	8.0	267.5	32.5
69	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
70	-	300.0	275.5	24.5	8.0	267.5	32.5
71	W18X46	300.0	275.5	24.5	8.0	267.5	32.5
72	-	300.0	275.5	24.5	8.0	267.5	32.5

PUMP STATION (MH-1 AND MH-2) PILE SCHEDULE

PILE NUMBER	PILE SIZE	TOP OF PILE ELEVATION (FEET)	SUBGRADE ELEVATION (FEET)	MAXIMUM RETAINED HEIGHT (FEET)	EMBEDMENT (FEET)	PILE TIP ELEVATION (FEET)	PILE LENGTH (FEET)
1	-	297.0	275.5	21.5	8.0	267.5	29.5
2	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
3	-	297.0	275.5	21.5	8.0	267.5	29.5
4	-	297.0	275.5	21.5	8.0	267.5	29.5
5	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
6	-	297.0	275.5	21.5	8.0	267.5	29.5
7	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
8	-	297.0	275.5	21.5	8.0	267.5	29.5
9	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
10	-	297.0	275.5	21.5	8.0	267.5	29.5
11	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
12	-	297.0	275.5	21.5	8.0	267.5	29.5
13	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
14	-	297.0	275.5	21.5	8.0	267.5	29.5
15	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
16	-	297.0	275.5	21.5	8.0	267.5	29.5
17	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
18	-	297.0	275.5	21.5	8.0	267.5	29.5
19	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
20	-	297.0	275.5	21.5	8.0	267.5	29.5
21	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
22	-	297.0	275.5	21.5	8.0	267.5	29.5
23	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
24	-	297.0	277.5	19.5	10.0	267.5	29.5
25	W18x46	297.0	277.5	19.5	10.0	267.5	29.5
26	-	297.0	277.5	19.5	10.0	267.5	29.5
27	W18x46	297.0	277.5	19.5	10.0	267.5	29.5
28	-	297.0	277.5	19.5	10.0	267.5	29.5
29	W18x46	297.0	277.5	19.5	10.0	267.5	29.5
30	-	297.0	277.5	19.5	10.0	267.5	29.5
31	W18x46	297.0	277.5	19.5	10.0	267.5	29.5
32	-	297.0	277.5	19.5	10.0	267.5	29.5
33	W18x46	297.0	277.5	19.5	10.0	267.5	29.5
34	-	297.0	277.5	19.5	10.0	267.5	29.5
35	W18x46	297.0	277.5	19.5	10.0	267.5	29.5
36	-	297.0	277.5	19.5	10.0	267.5	29.5
37	W18x46	297.0	277.5	19.5	10.0	267.5	29.5
38	-	297.0	277.5	19.5	10.0	267.5	29.5
39	W18x46	297.0	277.5	19.5	10.0	267.5	29.5
40	-	297.0	277.5	19.5	-	283.0	14.0
41	-	297.0	277.5	19.5	-	283.0	14.0
42	-	297.0	277.5	19.5	-	283.0	14.0
43	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
44	-	297.0	275.5	21.5	8.0	267.5	29.5
45	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
46	-	297.0	275.5	21.5	8.0	267.5	29.5
47	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
48	-	297.0	275.5	21.5	8.0	267.5	29.5
49	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
50	-	297.0	275.5	21.5	8.0	267.5	29.5
51	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
52	-	297.0	275.5	21.5	8.0	267.5	29.5
53	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
54	-	297.0	275.5	21.5	8.0	267.5	29.5
55	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
56	-	297.0	275.5	21.5	8.0	267.5	29.5
57	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
58	-	297.0	275.5	21.5	8.0	267.5	29.5
59	W18x46	297.0	275.5	21.5	8.0	267.5	29.5
60	-	297.0	275.5	21.5	8.0	267.5	29.5
61	W18x46	297.0	275.5	21.5	8.0	267.5	29.5

MH-3 PILE SCHEDULE

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

STATE OF MARYLAND — JOSHUA THOMAS CHRISTOPHER — No. 27970 — PROFESSIONAL ENGINEER

Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753

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CLARK FOUNDATIONS GROUP LLC

7900 WESTPARK DRIVE
SUITE T300
MCLEAN, VA 22102

QUANTUM LOOP PUMP STATION SUPPORT OF EXCAVATION PACKAGE

FREDERICK, MD

NO	DATE	ISSUE/REVISION	APP
0	10/16/2023	100% DESIGN	GAB

SHEET NAME

SECANT PILE SCHEDULES

SHEET NO.

SOE-07

DWG. NO.

13 OF 13

Appendix E

Clark Construction HASP for Pump Station Work

Accident Prevention Plan

Quantum Loophole - 1 MGD Sewage Pumping Station

Job # 22072W2

Project Description via the Project Plan:

- Clark Water will be providing a new 1 MGD Pump Station as part of the phased construction of the new Quantum Loophole Data Center Campus
- The 1 MGD Pump Station will be used to service Frederick County residents and needs from the initial expansion phase of the Quantum Loophole Data Center Campus and was designed in compliance with Frederick County standards.
- The new pump station will be composed of a new underground precast wet well, new pumps and pipeline to existing sanitary manholes and new supporting electrical infrastructure. The 1 MGD Pump Station will be configured to allow for expansion to a 5 MGD Pump Station as the campus expands.

TABLE OF CONTENTS

(1) SIGNATURE SHEET

Plan Prepared By: Lucas Porter – Safety Manager, Clark Construction Group, LLC

Corporate Approval: Brian Walker – Sr. Vice President & General Manager, Clark Construction Group, LLC

Signature_____ Date_____

Cellular: (252) 643-1000

Corporate Approval: Nathan Scalla – Project Executive, Clark Construction Group, LLC

Signature_____ Date_____

Cellular: (831) 588-5440

Corporate Approval: Dwayne Wright –Superintendent, Clark Construction Group, LLC

Signature_____ Date_____

Cellular: (240) 517-4637

Safety Approval: Marty Laskey – Division Safety Director, Clark Construction Group, LLC

Signature_____ Date_____

Cellular: (404) 638-809

(2) INTRODUCTION

The requirements specified in this Accident Prevention Plan (APP) have been established to protect the safety and health of Clark Construction Group, LLC employees and subcontractors assigned to the Quantum Loophole – 1 MGD Sewage Pumping Station Project. This plan has been written to comply with the regulations established by the Clark Construction Group, LLC Corporate Safety and Health Program and the Federal Occupational Safety and Health Administration (OSHA), Maryland OSH (MOSH), and the Structure Tone Corporate Safety, Health and Environmental Policies and Procedures Manual dated January 1st, 2022. Whenever a conflict arises between these requirements and the Accident Prevention Plan, the specification most protective of worker safety and health shall prevail (except where specifically noted as an exception). Each Clark Construction Group, LLC employee and subcontractor assigned to the project must abide by these requirements. Subcontractors, upon approval of the Clark Construction Group, LLC Site Safety and Health Officer, may use safety and health procedures that are at least as stringent as those contained in this document.

Contractor must immediately inform the Owners Representative and Clark Representatives of any inspections by MOSH, EPA, or other HSE regulatory agencies or other actions involving Contractor's work.

The information contained herein is general in nature and may not be enough to address all situations.

NOTICE

This Accident Prevention Plan (APP) has been prepared for use by employees and subcontractors performing a specific, limited scope of work. It has been prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the projectsite.

It is not possible in advance to discover, evaluate, and protect against all possible hazards that may be encountered during the completion of this project. Adherence to the requirements of this Plan will significantly reduce, but not eliminate, the potential for occupational injury and illness at the project site. The guidelines contained in this Plan have been developed specifically for the project site and scope of work described herein and should not be used at any other site(s) without the review and approval of a qualified health and safety professional. For this Plan, "site" is defined as the area of the Quantum Loophole – 1 MGD Sewage Pumping Station Project.

Clark Construction Group LLC's Corporate Safety and Health Manual is available electronically and will be provided upon request. All references to the appendixes within this Accident Prevention Plan are part of the Clark Construction Group LLC Corporate Safety and Health Manual and can be provided electronically or printed upon request.

PURPOSE

Clark Construction is committed to providing a safe and healthful workplace for its employees. The Clark Construction Group, LLC Safety and Health Manual contains policies, procedures and programs designedto ensure the safety of our workforce, construction personnel and the general public. We consider the prevention of incidents to be an integral part of our operation, and to these ends, we have established a supplemental site-specific health and safety plan to assure the continued safety of all project employees.
This plan is designed to:

- Identify and evaluate jobsite hazards.
- Establish means and methods to prevent exposure to unsafe conditions.
- Develop a system to communicate with our employees concerning safety matters and to encourage feedback.
- Establish training and retraining programs for employees.
- Develop a recognition program that identifies individuals/subcontractors who have met criteria and goals for working safe.
- Develop an enforcement and disciplinary system to ensure that employees comply with the Site Safety and Health Plan.
- Establish a culture on the jobsite where safety is recognized as a core value by all employees.
- Develop a trusting safety relationship between us and the owner

SAFETY AND HEALTH POLICY STATEMENT

Clark Construction believes that an effective safety and health program is based on a sincere desire to eliminate personal injuries, occupational illnesses, damage to equipment and property, as well as to protect the general public.

Management and supervision are charged with the responsibility of preventing the occurrence of incidents or conditions that can lead to occupational injuries or illnesses.

The ultimate success of a safety and health program depends upon the cooperation and coordination of each individual employee and sub-contractor.

It is management's responsibility to provide effective training and education that will result in a safe place to work, and to ensure that safety and health rules and procedures are adequate and enforced.

No employee or subcontractor shall be required to work in an unsafe manner or under unsafe conditions, unless it is to correct an unsafe condition and then, only after all reasonable safety precautions have been taken to minimize the potential injury exposure.

Clark Construction recognizes that safety and health are integral and essential parts of our operations. Our policy is to accomplish work in a safe manner consistent with good work practices. Management at every level is charged with the task of translating this policy into positive actions.

Our safety and health philosophy are based on the following principles:

- Employees are an invaluable resource to the company and their safety and well-being are essential to its continued success.
- Incidents are preventable and the occurrence of an incident means that we have not effectively managed our people and resources.
- ALL EMPLOYEES play a role in their own safety and the safety of those working around them. Management will be responsive to the expressed safety concerns of employees. SAFETY is our core value.

ASSIGNMENT OF RESPONSIBILITIES

PROJECT SR. VICE PRESIDENT / RESPONSIBLE PERSON

Brian Walker, Sr. Vice President and General Manager of Clark Construction has been designated as the Responsible Person for the APP. It is the responsibility of the Project Sr. Vice President to ensure overall implementation of the APP. In addition, the Project team will have the responsibility for enforcement of the program at the project site.

The duties of the Responsible Person are to:

- Identify and evaluate jobsite hazards, including procedures for investigating occupational injuries and illnesses.
- Establish and/or review methods and procedures for correcting unsafe and unhealthful conditions and work practices.
- Ensure that employees receive training on general and specific safety practices for the company and on each of their job assignments.
- Ensure that there is a procedure for communicating to employees, in an understandable manner, the safety and health rules and procedures.
- Ensure compliance with safety and health work practices.
- Ensure that records on training, inspections, and corrective measures are properly maintained, as required by this APP and other OSHA required programs.
- Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19

PROJECT MANAGER / PROJECT SUPERINTENDENT / SITE SAFETY AND HEALTH PROFESSIONAL

PROJECT MANAGER

Alexandria Hare of Clark Construction has been assigned as Project Manager. Ms. Hare is responsible for enforcement of this program at the project site, in conjunction with the Project Superintendent and SSHP. This includes:

- Assist in development of a job specific safety and health plan.
- Preplanning for safety in work activities.
- Foster a positive safety culture throughout the project.
- Inspect the project at least weekly.
- Ensure that corrective action is taken when there is an unsafe act or unsafe condition. Enforce employee and subcontractor disciplinary policies as described in the APP. Ensure subcontractor safety compliance.
- Review of safety training and orientations to ensure that the proper message is being delivered.
- Ensure that proper personal protective equipment (PPE) is available and being used as required.
- Ensure that communication from employees is being acted upon.
  Participate in investigation of all incidents.

- ☐ Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.
- ☐ Participate in site walks and log safety observations via safety suite

PROJECT SUPERINTENDENT

Dwayne Wright of Clark Construction has been assigned as the Project Superintendent. Mr. Wright is responsible for enforcement of this program at the project site. This includes:

- ☐ Assist in development of a job specific safety and health plan.
- ☐ Preplanning for safety in work activities.
- ☐ Foster a positive safety culture throughout the project.
- ☐ Inspect the project daily.
- ☐ Ensure that corrective action is taken when there is an unsafe act or unsafe condition.
- ☐ Enforce employee and subcontractor disciplinary policies as described in the APP.
- ☐ Ensure subcontractor safety compliance.
- ☐ Ensure that safety meetings are conducted and documented as described in this program and subcontractor "Safe Start" documents.
- ☐ Ensure that every employee goes through on-site safety orientation prior to starting work.
- ☐ Ensure that proper personal protective equipment (PPE) is available and being used as required.
- ☐ Ensure that communication from employees is being acted upon.
- ☐ Notify the owner and insurance carrier of an injury/incident which requires medical attention.
- ☐ Investigate all incidents and document findings in accordance with the APP.
- ☐ Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.
- ☐ Participate in site safety walks and log observations via safety suite

SITE SAFETY AND HEALTH PROFESSIONAL

Lucas Porter of Clark Construction has been assigned as the Site Safety and Health Professional (SSHP) for this project. The SSHP shall implement the operational aspects of this Plan and other applicable requirements and regulations. The SSHP shall identify and communicate existing and anticipated safety and health requirements to the Project Superintendent and Project Manager, and all subcontractor(s) through the Clark Subcontractor Safe Start meeting, and through activity/plan reviews with the project team prior to the subcontractor's start of work on the project.

The SSHP carries the authority of the Project Sr. Vice President as it relates to matters of project safety. The SSHP reports to the Project Sr. Vice President and has authority to stop work in order to prevent injury or incident.

The SSHP is responsible for the field coordination/ implementation of the APP and will consult with the Division Safety Director, Marty Laskey, on matters related to the project. Monthly exposure data including man hours worked will be completed by the SSHP and submitted to the Owner'srepresentative.

The SSHP will strictly enforce all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.

PROJECT TEAM

Project Team members will be familiar with the contents of the Clark Construction Group, LLC Safety and Health Program, this Clark Construction Site Safety and Health Plan, the project work plan, and the project quality control plan, and will observe all specifications set forth within those plans, and with any further direction they may receive. No employee may, for any reason, perform an act, or create a condition that may cause harm to themselves, co-workers, or third parties.

All employees shall immediately report unsafe conditions to their immediate supervisor who will either correct the condition or request assistance from the SSHP.

All employees will participate in site safety walks and log safety observations via safety suite.

FOREMAN

Project foremen have the following responsibilities:

- Ensure compliance with the APP.
- Ensure that all employees receive the site-specific orientation prior to beginning work on site.
- Inspect work areas regularly for unsafe acts and unsafe conditions.
- Communicate safety and health matters to the crew and ensure their understanding.
- Ensure corrective action is taken when there is an unsafe act or condition observed.
- Coordinate with Superintendents and Safety Managers to ensure safety is planned into work activities.
- Ensure that their crew understands the importance of and is wearing all required personal protective equipment.
- Ensure that their crew is performing in a safe manner, in compliance with all rules and regulations.
- Ensure that the concerns of the crew are communicated to the project superintendent.
- Ensure that tools and equipment are in good condition and are being used properly and in a safe manner.
- Assist with incident investigation when needed.
- Conduct Safe Plan of Action daily in the morning before work commences.
- Authority to stop work in order to prevent injury or incident.
- Perform at least 1 toolbox talk a week with crew.
- Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.

EMPLOYEES

Employees have the following responsibilities:

- Arrive to work fit for duty.
- Have on proper work attire including long pants with no cuffs and shirts with sleeves that cover the shoulder, safety toed work boots, Safety Helmets, safety glasses and a minimum A3 cut resistant

glove.
- Wear personal protective equipment that is required by their job/task and applicable regulation.
- Follow safety rules required by their company and the project.
- Report all unsafe acts or conditions immediately.
- Immediately report any work-related injury, regardless of how minor.
- Authority to stop work in order to prevent injury or incident.
- Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.

VISITORS

- Must follow project safety requirements, Code of Safe Practices, and OSHA, MOSH, and EPA regulations
- Will not be permitted in a work area that may present a hazard to the individual.
- Will not be allowed on project site work areas without proper PPE
- Must coordinate with GC prior to coming to job site and sign in at office trailer upon arrival.
- Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.
- Must be escorted on Site property by a member of Clark or by an authorized subcontractor representative.

SUBCONTRACTORS AND SUPPLIERS

Prior to proceeding with any work on this project, each Subcontractor must attend a pre-mobilization Safe Start meeting held by the SSHP. This meeting will review the established Corporate Safe Start Program. Each subcontractor shall be given a copy of our Subcontractor Safe Start Manual which contains the written documentation that is required to be submitted prior to working. All documents shall be reviewed with our Subcontractor's field leadership and Safety Representative during this meeting. A copy of the Subcontractor Safe Start Manual will be distributed to each Subcontractor prior to this meeting.

Vendors and/or suppliers who will be performing work of any kind on this project will be required to submit a detailed hazard analysis prior to start of work. Each hazard analysis must be approved by the SSHP. Examples of this type of work include but are not limited to the set up and use of concrete pump trucks, deliveries of building materials that must be mechanically unloaded onsite, installation of material hoists, trash chutes and scaffold systems.

Subcontractors are responsible for notifying their vendors and suppliers of this requirement, obtaining the hazard analysis and submitting the documentation to the SSHP for approval.

Subcontractors will, at a minimum, incorporate all the principles of the Clark Construction Group, LLC, Clark Construction APP into their safety programs. Subcontractors must accept responsibility for the management and implementation of their company's Safety and Health and HAZCOM Programs for the project and will ensure that their employees, subcontractors and suppliers, regardless of tier, know, understand, properly implement and are held accountable for complete project safety and health requirements.

Additional information on the Subcontractor Safe Start Program is contained in Appendix A-14.

All Subcontractors shall provide a full-time Safety representative on jobsite when manpower exceeds 30 or more workers (including lower tier sub-contractors). Safety representative shall have no other duties other

than safety and shall have OSHA 30 and be First aid CPR trained. Safety representative shall attend all Safety meetings conducted by Clark or by its lower tier sub-contractors while they are onsite.

Any Subcontractor with less than 30 workers onsite (including lower tier subcontractors) must have a designated onsite safety representative that is at a minimum First Aid/CPR trained at all times.

All Subcontractors, lower tier sub-contractors, suppliers (when onsite), sales reps, and visitors must adhere to all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.

SUBCONTRACTOR SAFETY REPERSENTIVE SHALL:

- Ensure that their employees, subcontractors and suppliers, regardless of tier, comply with their company's Safety and Health and HAZCOM Programs, the Contract Documents, OSHA/MOSH Standards, and all other federal, state and local codes, laws and regulations.
- Follow project safety requirements, Clark Construction Group, LLC Code of Safe Practices, and OSHA/MOSH regulations.
- Ensure that all work activities are planned with an emphasis on safety and health to prevent bodily injury, illness and property damage.
- Post a copy of the Medical Emergency Procedures and the Fire Emergency Procedures for the project in their change rooms, trailers and offices.
- Make provisions for immediate first aid and/or medical/hospital treatment for all work-related injuries and illnesses for their employees.
- Ensure that a Job Specific Hazard Analysis is developed and implemented for each major work operation.
- Be responsible for the Subcontractor Incident Reporting Requirements.
- Attend all Scheduled Safety Meetings.
- Arrange for weekly Toolbox Talks. A copy of the written minutes must be forwarded to the SSHP and Clark Superintendent.
- Report all safety and health related matters to the Superintendent and/or the SSHP.
- Perform daily safety inspections of work areas.
- Document all equipment inspections daily and provide copies to Clark Superintendent and or Clark Management representative.
- Ensure that Employee Information and the Training Checklist is completed and documented for new employees prior to starting work on the project.
- Authority to stop work in order to prevent injury or incident.
- Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19
- At a minimum First Aid/CPR trained.
- Maintain up to date MSDS sheets for all materials on site.

SUBCONTRACTOR EMPLOYEES SHALL:

- Follow project safety requirements, Clark Construction Group, LLC Code of Safe Practices, and OSHA/MOSH regulations.
- Report any unsafe conditions or acts to their Supervisor.
- Perform their work using safe and healthful methods.

- ☐ Use and wear all personal protective equipment required.
- ☐ Attend weekly Toolbox Talks and sign attendance list.
- ☐ Keep all areas clean and free of debris.
- ☐ Wear seat belts when operating equipment.
- ☐ Refrain from fighting, discrimination, harassment, and or any other immoral activities.
- ☐ Notify Supervisors immediately of any incidents.
- ☐ Not to possess any drugs, alcohol or firearms of any type on Job/Plant premises or in Company vehicles.
- ☐ Authority to stop work in order to prevent injury or incident.
- ☐ Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.

FITNESS FOR DUTY

Clark Construction and its subcontractors will be required to implement a drug testing program that includes, at a minimum, Pre-Employment, Periodic, Post Incident, For Cause, Random and Return to Work testing. Subcontractors will be required to comply with the Clark Construction Group, LLC Fitness for Duty program while working on the Quantum Loophole – 1 MGD Sewage Pumping Station Project. See Appendix A-14 for the complete Fitness for DutyPolicy.

JOB AND ACTIVITY HAZARD ANALYSIS

Each subcontractor, regardless of tier, must submit Clark Construction a Pre-Phase Safety Plan including a Job Hazard Analysis (JHA) for each phase of work. This JHA will be reviewed by the Clark Construction Group, LLC Superintendent(s) and SSHP at the Safe Start Meeting and Initial Meetings for their feature(s) of work. All JHA/AHA will be kept on file at the project site for review.

Pre-activity walks will be conducted with applicable parties on stie at the discretion of the Owner, Engineer, and Contractor. A pre activity review will be completed before an AHA is created

Additional information on the Hazard Analysis Policy is contained in Appendix A-7.

All Phases of work will require a Job Hazard Analysis (JHA), examples are:

Site-work
Demolition
Excavations, Trenching
Concrete – Structural
HVAC
Electrical
Equipment Rigging
Working on/near existing utilities; electrical, gas, chemical, steam, pressurized lines, sanitary lines
Confined Space Entry
At a minimum (for each phase) consider all potential hazards including those below.

1. Noise
2. Dust/Fumes/Mists/Chemical Exposures
3. Traffic Control
4. Falls, Working at Heights
5. Falling Objects/Flying Objects
6. Walking Surfaces/Access/Work Platforms & Scaffolding
7. Lighting
8. Machinery/Vehicles
9. Interface with other contractors
10. Security
11. Pollution/Spills
12. Utilities Exposure Including Electrical, Water (onsite and Public)
13. Vibration/Subsidence/Ground Support/Trenching and Excavations
14. Fires, Welding, Burning Operations/Fire Prevention
15. Clothing/PPE Requirements
16. Craning/Hoisting/Rigging
17. Signage/Barricades
18. Tools-use, Inspection, Maintenance
19. Demolition Operations
20. Protection of the Public
21. Other Hazards Particular to this Project

In addition**,** Specific plans will be submitted prior to these activities.

1. Site-specific Fall Protection and Prevention
2. Formwork and Shoring Erection and Removal
3. Steel Erection
4. Roofing
5. HVAC and Plumbing
6. Tank Rehabilitation Work
7. Crane
8. Confined Space Entry

A JHA will be completed for each major task during the project. This analysis will be conducted according to the Clark Construction Group, LLC Clark Construction Procedure - Job Hazard Analysis. The purpose for this analysis is to evaluate the task, identify the sources of hazards related to the task, and assign control measures for each hazard. The completed JHA can be used to train employees and subcontractors prior to initiating the task. It should be used by the supervisor to assure that safety planning has been completed, and that all necessary safety equipment is available in advance.

An JHA will be developed by the Contractor for every operation involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform work. The analysis must identify and evaluate hazards and outline the proposed methods and techniques for the safe completion of each phase of work. At a minimum, define activity being performed, sequence of work, specific safety and health hazards anticipated, control measure (to include personal protective equipment) to eliminate

or reduce each hazard to acceptable levels, equipment to be used, inspection requirements, training requirements for all involved, and the competent person in charge of that phase ofwork.

For work with fall hazards, including fall hazards associated with scaffold erection and removal, identify the appropriate fall protection methods used. For work with materials handling equipment, address safeguarding measures related to materials handling equipment. For work requiring excavations, include requirements for safeguarding excavations.

The JHA/AHA shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls. The JHA list will be reviewed periodically and updated as necessary when procedures, scheduling, or hazards change.

The JHA/AHA shall be updated as necessary to provide an effective response to changing work conditions and activities. The on-site superintendent, SSHP and competent persons used to develop the JHA/AHAs, including updates, shall sign and date the JHAs before they are implemented.

The JHA/AHA shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require a JHA. The JHA/AHAs will be developed by the contractor, supplier or subcontractor and provided to Clark Construction Group, LLC.

HAZARD CONTROL MEASURES

At the beginning of each work shift and as often as necessary to ensure safety, each crew foreman will conduct an area survey to identify workplace hazards and determine appropriate safety control measures. The hierarchy of control measures is as follows.

- ☐ Engineering Controls
- ☐ Work Practices Administrative Controls
- ☐ Personal Protective Equipment

EMPLOYEE TRAINING, INSTRUCTION AND INDOCTRINATION

COMMUNICATION OF SAFETY AND HEALTH MATTERS

Communication of safety and health policies and procedures begins on the employee's first day at the Employee Orientation. Each employee shall receive training from their employer on the identification of potential hazards he/she may encounter during their specific work activity, preventive measures or corrective actions and the OSHA/MOSH regulations.

Additional information on the Education and Training Policy is contained in Appendix A-12.

Daily "Safe Plan of Action" meetings are held by each crew, daily at the beginning of the work shift. A "Toolbox" Safety Meeting is held once a week attended by all of the Contractor's personnel. The Contracting

Offices will be notified in advance of these meetings and be invited to attend.

Employees shall be kept informed of updates or changes to the APP, Clark, Clark Construction and OSHA/MOSH Regulations and Policies through safety meetings, written notices, and posting of notices on the company bulletin board and shall be communicated in a manner understandable to all employees.

The SSHP will attend the Weekly Project Progress Meeting. In this forum, the SSHP will communicate concerns and issues to specific subcontractors and subcontractors in general. Subcontractors will have the opportunity to share concerns and issues regarding project safety as well.

All employees are encouraged to report hazardous conditions at the jobsite to the SSHP or Superintendent so that corrective action can be taken. Employees who report such conditions will do so without fear of reprisal.

For anonymous notification of potential safety hazards, a toll free "Safety Hotline" is available to all project personnel and jobsite subcontractors by dialing 1-888-547-3520. All notifications of potential safety hazards will be thoroughly investigated, and corrections will be made where necessary.

The SSHP shall post and maintain all required OSHA Federal and MOSH State postings, Emergency Phone Number Lists, The Emergency Action Plan, Hazard Warnings and Illness and Injury Data for employees in or on the jobsite trailer.

ORIENTATION

A representative of the Clark Project Team/SSHP shall conduct site specific orientations for all Clark Construction Group, LLC employees, subcontractor employees and visitors.

The initial site safety orientation shall be documented, and a unique hardhat sticker will be issued to each person completing the initial site-specific orientation on the Quantum Loophole – 1 MGD Sewage Pumping Station Project.

The orientation materials are shown in Appendix A-13. The orientation materials, Code of Safe Practices have been translated to Spanish and are available onsite.

Prior to beginning the orientation non-English speaking employees will be identified, a translator will be provided along with the appropriate documents to assist in the understanding of orientation material. Proper orientation documents shall be available onsite for review.

DAILY "SAFE PLAN OF ACTION" SAFETY MEETINGS

At the beginning of each shift, a qualified person shall conduct a daily Safe Plan of Action safety meeting detailing activities, specific hazards of the work to be performed and safety precautions and procedures for each task to be performed during that workday. A full understanding of the SPA must be agreed upon by all employees prior to work commencing. A copy of SPA must be submitted for documentational purposes to a representative of Clark daily.

Topics of discussion include the AHA/JHA, specific safety items relevant to the day's work activities, a

review of Safety Data Sheets (SDS) for new chemicals introduced into the work environment, new hazards that have been recognized by management or employees and a review of historical incident data or near miss information relevant to the day's activities. These meetings provide an open forum for employees to note safety conditions that need attention. The Foreman will identify non-English/non-Spanish speaking employees and provide an interpreter and translated training materials. All employees will be required to sign an attendance sheet which will be maintained in the project files.

Provide Owner's Representative copies of the meeting attendance sheet and meeting minutes.

SCHEDULED WEEKLY SAFETY MEETINGS

A "Toolbox" safety meeting shall be held weekly, attended by all contractor personnel. Topics to be covered include a review of specific health and safety regulations, new policies or procedures, any incidents or near misses that have occurred at the project, updated project incident rates, new JHA's and a forum for employee questions or comments. The SSHP or Superintendent will identify non-English/non-Spanish speaking employees and provide an interpreter and translated training materials, JHA's or Memo's. Any issues brought up during this meeting shall be documented in the meetingminutes.

Subcontractors have the option of attending the Clark Construction Group, LLC meeting or conducting their own weekly safety meeting. If a subcontractor holds their own weekly safety meeting, the Subcontractor's Superintendent is responsible for conducting the meeting and submitting the required documentation to the Clark Construction Group, LLC SSHP or onsite representative of Clark.

Provide Owner's Representative copies of the meeting attendance sheet and meeting minutes.

EMPLOYEE HEALTH AND SAFETY TRAINING

All Clark Construction Group, LLC and Subcontractor employees shall receive training and instruction by their employer in the following areas:

- ☐ Safety Data Sheets (SDS) requirements, location and availability.
- ☐ Specific instruction on each new task or phase of construction using Activity Hazard Analysis to identify hazards unique to this job environment and elimination/mitigation methods.
- ☐ Personal Protective Equipment (PPE) selection, use and maintenance requirements.
  All training will be documented and available for review.
- ☐ COVID-19 rules/regulations.

Training of employees covered by this APP shall occur:

A. When the program is first established.
B. For all new employees.
C. For all employees given a new job assignment for which training has not previously beenreceived.
D. Whenever new personnel, substances, materials, processes, procedures, or equipment areintroduced to the job site that represent a new hazard.

E. Whenever the project is made aware of a new or previously unrecognized hazard.
F. In response to a near miss or actual incident.

In accordance with this APP, the instructor will identify non-English/non-Spanish speaking employees and provide an interpreter and translated training materials.

Employers will provide additional training to supervisors to familiarize them with the safety and health hazards to which employees under their immediate direction and control may be exposed.

REQUIRED PERIODIC TRAINING

The following is a list of mandatory training applicable to this project:

A. Vehicle/Equipment/Crane Operator
B. First Aid/CPR
C. Confined Space Entry
D. Fall Protection
E. Hot Work/Fire Watch
F. Control of Hazardous Energy
G. Excavation Safety
H. Fire Extinguisher Use

CERTIFICATIONS/QUALIFICATIONS

The following lists of certifications are applicable to this project:

A. Crane Operation
B. Forklift Operator (Per Jurisdiction)
C. Rigger/Signalman
D. Traffic Flagman
E. Powder Actuated Tool Operator
F. Respiratory Medical Questionnaire/ Fit Test
G. Scissor Lift/Aerial Lift Operator
H. Confined Space Training

SAFETY AND HEALTH INSPECTIONS/CORRECTIVE ACTION PROCEDURES

The SSHP will conduct and document regular safety and health inspections. The SSHP will also conduct and document one monthly audit and submit a written report.

The safety and health inspection report shall contain the following:

- Date deficiency identified
- Description of deficiency
- Name of Company responsible for correcting deficiency
- Projected resolution date

- Date resolved

Unsafe or unhealthy work conditions or work practices will be corrected in a timely manner, as determined by the severity of the hazard. Under no circumstances will personnel be required to, or permitted to, work under conditions that pose a clear or imminent hazard.

The Project Superintendent will be responsible for problems that cannot be corrected immediately. Once corrected, the Project Superintendent will forward written documentation of the action taken to the SSHP.

When an imminent hazard exists, which cannot be immediately corrected without endangering employees and/or property, the following steps will be followed:

☐ Remove all potentially endangered employees from the area.
☐ Provide employees responsible to correct the condition with necessary safeguards.
☐ Correct the problem.
☐ Document and date the corrective action taken. The documentation is to be completed by the Project Superintendent. Documentation will be maintained at the project site and forwarded to the SSHP. Provide Owner's Representative a copy of the report before the end of the month at a minimum.

Additional inspections will be conducted:

☐ Whenever new materials, substances, processes, procedures, or equipment are introduced to the jobsite that represent a new occupational safety or health hazard.
☐ Whenever the jobsite is made aware of any new or previously unrecognized hazard.

Engineering controls are the best way to prevent or minimize unsafe or unhealthy work conditions and should be used first. If engineering controls are impractical or infeasible, adjusted work practices will be used. If engineering controls alone, or in combination with adjusted work practices cannot adequately minimize the hazard, personal protective equipment shall be used.

All operating procedures will be monitored and reviewed whenever new chemicals, equipment, or processes are introduced into the system. When changes are made, affected employees will receive additional instruction.

In the event that a subcontractor has created an unsafe condition, the following procedure will be followed.

☐ Upon identification of an unsafe condition, the Clark Construction Group, LLC Superintendent or SSHP will direct the subcontractor employees to stop work at that location immediately.
☐ The subcontractor supervisor will be called to the location to discuss the identified unsafe condition and the JHA covering that scope of work.
☐ The subcontractor will be directed to correct the unsafe condition and the timeframe in order to make the correction.
☐ The SSHP will make a determination as to subcontractor requirements for additional employee training.

The unsafe condition along with correction information and training requirements will be documented on the Clark Construction Group, LLC Inspection/Violation Report.

- ☐ Upon correction of the hazard, the Clark Construction Superintendent will inspect the area and sign off on the report.
- ☐ A jobsite stand down will be conducted by Clark Superintendent/SSHP with the subcontractor/subcontractor's management representative and employees before any work will commence.
- ☐ A copy of this report will then be given to the subcontractor and the SSHP for review and a copy will be given to the Owner's Representative.

1. First offense violations by a subcontractor are handled at a field level.
2. Second offense violations will result in a letter authored by the Clark Construction Group, LLC Project Director to the Subcontractor Corporate Office requesting an onsite safety meeting to discuss the violations and management commitment to employee safety.
3. A third offense may result in a request for the removal of a supervisor who is not enforcing safety policy, assignment of a full-time designated Safety Manager or the withholding of current and future pay requisitions pending compliance with this APP.

SAFETY AND HEALTH EXPECTATIONS, RECOGNITION PROGRAM AND COMPLIANCE

Our goal is to establish and implement a safety and health plan that will educate our employees on identifying and eliminating hazards and unsafe acts. We expect to prevent injuries, occupational illnesses and property damage by establishing safe and healthful methods on our construction sites.

SAFETY RECOGNITION PROGRAM

The Clark Construction Group, LLC mission is to build a strong safety culture through education, training, enforcement and recognition. A Safety Recognition Program will be developed providing motivation and positive reinforcement as a tool to realize increased safety performance.

EMPLOYEE COMPLIANCE AND DISCIPLINE

All employees are required to follow company safety policies and operating procedures. When required, employers will provide their employees additional training and information, or re-training to maintain their knowledge.

The disciplinary action policy is intended to encourage employee compliance with this APP. Immediate Termination: Any employee who commits a serious safety violation may be subject to immediate termination without prior notice in lieu of any prior verbal and/or written warnings.

Fall protection violations, harassment of any type, workplace violence/fighting, discrimination of any kind, possession or use of illegal drugs or alcohol use, possession of weapons, or flagrant violations or disregard for project safety rules, and unauthorized removal of LOTO devices, will result in immediate

and permanent termination, or removal from the project and all other future Clark Construction projects.

The SSHP and Superintendent will determine the best disciplinary action to be taken that best suits the circumstances. The steps to be taken at a minimum shall include the following:

- ☐ **Verbal Warning:** As the first step in correcting unacceptable behavior or minor infractions, a verbal warning and coaching will be used. This verbal warning will be documented.

- ☐ **Written Warning:** If the unacceptable performance continues, or the severity of the infraction's warrants, the next step will be a written warning. The written warning will clearly state the safety policy that was violated and steps the employee and supervisor must take to correct it.

- ☐ **Suspension/Termination:** If the unacceptable practice continues, or the severity of the infraction warrants, the employee will be given time off without pay. If suspended, an employee will be required to attend training specific to the unsafe practice or behavior that was cited.

Project workers who are terminated or removed from the project for disciplinary reasons related to violations of this safety program may not return to the project as an employee of the company they worked for at the time of termination or for any other employer. Further, they may not work on any other Clark Construction Group, LLC projects for at least 180 days. If a suspended employee wishes to return to a Clark Construction Group, LLC project they must meet with the Division Safety Director, Marty Laskey and demonstrate a significant change in attitude toward safety prior to being allowed access to Clark Construction Group, LLC projects.

Likewise, Clark Construction Managers and Supervisors may be at risk of discipline up to and including termination if they fail to diligently carry out their responsibilities as outlined in this APP and the overall Site Safety and Health Program.

Subcontractors who continually fail to comply with or to correct safety issues may have their payment withheld until compliance with safety issues and procedures is complete. Further, subcontractors may have their contracts suspended and they may be removed from work on this project if chronic failure to comply with project safety procedures continues.

INCIDENT INVESTIGATION

All work-related injuries and illnesses must be reported to the SSHP, no matter how minor, in accordance with the Clark Construction Procedure - Incident Investigation. Injuries, illness, or any other incident involving a third party, or a member of the general public must be promptly reported to the Clark SSHP and the Owner's Representative. Incident reviews shall take place after all near misses, recordable, lost times and hand injuries. Incidents involving potential exposure to hazardous materials, biological waste, and release or spills of such materials must be promptly reported to the Clark SSHP and the Owner's Representative. The Owner's Representative will be notified within four (4) hours of all incidents by the Clark Construction Superintendent/SSHP. Each Incident must be investigated as soon as possible by the immediate supervisor who has direct control over the employee or over the condition involved in the Incident. Project

Superintendent and SSHP will investigate all reported incidents and complete the Incident Investigation Report Form, as well as present the report for signature by the SSHP. Additional information on incident investigations is contained in Appendix A-5.

The Vice President, or his/her designee, will notify all public agencies requiring this information. OSHA needs to be notified of the following: any work-related fatality, hospital admittance of one or more individuals, any amputation, and loss of an eye.

Do not release information surrounding an incident to any agency. If in doubt as to who is asking, refer the inquiry to the Project Vice President.

The Incident Investigation Report Form must be completed for each injury to a Quantum Loophole – 1 MGD Sewage Pumping Station **Project** by a project employee and for all other types of incidents. All questions on the form must be clearly and completely answered.

This form must be submitted to the SSHP within twenty-four (24) hours. In addition, the incident report shall be submitted to the Owner's Representative within twenty-four hours of the incident.

Secure the incident scene until the SSHP has examined it. Do not allow any activity other than the initial rescue.

Photographs of the area are to be taken as soon after the incident as possible.

All Incident investigations should include the following information when applicable.

- ☐ Name/age/address/phone number of injured. Date and time of the incident.
- ☐ Equipment and or tools being used at the time. PPE being used/required at the time.
- ☐ Other subcontractors working in the vicinity at the time. Photographs.
- ☐ Primary cause. Secondary cause. Witness statements.
- ☐ Determine whether the employee had adequate instructions prior to starting the job.
- ☐ Name of the employee's supervisor.
- ☐ Name and telephone number of the clinic or hospital.
- ☐ Copies of AHAs, SPAs, site orientations, work plans, permits, etc.

When incidents or near misses occur that result in property damage or lost production time, these mishaps usually indicate an unsafe act, faulty procedure or hidden hazard.

The Owner's Representative shall also be notified of incidents or near misses that result in property damage or lost production time.

For any weight handling equipment incidents, a root cause incident investigation shall be completed.

Accident investigation reports for all Contractor accidents, injuries, and work-related illnesses shall be forwarded to the Owner's Representative within twenty-four hours of the occurrence. Vice President or officer of subcontractors shall attend all lost time meetings

INJURED EMPLOYEE ASSISTANCE

The Injured Employee Assistance Policy is part of the overall administration of the APP. The administration of this program includes the identification of all serious incidents, and ensures prompt medical attention and appropriate medical benefits, compensation benefits and applicable insurance coverage is provided to our injured employees.

Clark Construction is committed to providing injured employees the opportunity to return to work as soon as medically appropriate. The SSHP will meet with and be in contact with the clinic in order to communicate this policy and identify the potential for modified duty. A vital part of the recovery process is knowing that the employer will try its best to find meaningful work for their employee once they are released for work to the extent that work is reasonably available. Superintendents are expected to aggressively identify and provide modified duty assignments on their project for injured employees who have been released to work with physical limitations.

It is important to understand that returning injured employees to work under this modified duty program is in the interests of both the employee and employer.

MEDICAL SUPPORT AND FIRST AID PROCEDURES

PHYSICAL INJURY

For minor injuries, routine first aid procedures shall be applied. If required, the injured employee shall then be transported to the hospital.

For major injuries, an ambulance shall immediately be called. The emergency medical responders shall assess the nature and extent of the injury. In cases of severe injury occurring along with chemical contamination of the victim, and if injuries permit, the victim shall be decontaminated or have the contaminated garments removed prior to being transported in the ambulance, but only if these actions will not pose risk to the victim's health. Ambulance and hospital personnel shall be advised if contamination exposure is possible.

In the event of bleeding, broken bones, shock, burns, heat exhaustion, heat stroke, seizure, insect stings, etc., the trained personnel on each shift will use American Red Cross or equivalent approved measures for treatment.

CHEMICAL INJURY

- ☐ Appropriate safety gear shall be worn when treating the victim.
- ☐ The victim shall be removed to fresh air if possible.
- ☐ The victim's vital signs shall be assessed, and resuscitation shall be initiated if necessary.
- ☐ If clothing is chemically contaminated and injuries permit, clothing shall be removed, and the skin flooded with copious amounts of water.
- ☐ If the eyes are contaminated, they shall be irrigated immediately with copious amounts of water for twenty (20) minutes minimum.
- ☐ Medical attention shall be obtained immediately for any injury involving the eyes.
- ☐ Call the nearest Poison Control Center for technical advice and assistance.
- ☐ SDS sheets should be referenced to in order to treat victim properly.
- ☐ Emergency personnel should be notified of all chemicals involved if contacted.

NOTIFICATIONS

In the event of an emergency requiring notification, the Superintendent/SSHP is responsible for immediately contacting the Contracting Officer and appropriate agencies. If the Superintendent/SSHP is unavailable, the Project Manager will perform this function.

Contact will be made with local EMS/Fire Department and hospital services to discuss the project scope of work, materials identified on-site, number of employees, etc. Contact will be made with the Frederick County Police and Fire Department to give them a tour of the construction area and overview of the potential hazards. A list of phone numbers for emergency agencies and utilities will be posted near each phone in the field office to help facilitate emergency activities in the event of an incident.

The Superintendent/SSHP shall designate a rally point in case of emergency. The emergency evacuation signal for this project will be three (3) long blasts on an air horn or the crane horn, then a pause, and three more long blasts. Project radios may also be used, as well as verbal warnings, to notify project personnel of the emergency and evacuation notice.

Once an evacuation alarm has been sounded all personnel on site will proceed to the predetermined evacuation rally point. Using the daily sign-in sheet, the foremen for each trade/crew will account for the personnel under their supervision and report to the SSHP regarding the presence or absence of any of their personnel. The Superintendent/SSHP shall ensure that all personnel on site have been accounted for and provide instructions on further actions to be taken, including declaration of "all clear".

An evacuation drill will be conducted initially after work begins, and then as deemed necessary. This Emergency Action Plan will be updated as jobsite conditions warrant.

RESCUE AND EVACUATION PLAN

A Rescue and Evacuation Plan will be incorporated as part of the overall emergency action plan. The plan will incorporate the facility emergency and evacuation plan. Individual rescue and response plans will be included in other specific plans including the fall prevention/protection plan, excavation work plan, confined space entry plan, etc. The emergency action plan is contained in Appendix A-4. This plan will include a detailed discussion of the following:

- Methods of rescue
- Methods of self-rescue
- Equipment to be used
- Training requirements
- Procedures for requesting rescue
- Medical assistance
- Transportation route to the medical facility

The Rescue and Evacuation Plan will be included in the JHA for each phase of work and in the Fall Protection and Prevention Plan.

All of our subcontractors are required to have at least one (1) person who is trained and certified in First-Aid and CPR. The SSHP as well as the Project Superintendents are required to have been trained in First-Aid and CPR. At least one (1) Clark Construction trained and certified person will be on-site at all times.

TRAINING

Clark Construction office and supervisory personnel will be assigned specific duties regarding site security, media communications, assisting emergency personnel, and other duties.

Those project personnel assigned specific responsibilities regarding this emergency response policy will receive training regarding their specific responsibilities prior to the start of this project. A drill will be conducted within the first one hundred twenty (120) days from start of excavation, which will include all personnel who are assigned responsibilities. The Superintendent/SSHP will develop a specific list of responsibilities for each emergency response assignment and will distribute and review these responsibilities and discuss each participant's role in the emergency response plan in the initial Emergency Response Training meeting. This information will be contained in the project Emergency Action Plan.

EMERGENCY NUMBERS

Internal and external emergency contact numbers are identified in Table 1. The nearest emergency medical care is identified in Table 2. Emergency contact information will also be posted throughout the project including maps to clinics and hospital.

****

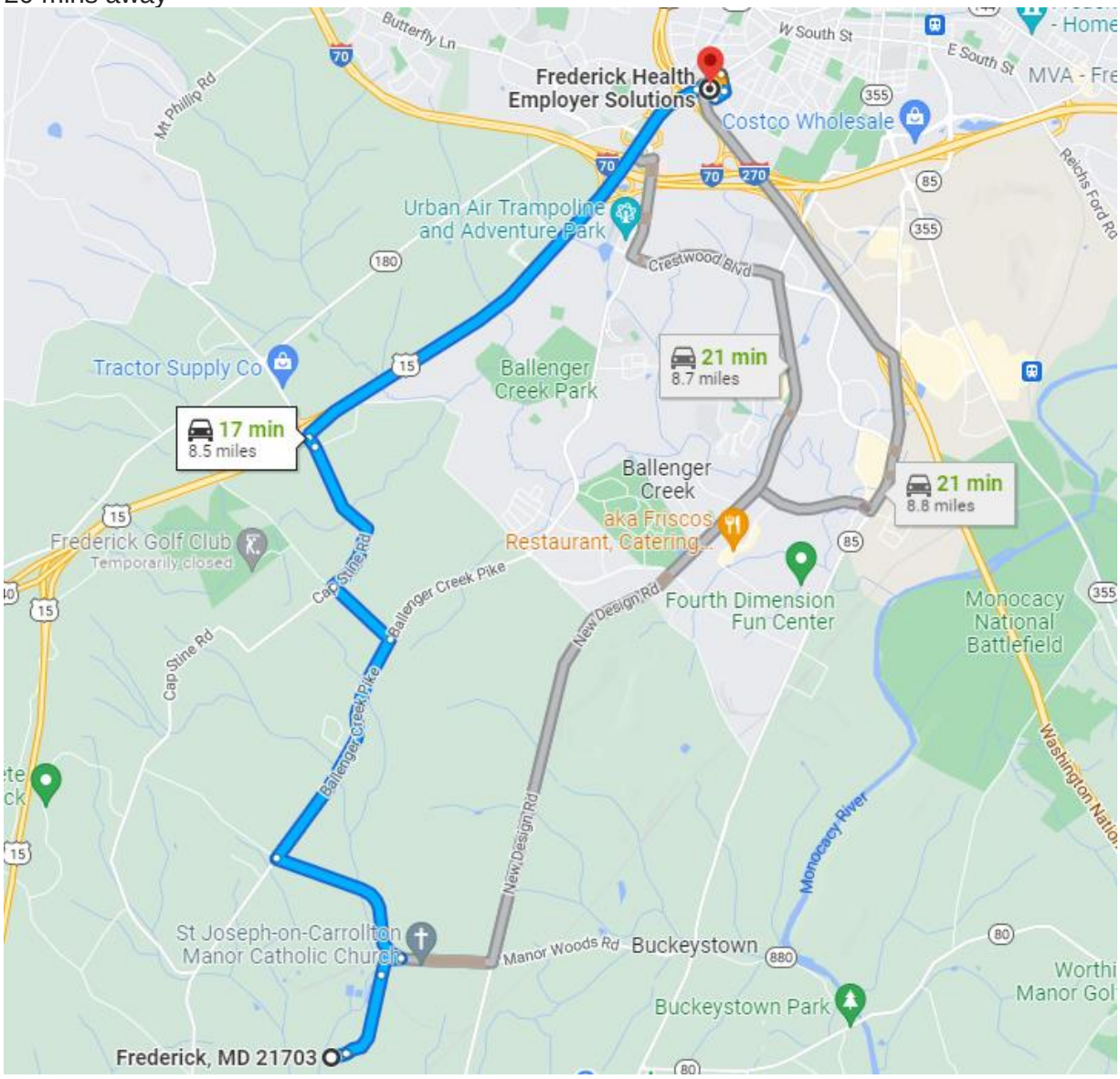
TABLE 1 - EMERGENCY CONTACTS

_ Emergency Ambulance	911
_ Fire	911
_ Poison Control Center	911 / 800-222-1222
_ Police	911
_ Spill Reporting	911
_ Safety Emergencies (after hours)	Maria Amenta: 301-272-8319
_ Burn Permits	Lucas Porter: (301) 310-3738
_ Gas Leaks	911
_ Project Superintendent	Dwayne Wright: (240) 517-4637
_ Project Manager	Alexandria Hare: (571) 458-6938
_ Project Executive	Nathan Scalla: (831) 588-5440

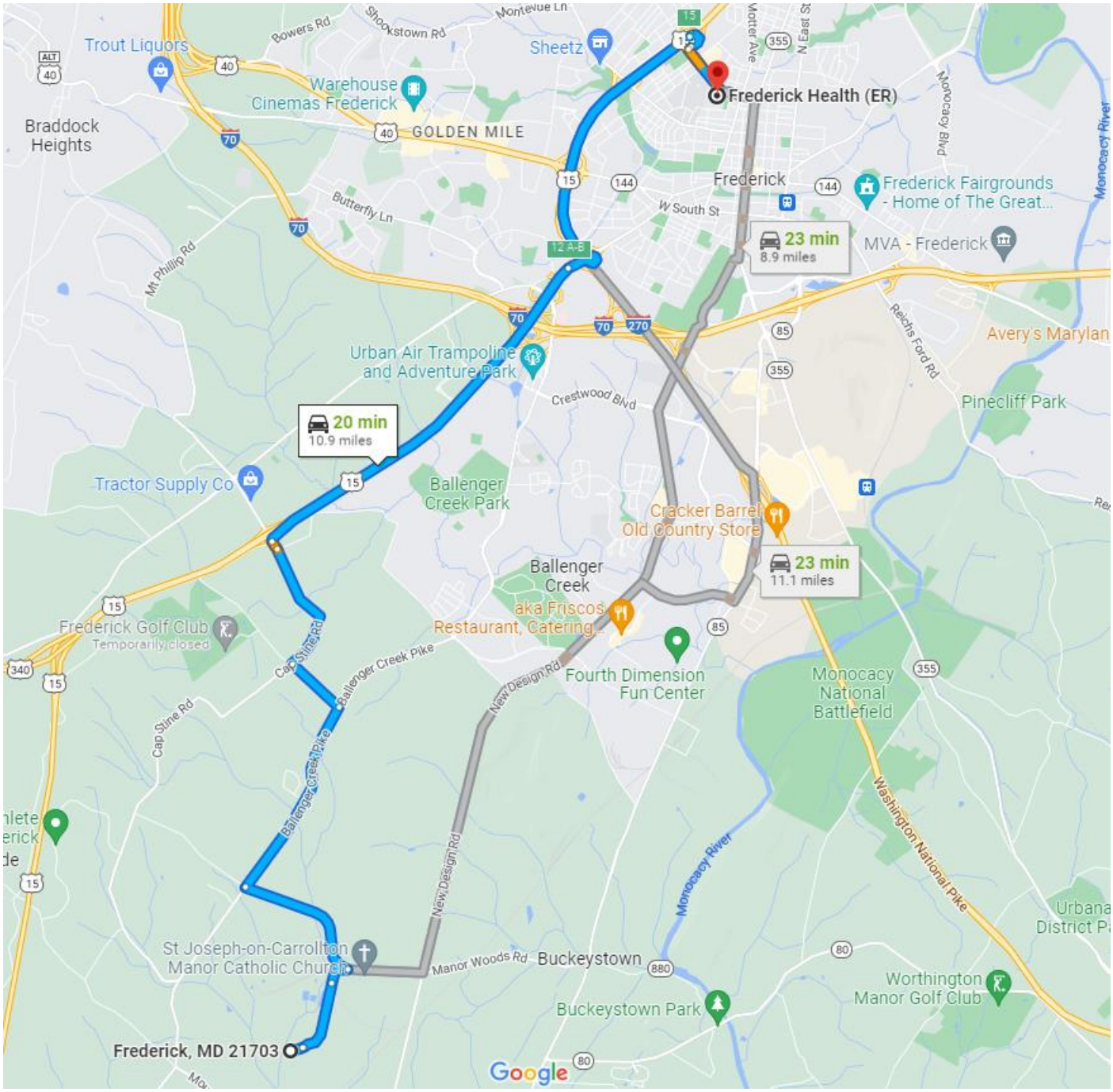
Primary Care Facility Locations

The Primary Care Facility for minor injuries will be:

Off Site Clinic:
Employer Solutions Fredrick Office
490-L Prospect Blvd Frederick, MD 21701
20 mins away



Hospital:
Frederick Health ER
Emergency Department, 400 W 7th St, Frederick, MD 21701
20 mins away.



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MANUAL LIFTING

Manual lifting is common to site work activities; and is a potential source of serious injury. The common concern about lifting is causing an injury to the back; but improper lifting techniques can also injure the neck, shoulder, knee, and hands.

Site conditions (such as poor footing, inadequate lighting, and weather) can compound the hazards associated with lifting. To minimize potential hazards from manual lifting, employees will be trained on the guidance presented below:

- Material handling equipment should always be the first choice if there is any question whether or not an employee can safely lift/move materials.
- If manual lifting will be used, prior to lifting, size up the job; look at the weight, size, shape, and condition of the object to be lifted, and decide if you can lift it unassisted.
- Obtain help if the lift will exceed your abilities or if lift weight exceeds fifty (50) lb. When lifting/carrying an object with another person, the weight should be evenly distributed, and movements coordinated.
- If you are lifting an object on your own, place your feet close to the object, get a good grip (palm of the hand is stronger than fingers, watch for sharp edges, nails, splinters), and straighten your back.
- Keeping your back as straight as comfortably possible, keep the object close to your body, and use the muscles in your legs to lift the object. Complete the lift before turning, and turn by repositioning your feet, never twist while lifting or carrying an object.
- Reverse the procedure when setting the object down, and keep your fingers clear of pinch points.
- Adverse weather condition can also be a factor in material handling such as rainy/ windy conditions, etc.
- If you do injure yourself lifting, or suspect that you may have, report the injury immediately. Do not attempt self-treatment, or ignore the problem. Report the injury to your supervisor.

HAZARD COMMUNICATION

Employees who may encounter hazardous substances used by site workers as part of construction activities will be subject to the requirements of the Clark Construction Group, LLC hazard Communication Program. All workers will be required to attend documented initial and annual refresher training on the GHS/Hazard Communication Standard.

Each hazardous material must receive approval from the Owner's Representative prior to being brought onsite. The Hazardous Material Approval Request process will take a minimum of ten (10) working days to approve.

Safety Data Sheets (SDS) will be obtained for all hazardous materials introduced for use on site. A copy of each SDS shall be available on the site. Each subcontractor will be required to supply a site-specific chemical inventory list prior to start of work. The list will be updated as necessary throughout the project. Copies of SDS will be available for review by the all employees on the project. Additional information on the hazard communication policy is contained in Appendix C-11.

SILICA EXPOSURE

Construction activities identified to have a potential to expose workers to silica dust will be conducted in accordance with OSHA standard 29CFR1926.1153 and the Clark Construction Group, LLC Procedure – Fugitive and Silica Dust Control. In addition to this procedure, the following NIOSH recommendations to reduce exposures to respirable crystalline silica in the workplace will be followed:

1. Recognize when silica dust may be generated and plan ahead to eliminate or control the dust at the source. Awareness and planning are keys to prevention of silicosis.
2. Use engineering controls and containment methods such as blast-cleaning machines and cabinets, wet drilling, or wet sawing of silica-containing materials to control the hazard and protect adjacent workers from exposure.
3. Routinely maintain dust control systems to keep them in good working condition.
4. Practice good personal hygiene to avoid unnecessary exposure to other worksite contaminants such as lead.
5. Wear disposable or washable protective clothes at the worksite.
6. Shower (if possible) and change into clean clothes before leaving the worksite to prevent contamination of cars, homes, and other work areas.
7. Conduct air monitoring to measure worker exposures and ensure that controls are providing adequate protection for workers.
8. Use adequate respiratory protection when source controls cannot keep silica exposures below the OSHA PEL.
9. Post warning signs to mark the boundaries of work areas contaminated with respirable crystalline silica.
10. Provide workers with training that includes information about health effects, work practices, and protective equipment for respirable crystalline silica.

These recommendations are discussed briefly in the following subsections.

DUST CONTROL

The key to preventing silicosis is to keep dust out of the air. Dust controls can be as simple as a water hose to wet the dust before it becomes airborne. Use the following methods to control respirable crystalline silica:

- ☐ Use the dust collection systems available for many types of dust-generating equipment. When purchasing equipment, look for dust controls.
- ☐ Use local exhaust ventilation to prevent dust from being released into the air. Always use the dust control system, and keep it well maintained.
- ☐ Do not use equipment if the dust control system is not working properly.
- ☐ During rock drilling, use water through the drill stem to reduce the amount of dust in the air, or use a drill with a dust collection system.
- ☐ Use drills that have a positive-pressure cab with air conditioning and filtered air supply to isolate the driller from the dust.
- ☐ When sawing concrete or masonry, use saws that provide water at the point of operation.
- ☐ Use good work practices to minimize exposures and to prevent nearby workers from being exposed. For example, remove dust from equipment with a water hose rather than with compressed air. Use vacuums with high-efficiency particulate air (HEPA) filters or use wet sweeping instead of dry sweeping.

☐ Use fans when possible, to keep dusty air moving away from worker/workers in work area.

PERSONAL HYGIENE

The following personal hygiene practices are essential for protecting workers from respirable crystalline silica:

☐ Do not eat, drink, or use tobacco products in dusty areas.
☐ Wash hands and face before eating, drinking, or smoking outside dusty areas.

PROTECTIVE CLOTHING

Take the following steps to assure that dusty clothes do not contaminate cars, homes, or worksites outside the dusty area:

☐ Change into disposable or washable work clothes at the worksite.
☐ Shower (if possible) and change into clean clothes before leaving the worksite.

AIR MONITORING

Air monitoring is needed to measure worker exposures to respirable crystalline silica and to select appropriate engineering controls and respiratory protection. Perform air monitoring as needed to measure the effectiveness of controls. Any new or irregular activity should be reviewed and have air monitoring conducted to determine if silica is close to or above the PEL.

Additional information on silica is contained in Appendix C-10.

NOISE

The Clark Construction Group LLC Hearing Conservation Program will be implemented when noisy conditions exist which produce noise exposures equal to or exceeding 85 dBA as an 8-hour time weighted average (TWA). Work activities and production areas will be monitored and sampled where necessary to ensure that no employee is exposed to noise level above the PEL.

Based on the hazard, employees will be given a choice of the type of PPE that can be used. Comfort and fit are important to ensure that employees will use the PPE necessary for protection.

Additional information on hearing conservation is contained in Appendix B-16.

WORK AT ELEVATED LOCATIONS

FALL PROTECTION/PREVENTION

100% fall protection is required when employees are working at (6) feet or above lower/working levels for all operations. If the fall distance is less than six (6) feet but the employee could fall into/onto dangerous equipment, or other hazards exist, fall protection must be implemented.

All employees who will utilized personal fall arrest equipment must be trained in the nature of fall hazards

associated with his or her job; calculating fall distances; proper selection, inspection, maintenance, wear and use of the equipment; proper selection and use of anchorage points; removal from service.

All fall prevention measures will be positive in nature, meaning there must be physical means to prevent an individual(s) from falling. Examples of this are guardrails and hard barricades.

Project employees shall use a complete fall arrest system when a personal fall arrest system is implemented. This includes full body harness, shock absorbing lanyard or self-retracting lanyard, anchorage devices, and an approved anchorage point.

A full body harness and lanyard are required to be used by all employees when operating any and all aerial lifts and scissor type lifts.
Double-lanyard systems will be used when necessary to ensure that 100% tie-off is maintained at all times when repositioning from one work location to another.

Positioning devices may be used but must be accompanied by a complete personal fall arrest system when an employee is working at or above 6 feet.

Body belts are not permitted on this project for any purpose.

Clark Construction believes that conventional fall protection equipment can be utilized in most cases where Leading Edge Programs have been used in the past. A Leading-Edge Program will only be approved for use under special circumstances.

A site-specific Fall Protection and Prevention Plan (FP&P) shall be developed to address specific fall protection hazards during each phase of construction. This plan will be written by a qualified person, kept onsite and revised every six (6) months to reflect any changes within the project.

Additional information on fall prevention and protection is contained in Appendix B-5.

PERSONAL PROTECTIVE EQUIPMENT

The purpose of this section is to establish guidelines for the use of Personal Protective Equipment (PPE). Although PPE can prevent an employee from injury or illness, engineering controls and work practices should always be considered first before relying on PPE. Protective equipment shall be identified, used and maintained in sanitary and reliable condition. Where employees provide their own PPE, the employer shall be responsible to assure its adequacy.

Minimum personal protective equipment requirements at the Quantum Loophole – 1 MGD Sewage Pumping Station Project include:

- ☐ ANSI approved safety toed leather work boots are required.
- ☐ Safety helmets with a fastened, integrated four-point chinstrap are required. Acceptable helmets shall meeting ANSI z89.1 Type 1 or Type II standards and EN12492 performance standards 4.2.1.2 (Front Energy absorption) 4.2.1.3 (Side Energy absorption), 4.2.1.4 (Rear Energy absorption), 4.2.3 (retention system strength), and 4.2.4 (retention system effectiveness). Subcontractor shall determine whether the hazards associated with their work

warrant having helmets with an electrical rating

- ☐ ANSI approved safety glasses with permanent side shields.
- ☐ A shirt with sleeves that cover the shoulders, and long work pants.
- ☐ Respirator (as needed for location and type of work);
- ☐ Clean-Shaven daily (is using a respirator); Hearing protection (as required)
- ☐ Appropriate task-related gloves for all activities. Minimum of at least ANSI cut resistance level 3.
- ☐ ANSI approved Class II reflective vests when working on site.
- ☐ Chaps and face shield are required when using a chainsaw
- ☐ Minimum A3 cut resistant gloves.

Based on the task being conducted, the SSHP may adjust personal protective equipment requirements. Individual PPE requirements shall be identified by the Subcontractor prior to start of work and will be outlined in the JHA consistent with the Clark Construction Group, LLC Procedure - Job Hazard Analysis. Each Subcontractor shall provide the appropriate PPE training to each of their employees, lower tier Subcontractor employees and vendors. This training shall be documented by date and individual signatures and kept onsite for review upon request. In the event that Clark Construction or the Subcontractor has reason to believe that an employee who has been trained does not have the understanding and skill required of the training, the employer shall retrain the employee. PPE is covered in safety orientation and documentation is retained by the SSHP. PPE requirements shall be enforced by the Project Director, Superintendent, SSHP, and individual Foreman.

EYE PROTECTION

As standard eye protection, ANSI approved Z87, non-prescription, standard industrial safety glasses with side shields are considered as minimum protection.

Prescription eyewear with side shields shall comply with ANSI standards. If prescription eyewear does not meet the ANSI standards, safety goggles of over-glasses shall be worn over the eyewear.

ANSI approved eye protection is required in all designated construction or facility areas, and maintenance/equipment yards.

Eye protection may be required in work atmospheres other than construction and facility areas as hazards dictate (to be determined by the SSHP).

Contact lenses are not recommended for use at the worksite due to the possibility of particles and chemicals getting behind the contact lens, the lens being broken into small particles in the eye or welding spatter fusing the lens to the eye. These can be very seriousinjuries.

CHEMICAL GOOGLES

Approved chemical mono-goggles shall be worn to ensure eye protection from the hazards associated with the handling or dispensing liquid chemicals.

FACE SHIELDS
An approved full-face shield shall be worn to provide face protection to the employee from flying particles, splashes, or mists. This includes, but is not limited to, activities such as grinding, chipping, jack hammering, and use of power saws. However, a face shield only provides protection to the face from direct impact objects, and does not provide acceptable eye protection. Eye protection must be worn in conjunction with a face shield.

BURNING GOOGLES/SHIELDS
ANSI approved burning goggles/shields with filtering lenses of number 3 or greater shall be worn to provide employee protection from optical radiation. Burning goggles/shields shall be worn whenever a torch is used for cutting or burning.

WELDING HOOD
Welding hoods with a filtered lens of number ten (10) shade or darker shall be used to provide protection from the optical radiation produced during electric arc welding. Welding hoods shall meet ANSI standards. Safety glasses must be worn in conjunction with a welding hood.

HEAD PROTECTION

Safety helmets with a fastened, integrated four-point chinstrap are required. Acceptable helmets shall meeting ANSI z89.1 Type 1 or Type II standards and EN12492 performance standards 4.2.1.2 (Front Energy absorption) 4.2.1.3 (Side Energy absorption), 4.2.1.4 (Rear Energy absorption), 4.2.3 (retention system strength), and 4.2.4 (retention system effectiveness). Subcontractor shall determine whether the hazards associated with their work warrant having helmets with an electrical rating

Metal hard hats, cowboy type, or bump caps are not considered approved head protection and shall not be used. Traditional style hardhats (lacking an integrated chinstrap) are prohibited from use on this site.

ALL employees, at all times while on the project site, shall wear approved safety helmets with their names and company name affixed to the front of the helmet.

- ☐ Safety Helmets shall conform to the approved specifications of ANSI z89.1 Type 1 or Type II standards and EN12492 performance standards 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.3, and 4.2.4
- ☐ Clark Construction Group, LLC does not allow of the use of cowboy style hardhats. Helmets must be worn in the forward position only.
- ☐ Chin Straps must be worn on all Safety Helmets.

HEARING PROTECTION

Employees shall not be exposed to noise in excess of the Occupational Exposure Limits established by OSHA. Hearing protection shall be worn when exposures exceed 85 dba and/or working with heavy equipment. The two types of recognized hearing protection available for use in reducing noise exposure are earplugs and earmuffs.

In most instances, universal-fit earplugs are acceptable hearing protection. Cotton plugs are not acceptable and shall not be used.

When using earmuffs for hearing protection, special care shall be given to ensure that the muffs are cleaned regularly and disinfected before being issued to another employee.

HAND PROTECTION

Task-appropriate work gloves shall be worn by employees for protection against splinters, sharp edges, jagged surfaces, wire rope, glass, metal splinters, concrete burns or any other exposures that could cause injury to the hands. Minimum of ANSI cut resistance Level 3 shall be worn by all employees for general use. When using sharp cutting tools such as razor knives the protective posture must be increased according to the ANSI hand protection standard based on the tool being used.

Special purpose work gloves shall be required when employees are exposed to greater hazards. Special purpose gloves include:

- Electric "hot" gloves
- Cut resistant gloves (sharp metal, glass)
- Chemical resistant (solvents) or heat resistant gloves (welding, torch cutting)
- Standard latex/rubber gloves (grout, concrete)

FOOT PROTECTION

Work boots with leather uppers and slip resistant soles are recommended. Safety toes footwear is mandatory.

Sneakers (even if ANSI approved), sandals, tennis shoes, high heels, leather soled street or dress shoes, and thongs shall not be considered approved industrial or construction footwear.

Additional information on personal protective equipment is contained in Appendix B-16.

Metatarsals are required on boots while jackhammering for demo work operations are occurring

RESPIRATORY PROTECTION (GENERAL)

Each Subcontractor who is performing work that will require employees to use respiratory protection must submit a Respiratory Protection Program. The completed program shall meet or exceed the Clark Construction Group, LLC Procedure - Respiratory Protection. Once submitted, the plan must be approved by the SSHP prior to start of work.

Selection of respirators will be made pursuant to the Clark Construction Group, LLC respiratory Protection Program. Any variance from this program will require the approval of the Corporate Vice President of Safety, Greg Covelas. Only properly cleaned and maintained NIOSH-approved respirators shall be used on site. Air

purifying cartridges shall be replaced at the beginning of each shift or when load-up or breakthrough occurs. Where respirators are designated for protection against particulate contaminants, the employee shall be permitted to change canisters or cartridges whenever an increase in breathing resistance (load-up) is detected. Respiratory devices will be cleaned, sanitized, and inspected at the completion of each shift's activities.

No employee shall be assigned to tasks requiring the use of respirators if, based upon the most recent examination, a physician determined that the employee will be unable to function normally wearing a respirator or that the safety or health of the employee or other employees will be impaired by use of a respirator. This shall be so stated on the medical certificate.

Only employees who have had pre-issue training, qualitative fit tests, annual re-training, and fit tests thereafter shall be allowed to work in atmospheres where respirators are required. If an employee has demonstrated difficulty in breathing during the fitting test or during use, he or she shall have a supplemental physical examination to determine the cause of the difficulty.

Excessive facial hair (beards and mustaches) inhibits proper face fit and effectiveness of respirators. All personnel wearing respirators will be required to be clean-shaven prior to each day's shift.

Regular eyeglasses cannot be worn with full-face respirators because they break the face piece seal. Special purpose inserts must be used.

Additional information on respiratory protection is contained in Appendix C-19.

FIRE PREVENTION

Fire prevention measures shall be implemented in accordance with the Clark Construction Group, LLC Procedure - Fire Prevention and Protection.

The SSHP will contact local fire department officials as soon as practical after the beginning of the project to coordinate a familiarization meeting. This meeting will address access to the project, location of dry standpipes, and other related concerns.

Organic solvents and fuels with low fire hazard and toxic properties shall be used.

Users of flammable liquids shall be trained in safe practices that shall include the hazardous characteristics of the specific flammable liquids they are using. Safety Data Sheets (SDS) will assist with the specific training of the hazardous characteristics.

The "No Smoking or Open Flames" posting will be strictly enforced where flammable liquids are being transported, used, or stored. The use of flammable liquids must be constantly monitored during welding/cutting operations to ensure there are no flammable or combustible hazards in the area. Flammable liquids must be secured in an approved container overnight. **Smoking is prohibited on the project site.**

Work efforts (e.g., painting, solvent cleaning of parts, etc.) and work areas where the potential exists for vapor accumulation shall incorporate fire prevention provisions including engineering controls and/or work practices. These controls are intended to prevent the concentration of any flammable or combustible mists or vapors.

All flammable liquid containers shall be kept away from ignition sources. Even empty containers generally contain flammable vapor-air mixtures.

Flammable and combustible liquids shall be stored at least ten (10) feet away from stairways, elevators, and exits.

Flammable liquids shall be stored in facilities that have been approved by Underwriters Laboratories (UL), and/or Factory Mutual (FM), or which have been constructed to meet those requirements and have been approved for flammable liquid storage by the SSHP.

No plastic storage containers for flammable liquids.

Portable fire extinguishers shall be located within seventy-five (75) feet of travel from all locations where fuel transfer is being performed.

Fire extinguisher use training will be conducted annually.

Oil painting materials (paint, brushes, empty paint cans, etc.), and all flammable liquids shall be removed from the facility at the end of the work shift. All painting materials and flammable liquids shall be stored outside in a suitable metal locker or box and will require re-submittal with non-hazardous materials.

Accumulation of trays, papers, shavings, sawdust, boxes and other packing materials shall be removed from the facility at the close of each workday and such material disposed of in the proper containers located away from the facility.

The storage of combustible supplies shall be a safe distance from structures.

Area outside the facility undergoing work shall be cleaned of trash, paper, or other discarded combustibles at the close of each workday.

All portable electric devices (saw, sanders, compressors, extension cord, lights, etc.) shall be disconnected at the close of each workday. When possible, the main electric switch in the facility shall be deactivated.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION IMMEDIATELY.

Obtain services from a National Fire Protection Agency (NFPA) Certified Chemist for “HOT WORK” within or around flammable materials (such as fuel systems, welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, vaults, etc.) that have the potential for flammable or explosive atmospheres.

All fuel containers such as gas or diesel must be stored in appropriate fuel cabinets, not in offices or tool storage containers.

All fire extinguishers must be tagged and inspected on a monthly basis. Any extinguishers not in good

working order must be removed and replaced immediately.

Additional information on fire prevention is contained in Appendix B-6.

FIRE WATCH

A fire watch shall be maintained during and for at least sixty (60) minutes after completion of welding/cutting operations so that possible smoldering fire can be detected and extinguished. Where it is possible for hot metal/sparks to fall to lower levels, a fire watch must be assigned to each level.

Should the hot work take place in an occupied building, historical building or other area requiring special attention the fire watch shall be maintained for three (3) hours after completion of welding/cutting operations.

Firewatchers shall have fire-extinguishing equipment readily available and shall be trained in its use. They shall be familiar with facilities and procedures in the event of a fire. They shall watch for fires in all exposed areas and attempt to extinguish them only when the situation is obviously within the capacity of the equipment available.

The Fire Department shall be immediately notified of all fires.

SMALL FIRES

A small fire is defined as a fire that can be extinguished with a single 10-pound dry chemical fire extinguisher. In the event of a small fire, site personnel will take the following actions:

- ☐ Evacuate all unnecessary personnel from the area, if possible to an upwind location.
- ☐ Attempt to extinguish fire using portable fire extinguishers or by smothering with soil
- ☐ Fire Department shall be notified of all fires, even if extinguished with no damage.

LARGE FIRES

In the event of a large fire or a small fire that cannot be extinguished, the following actions will be taken:

- Evacuate all unnecessary personnel from the site, preferably to an upwind location.
- Notify the fire department and other emergency response services (police, ambulance, hospital and poison control center) as needed.

Additional information on fire watch is contained in Appendix B-6.

WELDING AND FLAME CUTTING

Employees who will perform hot work; any spark or flame producing operation or tool, shall attend the Hot Work Orientation. Records of hot work orientations will be maintained by the SSHP.

No welding or flame cutting will be done without first obtaining authorization for such activities. Authorization must be obtained from the SSHP for Quantum Loophole – 1MGD Sewage Pumping Station Project to any welding, cutting or burning activities.

Prior to performing "Hot Work" or operating other flame producing devices, a written permit shall be obtained from the SSHP. ***The permit will not be issued until all of the criteria are met.*** Any "Hot Work" to be performed as part of the project will require a Hot Work Permit. Use of the Structure Tone Hot Work Permit is required on this project site and an inspection walk will be required prior to issuance of the Hot Work Permit.

The subcontractor will supply at least one (1) twenty-pound 4A:20BC rated fire extinguisher for normal hot work.

All oxygen and acetylene tanks should be kept a minimum of 25' apart while not in use. Containers should be stored in appropriate storage cages. Fire extinguishers should be kept near storage areas within 50'.

Additional information on hot work procedures and welding/torch operations is contained in Appendix B-6.

TRANSFER AND USE OF FLAMMABLE LIQUIDS

Flammable liquids may be transferred into an approved container after the original manufacturer's container is opened.

Containers are to be kept closed except when transfers are being made.

When transferring flammable liquids between conductive containers, the containers must be effectively bonded and grounded.

A maximum of a one-day supply of flammable liquids may be kept in a work area at one time. The one-day supply is to be returned to the designated storage area at the end of each work shift.

Secondary containers of flammable and combustible liquids shall be labeled with the name and hazards of the contents in accordance with OSHA regulations.

No welding or cutting operations which may provide an open flame or hot surface will be permitted until the SSHP has been notified and a permit obtained to conduct the specific operation outlined in thepermit.

When possible, objects to be welded, cut, or heated shall be moved to a designated safe location. If this is not possible, all movable combustibles in the workspace shall be taken to a safe place.

If the object to be welded, cut or heated cannot be moved and all combustibles cannot be removed (e.g., equipment, walls, floors, etc.), positive means shall be taken to confine the heat, sparks, and slag to protect

the immovable combustibles as well as opposite sides.

No welding, cutting, or heating shall be done where the application of flammable paint, the presence of other flammable compounds, or heavy dust concentration create a possible hazard.

Wherever there are openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no sparks will drop through the floor. The same precautions shall be taken in the presence of cracks or holes in walls, open doorways, and open or broken windows.

Approved fire extinguishing equipment in good working order shall be present in the immediate work area.

HAND AND PORTABLE POWER EQUIPMENT

Hand and portable power equipment will be operated in accordance with manufacturer specifications. Markings, guards, grounding devices, and other safety equipment must be fully functional.

When working from heights tools must be properly tethered.

Wrenches with cracked work jaws, screw drivers with broken points or broken handles, hammers with loose heads, dull saws, extension cords or electrical tools with broken plugs, improper or removed grounding systems, or split insulation are examples of tools in poor condition. Tools that have deteriorated to these conditions must be taken out of service.

Screwdrivers applied to objects held in the hand, knives pulled toward the body, cutting the ground pin off of electrical equipment, which eliminates the shock safeguard, are all activities that are prohibited.

Many incidents have been caused by tools falling from overhead and by knives, chisels, and other sharp tools carried in pockets or left in toolboxes with cutting edges exposed.

Powder-activated shot charges are classified as a hazardous material and must be listed on the hazardous material identification Form. Powder-activated shot charges and tools must be secured in a locked container when not in use. Never use used shot strips with misfired shots, place strips in a bucket of water and dispose of properly.

Additional information on hand tools and equipment is contained in Appendix B-17.

ELECTRICAL

Work on or near energized electrical parts is prohibited unless authorized by Clark Construction. All electrical work, installation, and wire capacities shall be in accordance with the pertinent provisions of the National Electrical Code.

It is mandatory that Ground Fault Circuit Interrupters (GFCI's) be used on all 120-V, single-phase, 15/20 amp receptacle outlets used for temporary power. Each GFCI outlet shall be marked and inspected daily before use, and monthly at a minimum. All cords will be inspected daily before use, and periodically depending on use and environment.

All switches shall be enclosed and grounded. Panel boards shall have provisions for closing and locking the main switch and fuse box compartments. All switches will be labeled to show the device or area that the switch serves.

Cables passing through work areas shall be covered or elevated to protect them from damage and to eliminate hazards to employees.

Extension cords used with portable electric tools and appliances shall be three-wire and grounded. Plugs shall conform to the type and configuration required by OSHA Construction Standards.
Suitable means shall be provided for identifying all electrical equipment and circuits, especially when two or more voltages are used on the same job. All circuits shall be marked for the voltage and the area of service they provide.

Flexible electrical cord shall be continuous length without splices. The Clark Construction Group, LLC Procedure - Portable Electrical Equipment shall be implemented.

All extension cords should follow Clarks minimum rating of a 12/3 gauge or higher.

Additional information on electrical equipment and operations is contained in Appendix B-9.

LOCK OUT/TAG OUT/BLOCK OUT (HAZARDOUS ENERGY CONTROL)

All hazardous energy control activities will be conducted in accordance with the Clark Construction Group, LLC Procedure - Lock and Tag Program.

Dwayne Wright (Clark Superintendent) will be the designated Energy Marshall for this project. Dwayne will be familiar with all “LOTO” process as part of our scope of work and will coordinate between the Owner, Structure Tone, Clark and all lower tier subcontractors.

Locks and "DANGER" tags shall be used by authorized personnel when the release of energy can cause injury to personnel, create property damage, or release a harmful substance to the environment. If locks cannot be used, an alternate method of isolating the system must be implemented. Tags will always be used.

Affected employees and contractors, if applicable, shall be notified of the placement of locks/tags prior to locking out the equipment. Only one lock per key.

Removal or cutting of locks and tags without approval is subject to immediate termination.
Additional information on LOTO is contained in Appendix B-15.

LADDERS

A “Ladders Last” approach shall be used during the pre-planning period for any scope of work. Ladders should only be used once the competent person has determined that no other method of access or egress to the work is feasibly available.

Ladders used on the project site must be used and maintained in accordance with the Clark Construction Procedure – Ladders - Use Handling and Storage and manufacturers’ specifications. Ladders must have tight

joints, and securely attached hardware and fittings. Ladders in need of repair will be removed from the job site and repaired or destroyed.

All portable ladders must be clearly marked with the user's company name. Only Type 1-A or a Lean Safe ladders are allowable for use on any Clark project.

All employees who will use ladders must be trained in the nature of fall hazards associated with ladders; proper selection, inspection, maintenance, and use; removal from service.

Extension ladders must be secured to a suitable anchorage point to prevent tipping or rolling. If an employee must mount the ladder in order to secure it, a second employee must be utilized to hold the ladder until it is secured. If an employee is working above the fifth rung of an extension ladder, the ladder must either be secured in place or held by a second employee.

Employees must maintain three points of contact while ascending/descending any type of ladder. While performing work from a ladder, an employee must keep him or herself centered between the side rails of the ladder and not over reach, changing the center of balance.

Fall protection is required when an employee is working at or above 20 feet while working from a ladder.

Job-built ladders shall meet the requirements outlined in ANSI 14.4; Job-built Ladders.

Metal ladders are not permitted when working in or around electrical equipment at Quantum Loophole – 1 MGD Sewage Pumping Station Project.

Additional information on ladders is contained in Appendix B-14.

SCAFFOLD USE, ASSEMBLY, AND DISMANTLING

All employees who will erect, alter, dismantle, and use scaffolding shall be trained in the nature of fall hazards associated with scaffolds; proper selection, erection, inspection, maintenance and use (dependent on the job task); engineering requirements.

A competent person shall be identified and be present to guide and observe any erection, alteration, or dismantling of scaffolding.

All scaffold activities will be conducted in accordance with the Clark Construction Group, LLC Procedure Scaffold Use, Assembly and Dismantling. Prior to assembly activities, a competent person or erection supervisor must be identified.

Scaffold or work platform erectors shall utilize fall protection during the erection and Dismantling of scaffolding or work platforms that are more than six (6) feet in height. The specific fall protection requirements can be found in the Fall Protection and Prevention Plan and delineated in the JHA for scaffold activities.

Scaffold platforms greater than twenty (20) feet in height shall be accessed by use of a scaffold stair system.

For scaffolds less than twenty (20) feet in height, when ladders are used, an adequate gate is required.

Counter-weighted suspended scaffold systems shall not be used with any system requiring the counterweights to be suspended or hung from the scaffold system. Counterweighted systems must be placed on the ground or deck. Counterweighted scaffold systems must be approved for the intended set up and have manufacturer data sheets on available on site or have drawings stamped by a registered professional engineer and be set up accordingly.

All employees who will use suspended scaffold systems must have proper training for the type of scaffold to be used. A competent person trained in suspended scaffolds must inspect daily and be present for all suspended scaffold operations.

Additional information on scaffolds is contained in Appendix B-20.

FALLING OBJECT PROTECTION

Employees exposed to falling objects will be protected by one of the following methods:

- Toe boards, screens or guardrail systems shall be erected to prevent objects from falling from higher levels, and potential falling objects on higher levels shall be kept far enough from the edge so that they would not go over the edge if they were incidentally displaced; or
- The area(s) into which objects could fall shall be barricaded and employees shall be prohibited from entering barricaded areas; or
- A canopy structure shall be erected.
- Tethering of tools when working from heights.

EXCAVATION AND TRENCHING

All excavation and trenching activities will be conducted in accordance with the Clark Construction Group, LLC Policy – Trenching and Excavation. Prior to initiating excavation and trenching activities, a competent person must be designated. The competent person shall be present during all excavation activities.

Sloping technique will be used during initial excavation and soil removal. All slopes shall be cut back according to Type C soil condition requirements.

All spoils piles must be kept a minimum of 2’ away from edge of excavation.

Trench and shoring systems shall be identified in the JHA/AHA for each activity or phase of work. Manufacturer tabulated data and specifications or registered engineer tabulated data for all shoring or benching systems shall be readily available on-site for review.

All shoring systems to be kept a minimum of 2’ off bottom of excavation.

The means of egress must be located so as not to require workers to travel more than 25’ laterally within the trench.

Job-made sheeting and shoring systems shall have the registered professional engineer stamped specification and tabulated data.

All existing utility or other underground facilities shall be identified by a "No Dig Method" and located before excavation commences. The utility company or owner shall be contacted within customary or established response times to identify underground facilities.

Surface encumbrances (trees, boulders, and poles) that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

During initial excavation, truck ramps shall have built-up side berms. Additionally, if employees will use the ramps to access the work area, a segregated walkway shall be fenced off along one side of the ramp to provide safe access. High visibility fencing or rope with flagging shall be used to mark the boundaries of the walkway.

Excavation Support plans including section and plan views must be submitted to Clark Construction for approval prior to beginning excavations greater than four (4) feet in depth.

Additional information on excavation and trenching is contained in Appendix A-23.

CONFINED SPACES AND PERMIT REQUIRED SPACES

All confined space entry activities will be conducted in accordance with OSHA standard 29CFR1926.1200, and the Clark Construction Group, LLC Procedure - Confined Space Entry. Prior to initiating confined space entry activities, a competent person must be designated, and all entry team members identified; Entry Supervisor, Attendant, Entrant.

The contractor who will require employees to enter and work in a confined space must complete the Clark Confined Space Survey form and submit it to the SSHP. The SSHP will then evaluate the space and coordinate with the appropriate party (Owner, subcontractor) to determine if the space is permit required, and if declassification is possible.

Proof of training for all employees involved in confined space/permit required confined space entry must be submitted for review and approval prior to the activity taking place.

Three (3) calendar days prior to entering any space, subcontractor will submit a request for a confined space permit to the SSHP. A confined space entry plan will accompany each request (see Subcontractor Safe Start Documents). Permit required confined space entries will, at a minimum, comply with the Department of Labor 29 CFR § 1926.1200. Non-permit required confined space entries will, at a minimum, require a confined space entry plan and AHA. Rescue procedures shall be included as part of all confined space entry plans. 911 shall not be the sole means of rescue prescribed for any confined space activity.

Additional information on confined spaces is located in Appendix C-7

HEAVY AND LIGHT EQUIPMENT

Heavy and light equipment shall be operated and maintained in accordance with manufacturer specifications.

Daily inspections will be performed by a competent person prior to equipment operation.

Proof of training, qualification, and required licenses shall be submitted to the SSHP to be kept on file.

Additional information on equipment operations is contained in Appendix B-4.

USE OF CRANES/DRILL RIGS

All cranes that will be operated on site shall have a 3rd party crane check performed as required by Clark Construction Group LLC crane policy. All deficiencies noted during the 3rd party crane check must be corrected prior to the crane being operated on site.

Prior to crane operations the crane packet required by Clark Construction Group LLC Policy Section B-02 Crane Operations, shall be completed and submitted to the Clark Water SSHP for review at least one week prior to any crane arriving on site.

Additionally, all crane/drill rig activities will be conducted in accordance with the Clark Construction Group, LLC Policy B-02 Crane Operations.

All cranes/drill rigs shall be inspected prior to use. If the crane was out of service, it must receive either certification or a complete annual inspection, whichever is applicable, prior to placement in service. The crane/drill rig operator shall conduct a daily inspection prior to start of work each shift.

All cranes with telescoping booms shall be equipped with a device to indicate clearly to the operator at all times the boom extended length, or an accurate determination of the load radius to be used during the lift shall be made prior to the lift.

Tower crane pedestals shall be designed by a registered professional engineer familiar with structural engineering. Pedestals must be built according to engineered specifications and the concrete cured to a specified strength prior to beginning erection of the tower crane.

Mobile crane operators must be qualified on the specific crane (type and capacity) that they are assigned to operate through an OSHA and/or industry recognized testing and qualification procedure. The out riggers on mobile cranes shall be fully extended and deployed to lift or support load. Base plates/supports shall be level.

Each load shall be rigged or attached independently to the hook/master link. Multiple rigging of materials (Christmas-Tree Lifting) is prohibited.

All cranes must be equipped with an operational anti two block device, **except during Driving Pile operations.**

Back-up alarms shall be operational on all cranes and tested daily.

Crane operator should fill out a daily inspection form to be turned into supervisor for documentation.

At least one hand-held or crane mounted wind speed indicator shall be on site during crane operations.

Tag lines shall be used on all lifts unless their use creates an unsafe condition.

All lifts shall be made in accordance with the manufacturer's lifting recommendations.

The use of a crane to hoist employees on a personnel platform is prohibited, except when conventional means of reaching the work location presents a greater hazard or is not possible because of structural design or worksite conditions. Supervision shall make a case-by-case evaluation to determine if an alternate method can be used. A justification for the use of crane-suspended personnel platforms shall be written into the JHA.

All cranes must follow Clarks Adverse weather condition policies, such as for wind and lighting.

The following documentation/reports are to be forwarded to the Owner's Representative:

- ☐ Copy of crane assembly and inspection reports prior to the crane being used.
  Copy of annual crane inspection report.
- ☐ Copy of crane operators certifications
- ☐ Copy of riggers and signal persons certifications

Additional information on crane operations and rigging is contained in Appendix B-2.

CRITICAL LIFT PROCEDURE

When a lift will exceed 75% of the cranes lifting capacity, lifts that will require two cranes (tandem lift), lifting of personnel or any lift involving non-routine rigging or operations a Critical Lift Plan will be prepared and signed in accordance the Clark Construction Group, LLC Critical Lift Procedure.

The Critical Lift Plan (CLP) must be reviewed and signed by all persons involved in the lift, and must include the following:

- _ The qualifications of the Critical Lift Supervisor;
- _ A description of the ground conditions, outriggers, and/or other requirements to achieve a level foundation for the lift;
- _ A list of environmental conditions that will stop the lift; and,
- _ A description of the coordination communication requirements.

The CLP must be completed before every critical or tandem lift procedure is performed.

All cranes must be equipped with Load Indicating Devices, anti-two blocks, load, and boom angle moment indicators.

Additional information on critical lift procedures is located in Appendix B-2.

HAZARDOUS MATERIAL HANDLING

Hazardous material may be encountered on this project. Additionally this project may require recycling of certain materials. The Hazardous Material/Recycling Coordinator for this project will be the Project Superintendent. He will be responsible for implementing the Recycling and Hazardous Material/Waste Handling/Disposal Procedure if required at the Quantum Loophole – 1 MGD Pumping Station Project.

In the event that contaminated soils are encountered during any phase of this project, the Hazardous Waste/Recycling Coordinator will have all work stopped in the area of the contaminated soils and will notify the owner. Soils tests will then be conducted by the owner to determine the level of contamination. Determinations will be made of how to dispose of the contaminated soils based on the soils test that have been conducted.

All subcontractors who generate hazardous waste materials during the process of building this project will share costs associated with the maintenance of this program.

Additional information on hazardous materials is located in Appendix C-12.

SPILLS

If a spill of hazardous material occurs, the following actions will be taken:

- Notify the Hazardous Material Coordinator immediately.
- Notify the Owner's Representative immediately.
- Take immediate measures to control and contain the spill within site boundaries if safe to do so.
- Keep unnecessary personnel away, isolate the hazardous area and deny entry.
- Stay upwind and keep out of low-lying areas.
- Allow no flares, smoking, or flames in hazard area.
- For liquids, keep combustibles away from the spilled materials.

SMALL DRY SPILLS

Proceed only under the direction and approval of the Hazardous Material Coordinator. Shovel contaminated materials into dry containers and cover. Use care not to make material airborne. Label the containers as to contents and remove to a secure area.

SMALL LIQUID SPILLS

Proceed only under the direction of the Hazardous Material Coordinator. Absorb the liquid with sand, clean fill, or other noncombustible absorbent material. Place contaminated material in a container, cover and label it, and remove it to a secure area.

DRINKING WATER

An adequate supply of potable water shall be provided in all places of employment.

- ☐ Cool drinking water will be provided during hot weather
- ☐ Drinking water will be dispensed by means that prevent contamination between the consumer and the source.
- ☐ Cups will be provided when drinking from portable coolers/containers. Unused disposable cups shall be kept in sanitary containers and waste receptacle shall be provided for used cups at each water container
- ☐ All drinking water should be stored in a proper location away from direct sunlight and extreme hot or cold conditions.
- ☐ Containers used to distribute drinking water shall be clearly marked "DRINKING WATER" and should not be used for other purposes. Water Containers shall be cleaned each day and each time refilled. The lid shall be taped shut and marked with the days date.

Housekeeping and Sanitation

Work areas shall be cleaned regularly of trash and debris to prevent slip/trip hazards and fire dangers.

Equipment and materials shall be stored in designated areas. Trash cans shall be placed in work areas and break areas in quantity enough to contain daily build-up. Food rubbish shall be removed from work areas regularly. Access routes and stairways shall be kept free of stored materials and debris piles.

Toilet facilities shall be made available based on the personnel on site. Toilet facilities shall be cleaned at regular intervals, and more often as needed. Hand washing and sanitizing stations shall be maintained in the toilet facility areas.

Additional information on housekeeping and sanitation is contained in Appendix B-12.

MAINTENANCE OF RECORDS

The SSHP will keep records of the actions taken to implement and maintain this APP.

Records of scheduled and unscheduled periodic inspections as well as other records including methods used to identify and evaluate jobsite conditions and work practices shall also be retained.

Records relating to the APP shall include, at a minimum, person(s) conducting the inspection or evaluation; the unsafe conditions and work practices that have been identified; and actions taken to correct the identified condition or work practice.

Records and documentation of safety and health training shall include at a minimum, the name of employee and/or employee number, date of training, training topic(s), and the name of the instructor.

ENVIRONMENTAL

Per Section 4.2.2, 4.2.3 and 4.2.4 of the Standard Operating Procedures set forth by Geo-Technical Associates Inc. per the Subject Property: Former Alcoa East alco Works Property, Frederick County, Maryland:

GTA Project No. 31201536

Date: October 28, 2022

All Infrastructure activities, Mass Grading and Construction, and Ground Water Management performed by Clark Construction, LLC will take place outside the SMA and EC. Please find Appendix 1 that contains the SOPs developed by Geo – Technical and a site map overlay to show SMA, EC and specific locations of Clark Water construction activities.

HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (HAZWOPER)

In areas where hazardous soils or conditions exist Clark will follow and institute a HAZWOPER plan. Clark will coordinate with trade partners to manage controls to be put place to protect employees and other subcontractors from hazardous materials on the jobsite. These controls will be outlined in an Activity Hazard Analysis (AHA) some of these controls include the use of continuous atmospheric monitoring through the use a calibrated 4-gas monitor testing for Oxygen concentration, Carbon Monoxide, Flammable concentration, and Hydrogen Sulfide. In addition, a photoionization detector (PID) will be used. Proper PPE will be used to include Tyvek suits, nitrile or rubber gloves, safety glasses and googles, and rubber boots. Personal hygiene stations will be set up within the Clark Limits of Disturbance to include handwash stations and changing rooms.

Based on industrial hygiene monitoring no adverse conditions are present where our employees and subcontractors will need to be enrolled in a medical surveillance program. Clark will conduct routine industrial hygiene monitoring during work activities to validate that workers will not be exposed to environmental concerns.

In addition, Clark will ensure that all employees or subcontractors that have the potential to come in to contact with Hazardous Waste will be decontaminated. All decontaminated materials will be disposed in accordance with both Local and Federal requirements.

Clark will ensure all individuals that could encounter hazardous waste be trained with a minimum of 24 hours of training and 8 hours of classroom experience. Annual refresher will be conducted as needed for applicable individuals. All employees and subcontractors entering the jobsite will be briefed on specific environmental concerns and methods to protect themselves during jobsite specific orientation.
This accident prevention plan contains provisions to address additional sections of a comprehensive HAZWOPER program as outlined in 1910.120 (B) (4) (ii).

SITE CONTROL

ACCESS

Access to the project site shall be restricted to authorized personnel. All personnel shall enter and exit through the pre-planned construction project access gates and will wear a hard hat sticker that denotes the worker has completed mandatory safety orientation training.

SITE COMMUNICATION

If the size or topography of the site is such that operations will be conducted out of continuous visual contact, a buddy system, or means of immediate voice communication (two-way radio) shall be instituted.

WARNING SIGNAGE

Appropriate caution/warning/danger signs will be posted to warn of potential hazards prior to entering the work areas and throughout the site as needed. Also, notices regarding the use of personal protective equipment (hardhats, safety glasses, etc.) shall be placed at the access points to the sites. Additional notices of specific hazardous areas shall be posted where needed.

VISITORS

This project is located at a secured location. As a result, **NO VISITORS** will be granted access unless escorted by authorized personnel. All Visitors are required to receive visitor orientation and sign visitor indemnification form.

SEVERE WEATHER

In the event of severe weather, as determined by warning and/or observation of earthquake, lightning, high winds, or heavy rain, site work shall be suspended until the event has passed. If the area of the project is under a severe weather warning issued by the National Weather Service, the SSHP shall maintain continuous observation of approaching weather.

Following a severe geological event or weather episode (including, earthquake wind, brush fires, and heavy rain), site work shall not resume until the site area has been inspected and a qualified person has determined that the site is secure.

No Cranes or any other heavy equipment should operate during sever weather conditions.

Additional information on weather response actions is contained in Appendix C-20, emergency action plan.

ORIENTATION OUTLINE

1. Emergency procedures.
2. Project work rules.
3. Incident investigation.
4. First Aid/Incident reporting.
5. Fitness for duty.
6. Lost time injury management policy.
7. Fall protection policy (6 foot).
8. Discipline policy.
9. Actions to be expected for failure to comply with safety requirements.
10. Parking and site security procedures and regulations.
11. Public protection.
12. Scaffold program and standards.
13. Hazard communication.
14. Hazardous chemical inventory list.
15. All MSDS's on site and submitted before product is used.
16. Safety recognition program.
17. Ladder safety.
18. Specific licensing requirements.
19. Subcontractor's safety audits.
20. Our written safety program.
21. Contractual obligation to comply with our safety program.
22. Respiratory protection program or requirements.
23. Fire protection.
24. Confined spaces/permits.
25. Job hazard analysis.
26. Safety meetings and documentation
27. Hazard abatement.
28. Housekeeping.
29. Project specific safety plan.
30. Designated safety representative.
31. Chain of command within the company.
32. Notification of OSHA visits.
33. Personal protective equipment policy.
34. Personal protective equipment use (including demonstration as
35. necessary).
36. Owner imposed safety requirements.
37. First aid provider identification.
38. First aid kit location.
39. Footwear/clothing/jewelry/hair policy.
40. Trenches and excavations.
41. Competent person identification.
42. Barricade/barricade tape (Yellow tape is cautionary; Red tape is mandatory).

43. Lock Out/Tag Out.
44. Hot work permits.
45. Review of the Safety and Health Handbook.
46. Rigging requirements.
47. Further safety education through Clark Net.
48. Daily SPA requirements.
49. 3rd party crane inspection

CODE OF SAFE PRACTICES

- ☐ All work shall be performed in compliance with OSHA Construction Industry Standards, the Clark Construction Group, LLC safety requirements, and other applicable federal, state, and local Safety and Health laws.
- ☐ Only equipment that is in serviceable condition, properly maintained, and equipped with all necessary safety guards and operating accessories shall be used on the Project.
- ☐ Project workers shall be fit for work, and qualified to perform all assigned tasks.
- ☐ Project workers shall strictly comply with all safety regulations and directions of the Contractor and Client.
- ☐ Workers with long hair must keep their hair tucked under their hard hat.
- ☐ Adequate supplies of all necessary personal protective clothing and equipment shall be available for employees. Protective clothing and equipment shall be approved by, or comply with, the specifications of ANSI, Underwriters Laboratories, or Factory Mutual, as appropriate.
- ☐ If respiratory protection is required, only NIOSH-approved respirators shall be used. Use of respiratory protection shall comply with OSHA. Project workers who may use respiratory protection shall have been trained and medically certified for its use.
- ☐ Project workers shall have been trained as required by the Hazard Communication Standard. All hazardous material containers shall be labeled and meet labeling requirements of the OSHA standard.
- ☐ All necessary steps shall be taken to protect Project workers from exposure to materials in excess of the OSHA Permissible Exposure Limits.
- ☐ Hearing protection devices shall be provided to and used by Project workers as appropriate.
- ☐ Safety glasses with side shields, hard-hats, long pants, sleeved shirts, and work boots are mandatory.
- ☐ Eating, drinking, and use of tobacco products are permitted only in designated areas. Use or possession of alcohol, intoxicating drugs, or firearms is prohibited.
- ☐ Use of smokeless tobacco products is strictly prohibited.
- ☐ Reasonable steps shall be taken to protect third parties from injury related to the work.
- ☐ The work area shall be maintained in an orderly manner. Accumulation of trash or debris is prohibited.

Tools, equipment, and materials used during the work shall be properly stored.

☐ Flammable gases, liquids, fuels, and solvents shall be properly used and stored to prevent fires. GFCIs shall be incorporated into all temporary wiring and flexible cords.

☐ Ladders shall be used, inspected and maintained according to manufacturers' recommendations. Portable ladders constructed of metal are prohibited.

☐ Scaffolding shall be erected and dismantled only under the direction of a competent person. Each scaffold system shall be inspected by a competent person prior to start of work.

☐ No Project worker shall be required or permitted to enter any unsecured excavation greater than five (5) feet deep.

☐ No Project worker shall be permitted or required to enter any confined space, until that space has been isolated, purged, and supplied with a safe atmosphere. A safety standby and emergency rescue capability shall be maintained for entry into a permit required confined space.

☐ Necessary emergency equipment, such as first aid kits, fire extinguishers, and eyewash solution shall be available for use by Project workers.

☐ Where Project workers may be exposed to the unexpected release of hazardous energy, a lock out/tag out program shall be applied.

☐ Horseplay, practical joking, or any other actions that jeopardize safety will not be tolerated. Running is not permitted

☐ Alcoholic beverages and non-medicinal drugs are not permitted at the project site. Employees suspected of being under the influence of alcohol or drugs will be removed from the site.

☐ Transportation and disposal of any contaminated materials shall comply with all applicable local, state, federal regulations. The generator, transporter, and disposer will address these items.

☐ Contaminated materials shall be stored in tightly closed containers in well-ventilated areas. Emergency equipment shall be located in readily accessible locations.

☐ All trenching, shoring, and excavation work must comply with Clark Construction Group, LLC safety requirements.

☐ Appropriate action to provide secure footing shall be taken at all locations where personnel will be working.

☐ Whenever solvents, cleaners, or other chemical substances are used, a properly completed Safety Data

Sheet (SDS) for the chemicals shall be available at the work site.

☐ Whenever flammable or combustible solvents are used, specific procedures for the control of flammable gases and vapors may be necessary.

☐ Tests shall be made by a qualified person to ensure that concentrations of flammable vapors in the work area do not exceed 10% of the lower explosive limit.

☐ As appropriate, equipment on site shall be bonded and grounded, spark proof, and explosion resistant.

☐ An adequate supply of fire extinguishers with a minimum rating of 20 lbs. ABC shall be strategically located throughout the work area so as to limit the travel distance required by any worker to reach the extinguisher to less than 100 linear feet.

☐ Radios (except two-way radios), tape players, or other forms of entertainment devices are prohibited within the authorized construction work zone. This includes storage yards, staging areas and other construction support work zones, which may be adjacent to the construction worksite.

☐ All activities will be performed in such a manner as to minimize or prevent the disbursement or release of any contaminants.

☐ Legible and understandable precautionary labels shall be affixed prominently to containers of contaminated scrap, waste, debris, and clothing.

☐ Transportation and disposal of any contaminated materials shall comply with all applicable local, state, federal regulations. The generator, transporter, and disposer will address these items.

☐ Contaminated materials shall be stored in tightly closed containers in well-ventilated areas. Emergency equipment shall be located in readily accessible locations.

☐ All trenching, shoring, and excavation work must comply with Clark Construction Group, LLC safety requirements.

☐ Appropriate action to provide secure footing shall be taken at all locations where personnel will be working.

Appendix F

Quarry Fill Certificate for Imported Stone

Vulcan
Materials Company
MIDEAST DIVISION

Subject: Clean Stone Cert.

Purchaser: Metro Earthworks

Address: 5601 Manor Woods
Frederick, MD

Project: Quantum Loophole

This Source of Supply Certification is to certify that to the best of my knowledge the #3 aggregate supplied out of our Frederick Quarry is free of any slag/asphalt/concrete and not contaminated with any hazardous substances or petroleum products. The stone is naturally occurring virgin aggregate and has not been reprocessed or previously used. No controlled hazardous substances or oil is used in the extraction, or production.

Date: 10/13/2023

Harry Deatrick
Harry Deatrick
Technical Services
Vulcan Materials Company