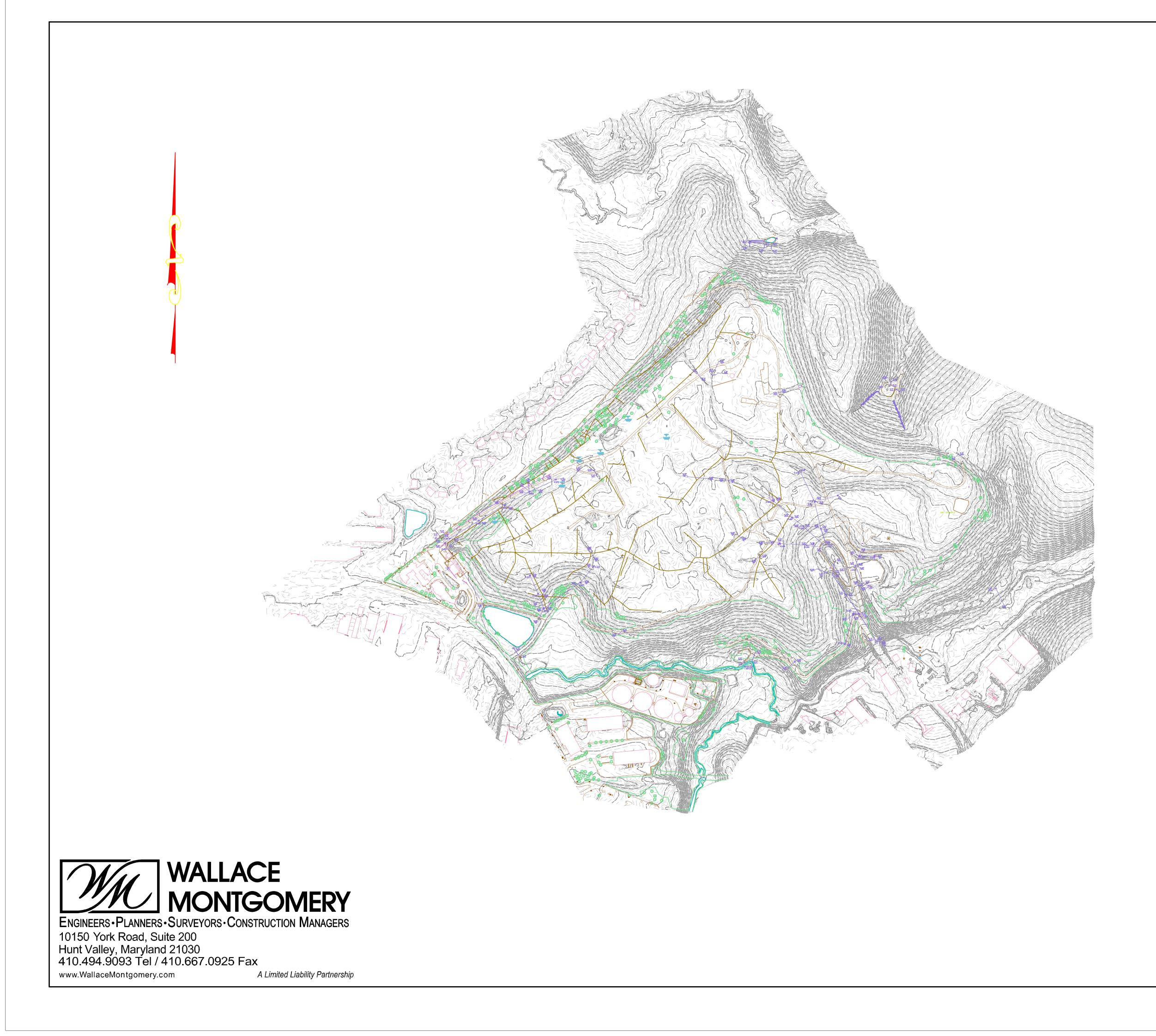
Attachment A

Topographic Survey

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GUDE LANDFILL 150 0 150 300 1"= 150' Ah Election District Montgomery County,MD Sheet 1 of 1 Project No. 218007.0001 Drawn By: DBM Checked By: EVC	TOPOGRAPHIC	C SURVEY
1"= 150'4h Election DistrictMontgomery County,MDSheet 1 of 1Project No. 218007.0001	GUDE LAN	DFILL
1"= 150'4h Election DistrictMontgomery County,MDSheet 1 of 1Project No. 218007.0001		
Sheet 1 of 1 Project No. 218007.0001		0 300
	4h Election District	Montgomery County,MD
Drawn By: DBM Checked By: EVC	Sheet 1 of 1	Project No. 218007.0001
	Drawn By: DBM	Checked By: EVC
Scale 1"=150' Date January 30. 2019	Scale 1"=150'	Date January 30. 2019

MAP LEGEND
TREE ∞ ELECT POLE
WOODS × LIGHT POLE
MANHOLE → GUY WIRE
INLET → HYDRANT
POND ○ MISC FEATURE
FENCE ● BOLLARD
→ GAS LINE → TRAFFIC SIGN
■ HAND BOX GUARDRAIL
→ LFG PIPING □TRANSFORMER



ERIC V COOPER DATE: 4-11-2019 PROFESSIONAL LAND SURVEYOR MD.#21311 (expiration date JUNE 25, 2020)

THE TOPOGRAPHICAL SURVEY SHOWN HERON ARE AN INTERPRETATION OF PHOTOGRAMETRY AND FIELD RUN SURVEYS COMPLETED ON JAN. 30, 2019, THE UNDERSIGNED WAS IN RESPONSIBLE CHARGE OF THE PREPARATION OF THIS MAP AND THE SURVEYING WORK REFLECTED IN IT. THIS MAP WAS DEVELOPED IN COMPLIANCE WITH THE REQUIREMENTS SET FORTH IN COMAR REGULATIONS 09.13.06.

Attachment B

Utility Locating Report

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EA Engineering, Science, and Technology, Inc., PBC Attn: Mark Gutberlet 225 Schilling Circle, Suite 400 Hunt Valley, Maryland 21031

November 21, 2018

Re: Report of Findings - Gude Landfill

Dear Mr. Gutberlet,

Master Locators, Inc. (ML) is pleased to provide this report regarding the geophysical investigation performed at 600 East Gude Drive in Rockville, MD. The scope of work included scanning for and marking out utilities/unknowns within approximately 30 acres of the Gude Landfill property. Approximate scope of work boundaries are included in *Attachment 1: Report Figures, Site Photos* at the end of this report.

METHODOLOGY

Underground utility data is considered Quality Level B (QLB) as defined in ASCE 38-02: Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data and is intended to show the approximate horizontal locations of existing underground utilities as marked by ML during a geophysical investigation performed within the scope of work boundaries.

ML utilized Electromagnetic (EM) and Ground Penetrating Radar (GPR) technology to perform the subsurface investigation with the following equipment.

- RD 8000 Digital Locator manufactured by Radiodetection
- A6 Tracer manufactured by Aquatronics (Spit-Box)
- Noggin SmartCart with 250MHz GPR antenna manufactured by Sensors and Software
- Carlson GPS unit

EM scanning was performed to trace all conductive utilities which were visually evident within or adjacent to the scan area. This included both active and inactive methods of locating with the RD 8000 Digital Locator. Active and inductive scans were performed on various frequencies ranging from 8 kHz to 200 kHz. Passive scans were performed on a 60 Hz frequency in a ten (10)-foot by ten (10)-foot grid over the accessible portions of the scan area.

Inductive EM scans were conducted using an A6 Tracer (Split-Box) at a frequency of 118 kHz and collected in a ten (10)-foot by ten (10)-foot grid over the accessible portions of the scan area. The A6 Tracer scans were performed to identify any potential metallic targets within the scan areas.

GPR scans were performed with a 250 MHz antenna. GPR data was collected in a five (5)-foot by five (5)-foot grid over the accessible portions of the scan area. During the scanning process, the GPR operator continuously monitored the imaging results displayed for indications of any anomalies associated with utilities or unknown targets. Any anomalies which were detected were investigated further to identify the target as a potential utility or unknown target.

The horizontal locations of utilities, utility structures, unknowns and site features (fence line, etc.) were collected using the Carlson GPS unit and included on the CAD mapping provided with this report.

Master Locators Inc. | 675 Concord Road, Glen Mills, PA 19342 800.495.4248 | masterlocators.com



RESULTS

Attachment 2: Utility Mapping contains the approximate locations of utilities and unknowns observed during the geophysical investigation. The geophysical investigation was performed within two (2) areas on landfill property. Area 1, measures approximately 28.3 acres and includes a gas utility right of way along the northwest perimeter of the landfill (gas line material unknown), the gazebo area near the model plane airport and current facility buildings all northeast of East Gude Drive. Area 2, measures approximately 1.1 acres and includes the roadway that led up the former incinerator known as Incinerator Lane.

Please note the following on the attached utility mapping:

- Utilities were marked in the field using the standard American Public Works Association (APWA) color code. Gas lines on *Attachment 2: Utility Mapping* are depicted in purple instead of yellow for better visibility when printed.
 - See Figures 2 and 3 for examples in Attachment 1: Report Figures, Site Photos.
- Utility types marked out and mapped for Areas 1 &2 include: communications; electric; gas; landfill gas, sanitary sewer; storm drainage; water and unknowns.
- To differentiate between natural gas lines and landfill gas lines, each has a dedicated line type on the attached mapping. -G-, underground gas lines are natural gas lines. -LFG-, underground landfill gas lines are associated with the landfill gas extraction lines within the landfill property boundary.
- When a feature is observed during grid scans using either GPR or EM and cannot be traced to an above ground structure it is labeled as an unknown.
- When utilities are depicted with a dash only line type (no letter identifier), field staff dotted this path in the field as the suspected path/continuation of the line based upon field observations. *See Sheets 3 and 7 for examples of this.*
- Features that have an "last locatable point" symbol (X) may continue, but due to possible site or equipment limitations, access issues, and/or unfavorable subsurface conditions this can't be determined.
- Those utilities that end with a "line continues" symbol (\sim) either intersect with the scope of work boundaries or possibly continue through an area that was inaccessible to field staff.
- The bolded lines depicted along the northern perimeter of the landfill in Area 1 were marked out by a representative from Williams as part of the one-call design ticket that was placed. Three (3) gas lines and one (1) electric line were marked by Williams using grade stakes. No other utility companies/representatives marked out utilities in response to the one-call design ticket placed.
- ML utility locators grid scanned the area containing the utilities marked out by Williams to determine if any other utilities were in this section of the scope of work. No other utilities were observed in this section using the methods described in this report. ML GPS technicians collected the horizontal locations of the grade stakes planted by the representative from Williams.
- Heavy vegetation prevented access to some sections of the scope of work. See Sheets 2, 3 and 4 for examples of this. See Figure 4 in Attachment 1: Report Figures, Site Photos for an example area.

MAP SHEET SUMMARY

Sheet

No. Description

1 Key Sheet

Project site (landfill and surrounding areas), Areas 1 & 2 scope of work boundaries, approximate landfill property line and remaining sheet locations.

2 Southwest corner of Area 1, north of East Gude Drive

Three (3) natural gas lines and one (1) electric line marked out by Williams (one-call design ticket), multiple utilities associated with site buildings including: communications; electric; natural gas; sanitary sewer; storm drainage; and water.

3 Section northeast of Sheet 2

Continuation of three (3) natural gas lines and one (1) electric line marked out by Williams (one-call design ticket), multiple utilities associated with site buildings including: electric; landfill gas, storm drainage; and water.

4 Section southeast of Sheet 2, northeast of East Gude Drive

Multiple utilities associated with site buildings on including: electric; natural gas; sanitary sewer; storm drainage; water and an unknown. Dense vegetation prevented the continuous detection of some utilities on this sheet.

5 Section southeast of Sheet 4, northeast of East Gude Drive

Suspected sanitary sewer line within scope of work boundary; dense vegetation prevented investigation in this area.

6 Section northeast of Sheet 3

Continuation of three (3) natural gas lines and one (1) electric line marked out by Williams (one-call design ticket), storm drainage and one (1) landfill gas line (mark out was limited for this line, both ends of the line have the last locatable point symbol).

7 Section northeast of Sheet 6

Continuation of three (3) natural gas lines and one (1) electric line marked out by Williams (one-call design ticket), continuation of storm drainage, and landfill gas lines. A portion of the landfill gas line is marked as "suspected location" (dashed line type without LFG) to where an above ground pipe structure was observed in the field.

8 Section northeast of Sheet 7

Continuation of three (3) natural gas lines and one (1) electric line marked out by Williams (one-call design ticket), two (2) storm drainage lines running below landfill roadways and water lines associated with water fountains. "X" indicates last locatable point, ML field staff did not observe a feature or signal beyond the location of "X" but the lines may continue.

9 Section northeast of Sheet 8

Continuation of three (3) natural gas lines and one (1) electric line marked out by Williams (one-call design ticket). These utility lines continue beyond scope of work.

10 North side of Area 2, Incinerator Road

Storm drainage lines, an unknown and approximate location of an observed stream running below the road. Base map contains a surface structure not observed during the field investigation. ML suspects that the structure is either buried or possibly mis-mapped; feature may be storm drainage manhole nearby mapped by ML.

11 South side of Area 2, Incinerator Road

Multiple utilities observed, features may be associated with existing or previous structures surrounding the scope of work and include electric, natural gas, storm drainage and unknowns. Unknowns may be associated with abandoned utilities.

CONCLUSIONS

Utilities observed and marked in the field were identified either by direct connection to utility structure at the surface or traced to a termination point at utility structure. Unknowns were marked out during the collection of grid scans within the scope of work. The unknowns were not identified because they could not be traced to a utility surface structure.

ML recommends non-destructive vacuum excavation to expose these utilities at their last locatable point to determine where they terminate and possible investigation of the unknowns to further attempt to identify their utility type and termination point.

As utility locations are approximate, if precise locations and depths of utilities are needed, ML can employee vacuum excavation to determine this information on the utilities depicted in the attached mapping.

Please reach out to us with any questions regarding the contents of this report.

Sincerely,

Crystal Gardener Project Manager/Geologist

ATTACHMENTS

Attachment 1: Report Figures, Site Photos Attachment 2: Utility Mapping

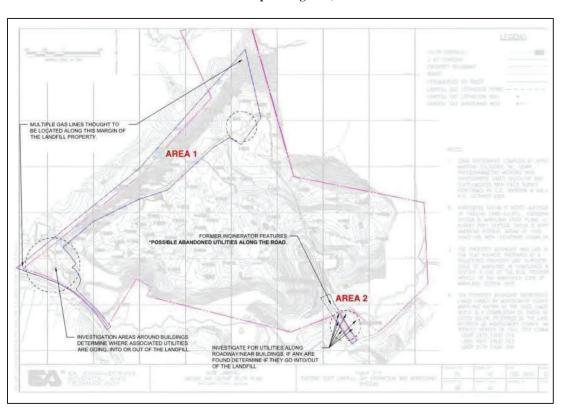




Figure 1: Scope of work includes areas bound by the blue outlines, Area1 and Area 2.

Client Provided Information: 100 foot ROW easement includes Williams Gas/Trans-continental Natural Gas Pipelines (near landfill side). 25-50 foot ROW easement contains Columbia Gas Pipeline and Fiber Optic Line (near community side).



Figure 2: Example of field mark out, picture depicts a section in Area 1 (near homeless shelter) where two (2) electric lines cross over a water and storm drainage lines.



Attachment 1: Report Figures, Site Photos

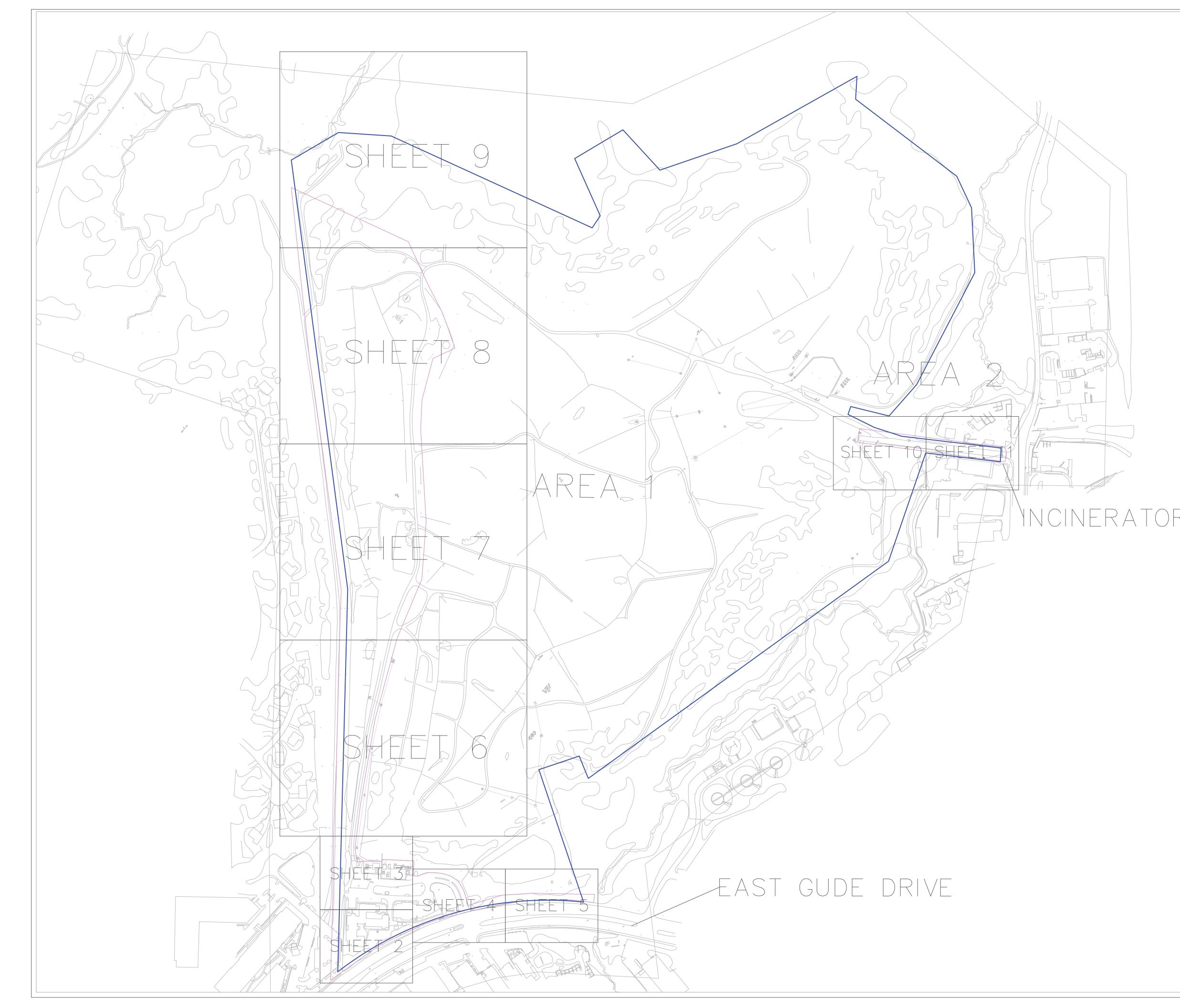
Figure 3: Example of field mark out, picture depicts a congested section in Area 1 (near homeless shelter) where three (3) electric, two (2) communication and one (1) water line converge.

Attachment 1: Report Figures, Site Photos

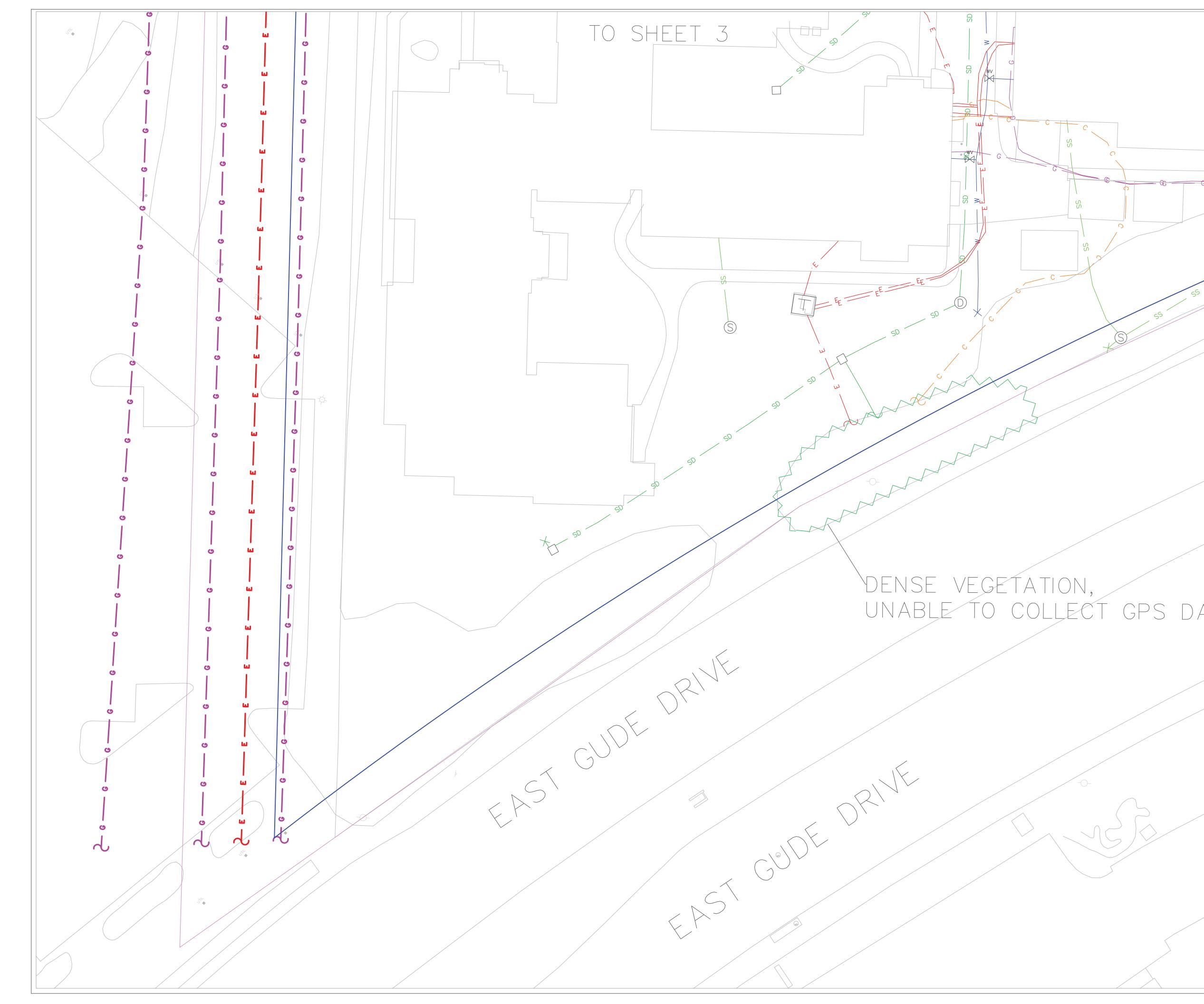


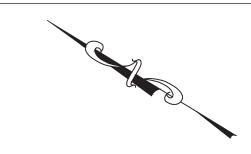
Figure 4: Section of Area 1 on Sheet 2 where the communication, electric and storm drainage intersect the area of heavy vegetation called out on the utility mapping.

Attachment 2: Utility Mapping



	NOTES:					
	1. UNLESS OTHERWISE NOTED UNDERGROUND UTILITY DATA IS CONSIDERED QUALITY LEVEL B (QLB) AS DEFINED IN ASCE 38–02: STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXI SUBSURFACE UTILITY DATA AND IS INTENDED TO SHOW THE APPRO HORIZONTAL LOCATIONS OF EXISTING UNDERGROUND UTILITIES AS M	1. UNLESS OTHERWISE NOTED UNDERGROUND UTILITY DATA IS CONSIDERED QUALITY LEVEL B (QLB) AS DEFINED IN ASCE 38–02: STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA AND IS INTENDED TO SHOW THE APPROXIMATE HORIZONTAL LOCATIONS OF EXISTING UNDERGROUND UTILITIES AS MARKED BY MASTER LOCATORS DURING A GEOPHYSICAL INVESTIGATION PERFORMED				
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	3. AS THE BASE FILE FOR THIS PROJECT WAS NOT GEO-REFEREN MASTER LOCATORS SURVEYED IN FEATURES PRESENT BOTH IN THE AND ON THE BASE MAP IN ORDER TO OVERLAY THE APPROXIMATE UTILITY LOCATIONS. MASTER LOCATORS IS NOT RESPONSIBLE FOR VALIDITY OR POSITIONS OF STRUCTURES PRESENT IN THE CLIENT-PROVIDED BASE MAP.	FIELD				
	4. ALL UTILITY LOCATIONS SHOWN ON THIS PLAN ARE FOR REFER ONLY. THIS PLAN SHOULD NOT BE USED FOR CONSTRUCTION OR DE PURPOSES AND MASTER LOCATORS IS NOT RESPONSIBLE FOR DAMA UTILITIES RESULTING FROM ANY CONSTRUCTION WORK BASED ON TH PLAN.	ESIGN AGE TO				
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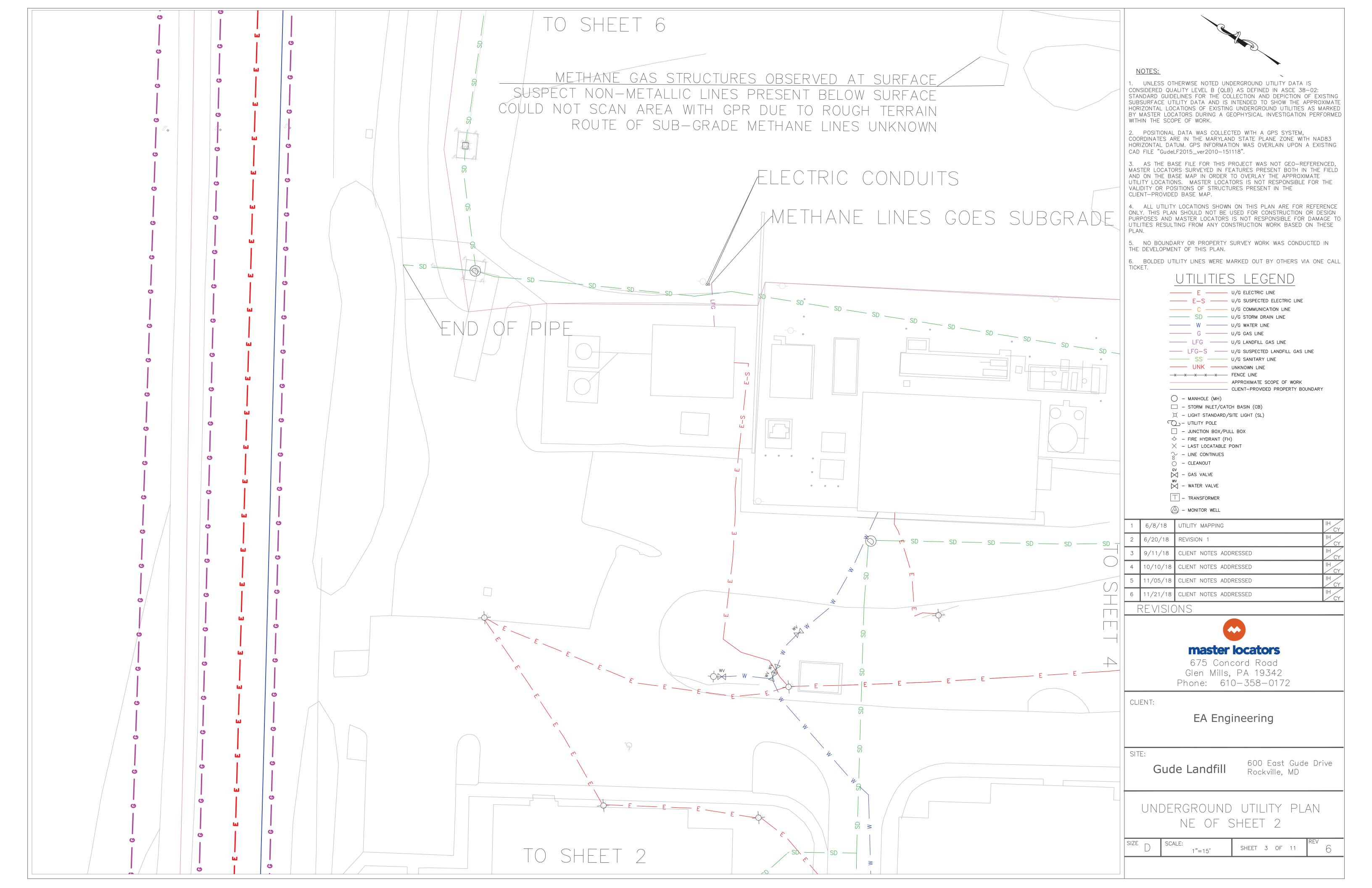
2. POSITIONAL DATA WAS COLLECTED WITH A GPS SYSTEM, COORDINATES ARE IN THE MARYLAND STATE PLANE ZONE WITH NAD83 HORIZONTAL DATUM. GPS INFORMATION WAS OVERLAIN UPON A EXISTING CAD FILE "GudeLF2015_ver2010-151118".

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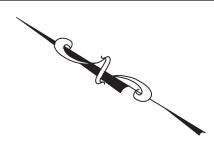






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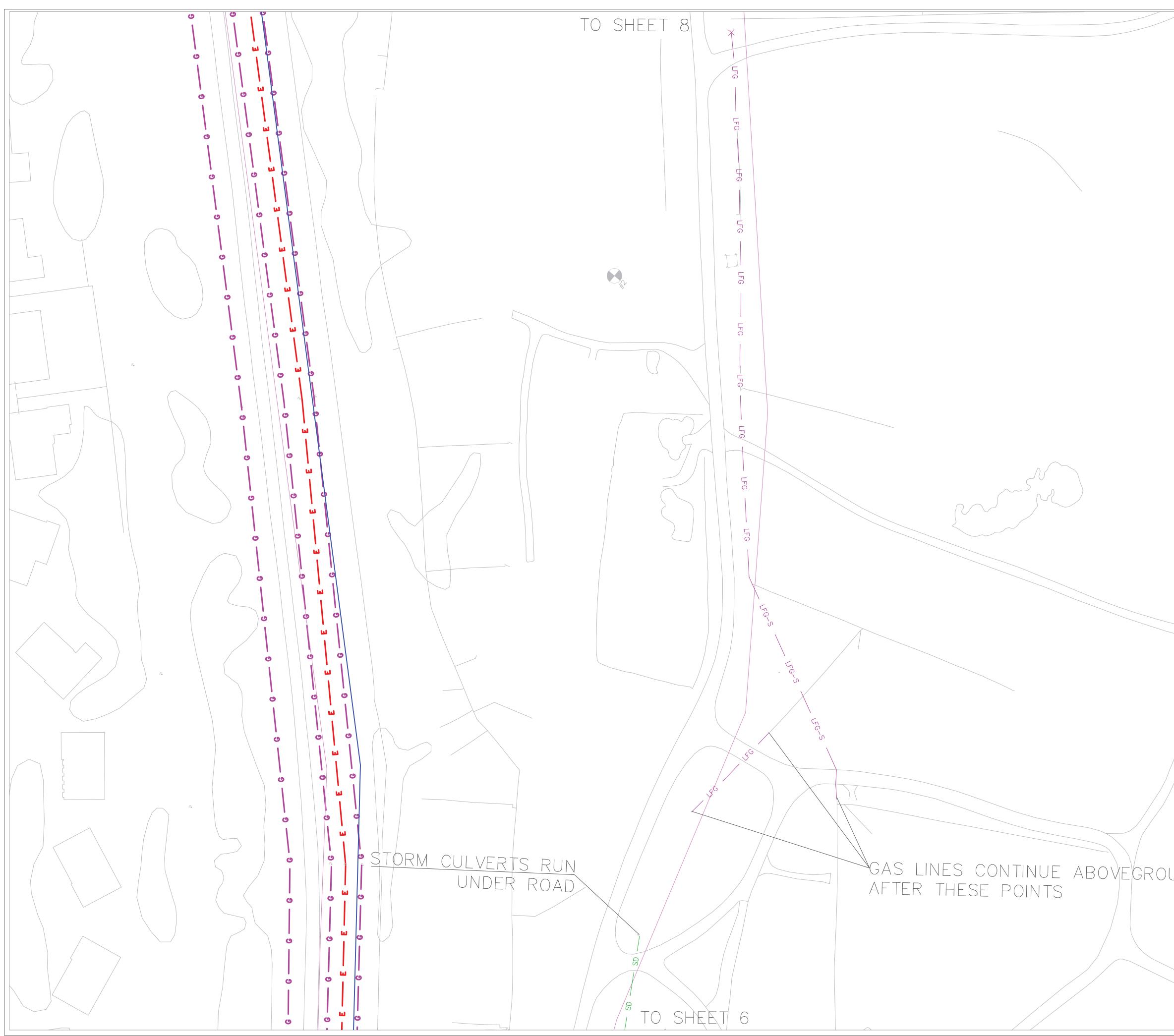
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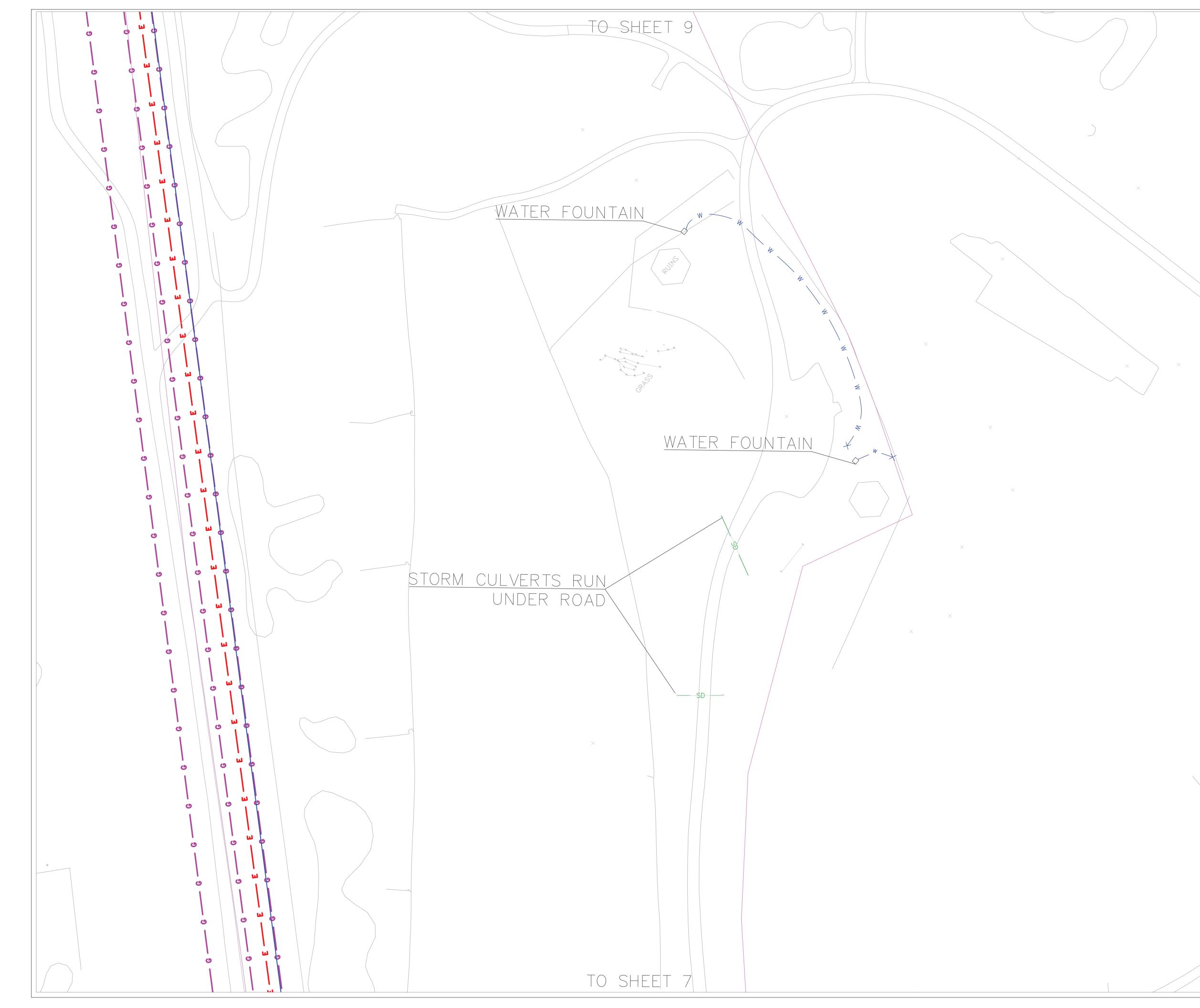
5. NO BOUNDARY OR PROPERTY SURVEY WORK WAS CONDUCTED IN THE DEVELOPMENT OF THIS PLAN.

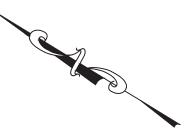
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<u>NOTES:</u>

1. UNLESS OTHERWISE NOTED UNDERGROUND UTILITY DATA IS CONSIDERED QUALITY LEVEL B (QLB) AS DEFINED IN ASCE 38-02: STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA AND IS INTENDED TO SHOW THE APPROXIMATE HORIZONTAL LOCATIONS OF EXISTING UNDERGROUND UTILITIES AS MARKED BY MASTER LOCATORS DURING A GEOPHYSICAL INVESTIGATION PERFORMED WITHIN THE SCOPE OF WORK.

2. POSITIONAL DATA WAS COLLECTED WITH A GPS SYSTEM, COORDINATES ARE IN THE MARYLAND STATE PLANE ZONE WITH NAD83 HORIZONTAL DATUM. GPS INFORMATION WAS OVERLAIN UPON A EXISTING CAD FILE "GudeLF2015_ver2010-151118".

3. AS THE BASE FILE FOR THIS PROJECT WAS NOT GEO-REFERENCED, MASTER LOCATORS SURVEYED IN FEATURES PRESENT BOTH IN THE FIELD AND ON THE BASE MAP IN ORDER TO OVERLAY THE APPROXIMATE UTILITY LOCATIONS. MASTER LOCATORS IS NOT RESPONSIBLE FOR THE VALIDITY OR POSITIONS OF STRUCTURES PRESENT IN THE CLIENT-PROVIDED BASE MAP.

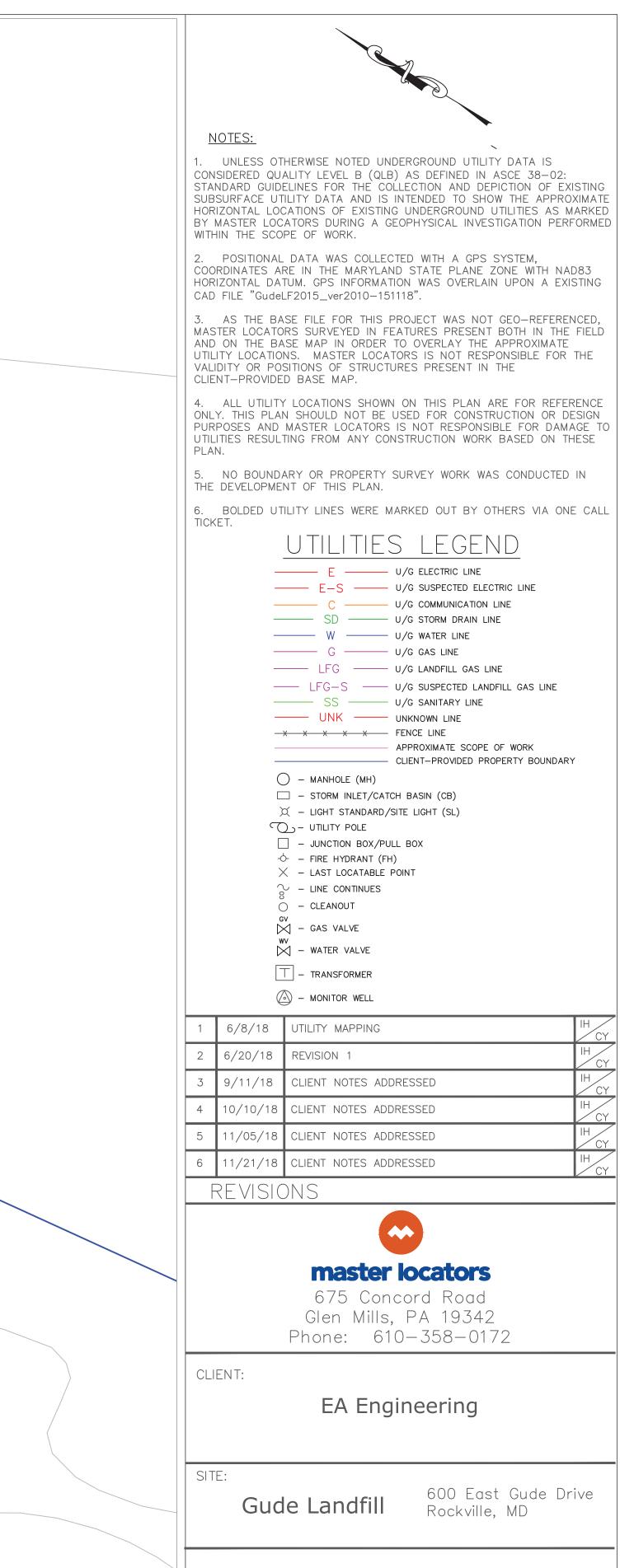
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5. NO BOUNDARY OR PROPERTY SURVEY WORK WAS CONDUCTED IN THE DEVELOPMENT OF THIS PLAN.

6. BOLDED UTILITY LINES WERE MARKED OUT BY OTHERS VIA ONE CALL

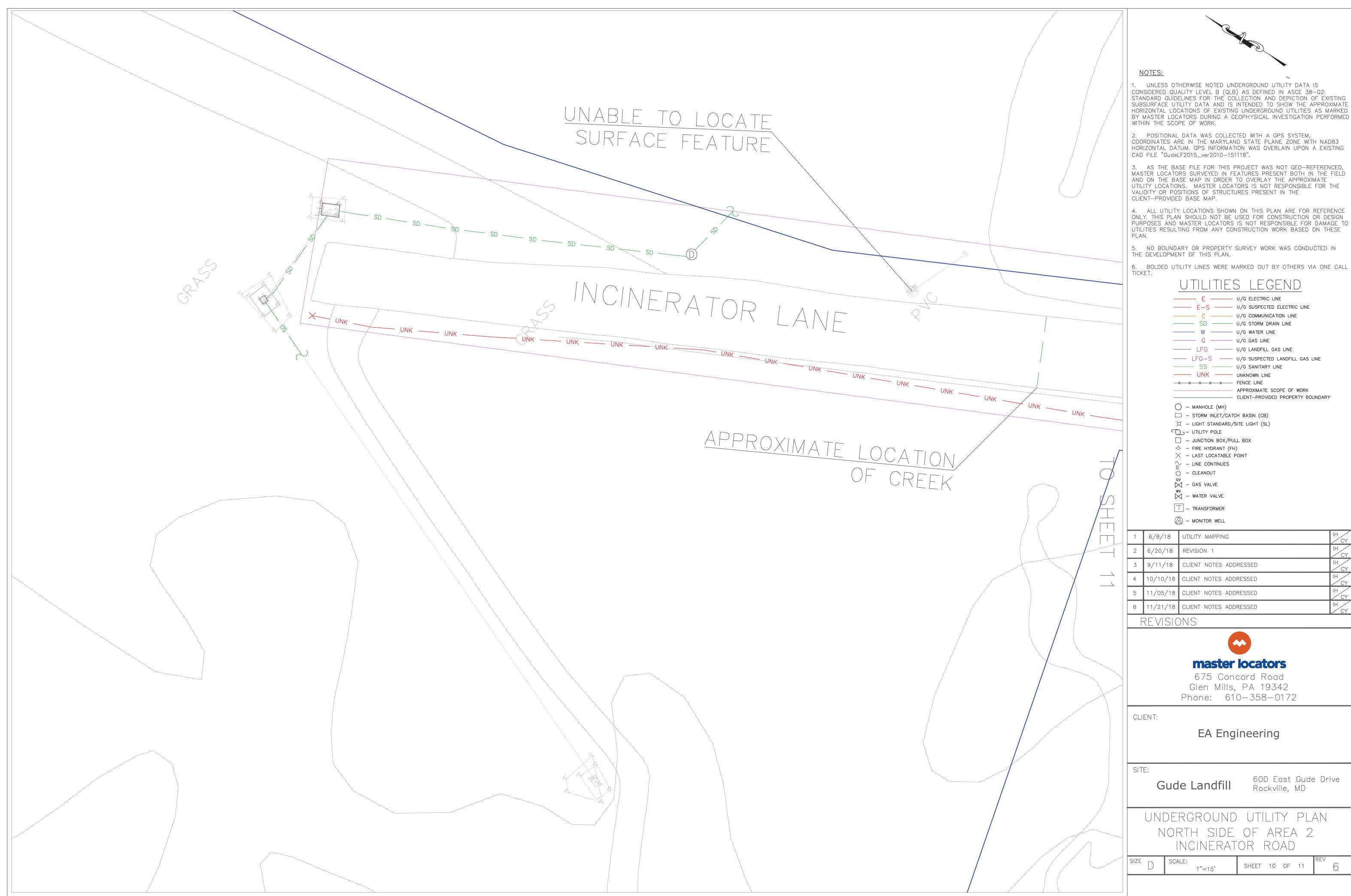
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Attachment C

Geotechnical Evaluation

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September 10, 2018

Mr. Mark Gutberlet, PE Project Manager EA Engineering, Science, and Technology, Inc., PBC 225 Schilling Circle, Suite 400 Rockville, MD 20850

RE: Geotechnical Evaluation Gude Landfill Rockville, Maryland RBB Project No. 16943-0

Dear Mr. Gutberlet:

The Robert B. Balter Company is pleased to submit this geotechnical evaluation report for the subject project. The purpose was to assess the existing soil cap condition and provide recommendation regarding soil reuse.

Project information provided to us by various parties helped form the basis for our recommendations. If any of the project information discussed in this report differs from the actual proposed construction, we should be contacted to re-evaluate the recommendations provided herein and provide revisions if necessary.

We have appreciated this opportunity to be of service. If you have any questions regarding this report, or if we can assist you in any way, please do not hesitate to call our office.

Sincerely,

THE ROBERT B. BALTER COMPANY

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, 2326/, Expiration Date: 06/25/2020

James M. Bailey, E.I.T. Geotechnical Engineer

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- Table 3 Laboratory Test Results
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Plate 2 – Boring Location Plan

APPENDICES

A – Boring Logs

B - Laboratory Soils Test Results



1.0 INTRODUCTION

1.1 General

The proposed project will consist of a new toupee cap for the Gude Landfill, as well as an analysis of the stability of the site as it pertains to future developments, such as potential access roads, parking areas, and new facilities.

1.2 Authorization

The geotechnical evaluation was authorized by EA, based on our September 28, 2017 *Revised Proposal for Geotechnical Evaluation*.

1.3 Scope

The scope of the geotechnical evaluation included the following: site reconnaissance, subsurface sampling and testing, geotechnical laboratory testing, engineering evaluation and report preparation.

1.4 Summary of Recommendations

Cap Fill Soil Reuse	The existing site cap fill soils are expected to be suitable for reuse. However, laboratory testing indicated that site soils are presently in excess of the optimum moisture content and may require drying before placement. We would expect the moisture content of the existing fill soils to change over time.
Topsoil	The current site topsoil was only encountered sporadically, with most plant

Topsoil The current site topsoil was only encountered sporadically, with most plant covering growing in the fill soils rather than a distinct topsoil stratum. It is unlikely to be cost-effective to salvage for reuse as topsoil

2.0 PROJECT DESCRIPTION

2.1 Site Conditions

The project is located at 600 East Gude Drive, Rockville, Maryland. The site is bordered to the northwest by Gude Trail, followed by a residential development, to the northeast by a heavily forested area, to the southeast by a mixed commercial/retail development, and to the southwest by East Gude Drive followed by mixed commercial/retail development. The site is currently occupied by the closed Gude MSW Landfill including a gas energy production facility and is currently being used as a radio-controlled (RC) model airplane recreational area. A Vicinity Map is shown on Plate 1, attached.

2.2 Project Information

The proposed project will consist of the reconstruction of the landfill cap. The purpose of this investigation was to determine the depth of the existing cap and to determine the potential for reuse of the existing cap soils.

2.3 Site Geology

According to the <u>National Geologic Map Database</u> provided by USGS, the subject site is underlain by the Wissahickon Formation. This formation is known to consist of Muscovitechlorite-albite schist, muscovite-chlorite schist, chloritoid schist, and quartzite; intensely folded and cleaved.

3.0 EVALUATION PROGRAM

3.1 Subsurface Explorations

The subsurface exploration program for this study included a total of 128 new Test Pits, labeled TP-200 to TP-335, with the exclusions of TP-296, TP-297, TP-300, TP-306, TP-313, TP-316 and TP-328. These test locations were not performed due to time constraints. The locations for the test pits were selected by EA and located in the field by Balter using standard taping procedures and are assumed accurate to within 10-15 feet. Additionally, longitude and latitude coordinates were recorded by cell phone GPS for each test pit location and are assumed accurate to within 10 to 15 feet. Prior to the start of the test pit operations, the test pits were cleared for utilities by Miss Utility. The attached **Plate 2, Boring Location Plan,** indicates the approximate as-dug locations of the test pits.

The test were advanced to depths ranging from 1.5 feet to 8 feet below the existing ground surface using a Case 580 N backhoe. During the test operations, bulk samples of representative soils from the upper regions of the soils were recovered for laboratory evaluation. Following completion, the test pit locations were backfilled with landfill garbage at the bottom and soils on top lightly compacted with the backhoe bucket. After backfill, all test pits were strawed and seeded.

All test pits were screened for oxygen levels and combustible gases as per the site Health and Safety Plan.

The subsurface data obtained from the recent explorations are presented in log form in Appendix A.

The depths at which water was observed in the test were recorded upon completion. The method of classification used in preparing the strata descriptions is based on our interpretation of the Unified Soils Classification System (USCS).

Test pit logs show the estimated general soil classifications and the <u>assumed</u> boundaries between soil types. The actual boundaries in the field could vary significantly from those assumed for the logs. It is noted that the subsurface data shown on the figures are an integral portion of this report. Separation of the figures from the remainder of the report may lead to misinterpretation of the data by others.

3.2 Laboratory Testing Program

Selected samples were subjected to laboratory analyses to estimate their classifications according to the Unified Soils Classification System. This testing included moisture content determination, sieve gradation analyses, and Atterberg limits determinations. The bulk samples were subjected to evaluation of their compaction properties by AASHTO T-180 (Modified Proctor).

The results of our laboratory testing are presented in Appendix B and are summarized in **Table 1** of Section 4.2 Subsurface Materials.

4.0 SUBSURFACE CONDITIONS

4.1 General

This section provides a description of the estimated subsurface conditions encountered at the borings at the time of drilling. Significant variations may occur outside specific test locations.

4.2 Subsurface Materials

4.2.1 Surficial Materials

Topsoil - Topsoil was only encountered in borings TP-201, TP-202, TP-203, TP-254, TP-255, TP-256, TP-257, TP-258, TP-259, and TP-263 to depths ranging between 1 inch and 4.0 inches. The term "topsoil," as used in this report refers to surface soils having an apparently significant organic content, based only on visual estimates in the field. It does not imply that the subject materials meet the requirements or specifications for topsoil set by any particular organization or agency. Plant growth was present across the landfill, however the growth appears to be within the fill soils rather than within a distinct topsoil layer.

4.2.2 Existing Cap Fill Soils

Fill soils associated with the existing landfill cap were found to generally consist of Sand and Silt mixtures (SM, ML) and Sand and Clay mixtures (SC), and Clays (CL) with significant amounts of gravel and significant amounts of cobbles and boulders encountered in some borings. Some borings encountered crushed stone (CR-6) layers within the soil cap. Existing cap fill soils extended to depths ranging between 1.5 feet and 8 feet. Test pits TP-279, TP-293, and TP-298 terminated in the existing cap soils (i.e. they were not fully penetrated). The existing cap fill depths for each test pit are presented on the following page in Table 1.

Table 1 – Existing Cap Fill Soll Depths					
Test Pit	Cap Thickness	Test Pit	Cap Thickness	Test Pit	Cap Thickness
TD 200	(ft)	TD 242	(ft)	TD 200	(ft)
TP-200	NA	TP-243	1.3	TP-286	3.0
TP-201	NA	TP-244	1.0	TP-287	6.5
TP-202	NA	TP-245	1.3	TP-288	2.3
TP-203	NA	TP-246	3.8	TP-289	4.3
TP-204	2.0	TP-247	3.3	TP-290	2.7
TP-205	5.0	TP-248	1.5	TP-291	3.5
TP-206	2.0	TP-249	3.0	TP-292	1.5
TP-207	2.0	TP-250	1.8	TP-293	NP
TP-208	5.0	TP-251	1.0	TP-294	4.0
TP-209	0.9	TP-252	1.5	TP-295	5.0
TP-210	2.5	TP-253	5.5	TP-298	NP
TP-211	1.7	TP-254	3.9	TP-299	2.0
TP-212	1.7	TP-255	3.3	TP-301	5.8
TP-213	2.3	TP-256	4.8	TP-302	2.0
TP-214	3.0	TP-257	1.9	TP-303	4.3
TP-215	5.3	TP-258	4.0	TP-304	1.8
TP-216	2.3	TP-259	6.0	TP-305	3.3
TP-217	4.0	TP-260	4.0	TP-307	3.5
TP-218	4.0	TP-261	6.0	TP-308	3.5
TP-219	4.3	TP-262	2.0	TP-309	3.0
TP-220	3.0	TP-263	6.0	TP-310	1.0
TP-221	1.3	TP-264	3.0	TP-311	1.6
TP-222	1.5	TP-265	3.0	TP-312	3.5
TP-223	0.9	TP-266	2.3	TP-314	3.5
TP-224	2.3	TP-267	2.0	TP-315	1.3
TP-225	0.3	TP-268	3.0	TP-317	3.2
TP-226	1.5	TP-269	2.5	TP-318	2.5
TP-227	2.0	TP-270	3.0	TP-319	1.5
TP-228	3.5	TP-271	2.0	TP-320	3.9
TP-229	5.3	TP-272	3.5	TP-321	1.5
TP-230	2.7	TP-273	6.5	TP-322	2.3
TP-231	5.0	TP-274	4.0	TP-323	4.0
TP-232	3.0	TP-275	3.5	TP-324	2.2
TP-233	2.2	TP-276	3.0	TP-325	2.5
TP-234	3.3	TP-277	1.8	TP-326	3.0
TP-235	2.0	TP-278	2.8	TP-327	3.3
TP-236	2.7	TP-279	NP	TP-329	2.3
TP-237	3.5	TP-280	5.5	TP-330	6.0
TP-238	1.7	TP-281	3.5	TP-331	3.5
TP-239	3.8	TP-282	4.0	TP-332	3.5
TP-240	2.3	TP-283	5.5	TP-333	2.0
TP-241	3.0	TP-284	3.8	TP-334	5.5
TP-242	3.0	TP-285	3.5	TP-335	2.3

Table 1 – Existing Cap Fill Soil Depths

Notes: NA = Cap penetrated but no trash encountered; NP = Cap not penetrated

4.2.3 Landfill Trash

Landfill Trash was encountered beneath the existing cap soils in all locations with the exception of test pits TP-200, TP-201, TP-202, TP-203, TP-279, TP-293, and TP-298. The landfill trash generally consisted of various types of debris intermixed with varying amounts of soils. The depth to trash for each test pit are presented on the following page in Table 1.

4.2.4 Residual Soils

Residual soils were encountered beneath the existing cap fill soils in Test Pits TP-200 through TP-203. These soils generally consisted of clay and sand mixtures (USCS: CL) with varying amounts of gravel and extended to the depth of termination where encountered. No landfill trash was encountered in these test pits.

4.2.5 Environmental Screenings

No Combustible Gas or Oxygen readings exceeding the requirements in the Health and Safety Plan were noted during the investigation. All oxygen readings were noted as 20.9% with the exception of test pits performed during a period of precipitation in which slightly lower oxygen levels were noted. It is possible that the precipitation was the cause of the lower level of oxygen. The results of the screening for oxygen and LELs are presented below.

Test Pit	O ₂ (%)	LEL (%)	Test Pit	O2(%)	LEL (%)	Test Pit	O ₂ (%)	LEL (%)
TP-200	20.9	0	TP-243	20.3	0	TP-286	20.9	0
TP-201	20.9	0	TP-244	20.6	0	TP-287	20.9	0
TP-202	20.9	0	TP-245	20.9	0	TP-288	20.9	0
TP-203	20.9	0	TP-246	20.9	0	TP-289	20.9	0
TP-204	20.9	0	TP-247	20.9	0	TP-290	20.9	0
TP-205	20.9	0	TP-248	20.9	0	TP-291	20.9	0
TP-206	20.9	0	TP-249	20.9	0	TP-292	20.9	0
TP-207	20.9	0	TP-250	20.6	0	TP-293	20.9	0
TP-208	20.9	0	TP-251	20.9	0	TP-294	20.9	0
TP-209	20.9	0	TP-252	20.9	0	TP-295	20.9	0
TP-210	20.9	0	TP-253	20.9	0	TP-298	20.9	0
TP-211	20.9	0	TP-254	20.9	0	TP-299	20.9	0
TP-212	20.9	0	TP-255	20.9	0	TP-301	20.9	0

 Table 2 – Environmental Monitoring Results

Notes: $O_2 = Oxygen; LEL = Lower Explosive limit$

	Table 2 – Environmental Monitoring Results (cont.)									
TP-213	20.9	0	TP-256	20.9	0	TP-302	20.9	0		
TP-214	20.9	0	TP-257	20.9	0	TP-303	20.9	0		
TP-215	20.9	0	TP-258	20.9	0	TP-304	20.9	0		
TP-216	20.9	0	TP-259	20.9	0	TP-305	20.9	0		
TP-217	20.9	0	TP-260	20.9	0	TP-307	20.9	0		
TP-218	20.9	0	TP-261	20.9	0	TP-308	20.9	0		
TP-219	20.9	0	TP-262	20.9	0	TP-309	20.9	0		
TP-220	20.9	0	TP-263	20.9	0	TP-310	20.9	0		
TP-221	20.9	0	TP-264	20.9	0	TP-311	20.9	0		
TP-222	20.9	0	TP-265	20.9	0	TP-312	20.9	0		
TP-223	20.9	0	TP-266	20.9	0	TP-314	20.9	0		
TP-224	20.9	0	TP-267	20.9	0	TP-315	20.9	0		
TP-225	20.9	0	TP-268	20.9	0	TP-317	20.9	0		
TP-226	20.9	0	TP-269	20.9	0	TP-318	20.9	0		
TP-227	20.9	0	TP-270	20.9	0	TP-319	20.9	0		
TP-228	20.9	0	TP-271	20.9	0	TP-320	20.9	0		
TP-229	20.9	0	TP-272	20.9	0	TP-321	20.9	0		
TP-230	20.9	0	TP-273	20.9	0	TP-322	20.9	0		
TP-231	20.9	0	TP-274	20.9	0	TP-323	20.9	0		
TP-232	20.9	0	TP-275	20.9	0	TP-324	20.9	0		
TP-233	20.9	0	TP-276	20.9	0	TP-325	20.9	0		
TP-234	20.6	0	TP-277	20.9	0	TP-326	20.9	0		
TP-235	20.6	0	TP-278	20.9	0	TP-327	20.9	0		
TP-236	20.6	0	TP-279	20.9	0	TP-329	20.9	0		
TP-237	20.9	0	TP-280	20.9	0	TP-330	20.9	0		
TP-238	20.9	0	TP-281	20.9	0	TP-331	20.9	0		
TP-239	20.9	0	TP-282	20.9	0	TP-332	20.9	0		
TP-240	20.9	0	TP-283	20.9	0	TP-333	20.9	0		
TP-241	20.4	0	TP-284	20.9	0	TP-334	20.9	0		
TP-242	20.3	0	TP-285	20.9	0	TP-335	20.9	0		

Table 2 – Environmental Monitoring Results (cont.)

Notes: $O_2 = Oxygen; LEL = Lower Explosive limit$

4.2.7 Ground Water Conditions

Static groundwater was not observed in any of the test pits. Subsurface water levels will fluctuate with changes in rainfall and runoff, construction and development activities, and other causes. Future groundwater levels across the site should be expected to vary from those noted during the recent exploration program.

4.2.8 Laboratory Test Results

The completed laboratory index tests performed on samples of the existing cap fill soils are summarized on the following Table 1 - Laboratory Test Results. The laboratory results are presented in graphic form in **Appendix B**.

. .	Sample	USCS	In-Place		tterber _i Limits	g	- #200	Modified Proctor ⁽¹⁾		
Boring	Depth (ft)	Class.	Moisture (%)	LL	PL	PI	Sieve (%)	MDD (pcf)	OMC (%)	
TP-208	0.0 - 2.0	SM	27.6	36	26	10	48	118.7	13.3	
TP-215	0.0 - 2.0	ML	29.8	36	25	11	62	115.0	14.4	
TP-228	0.0 - 2.0	ML	26.3	40	27	13	71	112.9	15.5	
TP-231	0.0 - 2.0	ML	28.9	34	24	10	62	118.2	13.6	
TP-241	0.0 - 2.0	ML	29.7	38	31	7	52	121.7	9.0	
TP-253	0.0 - 2.0	SM	24.1	35	29	6	41	119.4	12.4	
TP-258	0.0 - 2.0	ML	26.0	37	26	11	60	115.8	13.8	
TP-259	0.0 - 2.0	ML	31.0	49	37	12	54	108.4	17.8	
TP-263	0.0 - 2.0	SM	31.0	36	30	6	41	117.6	10.5	
TP-273	0.0 - 2.0	SM	24.3	30	24	6	49	121.7	12.0	

Table 3 – Laboratory Test Results

Notes: ⁽¹⁾ Modified Proctor performed in accordance with AASHTO T-180; MDD = Maximum Dry Density, OMC = Optimum Moisture Content

5.0 EVALUATION AND RECOMMENDATIONS

5.1 Topsoil Reuse

Generally, topsoil was encountered sporadically, with most plant covering growing directly in the existing fill soils with no distinct topsoil stratum. As such, the existing topsoil is not expected to be suitable for reuse as topsoil, since it is likely not cost effective to collect. However, it could be mixed with the existing cap fill soils for reuse with them.

5.2 Cap Fill Soil Reuse

The site soils are suitable for reuse as controlled compacted fills. It should be noted that the fill materials may contain minor amounts of trash debris however these are not expected to affect the reusability of the soils. Fill placed at any location requiring stable support or minimal settlement shall be constructed as controlled compacted fill. Compacted fill should be placed in relatively horizontal 8-inch loose lifts. Each lift should be uniformly and evenly bladed and mixed during spreading to ensure uniformity of the material in each layer. Each layer should be compacted to a minimum of 95 percent of the Modified Proctor maximum dry density as determined by AASHTO T-180. The moisture content of the materials shall be maintained such that the required degree of compaction can be obtained.

If fills are to be placed on slopes, the original ground should be deeply scarified, or where slopes are steeper than 5 horizontal to 1 vertical, the slope should be stepped or benched, when considered necessary by the Geotechnical Engineer, in order that the placement of fill may be accomplished in horizontal lifts.

5.3 Compaction Moisture Contents

It was noted that the measured natural moisture contents were both higher than the optimum moisture values for most efficient compaction. As a result, drying of excessively wet soils by special manipulation (aerating, discing, etc.) will be required in order to achieve the specified degree of compaction. However it should also be noted that the investigation took place during a period of particularly active precipitation, and the moisture contents obtained may not be indicative of more typical site conditions.

Wet weather could exacerbate the potential compaction difficulties. Cement or lime modification, or mixing with drier or more granular soils, or other methods, could also be used to improve wet or unstable soils at the time of compaction. If earthwork operations are performed during the winter months, the contractor must not work with frozen soils.

5.4 Weather Conditions

Weather (rainfall and freezing) has a huge influence on site earthwork, foundations, and concrete placement. Average monthly weather data reported by the nearest National Oceanic and Atmospheric Administration (NOAA) station, located within Baltimore, provide an insight to the local temperature and precipitation conditions.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Precipitation ¹ (in.)	2.84	2.32	3.56	2.99	3.89	3.43	3.85	3.74	3.98	3.16	3.02	3.03	39.81
Below Freezing Days	25	21	14	3	*	0	0	0	0	2	11	21	97

Table 4 – Baltimore City NOAA station

Source: National Oceanic and Atmospheric Administration, minimum 30-year reporting period ¹Adjusted precipitation to reflect rainfall only (excludes frozen precipitation- pellets, sleet and hail). *Not reported

According to NOAA, the typical monthly precipitation for the reporting station averages from 2.32 inches in February to 3.98 inches in September. The number of days experiencing freezing temperatures varied from 2 days in October to 25 days in January.

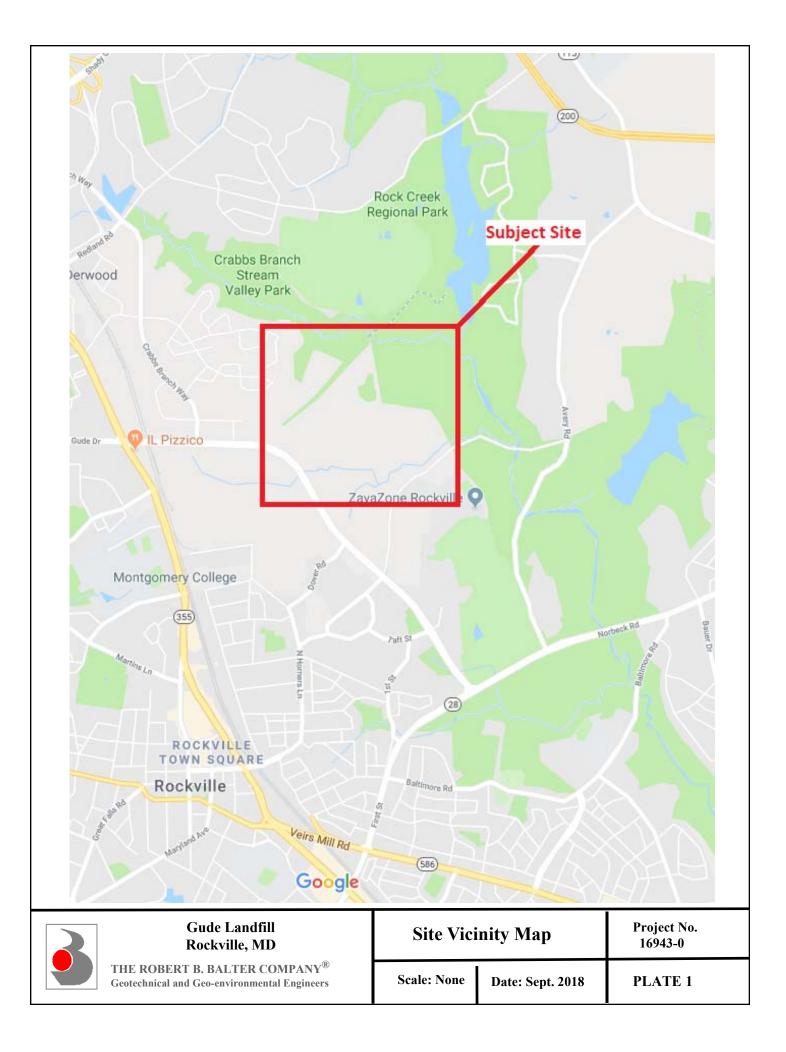
6.0 GEOTECHNICAL OBSERVATION AND TESTING

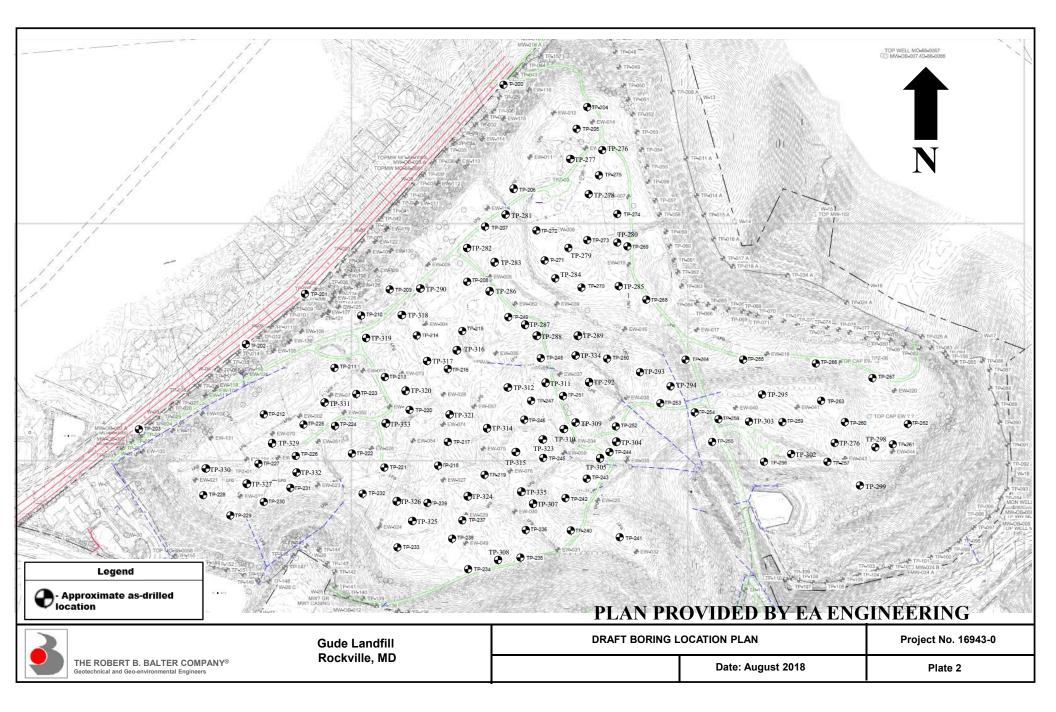
As variations in soil conditions can be expected to some degree on any project, it is strongly recommended that The Robert B. Balter Company, as project geotechnical engineer, provide full time, on-site observation and testing of all soil related aspects of construction. This is to assure compliance with design concepts and recommendations, and to verify that the subsurface conditions are consistent with those anticipated prior to construction.

7.0 GENERAL COMMENTS

The evaluations and recommendations contained in this report were based upon the finite data obtained from the borings which are presented within this report. Although we have described typical variations which may affect the project, there is the possibility that significant unanticipated conditions may be present outside the specific boring locations. The nature and extent of differing subsurface conditions, as well as their impact on the proposed construction, will most likely not be evident until the time of construction. If significant differences are discovered in the field during construction, it may be necessary for us to re-evaluate and revise the contents of this report.

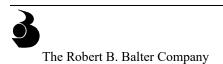
Also, this report specifically excludes exploration, sampling, testing, evaluation and recommendations relating to the presence of hazardous materials or other environmental concerns which could affect future development of the site. The Robert B. Balter Company performs such services and would be pleased to provide a proposal to address your needs.





APPENDIX A

TEST PIT LOGS



16943-0 Gude Landfill

THE ROBERT B. BALTER COMPANY IDENTIFICATION OF SOIL SAMPLES

Soils are described in the boring logs according to the following criteria with the principal constituents written in capital letters. Other constituents are preceded by descriptive terminology that is used to denote the percentage of weight of each component. Soil descriptions are determined visually except where laboratory classification test data are available. Classifications are based on The Robert B. Balter Company's interpretation of ASTM D 2487-00.

		0 to 50/ Einer	Well Graded		GW	GRAVEL
		0 to 5% Fines	Poorly Graded		GP	GRAVEL
			Cilta Finan	Well Graded	GW-GM	GRAVEL with Silt
	EL	6 to 12% Fines	Silty Fines	Poorly Graded	GP-GM	GRAVEL with Silt
. 1 e	AV	6 to 12% Fines	Classes Finan	Well Graded	GW-GC	GRAVEL with Clay
OII	GRAVEL		Clayey Fines	Poorly Graded	GP-GC	GRAVEL with Clay
COARSE GRAINED SOIL > 50% Retained on No. 200 Sieve	-		Silty Fines		GM	Silty GRAVEL
VE V 0. 2		13 to 50% Fines	Silty Clay Fine	5	GC-GM	Silty, Clayey GRAVEL
AI N			Clayey Fines		GC	Clayey GRAVEL
GR ned o		0 to 5% Fines	Well Graded		SW	SAND
SE c		0 to 576 miles	Poorly Graded		SP	SAND
COARSE 50% Retai			Silty Fines	Well Graded	SW-SM	SAND with Silt
50%	Ω	6 to 12% Fines	Sitty Filles	Poorly Graded	SP-SM	SAND with Silt
\mathbf{U}_{\wedge}	SAND	0 to 1270 Fines	Clayey Fines	Well Graded	SW-SC	SAND with Clay
	Ś		Clayey Pliles	Poorly Graded	SP-SC	SAND with Clay
			Silty Fines		SM	Silty SAND
		13 to 50% Fines	Silty, Clayey Fi	ines	SC-SM	Silty, Clayey SAND
			Clayey Fines		SC	Clayey SAND
, e		Low Plastic Fines, PI<4	Plots below "A	" line	ML	SILT
DII	SILT & CLAY (ILL<50)	Low Plastic Fines, 4≤PI≤7	Plots on or above	ve "A" line	CL-ML	Silty CLAY
S 000	LA L<	Plastic Fines, PI>7	Plots on or above	ve "A" line	CL	Lean CLAY
Jo. 2	⊆ C SI	Significant Organics, PI<4	Plots below "A	" line	OL	Organic SILT
AIN ng N		Significant Organics, PI≥4	Plots on or above	ve "A" line	OL	Organic CLAY
GRAINED SOIL assing No. 200 Siev	3. 6	Elastic Fines	Plots below "A	" line	MH	Elastic SILT
FINE GRAINED SOIL ≥ 50% Passing No. 200 Sieve	SILT & CLAY (LL≥50)	Plastic Fines	Plots on or above	ve "A" line	СН	Fat CLAY
FINE 50% P	SILT . CLA\ (LL≥5	Significant Organics	Plots below "A	" line	OH	Organic SILT
		Significant Organics	Plots on or above	ve "A" line	ОН	Organic CLAY
	HLY IC SOIL	Dark, highly organic, decomp	posed vegetative t	issue	РТ	PEAT

ADDITIONAL TERMINOLOGY:

Descriptive Cor	<u>nponents</u>
Descriptive Terms	Proportions
Trace	1 - 5%
Little (Sand, Gravel)	6 - 14%
With (Sand, Gravel)	15 - 30%
With (Silt, Clay)	6-12%
Adjective Form (Sandy, Gravelly)	31 - 50%
Adjective Form (Silty, Clayey)	13 - 50%

	Density or	<u>Consistency</u>	
SAND	and GRAVEL	SILT a	and CLAY
N-Value	Density	N-Value	Consistency
0-4	Very Loose	0-1	Very Soft
5-10	Loose	2-4	Soft
11-30	Medium Dense	5-8	Medium Stiff
31-50	Dense	9-15	Stiff
> 50	Very Dense	16-30	Very Stiff
		> 30	Hard

Fill materials are placed by man, and may be identified by unnatural artifacts, unnatural mixed grain sizes or layering, or trustworthy documentation of fill placement.

Possible Fill materials are difficult to distinguish from natural soils, exhibiting minor distinctions.

Decomposed Rock consists of residual soil with SPT N-values between 50 blows per foot and blows per 4 inches (50/4"). **Highly Weathered Rock** consists of residual soil with SPT N-values between 50/3" and 50/1".

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o DEPTH O (ff) SAMPLE TYPE NUMBER	TESTS	U.S.C.S. GRAPHIC				RIAL DESC	RIPTION			
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER. GDT 9/5/18		SM	F Moist, Ligh	ht Brown, Silty SA		n of test pit	at 6.0 feet			

CLIENT EA Engineering, Inc. PROJECT NAME Gude Landfill PROJECT LOCATION Montgomery County, Maryland PROJECT NUMBER 16943-0 MD DATE STARTED 7/18/18 COMPLETED 7/18/18 GROUND ELEVATION TEST PIT SIZE EXCAVATION CONTRACTOR The Robert B. Balter Company WATER ELAPSED CASING HOLE WATER			Ge Ma Te	otech terials ephor	nical a and (nd En Constru (410)	Company vironmenta uction Insp 363-1555	al Engin pection a	eers and Tes	ting						TEST	PIT TI PAGE	P-209 1 OF 1
DATE STARTED 7/18/18 COMPLETED 7/18/18 GROUND ELEVATION TEST PIT SIZE EXCAVATION CONTRACTOR The Robert B. Baiter Company WATER LEVELS WATER LEVELS EXCAVATION METHOD CHECKED BY K. Crist NOTES Lat: 39.10926 Long: -77.14083 NOTES NOTES Lat: 39.10926 Long: -77.14083 MATERIAL DESCRIPTION NE NE H U U U NE NE 0.0 U U U NE NE NOTES SM U U NE NE 0.0 U U NE NE NE 0.0 SM U U NE NE 0.0 U U U U		CLIEN	IT EA E	ngine	ering,	Inc.					PR	OJECT		ide Landfill				
WATER LEVELS EXCAVATION CONTRACTOR The Robert B. Balter Company Date Under Cosing Water Levels LOGGED BY J. Balley CHECKED BY K. Crist 7/18/18 0 I NE NOTES Lat 39.10926 Long: -77.14083 NE NE NE NE Image: State of the state of th		PROJ	ECT LOC	ATIO	N <u>Mo</u>	ontgom	nery Count	y, Maryl	and		PR	OJECT	NUMBER	16943-0 M				
EXCAVATION METHOD Date TIME ELAPSED OCE DEPTH (th) DEPT		DATE	STARTE	D _7/	18/18		co	MPLETE	D 7/18	8/18	GR		LEVATION				E	
EXCAVATION METHOD UARE HOURS DEPTH (ft) DE DEPTH (ft)	- 1									-		D.4.7.5		ELAPSED	TER LEVE	LS HOLE	WATER	WATER
Loadey Checked Bit Konst NOTES Lat 39.10926 Long: -77.14083 Image: Intervention of the state of the s													TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
Height of the second											''	/10/10		0 ¥				
0.0 Moist, Light Brown, Silty SAND SM 0.9 Trash 1.5 Bottom of test pit at 1.5 feet		NOTE	S _Lat: 3	9.109	26 Lor	ng: -77	14083											
SM 0.9 Trash 1.5 Bottom of test pit at 1.5 feet			SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATEI	RIAL DESC	CRIPTION				
Bottom of test pit at 1.5 feet	-			SM	F F	0.9		ight Bro	own, Silt	y SAND								
Bottom of test pit at 1.5 feet						1.5												
	Ī											Botton	n of test pit	at 1.5 feet				
	BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

Geote Mater	echnica rials an	B. Balter C al and Envi d Construc No. (410) 3 co.com	ronmental E	ngineers ion and Te	esting					TEST	PIT TF PAGE	P-210 1 OF 1
CLIENT _EA Engi	ineerin	ıg, Inc.					AME Gu	ide Landfill				
PROJECT LOCAT				-			NUMBER _	16943-0 M	D			
DATE STARTED							LEVATION				E	
EXCAVATION CO						DATE	TIME	VVA ELAPSED HOURS		HOLE	WATER	WATER
EXCAVATION ME						7/18/18		0 ⊻		DEPTH (ft)	DEPTH (ft) NE	
NOTES Lat: 39.1						—						
A S A	U.S.C.S. GRAPHIC	POG				MATEF	RIAL DESC	CRIPTION				
0.0 	SM	F F 2.5 4.0	Moist, Light	Brown, S	ilty SAND	Bottom	of test pit	at 4.0 feet				

GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18

	Ge Ma Tel	otechi terials ephor	nical a a a	nd Env Constru (410) 3	Compai vironme liction Ir 363-155	ntal Englispectio	gineer on and	rs I Testi	ng							TEST	PIT TI PAGE	P-211 1 OF 1
CLIEN	NT EAE	ngine	ering, l	nc.						 PROJECT	NAME	E_Gu	de Landfill					
PROJ	ECT LOC	ATIO	N <u>Mo</u>	ntgom						 PROJECT								
DATE	STARTE	D _7/	18/18		c	OMPLE		7/18/	/18	 GROUND	ELEV	ATION	I		TES		E	
EXCA	VATION	CONT	RACT		he Rob	ert B. B	alter C	Compa	any	 [1		WA ELAPSED			S HOLE	WATER	WATER
	VATION									 DATE	TI	ME	HOURS	DEPTH	(ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGG	GED BY	J. Bai	ey		c	HECKE	D BY	K. C	Crist	 7/18/18			0 ⊻				NE	
NOTE	S Lat: 3	9.108	41 Lor	ng: -77.	14166													
0.0 (#)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Maint		D	Cilt	CAND	MATE	RIAL	DESC	CRIPTION					
	-	SM	F	1.7	Moist Trash	, Light E	Brown	, Silty	SAND									
	-			0.0														
				2.3						Botto	n of te	est pit	at 2.3 feet					
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																		

	Ge Ma Tel	otechi terials ephor	nical ai and C	nd Env constru (410)	Compar vironmer uction In 363-155	ntal Eng	gineers n and 1	Testing	I						TEST	PIT TI PAGE	P-212 1 OF 1
CLIEN	NT EAE	ngine	ering, I	nc.						_ PROJE	сті		ide Landfill				
PROJ	ECT LOC	ATIO	M Mo	ntgom	ery Cou	nty, Mai	ryland			_ PROJE	СТІ	NUMBER	16943-0 N	ID			
	STARTE									_ GROUN	ID E	LEVATION			EST PIT SIZ	E	
	VATION								у	DATE		TIME	ELAPSED		HOLE	WATER	WATER
	VATION								. +	- 7/19/*			HOURS 0 ⊻		DEPTH (ft)	DEPTH (ft)	ELEV (ft)
	S _ Lat: 3									-							
0.0	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Moist	Light B	Brown, S	Silty S	AND	MA	TEF	RIAL DESC	CRIPTION				
	-	SM	F	1.7				-									
				2.5	Trash								at 2.5 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

	Ge Ma Tel	otechr terials ephon	nical a and C	nd Env Constru (410)	Company vironmental uction Inspe 363-1555	Enginee ction and	rs d Testing)					TEST	PIT TI PAGE	P-213 1 OF 1
CLIENT	T <u>EA E</u>	nginee	ering, I	nc.					PROJECT	NAME	Gude Landfi	I			
PROJE	CT LOC	ATIO	M Mo	ntgom	ery County,	Marylan	d				R <u>16943-0 I</u>				
									GROUND	ELEVATI	ON			E	
					he Robert E			у	DATE	ТІМЕ	ELAPSED	ATER LEVE	HOLE	WATER	WATER
									- 7/18/18		HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
						KED BY	K. Cris	st	-		- · ·				
NOTES	3 <u>Lat: 3</u>	9.1082	26 Lor	ig: -//	.1409				-						
O DEPTH O (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DE	SCRIPTION				
0.0 CENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		2.3	Moist, Lig	Jht Brown	n, Silty S.	AND	Botto	m of test	pit at 3.2 fee	t			

Mate	Robe techn erials phone v.balte	and C e No.	Balter (nd Env Constru (410) 3 com	Compar ironme ction In 63-155	ny ntal En ispectio 55	igineer on and	rs I Testin	ng						TEST	PIT TF PAGE	P-214 1 OF 1
CLIENT EA En	ginee	ring, l	Inc.						PROJE	CTN	IAME Gu	ide Landfill				
PROJECT LOCA		Mo	ntgome	ery Cou	inty, Ma	arylan	d		PROJE	CTN	IUMBER _	16943-0 M	D			
DATE STARTED										ND E	LEVATION				E	
EXCAVATION C									DAT	=	TIME	ELAPSED	TER LEVE CASING	HOLE	WATER	WATER
EXCAVATION M									7/19/			HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
									-							
NOTES Lat: 39	0.1087	/ Lor	<u>ig: -77.</u>	14042					_							
O DEPTH O (ft) SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MA	TEF	RIAL DESC	CRIPTION				
	SM		3.0	Trash		Brown	, Silty S	SAND	Bc	ittom	of test pit	at 3.5 feet				

GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18

Telephone No. (410) 363 www.balterco.com	8-1555	ection	neers and Testing							P-215 1 OF 1
				PROJECT	NAME Gu	ide Landfill				
PROJECT LOCATION Montgomery				PROJECT			D			
DATE STARTED 7/19/18	COM	IPLETE	ED 7/19/18	GROUND E		۱	TE	ST PIT SIZ	E	
EXCAVATION CONTRACTOR The	Robert	B. Balt	er Company			WA [·] ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCAVATION METHOD				DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGGED BY J. Bailey	CHE	CKED	BY K. Crist	7/19/18		0 ⊻			NE	
NOTES _Lat: 39.10899 Long: -77.13	973									
HLAIN (II) (II) 0.0 0.0	U.S.C.S.	GRAPHIC LOG				RIAL DESC	RIPTION			
	ML		5.3 Trash	own, Sandy S		n of test pit	at 6.5 feet			

	Ge Ma Te	otechr	nical a and C ne No.	nd Env Constru (410)	Company vironmenta uction Inspo 363-1555	I Enginee ection an	ers nd Testin	ng						TEST	PIT TF PAGE	P-216 1 OF 1
CLIE	NT EA E	ingine	ering, I	nc.					_ PROJECT	NAME	Gu	de Landfill				
PRO	JECT LOO	CATIO	N <u>Mo</u>	ntgom	ery County	/, Marylaı	nd		_ PROJECT	NUMB	ER _	16943-0 M	D			
								18	_ GROUND	ELEVA	TION			ST PIT SIZI	I	
					he Robert			ny	DATE	ТІМ		ELAPSED	TER LEVE	HOLE	WATER	WATER
									- 7/19/18		16	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					CHE	CKED B	Y <u>K.</u> Cr	rist	-			0 -			NL.	
NOT	ES _Lat: 3	39.108	51 Lor	ig: -77	.13996				-							
0. DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG				0.11		MATE	ERIAL [DESC	CRIPTION				
GENERAL BH/TP/WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		2.3	Moist, Li	ght Brow	n, Silty S	SAND	Botto	m of te	st pit	at 3.5 feet				

	Ge Ma	otechr terials ephor	nical and C	nd Env onstru (410)	Company vironmental uction Inspe 363-1555	Enginee ction an	ers d Testin	ng					TEST	PIT TF	P-217 1 OF 1
CLIEN									PROJECT	NAME _	Gude Landfill				
PROJ			M Mo	ntgom	ery County,	Marylar	nd		PROJECT	NUMBER	16943-0 M	D			
DATE	STARTE	D _7/*	19/18			PLETED	7/19/1	18	GROUND	ELEVATIO	ON	TE	ST PIT SIZ	Ε	
EXCA	VATION	CONT	RACTO	DR _T	he Robert E	8. Balter	Compa	ny	—	1	WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCA	VATION	METH	OD						DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGO	SED BY _	J. Bail	еу		CHEC	KED B	/ <u>K. Cr</u>	rist	7/19/18		0 ⊻			NE	
NOTE	S Lat: 3	9.107	56 Lon	g: -77	.13993				_						
o (ft) (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DES	SCRIPTION				
 2.5 		SM		4.0	Moist, Lig	ht Brow	n, Silty S	SAND	Botto	m of test p	bit at 4.7 feet				
GENERAL BH / TP / WELL 18943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 95/18															

	Ge Ma Tel	otechr terials	iical aı and C e No	nd Env onstru (410) (Company ironmenta ction Insp 363-1555	al Engin ection a	neers and Tes	sting							TEST	PIT TF	P-218 1 OF 1
CLIEN	IT <u>EA E</u>									PROJEC			ide Landfill				
PROJ	ECT LOC		Mo	ntgom	ery Count	y, Mary	land			PROJEC		BER _	16943-0 N	D			
DATE	STARTE	D_7/1	9/18			IPLETE	ED _7/1	9/18		GROUNE	ELE\	VATION	۱	TE	ST PIT SIZ	E	
EXCA	VATION	CONT	RACTO	DR	ne Robert	B. Balt	er Com	ipany					WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCA	VATION I	NETHO	DD							DATE	_	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGG	ED BY	J. Bail	эу		CHE	CKED	BY <u>K</u> .	Crist		7/19/18			0 ⊻			NE	
NOTE	S <u>Lat: 3</u>	9.1071	9 Lon	g: -77	14022												
0. (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Moist I	ight Bro	own Sil	Ity SAND)	MAT	ERIAI	L DESC	CRIPTION				
BALTER.GDT 9/5/18		SM		4.0 5.0	Moist, L	ight Bro	own, Sil	ty SAND)	Bott	om of	test pit	at 5.0 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

The Robert B. E Geotechnical ar Materials and C Telephone No. (www.balterco.co	nd Environmental Engineers onstruction Inspection and Testing (410) 363-1555					TEST	PIT TF PAGE	P-219 1 OF 1
CLIENT EA Engineering, I	nc.	PROJECT	NAME Gu	ude Landfill				
PROJECT LOCATION Mor	ntgomery County, Maryland	PROJECT		16943-0 MI	D			
DATE STARTED 7/19/18	COMPLETED _7/19/18	_ GROUND E	LEVATION	N			E	
EXCAVATION CONTRACTO	DR The Robert B. Balter Company		TIME	WA [*] ELAPSED	TER LEVEL CASING	HOLE	WATER	WATER
		- DATE 7/19/18	TIME	HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	CHECKED BY K. Crist	-		0 -			INC.	
NOTES _Lat: 39.10721 Lon	g: -77.1394	-						
G DEPTH (ft)		MATE	RIAL DESC	CRIPTION				
2.5 SM F F F F F F F F	4.3 Trash 5.0	Botton	n of test pit	at 5.0 feet				

		eotechi	nical a	nd En	Company vironmental uction Inspe 363-1555	l Engine ection ar	ers nd Testi	ing						TEST	PIT TF PAGE	P-220 1 OF 1
CLIE	NT EA								PRC	JECT I		ude Landfill				
PRO	JECT LO	CATIO	N <u>Mo</u>	ntgom	nery County	, Maryla	nd		PRC	JECT I	UMBER	16943-0 M	D			
DAT	E START	ED _7/	18/18		СОМ	PLETED) 7/18/	/18	GRC	DUND E	LEVATIO	N			E	
					he Robert E			any		ATE	TIME	WA	TER LEVE	HOLE	WATER	WATER
										ATE 18/18	TIME	HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
						CKED B	Υ <u>Κ.</u>	Crist	/ /	10,10		0 -				
NOT	ES Lat:	39.107	89 Lor	ng: -77	7.14055											
0. 0. (ft)	SAN	U.S.C.S.	GRAPHIC LOG							MATE	RIAL DES	CRIPTION				
GENERAL BH / TP / WELL 18943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18	-	SM		3.0	Trash	ght Brow	vn, Silty	SAND		Bottom	n of test pir	t at 3.3 feet				

	Ge Ma Te	otechi terials ephor	nical a a	nd Env Constru (410)	Compan vironmer uction Ins 363-155	tal Engir	neers and Tes	sting						TEST	PIT TF PAGE	P-221 1 OF 1
CLIEI	NT <u>EA E</u>	ngine	ering, l	nc.					I	PROJECT	NAME _G	ude Landfill				
PRO.	ECT LOC	ATIO	N <u>M</u> o	ntgom	ery Cour	nty, Mary	/land					16943-0 M				
DATE	STARTE	D _7/	18/18		co	OMPLETI	ED _7/1	8/18	(GROUND E	ELEVATIO	N			E	
	VATION								[DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
	VATION									7/18/18		<u>HOURS</u> 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	GED BY									1110/10		0 -				
NOTE	S <u>Lat: 3</u>	9.107	26 Lor	ng: -//	.14095											
0. DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATE	RIAL DES	CRIPTION				
	-	SM		1.3	Moist, Trash	Light Bro	own, Sili	ty SAND								
				1.7						Bottor	n of test n	it at 1.7 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																

	Ge Ma Te	otechi iterials lephor	nical a and C	nd En Constr (410)	Compa vironm uction 363-15	iental E Inspec	Engine tion ar	ers nd Tes	sting								TEST	PIT TI PAGE	P-222 1 OF 1
CLIE	NT EAE	ngine	ering, l	Inc.							PR	OJECT		ude Land	fill				
PRO	JECT LOC	ATIO	N <u>Mo</u>	ntgon	nery Co	ounty, I	Maryla	and			_ PR	OJECT		16943-0	MD)			
DATE	E STARTE	D _7/	18/18			COMP	LETED	D _7/1	8/18		_ GR	OUND E	LEVATIO					E	
	AVATION											DATE	TIME	ELAPSE	ED	CASING	HOLE	WATER	WATER
	AVATION										_	/18/18		HOURS	s	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
	GED BY						KED B	Υ <u>Κ</u>	Crist		- ''	10/10			-				
NOT	ES <u>Lat: 3</u>	9.107	36 Lor	ng: -77	2.14129	9					_								
o DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG									MATE	RIAL DES	CRIPTIO	N				
	-	SM	F	1.5	Mois	st, Ligh	nt Brow	vn, Sil	Ity SAN	ND									
	_			2.0								Detter			- 4				
												Bollon	n of test pi	t at 2.0 ie	et				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																			

ſ	0	Ge Ma Tel	otechi terials ephor	nical a and (nd En Constru (410)	Compai vironme uction Ir 363-155	ntal Eng	gineers on and	s Testin	ng							TEST	PIT TF PAGE	P-223 1 OF 1
	CLIEN	T <u>EA E</u>	ngine	ering,	Inc.						F	PROJECT	NAME	Gu	de Landfill				
		ECT LOC									F	PROJECT	NUMBE	ER _	16943-0 M	D			
		STARTE									(GROUND E	LEVAT	TION				E	
		VATION									— r	DATE	TIME	_	ELAPSED	TER LEVE CASING	HOLE	WATER	WATER
		VATION										7/18/18	1 11412	-	HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
												1710/10			0 -				
Ľ	NOTE	S _Lat: 3	9.107	99 Lor	ng: -//	.14142													
	0.0 (ff) 0.0	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG								MATE	RIAL D	ESC	RIPTION				
_	_		SM	F F	0.9	Moist	:, Light E	Brown,	, Silty S	SAND									
-	-				0.9	Trash	1												
	_				2.0														
												Bottor	n of tes	t pit	at 2.0 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																			
GENERAL I																			

	Ge Ma	otechi Iterials Iephor	nical ai and C	nd Env Constru (410)	Compai vironme uction Ir 363-155	ntal Eng	gineers n and ⁻	s Testing	9						TEST	PIT TI PAGE	P-224 1 OF 1
CLIEI										PRO	JECT		ude Landfill				
PROJ	IECT LOC	OITA	M Mo	ntgom	ery Cou	unty, Ma	ryland			PRO	JECT	UMBER	16943-0 N	ID			
DATE	STARTE	D _7/	18/18		c	OMPLE	TED _	7/18/18	8	GRO	DUND E	LEVATIO			ST PIT SIZ	E	
	VATION								ıy		DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
	VATION									_	18/18		HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	GED BY						DBY	K. Cris	st	- "	10/10		0 -				
NOTE	ES _Lat: 3	9.107	52 Lon	ig: -//	.14197					_							
O DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG								MATE	RIAL DES	CRIPTION				
GENERAL BH/TP/WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		2.3	Trast	, Light E	Brown,	Silty S	SAND		Botton	n of test pi	t at 2.7 feet				

Geotech Materials Telephor	nical a s and C ne No.	nd Env Constru (410) 3	vironmental uction Inspe	Enginee ction and	ers d Testin	ng						TEST		P-225 1 OF 1
							PROJI	ЕСТ І	NAME Gu	de Landfill				
OCATIO	N <u>Mo</u>	ntgom						ЕСТ І		16943-0 M	ID			
RTED _7/	18/18			PLETED	7/18/1	18	GROU	ND E	LEVATION	۱	TE	ST PIT SIZ	E	
ON CONT	RACTO	OR _ T	he Robert B	. Balter	Compa	ny		_		WA ELAPSED		LS HOLE	WATER	WATER
									TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
				KED BY	/ <u>K.</u> Cr	rist	//18	18		0 ¥				
nt: 39.107	78 Lor	ng: -77	.14199											
U.S.C.S.	GRAPHIC LOG						М	ATEF	RIAL DESC	CRIPTION				
SM	F	0.2	Moist, Lig	ht Browr	n, Silty S	SAND								
		1.7	Trash											
	Geotech Materials Telephor www.balt A Engine OCATIO RTED _7/ ON CONT ON METH Y _J. Bai at: 39.107	Geotechnical a Materials and C Telephone No. www.balterco.cd A Engineering, I OCATION Mo RTED 7/18/18 ON CONTRACTO ON METHOD Y J. Bailey at: 39.10778 Lor X J. Bailey at: 39.10778 Lor	Geotechnical and Em Materials and Constri Telephone No. (410) www.balterco.com A Engineering, Inc. OCATION Montgom RTED 7/18/18 DN CONTRACTOR T DN METHOD Y J. Bailey at: 39.10778 Long: -77	Materials and Construction Inspe Telephone No. (410) 363-1555 www.balterco.com <u>A Engineering, Inc.</u> <u>LOCATION Montgomery County,</u> RTED 7/18/18 COMF ON CONTRACTOR The Robert E ON METHOD Y J. Bailey CHEC at: 39.10778 Long: -77.14199 <u>Y G. Hard</u> SM F. F. 0.3 Trash	Geotechnical and Environmental Engineer Materials and Construction Inspection and Telephone No. (410) 363-1555 www.balterco.com A Engineering, Inc. 	Geotechnical and Environmental Engineers Materials and Construction Inspection and Testir Telephone No. (410) 363-1555 www.balterco.com A Engineering, Inc. OCATIONMontgomery County, Maryland COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/18 COMPLETED7/18/19 COMPLETED7/18/19 COMPLETED7/14/199 COMPLETED7/14/199 COMPLETEDCOMPLETED7/14/199 COMPLETEDCO	Geotechnical and Environmental Engineers Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com A Engineering, Inc. OCATION Montgomery County, Maryland RTED7/18/18 COMPLETED7/18/18 DN CONTRACTOR The Robert B. Balter Company DN METHOD	Geotechnical and Environmental Engineers Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com A Engineering, Inc. PROJI OCATION Montgomery County, Maryland PROJI OCATION Montgomery County, Maryland PROJI OCATION Montgomery County, Maryland PROJI ON CONTRACTOR The Robert B. Balter Company DAT ON METHOD	Geotechnical and Environmental Engineers Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com A Engineering, Inc. PROJECT N LOCATION Montgomery County, Maryland PROJECT N LOCATION Montgomery County, Maryland PROJECT N COCATION Montgomery County, Maryland PROJECT N DON CONTRACTOR The Robert B. Balter Company DATE ON METHOD DATE 7/18/18 Y J. Bailey CHECKED BY K. Crist at: 39.10778 Long: -77.14199 MATER MATER	Geotechnical and Environmental Engineers Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com A Engineering, Inc. PROJECT NAME _Gu LOCATION _Montgomery County, Maryland PROJECT NUMBER _ RTED _7/18/18 COMPLETED _7/18/18 GROUND ELEVATION DN CONTRACTOR _The Robert B. Balter Company DATE	Geotechnical and Environmental Engineers Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com A Engineering, Inc. PROJECT NAME _Gude Landfill LOCATION _Montgomery County, Maryland PROJECT NUMBER _ 16943-0 M COCATION _Montgomery County, Maryland PROJECT NUMBER _ 16943-0 M CONCONTRACTOR _The Robert B. Balter Company WA DN METHOD Date Y _J. Bailey CHECKED BY _K. Crist at: 39.10778 Long: -77.14199 MATERIAL DESCRIPTION Y _J. Bailey CHECKED BY _K. Crist y	Geotechnical and Environmental Engineers Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com A Engineering, Inc. PROJECT NAME _Gude Landfill OCATION _Montgomery County, Maryland PROJECT NUMBER _16943-0 MD OCATION _Montgomery County, Maryland GROUND ELEVATION	Geotechnical and Environmental Engineers Materials and Construction Inspection and Testing PROJECT NAME _Gude Landfill	Geotechnical and Environmental Engineers PAGE Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 PROJECT NAME _Gude Landfill

	Geot Mate Teler	echn rials ohon	ical a and C	nd En Constru (410)	Comp vironm uction 363-1	nental Inspe	Engine ction a	eers nd Tes	sting								TES	F PIT T Page	P-226 1 OF 1
CLIENT	EA Eng	ginee	ring, I	nc.							_ PRO		AME Gu	ide Landfill					
PROJECT			Mo	ntgom										16943-0 N					
DATE STA	ARTED	7/1	8/18			COMF	PLETE	D _7/1	18/18		_ GRO	UND E	LEVATION					ZE	
EXCAVAT		ONTF	RACTO)r _T	he Ro	bert B	. Balte	er Com	npany		-			ELAPSED	CA		LS HOLE	WATER	WATER
EXCAVAT											_	ATE 8/18	TIME	HOURS 0 ⊈	DEF	PTH (ft)	DEPTH (ft) DEPTH (fi NE) ELEV (ft)
LOGGED							KED E	ΒΥ <u>Κ.</u>	Crist		- '''	0/10		U ¥					
NOTES _	Lat: 39.	1073	32 Lon	ıg: -77	.1423	4					-								
O DEPTH O (ft) SAMPI F TYPF	NUMBER	U.S.C.S.	GRAPHIC LOG									MATEF	RIAL DESC	CRIPTION					
	Ş	SM	F F	1.5	Moi	st, Lig	ht Brov	wn, Sil	Ity SAI	ND									
					Tra	sh													
	_	K	***	2.0								Pottom	of toot nit	at 2.1 fee	+				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																			

	Ge Ma Te	otechr terials ephor	nical ar and C	nd Env onstru (410) :	Company vironmental uction Inspe 363-1555	Enginee ction and	ers d Testing	g					TEST	PIT TF PAGE	P-227 1 OF 1
CLIE		nginee	ering, I	nc.					PROJECT	NAME _G	ude Landfill				
PRO.	JECT LOC	ATIO	Moi	ntgom	ery County,	Marylan	ıd		_ PROJECT	NUMBER	<u>16943-0 M</u>	ID			
DATE	STARTE	D _7/*	8/18			PLETED	7/18/18	8	GROUND	ELEVATIO	DN			E	
					he Robert B			ıy	DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
									- 7/18/18		HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
								st	-		0 -				
NOT		9.107	J9 Lon	g: -//	.14275				-						
o DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DES	SCRIPTION				
GENERAL BH/TP/WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		2.0	Trash	ht Browr	n, Silty S	BAND	Botto	n of test p	it at 2.5 feet				

3	The Robert B. Balter Con Geotechnical and Environ Materials and Constructio Telephone No. (410) 363 www.balterco.com	montal En	gineers n and Testing					TEST	PIT TP PAGE	-228 1 OF 1
				PROJECT	NAME Gu	ide Landfill				
PROJECT	LOCATION Montgomery			PROJECT						
DATE STA	RTED 7/18/18	COMPLE	TED 7/18/18	GROUND E	LEVATION				E	
EXCAVATI	ON CONTRACTOR	Robert B. B	alter Company	DATE	TIME	ELAPSED	TER LEVEL CASING	HOLE	WATER	WATER
				7/18/18		HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	IY <u>J. Bailey</u>		DBY K. Crist			0 -				
	at: 39.1069 Long: -77.1438									
O DEPTH O (ft) SAMPLE TYPE	TESTS	U.S.C.S. GRAPHIC LOG			MATE	RIAL DESC	RIPTION			
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		ML F	F Anoist, Ligh F Anoist, Ligh F Anoist A	it Brown, Sandy S		n of test pit	at 4.0 feet			

Geo Mat	otechnic erials a	cal and E nd Cons	er Company Environmental Engineer truction Inspection and)) 363-1555	rs I Testing					TEST	PIT TF	P-229 1 OF 1
CLIENT EA Er					PROJECT	NAME Gu	ude Landfill				
PROJECT LOC	ATION	Montgo	omery County, Marylan			NUMBER	16943-0 M	D			
DATE STARTE	D_7/18	/18	COMPLETED	7/18/18	GROUND E	ELEVATIO	N N	TE	ST PIT SIZ	E	
EXCAVATION	CONTR	ACTOR	The Robert B. Balter	Company			WA ELAPSED		LS		
EXCAVATION N	NETHO	D			DATE	TIME	HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
LOGGED BY _	J. Bailey	/	CHECKED BY	K. Crist	_						
NOTES Lat: 39	9.10657	Long: -	77.1433		_						
O DEPTH O (ft) SAMPLE TYPE NUMBER	U.S.C.S.		Moist Light Brown		MATE	RIAL DESC	CRIPTION				
	SM	F F F F F 5.3	Moist, Light Brown	h, Silty SAND	Botton	n of test pit	t at 5.7 feet				

Geot	technio erials a	cal and ind Coi	alter Company d Environmenta nstruction Insp 10) 363-1555 n	I Engineers ection and ⁻	s Testing					TEST	PIT TF PAGE	P-230 1 OF 1
CLIENT EA Eng	gineeri	ing, Inc	C.			PROJECT	NAME Gu	ide Landfill				
PROJECT LOCA	TION	Monte	gomery Count	/, Maryland		PROJECT	NUMBER	16943-0 M	D			
DATE STARTED							LEVATION				E	
EXCAVATION C						DATE	TIME	WA ELAPSED HOURS	TER LEVE	HOLE	WATER	WATER
EXCAVATION M						7/18/18		HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
				CKED BY _	K. Crist			0 1				
NOTES Lat: 39	.10674	Long:	: -//.14291									
G DEPTH (ft) SAMPLE TYPE NUMBER	U.S.C.S.	LOG				MATE	RIAL DESC	CRIPTION				
	SM		<u>7</u> Trash	ght Brown,	Silty SAND	Botton	n of test pit	at 4.0 feet				

Www.baiterco.com PROJECT NAME [Gude Landfill PROJECT LOCATION Montgomery County, Maryland PROJECT NAME [Gude Landfill PROJECT LOCATION Montgomery County, Maryland PROJECT NAME [Gude Landfill DATE STARTED 7/18/18 COMPLETED 7/18/18 EXCAVATION CONTRACTOR The Robert B. Balter Company GROUND ELEVATION EXCAVATION METHOD	P-231 1 OF 1
PROJECT LOCATION Montgomery County, Maryland PROJECT NUMBER _ 16943-0 MD DATE STARTED _7/18/18 COMPLETED _7/18/18 GROUND ELEVATION	
WATER LEVELS WATER LEVELS EXCAVATION CONTRACTOR The Robert B. Balter Company DATE TIME ELASSING HOLES EXCAVATION METHOD MATER LEVELS LOGGED BY J. Bailey CHECKED BY K. Crist NOTES Lat: 39.10682 Long: -77.14237 MATERIAL DESCRIPTION MATERIAL DESCRIPTION TESTS G PAGO O.0 MATERIAL DESCRIPTION O.0 MATERIAL DESCRIPTION CHECKED BY K. Crist MATERIAL DESCRIPTION O.0 O.0 O.0 MATERIAL DESCRIPTION F Moist, Light Brown, Silty SAND F	
EXCAVATION METHOD Children of the constraint of the co	
EXCAVATION METHOD ONTE Inme HOURS DEPTH (ft) DEPTH (ft) DEPTH (ft) LOGGED BY J. Bailey CHECKED BY K. Crist 7/18/18 0 III NE NOTES Lat: 39.10682 Long: -77.14237 IIIII IIIIII NI NE H IIIIII IIIIIII IIIIIII IIIIIIII NE H IIIIIIIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	WATER
Lotsdep Br J. Balley One checked Br N. Clist $H = 39.10682 \text{ Long: -77.14237}$ Hermitian Hermitian $H = 42$ $H = 439$ TESTS $G = 439$ $H = 439$ TESTS $G = 439$ MATERIAL DESCRIPTION 0.0 $G = 439$ Moist, Light Brown, Silty SAND 0.0 $H = 439$ $H = 439$ <td>ELEV (ft)</td>	ELEV (ft)
H H <td></td>	
0.0 Moist, Light Brown, Silty SAND - - </td <td></td>	
5.0 Trash 10001 5.5 10001 5.5 Bottom of test pit at 5.5 feet	

	Ge	otechr terials	nical a	nd En	Company vironmental uction Inspe 363-1555	Enginee ction and	ers d Testin	g					TEST	PIT TI PAGE	P-232 1 OF 1
CLIEI									_ PROJECT		Gude Landfill				
PRO	IECT LOC	ATIO	M <u>Mo</u>	ntgom	nery County,	Marylan	nd		_ PROJECT	NUMBER	R 16943-0 N	1D			
DATE	STARTE	D _7/	18/18			PLETED	7/18/1	8	GROUND	ELEVATIO	ON			E	
					he Robert B			ny		TIME	WA ELAPSED	TER LEVE	HOLE	WATER	WATER
									- DATE 7/18/18	TIME	<u>HOURS</u> 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					CHEC	KED BY	K. Cr	ist	-		0 -				
NOTE	S _Lat: 3	9.106	91 Lor	ng: -77	'.1414				_						
O DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DE	SCRIPTION				
General BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		3.0	Trash	ht Brown	n, Silty S	SAND	Botto	n of test	pit at 3.3 feet				

		Ge Ma Tel	otechr terials	nical a and (e No.	nd En Constr (410)	Company vironmenta uction Insp 363-1555	al Engin	eers and Test	ting						TEST	PIT TF PAGE	P-233 1 OF 1
	CLIEN	IT EAE	nginee	ering,	Inc.					PR	OJECT	NAME Gu	ude Landfill				
	PROJ	ECT LOC	ATIO	M _Mc	ontgom	nery Count	ty, Maryl	and		PRO	OJECT	UMBER	16943-0 M	D			
	DATE	STARTE	D _7/*	8/18		CO	MPLETE	D 7/18	8/18	GR	ound e	LEVATIO	N			E	
						he Robert					DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
											18/18		HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
						СН	ECKED	BY <u>K.</u>	Crist	''	10/10		0 -				
	NOTE		9.106	13 Loi	ng: -77	7.14079											
	o DEPTH o (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Maiot L	ight Dro	um Cilti			MATE	RIAL DES(CRIPTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18	0.0	5	SM		2.2	Moist, L	ight Bro	wn, Silty	y SAND		Botton	n of test pit	t at 3.5 feet				
GENERAL BH / TP / WELL 169.																	

	The Ge Ma Tel ww	e Robe otechr terials ephon w.balt	ert B. E nical and and C e No. erco.c	Balter nd Env onstru (410) om	Company vironmental Er uction Inspecti 363-1555	ngineers ion and Te	sting					TEST	PIT TF PAGE	7-234 1 OF 1
CLIE								PROJECT		Gude Landfill				
PRO.	IECT LOC	ATIO	M Mo	ntgom	nery County, M	laryland		PROJECT	NUMBEF	R <u>16943-0 M</u>	D			
DATE	STARTE	D _7/*	17/18		COMPL	ETED _ 7/1	17/18		LEVATI	ON			E	
					he Robert B. I			DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
										<u>HOURS</u> 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
								_ /////0		0 -				
NOT		9.105	95 Lon	g: -//	7.13967									
O DEPTH O (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG					MATE	RIAL DE	SCRIPTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		3.3	Trash	Brown, Sil	Ity SAND	Bottor	n of test	pit at 4.0 feet				

	Ge Ma Tel	otechi terials ephor	ert B. E nical and and C ne No. erco.c	nd Er constr (410)	vironn	nental l Inspec	Engine	eers and Te	esting							TEST	PIT T PAGE	P-235
CLIEI	NT EAE										_ PRC	JECT		ude Landfil				
PROJ	IECT LOC	ATIO	N <u>Mo</u>	ntgon	nery C	ounty,	Maryla	and			_ PRC	JECT	UMBER	16943-0 N	ЛD			
	STARTE										_ GRC	DUND E	LEVATIO			EST PIT SI	ZE	
	VATION											ATE	TIME	ELAPSED	ATER LEV	i HOLE	WATER	WATER
											_	17/18		HOURS 0 ⊈		t) DEPTH (ft) DEPTH (ft) NE	ELEV (ft)
											-							
	ES _Lat: 3	9.100		ig7	1.1301	0					-							
o DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG									MATE	RIAL DES	CRIPTION				
	-	SM		2.0	Mo	ist, Ligl	ht Bro	wn, Si	ilty SA	.ND								
2.5				2.5														
												Botton	n of test pi	t at 2.7 fee	t			
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																		

	Ge Ma Te	otechr terials ephon	nical a and C	nd En Constri (410)	Company vironmenta uction Insp 363-1555	l Enginee ection an	ers nd Testir	ng						TEST	PIT TF PAGE	P-236 1 OF 1
CLIEI	NT EAE	nginee	ering, I	nc.					PROJECT	NAME	Gud	le Landfill				
PRO.	ECT LOC	ATIO	M <u>Mo</u>	ntgom	nery County	, Maryla	nd		_ PROJECT	NUMBE	R _1	6943-0 M	D			
DATE	STARTE	D _7/*	17/18			IPLETED) 7/17/	18	GROUND	ELEVAT	ION			ST PIT SIZ	Ε	
					he Robert			any	DATE	ТІМЕ	-	ELAPSED	TER LEVE	HOLE	WATER	WATER
									- 7/17/18		-	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					CHE			rist	-			0 -				
NOTE	S <u>Lat: 3</u>	9.106	45 Lor	ig: -77	7.13873				_							
O DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DI	ESCI	RIPTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		2.7	Moist, Li	ght Brow	/n, Silty	SAND	Botto	m of test	t pit a	at 3.0 feet				

Geotech Material Telepho	obert B. Balter Company chnical and Environmental Engineers als and Construction Inspection and Testing one No. (410) 363-1555 alterco.com					TEST	PIT TF PAGE	2-237 1 OF 1
CLIENT EA Engine	neering, Inc.	PROJECT I	NAME _Gu	de Landfill				
PROJECT LOCATIO	ON Montgomery County, Maryland	_ PROJECT I		16943-0 M	D			
	7/18/18 COMPLETED 7/18/18		LEVATION				Ε	
	TRACTOR The Robert B. Balter Company	DATE	TIME	FI APSED	TER LEVEI CASING	HOLE	WATER DEPTH (ft)	WATER
		7/18/18		HOURS 0 \[2]	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	ailey CHECKED BY K. Crist 0652 Long: -77.1396	-						
	5052 Eolig77.1330	—						
0.0 DEPTH (ft) SAMPLE TYPE U.S.C.S.	GRAPHIC LOG	MATER	RIAL DESC	CRIPTION				
	Moist, Light Brown, Silty SAND	Botton	n of test pit	at 4.1 feet				

	Ge Ma Tel	otechi terials ephor	nical a	nd En Constru (410)	Company vironment uction Insp 363-1555	al Engin	eers and Tes	sting						TEST	PIT TF PAGE	P-238 1 OF 1
CLIEN		nginee	ering, I	nc.					I	PROJECT	NAME _G	ude Landfill				
PROJ	ECT LOC	ATIO	N <u>Mo</u>	ntgom	nery Count	ty, Maryl	land			PROJECT	NUMBER	_16943-0 M	D			
					CO					GROUND E	ELEVATIO	N			Ε	
					he Robert				[DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
									·	7/18/18		<u>HOURS</u> 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					CHI					1,10,10		0 -				
NOTE		9.106	27 Lor	ig: -//	7.13977											
OEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATE	RIAL DES	CRIPTION				
	-	SM	F F F F	1.7	Moist, L	ight Bro	own, Silt	y SAND								
2.5	-			2.7	Trash					Datter	6 4 4	it at 2.7 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																

	Ge Ma Tel	otechr terials ephor	nical ar and C	nd Env onstru (410) 3	Company vironmenta iction Insp 363-1555	l Engine ection ai	ers nd Testi	ing						TEST	PIT TF PAGE	P-239 1 OF 1
CLIER	NT EAE	nginee	ering, I	nc.					PRO			ude Landfill				
PROJ		ATIO		ntgome	ery County	, Maryla	and		PRO		UMBER	16943-0 M	D			
DATE	STARTE	D _7/*	18/18			IPLETE	D <u>7/18</u>	/18	GRO	UND E	LEVATION	N N	TE	ST PIT SIZ	E	
EXCA	VATION	CONT	RACTO	DR TI	he Robert	B. Balte	r Comp	any				WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCA	VATION	METH	OD						_	ATE .	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGO	GED BY	J. Bail	еу		CHE	CKED B	ΒΥ <u>Κ.</u>	Crist	7/18	8/18		0 ⊻			NE	
NOTE	S Lat: 3	9.106	56 Lon	g: - 77.	14034											
DEPTH (ft) OE	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG				Qilt.		Ν	MATEF	RIAL DESC	CRIPTION				
 		SM		<u>3.8</u>	Moist, Li	gin brow				Bottom	of test pit	at 5.0 feet				
GENERAL BH/TP/WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																

	Ge Ma Te	otechi aterials lephor	nical a and C	nd Env Constru (410)	Company vironmental uction Inspe 363-1555	Engineer ction and	rs ⊨Testing						TEST	PIT TF PAGE	P-240 1 OF 1
CLIE	NT EA E	ingine	ering, l	Inc.					PROJECT	NAME _G	ude Landfill				
PRO	JECT LOO	CATIO	N <u>Mo</u>	ntgom	ery County,	Maryland	d		PROJECT	NUMBER	16943-0 M				
									GROUND	ELEVATIO	N			E	
					he Robert B			y	DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
									7/17/18		HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					CHEC	KED BY	K. Crist	st	-						
NOT	ES Lat: N	N/A LO	ng: N//	A					-						
0.0 (ft) 0.0	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DES	CRIPTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		2.3	Moist, Lig	ht Brown	, Silty SA	AND	Bottor	n of test pi	t at 3.0 feet				

	Ge Ma Tel	e Robert B. Balter otechnical and En terials and Constr ephone No. (410) w.balterco.com	vironmenta uction Insp	al Eng bectior	ineers and Test	ing					TEST	PIT TF PAGE	P-241 1 OF 1
CLIE		ngineering, Inc.					PROJECT		Gude Landfill				
PRO	JECT LOC	ATION Montgon						NUMBER	16943-0 M	D			
DATI	E STARTE	D 7/17/18		MPLE1	FED 7/17	/18		ELEVATIO	DN			E	
EXC	AVATION		The Robert	B. Ba	lter Comp	any			WA ELAPSED	TER LEVE	_S HOLE	WATER	WATER
							DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
		J. Bailey		CKE) BY <u>K. (</u>	Crist	7/17/18		0 ⊻			NE	
NOT	ES _Lat: 3	9.10637 Long: -77	7.13711				_						
0. DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG					ERIAL DESC	CRIPTION			
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18			ML		3.0	rash	Brown, Sandy S		om of test pit	at 3.0 feet			

3	Geot Mate Tele	techn erials phon	ical a and C	nd En Constr (410)	Compa vironm uction 363-15	ental E Inspec	Engine tion ai	eers nd Tes	sting							TEST	PIT TI PAGE	P-242 1 OF 1
CLIENT	EA Eng	ginee	ring, l	nc.							_ PRO			ude Landfil	I			
PROJEC	T LOCA		Mo_Mo	ntgon	nery Co	ounty, I	Maryla	and						16943-0 N				
DATE ST											_ GRO	UND E	LEVATIO			EST PIT SIZ	E	
EXCAVA									ipany			ATE	TIME	ELAPSED	ATER LEVE	HOLE	WATER	WATER
EXCAVA												7/18	11141	HOURS 0 ⊈	DEPTH (ft) DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
LOGGED							KED B	ΒΥ <u>Κ</u>	Crist		-	.,		0 -				
NOTES _		.1065	Long	: -//.	13825						-							
O DEPTH O (ff)	SAMPLE 17PE NUMBER	U.S.C.S.	GRAPHIC LOG					0.1			ſ	MATEF	RIAL DES	CRIPTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT %5/18		SM		3.0	Tras		nt Brov	wn, Sil	Ity SAN	ND		Bottom	of test pir	t at 3.0 fee	t			

	Ma Tel	terials	and (ne No.	Construc (410) 36	ompany onmental l tion Inspec 33-1555	Enginee ction and	rs d Testing	1					TEST	PIT TI PAGE	P-243 1 OF 1
CLIEN	IT <u>EA E</u>	ngine	ering,	Inc.					PROJECT		ude Landfill				
PROJ	ECT LOC	ATIO	N <u>M</u> c	ontgomer	y County,	Marylan	d		PROJECT	NUMBER	16943-0 M	D			
DATE	STARTE	D _7/	17/18		_ COMP	PLETED	7/17/18	3	GROUND	ELEVATIO				E	
EXCA	VATION	CONT	RACT	OR The	e Robert B	. Balter	Company	у	DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
					N Backho				DATE 7/17/18	TIME	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					CHEC	KED BY	K. Cris	st	-		0 -				
NOTE	S <u>Lat: 3</u>	9.106	65 LOI	ng: -//.1	3783				-						
O DEPTH O (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DES	CRIPTION				
		SM	F	1.3	Moist, Ligl Trash	ht Browr	n, Silty S <i>i</i>	AND							
					114511										
				2.3					Bottor	n of test pi	t at 2.3 feet				

	3	Ge Ma Tel	otechi terials ephor	nical a and (nd Env Constru (410)	Compa vironme uction li 363-15	ental Er	nginee on and	ers d Test	ting						TEST	PIT TI PAGE	P-244 1 OF 1
CLI	IENT	EAE	ngine	ering,	Inc.						 PROJ		AME Gu	ide Landfill				
PR	OJE	CT LOC	ATIO	N <u>M</u> c	ontgom	ery Co	unty, M	larylan	nd					16943-0 N				
		STARTE									 GROL	JND E	LEVATION			EST PIT SIZ	E	
		ATION							Comp	bany	 DA	те	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
											 7/17			HOURS 0 ⊻	DEPTH (ft) DEPTH (ft)	DEPTH (ft)	ELEV (ft)
		DBY						ED BY	<u>к.</u>	Crist	 .,	,		0 -				
NO	IES	Lat: 3	9.107	39 LOI	ng: -//	.13/4/												
DEPTH		SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							N	IATEF	RIAL DESC	CRIPTION				
-	_		SM	F F	1.0	Mois		Browr	n, Silty	y SAND								
					1.3						 	Pottom	of tost nit	at 1.4 feet				
											E	SOLIOT	i oi test pit	al 1.4 leel				
9/5/18																		
SDT																		
TER.(
3 BAL																		
BERT																		
ROB																		
L.GPJ																		
IDFIL																		
ELAN																		
GUD																		
943-0																		
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/6/18																		
/ WE																		
H / TF																		
RAL BI																		
ENER																		
ں			I	1	I													

		Ge Ma Tel	otechi terials ephor	nical a	nd Er Constr (410)	Comparison Comparison Contron Control Comparison Compar	iental E Inspec	Engine tion ai	eers nd Tes	sting							TEST	PIT TI PAGE	P-245 1 OF 1
	CLIEN	T EA E	ngine	ering,	Inc.							_ PRO	JECT I	NAME Gu	ude Landfill				
	PROJ	ECT LOC	ATIO	N <u>Mo</u>	ontgon	nery Co	ounty, l	Maryla	and			_ PRO	JECT I	NUMBER	16943-0 N	1D			
	DATE	STARTE	D _7/	19/18			COMP	LETE	D _7/1	9/18		_ GRO	UND E	LEVATION			EST PIT SIZ	E	
	EXCA	VATION	CONT	RACT	OR _	The Ro	bert B.	Balte	r Com	ipany		-	ATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
_ I		VATION										_	9/18	TIME	HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
_ I		ED BY _						KED B	ΒΥ <u>Κ.</u>	Crist		- '''	9/10		0 -				
	NOTE	S <u>Lat: 3</u>	9.107	34 Lor	ng: -71	7.1384 [·]	1					-							
	O DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG									MATE	RIAL DESC	CRIPTION				
-			SM		1.3	Mois		it Brov	wn, Sil	Ity SAN	ND								
-	2.5																		
$\left \right $					3.3														
					13.3								Bottom	n of test pit	t at 3.3 feet	:			
5/18																			
DT 9/																			
ER.G																			
BALT																			
ERTB																			
ROBI																			
GPJ																			
NDFIL																			
DE LA																			
0 GUE																			
6943-																			
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																			
TP / W																			
. HBH /																			
IERAL																			
GEN																			

3	Materials	s and (ne No.	Constru (410) (Company /ironmental E uction Inspec 363-1555	Engineers tion and T	Festing						TEST	PIT TF PAGE	P-246 1 OF 1
CLIENT	EA Engine	ering,	Inc.				PROJ	ECT	NAME Gu	de Landfill				
PROJECT		N <u>M</u> c	ontgom	ery County, I	Maryland		PROJ	ECT	NUMBER _	16943-0 M	D			
DATE ST	ARTED _7/	19/18		COMP		7/19/18	GROL	JND E	LEVATION	۱		ST PIT SIZ	E	
				he Robert B.		ompany	DA	TE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
				80N Backhoe			DA		TIME	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
				CHECI	KED BY _	K. Crist	//15	,10		0 -				
NOTES	Lat: 39.107	79 Loi	ng: -77	.13878										
O DEPTH O (ft) SAMDI F TVPF	U.S.C.S.	GRAPHIC LOG					Μ	1ATEF	RIAL DESC	CRIPTION				
GENERAL BH/TP/WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18	SM		3.8	Moist, Ligh	nt Brown, -	Silty SAND	E	3ottorr	I of test pit	at 6.2 feet				

	The Ge Ma Tel ww	e Robe otechr terials ephon w.balt	ert B. E nical an and C ie No. erco.c	Balter (nd Env Constru (410) 3 om	Company ironmenta ction Inspe 363-1555	l Enginee ection an	ers id Testir	ng					TEST	PIT TF PAGE	P-247 1 OF 1
CLIEN	NT EAE								PROJECT	NAME _G	ude Landfill				
PROJ	ECT LOC	ATIO	M Mo	ntgome	ery County	, Marylaı	nd		_ PROJECT	NUMBER	16943-0 M	D			
					COM				_ GROUND I	ELEVATIO	DN			E	
					ne Robert		Compa	ny	DATE	TIME	ELAPSED	TER LEVEI CASING	HOLE	WATER	WATER
					30N Backh			riot	7/19/18		<u>HOURS</u> 0 ⊻	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	S Lat: 3				CHE		I <u>R.</u>	151	-						
0.0 DEPTH	SAMPLE TYPE NUMBER		GRAPHIC LOG	<u></u>					 MATE	RIAL DES	SCRIPTION				
0.0 2.5 		SM		<u>3.3</u> 3.5	Moist, Li	ght Brow	n, Silty :	SAND	Bottor	n of test p	it at 3.6 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18															

	Ge Ma Te	otechi iterials lephor	nical a and C	nd Env Constru (410)	Compar vironme uction In 363-155	ntal Eng	ineers n and T	esting							TEST	PIT TI PAGE	P-248 1 OF 1
CLIE	NT EAE	ingine	ering, I	nc.						_ PROJE	CTN	AME _Gu	ide Landfill				
PRO	JECT LOO	CATIO	N <u>Mo</u>	ntgom	ery Cou	inty, Mar	yland			_ PROJE	CTN	UMBER _	16943-0 N	1D			
	E STARTE									_ GROUN	DE	LEVATION			EST PIT SIZ	E	
	AVATION						lter Co	mpany	,	DATE	.	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
	AVATION									- 7/17/1			HOURS 0 ⊻	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
						HECKEL) BY <u> </u>	K. Crist	1	-	Ĭ		0 -				
NOT	ES <u>Lat:</u> 3	9.108	56 LOP	ng: -//	.1384					_							
o DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MA	TEF	RIAL DESC	CRIPTION				
	-	SM	FF	1.5	Moist Trash	, Light B	rown, S	Silty SA	ND								
	_			2.0						Bo	ttom	of test nit	at 2.0 feet				
										20		or toot pit	ut 2.0 100				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

	e Robe eotechr aterials lephon vw.balt	and (e No.	Construe (410) 3	Company ronment ction Ins 63-1555	/ tal Engi pection	ineers and T	esting							TEST	PIT TF PAGE	2-249 1 OF 1
	Ingine	ering,	Inc.						PROJEC	NAM	E_Gu	ide Landfill				
PROJECT LO				-		-			-			16943-0 M				
DATE START									GROUNE	ELEV	ATION	N		ST PIT SIZ	E	
EXCAVATION						lter Co	mpany		DATE	Т	ME	ELAPSED HOURS		LO HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER
EXCAVATION						BY	K Crist		7/17/18			0 <u>⊻</u>			NE	
NOTES Lat:						· <u> </u>										
G DEPTH (ft) SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MAT	ERIAL	DESC	CRIPTION	I	I		
	SM	F	3.0	Trash	Light Bi	rown, \$	Silty SAN	ND	Bott	om of t	est pit	at 3.5 feet				

	9	Ge Ma Tel	otechr terials ephon	nical a a a	nd En Constru (410)	uction	nental l Inspec	Engine	eers ind Te	sting								TEST	PIT TI PAGE	P-250 1 OF 1
c		<u>т</u> <u>еае</u>										PR	OJECT	NAME _	Gud	e Landfill				
Р	ROJE	ECT LOC	ATIO	N <u>M</u> o	ntgom	ery Co	ounty,	Maryla	and			PR	OJECT	NUMBER	R _1	6943-0 MI	D			
		STARTE										GF	ROUND E	ELEVATIO	ON			ST PIT SIZ	E	
		VATION							er Com	npany			DATE	TIME		ELAPSED	TER LEVE CASING	HOLE	WATER	WATER
										<u> </u>		_ ⊢	/17/18			HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
		ED BY						KED E	3Υ <u>κ</u>	. Crist		- `								
	UIE	S <u>Lat: 3</u>	9.100		ig <i>r i</i>	.1370	0					_								
	(#) 0.0	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG									MATE	RIAL DES	SCF	RIPTION				
-	_		SM	F	1.8	Moi	st, Ligl	ht Brov	wn, Sil	Ity SA	ND									
F	-				2.0								Bottor	n of test p	pit a	at 2.0 feet				
9/5/18																				
GDT																				
LTER																				
T B B/																				
OBER.																				
PJ R																				
EILL.G																				
LAND																				
SUDE																				
43-0 0																				
-L 169																				
/ MEI																				
H/TP																				
RAL B																				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																				

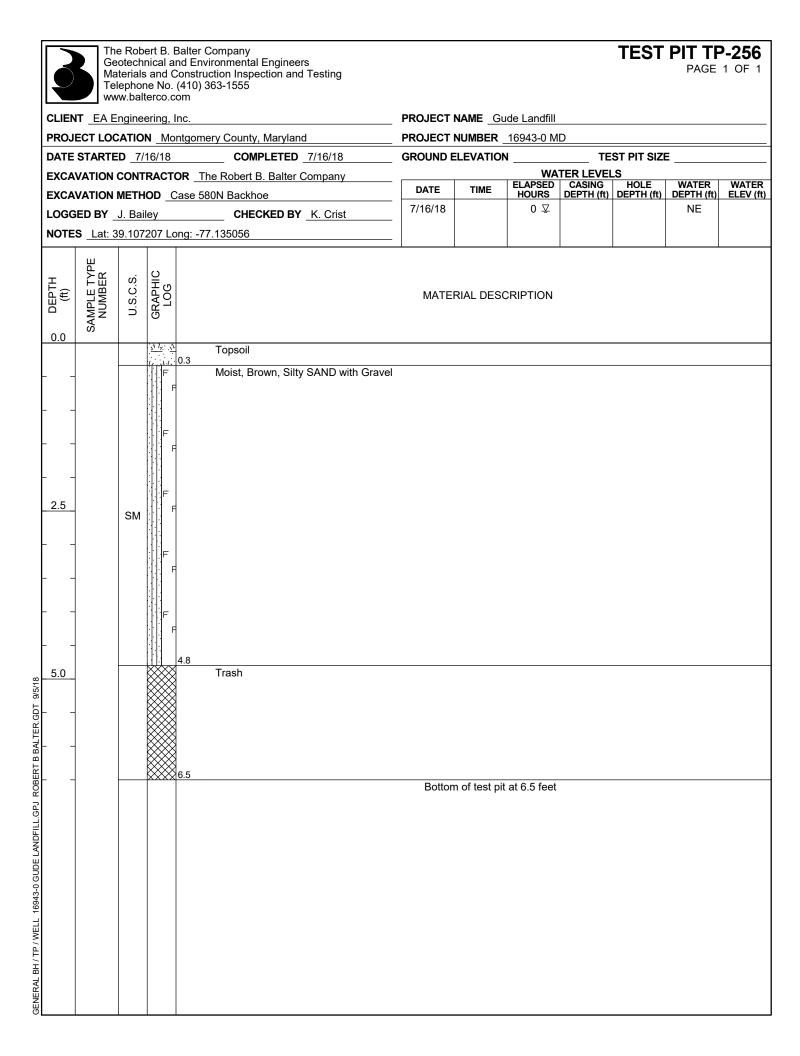
	Ge	otechi terials	nical a and C	nd En Constr	Company vironmen uction Ins 363-1555	tal Engi	neers and Te	esting							TEST	PIT TF PAGE	P-251 1 OF 1
CLIEN	NT EAE									PROJECT	NAM	E Gu	de Landfill				
PROJ	ECT LOC	ATIO	N <u>Mo</u>	ntgon	nery Coun	ity, Mary	yland			PROJECT	NUM	BER _	16943-0 M	D			
					co					GROUND	ELEV	ATION			ST PIT SIZ	Ε	
					The Rober		Iter Cor	mpany		DATE	T	IME	ELAPSED	TER LEVE	HOLE	WATER	WATER
					80N Back					7/17/18	- ·		HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					Сн	ECKED) BY _K	C. Crist					0 -				
NOTE	S <u>Lat: 3</u>	9.108	U2 Lor	ng: - <i>1 i</i>	7.13806												
0. DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATE	RIAL	DESC	RIPTION				
	_	SM	F	1.0	Moist,	Light Br	rown, S	ilty SAN	ND								
 <u>2.5</u>	-			3.0	Trash												
	-			3.0						Botto	m of t	est pit	at 3.0 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

		Ge Ma Tel	otechr terials ephor	nical a and C	nd En Constr (410)	Compa vironm uction I 363-15	ental E	nginee ion an	ers d Testi	ing						TEST	PIT TI PAGE	P-252 1 OF 1
	CLIEN		nginee	ering, l	nc.						 PROJECT		Guo	le Landfill				
	PROJ	ECT LOC	ATIO	N <u>M</u> o	ntgom	nery Co	ounty, N	larylar	nd		 PROJECT	NUMBE	R _1	16943-0 M	D			
		STARTE									 GROUND I	ELEVAT	ION				E	
		VATION							Comp	any	 DATE	TIME	-	ELAPSED	TER LEVE CASING	HOLE	WATER	WATER
		VATION I									 7/17/18		-	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
								ED B	r <u>K</u> . C	Crist				0 1				
	NOTE	S _Lat: 3	9.107	69 Lor	ng: -77	7.13729)											
	o DEPTH o (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATE	rial de	ESCI	RIPTION				
			SM	F F	1.5			Brow	n, Silty	SAND								
						Tras	h											
				$\sim \sim \sim$	2.0						Bottor	n of test	t pit a	at 2.0 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																		
GENERAL																		

Www.balterco.com PROJECT NAME Gude Landfill PROJECT LOCATION Montgomery County, Manyland PROJECT NUMBER 16943-0 MD DATE STARTED 7/17/18 COMPLETED 7/17/18 EXCAVATION CONTRACTOR The Robert B. Balter Company GROUND ELEVATION EXCAVATION METHOD Case 580N Backhoe Image: CheckEd By K. Crist LOGGED BY J. Balter CHECKED BY K. Crist NOTES Lat: 39: 10805 Long: -77.1365 Material DESCRIPTION ####################################	ER WATER H (ft) ELEV (ft)
PROJECT LOCATION Montgomery County, Maryland PROJECT NUMBER _16943-0 MD DATE STARTED _7/17/18	ER WATER H (ft) ELEV (ft)
WATER LEVELS EXCAVATION CONTRACTOR The Robert B. Balter Company EXCAVATION METHOD Case 580N Backhoe LOGGED BY J. Bailey CHECKED BY K. Crist DATE TIME ELAPEED HOURS DEPTH (th)	ER WATER H (ft) ELEV (ft)
EXCAVATION METHOD Case 580N Backhoe DATE TIME ELAPSED CASING HOLE WORD DEPTH(ft) DEPTH(f	H (ft) ELEV (ft)
LOGGED BY J. Bailey CHECKED BY K. Crist 7/17/18 0 II N NOTES Lat: 39.10805 Long: -77.1365 MATERIAL DESCRIPTION MATERIAL DESCRIPTION Hage Hage TESTS IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	
Lotode B S _ 0 Bailey Officients Officients Officients H = 0 H = 0 H = 0 H = 0 H = 0 H = 0 H = 0 H = 0 H = 0 H = 0 0.0 H = 0 H = 0 H = 0 H = 0 0.0 H = 0 H = 0 H = 0 H = 0 0.0 H = 0 H = 0 H = 0 H = 0 0.0 H = 0 H = 0 H = 0 H = 0 0.0 H = 0 H = 0 H = 0 H = 0 0.0 H = 0 H = 0 H = 0 H = 0 0.0 H = 0 H = 0 H = 0 H = 0 0.0 H = 0 H = 0 H = 0 H = 0 0.0 H = 0 H = 0 H = 0 H = 0 1 H = 0 H = 0 H = 0 H = 0 H = 0 1 H = 0 H = 0 H = 0 H = 0 H = 0 2.5 H = 0 H = 0 H = 0 H = 0 H = 0 1 H = 0 H = 0 H = 0 H = 0 H = 0 <td></td>	
Here Here Here 0.0 TESTS g 0.0 TESTS g 0.0 Moist, Light Brown, Silty SAND	
0.0	
0.0 5.5 Trash 7.5 7.0	

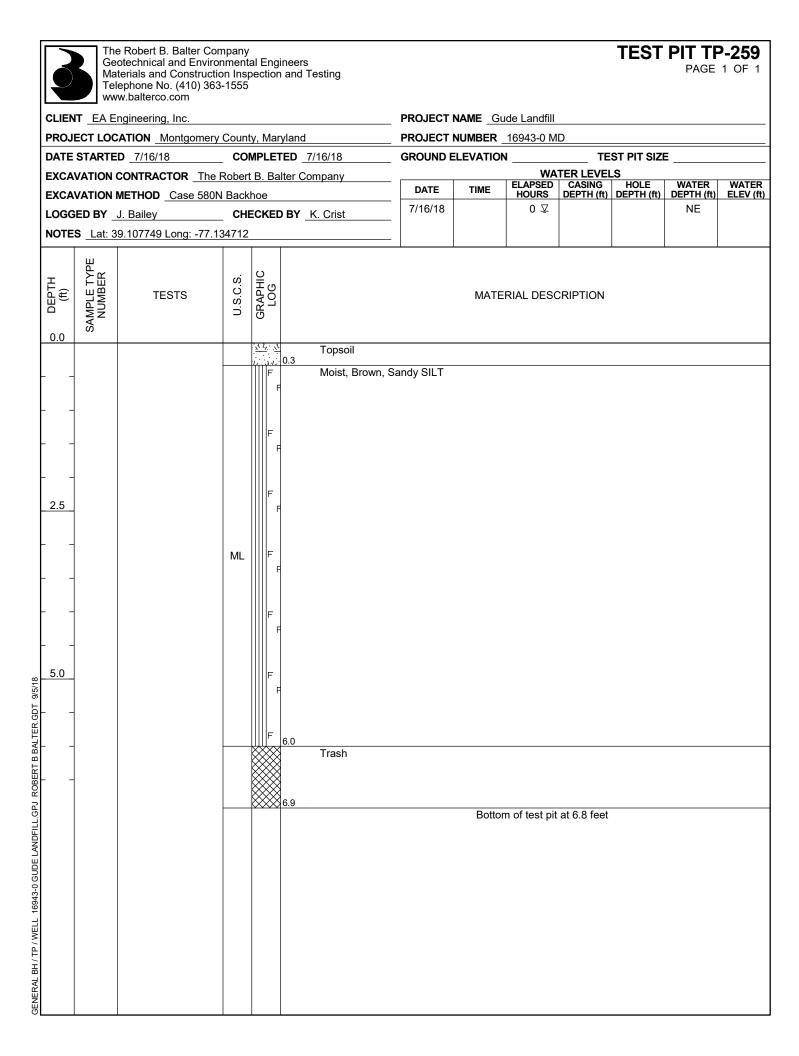
	Ge Ma Tel	otech terials ephor	nical a and (nd Env Constru (410) (Company vironment Iction Ins 363-1555	al Engin	eers and Test	ting						TEST	PIT TF PAGE	P-254 1 OF 1
CLIEN	IT EAE	ngine	ering,	Inc.					P	ROJECT I		ude Landfill				
PROJ	ECT LOC	ATIO	N Mc	ontgom						ROJECT I	NUMBER	16943-0 M	D			
DATE	STARTE	D_7/	16/18		CO	MPLETE	D _7/16	6/18	G		LEVATIO	N	TE	ST PIT SIZ	E	
EXCA		CONT	RACT		he Rober	t B. Balte	er Comp	bany					TER LEVE	LS HOLE	WATER	WATER
EXCA	VATION I	METH		Case 58	30N Back	thoe				DATE	TIME	ELAPSED HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGG	ED BY _	J. Bai	ley		СН	ECKED	BY <u>K.</u>	Crist		7/16/18		0 ⊻			NE	
NOTE	S Lat: 3	9.107	852 Lo	ong: -7	7.13603											
0. DEPTH (ft) 0	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATER	RIAL DES	CRIPTION				
			7 <u>77</u> .7	0.3	Topsoil											
 <u>2.5</u> 		SM		3.9	Moist, f	Reddish	Brown,	Silty SAN	ND with G	Bravel (Fill		t at 4.3 feet				
										Bottom	n of test pi	t at 4.3 feet				

	Ge Ma Tel	otechi terials	nical a and (ne No.	ind En Constru (410)	Company vironmental uction Inspe 363-1555	Enginee ection an	ers d Testing	g					TEST	PIT TF	P-255 1 OF 1
CLIEN	IT EAE	ngine	ering,	Inc.					PROJECT	NAME Gu	ude Landfill				
PROJ	ECT LOC	ATIO	N Mc	ontgom	ery County	, Marylar	nd		PROJECT	NUMBER	16943-0 M	D			
DATE	STARTE	D_7/	16/18		COM	PLETED	7/16/1	8	GROUND		N	TE	ST PIT SIZ	E	
EXCA	VATION	CONT	RACT	OR _T	he Robert E	B. Balter	Compan	ıy			WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCA	VATION	METH		Case 5	80N Backho	oe			DATE	TIME	HOURS		DEPTH (ft)	DEPTH (ft)	
LOGG	ED BY	J. Bai	ey		CHEC	CKED B	K. Cri	st	7/16/18		0 ⊻			NE	
NOTE	S <u>Lat: 3</u>	9.107	514 Lo	ong: -7	7.135773				-						
0. DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DESC	CRIPTION				
			<u>x1 1/2</u> . <u>x1</u>	0.3	Topsoil										
 <u>2.5</u>		SM		3.3	Moist, Br	own, Silt	y SAND	with Grave	I And Boulder	S					
				3.5	Trash				Bottor	n of test nit	t at 3.3 feet				

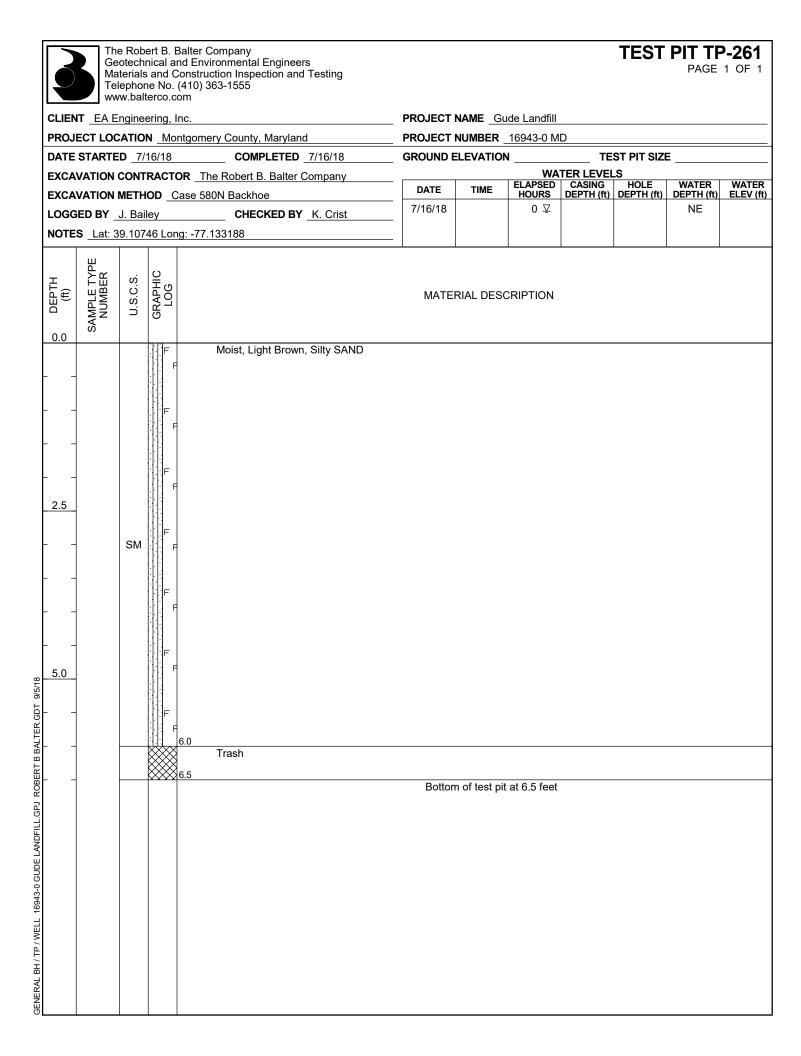


	Ge Ma Tel	otechi terials ephor	nical a	and Envir Construc (410) 30	ompany ronmental tion Inspe 63-1555	Enginee ction an	ers id Testing	g					TEST	PIT TF PAGE	P-257 1 OF 1
CLIEN	IT EA E	ngine	ering,	Inc.					PROJECT		ude Landfill				
PROJ	ECT LOC	ATIO	N _ Mo	ontgome	ry County,	Maryla	nd		PROJECT	NUMBER	16943-0 M	D			
DATE	STARTE	D _7/	16/18			PLETED	7/16/1	8	GROUND	ELEVATIO			ST PIT SIZ	E	
EXCA	VATION	CONT	RACT	OR Th	e Robert E	8. Balter	Compar	ny	-		WA	TER LEVE	LS HOLE	WATER	WATER
					ON Backho				DATE 7/16/18	TIME	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					CHEC	KED B	Y K. Cri	ist	-		0 -				
NOTE	S <u>Lat: 3</u>	9.107	24 Lo	ng: -77.1	34086				-						
O DEPTH O (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DES(CRIPTION				
0.0	0	SM		1.9	Topsoil Dry, Brow	/n, Silty	SAND w	vith Gravel	Bottor	n of test pit	t at 3.0 feet				

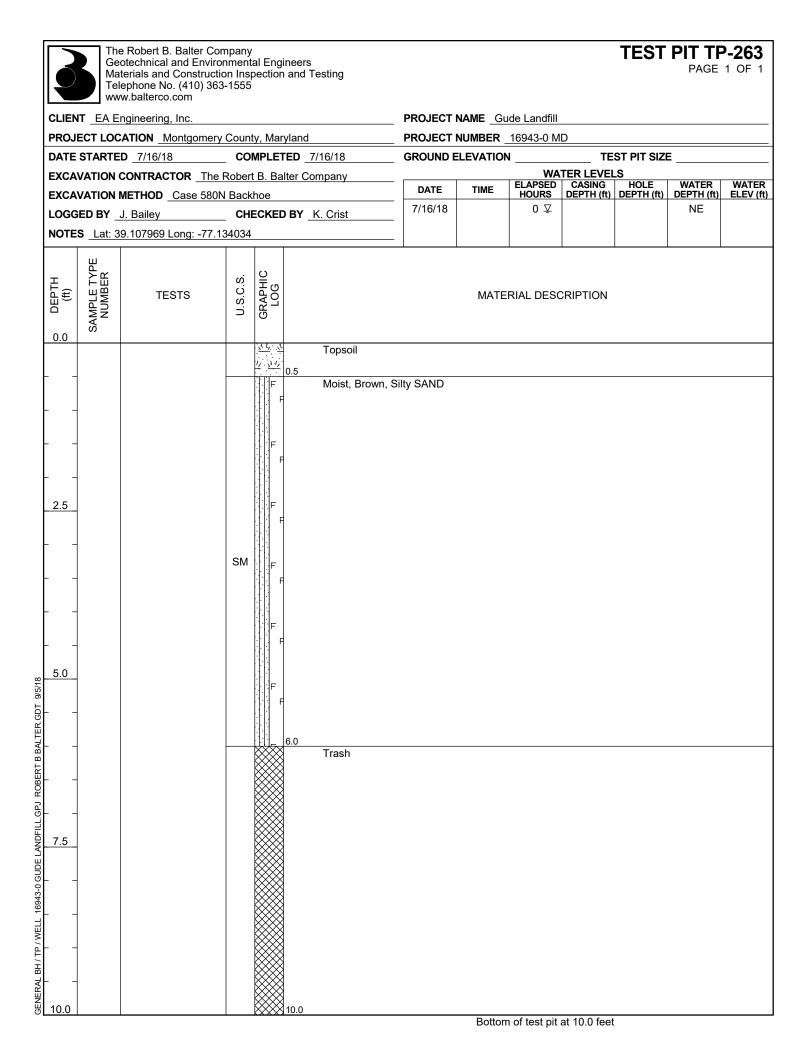
The Robert B. Balter Con Geotechnical and Enviro Materials and Construction Telephone No. (410) 363 www.balterco.com	nmental Engineers on Inspection and Testing					TEST	PIT TF PAGE	-258 1 OF 1			
		PROJECT	NAME Gu	de Landfill							
PROJECT LOCATION Montgomery		PROJECT		16943-0 MI	D						
DATE STARTED 7/16/18	COMPLETED 7/16/18	GROUND ELEVATION TEST PIT SIZE									
EXCAVATION CONTRACTOR _ The	Robert B. Balter Company				TER LEVEL CASING	_S HOLE	WATER	WATER			
EXCAVATION METHOD Case 580N	N Backhoe	DATE	TIME	ELAPSED HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)			
LOGGED BY J. Bailey	CHECKED BY K. Crist	7/16/18		0 ⊻			NE				
NOTES Lat: 39.107704 Long: -77.1	35629	-									
HLAD NUMBER 0.0	U.S.C.S. GRAPHIC LOG		MATE	RIAL DESC	RIPTION						
	ML F H H H H H H H H H H H H H	Sandy SILT	Botton	n of test pit	at 4.5 feet						



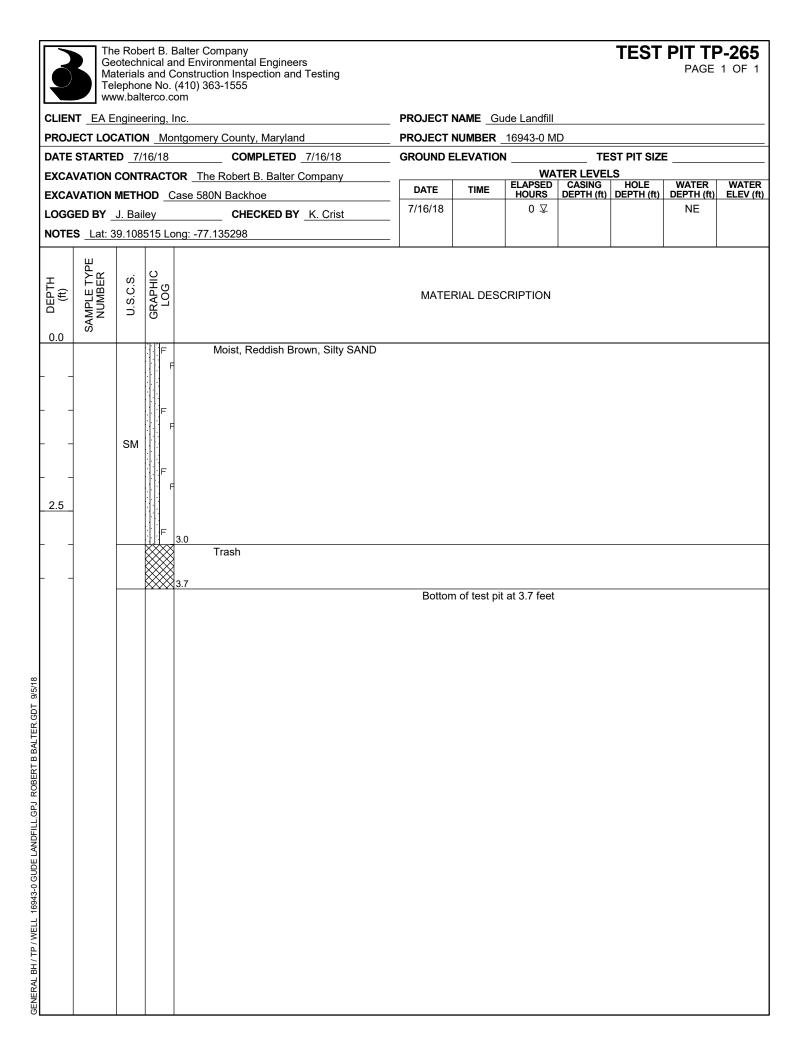
	Ge Ma Tel	otechi terials	nical a and (ie No.	Balter Company and Environmental Engineers Construction Inspection and Testing . (410) 363-1555 com					TEST	PIT TF PAGE	P-260 1 OF 1			
CLIEN		nginee	ering,	Inc.	PROJECT	NAME Gu	ude Landfill							
PROJ	ECT LOC		N Mo	ontgomery County, Maryland	PROJECT	NUMBER	16943-0 M	D						
DATE	STARTE	D_7/*	16/18	COMPLETED _7/16/18	GROUND ELEVATION TEST PIT SIZE									
EXCA		CONT	RACT	OR _The Robert B. Balter Company				TER LEVE	LS					
EXCA		метн	OD _(Case 580N Backhoe	DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)			
LOGO	ED BY	J. Bail	ey	CHECKED BY K. Crist	7/16/18		0 ⊻			NE				
NOTE	S Lat: 3	9.105	66 Lo	ng: -77.13373										
0.0 (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		MATE	RIAL DESC	CRIPTION							
		SM		F 4.0 Trash 4.5	Botton	n of test pit	t at 4.6 feet							



B	Th Ge Ma Te ww	e Robe eotechi aterials lephor ww.balt	ert B. E nical a and C ne No. erco.c	Balter nd Env Constru (410) S om	Company /ironment uction Insp 363-1555	al Engin pection a	eers and Test	ting						TEST	PIT TF PAGE	P-262 1 OF 1
CLIEN									P	ROJECT	NAME G	ude Landfill				
PROJ	ECT LOO	CATIO	N <u>Mo</u>	ntgom	ery Count	ty, Maryl	and		P	ROJECT	NUMBER	<u>16943-0 M</u>	D			
DATE	STARTE	D _7/	16/18		COI	MPLETE	D 7/16	6/18	G	ROUND E	LEVATIO	N			E	
EXCA	VATION	CONT	RACTO)r _T	he Robert	t B. Balte	er Comp	bany	— r			WA	TER LEVE	LS HOLE	WATER	WATER
					80N Back					DATE 7/16/18	TIME	HOURS 0 \[\frac{1}{2}\]	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					CH		BY <u>K.</u>	Crist		//10/10		0 ¥				
NOTE	S _Lat: 3	39.107	675 Lc	ong: -7	7.133093											
O DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Moiot E					MATE	RIAL DES	CRIPTION				
	-	SM		2.0		3rown, S	ilty SAN	1D								
<u>2.5</u> 	-			3.8	Trash											
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18										Botton	n of test pi	t at 3.8 feet				



Geotechr	ert B. Balter Company nical and Environmental Engineers and Construction Inspection and Testing le No. (410) 363-1555 erco.com					TEST	PIT TP PAGE	-264 1 OF 1
CLIENT EA Enginee		PROJECT	NAME Gu	ıde Landfill				
	N _Montgomery County, Maryland	PROJECT)			
DATE STARTED 7/1	16/18 COMPLETED _7/16/18	GROUND E		۱	TE	ST PIT SIZE	-	
EXCAVATION CONTI	RACTOR The Robert B. Balter Company					S		
EXCAVATION METH	OD _Case 580N Backhoe	DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
LOGGED BY J. Bail	ey CHECKED BY K. Crist	7/16/18		0 🛛			NE	
NOTES Lat: 39.108	534 Long: -77.136183	_						
G DEPTH G (ft) SAMPLE TYPE NUMBER U.S.C.S.	OH 90 CYAPH COR BO CYAPH COR BO Solution Correction Cor		RIAL DESC	CRIPTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18	Moist, Brown, Silty SAND with Bould F F F S S S S S S S S S S S S S		n of test pit	at 5.5 feet				



CLIENT EA Engineering, Inc. PROJECT NAME Gude Landfill PROJECT LOCATION Montgomery County, Maryland PROJECT NUMBER 16943-0 MD DATE STARTED 7/16/18 COMPLETED 7/16/18 GROUND ELEVATION TEST PIT SIZE EXCAVATION CONTRACTOR The Robert B. Balter Company GROUND ELEVATION TEST PIT SIZE EXCAVATION METHOD Case 580N Backhoe Date Time Hubber Costing WATER LEVELS IOGGED BY J. Baltey CHECKED BY K. Crist NTES NTES NE NOTES Lat: 39.108506 Long: -77.134112 MATERIAL DESCRIPTION NE U U U NE NE 0.0 V U V NE 0.0 V V MATERIAL DESCRIPTION NE 0.0 V V V NE 0.0 V V V V V V V V V V V V V V V V V V V V V V V V V V </th <th></th> <th>Ge</th> <th>otechr</th> <th>nical an</th> <th>d Env</th> <th>Company ironmental ction Inspe 863-1555</th> <th>Enginee ction and</th> <th>rs d Testing</th> <th>I</th> <th></th> <th></th> <th></th> <th></th> <th>TEST</th> <th>PIT TF PAGE</th> <th>P-266 1 OF 1</th>		Ge	otechr	nical an	d Env	Company ironmental ction Inspe 863-1555	Enginee ction and	rs d Testing	I					TEST	PIT TF PAGE	P-266 1 OF 1
DATE STARTED 7/16/18 COMPLETED 7/16/18 GROUND ELEVATION TEST PIT SIZE EXCAVATION CONTRACTOR The Robert B. Balter Company WATER LEVELS WATER LEVELS EXCAVATION METHOD Case 580N Backhoe Date Time ELORS DePTH (h)	CLIEN									PROJECT		ude Landfill				
WATER LEVELS EXCAVATION CONTRACTOR The Robert B. Balter Company EXCAVATION METHOD Case 560N Backhoe LOGGED BY J. Bailey OHECKED BY K. Crist NOTES Lat: 39.108506 Long: -77.134112 H	PROJ	ECT LOC	ATIO	N <u>Mon</u>	itgome	ery County,	Marylan	ld		PROJECT	NUMBER	16943-0 M	D			
EXCAVATION METHOD Case 580N Backhoe LOGGED BY J. Bailey CHECKED BY K. Crist NOTES Lat: 39.108506 Long: -77.134112 7/16/18 0 ¥ H B U 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 0 ¥ H 1 1 1 H 1 1 1 H 1 1 1 H 1 1 1 H 1 1 1 H 1 1 H 1	DATE	STARTE	D _7/	16/18			PLETED	7/16/18	3	GROUND E	LEVATIO				I	
EXAMINATION THE THOSE Cases source backflow Thomas Definition Definition <thdefinition< th=""> Definition Definiti</thdefinition<>								Company	У	DATE	TIME	ELAPSED	CASING	HOLE	WATER	WATER
Lotatey Checked Bit Noist NOTES Lat: 39.108506 Long: -77.134112 MATERIAL DESCRIPTION $H_{add e}$													DEPTH (ft)	DEPTH (ft)		ELEV (ft)
Here Here Here Here 0.0 0.0 Material Description 0.0 Moist, Brown, Silty SAND 1 F 2.5 SM 2.5 Trash							KED BY	K. Cris	st			0 1				
0.0 Moist, Brown, Silty SAND - - - - - - 2.5 Trash 3.2 Bottom of test pit at 3.2 feet	NOTE	:S _Lat: 3	9.108	506 Lor	ng: -/ i	0.134112										
SM F 2.5 2.5 3.2 Bottom of test pit at 3.2 feet		SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DES	CRIPTION				
AF BH / TP / WELL 1000000000000000000000000000000000000			SM				own, Silty	y SAND		Botton	n of test pit	t at 3.2 feet				

	Ma Tel	terials ephor	and (Constr (410)	Compa vironm uction 363-1	any iental E Inspect 555	ingine ion an	ers nd Testi	ing						TEST	PIT TF	P-267 1 OF 1
CLIEN	T EA E	ngine	ering,	Inc.						PF	ROJECT		ude Landfill				
PROJ	ECT LOC	ATIO	N Mo	ontgon	nery Co	ounty, N	/laryla	nd		PF	ROJECT		16943-0 N	ID			
DATE	STARTE	D _7/	16/18			COMPL	ETED) 7/16	/18	GI	ROUND E	ELEVATIO	N			E	
EXCA	VATION	CONT	RACT	OR _1	he Ro	bert B.	Balter	Comp	any	— r	DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
	VATION									— -	DATE 7/16/18	TIME	HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
						CHECK	(ED B)	Υ <u>Κ.</u>	Crist	'	//10/10		0 -				
NOTE	S <u>Lat: 3</u>	9.108	229 L(ong: - <i>i</i>	7.133	38											
O DEPTH O (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG								MATE	RIAL DESC	CRIPTION				
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	Ma Tel	terials ephor	and (Balter Company nd Environmental En Construction Inspectic (410) 363-1555 com	gineers on and Testing						TEST	PIT TF PAGE	P-268 1 OF 1
CLIEN		ngine	ering,	Inc.			PROJECT I	NAME Gu	ide Landfill				
PROJ	ECT LOC	ATIO	N <u>M</u> c	ntgomery County, Ma	aryland		PROJECT I		16943-0 M	D			
				COMPLE			GROUND E	LEVATION				Ε	
				OR The Robert B. B	alter Company		DATE	TIME	ELAPSED	TER LEVEI CASING	HOLE	WATER	WATER
				Case 580N Backhoe CHECKE	D BV K Criet		7/17/18		HOURS 0 ⊻	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
				ng: -77.13675									
O DEPTH O (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG				MATE	RIAL DESC	CRIPTION				
		SM		3.0 Trash 3.5	Brown, Silty SA	ND	Botton	n of test pit	at 3.5 feet				

Th Ge Ma Te ww	e Robe otechr terials lephon w.balt	ert B. I nical a and C ie No. erco.c	Balter nd Er Constr (410) om	Company Ivironme ruction li 363-15	any ental En nspectio 55	ngineers on and	s Testin	ng						TEST		P-269 1 OF 1
									PR	OJECT	NAME _G	ude Landfill				
ECT LOO	ATIO	M <u>Mo</u>	ntgon	nery Co	unty, M	aryland	b		PR	OJECT	NUMBER	16943-0 N	ID			
STARTE	D _7/	17/18		0	COMPLI	eted _	7/17/1	18	GF	ROUND E	LEVATIO				E	
			_			Balter C	Compa	ny	— _	DATE	TIME	ELAPSED	CASING	HOLE	WATER	WATER
									⊢				DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
									'	/ 17/10		0 -				
:S _Lat: 3	9.109	85 Lor	ng: -/ .	7.13716												
SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG								MATE	RIAL DES	SCRIPTION				
	SM		2.5		-	Brown,	, Silty S	SAND		Botton	n of test p	it at 3.5 feet				
	Ma Tel WM TEAE WATION SED BY _ ES _Lat: 3	Materials Telephon www.balt	Materials and C Telephone No. www.balterco.c NT <u>EA Engineering</u> ECT LOCATION <u>Mo</u> STARTED <u>7/17/18</u> NATION CONTRACTO NATION METHOD <u>C</u> SED BY <u>J. Bailey</u> S <u>Lat: 39.10985 Lor</u> UATION <u>METHOD C</u> SED BY <u>J. Bailey</u> S <u>Lat: 39.10985 Lor</u> UATION <u>METHOD C</u> SED BY <u>J. Bailey</u> S <u>Lat: 39.10985 Lor</u> S <u>S Lat: 39.10985 Lor</u> S <u>S S S S S S S S S S S S S S S S S S </u>	Materials and Constitute Telephone No. (410) www.balterco.com	Materials and Construction I Telephone No. (410) 363-15 www.balterco.com T _EA Engineering, Inc. IECT LOCATION _Montgomery Co STARTED _7/17/18 AVATION CONTRACTOR _The Rot AVATION METHOD _Case 580N Ba SED BY _J. Bailey SEL at: 39.10985 Long: -77.13716 WARD SMF SMF F 	Materials and Construction Inspecti Telephone No. (410) 363-1555 www.balterco.com T_EA Engineering, Inc. ECT LOCATIONMontgomery County, M STARTED7/17/18COMPL EXATION CONTRACTORThe Robert B. F EXATION METHODCase 580N Backhoe GED BYJ. BaileyCHECKU SCO GED BYCO GED BY	Materials and Construction Inspection and Telephone No. (410) 363-1555 www.balterco.com T_EA Engineering, Inc. TECT LOCATION _Montgomery County, Maryland STARTED _7/17/18 COMPLETED AVATION CONTRACTOR _The Robert B. Balter O AVATION METHOD _Case 580N Backhoe GED BY _J. Bailey CHECKED BY S Lat: 39.10985 Long: -77.13716	WT _EA Engineering, Inc. JECT LOCATION _Montgomery County, Maryland STARTED _7/17/18 COMPLETED _7/17/7 VATION CONTRACTOR _The Robert B. Balter Compa VATION METHOD _Case 580N Backhoe SED BY _J. Bailey CHECKED BY _K. Cr SS _Lat: 39.10985 Long: -77.13716 WATION WETHOD _Case 580N Backhoe SED BY _J. Bailey CHECKED BY _K. Cr S _Lat: 39.10985 Long: -77.13716 WAT BY _SO SO	Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com T _EA Engineering, Inc. TECT LOCATION _Montgomery County, Maryland STARTED _7/17/18 COMPLETED _7/17/18 WATION CONTRACTOR _The Robert B. Balter Company WATION METHOD _Case 580N Backhoe SED BY _J. Bailey CHECKED BY _K. Crist S _Lat: 39.10985 Long: -77.13716	Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com WT_EA Engineering, Inc. PR FECT LOCATION Montgomery County, Maryland PR STARTED _7/17/18 GR VATION CONTRACTOR _The Robert B. Balter Company VATION METHOD _Case 580N Backhoe SED BY _J. Bailey CHECKED BY _K. Crist S _Lat: 39.10985 Long: -77.13716	Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com PROJECT I VT_EA Engineering, Inc. PROJECT I IECT LOCATION Montgomery County, Maryland PROJECT I STARTED 7/17/18 COMPLETED 7/17/18 GROUND E WATION CONTRACTOR The Robert B. Balter Company DATE VATION METHOD Case 580N Backhoe 7/17/18 SED BY J. Bailey CHECKED BY K. Crist TS Lat: 39.10985 Long: -77.13716 MATEI Go WATEN Go WATEN Go SM F F Moist, Light Brown, Silty SAND F 2.5 Trash Trash	Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 Www.ballerco.com NT EA Engineering, Inc. PROJECT NAME _G JECT LOCATION Montgomery County, Maryland PROJECT NUMBER STARTED 7/17/18 GROUND ELEVATION VATION CONTRACTOR The Robert B. Balter Company DATE TIME VATION METHOD Case 580N Backhoe 7/17/18 7/17/18 SED BY J. Bailey CHECKED BY K. Crist 7/17/18 IS Lat: 39.10985 Long: -77.13716 MATERIAL DES MATERIAL DES WATERIAL DES S GROUND MATERIAL DES WATERIAL DES S S S WATERIAL DES S S S WATERIAL DES S S S MATERIAL DES S S S S S S S S Y Trash S S S	Materials and Construction Inspection and Testing Trephone No. (410) 363-1555 www.balterco.com PROJECT NAME _Gude Landfill VIT_EA_Engineering, Inc. PROJECT NAME _Gude Landfill IECT LOCATION _Montgomery County, Maryland PROJECT NUMBER _ 16943-0 M STARTED_7/17/18 COMPLETED_7/17/18 GROUND ELEVATION	Materials and Construction Inspection and Testing Telephone No. (410) 363-1555 www.balterco.com PROJECT NAME Gude Landfill IFECT LOCATION Montgomery County, Maryland PROJECT NUMBER _ 16943-0 MD IECT LOCATION Montgomery County, Maryland PROJECT NUMBER _ 16943-0 MD IECT LOCATION Montgomery County, Maryland PROJECT NUMBER _ 16943-0 MD IECT LOCATION	Bedeechnical and Environmental Engineers Steppone No. (410) 363-1555 www.balterco.com PROJECT NAME _Gude Landfill YT EA Engineering, Inc. PROJECT NUMBER_19943-0 MD JECT LOCATION _Montgomery County, Maryland PROJECT NUMBER_19943-0 MD STARTED _7/17/18 COMPLETED _7/17/18 GROUND ELEVATION	Materials and Construction Inspection and Testing Telephone No. (410) 383-1555 www.balterco.com PROJECT NAME _Gude Landfill VAT EA Engineering, Inc. PROJECT NAME _Gude Landfill ECT LOCATION _Montgomery County, Maryland PROJECT NUMBER _16943-0 MD STARTED _7/17/18 COMPLETED _7/17/18 GROUND ELEVATION

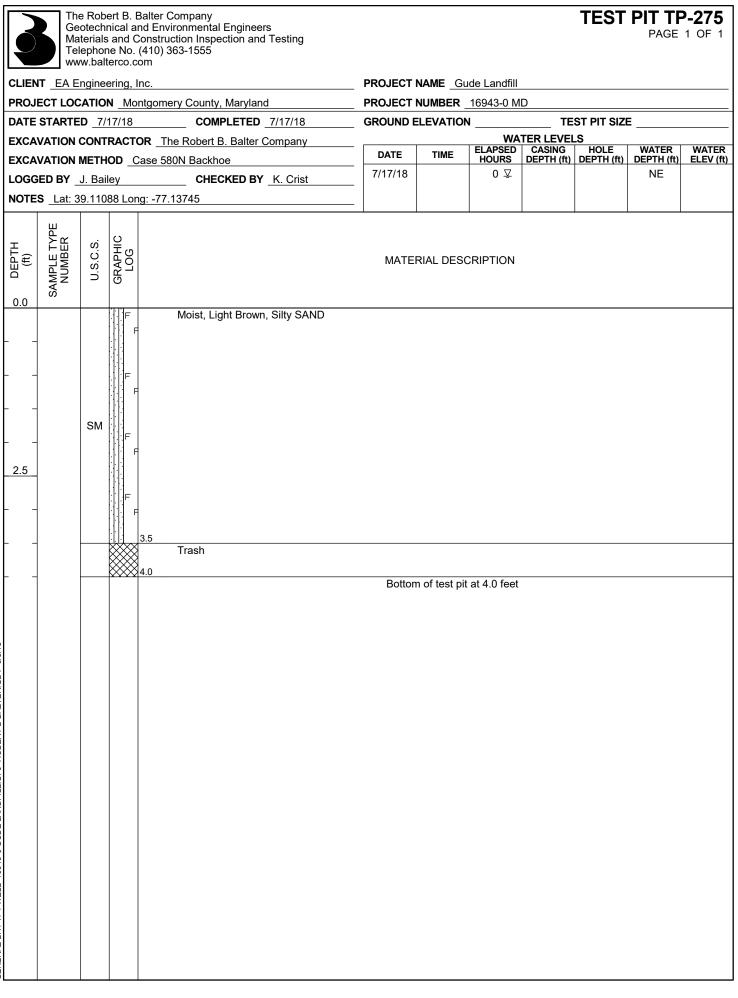
Ma Te	iterials	and (e No.	Construe (410) 3	Company Fronmen ction Ins 63-1555	spection	ineers and T	esting							TEST	PIT TF PAGE	2-270 1 OF 1
CLIENT EAE	ingine	ering,	Inc.						PROJEC	T N/	AME Gu	de Landfill				
PROJECT LOO	CATIO	M _ Mo	ontgome	ery Cour	nty, Mar	yland			PROJEC	TN	JMBER _	16943-0 M	D			
DATE STARTE									GROUN) EL	EVATION	I			E	
EXCAVATION						Iter Co	mpany		DATE		TIME	ELAPSED		HOLE	WATER	WATER
EXCAVATION						עם ר	K Criet		7/17/1	3		HOURS 0 ⊻		DEPTH (ft)	DEPTH (ft) NE	<u>ΕLEV (π)</u>
NOTES Lat: 3							R. Onst									
0 DEPTH 0 (ft) SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MA	ERI	AL DESC	RIPTION				
	SM		3.0	Moist, Trash	Light B	rown, \$	Silty SA	ND	Bot	om	of test pit	at 3.5 feet				

		Ge Ma Te	otechi terials ephor	nical a a	nd En Constr (410)	Company vironmental uction Inspe 363-1555	Enginee ection an	ers id Testii	ng						TEST	PIT TF PAGE	P-271 1 OF 1
	CLIEN	IT <u>EA E</u>	ngine	ering, l	Inc.					PR	OJECT	NAME Gu	ide Landfill				
I	PROJ	ECT LOC	ATIO	N <u>Mo</u>	ntgom	nery County,	, Marylaı	nd					16943-0 M				
						COM				GR	OUND E	LEVATION			ST PIT SIZ	E	
						he Robert E		Compa	any		DATE	TIME	ELAPSED	TER LEVE CASING	HOLE	WATER	WATER
						80N Backho					/17/18		HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
		совт_ S_Lat: 3				CHEC	NED B	т <u>к.</u>	rist								
Ľ	NOTE		9.109		ig <i>r i</i>	.13039											
	o DEPTH o (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATEI	RIAL DESC	CRIPTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18	0.0	SA	SM		2.0 2.3	Trash	Jht Brow	/n, Silty	SAND		Botton	n of test pit	at 2.3 feet				
GENERAL BH /																	

	Ge Ma Tel	otechi terials ephor	nical a and C	nd En Constr (410)	Compa ivironme ruction li 363-15	ental Eng	gineers n and Te	esting					TEST	PIT TF PAGE	P-272 1 OF 1
CLIEN		ngine	ering, l	Inc.					PROJECT	NAME G	ude Landfill				
											16943-0 M				
	STARTE							/17/18			N		ST PIT SIZ	E	
											WA	TER LEVE	LS		
	VATION I								DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
	GED BY						DBY K	. Crist	7/17/18		0 ⊻			NE	
0.0 (ft) 0.0	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Mois	t, Light B	Brown, S	ilty SAND	MATE	RIAL DES	CRIPTION	1	<u></u>		
	-	SM	P P	1.0		t, Gray, S		-							
	-	GM		1.5		-	-	ilty SAND	 						
_ 2.5	-	SM	F	3.5											
	-			4.5	Trasl	n			Detter	6 4 4 1					
									Botton	n of test pi	t at 4.5 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18															

	Geo Mat Tele	Robert B. Balter Co otechnical and Enviro terials and Constructi ephone No. (410) 363 w.balterco.com	onment	tal Engi pection	ineers a and Testing					TEST	PIT TI PAGE	P-273 1 OF 1
CLIENT						PROJECT	NAME GI	ude Landfill				
		ATION Montgomery				PROJECT						
		D _7/17/18			-	GROUND E				ST PIT SIZE	-	
		CONTRACTOR The							TER LEVE			
		METHOD Case 5801			ter company	DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
		J. Bailey) BY K Crist	7/17/18		0 ⊻			NE	
		9.10993 Long: -77.13				-						
DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG		-	MATE	ERIAL DESC	CRIPTION			
	S)		CL		6.5 Trash 7.0	Brown, Sand	- 	m of test pit	at 7.0 feet			

Ge Ma Tel	otechi terials	nical a and (ne No.	nd Envi Construc (410) 30	ompany ronmental ction Inspe 63-1555	l Enginee ection an	ers nd Testir	ng					TEST	PIT TI PAGE	P-274 1 OF 1
CLIENT EAE	ngine	ering,	Inc.					_ PROJECT	NAME _G	ude Landfill				
PROJECT LOC	ATIO	N <u>M</u> o	ontgome	ry County	, Maryla	nd		_ PROJECT	NUMBER	16943-0 M	D			
DATE STARTE	D _7/	17/18		СОМ	PLETED) 7/17/	18	GROUND E	ELEVATIO	N	TE	ST PIT SIZ	E	
EXCAVATION	CONT	RACT	OR The	e Robert I	B. Balter	r Compa	any			WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCAVATION I	METH		Case 580	0N Backh	oe			DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGGED BY	J. Bai	ey		CHE	CKED B	Y <u>K.</u> C	rist	7/17/18		0 ⊻			NE	
NOTES Lat: 3	9.110	31 Lo	ng: -77.1	3718				_						
o DEPTH o (ft) SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DES	CRIPTION				
	SM		4.0	Moist, Lis	ght Brow	<i>i</i> n, Silty	SAND	Bottor	n of test p	it at 4.5 feet				

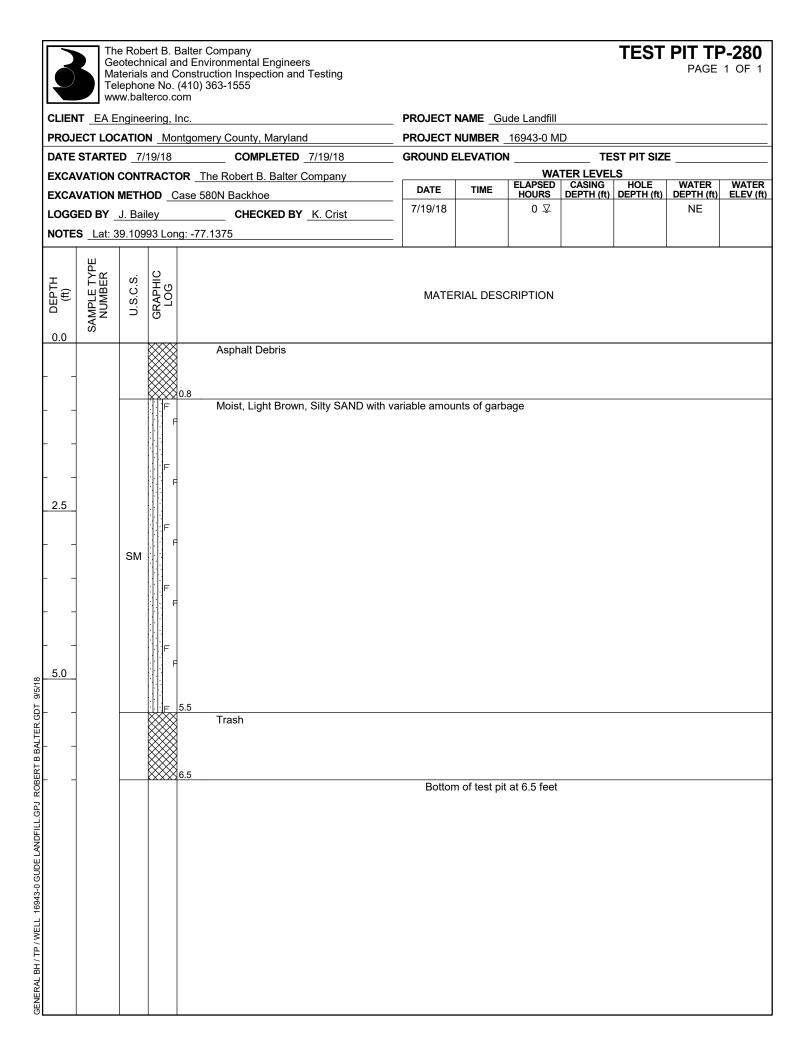


	bert B. Balter Company nnical and Environmental Engineers Is and Construction Inspection and Testing one No. (410) 363-1555 Iterco.com					TEST	PIT TP PAGE	P-276 1 OF 1
CLIENT EA Engine		PROJECT	NAME Gu	de Landfill				
PROJECT LOCATIO	DN <u>Montgomery County, Maryland</u>	PROJECT		16943-0 MI	2			
DATE STARTED _7/	COMPLETED 7/19/18	GROUND E	LEVATION				E	
	TRACTOR _ The Robert B. Balter Company	DATE	TIME	ELAPSED	TER LEVEL CASING	HOLE	WATER	WATER
	HOD Case 580N Backhoe			HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	hiley CHECKED BY K. Crist	_		0 -				
	103 Long: -77.13744							
G DEPTH G (ft) SAMPLE TYPE NUMBER U.S.C.S.		MATEI	RIAL DESC	RIPTION				
GENERAL BALTER. GDT 9/5/18	Moist, Light Brown, Silty SAND	Botton	n of test pit	at 3.8 feet				

	Ge Ma Tel	otechi terials	nical a and (ne No.	and Env Constru . (410)	Compa vironme uction Ir 363-15	ental En	gineer on and	s Testinę	g						TEST	PIT TF PAGE	P-277 1 OF 1
CLIEN	IT EA E	ngine	ering,	Inc.						PROJE		AME _GL	ude Landfill				
PROJ	ECT LOC	ATIO	N _Mc	ontgom	ery Cou	unty, Ma	aryland	ł		PROJE		NUMBER _	16943-0 N	1D			
	STARTE									GROU	ND E	LEVATION			ST PIT SIZ	E	
	VATION						Balter C	Compar	ıy	DAT	E	TIME	ELAPSED		HOLE	WATER	WATER
	VATION ED BY						n ev	K Cri	et				HOURS 0 ∑			DEPTH (ft) NE	<u>ΕLEV (π)</u>
	S <u>Lat: 3</u>						001	<u> </u>	51	-							
O DEPTH O (ft)	SAMPLE TYPE NUMBER		© GRAPHIC □ LOG			ned Sto	ne			 M/	ATEF	RIAL DESC	CRIPTION	1		<u> </u>	
		GM		F 0.9													
		SM	F	F	Moist	t, Light I	Brown	, Silty S	SAND								
				1.8	Trast	ו											
2.5																	
				\$2.7						В	ottom	of test pit	t at 2.7 feet				

	Ma Tel	terials ephor	and (Construct (410) 36	ompany onmental E tion Inspect 3-1555	ngineers tion and	s Testing					TEST	PIT TF PAGE	P-278 1 OF 1
CLIEN	T EAE	ngine	ering,	Inc.				 PROJECT	NAME Gu	ude Landfill				
PROJ	ECT LOC	ATIO	N <u>M</u> c	ontgomer	y County, N	Maryland		 PROJECT		16943-0 M	D			
DATE	STARTE	D _7/	19/18			LETED _	7/19/18	 GROUND E	LEVATIO			ST PIT SIZ	E	
EXCA	VATION	CONT	RACT	OR The	e Robert B.	Balter C	ompany	 		WA ELAPSED	TER LEVE	HOLE	WATER	WATER
					N Backhoe			 DATE 7/19/18	TIME	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
						(ED BY	K. Crist	 1/19/10		0 -				
NOTE	S _Lat: 3	9.110	52 Loi	ng: -77.1:	3746									
O DEPTH O (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG					MATE	RIAL DESC	CRIPTION				
		SM		2.8	Trash	t Brown,	Silty SAND	Botton	n of test pit	t at 3.7 feet				

Geot Mate Telep	Robert B. Balter Com echnical and Enviror rials and Constructio phone No. (410) 363- .balterco.com	nmental E on Inspect	ngineers ion and Testing					TEST	PIT TP PAGE	P-279 1 OF 1
CLIENT EA Eng				PROJECT	NAME _Gu	ıde Landfill				
PROJECT LOCA	TION Montgomery			PROJECT		16943-0 MI	D			
DATE STARTED	7/19/18	COMPL	_ETED 7/19/18		ELEVATION			ST PIT SIZ	E	
	ONTRACTOR The F			DATE	TIME	WA ELAPSED HOURS	TER LEVEI CASING	HOLE	WATER	WATER
	ETHOD Case 580N			- 7/19/18		HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	Bailey		KED BY K. Crist	-		0 -				
	10976 Long: -77.138	302		-						
O DEPTH O (ft) SAMPLE TYPE NUMBER	REMARKS	U.S.C.S. GRAPHIC				RIAL DESC				
	Trash Not Encountered	SM	F Moist, Light Br F F F F F F F F F F F F F F F F F F F F F F F F F F F F F F F F F F F F F F	own, Silty SAI		n of test pit		pris		



	Ge Ma Tel	otechi terials ephor	nical ar and C	id Env onstru 410) 3	Company ironmen ction Ins 663-1555	tal Eng	ineers and To	esting							TEST	PIT TF PAGE	P-281 1 OF 1
CLIEI		nginee	ering, li	IC.						PRO		AME Gu	ıde Landfill				
					ery Cour	ity, Mar	ryland			PRO			16943-0 M	D			
	STARTE							/20/18		GRO	UND E	LEVATION	۱	TE	ST PIT SIZ	E	
EXCA		CONT	RACTO	R Th	ne Robei	rt B. Ba	lter Co	mpany									
EXCA		METH	OD _C	ase 58	0N Bacl	khoe					ATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
LOGO	GED BY	J. Bail	ey		СН	ECKE	BY H	K. Crist		_ 7/2	20/18		0 ⊻			NE	
NOTE	ES _Lat: 3	9.110	28 Lon	g: - 77.	1391					_							
o (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Moist,	Light B	rown, S	Silty SA	ND		MATEF	RIAL DESC	CRIPTION		- 		
 		SM		3.5	Trash												
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL GPJ ROBERT B BALTER GDT 9/5/18											Bottom	of test pit	at 4.8 feet				

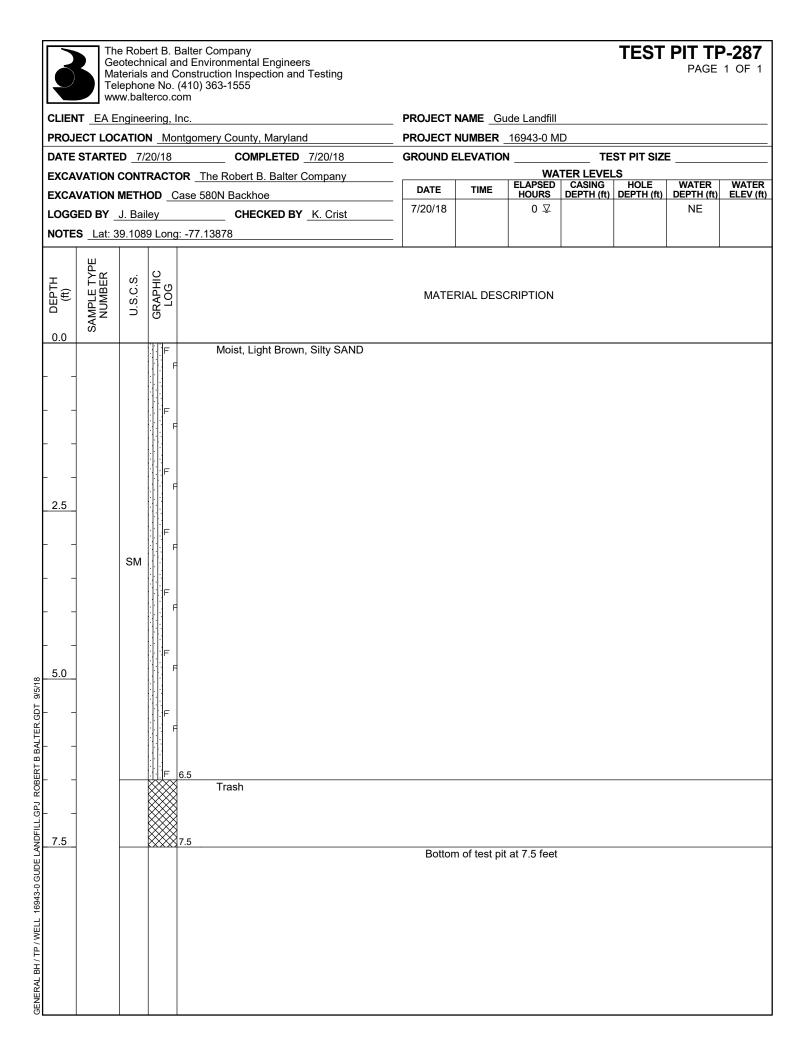
LOGGED BY J. Balley CHECKED BY K. Crist 7/20/18 0 II NE NOTES Lat. 39.10991 Long: -77.13948 MATERIAL DESCRIPTION NE Image: Imag		Ma Tel	terials enhor	and C	onstru (410)	Company vironmenta uction Insp 363-1555	al Engine	eers Ind Test	ing						1521	PIT TF PAGE	-282 1 OF 1
Date started 7/20/18 COMPLETED 7/20/18 GROUND ELEVATION TEST PIT SIZE EXCAVATION CONTRACTOR The Robert B. Baiter Company WATER LEVELS WATER LEVELS EXCAVATION METHOD Case 560N Backhoe Date Time ELAPSED CASING HOLE WATER LEVELS LOGGED BY J. Bailey CHECKED BY K. Crist NOTES Lat: 39.10991 Long: -77.13948 NE H U U U U NE NE H U U U NE NE U U U U NE NE NOTES Lat: 39.10991 Long: -77.13948 NE NE NE U U U U NE NE U U U <td>CLIEN</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td> PRC</td> <td></td> <td></td> <td>ude Landfill</td> <td></td> <td></td> <td></td> <td></td>	CLIEN									PRC			ude Landfill				
EXCAVATION CONTRACTOR The Robert B. Balter Company WATER LEVELS EXCAVATION METHOD Case 580N Backhoe Date Time Flagse Depth (th)	PROJ	ECT LOC	ATIO	M <u>Mo</u>	ntgom	ery Count	y, Maryla	and		PRC			16943-0 M	D			
EXCAVATION METHOD Case 590N Backhoe Date Time ELAPSED Depth (th) Depth (t	DATE	STARTE	D_7/2	20/18		COI	MPLETE	D <u>7/20</u>	/18	GRO	DUND E	LEVATION	N N	TE	ST PIT SIZ	E	
EXACUTION METHOD Case 530N Backhoe LOGGED BY J. Bailey CHECKED BY K. Crist NOTES Lat: 39.10991 Long: -77.13948 0 $\overline{\times}$ 0 $\overline{\times}$ H H H 0 $\overline{\times}$ NE H H H H H H H H H H H H H H H H H H H H H H	EXCA	VATION	CONT	RACTO	DR _T	he Robert	B. Balte	er Comp	any	—					LS		WATER
NOTES Lat: 39.10991 Long: -77.13948 H H <td>EXCA</td> <td>VATION I</td> <td>METH</td> <td>OD_C</td> <td>ase 5</td> <td>80N Back</td> <td>hoe</td> <td></td> <td></td> <td></td> <td></td> <td>TIME</td> <td>HOURS</td> <td>DEPTH (ft)</td> <td>DEPTH (ft)</td> <td>DEPTH (ft)</td> <td>ELEV (ft)</td>	EXCA	VATION I	METH	OD _C	ase 5	80N Back	hoe					TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
Had Bar (B) Bar (B) Bar (B) Bar (B) Material description 0.0 0.0 0.0 Moist, Light Brown, Silty SAND - - - - - - - - <	LOGG	ED BY _	J. Bail	еу		CHE	ECKED E	ΒΥ <u>Κ.</u>	Crist	7/2	20/18		0 ⊻			NE	
0.0 Moist, Light Brown, Silty SAND - - - - 2.5 - - -	NOTE	S <u>Lat: 3</u>	9.109	91 Lor	g: -77	.13948				_							
$\begin{bmatrix} 5.0 \\ 5.0 \\ 5.0 \end{bmatrix}$		SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Moist. L	ight Brov	wn. Siltv	/ SAND		MATEF	RIAL DESC	CRIPTION				
			SM				ight Brov	wn, Silty	r SAND		Bottom	o of test pit	t at 5.3 feet				

3	Materials	and Cons e No. (41	er Company Environmental E struction Inspec 0) 363-1555	Engineers tion and Test	ing					TEST	PIT TF PAGE	P-283 1 OF 1
	EA Enginee	ering, Inc.				PROJECT	NAME Gu	ide Landfill				
PROJECT	LOCATIO	Montge	omery County, I	Maryland		PROJECT		16943-0 M	D			
DATE STA	RTED 7/2	20/18	COMP	LETED _ 7/20)/18	GROUND E		۱	TE	ST PIT SIZ	Ε	
EXCAVAT	ION CONT	RACTOR	The Robert B.	Balter Comp	any			WA [·] ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCAVAT	ION METH	OD Case	e 580N Backhoe	е		DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGGED	BY _J. Bail	еу	CHECI	KED BY K. C	Crist	7/20/18		0 ⊻			NE	
	.at: 39.109	64 Long: -	77.13941									
O DEPTH O (ft) SAMPLE TYPE	NUMBER U.S.C.S.	GRAPHIC		A Desure Site		MATE	RIAL DESC	CRIPTION				
GENERAL BH/TP/WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/6/18	SM		Moist, Ligh	nt Brown, Silty	/ SAND	Botton	n of test pit	at 7.0 feet				

	Ge Ma Te	otechi terials ephor	nical a and C	nd En constr (410)	Compa vironm uction I 363-15	ental Ei Inspecti	nginee ion and	ers d Testi	ng						TEST	PIT T PAGE	P-284
CLIEN										PROJECT	NAME	Gude La	andfill				
	ECT LOC									PROJECT							
	STARTE					COMPL			/18	GROUND					EST PIT SIZ	Έ	
	VATION													TER LEVE	LS		
	VATION									 DATE	TIME	ELA HO	PSED URS	CASING DEPTH (ft	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
	SED BY							′К.С	Crist	 7/19/18			0 ⊻			NE	
									-								
O DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Mois	st, Light	Browr	n, Silty	SAND	MATE	RIAL DE	SCRIPT	ΓION			1	
 		SM		3.8	Tras		Browr	n, Silty	SAND	Bottor	n of test	pit at 4.	5 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

CLIENT EA Engineering, Inc. PROJECT NAME Gude Landfill PROJECT LOCATION Montgomery County, Maryland PROJECT NUMBER 16943-0 MD Date SROUND ELEVATION TEST PT SIZE EXCAVATION METHOD Case 580N Backhoe LOGGED BY J. Bailey CHECKED BY NOTES Lat: 39.10952 Long: -77.13738 DATE Matterial Varter, Maryland Ne Varter, Maryland Ne Ne NOTES Lat: 39.10952 Long: -77.13738 Matterial Matterial Ne Ne NOTES Lat: 39.10952 Long: -77.13738 Matterial Matterial Ne Ne Notes SM F Noist, Light Brown, Silty SAND Ne Noist, Light Brown, Silty SAND SM Noist, Light Brown, Silty SAND Naterial Description		Ge Ma Te	otech aterials lephor	nical a	nd En onstr (410)	Compan vironmer uction In: 363-155	ntal Eng	ineers and Te	esting							TEST	PIT TF PAGE	P-285 1 OF 1
PROJECT LOCATION Montgomery County, Maryland PROJECT NUMBER 16943-0 MD DATE STARTED 7/19/18 COMPLETED 7/19/18 GROUND ELEVATION TEST PIT SIZE EXCAVATION METHOD Case 5800 Backhoe DATE TME LAPOIRS DEPTH (tr) DEPTH (tr) <td>CLIEI</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>PRO</td> <td></td> <td>IAME Gu</td> <td>ıde Landfill</td> <td></td> <td></td> <td></td> <td></td>	CLIEI										PRO		IAME Gu	ıde Landfill				
EXCAVATION CONTRACTOR The Robert B. Balter Company WATER LUSE EXCAVATION METHOD Case 560N Backhoe DATE TIME EUORSD DEPTH (ft)											_							
DATE TIME ELAPSED CASING IDUEL WATER WATER WATER WATER WATER UARDING LOGGED BY J. Bailey CHECKED BY K. Crist 7/19/18 0 V Image: State 39.10952 NE NE NOTES Lat: 39.10952 0.0 0.0 V Image: State 39.10952 NE NE Image: State 39.10952 Ima	DATE	STARTE	D _7/	19/18		C(OMPLE	TED _7/	/19/18		GRC	OUND E	LEVATION	۱	TE	ST PIT SIZI	E	
EXCAVATION METHOD Case 580N Backhoe Dark Iume Hours DEPTH (ft)	EXCA	VATION	CONT	RACTO) R _1	he Robe	ert B. Ba	lter Co	mpany									
CodeD St J. Jamey Cricked St Notes NOTES Lat: 39.10952 Long: -77.13738 MATERIAL DESCRIPTION Image: Structure of the struc	EXCA	VATION	метн	OD _C	ase 5	80N Bac	khoe				_		TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
Had Bar of Signal of Sign	LOGO	GED BY	J. Bai	ley		Cł	HECKED) BY _k	<. Crist		_ 7/1	19/18		0 ⊻			NE	
0.0 Image: Solution of test pit at 4.7 feet	NOTE	S _Lat: 3	39.109	52 Lon	g: -77	.13738					-							
SM F 2.5 SM 2.5 F <td></td> <td>SAMPLE TYPE NUMBER</td> <td>U.S.C.S.</td> <td>GRAPHIC LOG</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>MATEF</td> <td>RIAL DESC</td> <td>CRIPTION</td> <td></td> <td></td> <td></td> <td></td>		SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG								MATEF	RIAL DESC	CRIPTION				
			SM				Light B	rown, S	Silty SAI	ND		Bottom	of test pit	at 4.7 feet				

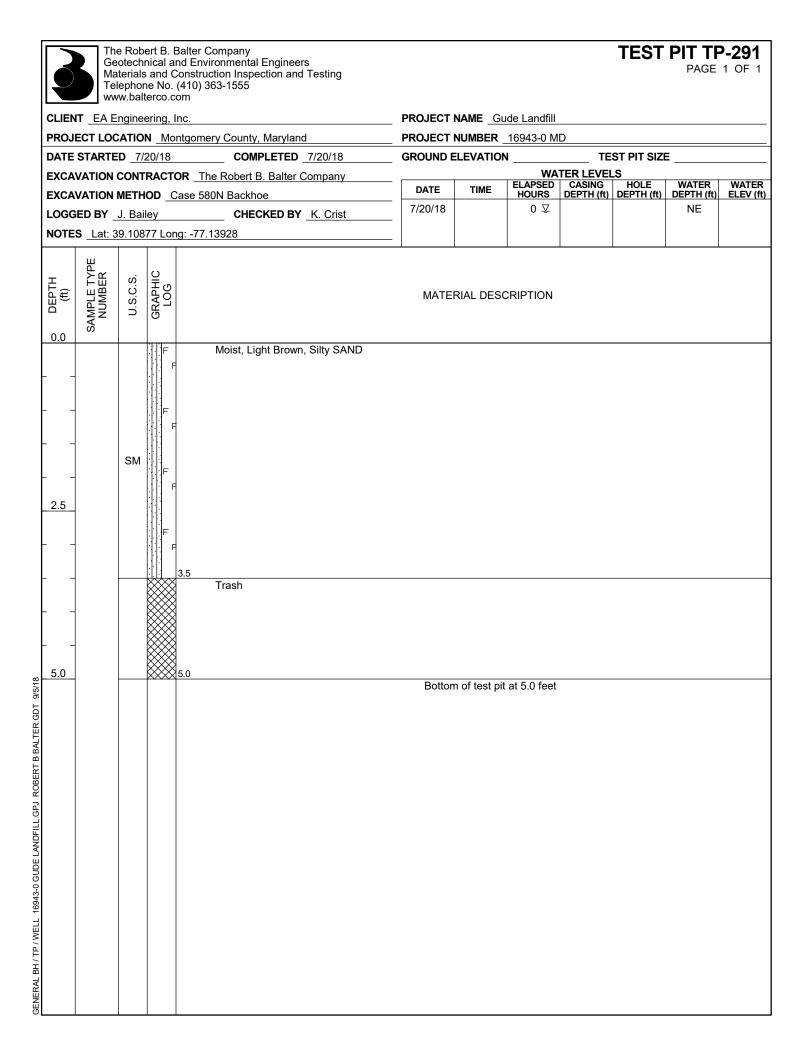
	terials	and (No	Construc (410) 3	ompany ronmental stion Inspe 63-1555	l Engine ection a	ers nd Testi	ing					TEST	PIT TP PAGE	2-286 1 OF 1
CLIENT EA E	ingine	ering,	Inc.					PROJECT		Gude Landfill				
PROJECT LOO	CATIO	N <u>M</u> c	ontgome	ry County	, Maryla	and		PROJECT	NUMBEF	R <u>16943-0 M</u>	ID			
DATE STARTE	D _7/2	20/18		COM	IPLETEI	D <u>7/20</u>	/18	GROUND	ELEVATI	ON		ST PIT SIZ	E	
EXCAVATION	CONT	RACT	OR Th	e Robert I	B. Balte	r Compa	any	-		ELAPSED	TER LEVE	HOLE	WATER	WATER
EXCAVATION								DATE 7/20/18	TIME	<u>HOURS</u> 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGGED BY					CKED B	ΒΥ <u>Κ.</u> Ο	Crist			0 -				
NOTES Lat: 3	39.109	32 Loi	ng: -77.1	3918				_						
G DEPTH (ft) SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DE	SCRIPTION				
	SM		3.0	Trash	ght Brov	wn, Silty	SAND	Botto	n of test	pit at 3.7 feet				



Geoteo Materia	obert B. Balter Co chnical and Enviro als and Construct ione No. (410) 36 alterco.com	onmental Engineers					TEST	PIT TF PAGE	2-288 1 OF 1
CLIENT EA Engin	neering, Inc.		PROJECT I	NAME Gu	de Landfill				
PROJECT LOCATI	ON Montgomer	y County, Maryland	_ PROJECT I		16943-0 M	D			
		COMPLETED 7/20/18	_ GROUND E	LEVATION				E	
		Robert B. Balter Company	DATE	TIME	WA ELAPSED HOURS	TER LEVEI CASING	HOLE	WATER	WATER
EXCAVATION MET			- 7/20/18	TIVE	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
NOTES <u>Lat: 39.10</u>		_ CHECKED BY <u>K. Crist</u>	-						
			-						
O DEPTH O (ft) SAMPLE TYPE NUMBER U.S.C.S.			MATE	RIAL DESC	CRIPTION				
0.0 	V F F E 2.3	Moist, Light Brown, Silty SAND	Bottom	n of test pit	at 4.0 feet				

	Ma Tel	terials ephor	and C	onstru (410) 3	Company ironmenta ction Insp 63-1555	al Engir pection a	neers and Tes	sting						TEST	PIT TF PAGE	P-289 1 OF 1
CLIEN		nginee	ering, I	nc.					P	ROJECT	NAME _G	ude Landfill				
					ery Count							16943-0 M	D			
DATE	STARTE	D _7/ [·]	19/18		CON	NPLETE	ED 7/1	9/18		GROUND E	ELEVATIO	N	TE	ST PIT SIZ	E	
EXCA		CONT	RACTO	DR <u>Th</u>	ne Robert	B. Balt	ter Com	pany				WA	TER LEVE	LS		
EXCA	VATION	METH	OD _C	ase 58	0N Backl	noe				DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)		WATER ELEV (ft)
LOGG	ED BY	J. Bail	ey		CHE	CKED	BY <u>K</u> .	Crist		7/19/18		0 ⊻			NE	
NOTE	S <u>Lat: 3</u>	9.108	85 Lor	g: -77.	13804											
0.0 (ft) 0.0	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Moist	ight Bro	own Sill	ty SAND		MATE	RIAL DES	CRIPTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		6.5	Moist, L	ight Bro	own, Silt	ty SAND		Botton	n of test pi	it at 6.5 feet				

	Ma Tel	terials	and (ie No.	Constru (410)	Compar /ironmei uction In 363-155	ny ntal Eng spectior 5	jineers n and T	esting							TEST	PIT TI PAGE	P-290 1 OF 1
CLIEN	NT EAE	ngine	ering,	Inc.						PROJECT		Gude Lan	dfill				
PROJ	ECT LOC	ATIO	M Mc	ontgom	ery Cou	nty, Ma	ryland			PROJECT	NUMBER	R <u>16943</u> -	-0 M	D			
DATE	STARTE	D _7/2	20/18		C	OMPLE	TED _7	/20/18		GROUND	ELEVATI					E	
	VATION						alter Co	mpany		DATE	TIME	ELAPS	SED	TER LEVE	HOLE	WATER	WATER
	VATION									DATE 7/20/18	TIME	HOU	<u>RS</u> ⊻	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	ED BY						DBY	K. Crist		1/20/10			<u>-</u>				
NOTE	S _Lat: 3	9.109	35 Loi	ng: -77	.14033												
o DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATI	ERIAL DE	SCRIPTI	ON				
0.0		SM		2.7	Trash		Brown, S	Silty SANI	D	Botto	m of test	pit at 3.0	feet				



	Ma	terials	and (Balter Com and Enviror Constructio . (410) 363- com	n Inspectic	igineers on and T	esting						TEST	PIT TF PAGE	P-292 1 OF 1
CLIEN	IT EA E	ngine	ering,	Inc.				P	ROJECT		ude Landfill				
PROJ	ECT LOC	ATIO	N <u>M</u> c	ontgomery	County, Ma	aryland		P	ROJECT		16943-0 M	D			
DATE	STARTE	D _7/	19/18		COMPLE	ETED _7	/19/18		ROUND E	LEVATION	N N	TE	ST PIT SIZ	E	
EXCA	VATION	CONT	RACT	OR The F	Robert B. B	Balter Co	mpany	— г					LS HOLE	WATER	WATER
EXCA	VATION	METH		Case 580N	Backhoe			-	DATE	TIME		DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
						ED BY	K. Crist		7/19/18		0 \[\blacksymbol{\V}\]			NE	
NOTE	S <u>Lat: 3</u>	9.108	34 Loi	ng: -77.137	74										
O DEPTH O (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATER	RIAL DESC	CRIPTION				
		SM	F	F 1.5	oist, Light	Brown, S	Silty SAND)							
 2.5 					asn										
				4.0					Bottom	of test nit	t at 4.0 feet				
									Bottom	i of test pit	at 4.0 feet				

3	Geo Mate Tele	Robert B. Balter Cor technical and Enviro erials and Constructio phone No. (410) 363 v.balterco.com	nment	al Eng	ineers and Testing					TEST	PIT TF PAGE	P-293 1 OF 1
CLIENT						PROJECT	NAME _Gu	ide Landfill				
PROJEC		ATION Montgomery				PROJECT	NUMBER	16943-0 M	D			
DATE ST	TARTED) 7/19/18	CO	MPLE	TED 7/19/18	GROUND E	ELEVATION			ST PIT SIZ	E	
EXCAVA	ATION C	ONTRACTOR The	Rober	t B. Ba	lter Company	DATE	TIME	WA [*] ELAPSED	TER LEVE	HOLE	WATER	WATER
		ETHOD Case 580N				- DATE 7/19/18	TIME	ELAPSED HOURS 0 ⊊	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
		. Bailey		ECKE	DBY K. Crist	-		0 -				
NOTES	Lat: 39	9.1085 Long: -77.136	73		I	-						
o DEPTH (ft)	SAMPLE TYPE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG				RIAL DESC	RIPTION			
		Trash Not Encountered	SM		8.0	own, Silty SAI		n of test pit	at 8.0 feet			

Geo Mate	otechr erials ephon	nical a and (Balter Com Ind Environ Construction (410) 363- com	mental En n Inspectio	gineers on and To	esting					TEST	PIT TI PAGE	P-294 1 OF 1
CLIENT EA En	nginee	ering,	Inc.				 PROJECT I		ude Landfill				
PROJECT LOC							PROJECT I						
DATE STARTED	D _7/*	19/18		COMPLE	TED 7	/19/18	 GROUND E	LEVATION	N	TE	ST PIT SIZE	I	
EXCAVATION C	ONT	RACT	OR _The R	Robert B. B	alter Co	mpany	 		WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCAVATION N	/ETH	OD _(Case 580N	Backhoe			 DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGGED BY _J	J. Bail	еу		CHECKE	DBY 🛓	<. Crist	 7/19/18		0 ⊻			NE	
NOTES Lat: 39	9.108	17 Loi	ng: -77.136	32									
0. DEPTH 0. (ft) SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG					MATE	RIAL DESC	CRIPTION				
	SM		4.0 Tr:	ash	Brown, S	Silty SAND	Botton	n of test pit	at 4.5 feet				

Material Telepho	pert B. Balter Company nnical and Environmental Engineers s and Construction Inspection and Testing ne No. (410) 363-1555 Iterco.com	1				TEST	PIT TP PAGE	P-295 1 OF 1			
CLIENT EA Engine	eering, Inc.	PROJECT	NAME Gu	ude Landfill							
PROJECT LOCATIO	Montgomery County, Maryland	PROJECT	NUMBER	16943-0 MI	2						
DATE STARTED _7	/20/18 COMPLETED _7/20/18	GROUND I	GROUND ELEVATION TEST PIT SIZE								
	TRACTOR _The Robert B. Balter Compan		TIME	ELAPSED	TER LEVEI CASING	HOLE	WATER	WATER			
	OD Case 580N Backhoe	DATE 7/20/18	TIME	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)			
	illey CHECKED BY K. Cris	<u>st</u>		0 -							
NOTES _Lat: 39.103	31 Long: -77.13471										
O DEPTH O (ft) SAMPLE TYPE NUMBER U.S.C.S.	GRAPHIC LOG		RIAL DESC	CRIPTION							
2.5 SM	Moist, Light Brown, Silty S F F F F F F F 6.0 Trash		n of test pit	at 6.0 feet							

	Ge Ma Tel	e Robert B. Balter Co otechnical and Enviro terials and Constructi ephone No. (410) 363 w.balterco.com	onmenta on Insp	al Eng	ineers a and Testing					TEST	PIT TF PAGE	P-298 1 OF 1			
CLIE		ngineering, Inc.				PROJECT	NAME Gu	ude Landfill							
PRO.		ATION Montgomery	Count	y, Mar	yland	PROJECT NUMBER 16943-0 MD									
DATE	E STARTE	D 7/20/18	_ co	MPLE	TED 7/20/18	GROUND ELEVATION TEST PIT SIZE									
EXCA	VATION	CONTRACTOR The	Robert	B. Ba	lter Company		TIME	WA' ELAPSED	TER LEVE	HOLE	WATER	WATER			
		METHOD Case 5801				- DATE 7/20/18	TIME	ELAPSED HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)			
		J. Bailey		ECKEE	DBY K. Crist	-		U ¥			INE				
NOTE	ES _Lat: 3	9.1073 Long: -77.133	36	1	1	-									
O DEPTH (ft)	SAMPLE TYPE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG				RIAL DESC	CRIPTION						
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL. GPJ ROBERT B BALTER. GDT 9/5/18		Trash Not Encountered	SM		Moist, Light Bi	rown, Silty SA		m of test pit	at 8.0 feet						

	Ge Ma	otechi terials	nical a	nd En	Compa vironm uction I 363-15	ental E	nginee ion an	ers Id Tesi	ting								TEST	PIT TI PAGE	P-299 1 OF 1	
CLIE											PROJECT	NAM	IE _Gu	ide Landfil	I					
PROJ	IECT LOC	ATIO	N <u>Mo</u>	ntgorr	ery Co	ounty, N	/larylar	nd			PROJECT	NUM	IBER _	16943-0 N	٨D					
	STARTE										GROUND ELEVATION TEST PIT SIZE									
	VATION							Comp	bany		DATE	т	IME	ELAPSED) C	R LEVEI ASING	HOLE	WATER	WATER	
	VATION										7/20/18	· ·		HOURS 0 ⊈	DE	PTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)	
	GED BY						ED B	Y <u>K.</u>	Crist		1720/10			0 -						
NOTE	ES _Lat: 3	9.107	U1 Lor	ig: -//	.13348	3														
0.0 (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG								MATE	RIAL	. DESC	CRIPTION						
	-	SM	F	2.0	Mois		t Brow	'n, Silt	y SAND)										
2.5																				
				2.7							Botto	n of t	test pit	at 2.7 fee	t					
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																				

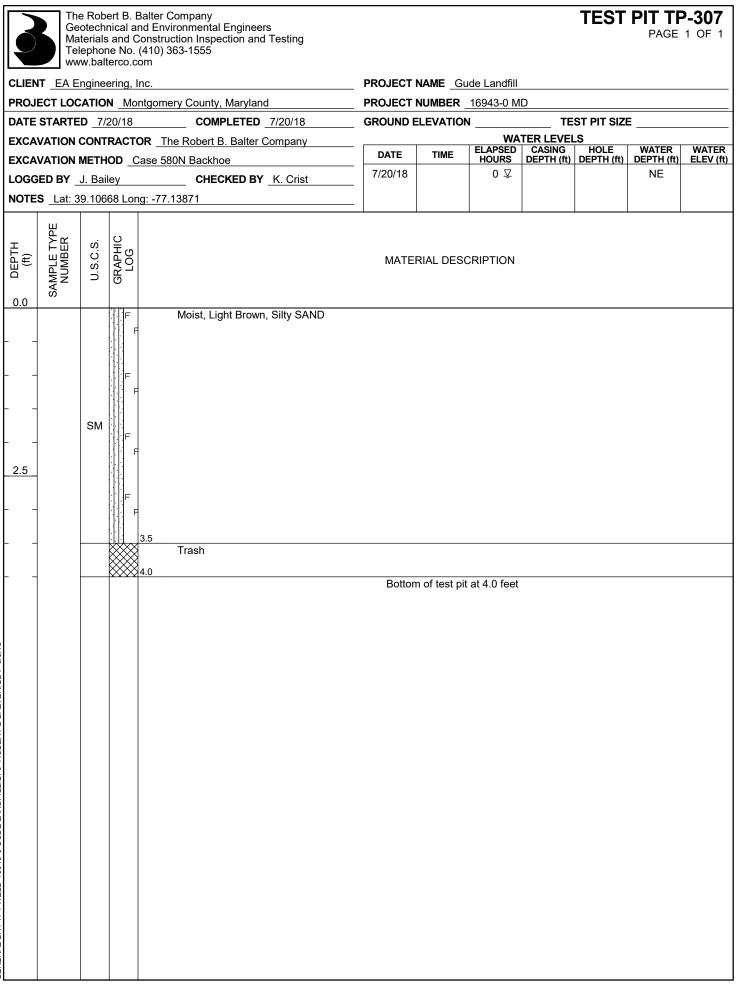
CLENT EA Engineering. Inc. PROJECT NAME Quide Landfill PROJECT UCATION Kontgomery County, Maryland PROJECT NUMBER 1943-0.00 DATE STARTED 7/2018 COMPLETED 7/2018 GROUND ELEVATION TEST PIT SIZE EXCAVATION CONTRACTOR The Robott B. Balley CHECKED BY K. Crist. MATER LEVES WATER LEVES IOGGED BY J. Balley CHECKED BY K. Crist. 0.2 INTE INTE NOTES Lat. 39.10739 Long77.13395 ONE MATERIAL DESCRIPTION 0.0 INTE Moist. Light Brown, Silty SAND MATERIAL DESCRIPTION 0.0 INTE INTE INTE INTE 2.5 SM INTE INTE INTE INTE 2.5 SM INTE INTE INTE INTE INTE 2.6 INTE INTE INTE INTE INTE INTE		Ge Ma Te	otechi iterials lephor	nical ar	nd Envi onstruc (410) 3	company ronmenta ction Insp 63-1555	I Engine ection a	eers and Tes	ting						TEST	PIT TI PAGE	P-301 1 OF 1		
DATE STARTED 7/20/18 COMPLETED 7/20/18 GROUND ELEVATION TEST PIT SIZE EXCAVATION CONTRACTOR The Robert B. Balter Company WATER LEVELS WATER LEVELS EXCAVATION METHOD Case 500 Backhoe Date Time ELAPSED CASING Depth (ft) Depth (ft) <td>CLIE</td> <td>NT EAE</td> <td>ngine</td> <td>ering, Ir</td> <td>nc.</td> <td></td> <td></td> <td></td> <td></td> <td> P</td> <td>ROJECT</td> <td>NAME _G</td> <td>ude Landfill</td> <td></td> <td></td> <td></td> <td></td>	CLIE	NT EAE	ngine	ering, Ir	nc.					P	ROJECT	NAME _G	ude Landfill						
EXCAVATION CONTRACTOR The Robert B. Balter Company WATER Level S EXCAVATION METHOD Case 580N Backhoe DATE TIME Houges DEPTH (ft) <	PRO.	ECT LOC	OITA	M <u>Mor</u>	ntgome	ry County	/, Maryl	and		Р	ROJECT	NUMBER	16943-0 M	D					
EXCAVATION METHOD Case 580N Backhoe DATE TIME ELAPSED DepTh (ft) DepTh (f	DATE	STARTE	D _7/2	20/18			IPLETE	D _7/20	0/18										
EXAMPLE Longe by J. Bailey CHECKED BY K. Crist Durit Hours DEPTH (ft) DEPTH (f	EXCA	VATION	CONT	RACTO	R <u>Th</u>	e Robert	B. Balte	er Comp	pany										
NOTES Lat: 39.10739 Long: -77.13395 H H <td>EXCA</td> <td>VATION</td> <td>метн</td> <td></td> <td>ase 58</td> <td>0N Backh</td> <td>noe</td> <td></td> <td></td> <td> -</td> <td></td> <td>TIME</td> <td>HOURS</td> <td>DEPTH (ft)</td> <td>DEPTH (ft)</td> <td>DEPTH (ft)</td> <td>ELEV (ft)</td>	EXCA	VATION	метн		ase 58	0N Backh	noe			-		TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)		
Had and the second s	LOGO	SED BY _	J. Bai	ey		CHE	CKED	BY <u>K.</u>	Crist		7/20/18		0 ⊻			NE			
0.0 Image: Same set of the set of th	NOTE	S _Lat: 3	9.107	39 Lon	g: - 77.1	13395													
		SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATE	RIAL DES	CRIPTION						
GENERAL BH / TP / 1	 2.5 		SM				ght Bro	wn, Silt	y SAND		Botton	n of test pi	it at 7.0 feet						

	Ge Ma	otechi	nical a a	nd En Constr	Compai vironme uction Ir 363-155	ntal Eng	gineers n and ⁻	s Testin	g							TEST	PIT TI PAGE	P-302 1 OF 1
CLIE	NT EAE									PR	OJECT		Gude	e Landfill				
PRO	JECT LOC	ATIO	N <u>Mo</u>	ntgorr	nery Cou	unty, Ma	ryland			PR	ROJECT	NUMBER	R _16	6943-0 M	D			
	E STARTE									GROUND ELEVATION TEST PIT SIZE								
	VATION						alter Co	ompar	ny	— Г	DATE	TIME	E	LAPSED	TER LEVE	HOLE	WATER	WATER
	VATION									_ ⊢	7/20/18			<u>HOURS</u> 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	GED BY						D BY _	K. Cri	ist	— '	/20/10			0 -				
NOTE	ES <u>Lat: 3</u>	9.107	37 Lor	ig: -//	.13473													
O DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG					0.111			MATE	RIAL DE	SCR	IPTION				
	-	SM	F	2.0	Moist Trast	, Light E	βrown,	Silty S	SAND									
2.5	_			3.0														
				0.0							Botton	n of test	pit at	3.0 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT %5/18																		

Geotechnical Materials and	 Balter Company and Environmental Engineers Construction Inspection and Testing (410) 363-1555 .com 					TEST	PIT TP PAGE	-303 1 OF 1			
CLIENT EA Engineering		_ PROJECT	NAME _Gu	de Landfill							
	Iontgomery County, Maryland	PROJECT		16943-0 MI	D						
DATE STARTED _7/20/18	8 COMPLETED 7/20/18	GROUND ELEVATION TEST PIT SIZE									
EXCAVATION CONTRAC	TOR _The Robert B. Balter Company			WA ⁻ ELAPSED	TER LEVEI CASING	_S HOLE	WATER	WATER			
EXCAVATION METHOD	Case 580N Backhoe	DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)		ELEV (ft)			
LOGGED BY J. Bailey	CHECKED BY K. Crist	7/20/18		0 ⊻			NE				
NOTES _Lat: 39.10767 Lo	ong: -77.13531	_									
O DEPTH O (ft) SAMPLE TYPE NUMBER U.S.C.S. GRAPHIC		MATE	RIAL DESC	CRIPTION							
General BH/TP//WELL 16943-0 GUDE LANDFILL. R041-0 F	F Moist, Light Brown, Silty SAND	Botton	n of test pit	at 5.0 feet							

	Ge Ma	otechi terials	nical a a	nd Er Consti	Compa ivironme uction li 363-15	ental Ei nspecti	nginee ion and	ers d Test	ing						TEST	PIT TI PAGE	P-304 1 OF 1
CLIEN	NT EAE									 PROJEC [®]		ME _Gu	ide Landfill				
PROJ	ECT LOC	ATIO	N <u>Mo</u>	ntgor	nery Co	unty, N	larylan	nd					16943-0 N				
	STARTE									 GROUND	ELE	VATION			EST PIT SIZ	Ε	
	VATION							Comp	any	 DATE		TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
									<u></u>	 7/19/18	_		HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	GED BY _ S _Lat: 3						EDBI	г <u>к.</u> (Jrist								
NOTE	1	9.107	49 LUI	ig <i>r</i>	1.13755												
0.0 (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MAT	ERIA	AL DESC	CRIPTION				
	-	SM		1.8	Mois	t, Light	t Browr	n, Silty	y SAND								
 <u>2.5</u> 	-			3.0	Trasl	h				Bott		f test pit	at 3.0 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

Materia	als and (Balter Company nd Environmental Engineers Construction Inspection and Testing (410) 363-1555 com					TEST	PIT TP PAGE	-305 1 OF 1
CLIENT EA Engin	neering, l	Inc.	PROJECT	NAME Gu	de Landfill				
PROJECT LOCATI	ION Mo	ntgomery County, Maryland	PROJECT		16943-0 M	D			
DATE STARTED	7/20/18	COMPLETED _7/20/18	GROUND E	LEVATION				Ε	
EXCAVATION CON	NTRACTO	OR _The Robert B. Balter Company		TIME	ELAPSED	TER LEVEI CASING	HOLE	WATER	WATER
		Case 580N Backhoe	DATE 7/20/18	TIME	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	WATER DEPTH (ft) NE	ELEV (ft)
		CHECKED BY K. Crist			0 -			INC.	
NOTES _Lat: 39.10	074 Long	g: -77.13733							
0 DEPTH (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	GRAPHIC LOG		MATE	RIAL DESC	CRIPTION				
0.0	F	Moist, Light Brown, Silty SAND	Botton	n of test pit	at 4.0 feet				

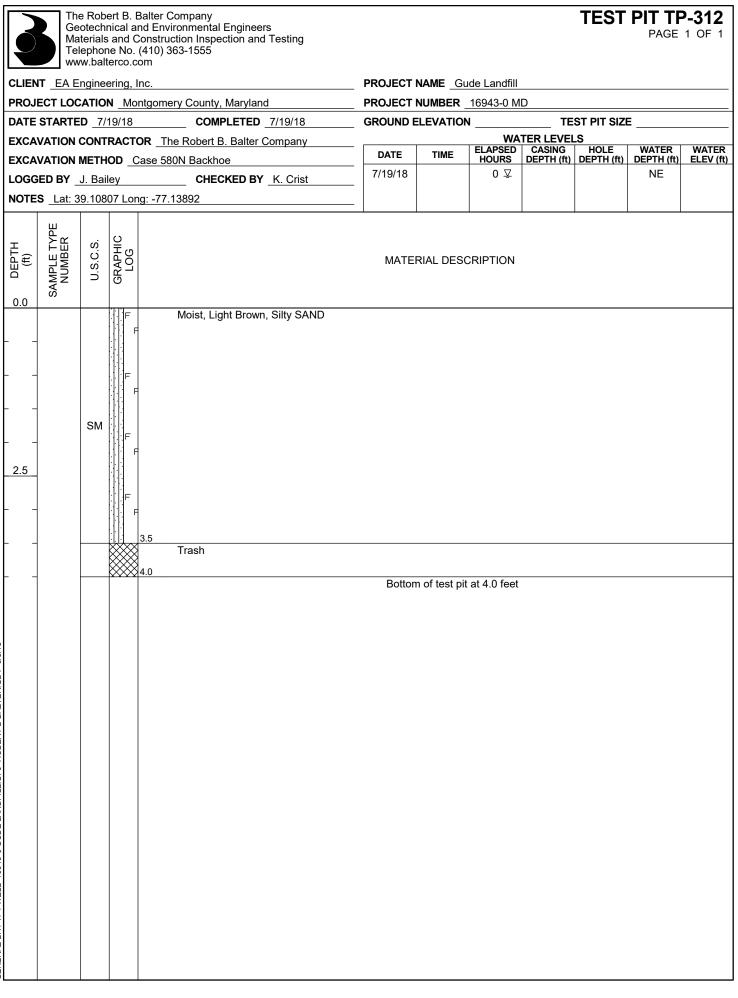


Ge Ma Tel	otechı terials	nical a and (ie No.	Balter Company nd Environmental Engineers Construction Inspection and Testing (410) 363-1555 com					TEST	PIT TP PAGE	-308 1 OF 1
CLIENT EAE	nginee	ering,	Inc.	PROJECT	NAME Gu	ide Landfill				
PROJECT LOC	ATIO	N <u>Mo</u>	ntgomery County, Maryland	PROJECT		16943-0 M	D			
DATE STARTE	D _7/2	20/18	COMPLETED 7/20/18	GROUND E					E	
EXCAVATION	CONT	RACT	OR _The Robert B. Balter Company			WA [*] ELAPSED	TER LEVE	HOLE	WATER DEPTH (ft)	WATER
			Case 580N Backhoe	DATE 7/20/18	TIME	HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
			CHECKED BY K. Crist			0 -			INC.	
NOTES Lat: 3	9.106	13 Lor	ng: -77.13903							
O DEPTH O (ft) SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		MATE	RIAL DESC	CRIPTION				
	SM		Moist, Light Brown, Silty SAND	Botton	n of test pit	at 1.8 feet				

Telephone No. (410) 3 www.balterco.com	iction Inspection and Testing 363-1555					TEST		1 OF 1
CLIENT EA Engineering, Inc.		PROJECT	NAME Gu	de Landfill				
PROJECT LOCATION Montgome	ery County, Maryland	PROJECT		16943-0 MI	2			
DATE STARTED 7/19/18	COMPLETED 7/19/18	_ GROUND E	LEVATION				∎	
		DATE	TIME	ELAPSED	TER LEVEL CASING	HOLE	WATER	WATER
EXCAVATION METHOD Case 58		- 7/19/18		HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
LOGGED BY J. Bailey		-		0 -			112	
NOTES _Lat: 39.10789 Long: -77.	.13805	-						
O DEPTH O (ft) (ft) (ft) (ft) U.S.C.S. U.S.C.S. U.S.C.S. LOG CRAPHIC LOG	Maiat Light Drown Silty CAND	MATE	RIAL DESC	RIPTION				
0.0 SM SM SM 	Moist, Light Brown, Silty SAND	Botton	n of test pit	at 3.8 feet				

		Ge	otech	nical a	nd Env	Company vironmental E uction Inspec 363-1555	Engineers tion and	s Testing						TEST	PIT TF PAGE	P-310 1 OF 1
	CLIEN	T EAE								PROJECT		Gude Landfill				
- H						ery County, I				PROJECT	NUMBER	R _16943-0 N	ID			
- 1						COMP				GROUND	ELEVATIO	ON		ST PIT SIZ	Ε	
						he Robert B.		ompany		DATE	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
						80N Backhoe				7/19/18		<u>HOURS</u> 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
							KED BY	K. Crist				0 1				
-	NOTE	S <u>Lat: 3</u>	9.107	64 Lor	<u>ng: -//</u>	.13807										
	o DEPTH o (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DE	SCRIPTION				
			SM	F	-	Moist, Ligh	nt Brown,	Silty SA	ND							
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18	2.5				4.1	Trash				Bottor	n of test	pit at 4.1 feet				
GENEKAL BU																

	Ge Ma Te	otechi terials ephor	nical a a	nd Er Constr (410)	Company ovironmental ruction Inspe 363-1555	Enginee ction and	rs d Testing)					TEST	PIT TP PAGE	P-311 1 OF 1
CLIER		nginee	ering, l	nc.					PROJECT	NAME	Gude Landfil	I			
PROJ	IECT LOC	ATIO	N <u>Mo</u>	ntgon	nery County,	Marylan	d		_ PROJECT	NUMBER	R <u>16943-0 I</u>	MD			
DATE	STARTE	D _7/	19/18		COM	PLETED	7/19/18	8	_ GROUND	ELEVATI	ON			E	
					The Robert E		Compan	iy	DATE	ТІМЕ	ELAPSED	ATER LEVE	HOLE	WATER	WATER
					580N Backho				- 7/19/18		<u>HOURS</u> 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
					CHEC	CKED BY	K. Cris	st	-		0 -				
NOTE	S _Lat: 3	9.108	14 Lor	ng: -7	7.13841				_						
0.0 (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DE	SCRIPTION				
	-	SM		1.6	Moist, Lig	jht Browr	n, Silty S	AND							
	-			3.0	Trash				Botto	m of toot	pit at 3.0 fee	4			
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18															



	Ge Ma Tel	otechi terials ephor	nical ar	nd Env onstru (410)	Compan /ironmer uction In: 363-155	ntal Eng	gineers on and 1	Testing	g						TEST	PIT TF	P-314 1 OF 1
CLIE		ngine	ering, I	nc.						PR	OJECT I	NAME Gu	ude Landfill				
	ECT LOC				ery Cou	nty, Ma	aryland			PR	OJECT I	NUMBER	16943-0 M	D			
	STARTE						TED		8	GR			N	TE	ST PIT SIZ	E	
EXCA		CONT	RACTO	DR _T	he Robe	ert B. Ba	alter Co	ompan	ıy					TER LEVE			
EXCA	VATION	МЕТН	OD _C	ase 5	80N Bac	khoe					DATE	TIME	ELAPSED HOURS	DEPTH (ft)	DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
LOGO	GED BY	J. Bai	ey		Cł	IECKE	DBY	K. Cris	st	7	/19/18		0 ⊻			NE	
NOTE	S Lat: N	I/A Lo	ng: N/A	4						_							
o DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG								MATE	RIAL DES	CRIPTION				
		SM		3.5	Moist, Trash	Light E	Brown,	Silty S	SAND		Bottom	n of test pil	t at 4.5 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

	3	Geo Mat Tel	otechr terials ephon	nical a	nd En Constr (410)	Compa vironmo uction I 363-15	ental E	inginee tion an	ers Id Test	ing						TEST	PIT TI PAGE	P-315 1 OF 1
CLI	ENT	EA Ei	nginee	ering, l	Inc.						 PROJECT	NAM	E _Gu	ide Landfill				
PRC	OJEC	T LOC	ATIO	N <u>M</u> o	ntgon	nery Co					PROJECT	NUM	BER _	16943-0 N	1D			
DAT	TE SI	FARTE	D _7/	19/18		(COMPL	ETED	7/19)/18	 GROUND	ELEV	ATION			EST PIT SIZ	E	
EXC	CAVA		CONT	RACT	OR _1	The Rob	oert B.	Balter	Comp	any	 DATE			ELAPSED	TER LEVE	HOLE	WATER	WATER
						580N Ba					 7/19/18		ME	HOURS 0 ⊈	DEPTH (ft) DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
						(CHECK	(ED B)	Υ <u>Κ.</u>	Crist	 7/19/10			0 -				
NOT	TES	Lat: 3	9.107	42 Lor	ng: -77	7.139												
0. DEPTH		SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG					0.11	04115	MATE	RIAL	DESC	CRIPTION				
-	_		SM		1.3			t Brow	n, Silty	y SAND								
- - _ 2.5	- - 5					Tras	h											
-	-				3.3													
											Botto	m of t	est pit	at 3.3 feel	t			
_																		
9/5/18																		
GDT																		
LTER																		
BBA																		
DBER																		
PJ R(
9.TT																		
ANDF																		
UDE I																		
13-0 G																		
- 1694																		
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																		
/ TP /																		
AL BH																		
ENER																		
ö																		

Geotech Materials Telepho	pert B. Balter Company nical and Environmental Engineers s and Construction Inspection and Te ne No. (410) 363-1555 Iterco.com	esting				TEST	PIT TF PAGE	P-317 1 OF 1
CLIENT EA Engine	ering, Inc.	PROJECT	NAME _Gu	ide Landfill				
	Montgomery County, Maryland		NUMBER _	16943-0 M	D			
	/20/18 COMPLETED 7/2		ELEVATION	۱			E	
	TRACTOR The Robert B. Balter Con	mpany DATE	TIME	ELAPSED	TER LEVEI CASING	HOLE	WATER DEPTH (ft)	WATER
	Case 580N Backhoe	7/20/18		HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
NOTES <u>Lat: 39.108</u>	iley CHECKED BY K							
0 DEPTH (ft) SAMPLE TYPE NUMBER U.S.C.S.	GRAPHIC LOG		RIAL DESC	CRIPTION				
	Moist, Light Brown, Si		n of test pit	at 4.0 feet				

Mater	riale a	nd Constri	Company vironmental Eng uction Inspectio 363-1555	gineers n and Testing	g					TEST	PIT TF PAGE	P-318 1 OF 1
CLIENT EA Eng	gineeri	ng, Inc.				PROJECT N	NAME Gu	ide Landfill				
PROJECT LOCA	TION	Montgom	nery County, Ma	aryland		PROJECT N						
DATE STARTED						GROUND E	LEVATION				E	
EXCAVATION CC				alter Compar	ıy	DATE	TIME	WA ELAPSED HOURS	TER LEVE	HOLE	WATER	WATER
EXCAVATION ME						7/20/18		HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
LOGGED BY _J. NOTES _Lat: 39.1					SI							
NOTES	10904	<u>- Long77</u>	.14002									
SA SA	U.S.C.S.					MATEF	RIAL DESC	CRIPTION				
0.0	SM	F F 2.5	Moist, Light E	Brown, Silty S	SAND	Bottom	n of test pit	at 3.8 feet				

	Ge Ma Tel	otechr terials ephon	nical a a a	nd En Constr (410)	Compa vironme uction li 363-15	ental Er	ngineei on and	rs d Testi	ing								TEST	PIT TI PAGE	P-319 1 OF 1
CLIEN	NT EAE										PROJE			ude Landfi	II				
PROJ	ECT LOC	ATIO	N <u>Mo</u>	ntgon	nery Co	unty, M	arylan	d			PROJE		UMBER _	16943-0 I	MD				
	STARTE										GROU	ND E	LEVATIO				ST PIT SIZ	E	
	VATION						Balter (Comp	any		DAT		TIME	ELAPSED		R LEVEL CASING	HOLE	WATER	WATER
	VATION										7/20/			HOURS 0 ♀		EPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
							ED BY	<u>K. C</u>	Crist		17207			0 -					
NOTE	S <u>Lat: 3</u>	9.108	79 Lor	ig: - <i>1 i</i>	(.14117														
0. DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG								M	ATEF	RIAL DESC	CRIPTION	I				
	-	SM	F	1.5	Mois	t, Light	Brown	n, Silty	SAND)									
				2.5										t at 2.5 fee					
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																			

	Ge Ma Te	otechi iterials lephor	nical a	nd En Constr (410)	Compa vironm uction I 363-15	ental F	Engine tion a	ers nd Tes	sting							TEST	PIT TF	P-320 1 OF 1
CLIEI	NT EAE	ingine	ering, l	nc.							PRC		AME Gu	ude Landfill				
					nery Co	ounty, I	Maryla	and			PRC			16943-0 N	ID			
DATE	STARTE	D 7/2	20/18		(COMP	LETE	D _7/2	20/18		GRO	DUND E	LEVATIO	N	TE	ST PIT SIZ	E	
	VATION													WA	TER LEVE	LS		
	VATION										D	ATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
	GED BY							ΒΥ _Κ.	Crist		7/2	20/18		0 ⊻			NE	
	S Lat: 3																	
o (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Mois	st, Ligh	t Brov	wn, Sil	Ity SAN	ID		MATEF	RIAL DES(CRIPTION	<u></u>			
 <u>2.5</u> 		SM		3.9														
	-			4.9	Tras	sh												
/18			XXXX									Bottom	of test pit	t at 4.8 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/518																		

	Ge Ma	otechi terials	nical a	nd En	Company vironmenta uction Insp 363-1555	I Engine ection ar	ers nd Testi	ng						TEST	PIT TF PAGE	P-321 1 OF 1
CLIEN	NT <u>EA E</u>								PR	OJECT	NAME _G	ude Landfill				
PROJ	ECT LOC	ATIO	N <u>M</u> o	ntgom	nery County	/, Maryla	and		PR	OJECT	NUMBER	16943-0 M	D			
									GR		ELEVATIO	N			Ε	
					he Robert		r Compa	any		DATE	TIME	ELAPSED		HOLE	WATER	WATER
					80N Backh		v k c	rict		/20/18		HOURS 0 ⊻		DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	S Lat: 3						<u> </u>	1151	_							
0.0 0.0 0.0 0.0	SAMPLE TYPE NUMBER		GRAPHIC LOG		Moist, Li	ight Brov	vn, Silty	SAND		MATE	RIAL DES	CRIPTION	1			
	-	SM		1.5	Trash											
				3.2						Detter		it at 3.2 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/6/18																

		Ge Ma Tel	otechi terials ephor	nical a a a	nd En Constr (410)	Company vironmen uction Ins 363-1555	tal Engir	neers and Te	esting						TEST	PIT TF PAGE	P-322 1 OF 1
	CLIEN	IT <u>EA E</u>								 PROJECT		Gude	Landfill				
	PROJI	ECT LOC	ATIO	N <u>Mo</u>	ntgom	nery Coun	ity, Mary	land		 PROJECT	NUMBE	R <u>169</u>	943-0 MI	C			
						co				 GROUND E	ELEVAT				ST PIT SIZI	E	
						The Rober		ter Con	npany	 DATE	TIME		APSED	CASING	HOLE	WATER	WATER
						80N Back				 7/20/18		· H	IOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
						СН	ECKED	ВҮ <u>К</u>	. Crist	 1120/10			0 -				
	NOTE	S <u>Lat: 3</u>	9.107	62 LOR	<u>ng: -//</u>	.14041											
	o DEPTH (ff)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	rial de	ESCRI	PTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18	0.0	S/	SM		2.3	Moist, Trash	Light Bro	own, Si	ilty SANE	Bottor	n of test	: pit at 3	3.0 feet				
GENERAL BI																	

	Ge Ma Tel	otechr terials ephor	nical ar and C	nd Env onstru (410) 3	Company ironment ction Insp 863-1555	al Engin	neers and Tes	sting						TEST	PIT TF PAGE	P-323 1 OF 1
CLIEN	IT <u>EA E</u>	nginee	ering, I	nc.					P	ROJECT		ude Landfill				
PROJ	ECT LOC	ATIO	Mo	ntgome	ery Count	y, Maryl	land		P	ROJECT	NUMBER	16943-0 N	1D			
DATE	STARTE	D_7/*	19/18		CO	MPLETE	ED _7/1	9/18	G		LEVATIO	N	TE	ST PIT SIZ	E	
EXCA		CONT	RACTO	DR T	ne Robert	B. Balt	er Com	pany	— r			WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCA	VATION I	METH	OD _C	ase 58	30N Back	hoe			-	DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
LOGO	BED BY	J. Bail	еу		CH	ECKED	BY <u>K</u> .	Crist		7/19/18		0 ⊻			NE	
NOTE	S Lat: 3	9.107	53 Lon	g: -77.	1384											
O DEPTH	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATEI	RIAL DES	CRIPTION				
 		SM		4.0	Moist, L Trash	ight Brc	own, Silt	y SAND		Botton	n of test pi	t at 5.2 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 95/18																

	Ge Ma	otechi	nical a and C	nd Env Constru	Company vironmental iction Inspe 363-1555	l Enginee ection an	ers id Testir	ng						TEST	PIT TF PAGE	P-324 1 OF 1
CLIEN	NT EAE								Proji			ide Landfill				
PROJ	ECT LOO	ATIO	M <u>Mo</u>	ntgom	ery County	, Marylar	nd		PROJI		NUMBER _	16943-0 M	D			
					COM				GROU	ND E	LEVATION	۱		ST PIT SIZ	E	
					he Robert E		Compa	any	DA1	F	TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
					BON Backho				7/20			HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	S _Lat: 3				CHE(CKED BI	<u>к. с</u>	rist	_							
DEPTH (ft)	SAMPLE TYPE NUMBER		GRAPHIC LOG						M	ATEF	RIAL DESC					
0.0		SM	F	2.2	Moist, Lig	ght Brow	m, Silty	SAND								
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18									В	ottom	of test pit	at 4.0 feet				

	Ge Ma Te	otechr terials ephon	nical a and C	nd En Constr (410)	Company vironmental uction Inspe 363-1555	Engineer ction and	s Testing						TEST	PIT TF	P-325 1 OF 1
CLIEN		nginee	ering, l	nc.					PROJECT		ude Landfill				
PROJ		ATIO	M <u>Mo</u>	ntgom	nery County,	Maryland	d		PROJECT	NUMBER	16943-0 M	D			
DATE	STARTE	D_7/2	20/18		COM	PLETED	7/20/18		GROUND	ELEVATIO	N	TE	ST PIT SIZ	E	
EXCA	VATION	CONT	RACT	OR _1	he Robert E	. Balter C	Company	1	·		WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCA	VATION	METH		Case 5	80N Backho	e			DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	
LOGO	GED BY _	J. Bail	ey		CHEC	KED BY	K. Crist	t	7/20/18		0 ⊻			NE	
NOTE	S Lat: 3	9.1064	4 Long	j: - 77.	14037										
O DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG						MATE	RIAL DES	CRIPTION				
 2.5 		SM	F	<u>2.5</u>	Moist, Lig	ht Brown	, Silty SA	AND	Bottor	n of test pi	t at 4.0 feet				
GENERAL BH/TP/WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 95/18															

	Ge Ma	otechi iterials lephor	nical a	nd Env constru (410) 3	Company ironmenta ction Insp 363-1555	l Engine ection ar	ers nd Testir	ng						TEST	PIT TF PAGE	P-326 1 OF 1
CLIE	NT EAE								PROJ		AME Gu	ude Landfill				
PROJ	ECT LOO	ATIO	N Mo	ntgom	ery County	, Maryla	nd		PROJ			16943-0 M	D			
DATE	STARTE	D _7/2	20/18			IPLETED) <u>7/20/</u>	18	GROU	IND E	LEVATION	N	TE	ST PIT SIZ	E	
EXCA	VATION	CONT	RACTO	DR TI	ne Robert	B. Balter	r Compa	any				WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXCA	VATION	METH	OD _C	ase 58	30N Backh	ioe			DA		TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	
LOGO	GED BY _	J. Bai	ley		CHE	CKED B	Y <u>K. C</u>	rist	7/20	/18		0 ⊻			NE	
NOTE	S Lat: 3	9.106	73 Lor	ig: -77.	14073											
O DEPTH (ft) O	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		NA-1-4 1	ald Draw		CAND	Μ	IATEF	RIAL DESC	CRIPTION				
		SM		<u>3.0</u>	Moist, Li	ght Brow	vn, Silty :	SAND	B	iottom	of test pit	t at 4.5 feet				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																

Geotechni Materials a	rt B. Balter Company ical and Environmental Engineers and Construction Inspection and Testing e No. (410) 363-1555 erco.com					TEST	PIT TP PAGE	1 OF 1
CLIENT EA Engineer	ring, Inc.	PROJECT	NAME Gu	de Landfill				
PROJECT LOCATION	Montgomery County, Maryland	PROJECT	NUMBER	16943-0 M	D			
DATE STARTED 7/20	0/18 COMPLETED _7/20/18	_ GROUND E	ELEVATION			ST PIT SIZ	E	
EXCAVATION CONTR	ACTOR The Robert B. Balter Company		TIME	WA ⁻ ELAPSED	TER LEVEI CASING	HOLE	WATER	WATER
	DD Case 580N Backhoe	- DATE 7/20/18	TIME	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
	CHECKED BY K. Crist	-		0 -				
NOTES _Lat: 39.10714	4 Long: -77.14309	-						
O DEPTH O (ft) SAMPLE TYPE NUMBER U.S.C.S.	GRAPHIC LOG	MATE	RIAL DESC	RIPTION				
	Moist, Light Brown, Silty SAND	Botton	n of test pit	at 4.2 feet				

		Ge	otechi terials	nical a	nd En	Compan vironmer uction Ins 363-155	ntal Eng	ineers n and T	resting							TEST	PIT TF PAGE	P-329 1 OF 1
	CLIEN	T_EAE									_ PROJI		AME _Gu	ide Landfill				
F	PROJI	ECT LOC	ATIO	N <u>M</u> o	ntgom	nery Cou	nty, Mar	ryland			_ PROJI			16943-0 M	D			
		STARTE									_ GROU	ND E	LEVATION			ST PIT SIZ	■	
		VATION						alter Co	ompany	у	DAT		TIME	ELAPSED	TER LEVE	HOLE	WATER	WATER
		VATION									- 7/20/			HOURS 0 ♀	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)
							HECKED	D BY _	K. Cris	st	- //20/			0 -				
r	NOTE	S _Lat: 3	9.107	52 Lor	ng: -//	.14253					_							
	(#) (#) 0.0	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							М	ATEF	RIAL DESC	CRIPTION				
-	0.0	Ś	SM		2.3	Moist, Trash	Light B	irown, S	Silty SA	AND	В	ottom	of test pit	at 3.0 feet				
GENERAL BH / TP / WELL 16943-0 GL																		

	Ge Ma Te	otechi aterials lephor	nical ai and C	nd Env constru (410) 3	Company ironmenta ction Insp 863-1555	al Engine ection a	eers and Test	ting						TEST	PIT TF PAGE	P-330 1 OF 1
CLIE	NT EAE	ingine	ering, I	nc.					PR	OJECT I		ude Landfill				
PRO	JECT LOO	CATIO	N <u>Mo</u>	ntgome	ery Count	y, Maryl	and		PR	OJECT I	NUMBER	16943-0 M	D			
DATE	E STARTE	D _7/2	20/18		CON	IPLETE	D <u>7/20</u>)/18	GR	ound e	LEVATIO	N		ST PIT SIZ	E	
EXC	AVATION	CONT	RACTO)r <u>T</u>	ne Robert	B. Balte	er Comp	bany				WA ELAPSED	TER LEVE	LS HOLE	WATER	WATER
EXC	AVATION	METH		ase 58	80N Backl	noe					TIME	HOURS	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	ELEV (ft)
	GED BY _					CKED I	BY <u>K.</u>	Crist	''	/20/18		0 ⊻			NE	
NOTI	ES _Lat: 3	<u>107:</u>	28 Lon	ıg: -77.	14366											
0. DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG							MATER	RIAL DES	CRIPTION				
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM		6.0	Moist, L	ight Bro	wn, Silty	y SAND		Bottom	n of test pi	t at 7.0 feet				

Geotechn Materials	ert B. Balter Company nical and Environmental Engineers and Construction Inspection and Testing ne No. (410) 363-1555 erco.com					TEST	PIT TP PAGE	-331 1 OF 1
CLIENT EA Enginee	ering, Inc.		NAME Gu	de Landfill				
PROJECT LOCATION	N Montgomery County, Maryland		NUMBER	16943-0 M	D			
DATE STARTED 7/2	20/18 COMPLETED 7/20/18	GROUND E	LEVATION				∎	
EXCAVATION CONTR	RACTOR _ The Robert B. Balter Company	-		WA [*] ELAPSED	TER LEVEL	HOLE	WATER	WATER
	OD Case 580N Backhoe	- DATE 7/20/18	TIME	HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	WATER DEPTH (ft) NE	ELEV (ft)
	ey CHECKED BY K. Crist	-		0 ¥				
NOTES Lat: 39.1080	03 Long: -77.14175	-						
0. DEPTH (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	GRAPHIC LOG	MATEF	RIAL DESC	RIPTION				
0.0 	Moist, Light Brown, Silty SAND	Bottom	n of test pit	at 4.2 feet				

	Ge Ma Tel	otechi terials ephor	nical a	nd En constr (410)	Compai vironme uction Ir 363-155	ntal Eng Ispectio	gineers n and T	esting							TEST	PIT TF	P-332 1 OF 1
CLIEN		ngine	ering, I	nc.						PROJECT	NAME	Gude	e Landfill				
										PROJECT	_						
	STARTE						TED 7	/20/18		GROUND					ST PIT SIZ	E	
	VATION												WA	TER LEVE	LS		
	VATION									DATE	TIME	E E	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
	SED BY						DBY	K. Crist		7/20/18			0 ⊻			NE	
O (ft) (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG		Moiet	Light E	Prown			MATE	ERIAL DE	ESCR	RIPTION	1	1	1	
 		SM		3.5	Moist Trast		Brown, S	Silty SAN	ND	Botto	m of test	t pit a	t 4.5 feet				
GENERAL BH / TP / WELL 18943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

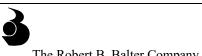
	Ge Ma Te	otechi	nical a and (ne No.	nd Er Constr (410)	Comp vironm uction 363-1	iental I	Engin ction a	eers and Te	esting									TES	ST	PIT TI PAGE	P-333 1 OF 1
CLIE	NT EAE	ingine	ering,	Inc.							 PROJ		AME G	ude	Landfill						
PRO.	JECT LOO	CATIO	N <u>M</u> o	ontgon	nery Co	ounty,	Maryl	land			 PROJ		UMBER	_16	943-0 M	1D					
DATE	STARTE	D _7/2	20/18			COMP	PLETE	ED _7/	/20/18	3	 GROL	JND E	LEVATIO	N _					SIZE	E	
	VATION							er Cor	mpany	у	 DA	те	TIME	E	LAPSED	C	LEVE	HOLE		WATER	WATER
	VATION										 7/20				<u>HOURS</u> 0 ⊈	DE	PTH (ft)	DEPTH	(ft)	DEPTH (ft) NE	ELEV (ft)
	GED BY						KED I	BY _k	<. Cris	st	 1120	,10			0 -						
NOTE	ES _Lat: 3	39.107	78 Lor	ng: -7	7.1409																
O DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG								N	IATEF	RIAL DES	CR	IPTION						
	-	SM		2.0	Moi: Tras	st, Ligh	ht Bro	own, S	ilty SA	AND											
	-			3.3																	
			* * * *								В	ottom	of test pi	it at	3.3 feet						
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																					

	Ge Ma Te	otechr Iterials Iephon	nical and and Cor	ter Company Environment Istruction Ins 10) 363-1555 I	tal Enginee	ers d Testing						TEST	PIT TF PAGE	P-334 1 OF 1			
CLIEN		inginee	ering, Inc					PROJECT		ude Landfill							
PROJ	PROJECT LOCATION Montgomery County, Maryland								PROJECT NUMBER _16943-0 MD								
DATE	DATE STARTED _7/19/18 COMPLETED _7/19/18							GROUND ELEVATION TEST PIT SIZE									
EXCA	EXCAVATION CONTRACTOR The Robert B. Balter Company									WA [*] ELAPSED	TER LEVE	LS HOLE		WATER			
EXCA	EXCAVATION METHOD Case 580N Backhoe							DATE	TIME	HOURS	DEPTH (ft)	DEPTH (ft)		ELEV (ft)			
LOGO	GED BY _	J. Bail	еу	СН	ECKED BY	K. Crist		7/19/18		0 ⊻			NE				
NOTE	NOTES Lat: 39.10849 Long: -77.13795																
O DEPTH	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG					MATE	RIAL DES	CRIPTION							
EILL.GPJ ROBERT B BALTER.GDT 9/5/18		SM	F F F F F F F F F 6.1	5 Trash	Light Brow	n, Silty SAN		Botton	n of test pi	t at 6.0 feet							
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18																	

	Tel	ephon	and C	constru (410)	uction Inspect 363-1555	ingineers tion and T	esting						TEST		1 OF 1		
CLIEN	T EA EI	nginee	ering, I	nc.				PROJEC ⁻	PROJECT NAME Gude Landfill								
PROJE	ECT LOC	ATIO	M Mo	ntgorr	nery County, N	Maryland		PROJEC	PROJECT NUMBER _ 16943-0 MD								
DATE	DATE STARTED 7/20/18 COMPLETED 7/20/18								ELEV	ATION			ST PIT SIZI	E			
	EXCAVATION CONTRACTOR The Robert B. Balter Company							DATE	WATER LEVELS								
	EXCAVATION METHOD Case 580N Backhoe							7/20/18	_		HOURS 0 ⊈	DEPTH (ft)	DEPTH (ft)	DEPTH (ft) NE	ELEV (ft)		
	LOGGED BY J. Bailey CHECKED BY K. Crist										0 -						
NOTES	NOTES _Lat: 39.10695 Long: -77.13868																
0.0 (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG					МАТ	ERIAL	DESC	CRIPTION						
GENERAL BH / TP / WELL 16943-0 GUDE LANDFILL.GPJ ROBERT B BALTER.GDT 9/5/18	<i>о</i>	SM		2.3	Moist, Ligh	t Brown, S	Silty SAND	Botto	om of te	est pit	at 3.0 feet						

APPENDIX B

LABORATORY TEST RESULTS



16943-0 Gude Landfill

The Robert B. Balter Company



SUMMARY OF LABORATORY RESULTS

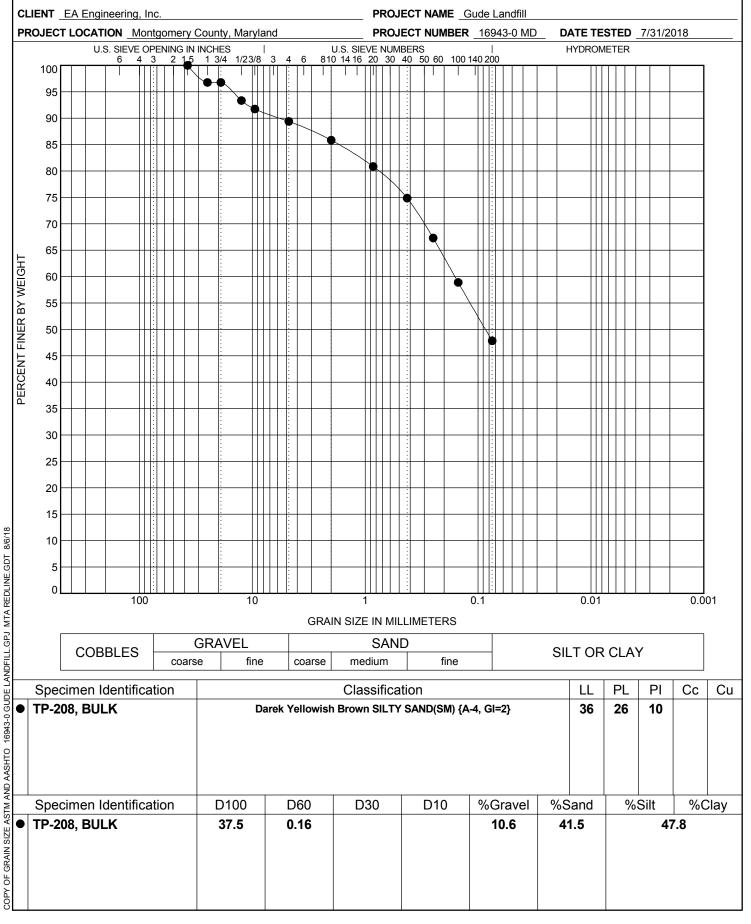
PAGE 1 OF 1

	CLIENT	EA Engineering, Inc.
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	Engineering, Inc				PROJECT NAME Gude Landfill								
PROJECT LO	CATION Montg	jomery Cou	nty, Maryla	nd		PROJECT NUMBER 16943-0 MD DATE TESTED 7/31/2018							
Borehole	Depth	Sample Number	Liquid Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	AASHTO Classificatio	ASTM Classification	Water Content (%)	Max Dry Density (pcf)	Optimum Moisture (%)	CBR Value	
TP-208	0.0' - 2.0'	BULK	36	10	37.5	48	A-4	SM	27.6	118.7	13.3		
TP-215	0.0' - 2.0'	BULK	36	11	25	62	A-6	ML	29.8	115.0	14.4		
TP-228	0.0' - 2.0'	BULK	40	13	12.5	71	A-6	ML	26.3	112.9	15.5		
TP-231	0.0' - 2.0'	BULK	34	10	19	62	A-4	ML	28.9	118.2	13.6		
TP-241	0.0' - 2.0'	BULK	38	7	12.5	52	A-4	ML	29.7	121.7	9.0		
TP-253	0.0' - 2.0'	BULK	35	6	37.5	41	A-4	SM	24.1	119.4	12.4		
TP-258	0.0' - 2.0'	BULK	37	11	37.5	60	A-6	ML	26.0	115.8	13.8		
TP-259	0.0' - 2.0'	BULK	49	12	37.5	54	A-7-5	ML	31.0	108.4	17.8		
TP-263	0.0' - 2.0'	BULK	36	6	25	41	A-4	SM	31.0	117.6	10.5		
TP-273	0.0' - 2.0'	BULK	30	6	25	49	A-4	SM	24.3	121.7	12.0		

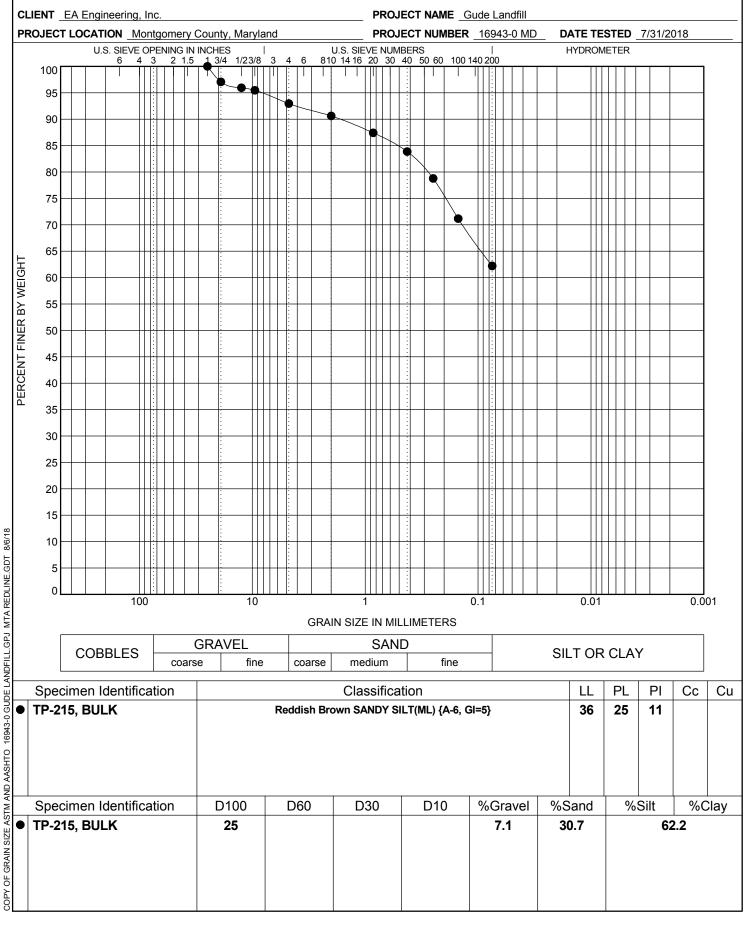


GRAIN SIZE DISTRIBUTION



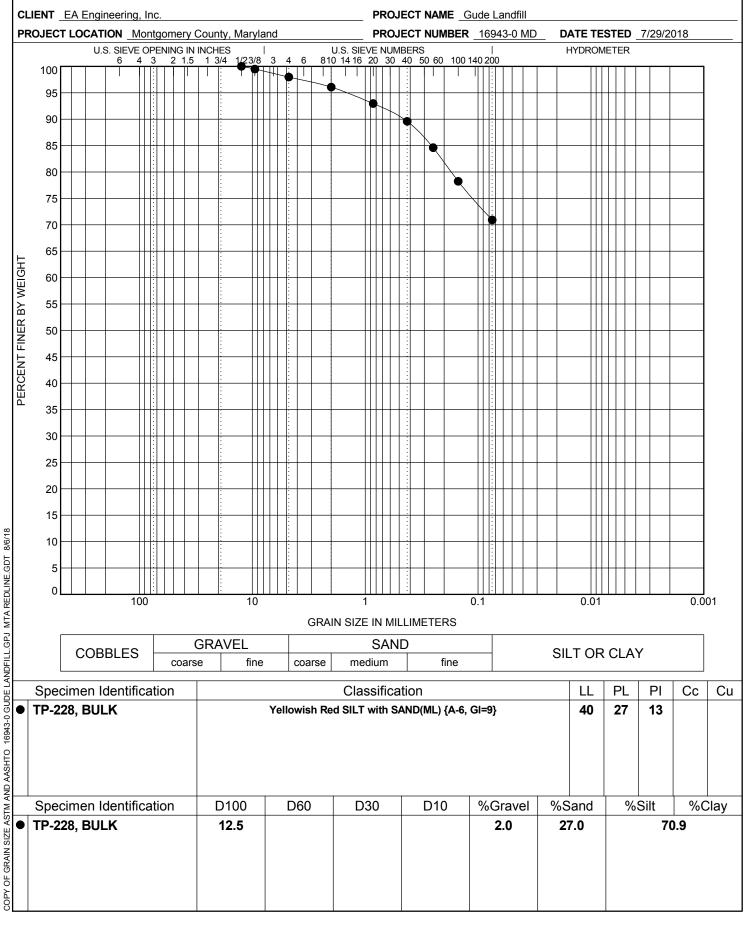


GRAIN SIZE DISTRIBUTION



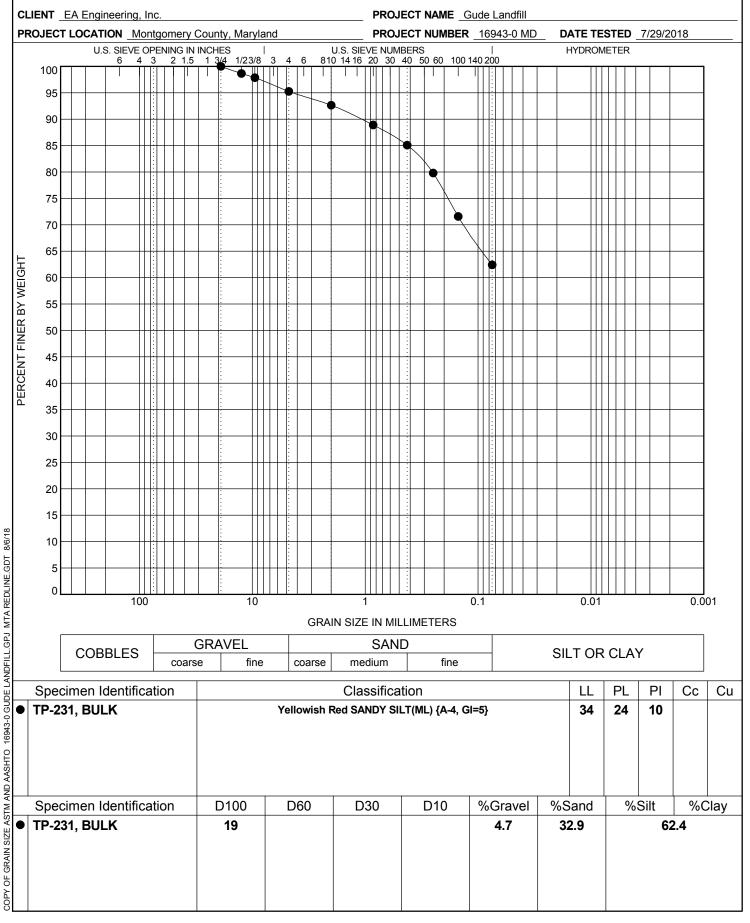


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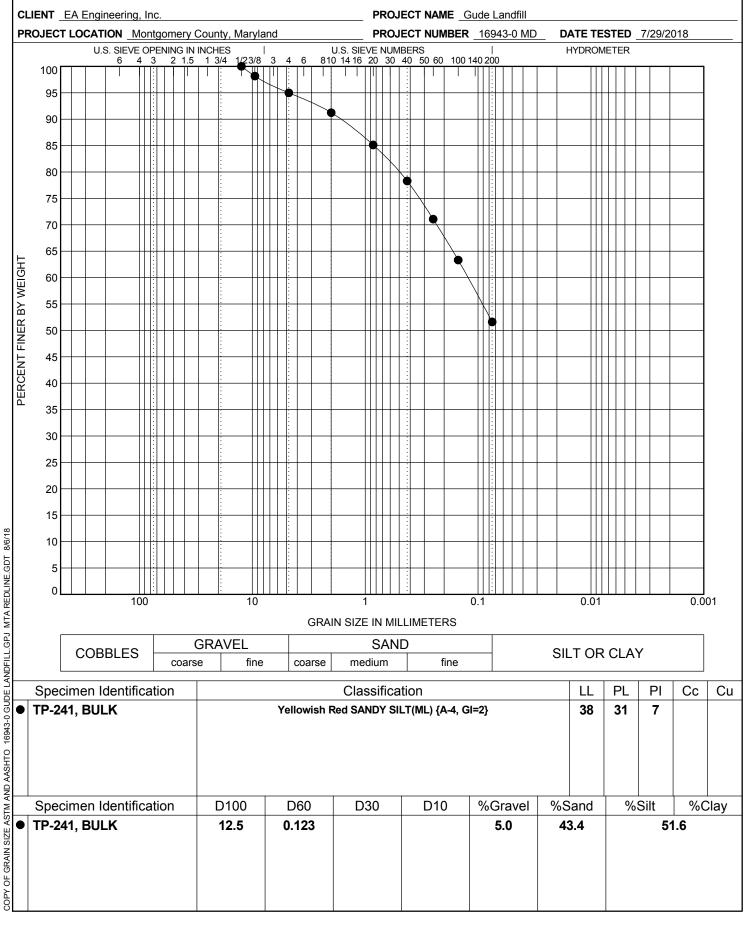


GRAIN SIZE DISTRIBUTION



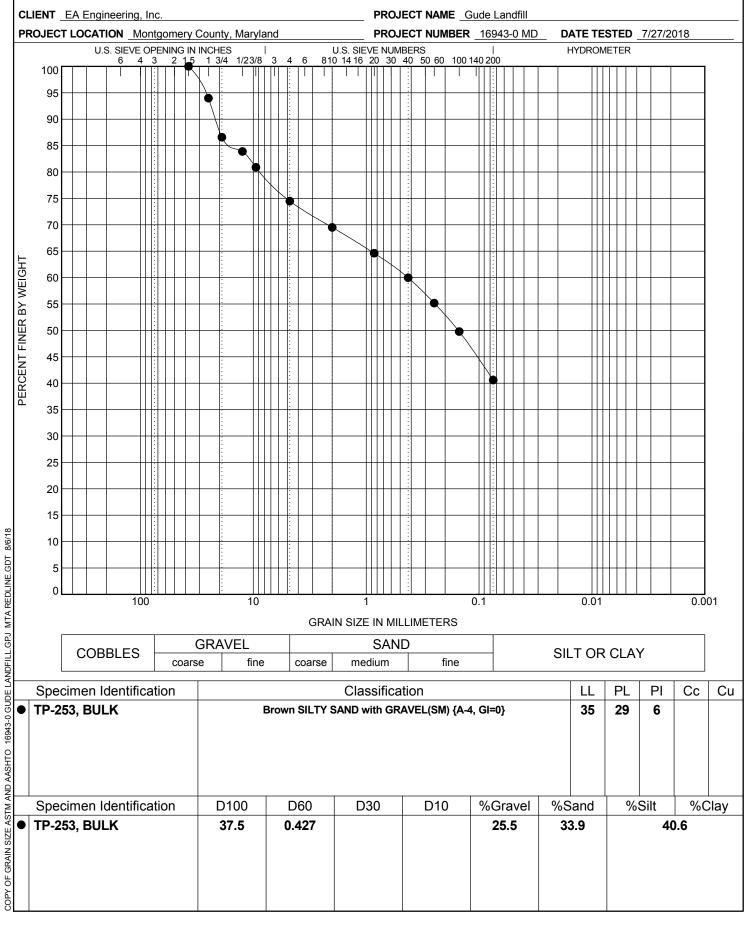


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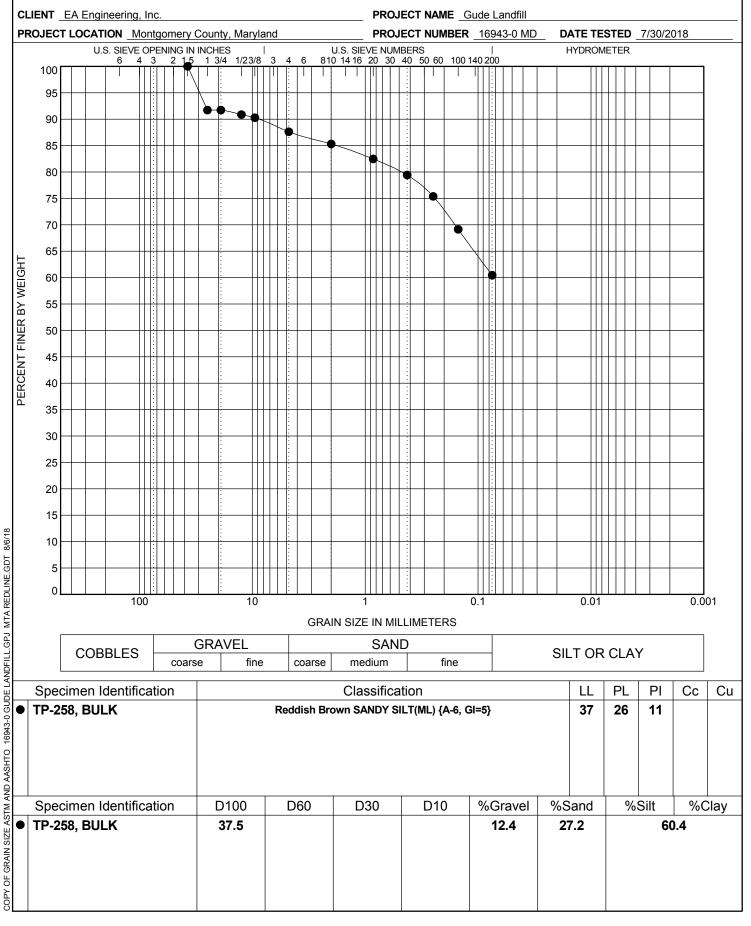


GRAIN SIZE DISTRIBUTION



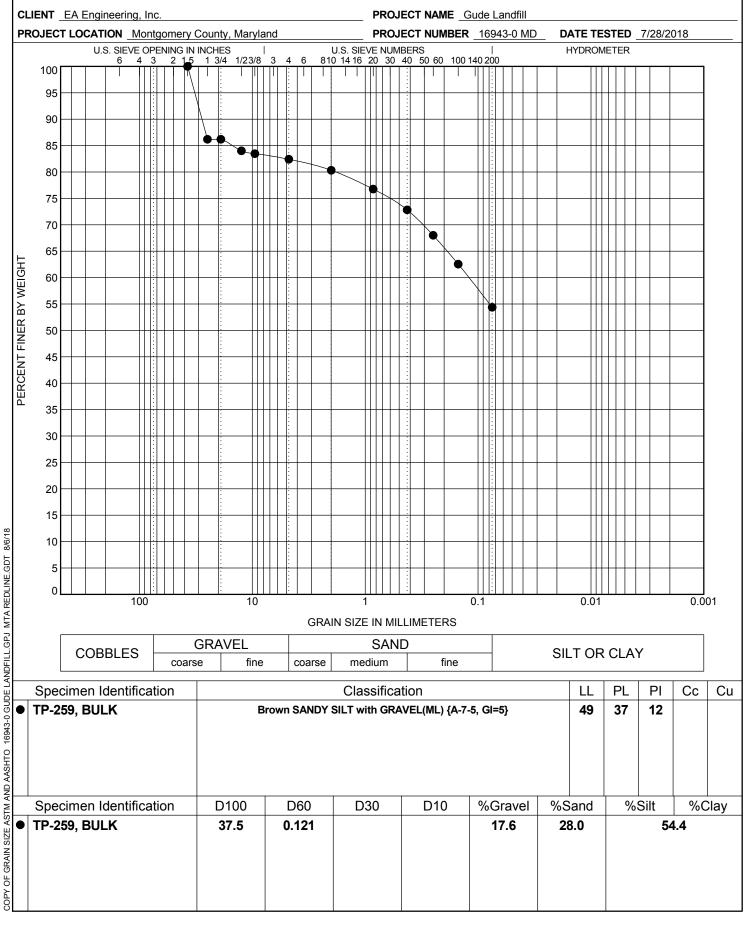


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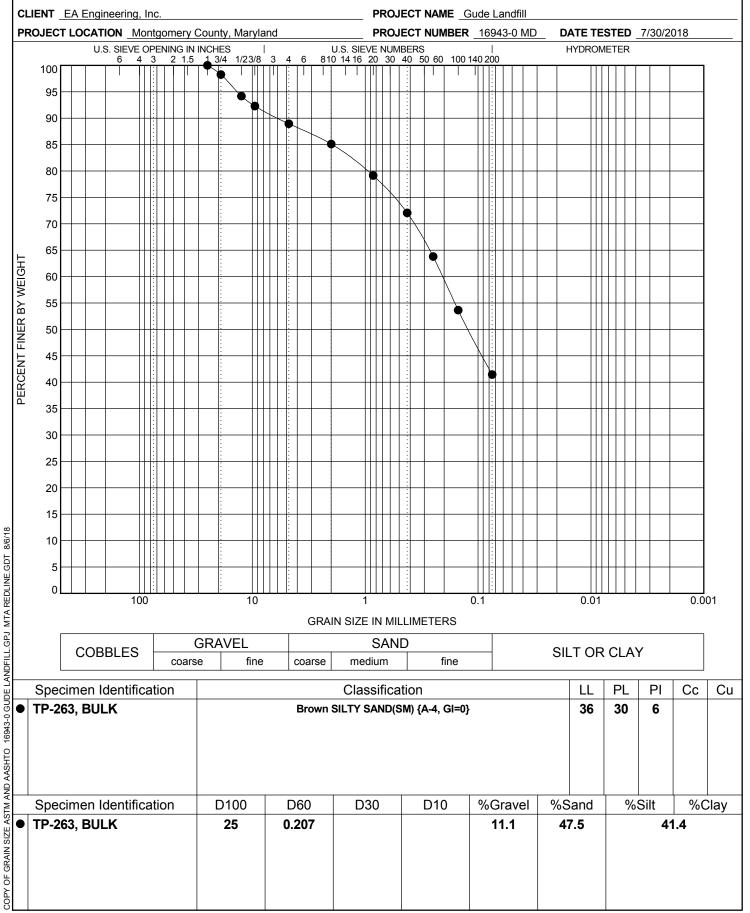


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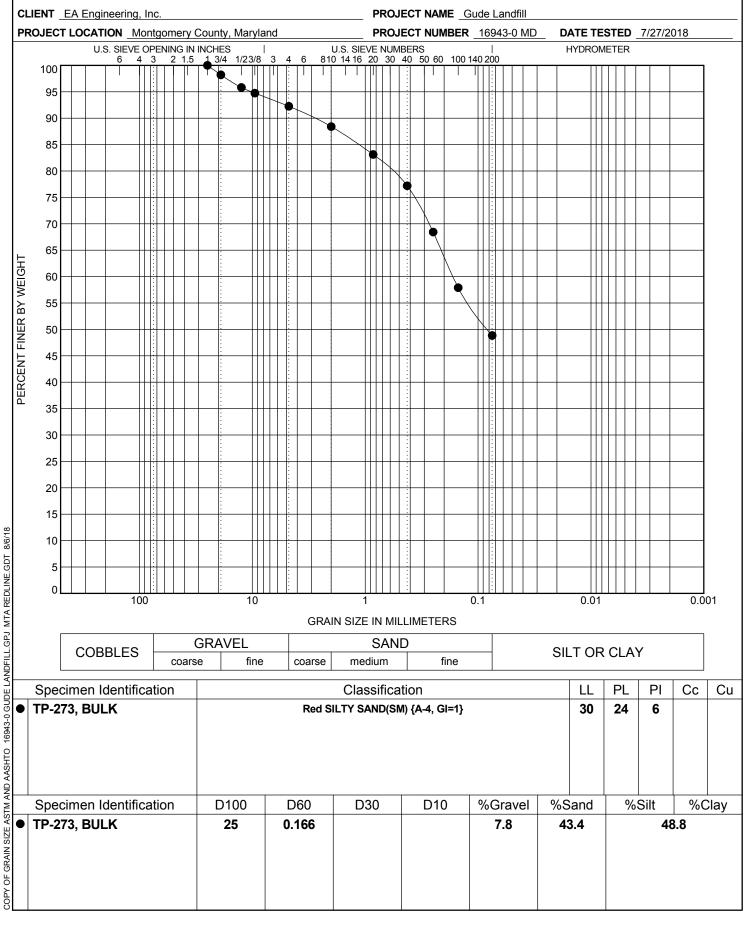


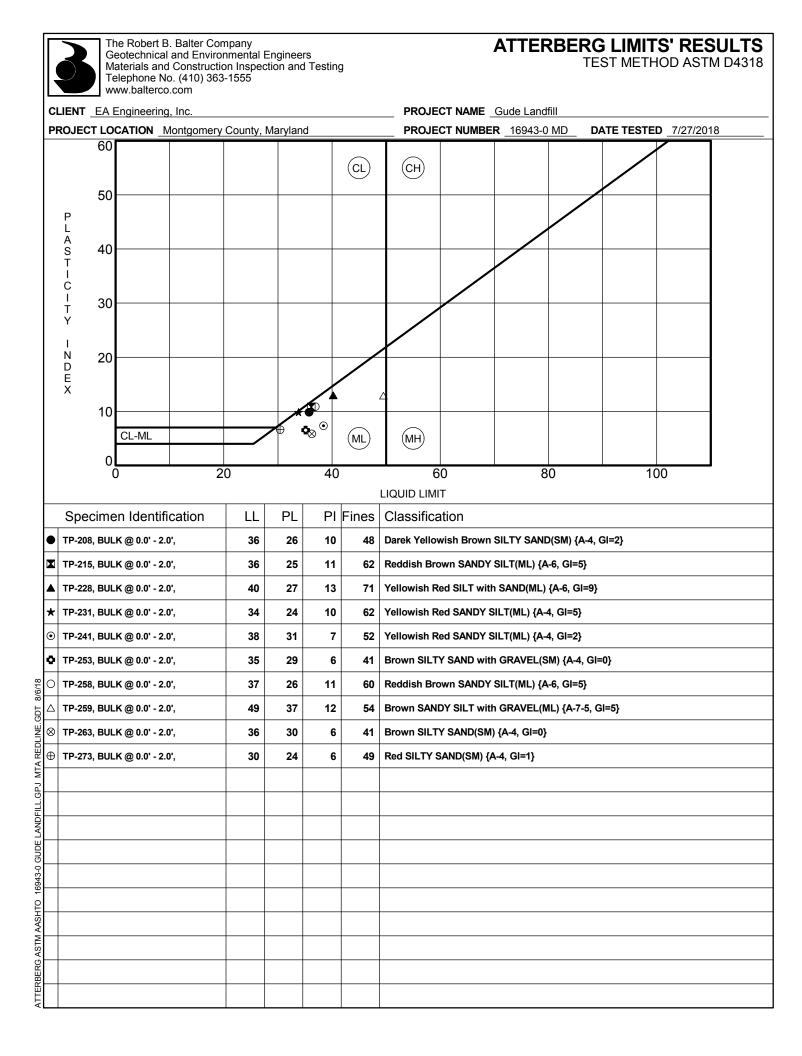
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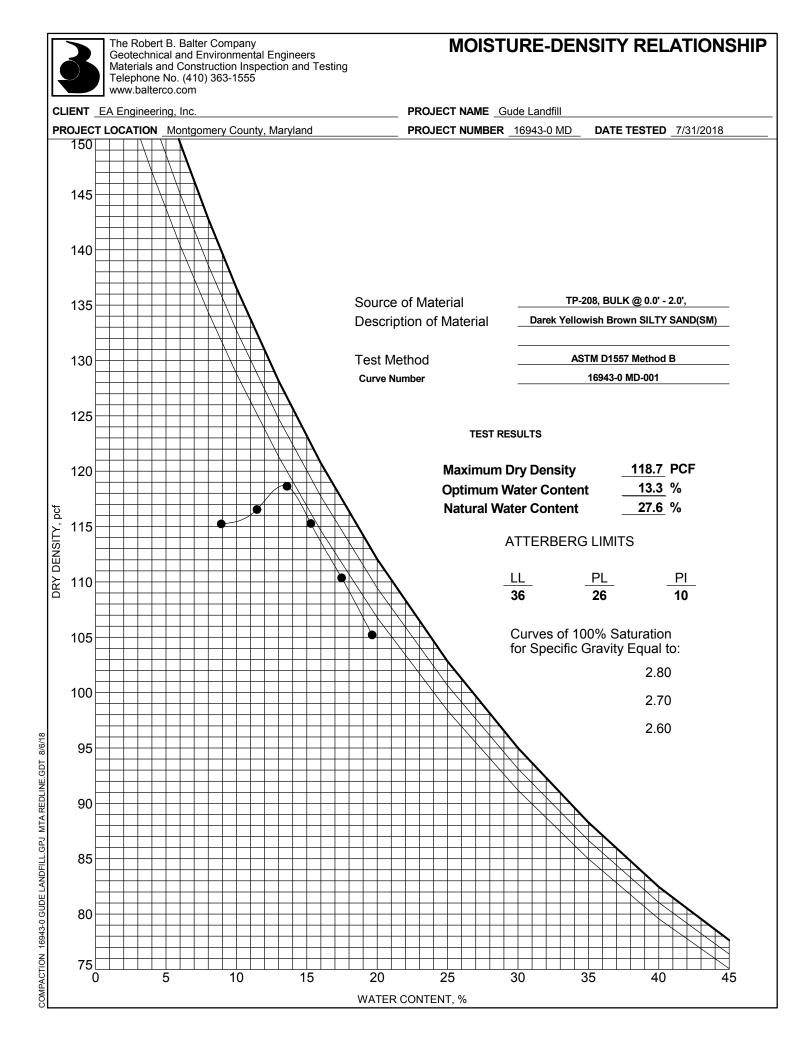


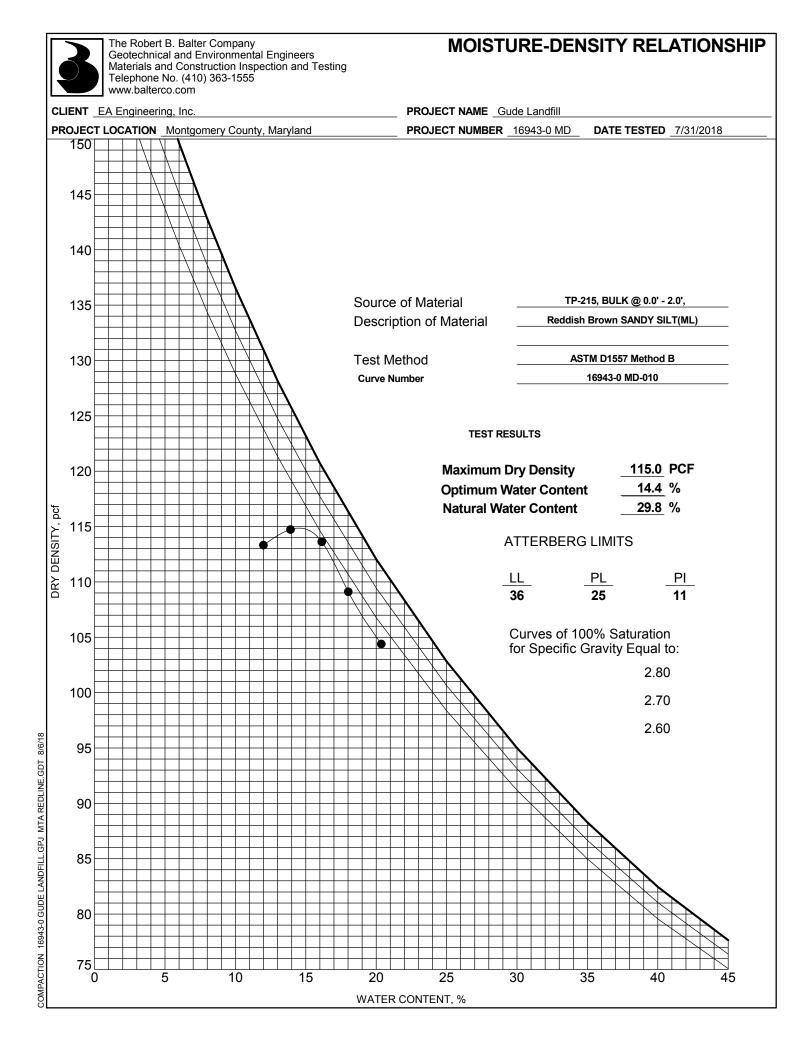


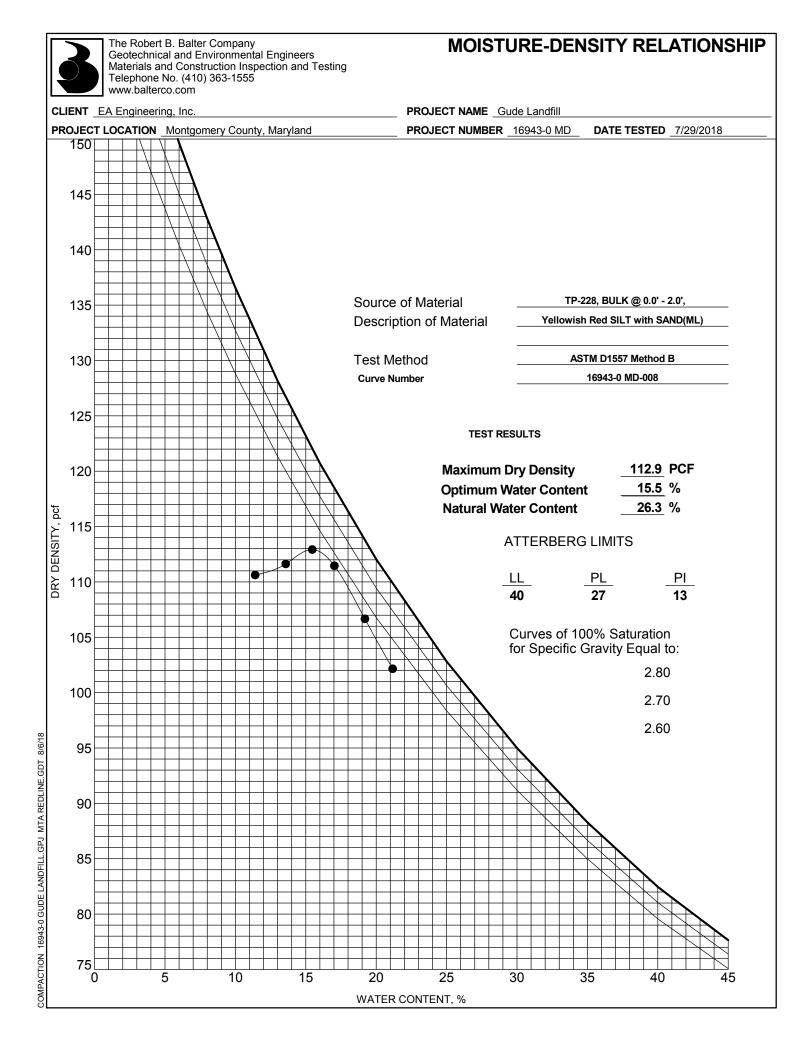
GRAIN SIZE DISTRIBUTION

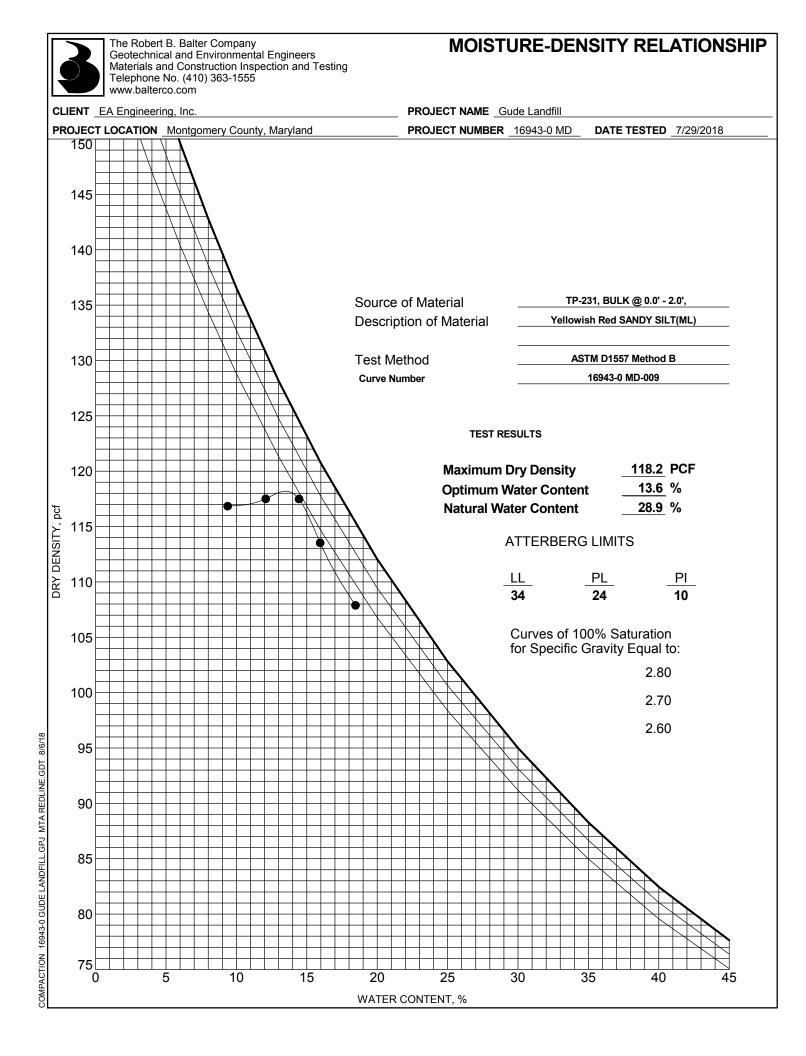


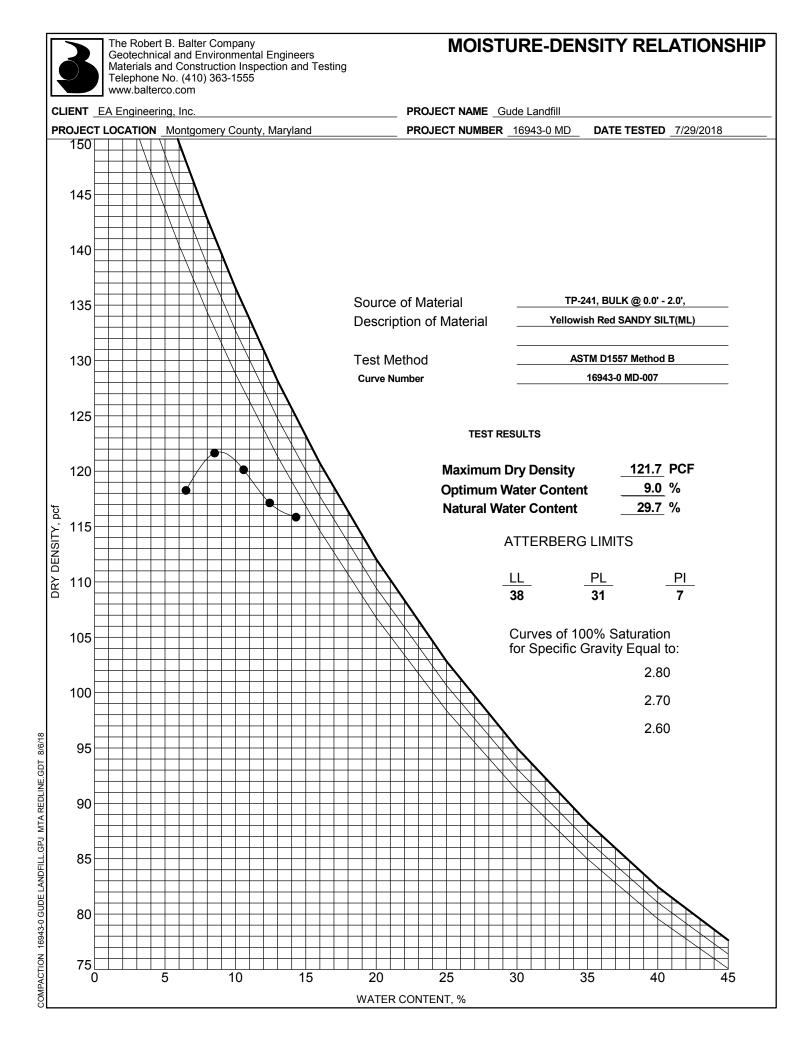


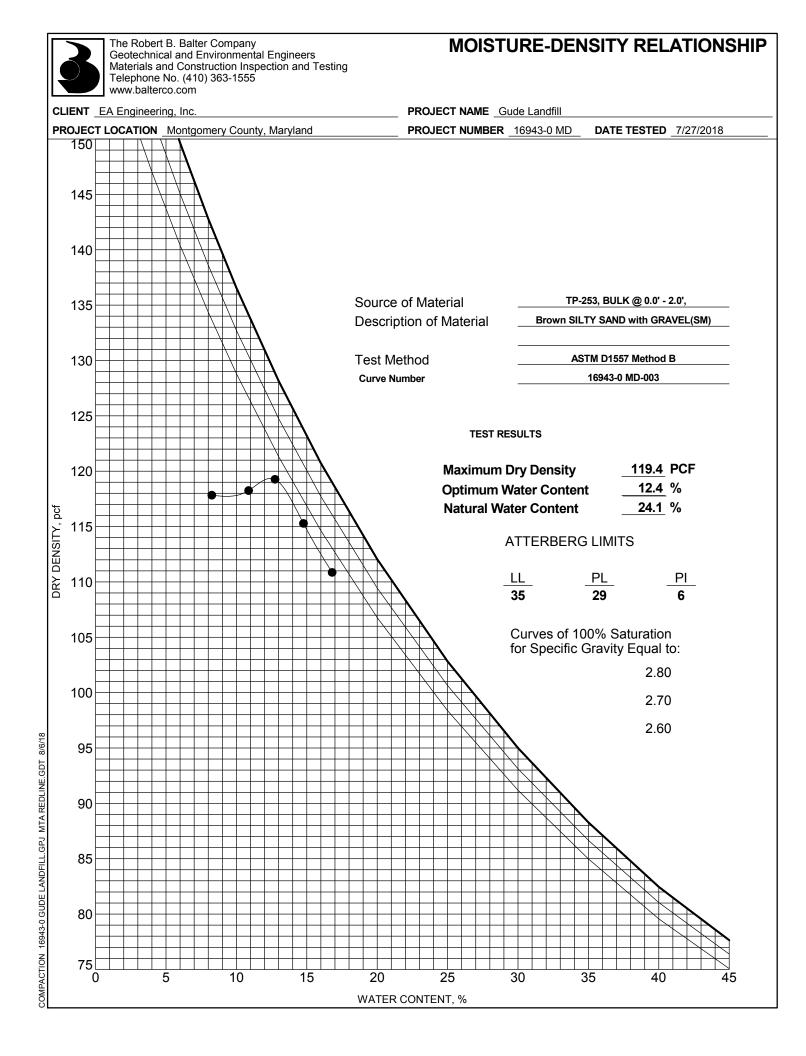


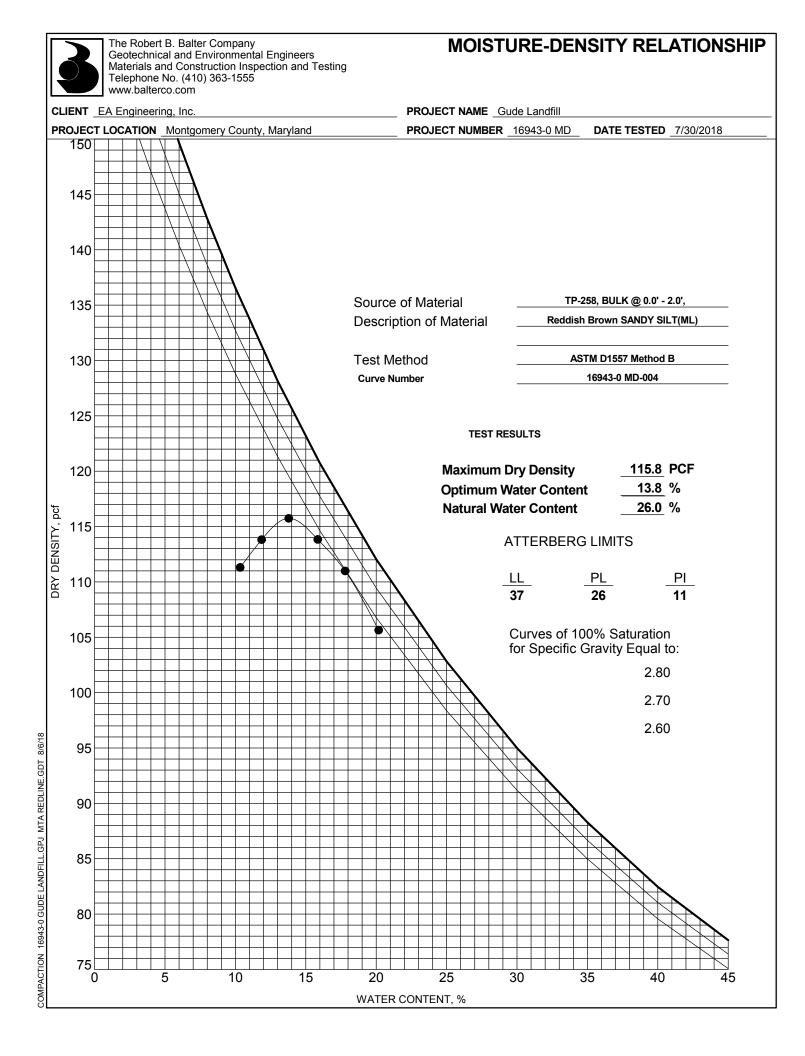


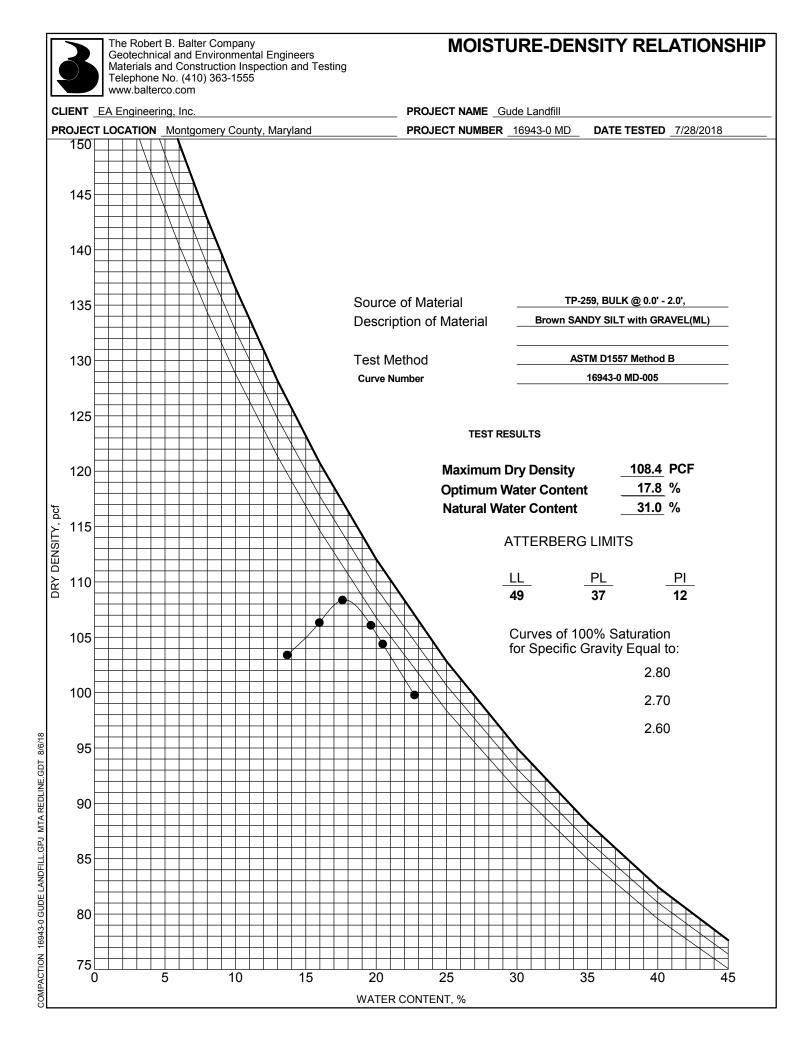


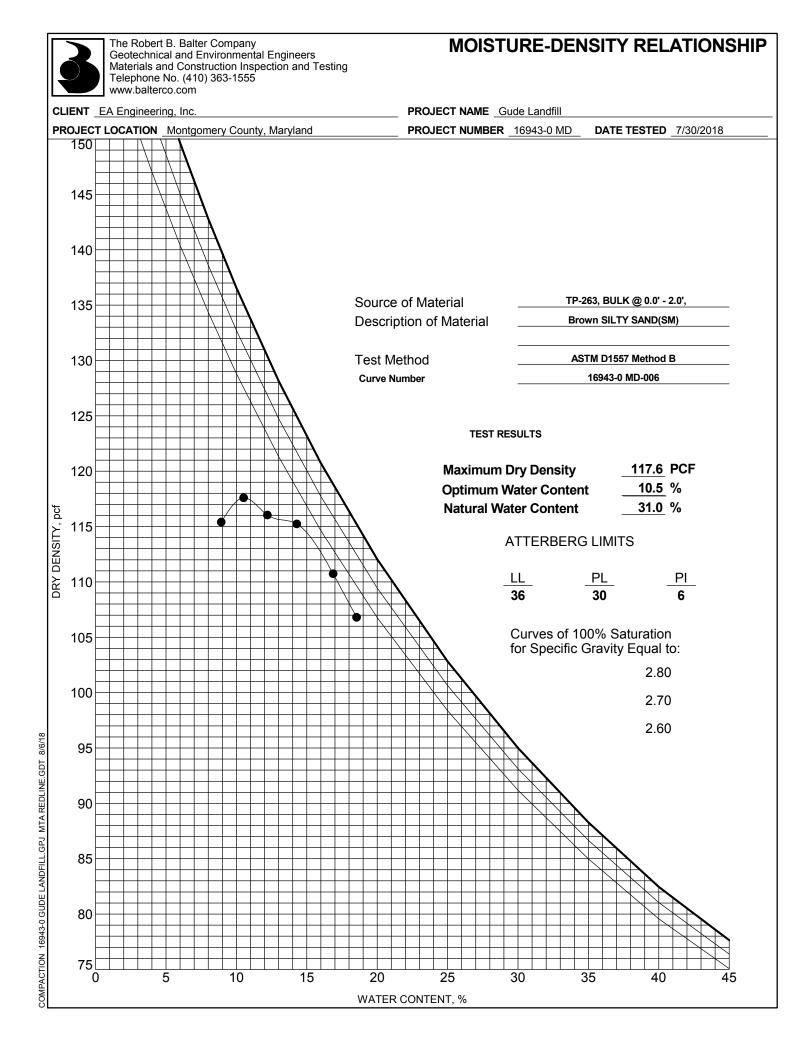


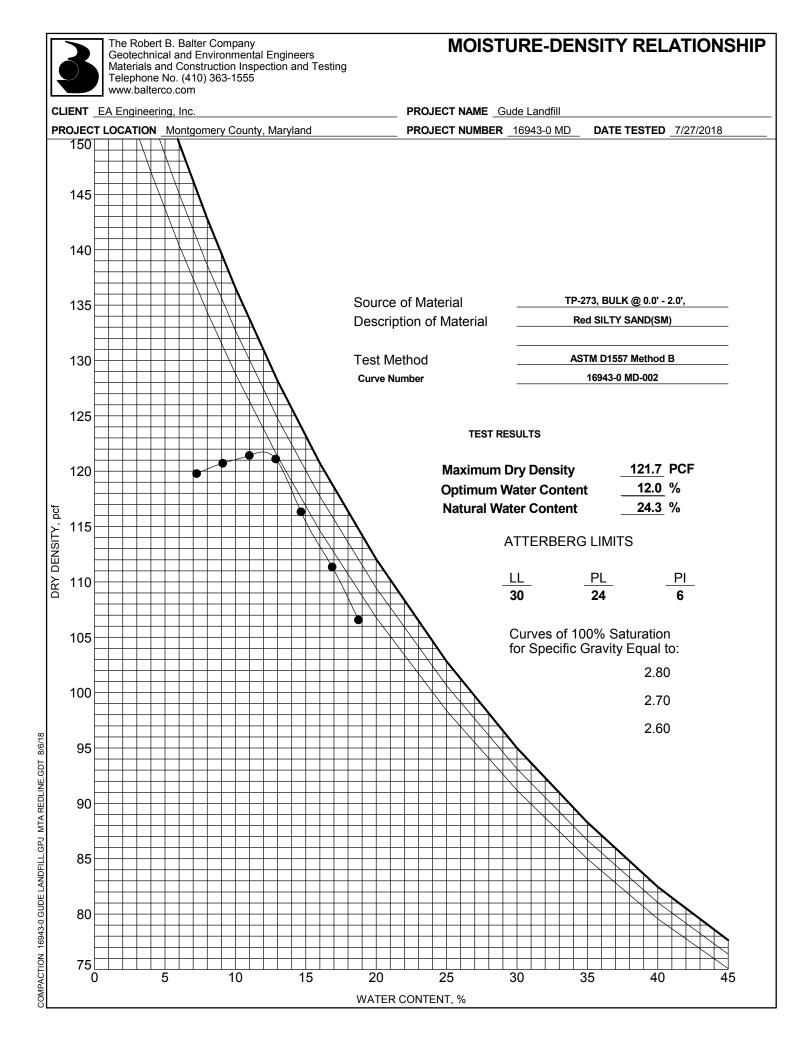














October 27, 2020

Kerry E. Feuz, P.E. Civil Engineer EA Engineering, Science, and Technology, Inc., PBC 225 Schilling Circle, Suite 400 Hunt Valley, Maryland 21031

RE: Geotechnical Data Report Gude Landfill 600 East Gude Drive Rockville, Maryland 20850 RBB Project No. 17359-0 MD

Dear Ms. Feuz:

The Robert B. Balter Company is pleased to submit this geotechnical data report for the subject project. The purpose of this data report was to assess subsurface conditions for the slope stability analysis to be performed by EA Engineering, Science, and Technology, Inc., PBC at the existing Gude Landfill. A separate letter will be sent providing the laboratory test results for the soils collected in the purple line stockpile.

Project information provided to us by various parties helped form the basis for our data report. If any of the project information discussed in this report differs from the actual proposed analysis, we should be contacted to re-evaluate the data provided herein and provide revisions or further investigation if requested.

We have appreciated this opportunity to be of service. If you have any questions regarding this report, or if we can assist you in any way, please do not hesitate to call our office.

the laws of the State of Maryland.

License No. 41312, Expiration Date: 01/05/2022

Kristopher

Sincerely,

THE ROBERT B. BALTER COMPANY

Christopher D. Karg II, E.I.T. Project Engineer

Joseph F. Whittle

Chief Engineer

Headquarters: 18 Music Fair Road

410-363-1555 · 410-363-8073 (fax)

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

Senior Geotechnical Eng

GEOTECHNICAL DATA REPORT GUDE LANDFILL 600 EAST GUDE DRIVE ROCKVILLE, MARYLAND RBB Project No. 17359-0 MD

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1.0 INTRODUCTION

1.1 General

The proposed project generally consists of a slope stability analysis to be performed by others at the existing Gude Landfill. The purpose of our work was to perform a geotechnical evaluation of the subsurface conditions, and to provide certain geotechnical related data for the use in analysis for slope stability toward the Northwest side of the project site. Geotechnical evaluations and recommendations are not part of the scope of this work.

1.2 Authorization

The geotechnical evaluation was authorized by EA Engineering, Science, and Technology, Inc., PBC (EA), based on our August 12, 2020 *Revised Proposal for Geotechnical Services*.

1.3 Scope

The scope of the geotechnical evaluation included the following: site reconnaissance, subsurface sampling and testing, geotechnical laboratory testing and data report preparation.

2.0 PROJECT DESCRIPTION

2.1 Site Location and Proposed Project

The project is located at 600 East Gude Drive, Rockville, Maryland. The site is bordered to the northwest by Gude Trail, followed by a residential development, to the northeast by a heavily forested area, to the southeast by a mixed commercial/retail development, and to the southwest by East Gude Drive followed by mixed commercial/retail development. The site is currently occupied by the closed Gude MSW Landfill including a gas energy production facility and is currently being used as a radio-controlled (RC) model airplane recreational area. A Vicinity Map is shown on Plate 1, attached.

The proposed project consists of the slope stability analysis by others at existing slopes located adjacent to the road running along the Northwest portion of the site. Data collected by Balter will be used in all analyses performed by EA.

The scope of work also included the collection of bulk grab samples from the existing purple line stockpile, located at the Northeast corner of the site. These samples are to be subjected to laboratory testing for certain geotechnical parameters. That information will be presented under a separate letter.

2.2 Site Geology

According to the <u>Geologic Map of Montgomery County and the District of Columbia</u> (1953), the project site is underlain by the Wissahickon Formation. The age of this formation is reported as unknown. It generally consists of banded or laminated quartz-rich Phyllites and Schists with magnetite. Quartz veins, sandstone, and conglomerate beds composed of muscovite, chlorite, albite, and quartz are common throughout the formation.



Previous borings, performed by others as part of monitoring well operations, indicated the presence of 20 feet to 46 feet of landfilled materials underlain by bedrock comprised of Schist within the subject area.

3.0 EVALUATION PROGRAM

3.1 Subsurface Explorations

The subsurface exploration program for this study included a total of 3 new Standard Penetration Test (SPT) borings, including B-4 to B-6. The locations for the borings were selected by EA based on the proposed plan for the slope stability analysis, marked up on the provided "Existing Conditions Plan – Key Sheet" (Drawing No. C-101). Borings were located in the field from a hand-held GPS based on coordinates provided by EA. They were not surveyed.

Prior to the start of the drilling operation, the subject area was cleared for utilities by Miss Utility. An environmental health and safety plan, prepared by EA, was used and followed while onsite. Balter representatives were onsite with the crew and provided monitoring of the LEL and O_2 combustible gas levels during the drilling.

Balter mobilized a Mobil B45 rubber-tracked ATV-mounted drill rig to the site to drill the borings. The rig was equipped with conventional 3.25-inch I.D. hollow stem augers with carbide drill head bits and a calibrated automatic hammer. Our field personnel were OSHA Hazwoper and Supervisor trained, as appropriate.

The borings were drilled to depth ranging from 25 feet to 50 feet below the existing ground surface. Standard Penetration Testing (SPT) and sampling was performed through the auger stems at 5-foot intervals. The testing and sampling procedures were performed in general accordance with ASTM D-1586 procedures, using a standard 2-inch O.D. sampling spoon, driven by an automatic 140-pound hammer freely falling 30 inches. During the drilling operations, bulk samples and Shelby Tubes of representative soils from elevations not containing trash were recovered from the auger flights for laboratory evaluation.

The drill rig was equipped with an automatic hammer which requires an approximate correction factor of x1.5 to the recorded N-Values. This correction factor is based on calibration of our rig and hammer. This allows comparison to "standard" N values for a less-efficient manual hammer (N_{60} values, for 60 % energy efficiency). Corrected values (N_{60}) are not shown on the boring logs.

The borings were overseen by an experienced geotechnical engineer who logged each boring and collected the samples. The method of classification used in preparing the strata descriptions is based on our interpretation of the Unified Soils Classification System (USCS).

3



The depths at which water was observed in the uncased holes were recorded upon completion (i.e., after the augers were withdrawn). At borings B-4 and B-5, 24-hour (or longer) readings of depths at which water was observed were recorded as well. Boring B-6 did not include a 24-hour reading due to budget and time restraints. Because the borings were drilled in the existing landfill, they were backfilled with the drill spoils and topped off with Bentonite chips once water levels were recorded.

The attached **Plate 2, Boring Location Plan,** indicates the approximate as-drilled locations of the borings.

The subsurface data obtained from the recent explorations are presented in log form in **Appendix A**. Ground surfaces were estimated using the GPS and boring location plan for any boring offset. The numeric values (N-values) shown within the individual boring columns on the Boring Logs indicate the standard penetration resistances, in blows per foot, or as otherwise noted.

Boring logs show the estimated general soil classifications and the <u>assumed</u> boundaries between soil types. The actual boundaries in the field could vary significantly from those assumed for the logs. It is noted that the subsurface data shown on the figures are an integral portion of this report. Separation of the figures from the remainder of the report may lead to misinterpretation of the data by others.

3.1.1 Environmental Measures

A site specific Health and Safety Plan (HASP), developed by EA Engineering, was used onsite as a result of the potential for methane gas from the existing landfill. It was reviewed every day before work at the site commenced. The HASP covered site hazards and included information related to the use of a Combustible Gas Indicator (CGI) to measure the Oxygen levels and the LEL levels for methane. Carbon Monoxide (CO) and Hydrogen Sulfide (H₂S) were also monitored. A representative was onsite from Balter with a CGI to monitor the workspace of the drill rig.

Meter levels from each boring were recorded on an EA provided form. The completed sign-in and monitoring forms from the provided HASP are included in Appendix C.

3.2 Laboratory Testing Program

Selected samples were subjected to laboratory analyses to estimate their classifications according to the Unified Soils Classification System. This testing included moisture content determination, sieve gradation analyses and Atterberg limits determinations. Pocket penetrometers were also performed on the fine-grained samples. The Shelby tubes were subjected to Unit Weight testing.

4



The results of our laboratory testing are presented in Appendix B and are summarized in **Table 2** of Section 4.4 Results of Laboratory Testing. Pocket penetrometer, - #200 sieve, moisture and Atterberg limits testing results are included on the boring logs.

4.0 SUBSURFACE CONDITIONS

4.1 General

This section provides a description of the estimated subsurface conditions encountered at the borings at the time of drilling. The on-landfill borings (B-4, B-5) encountered surficial materials (i.e., topsoil, root mat) overlying fills to a depth of 8.0 feet overlying the Landfill materials. The off-landfill boring (B-6) encountered surficial materials (i.e., topsoil, root mat) overlying fills to a depth of 3.0 feet, followed by residual soils to a depth of 22.0 feet and decomposed rock to a depth of 25.5 feet. The borings were advanced into the landfill materials to the specified depths as directed by EA Engineering. The transition between the stratigraphy at the boring locations may be more gradual than indicated on the logs, and significant variations may occur outside specific boring locations or sampled intervals. The following sections provide a summary of the encountered materials.

4.2 Surface Materials

Topsoil - Topsoil was encountered in borings B-4, B-5, and B-6 to a depth of 4.0 inches at each location. The term "topsoil," as used in this report refers to surface soils having an apparently significant organic content, based only on visual estimates in the field. It does not imply that the subject materials meet the requirements or specifications for topsoil set by any particular organization or agency.

4.3 Subsurface Materials

4.3.1 Fill Soils

Fill was identified in all 3 borings under the surface soils to depths ranging from 3.0 to 8.0 feet below the existing ground surface. Borings B-4 and B-5 both exhibited 8.0 feet of fill soils above the Landfill. These soil samples did not exhibit trash and are considered to be landfill cover soils. Because all the borings are located at the existing landfill, these soils are assumed to have been imported to the site.

The fills generally consisted of Sand (SM), Gravel (GC), Silt (ML), and Clay (CL) with varying amounts of organics and gravel. SPT N-values generally ranged from 3 blows per foot (bpf) to 18 bpf. Pocket penetrometers were performed in the fine-grained soils. They ranged from 1.8 tons per square foot (tsf) to 3.2 tsf.

4.3.2 Landfill Materials

Materials associated with the landfill were encountered underlying the fills soils to the maximum explored depth of 50.5 feet below the existing ground surface. Landfill materials were comprised of layers of soil which included Sand (SC-SM, SM), Silt (ML), and Clay (CL) interbedded with trash (ie, paper, metals, etc.) and Wood. Strong organic odors were noted



throughout the landfill materials. Methane was not encountered in notable amounts throughout the three borings. This was checked by monitoring for variations in O_2 and LEL levels.

SPT samples were collected throughout the landfill materials. The resultant SPT N-values generally ranged from the 5 bpf to 60 bpf. Elevated N-values were due to the presence of the landfill materials and not soil.

4.3.3 Existing Residual Soils

Residual soils were identified in boring B-6 below the fills to a depth of 22.0 feet below the existing ground soils. The residual soils are generally the result of the in-place weathering of underlying bedrock into soils. They often will exhibit the original structure of the rock (i.e. relic rock structure).

The residual soils generally consisted of Sand (SC-SM, SM) and exhibited SPT N-values ranging from 7 bpf to 23 bpf.

4.3.4 Decomposed Rock

Decomposed Rock was encountered underlying the fills and residual soils in boring B-6 to a depth up to 25.5 feet below the existing ground surface (approximate elevation EL 388.0). Decomposed rock is arbitrarily defined as having SPT N-values greater than 50 bpf and up to 50 blows for 4 inches of penetration. During the sampling process, the split spoon sampler pulverizes the material; therefore, the actual sample may not be representative of the true insitu condition.

The pulverized decomposed rock sample generally consisted of Sand (SM) exhibiting an SPT N-value of 51 blows per foot of penetration.

4.4 Standard Penetration Resistances

Figure 1 below shows the distribution of the collected N_{60} -values, of all soil types, versus depth across the site.



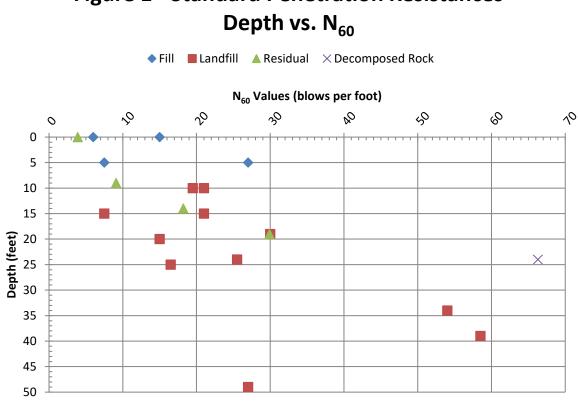


Figure 1 - Standard Penetration Resistances

Figure 2 below shows the distribution of the collected N₆₀-values, of all soil types, versus elevation across the site.

7



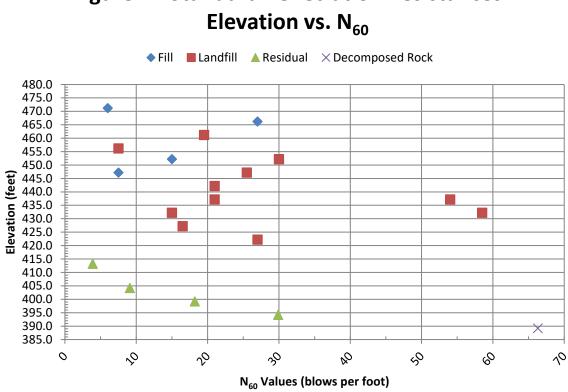


Figure 2 - Standard Penetration Resistances

4.5 **Results of Laboratory Testing**

The completed laboratory index tests performed on samples of the subsurface materials are summarized on the following Table 1 - Laboratory Test Results. The laboratory results are presented in graphic form in Appendix B.

Boring	Sample Depth	USCS	In-Place Moisture		terber imits ⁽⁾		- #200	Unit Weight								
0	(ft)	Class.	(%)	LL	PL	PI	Sieve (%)	(lb/ft ³)								
B-4	0-1.5	SM ⁽¹⁾	5.5	30	26	4										
B-4	4-6	$CL^{(1)}$	19.1					118.4								
B-4	9-10.5	SM ⁽¹⁾	26.8													
B-5	0-1.5	SM ⁽¹⁾	16.4													
B-5	4-6	SM ⁽¹⁾	15.3					118.6								
B-5	5-6.5	SM	13.4	26	23	3	41									
B-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	SC-SM	20.7	27	20	7	50	112.4
B-6	9-10.5	SM ⁽¹⁾	18.2													
B-6	14-15.5	SM ⁽¹⁾	15.6													
B-6	19-20.5	SM	13.0	26	22	4	32									
USCS Cla	assification	for sample	es noted are d	letermi	ined by	y visu	al observ	ation								

Table 1 – Laborator	y Test Results
---------------------	----------------

Notes:



4.6 Ground Water Conditions

Ground water observations were made during the drilling operation, immediately after the augers were withdrawn, and after 26 to 68-hours from the augers being withdrawn. Borings were backfilled at completion of water readings with the drill spoils and capped off with Bentonite chips.

Based on the water readings collected, ground water was encountered in 2 of the 3 borings at depths ranging from 10.0 feet to 14.0 feet below the existing ground surface (approximate elevations EL 443.7 to EL 457.2). We understand that ground water in this area is generally around EL 340 to EL 350 based off previous information provided by EA; therefore, the presence of water in the recent borings would suggest that it is trapped or perched in the landfill.

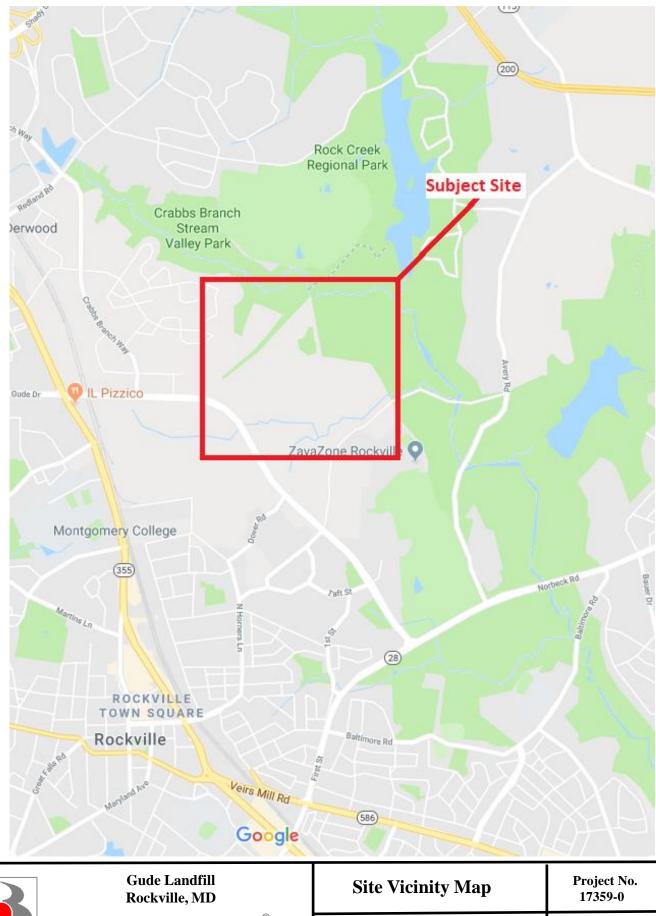
Boring B-6 exhibited dry conditions during drilling and after removal of the augers. It must be noted that this does not indicate that water is not present, only that ground water did not seep into the borehole while it was drilled, or that the boreholes caved at depths shallower than the current water levels. It should be assumed that ground water at this location is present at a deeper depth than drilled. Table 2 below provides the at-completion and 24+ hours ground water measurements recorded.

Boring	Ground Elev. (feet)	Measured Water Depth at Completion (feet)	Measured Water Depth after 24-hours (feet)	At- Completion Water Elevation (feet)	Water Elevation After 24+ Hours (feet)
B-4	457.0	13.3	9.8	443.7	447.2
B-5	471.2	14.3	11.0	457.2	460.5
B-6	413.2	Dry	Dry	<388.0	N/A

 Table 2 – Ground Water Measurements

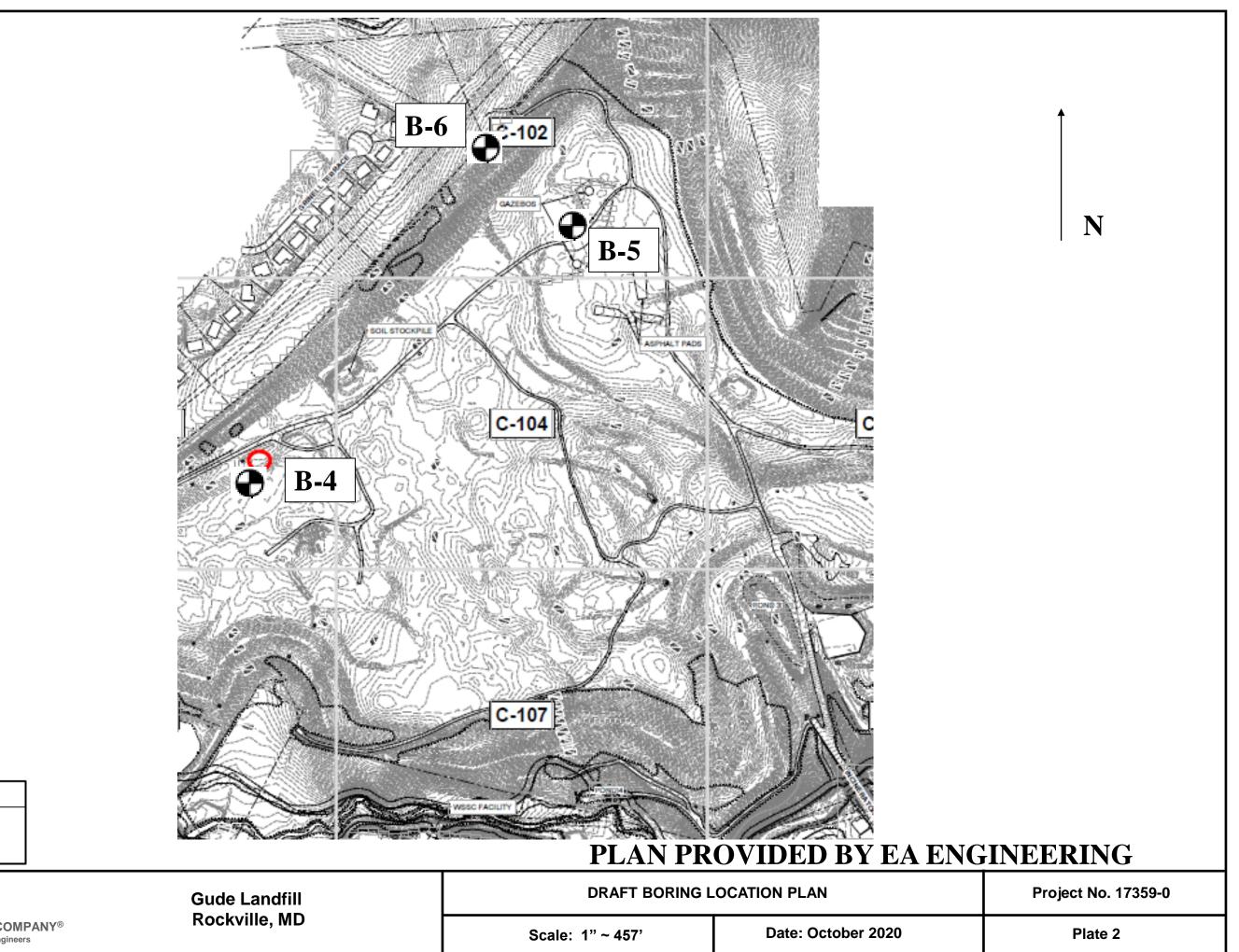
Subsurface water levels will fluctuate with changes in rainfall and runoff, construction and development activities, and other causes. Future groundwater levels across the site should be expected to vary from those noted during the recent exploration program.





THE ROBERT B. BALTER COMPANY[®] Geotechnical and Geo-environmental Engineers

	y p	17359-0
Scale: None	Date: Oct. 2020	PLATE 1



Legend

Approximate as-drilled location

THE ROBERT B. BALTER COMPANY® Geotechnical and Geo-environmental Engineers

APPENDIX A

BORING LOGS



THE ROBERT B. BALTER COMPANY IDENTIFICATION OF SOIL SAMPLES

Soils are described in the boring logs according to the following criteria with the principal constituents written in capital letters. Other constituents are preceded by descriptive terminology that is used to denote the percentage of weight of each component. Soil descriptions are determined visually except where laboratory classification test data are available. Classifications are based on The Robert B. Balter Company's interpretation of ASTM D 2487-00.

		$0 \neq 50$ Finan	Well Graded		GW	GRAVEL		
COARSE GRAINED SOIL > 50% Retained on No. 200 Sieve		0 to 5% Fines	Poorly Graded		GP	GRAVEL		
			Cilta Finan	Well Graded	GW-GM	GRAVEL with Silt		
	EL	6 to 12% Fines	Silty Fines	Poorly Graded	GP-GM	GRAVEL with Silt		
	AV		Clause Finan	Well Graded	GW-GC	GRAVEL with Clay		
	GRAVEL		Clayey Fines	Poorly Graded	GP-GC	GRAVEL with Clay		
D S 200	-		Silty Fines		GM	Silty GRAVEL		
VE V 0. 2		13 to 50% Fines	Silty Clay Fine	5	GC-GM	Silty, Clayey GRAVEL		
AI N			Clayey Fines		GC	Clayey GRAVEL		
GR ned o		0 to 5% Fines	Well Graded		SW	SAND		
SE c		0 to 576 miles	Poorly Graded		SP	SAND		
COARSE 50% Retai			Silty Fines	Well Graded	SW-SM	SAND with Silt		
50%	SAND	6 to 12% Fines	Sitty Filles	Poorly Graded	SP-SM	SAND with Silt		
\mathbf{U}_{\wedge}		0 to 1270 miles	Clayey Fines	Well Graded	SW-SC	SAND with Clay		
	Ś		Clayey Pliles	Poorly Graded	SP-SC	SAND with Clay		
			Silty Fines		SM	Silty SAND		
		13 to 50% Fines	Silty, Clayey Fi	ines	SC-SM	Silty, Clayey SAND		
			Clayey Fines		SC	Clayey SAND		
, e		Low Plastic Fines, PI<4	Plots below "A	" line	ML	SILT		
DII	SILT & CLAY (ILL<50)	Low Plastic Fines, 4≤PI≤7	Plots on or above	ve "A" line	CL-ML	Silty CLAY		
S 000	LA L<	Plastic Fines, PI>7 Plots on or above "A" line		CL	Lean CLAY			
Jo. 2	⊆ C SI	Significant Organics, PI<4	Plots below "A	" line	OL	Organic SILT		
AIN ng N		Significant Organics, PI≥4	Plots on or above	ve "A" line	OL	Organic CLAY		
GRAINED SOIL assing No. 200 Siev	3. 6	Elastic Fines	Plots below "A	" line	MH	Elastic SILT		
FINE GRAINED SOIL ≥ 50% Passing No. 200 Sieve	SILT & CLAY (LL≥50)	Plastic Fines	Plots on or above	ve "A" line	СН	Fat CLAY		
FINE 50% P	SILT . CLA\ (LL≥5	Significant Organics	Plots below "A	" line	ОН	Organic SILT		
		Significant Organics	Plots on or above	ve "A" line	ОН	Organic CLAY		
HIGHLY ORGANIC SOIL		Dark, highly organic, decomp	posed vegetative t	issue	РТ	PEAT		

ADDITIONAL TERMINOLOGY:

Descriptive Components										
Descriptive Terms	Proportions									
Trace	1 - 5%									
Little (Sand, Gravel)	6 - 14%									
With (Sand, Gravel)	15 - 30%									
With (Silt, Clay)	6-12%									
Adjective Form (Sandy, Gravelly)	31 - 50%									
Adjective Form (Silty, Clayey)	13 - 50%									

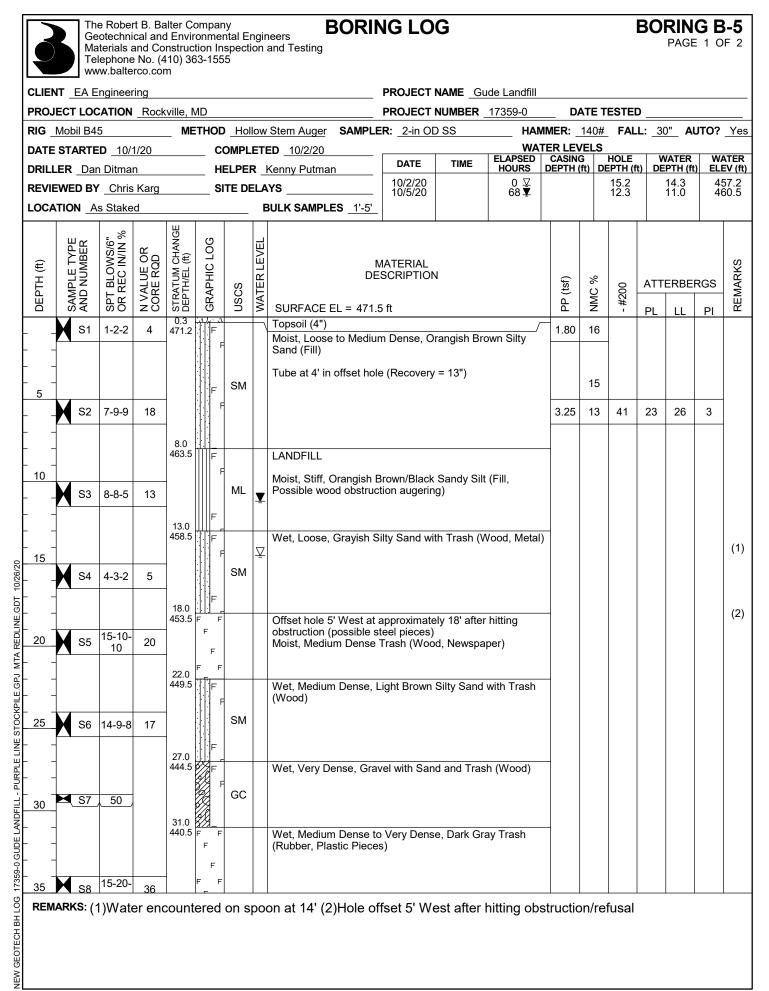
	Density or Consistency													
SAND	and GRAVEL	SILT and CLAY												
N-Value	Density	N-Value	Consistency											
0-4	Very Loose	0-1	Very Soft											
5-10	Loose	2-4	Soft											
11-30	Medium Dense	5-8	Medium Stiff											
31-50	Dense	9-15	Stiff											
> 50	Very Dense	16-30	Very Stiff											
		> 30	Hard											

Fill materials are placed by man, and may be identified by unnatural artifacts, unnatural mixed grain sizes or layering, or trustworthy documentation of fill placement.

Possible Fill materials are difficult to distinguish from natural soils, exhibiting minor distinctions.

Decomposed Rock consists of residual soil with SPT N-values between 50 blows per foot and blows per 4 inches (50/4"). **Highly Weathered Rock** consists of residual soil with SPT N-values between 50/3" and 50/1".

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CLIE	NT EAE								PROJECT	NAME_G	ude Landfill							
PROJ	IECT LO	CATION	Rock								17359-0		ATE T	ESTEI	כ			
RIG	Mobil B4	5		ME	тно	D Ho	llow	Stem Auger SAMPLE	R : _2-in OE) SS	HAN	/MER:	140#	FAL	L: 30)" A	JTO?	Yes
DATE	START	ED <u>10/</u>	1/20		_ 0	COMPL	ET	ED 10/1/20	[WA [:] ELAPSED	TER LE	/ELS	HOLE	1	ATER	W	ATER
DRILI	LER _Da	n Ditma	In		_ F	IELPE	R _	Kenny Putman	DATE	TIME	HOURS	DEPTH	(ft) DE	EPTH (f	t) DE	PTH (ft	:) ELE	EV (ft)
REVI	EWED B	Chris	s Karg		s	SITE D	ELA	YS	10/1/20 10/2/20		0 ⊻ 26 ¥			20.5 17.0		13.3 9.8	44	43.7 47.2
LOCA	TION _a	pproxim	nately 4	40' Sou	ıth		E	BULK SAMPLES 1'-5'										
DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	0.3		USCS	WATER LEVEL	M DE SURFACE EL = 457. Topsoil (4")	NATERIAL SCRIPTION	1	/	PP (tsf)	NMC %	- #200	PL	ERBE	PI	REMARKS
	S1	4-6-4	10	456.7	F	F SM		Moist, Loose, Brown S Fragments (Fill)	ilty Sand wit	th Small R	lock		5		26	30	4	
5				453.0	F			Moist, Medium Stiff, G	rayish Sand	y Clay (Fil	I)		19					
	S 2	3-2-3	5			CL						1.90	27					
	- T1	11 / 24		8.0 449.0	F			LANDFILL				_						
10						F	T	Wet, Medium Dense, E	Brown Silty S	Sand and [.]	Trash							(1)
	S 3	5-11-3	14			SM		(Plastic, Wood, etc.)	,									(')
	-			13.0	F													
				444.0	F		Į₽	Wet, Stiff, Brown Sanc	ly Silt									
15				_		ML												
	S 4	9-9-5	14															
	-			17.0 440.0	F		+	Moist, Stiff, Brown Sar	dy, Clayey S	Silt with R	ock and	_						
						F		Trash (Wallpaper, etc.)									
20				_														
	S5	3-4-6	10	_	F	CL-						3.25						
	-					ML												
				-	F													
	S6	9-5-6	11	26.5		<u> </u>												
				430.5				Term	inated at 26	.5 feet								
5																		
2																		
		1)\\/~+																
		ijvvat	ei en	count	erec		ho	on at 10'										
GEO																		





BORING LOG

BORING B-5

PAGE 2 OF 2

CLIENT EA Engineering PROJECT NAME _Gude Landfill PROJECT LOCATION Rockville, MD PROJECT NUMBER 17359-0 DATE TESTED STRATUM CHANGE DEPTH/EL (ft) % SAMPLE TYPE AND NUMBER SPT BLOWS/6" OR REC IN/IN % **GRAPHIC LOG** WATER LEVEL N VALUE OR CORE RQD DEPTH (ft) MATERIAL REMARKS DESCRIPTION PP (tsf) % ATTERBERGS USCS #200 NMC PL ΡI LL 16 Wet, Medium Dense to Very Dense, Dark Gray Trash F (Rubber, Plastic Pieces) (continued) F E F 18-25 40 S9 39 14 F F F F 24-33 45 S10 60 F 27 F F F 20-11-50 S11 18 7 50.5 F 421.0 Terminated at 50.5 feet NEW GEOTECH BH LOG 17359-0 GUDE LANDFILL - PURPLE LINE STOCKPILE.GPJ MTA REDLINE.GDT 10/26/20 REMARKS: (1)Water encountered on spoon at 14' (2)Hole offset 5' West after hitting obstruction/refusal

	Ge Ma Te	e Robe otechn iterials lephone /w.balte	ical and and Co e No. (4	d Envir onstruc 410) 36	onme tion In	ntal E ispect	ngir	BORIN and Testing	NG LO	G					BO	RIN PAGE	G B = 1 0	
CLIEI	NT EAE	nginee	ring						PROJECT	NAME G	ude Landfill							
	IECT LOO								PROJECT					ESTE				
-	Mobil B4							Stem Auger SAMPLE	R: <u>2-in O</u>	DSS		MER:		_	L: <u>3</u>	<u>)"</u> AI	JTO?	Yes
								ED <u>10/5/20</u>	DATE	TIME	ELAPSED	CASIN DEPTH	G	HOLE	+) DE	/ATER PTH (ft		ATER EV (ft)
								Kenny Putman YS	10/5/20		0 \[\[2]			16.3		Dry		- v (ity
		-			0			BULK SAMPLES _1'-14'										
		1		ш								T						
DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	nscs	WATER LEVEL	DE SURFACE EL = 413.	/ATERIAL SCRIPTION	١		PP (tsf)	NMC %	- #200	ATT	ERBE	RGS PI	REMARKS
	S1	1-1-2	3	0.3 413.2 3.0	F	ML		Topsoil (4") Moist, Soft, Brown Cla (Fill)	yey Silt, little	e Sand, tra	ace roots	-						
	т1	23 / 24	-	410.5				Moist, Loose to Mediur Clayey Sand (Residual		eddish Bro	own Silty		21	50	20	27	7	
		23724	-			SC- SM								50	20	21		
				8.0 405.5		•		Moist, Loose to Mediur Sand (Residual)	m Dense, R	eddish Bro	own Silty							
10	S2	2-3-4	7										18					
	S3	5-6-8	14	-		SM		Relic Rock Structure Color to Light Brown					16	_				
20	S 4	8-11-	23	-									13	32	22	26	4	
		12		22.0		•												
		14.04		391.5	$\langle \circ \rangle$	sм		Decomposed Rock sar Brown Silty Sand	mpled as: N	loist, Very	Dense,							
25	S 5	14-24- 27	51	25.5	/. ⊳. ∕ ⊌ ∕			~		F ()		4						
				388.0				Termi	inated at 25	.5 feet								
5	IARKS:																	

APPENDIX B

LABORATORY TEST RESULTS





SUMMARY OF LABORATORY RESULTS

PAGE 1 OF 1

	FAF · ·	
CLIENI	EA Engineering	

CLIENT EA Engin	eering				PRO	JECT NAME	Gude Lan	dfill			
PROJECT LOCATI	ON				PRO		BER 17359-	<u>0</u> D	ATE TESTEI	כ	
Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Class- ification	Water Content (%)	Dry Density (pcf)	Satur- ation (%)	Void Ratio
B-4	0.0	30	26	4				5.5			
B-4	4.0							19.1			
B-4	5.0							26.8			
B-5	0.0							16.4			
B-5	4.0							15.3			
B-5	5.0	26	23	3	12.5	41	SM	13.4			
B-6	4.0	27	20	7	25	50	SC-SM	20.7			
B-6	9.0							18.2			
B-6	14.0							15.6			
B-6	19.0	26	22	4	4.75	32	SM	13.0			



GRAIN SIZE DISTRIBUTION

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APPENDIX C

ENVIRONMENTAL MEASURES



SITE SPECIFIC ADDENDUM TO GENERAL HEALTH AND SAFETY PLAN FOR HAZARDOUS WASTE & ENVIRONMENTAL SERVICES

SEPTEMBER 2020

HEALTH AND SAFETY PLAN REVIEW RECORD

SITE: <u>Gude Landfill</u> EA Project No. <u>1564601</u>

I have read the Health and Safety Plan (s) and have been briefed on the nature, level, and degree of exposure likely as a result of participation of field activities. I agree to conform to all the requirements of this Plan.

Name	Signature	Affiliation	Date
Kristopher Crist	the a	RB BALTER Co	9 29 2020
Dennis Strauberman	Mart An	-RR Balter Co.	9-29-20
Kenstly Putman Jr	YE	RB Buller co.	9-29-20
Daniel D. tman	Juny 7. O.to	18 Balter co.	9-29-20
Chriskang -	1 may	RB Balter Co.	9-29-20
Kristopher Chost	the a	tt.	10-1-20
Dennis Stranderma	- Alas	2 11 11	10-1-20
Kenneth Putman Tr	Alle	11 11	10-1-20
Donal D. Lunun	and T. Ostin	> / //	16.1-20
Chris Karg	11/16/	> 11 11	10-1-20
Chris Karg	- Alera	p o	10-2-2B
Kuneth Putman 50	11hn	11 22	10-2-20
Darrel Ditaron	Clink T. Dark	li n	10-2-20
Dennis Stranderma	In Man	In a	10-2.30
Chris Karg	1 and	11 16	10-5-20
Dannel D. Lang	Carl 7. Other	11 11	16-5-20
Kenneth hotman 5r	1 they	11 11	10-5-20
Dennis Strandbruges	dut	1. L.	10-5-20

SITE SPECIFIC ADDENDUM TO GENERAL HEALTH AND SAFETY PLAN FOR HAZARDOUS WASTE & ENVIRONMENTAL SERVICES

SEPTEMBER 2020

<u>Time</u>

SITE ENTRY AND EXIT LOG

Project/Site : <u>Gude Landfill</u> Project No.: <u>1564601</u>

Date	Name	Representing	In	Out
10120	Kris Crist	RBB	8:05	1:30
*	Dennis strawderm			
	Chris ling			
	Kenny Putnen			
	Dan Ditmen	V		V
10/2/20	Pennis Strauking	RBB	8:10	2:00
	Chris Kary		R	
	Kenny Putman			
V	Dan Pitman _	- V		V
10/5/20	Dennis Strand rum _		8:15	12:00
	Chriz Karg			
	Kenny Putman			
	Dan PAman	V		Y
<u>.</u>				

G-28

SITE SPECIFIC ADDENDUM TO GENERAL HEALTH AND SAFETY PLAN FOR HAZARDOUS WASTE & ENVIRONMENTAL SERVICES

SEPTEMBER 2020

ENVIRONMENTAL MONITORING RECORD

Time Monitoring Location Reading $E \subseteq 2 \circ$ $1 20 9:30 B-4 e begin n:ng 20.8 0_2 -$ $0 Corrective Action Taken(b) 20.8 0_2 -0 Corrective Action Taken(b) 0_2 = 20.8 0_2 -11:45 B-4 e corrective Action Or Corrective Action Taken(b) 11:40 B-5 c 5^{\circ} 0_2 = 20.8 (G = 0 H_2) = 0 (E^{\circ} = 0 - 1) (G = 1) ($		CALIBRATIC	DN: Gas: Conc:	Span:	
	2/20	Time 9:30 11:10 11:10 11:45 12:00 0:40 11:40 12:30 9:30 10:25 11:00 11:00 11:00 11:00 11:00 11:00 11:00 11:00 11:00 11:00 11:40 10:50	Monitoring Location B-4 e beginning B-4 e 10-15' ("Ty landful) B-4 e completion B-5 e 5' B-5 e 10' B-5 e 10' B-5 e 10' B-5 e 20' B-5 e 30' B-5 e 30' B-6 e completion B-6 e completion	Reading $L \in L = 0$ 20.8 0 z $0 C_0$ 0 F125 $0_2 = 20.8 C_0 = 0 H_25$ $11 T_1$ $0_2 = 20.8 C_0 = 0 H_25$ $11 T_1$ $12 C_0 = 1, 11$ $12 C_0 = 1, 11$ $12 C_0 = 1, 11$ $12 C_0 = 0, 8, C_0 = 0, H_25$ $0_2 = 20.8 C_0 = 0, H_25$ $0_2 = 20.8 C_0 = 0, H_25$	Taken ^(a) Taken ^(a) =0
(a) Corrective actions user must be documented whenever readings at or above action levels are reached.			41	-	



November 23, 2020

Kerry E. Feuz, P.E. Civil Engineer EA Engineering, Science, and Technology, Inc., PBC 225 Schilling Circle, Suite 400 Hunt Valley, Maryland 21031

RE:

Laboratory Soils Test Results Purple Line Stockpile 600 East Gude Drive Rockville, Maryland 20850 RBB Project No. 17359-0 MD

Dear Ms. Feuz:

The Robert B. Balter Company is pleased to submit the laboratory test results from the samples collected at six (6) locations from the purple line stockpile within the Gude Landfill. The laboratory testing included six (6) of each of the following: Atterberg Limits, Direct Shears (remolded), Flexible Wall Permeability tests (remolded), Moisture Contents, Sieve Analyses, and Standard Proctors. See the lab summary sheet and associated laboratory test reports attached at the end of this document for further information.

Project information provided to us by various parties helped form the basis for our data report. If any of the project information discussed in this report differs from the actual proposed analysis, we should be contacted to re-evaluate the data provided herein and provide revisions or further investigation if requested.

We have appreciated this opportunity to be of service. If you have any questions regarding this report, or if we can assist you in any way, please do not hesitate to call our office.

Sincerely,

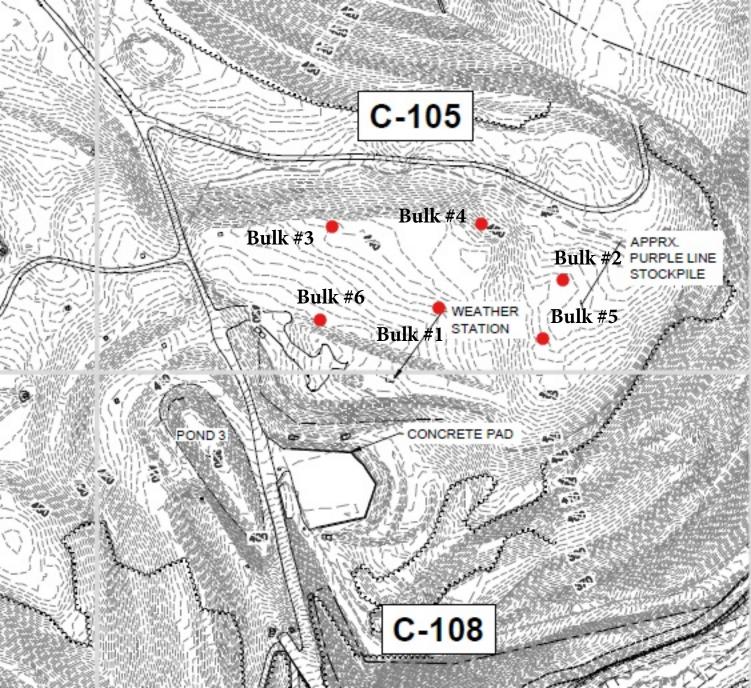
THE ROBERT B. BALTER COMPANY

Christopher D. Karg II, E.I.T. Project Engineer

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. <u>41312</u>, Expiration Date: <u>01/05/2022</u>

Senior Geotechnical Engineer

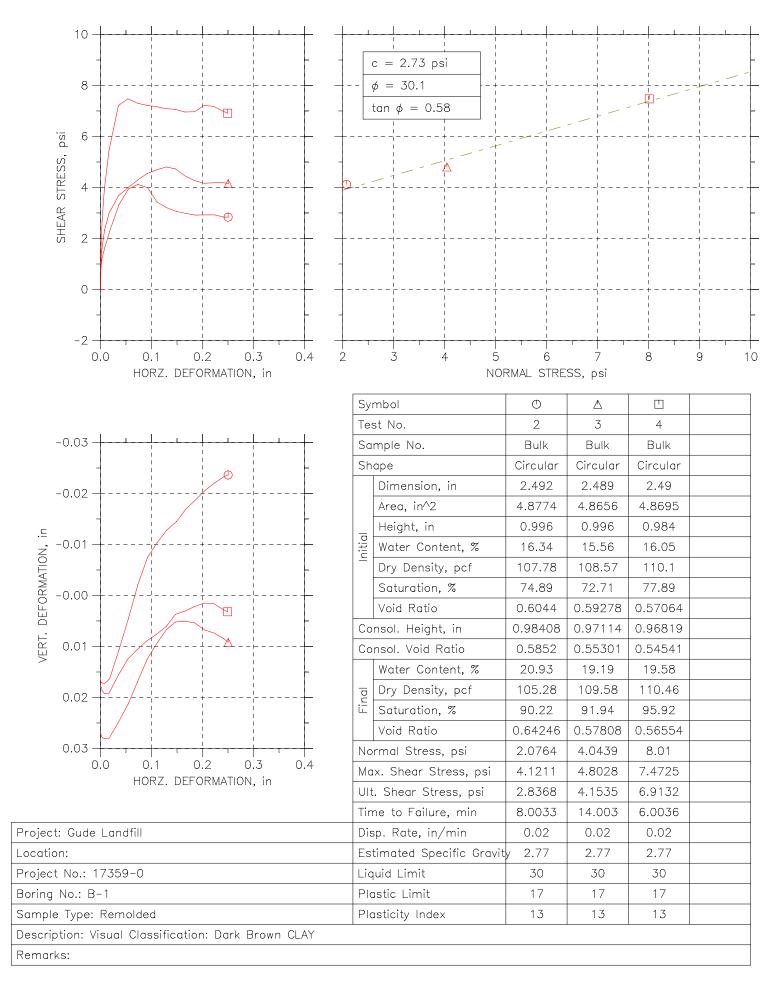
Crist, P.G.



Purple Line Stockpile Bulk #1 Lab Results

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PI	ROJE			Rockville, M	1D				PROJE	CT NUMB	ER <u>17359-</u>	<u> </u>	ATE TESTED		
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ATTERBERG LIMITS 17359-0 GUDE LANDFILL - PURPLE LINE STOCKPILE.GPJ MTA REDLINE.GD															
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DIRECT SHEAR TEST REPORT





Client:	Robert B. Balter Co	mpany	
Project Name:	Gude Landfill		
Project Location:	Maryland		
GTX #:	312644		
Start Date:	11/13/2020	Tested By:	jlw
End Date:	11/18/2020	Checked By:	emm
Boring #:			
Sample #:	Bulk 1		
Depth:	0.0-5.0 ft		
Visual Description:	Clayey Sand		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084 Constant Volume

Sample Type:	Remolded	Permeant Fluid:	De-aired Distilled water	
Orientation:	Vertical	Cell #:		
Sample Preparation:			re content. Values specified by client. Mater mings moisture content = 13.3%	erial >
Assumed Specific Gra	avity: 2.70			
	Parameter	Initial	Final	
	Height, in	2.00	1.97	
	Diameter, in	2.86	2.83	
	Area, in ²	6.42	6.29	
	Volume, in ³	12.8	12.4	
	Mass, g	420.7	436.7	
	Bulk Density, pcf	124.5	134.0	
	Moisture Content, %	13.3	17.6	
	Dry Density, pcf	109.9	114.0	
	Degree of Saturation, %	67	99	

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	89.99	Increased Cell Pressure, psi:	95.04
Sample Pressure, psi:	84.97	Corresponding Sample Pressure, psi:	89.67

95.04	Cell Pressure Increment, psi:	5.05
89.67	Sample Pressure Increment, psi:	4.70
	B Coefficient:	0.93
	*B value did not increase with increase in pr Final degree of saturation >95%.	essure.

FLOW DATA

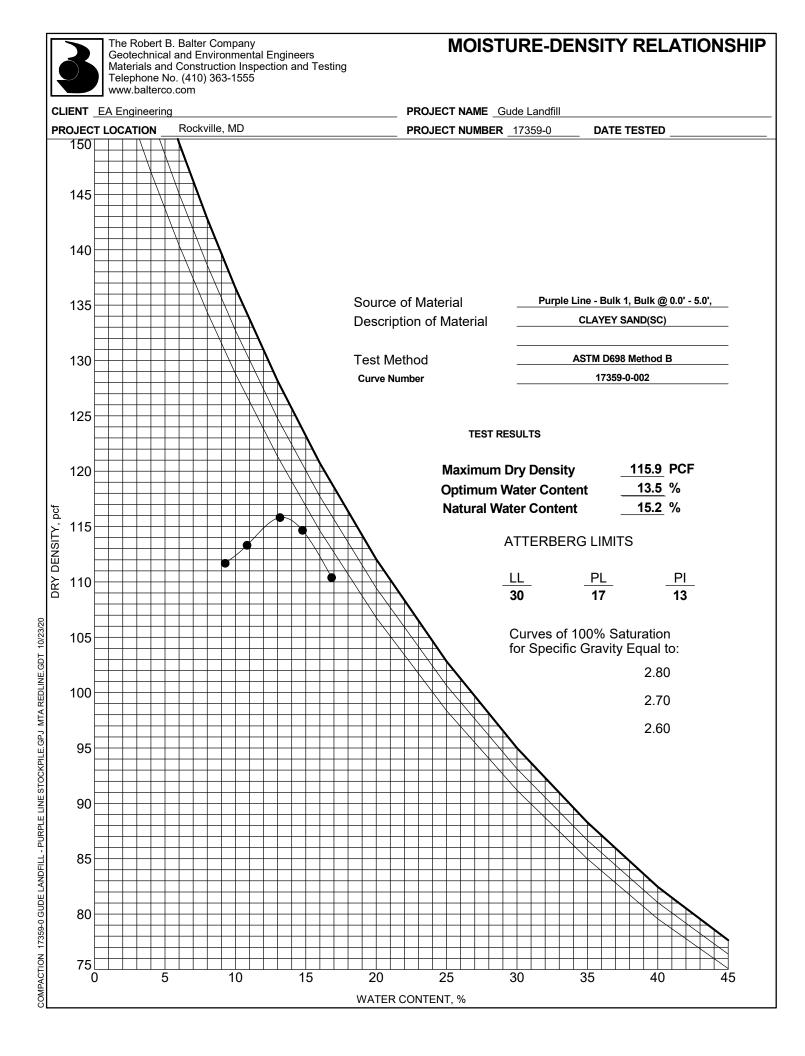
Date	Trial #	Press	ure, psi Sample	Manom Z ₁	neter Read Z ₂	ings Z ₁ -Z ₂	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R _t	Permeability K @ 20 °C, cm/sec
11/17	1	90.0	85.0	8.0	7.7	0.3	33	20.1	3.6E-07	19.5	1.013	3.6E-07
11/17	2	90.0	85.0	8.0	7.7	0.3	32	20.1	3.7E-07	19.5	1.013	3.7E-07
11/17	3	90.0	85.0	8.0	7.7	0.3	34	20.1	3.5E-07	19.5	1.013	3.5E-07
11/17	4	90.0	85.0	8.0	7.7	0.3	33	20.1	3.6E-07	19.5	1.013	3.6E-07

PERMEABILITY AT 20° C: 3.7 x 10⁻⁷ cm/sec (@ 5 psi effective stress)



GRAIN SIZE DISTRIBUTION

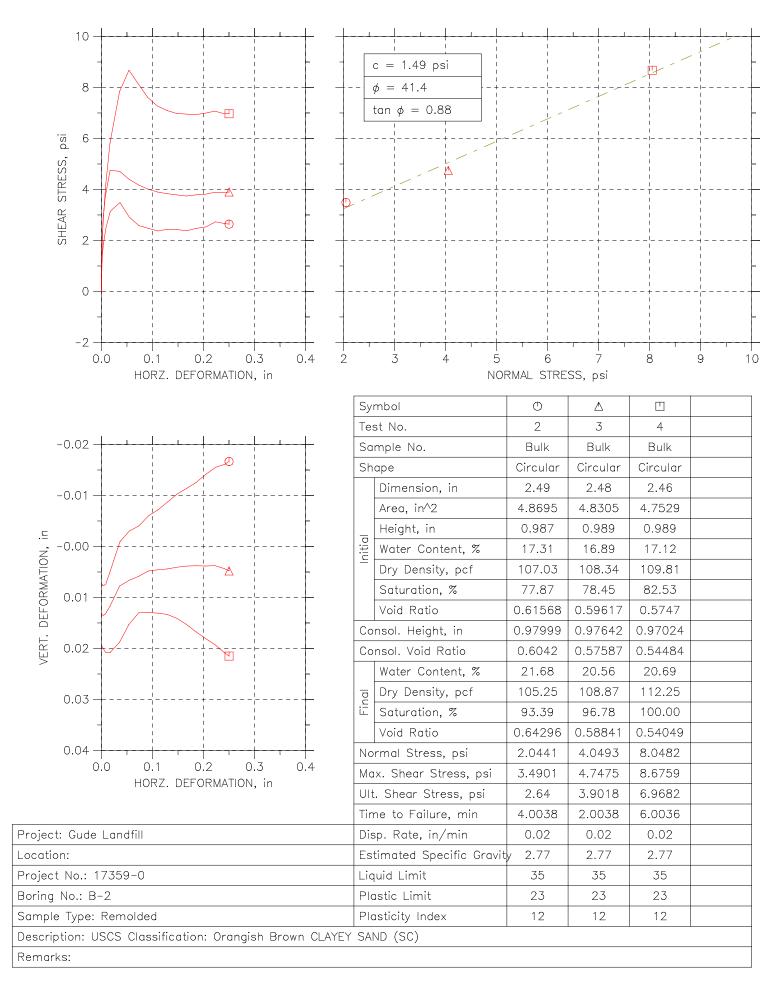
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Purple Line Stockpile Bulk #2 Lab Results

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									LIQUID LIM	T				
	Spe	ecime	n Identi	fication	LL	PL	PI	Fines	Classifica	ation				
•	Purpl	e Line ·	Bulk 2, Bu	ılk @ 0.0' - 5.0',	35	23	12	38	CLAYEY SA	ND(SC)				
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DIRECT SHEAR TEST REPORT





Client:	Robert B. Balter Company		
Project Name:	Gude Landfill		
Project Location:	Maryland		
GTX #:	312644		
Start Date:	11/19/2020	Tested By:	jlw
End Date:	11/20/2020	Checked By:	emm
Boring #:			
Sample #:	Bulk 2		
Depth:	0.0-5.0 ft		
Visual Description:	Orangish Brown Clayey Sand		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084 Constant Gradient

Sample Type:	Remolded	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	
Sample Preparation:	5	•	ntent. Values specified by client. Material mings moisture content = 13.7%
Assumed Specific Grav	/ity: 2.70		
	Parameter	Initial	Final
	Height, in	2.00	2.00
	Diameter, in	2.86	2.80
	Area, in ²	6.42	6.16
	Volume, in ³	12.8	12.3
	Mass, g	415.3	431.0
	Bulk Density, pcf	122.9	133.1
	Moisture Content, %	13.7	18.0
	Dry Density, pcf	108.0	112.7
	Degree of Saturation, %	66	98

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.00	Increased Cell Pressure, psi:	94.99
Sample Pressure, psi:	85.04	Corresponding Sample Pressure, psi:	89.25

Cell Pressure Increment, ps	4.99
Sample Pressure Increment	4.21
B Coefficient:	0.84
B-value did not increase with increase	e in pressure
Final degree of saturation >95%.	

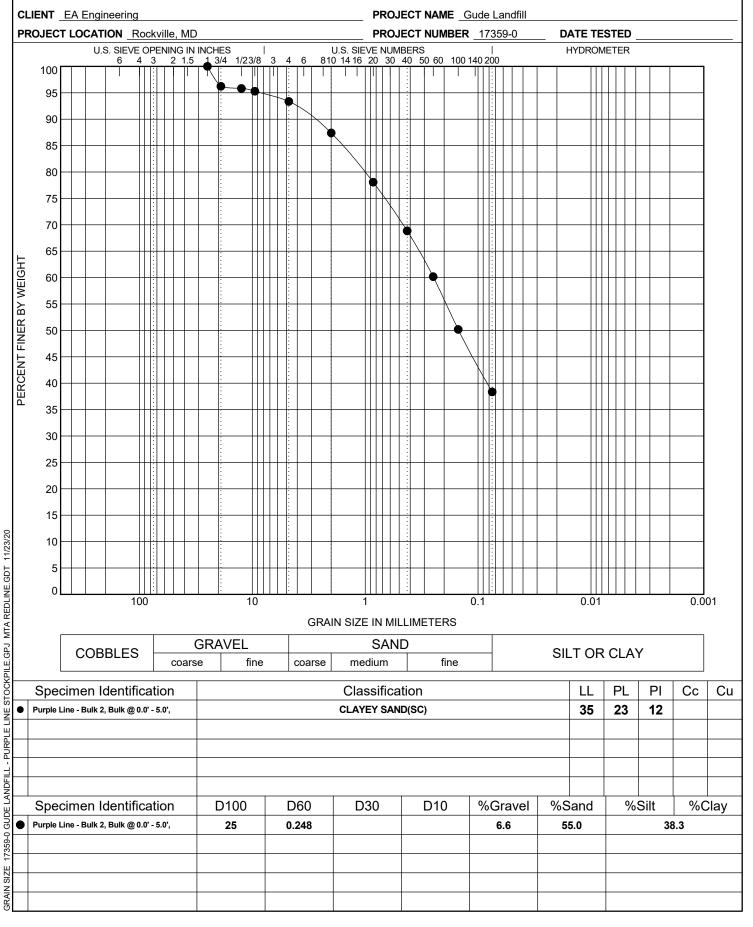
FLOW DATA

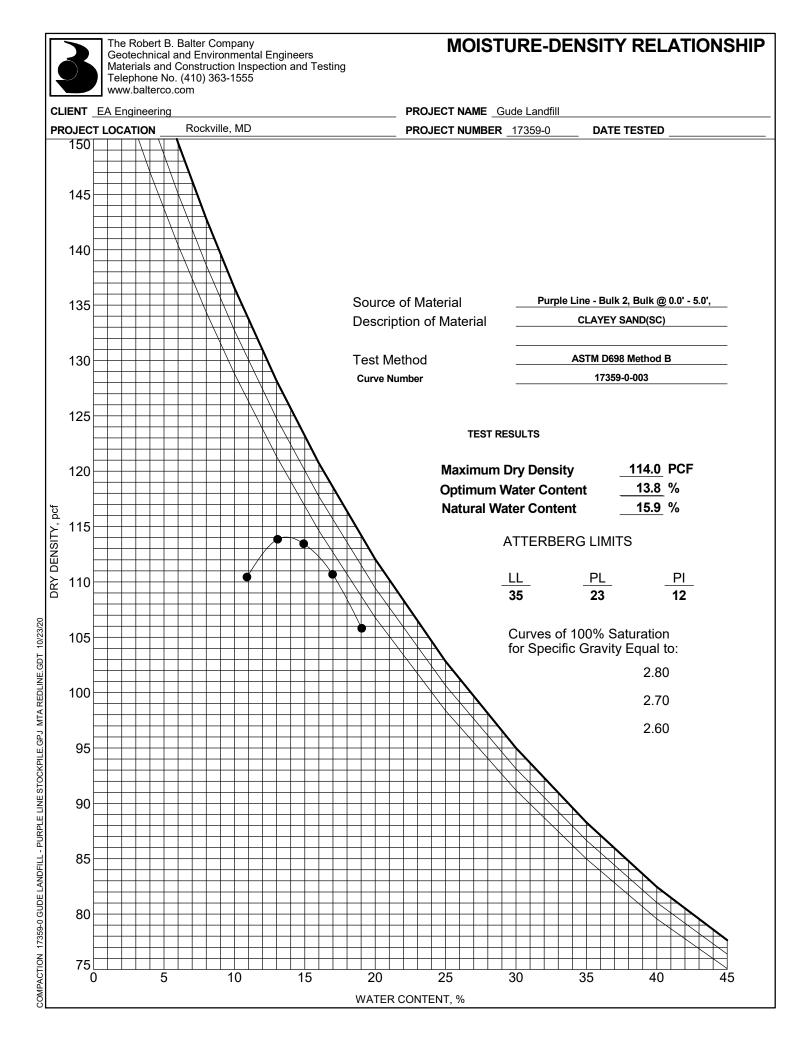
	Time,		essure,	1				lume, cc	4	Temp,		Permeability K @ 20 °C,
Date	sec	Cell	Inlet	Outlet	Gradient	In	Out	Δ _{In}	∆ Out	°C	R _t	cm/sec
11/20 11/20	 118	90.0 90.0	85.5 85.5	84.5 84.5	13.8 13.8	7.00 7.10	14.00 13.90	0.10	0.10	 19.5	 1.013	 1.6E-06
11/20		90.0	85.5	84.5	13.8	7.00	14.00					
11/20	112	90.0	85.5	84.5	13.8	7.10	13.90	0.10	0.10	19.5	1.013	1.6E-06
11/20		90.0	85.5	84.5	13.8	7.00	14.00					
11/20	132	90.0	85.5	84.5	13.8	7.10	13.90	0.10	0.10	19.5	1.013	1.4E-06
11/20		90.0	85.5	84.5	13.8	7.00	14.00					
11/20	129	90.0	85.5	84.5	13.8	7.10	13.90	0.10	0.10	19.5	1.013	1.4E-06

PERMEABILITY AT 20° C: 1.5×10^{-6} cm/sec (@ 5 psi effective stress)



GRAIN SIZE DISTRIBUTION

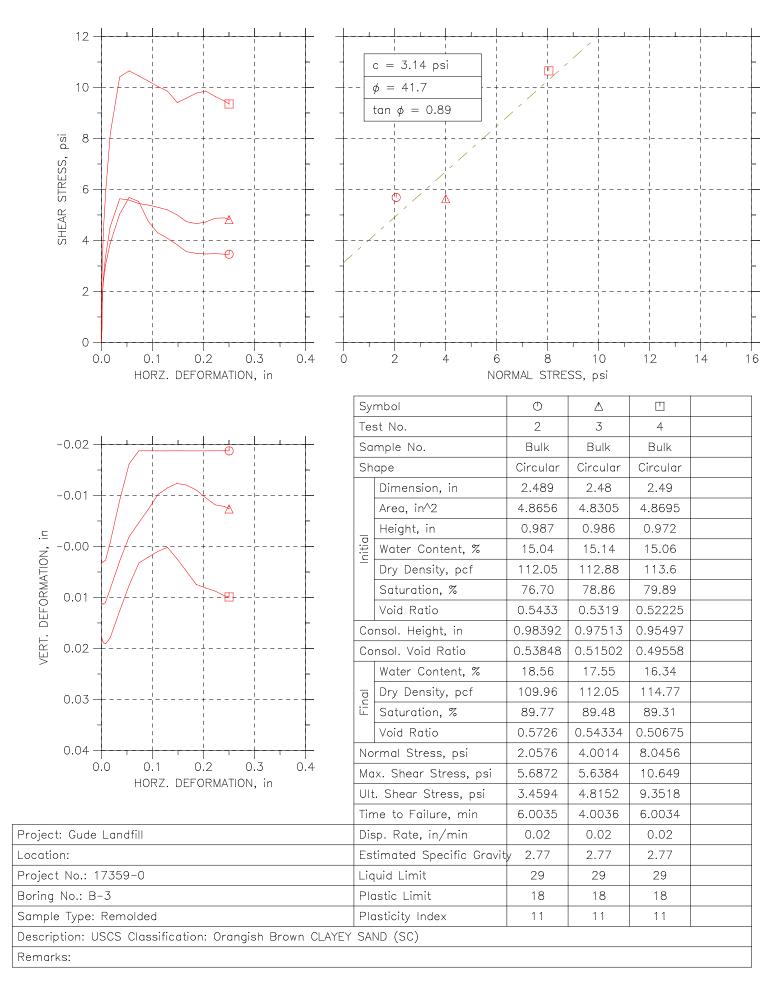




Purple Line Stockpile Bulk #3 Lab Results

		The Geo Mat Tele www	Robert I otechnica erials an ophone N v.balterc	B. Balter Co al and Envir d Construc lo. (410) 36 o.com	ompany onmental tion Inspe 3-1555	Enginee ction and	ers d Testing	g			ATTE	RBER(G LIMIT: EST METHO	S' RE OD AST	SULTS M D4318
c	LIENT	EA Er	igineerin	g					PROJE	CT NAME	Gude Lan	dfill			
Ρ	ROJE		ATION _	Rockville, N	1D				PROJE		ER <u>17359-</u>	<u> </u>	ATE TESTED		
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	P L	50-													
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								1	LIQUID LIM	IT					
	Spe	ecimen	Identif	fication		PL	PI	Fines	Classifica	ation					
•	Purpl	e Line - E	Bulk 3, Bu	lk @ 0.0' - 5.0	o', 29	18	11	36	CLAYEY SA	ND(SC)					
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DIRECT SHEAR TEST REPORT





Client:	Robert B. Balter Cor	mpany	
Project Name:	Gude Landfill		
Project Location:	Maryland		
GTX #:	312644		
Start Date:	11/19/2020	Tested By:	jlw
End Date:	11/20/2020	Checked By:	emm
Boring #:			
Sample #:	Bulk 3		
Depth:	0.0-5.0 ft		
Visual Description:	Orangish Brown Cla	yey Sand	

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084 Constant Volume

Sample Type:	Remolded	Permeant Fluid:	De-aired Distilled water	
Orientation:	Vertical	Cell #:		
Sample Preparation:	Target Compaction: 95% of 117 inch screened out of sample prio	•	ntent. Values specified by client. Materia gs moisture content = 13.1%	al > 3/8
Assumed Specific Gra	vity: 2.70			
	Parameter	Initial	Final	
	Height, in	2.00	2.00	
	Diameter, in	2.86	2.86	
	Area, in ²	6.42	6.42	
	Volume, in ³	12.8	12.8	
	Mass, g	426.9	445.7	
	Bulk Density, pcf	126.3	131.9	
	Moisture Content, %	13.1	18.1	
	Dry Density, pcf	111.7	111.7	
	Degree of Saturation, %	69	96	

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	89.99	Increased Cell Pressure, psi:	95.01
Sample Pressure, psi:	84.99	Corresponding Sample Pressure, psi:	89.04

95.01	Cell Pressure Increment, psi:	5.02
89.04	Sample Pressure Increment, psi:	4.05
	B Coefficient:	0.81
	*B value did not increase with increase in pr	essure.
	Final degree of saturation >95%.	

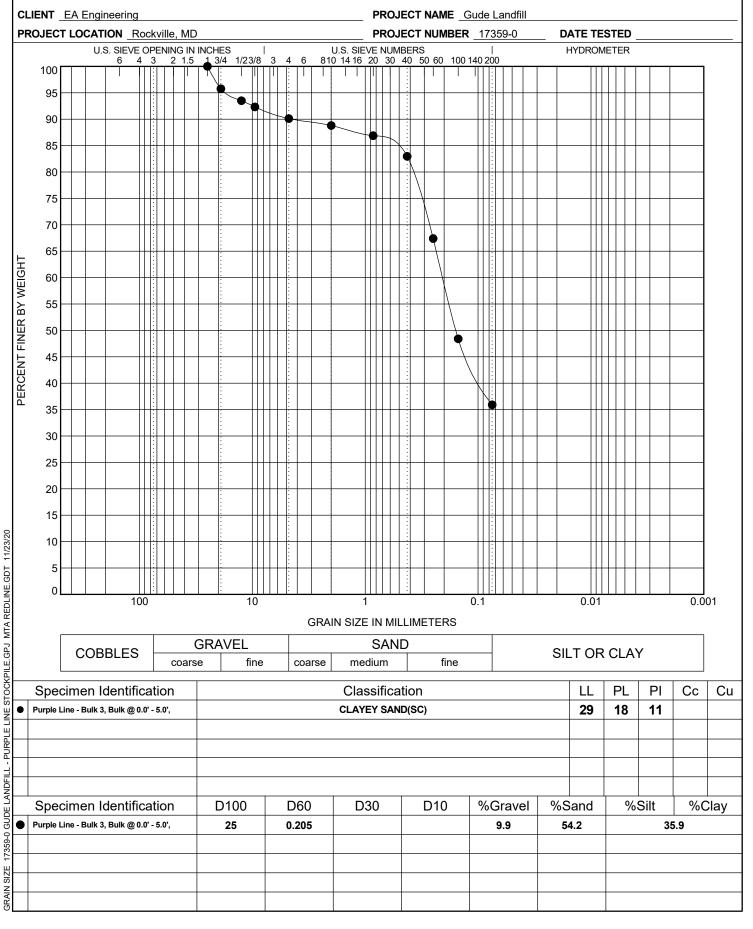
FLOW DATA

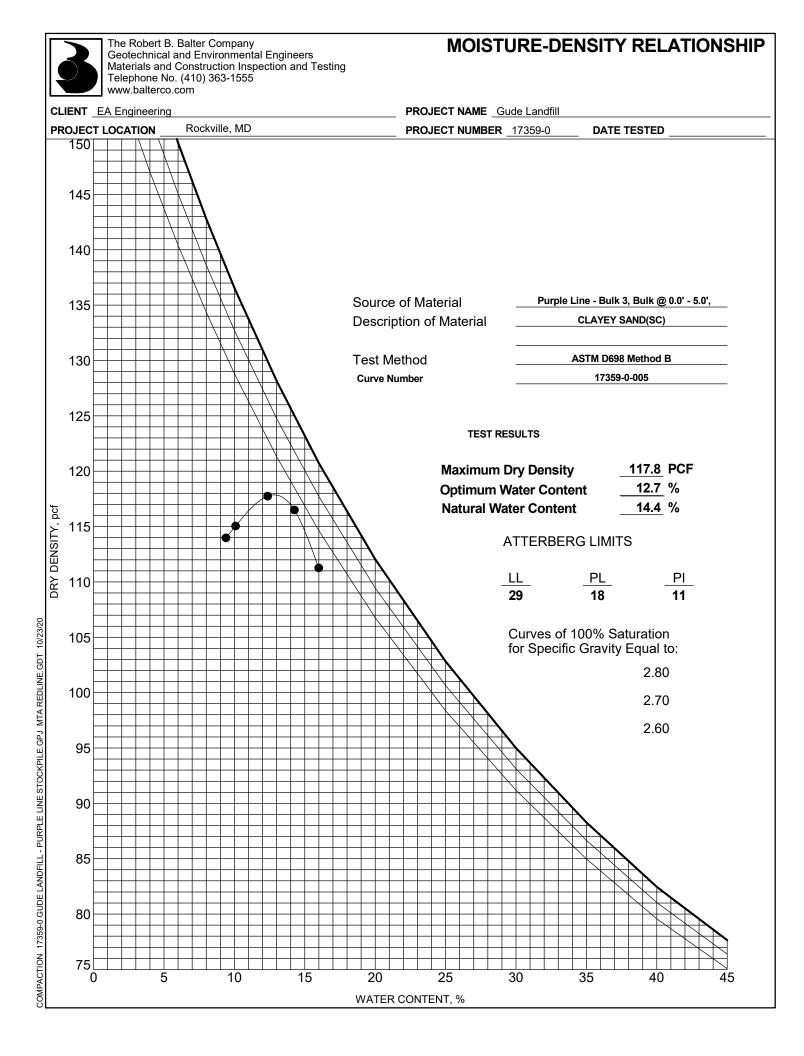
Date	Trial #	Press	ure, psi Sample	Manom Z ₁	neter Read Z ₂	ings Z ₁ -Z ₂	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R _t	Permeability K @ 20 °C, cm/sec
11/20	1	90.0	85.0	8.0	7.5	0.5	35	19.8	5.6E-07	19.5	1.013	5.7E-07
11/20	2	90.0	85.0	8.0	7.5	0.5	38	19.8	5.2E-07	19.5	1.013	5.3E-07
11/20	3	90.0	85.0	8.0	7.5	0.5	36	19.8	5.5E-07	19.5	1.013	5.6E-07
11/20	4	90.0	85.0	8.0	7.5	0.5	37	19.8	5.3E-07	19.5	1.013	5.4E-07

PERMEABILITY AT 20° C: 5.5 x 10^{-7} cm/sec (@ 5 psi effective stress)



GRAIN SIZE DISTRIBUTION

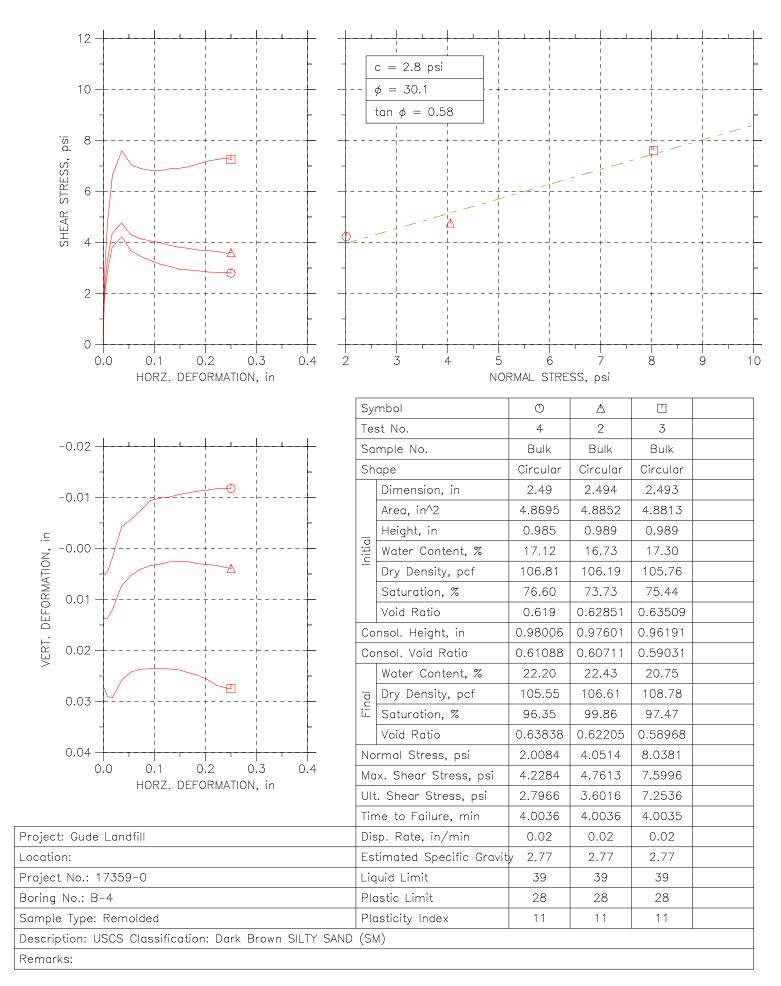




Purple Line Stockpile Bulk #4 Lab Results

	3	Th Ge Ma Te	ne Robert eotechnica aterials an elephone N ww.balterc	B. Balter Con al and Enviror d Constructic No. (410) 363 co.com	npany Imental In Inspec -1555	Enginee ction and	rs d Testinț	9			ATTE		G LIMITS' I ST METHOD	RESULTS ASTM D4318
c	LIENT	EAE	Engineerin	g					PROJE	CT NAME	Gude Land	lfill		
Ρ	ROJE			Rockville, MD)				PROJE		ER <u>17359-</u>		ATE TESTED	
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•	Purpl	e Line ·	- Bulk 4, Bu	ilk @ 0.0' - 5.0',	39	28	11	40	SILTY SAND	D(SM)				
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DIRECT SHEAR TEST REPORT





Client: Robe	rt B. Balter Company		
Project Name: Gude	e Landfill		
Project Location: Mary	land		
GTX #: 3126	44		
Start Date: 11/19	9/2020	Tested By:	jlw
End Date: 11/20	0/2020	Checked By:	emm
Boring #:			
Sample #: Bulk	4		
Depth: 0.0-5	5.0 ft		
Visual Description: Dark	Brown Silty Sand		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084 Constant Gradient

Sample Type:	Remolded	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	
Sample Preparation:	5	•	e content. Values specified by client. Mat immings moisture content = 15.4%
Assumed Specific Grav	ity: 2.70		
	Parameter	Initial	Final
	Height, in	2.00	2.00
	Diameter, in	2.86	2.86
	Area, in ²	6.42	6.42
	Volume, in ³	12.8	12.8
	Mass, g	412.7	432.1
	Bulk Density, pcf	122.1	127.8
	Moisture Content, %	15.4	20.8
	Dry Density, pcf	105.8	105.8
	Degree of Saturation, %	70	95

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.01	Increased Cell Pressure, psi:	94.99
Sample Pressure, psi:	85.02	Corresponding Sample Pressure, psi:	89.44

Cell Pressure Increment, ps	4.98
Sample Pressure Increment	4.42
B Coefficient:	0.89
B-value did not increase with incre	ase in pressure.
Final degree of saturation >95%.	

FLOW DATA

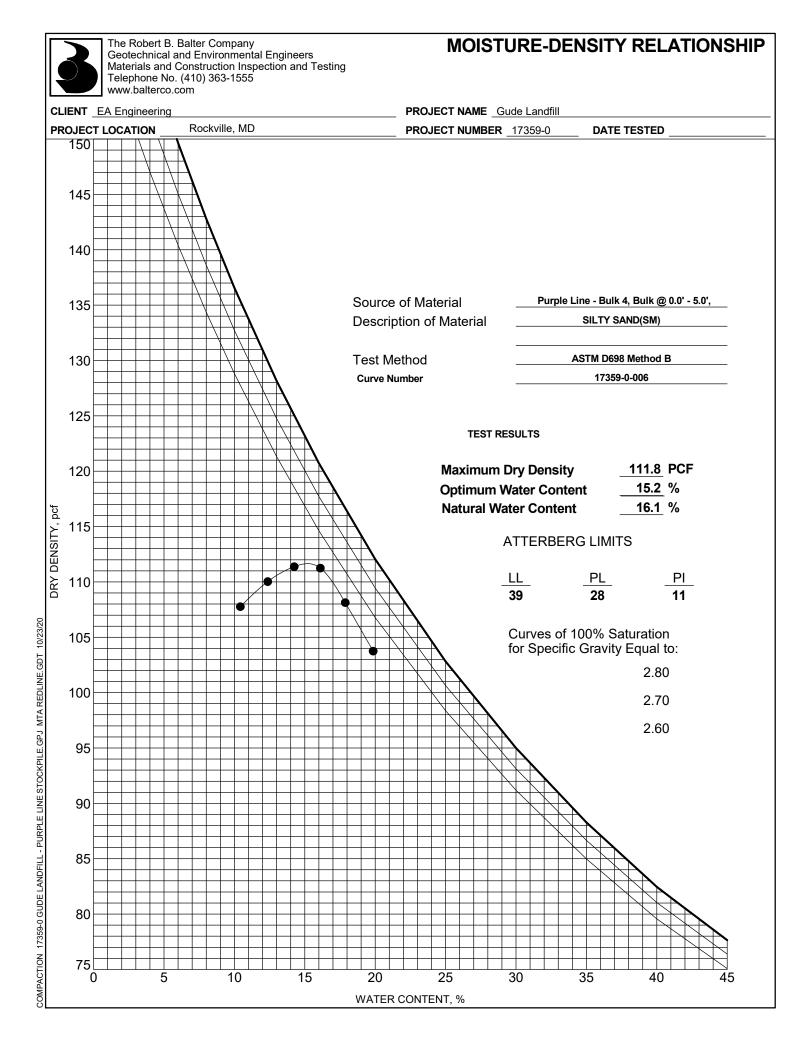
	Time,		essure,	i				lume, cc		Temp,		Permeability K @ 20 °C,
Date	sec	Cell	Inlet	Outlet	Gradient	In	Out	Δ _{In}	∆ Out	°C	Rt	cm/sec
11/20 11/20 11/20 11/20 11/20	 83 79 	90.0 90.0 90.0 90.0 90.0 90.0	85.5 85.5 85.5 85.5 85.5	84.5 84.5 84.5 84.5 84.5 84.5	13.8 13.8 13.8 13.8 13.8 13.8	7.00 7.10 7.00 7.10 7.00	14.00 13.90 14.00 13.90 14.00	0.10 0.10 	0.10 0.10 	 19.5 19.5 	1.013 1.013 	2.1E-06 2.2E-06
11/20	89	90.0	85.5	84.5	13.8	7.10	13.90	0.10	0.10	19.5	1.013	2.0E-06
11/20		90.0	85.5	84.5	13.8	7.00	14.00					
11/20	92	90.0	85.5	84.5	13.8	7.10	13.90	0.10	0.10	19.5	1.013	1.9E-06

PERMEABILITY AT 20° C: 2.1 x 10^{-6} cm/sec (@ 5 psi effective stress)



GRAIN SIZE DISTRIBUTION

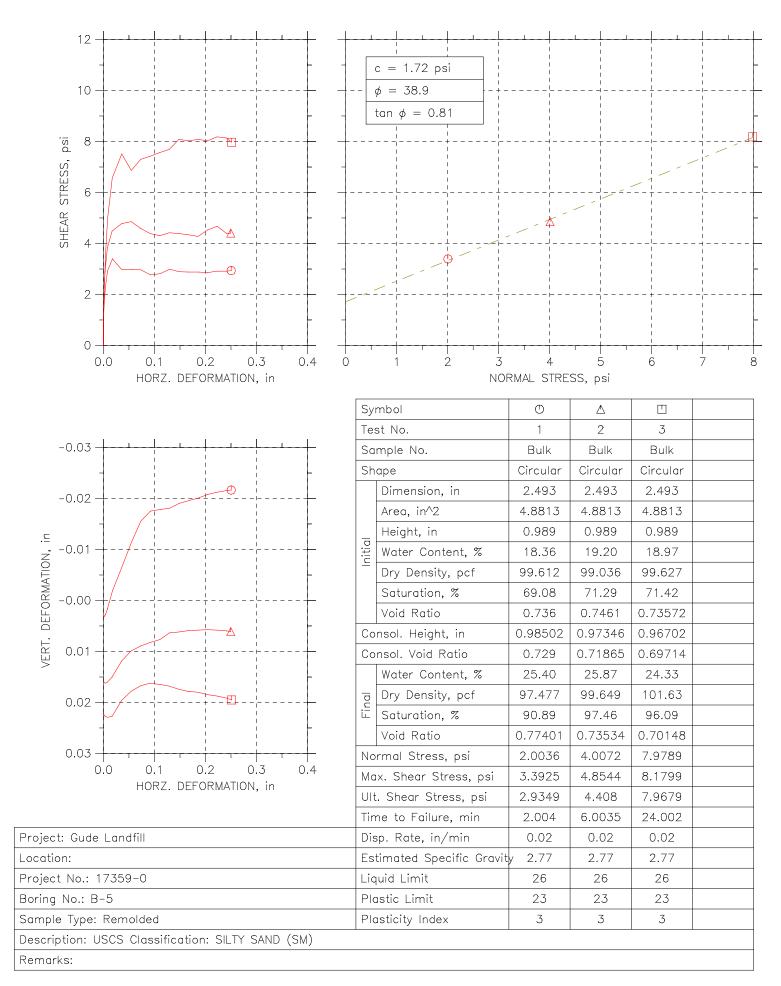
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P	ROJECT LOCATION _ Rockville, MD I														PF	20,	JEC	ст	NU	ME	BER	_1	73	59-	0		I	DAT	ΕT	ES	ΤE	D_													
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1735	-										\vdash				+					-					-									+				+							
GRAIN SIZE 17359-0 GUDE LANDFILL - PURPLE LINE STOCKPILE.GPJ MTA REDLINE.GDT 11/23/20															+																			+				+							
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Purple Line Stockpile Bulk #5 Lab Results

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			Engineerir							E Gude Landfill		
P	ROJE			Rockville,	MD				PROJECT NUM	BER <u>17359-0</u>	DATE TESTED	
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	P L	50										
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		0			20		40	(ML)	(MH) 60	80	100	
							1		LIQUID LIMIT			
	Spe	cime	en Identi	ification	LL	PL	PI	Fines	Classification			
•	Purpl	e Line	- Bulk 5, Bu	ulk @ 0.0' - 5	.0', 48	34	14	44	Brown SILTY SAND	(SM)		
2												
11/23/20												
OCKP												
- Ц - Ц - Ц - Ц - Ц - Ц - Ц - Ц - Ц - Ц												
ЪП												
ATTERBERG LIMITS 17359-0 GUDE LANDFILL												
59-0 6												
S 173												
KBERC												
Ш Н												

DIRECT SHEAR TEST REPORT





Client:	Robert B. Balter Comp	any	
Project Name:	Gude Landfill		
Project Location:	Maryland		
GTX #:	312644		
Start Date:	11/12/2020	Tested By:	jlw
End Date:	11/16/2020	Checked By:	emm
Boring #:			
Sample #:	Bulk 5		
Depth:	0.0-5.0 ft		
Visual Description:	Brown Silty Sand		

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084 Constant Volume

Sample Type:	Remolded	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	
Sample Preparation:	Target Compaction: 95% of 104 of sample prior to testing (0%).		ecified by client. Material > $3/8$ -inch screened on t = 18.0%
Assumed Specific Gra	vity: 2.70		
	Parameter	Initial	Final
	Height, in	2.00	2.00
	Diameter, in	2.86	2.83
	Area, in ²	6.42	6.29
	Volume, in ³	12.8	12.6
	Mass, g	393.6	416.6
	Bulk Density, pcf	116.5	125.9
	Moisture Content, %	18.0	25.0
	Dry Density, pcf	98.6	100.8
	Degree of Saturation, %	69	100

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	90.01	Increased Cell Pressure, psi:	ç
Sample Pressure, psi:	85.00	Corresponding Sample Pressure, psi:	8

95.00	Cell Pressure Increment, psi:	4.99
89.48	Sample Pressure Increment, psi:	4.48
	B Coefficient:	0.90
	*B value did not increase with increase in p	ressure.
	Final degree of saturation >95%.	

FLOW DATA

Date	Trial #	Press	ure, psi Sample	Manom Z ₁	neter Read	ings Z ₁ -Z ₂	Elapsed Time, sec	Gradient	Permeability K, cm/sec	Temp, °C	R _t	Permeability K @ 20 °C, cm/sec
11/13	1	90.0	85.0	8.0	7.3	0.7	37	19.8	7.7E-07	19.5	1.013	7.8E-07
11/13	2	90.0	85.0	8.0	7.3	0.7	39	19.8	7.3E-07	19.5	1.013	7.4E-07
11/13	3	90.0	85.0	8.0	7.3	0.7	41	19.8	7.0E-07	19.5	1.013	7.1E-07
11/13	4	90.0	85.0	8.0	7.3	0.7	42	19.8	6.8E-07	19.5	1.013	6.9E-07

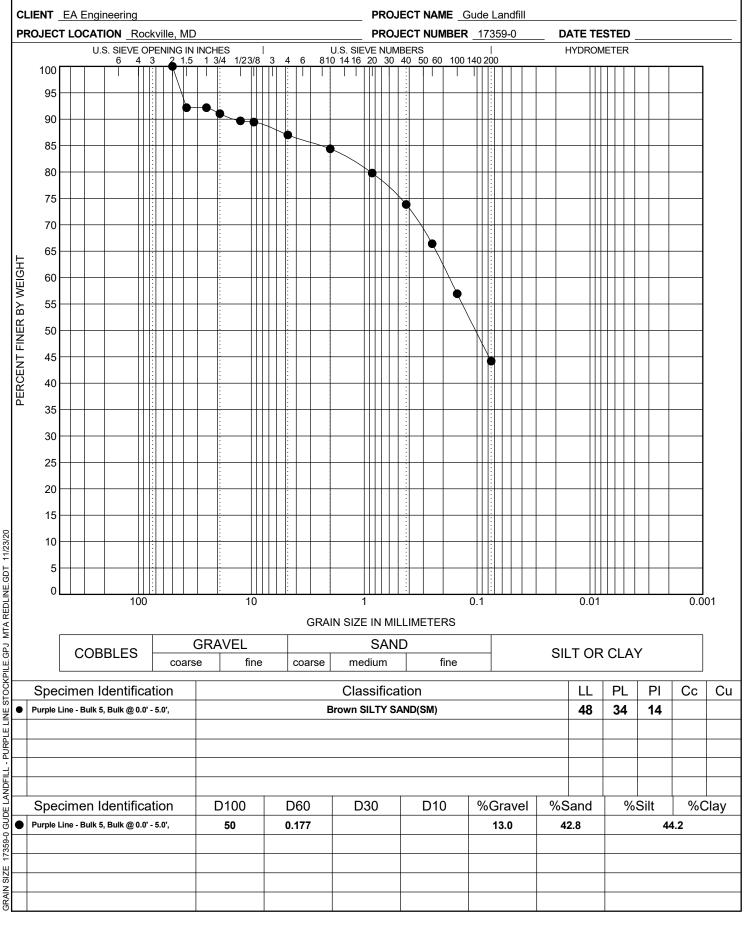
PERMEABILITY AT 20° C: 7.3 x 10^{-7} cm/sec (@ 5 psi effective stress)

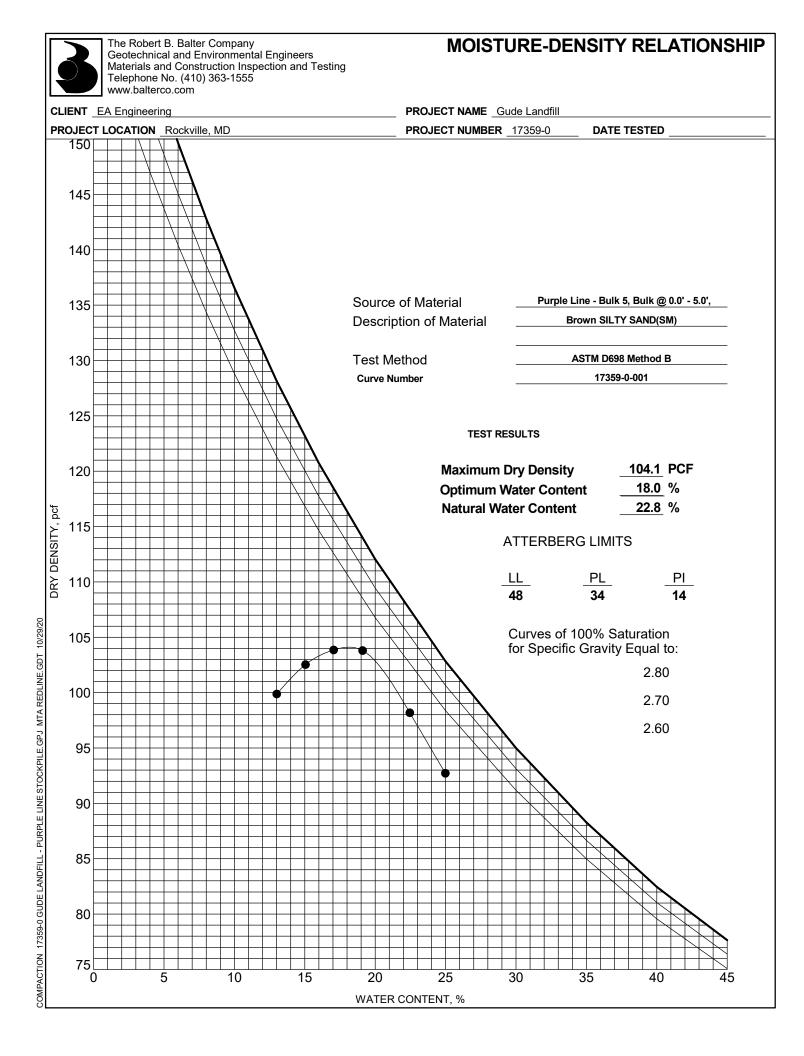


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GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422

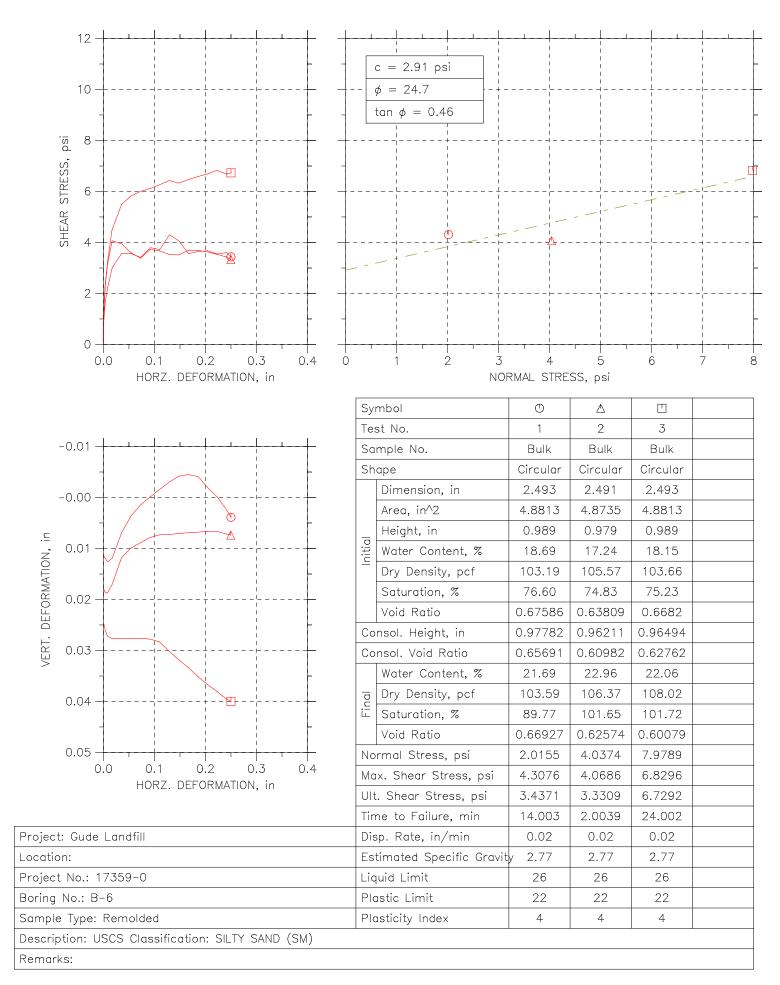




Purple Line Stockpile Bulk #6 Lab Results

	9	Th Ge Ma Te ww	e Robert eotechnic aterials ar lephone ww.baltero	B. Balt al and nd Con No. (41 co.com	ter Com Environ structio 0) 363-	ipany mental l n Inspec 1555	Enginee ction and	ers d Testinę	9			ATTE		G LIMIT EST METH	'S' RE 10D AS ⁻	SULTS TM D4318
	CLIENT EA Engineering											Gude Land				
F	ROJE			Rockv	ille, MD)				PROJE		R <u>17359-</u>		ATE TESTE	D	
		60							CL	СН						
	P L	50														
	A S T I C	40														-
	I T Y	30														-
	I N D E X	20														-
	Х	10							\frown							-
		0	CL-ML		20)	•	40	(ML)	(MH) 6	50	8	30	1	00	
										LIQUID LIMI	IT					
	Spe	ecime	n Identi	ificatio	on	LL	PL	PI	Fines	Classifica	ation					
	Purpl	e Line -	Bulk 6, Bi	ulk @ 0.	0' - 5.0',	31	29	2	37	Light Browr	N SILTY SAI	ND(SM)				
11/23/20																
-																
REDLIN																
AIM L4																
КР Ц																
ANDFI																
0-665																
11 11																
₹																

DIRECT SHEAR TEST REPORT





Client:	Robert B. Balter Company		
Project Name:	Gude Landfill		
Project Location:	Maryland		
GTX #:	312644		
Start Date:	11/12/2020	Tested By:	jlw
End Date:	11/18/2020	Checked By:	emm
Boring #:			
Sample #:	Bulk 6		
Depth:	0.0-5.0 ft		
Visual Description:	Light Brown Silty Sand		

B-value did not increase with increase in pressure.

Final degree of saturation >95%.

Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter by ASTM D5084 Constant Gradient

Sample Type:	Remolded	Permeant Fluid:	De-aired Distilled water
Orientation:	Vertical	Cell #:	
Sample Preparation:	Target Compaction: 95% of 110. out of sample prior to testing (06		cified by client. Material > 3/8-inch screen ntent = 15.2%
Assumed Specific Grav	/ity: 2.70		
	Parameter	Initial	Final
	Height, in	2.00	2.00
	Diameter, in	2.86	2.83
	Area, in ²	6.42	6.29
	Volume, in ³	12.8	12.6
	Mass, g	409.0	430.3
	Bulk Density, pcf	121.0	130.0
	Moisture Content, %	15.2	21.2
	Dry Density, pcf	105.1	107.3
	Degree of Saturation, %	68	100

B COEFFICIENT DETERMINATION

Cell Pressure, psi:	89.98	Increased Cell Pressure, psi:	95.01	Cell Pressure Increment, ps	5.03
Sample Pressure, psi:	85.03	Corresponding Sample Pressure, psi:	89.20	Sample Pressure Increment	4.17
				B Coefficient:	0.83

FLOW DATA

	Time,	Pr	essure,	psi			Flow Vo	lume, cc		Temp,		Permeability K @ 20 °C,
Date	sec	Cell	Inlet	Outlet	Gradient	In	Out	Δ In	Δ Out	°C	R _t	cm/sec
11/13		90.0	85.5	84.5	13.8	7.00	14.00					
11/13	61	90.0	85.5	84.5	13.8	7.10	13.90	0.10	0.10	19.5	1.013	3.0E-06
11/13		90.0	85.5	84.5	13.8	7.00	14.00					
11/13	64	90.0	85.5	84.5	13.8	7.10	13.90	0.10	0.10	19.5	1.013	2.8E-06
11/13		90.0	85.5	84.5	13.8	7.00	14.00					
11/13	56	90.0	85.5	84.5	13.8	7.10	13.90	0.10	0.10	19.5	1.013	3.2E-06
11/13		90.0	85.5	84.5	13.8	7.00	14.00					
11/13	57	90.0	85.5	84.5	13.8	7.10	13.90	0.10	0.10	19.5	1.013	3.2E-06

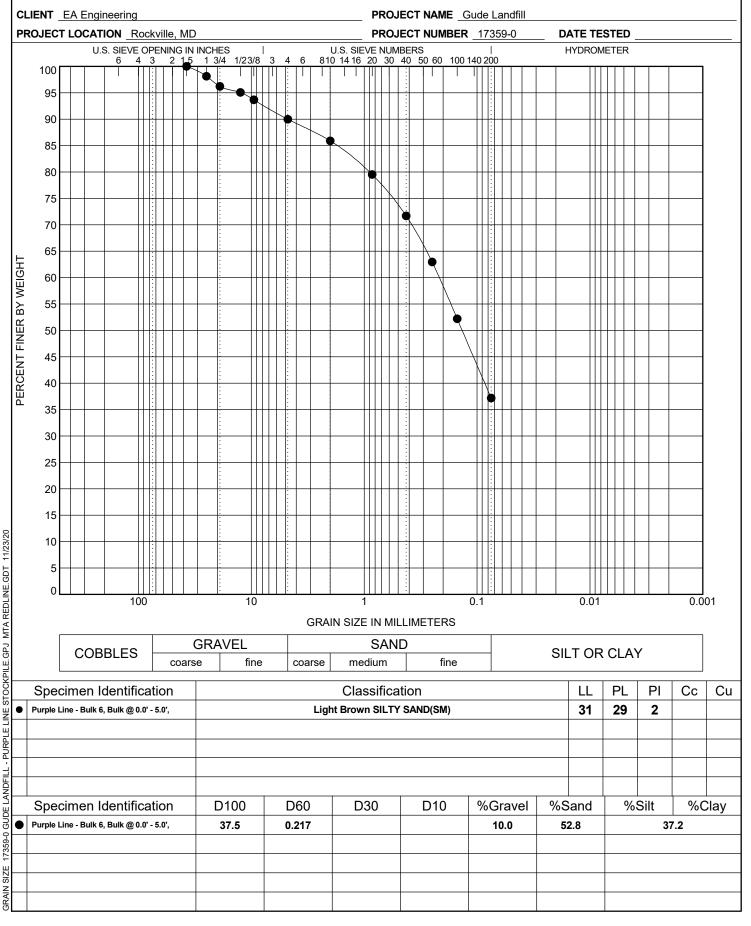
PERMEABILITY AT 20° C: 3.0 x 10^{-6} cm/sec (@ 5 psi effective stress)

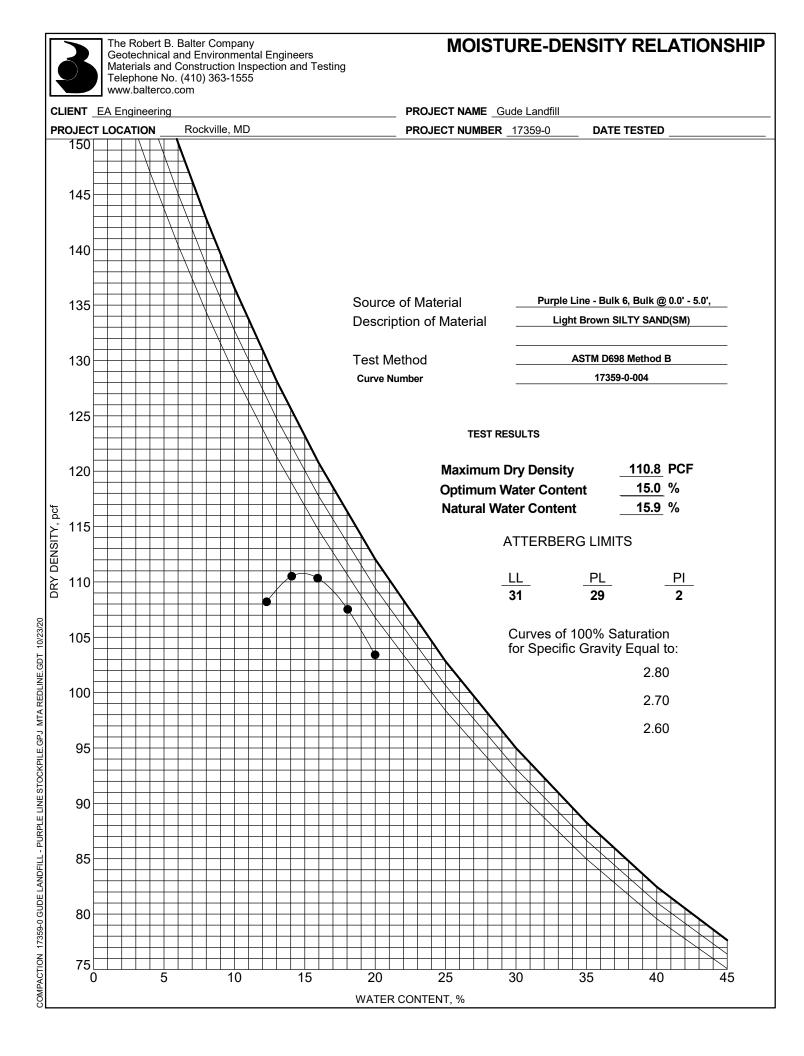


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GRAIN SIZE DISTRIBUTION

TEST METHOD ASTM D422





Attachment D

Forest Stand Delineation Report and Wetland Delineation Report

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Gude Landfill Remediation Project Design Engineer Contract

Natural Resources Inventory/ Forest Stand Delineation Report

Prepared for

Department of Environmental Protection Division of Solid Waste Services Montgomery County, Maryland

Prepared by EA Engineering, Science, and Technology, Inc., PBC 225 Schilling Circle, Suite 400 Hunt Valley, Maryland 21031

> March 2019 Version: FINAL EA Project No. 15646.01

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Gude Landfill Remediation Project Design Engineer Contract

Natural Resources Inventory/ Forest Stand Delineation Report

Prepared for

Department of Environmental Protection Division of Solid Waste Services Montgomery County, Maryland

Prepared by EA Engineering, Science, and Technology, Inc., PBC 225 Schilling Circle Hunt Valley, Maryland 21031

> March 2019 Version: FINAL EA Project No. 15646.01

Hans Thing

3/13/2019

Thomas M. King Maryland Department of Natural Resources Qualified Professional Date

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- 6 Specimen Trees

LIST OF ACRONYMS AND ABBREVIATIONS

the County	Montgomery County Department of Environmental Protection, Division of Solid Waste Services		
dbh	Diameter at breast height		
EA	EA Engineering, Science, and Technology, Inc., PBC		
FEMA FSD	Federal Emergency Management Agency Forest Stand Delineation		
the Landfill	Gude Landfill		
MDNR M-NCPPC	Maryland Department of Natural Resources Maryland-National Capital Park and Planning Commission		
NRCS NRI	National Resources Conservation Service Natural Resources Inventory		
PRA	Priority Retention Area		
USDA USFWS USGS	U.S. Department of Agriculture U.S. Fish and Wildlife Service U.S. Geological Survey		

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1. INTRODUCTION

This Natural Resources Inventory (NRI) and Forest Stand Delineation (FSD) Report was prepared for the Engineering, Bid Preparation, and Support Services for the Gude Landfill (the Landfill) Remediation Project for Montgomery County, Maryland (the Remediation Design), under the Northeast Maryland Waste Disposal Authority and the Montgomery County Department of Environmental Protection, Division of Solid Waste Services (the County).

The Landfill Remediation Design is for the recommended Corrective Measure Alternative, Toupee Capping and Additional Landfill Gas Collection, as approved by the Maryland Department of the Environment on July 8, 2016.

1.1 PURPOSE

The purpose of this NRI/FSD Report is to review, identify, and/or delineate natural resources and forest stands located on and within the vicinity of the Landfill (the project site). The Landfill consists of approximately one hundred sixty-two and seven-tenths (162.7) acres, located at 600 East Gude Drive in Rockville, Maryland (**Appendix A, Figure 1**).

As part of the design effort, EA Engineering, Science, and Technology, Inc., PBC (EA) performed an NRI of the site, including a full FSD and a Wetland Delineation. Wetlands delineated at the site are discussed in the *Gude Landfill Remediation Project, Design Engineer Contract, Wetland Delineation Report* (EA 2018). This report provides information on the Forest Stand Delineation conducted at the site. The FSD was conducted in accordance with the guidelines of the *State Forest Conservation Technical Manual* (Maryland Department of Natural Resources [MDNR] 1997) and in accordance with the regulations in the Montgomery County *Trees: Approved Technical Manual* (Maryland-National Capital Park and Planning Commission [M-NCPPC] 1994).

As part of the development of the FSD Report, an NRI/FSD Plan was prepared to the specifications and methodologies outlined in the Montgomery County *Trees: Approved Technical Manual* (M-NCPPC 1994), including delineated stands, wetlands, streams, buffers, steep slopes, and erodible soils. This plan figure is provided as sheet F-1 in **Appendix B**.

2. SITE DESCRIPTION

2.1 SITE LOCATION

At the time of EA's FSD on April 30 and May 1, 2018, the project site consisted of approximately one hundred six-two and seven-tenths (162.7) acres of land predominantly comprised of open grass and vegetative covered fields (**Appendix A, Figure 2**). The border of the project site consisted of undeveloped forested land. Major site features included an extensive landfill gas collection piping system throughout the property, a paved open area in the southeastern portion of the Landfill, a model airplane flying area in the northern portion of the Landfill, and a landfill gas to energy flare station and shelter in the southwest corner of the property.

The site is bordered to the south by industrial operations, to the west/northwest by the community of Derwood Station South, and to the north and east by M-NCPPC property. The surrounding area was mixed use with the Derwood residential community to the northwest, commercial and industrial properties to the south, and predominantly undeveloped wooded areas to the north and east. The approximate latitude/longitude of the property is 39° 06' 29" N and 77° 08' 16" W, respectively. The Landfill is located at 600 East Gude Drive in Rockville, Maryland (**Appendix A**, **Figure 1**). The property is identified as Parcels 151, 230, and 240 on Montgomery County Tax Maps. The area of review for the FSD is provided on **Figure 2** (**Appendix A**).

2.2 TOPOGRAPHY

The site is located in the upland section of the Piedmont Plateau Physiographic Province. The general topography of the site consists of moderate slopes with steeper slopes along the south and east edge of the Landfill property. Elevation of the site ranges from three hundred thirty (330) to four hundred seventy-five (475) feet above mean sea level (**Appendix A, Figure 3**). The underlying geology of the site is metamorphic and igneous rock formations of the Paleozoic and Precambrian Age. These formations consist of phyllite, slate, marble, schist, gneiss, and gabbro formations.

The U.S. Geological Survey (USGS) topographic map for the area (*Rockville Quadrangle*, **Figure 3** in **Appendix A**) was also used as a reference to identify possible wetlands and waterways on the property. Topographic maps identify elevations, forested areas, streams, ponds, roads, and structures. The USGS map identified multiple buildings and roads within the project site and depicted the majority of the site as being non-forested. Three (3) blue-line stream channels were depicted within the vicinity of the project site on the USGS map, including Crabbs Creek, Rock Creek, and an unnamed channel. Crabbs Creek was identified as being located on the northeastern corner of the project site. Crabbs Creek flowed in a southeasterly direction where it contributed to Rock Creek. Rock Creek was depicted to the east of the project site. Rock Creek was not located within the area of review. The third blue-line stream channel (unnamed) was located along the southern property line and conveyed flow in an easterly direction to Rock Creek. The streams discussed above are listed in the Code of Maryland Regulations stream use classification index as Use IV (Recreational Trout Waters), with an in-stream restriction during the period of March 1 through May 31.

The site topography was plateau-like and consisted of gentle relief along the top of the plateau and sharp relief along the entirety of the Landfill boundary. The elevation along the top of the plateau gently sloped to the south, with localized mounds and depressions throughout. The topography around the edges of the waste layer fell sharply from the plateau to elevations ranging from sixty (60) to ninety (90) feet below the plateau.

2.3 SOIL CHARACTERISTICS

The online U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey for Montgomery County was reviewed for the area of review prior to the field visit (**Appendix A, Figure 4**). Ten (10) soil types were identified within the project site (USDA NRCS 2018a). According to the NRCS hydric soils list by state (USDA NRCS 2018b), seven (7) of the soil units within the project site were listed as a hydric soil. In addition, all but two (2) of the soil types within the area of review are considered erodible soils, or soils with a K factor value greater than thirty-five one-hundredths (0.35). Soil types found within the project site are identified in **Table 1**.

	Hudrig English			Dutine a A qui aulture l	
		Hydric	Erosion		Prime Agricultural
Soil Mapping Unit	Symbol	Soil	(K factor)	Drainage Class	
Gaila silt loam, 3 to 8 percent slopes	1B	Yes	0.43	Well drained	Prime Farmland
Glenelg silt loam, 3 to 8 percent slopes	2B	No	0.37	Well drained	Prime Farmland
Elioak silt loam, 3 to 8 percent slopes	4B	No	0.37	Well drained	Prime Farmland
Glenville silt loam, 3 to 8 percent	5B	Yes	0.37	Moderately	Prime Farmland
slopes	2.0	105		well drained	
Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes	16D	Yes	0.37	Well drained	Not Prime Farmland
Occoquan loam, 8 to 15 percent slopes	17C	Yes	0.37	Well drained	Farmland of Statewide Importance
Hatboro silt loam, 0-3% slopes, frequently flooded	54A	Yes		Poorly drained	Not Prime Farmland
Dump, refuse	100	No			Not Prime Farmland
Blocktown channery silt loam, 15-25 percent slopes, very rocky	116D	Yes	0.49	Well drained	Not Prime Farmland
Blocktown channery silt loam, 25-45 percent slopes, very rocky	116E	Yes	0.49	Well drained	Not Prime Farmland
Source: Adapted from U.S. Department of Agriculture, Natural Resources Conservation Service 1995, 2018a, 2018b.					

Table 1Mapped Soil Types

2.4 WETLANDS, WATERS OF THE U.S., AND FLOODPLAINS

Wetlands and Waters of the U.S. at the Landfill were delineated as part of the Natural Resource Inventory, and are provided in the *Wetland Delineation Report* (EA 2018). Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps were consulted prior to the field visit to identify floodplain areas at the site. The Landfill falls within the Flood Insurance Rate Map identified as Map ID 24031C03320D, dated September 29, 2006. A review of the Flood Insurance Rate Map generated by FEMA's online Map Service Center indicates that portions of the unnamed tributary to Rock Creek, Rock Creek, and Crabbs Creek are located within the one hundred (100)-year floodplain. The remainder of the subject site is identified within an area of minimal flood hazard.

3. METHODOLOGY

A standard FSD was conducted on April 30 and May 1, 2018, in accordance with the guidelines of the *State Forest Conservation Technical Manual* (MDNR 1997) and in accordance with the regulations in the Montgomery County *Trees: Approved Technical Manual* (M-NCPPC 1994).

A one-tenth (1/10) acre fixed plot sampling technique was used to assess forest stand conditions and forest structure. Sampling plots were selected so as to be evenly distributed throughout each stand. A stick flag was placed in the center of each plot and along the perimeter of the circular plot in each of the four (4) cardinal directions. The plot center was marked in the field with orange flagging and the stand and plot number labeled with a black marker. The forest stand and forest structure procedures used for data collection followed guidelines of the *State Forest Conservation Technical Manual* (MDNR 1997). The priorities of the stands were assigned according to the guidelines in the Technical Manual.

The priorities of the stands and sensitive features mapped within each stand are determined according to the guidelines in the *State Forest Conservation Technical Manual* and the *Trees: Approved Technical Manual*. Priority Retention Areas (PRA) are specific vegetated and sensitive environmental areas identified including: steep slopes (greater than twenty-five [25] percent); erodible soils on slopes of fifteen (15) percent or greater; one hundred (100)-year floodplains; intermittent and perennial streams; nontidal wetlands; fifty (50) foot buffers to intermittent/perennial streams and nontidal wetlands (which are expanded by four [4] feet for every one [1] percent of adjacent slope or extend to the top of contiguous steep slopes twenty-five [25] percent or greater); tidal wetlands and their one hundred (100)-foot buffers; and habitats for rare, threatened, and endangered species. PRAs also include contiguous forests that connect the largest undeveloped or most vegetated tracts of land within and adjacent to the site, and trees having a diameter at breast height (dbh) of thirty (30) inches or greater (specimen trees), or that are seventy-five (75) percent or more of the dbh of the current state champion tree of that species.

Within Montgomery County, Priority (Retention) Areas are further described based on whether they are Priority 1 through Priority 4. These areas are defined in the *Trees: Approved Technical Manual* (M-NCPPC 1994) as follows:

- Priority Area 1 (High)—Area contains trees, shrubs, or herbaceous plants associated with intermittent and perennial streams and their buffers; slopes greater than twenty-five (25) percent; nontidal wetlands and their buffers; one hundred (100)-year floodplains; critical habitats of rare, threatened, or endangered species; contiguous forest connected to large undeveloped or most vegetated tracts of land. In addition, Priority Area 1 areas may also have trees that are part of a historic site or associated with a historic structure; designated as a champion tree at the local, state, or national level; have a dbh that is seventy-five (75) percent or more of the dbh of the designated state champion; or specimen trees (trees with a dbh of thirty (30) inches or greater).
- Priority Area 2 (Moderate)—Areas that contain stands or portions of stands with good forest structural diversity; forested areas providing a corridor three hundred (300) feet wide

or more of primarily native vegetation between two (2) larger forested tracts; forested stream buffers up to forest corridor width (three hundred [300] feet); trees which act as buffers between incompatible land uses and between dwellings and roads; and specific trees with a dbh of twenty-four (24) inches or greater on a site that will significantly enhance the site through their preservation.

- Priority Area 3 (Low)—Areas that contain stands or portions of stands with poor forest structural diversity or areas with none of the characteristics mentioned in the descriptions of the other Priority Area characterizations.
- Priority Area 4 (Disturbed)—Areas that have approximately forty (40) percent land cover of exotic or invasive species in the dominant canopy layer.

As noted in Section 2, topographic maps, the Montgomery County soil survey (USDA [NRCS] 2018a), and aerial photographs were reviewed prior to field investigations to identify probable forest stand boundaries. A field investigation of the project area was conducted in April and May 2018 to identify, delineate, and characterize forest stands. Forest stands were distinguished primarily by differences in species composition and successional stage. This report provides the results of this field delineation of forest stands.

4. SYSTEMS IDENTIFIED

Four (4) forest stands were identified within the area of review, predominantly along the perimeter of the Landfill. The cover types were chestnut oak/red oak, oak/hickory/maple, red maple, and green ash/box elder (**Appendix A, Figure 5**). Stand variations resulted from changes in topographic position, degree of slope, and amount and type of historical human disturbance. Forest stand conditions and forest structure were assessed at sample plots within the stand as detailed in the following stand description. Additional information on the stands is provided in the datasheets (**Appendix C**) and a summary of forest conditions within the stand is included in **Appendix D**.

The attached *Forest Stand Delineation Plan* (drawing F-1, provided in **Appendix B**) depicts the approximate location of the sampling plots and boundary of forest cover type. Brief descriptions of the forest stands are included in this section. A photographic record is provided in **Appendix E**.

4.1 FOREST STAND 1

Stand 1 is located on the northeastern side of the project site and is dominated by chestnut oak (*Quercus prinus*) and red oak (*Quercus rubra*) in the dominant size class of six (6) to eleven and nine-tenths (11.9) inches dbh. The average basal area of this stand is one hundred thirteen (113) square feet per acre. Stand 1 has an average canopy closure of sixty-six (66) percent. Other species found in the canopy include black gum (*Nyssa sylvatica*) and mockernut hickory (*Carya tomentosa*). A portion of stand 1 appears to have been recently burned in a leaf-litter fire. As a result, there is little to no vegetation, including herbaceous vegetation in the three (3) to twenty (20) foot understory or the zero (0) to three (3) foot understory. The portion of stand 1 that does not appear to have been recently burned appears to have been previously burned, and also has little to no understory growth. In this area, black cherry (*Prunus serotina*) and striped wintergreen (*Chimaphila maculata*) are present in the understory from zero (0) to three (3) feet, but do not provide appreciable understory coverage.

Environmental features present in stand 1 include steep slopes, and a portion of the stand was recently burned. The stand continues offsite, and adjacent land uses include undeveloped forested land. Stand 1 is within the one hundred (100)-year floodplain of an offsite stream, Crabbe Creek, and has high wildlife value, as it provides cover and food sources for wildlife species. No specimen trees were identified in stand 1.

Stand 1 is rated as a Priority Area 1 due to the presence of steep slopes. Additional summary details of stand 1 are provided in **Table 2**.

	Stand I Summary
Sample Plots	3
Successional Stage	Mid-Successional
Priority Area	1
Cover Type	Chestnut Oak/Red Oak
Size within AOR	3.21 acres

Table 2	Stand 1	Summary

4.2 FOREST STAND 2

Stand 2 is located along the eastern, southern, and southeastern edge of the area of review, and continues offsite. Stand 2 is dominated by mixed oak (Quercus spp.) and mockernut hickory of an average size class of twelve (12) to nineteen and nine-tenths (19.9) inches dbh, with eighty-four (84) percent canopy closure. Stand plots on the slopes tend to be dominated by oak species, while those in the bottomland near streams are more dominated by red maple (Acer rubrum). The average basal area of stand 2 is one hundred eighteen (118) square feet per acre. Oak species found within stand 2 include white oak (Quercus alba), chestnut oak, and northern red oak. Species found in the canopy within the plots include mockernut hickory, black gum, black cherry, tulip poplar (Liriodendron tulipifera), American sycamore (Platanus occidentalis), black haw (Viburnum prunifolium), and mountain laurel (Kalmia latifolia). The understory from three (3) to twenty (20) feet tall averages sixty-eight (68) percent coverage, and includes red maple, mockernut hickory, black gum, chestnut oak, black cherry, northern red oak, mountain laurel, and common privet (Ligustrum vulgare). Common herbaceous and woody species zero (0) to three (3) feet tall consisted of striped wintergreen, partridge berry (Mitchella repens), bush honeysuckle (Lonicera tartarica), Asiatic bittersweet (Celastrus orbiculatus), garlic mustard (Alliaria petiolata), Japanese honeysuckle (Lonicera japonica), American holly (Ilex opaca), Japanese stiltgrass (Microstegium vimineum), common privet, poison ivy (Toxicodendron radicans), and soft rush (Juncus effusus). Coverage of understory herbaceous plants during the forest stand delineation was twenty-four (24) percent. Invasive species observed in the sample plots included Japanese honeysuckle, garlic mustard, Asiatic bittersweet, bush honeysuckle, Japanese stiltgrass, and common privet.

Environmental features within stand 2 include a forested wetland, a stream (an unnamed tributary to Rock Creek), steep slopes, and several specimen trees. The wildlife value of the stand is high due to the presence of cover, food, and water. The stand continues offsite, and adjacent land uses include industrial property and M-NCPPC owned land. EA identified seven (7) specimen trees (white oak, scarlet oak, red oak, silver maple [*Acer saccharinum*], and several tulip poplars) within stand 2 as described in Section 4.5.

The stand is a Priority Area 1 because of the presence of specimen trees, steep slopes, a stream, and wetlands. Additional summary details of stand 2 are provided in **Table 3**.

Sample Plots	5
Successional Stage	Mature
Priority Area	1
Cover Type	Oak/Hickory/Red Maple
Size within AOR	16.10 acres

Table 3Stand 2 Summary

4.3 FOREST STAND 3

Stand 3 is located on the southwest and southeast corners of the project site upslope of stand 2. Stand 3 is dominated by red maple of size class six (6) to eleven and nine-tenths (11.9) inches dbh, with eighty (80) percent canopy closure. Other species in the canopy are red cedar (*Juniperus* *virginiana*), black cherry, Virginia pine (*Pinus virginiana*), silver maple, black locust (*Robinia pseudo-acacia*), and black gum. The average basal area in stand 3 is seventy (70) square feet per acre. The understory from three (3) to twenty (20) feet tall averages forty (40) percent coverage, and includes red maple, black gum, red cedar, Asiatic bittersweet, and Japanese barberry (*Berberis thunbergii*). Common herbaceous and woody species zero (0) to three (3) feet tall consist of American holly, Japanese barberry, Chinese silvergrass (*Miscanthus sinensis*), Japanese stiltgrass, poison ivy, Asiatic tearthumb (*Polygonum perfoliatum*), Indian strawberry (*Duchesnea indica*), red maple, red cedar, and common reed (*Phragmites australis*). Cover of herbaceous understory species are present and were observed in the sample plots including Japanese barberry, Japanese stiltgrass, Japanese silvergrass, Asiatic bittersweet, Asiatic tearthumb, and common reed.

Environmental features found within stand 3 include steep slopes and relatively high invasive plant species cover. Adjacent land uses include M-NCPPC owned land. The stand provides moderate wildlife value, due to the presence of cover and food. Stand 3 does not provide water for wildlife. No specimen trees were identified in stand 1.

The stand was rated as a Priority Area 1 due of the presence of steep slopes, but the stand also has a higher percentage of invasive coverage than other stands onsite. Additional summary details of stand 3 are provided in **Table 4**.

Iuble I	stand e standary
Sample Plots	2
Successional Stage	Mid-Successional
Priority Area	1
Cover Type	Red Maple
Size within AOR	19.12 acres

Table 4Stand 3 Summary

4.4 FOREST STAND 4

Stand 4 is located on the northeast portion of the project site and is dominated by green ash (*Fraxinus pennsylvanica*) and box elder (*Acer negundo*). Other canopy species present are black cherry, black locust, apple (*Malus* spp.), bush honeysuckle, silver maple, red maple, and red cedar. The overstory in stand 4 has an average canopy closure of fifty (50) percent, with dominant trees of size class six (6) to eleven and nine-tenths (11.9) inches dbh. The average basal area in stand 4 is seventy-five (75) square feet per acre. The understory from three (3) to twenty (20) feet tall also averages fifty (50) percent coverage, and includes bush honeysuckle and Japanese barberry. Common herbaceous and woody species zero (0) to three (3) feet tall consist of horse balm (*Collinsonia canadensis*), Japanese stiltgrass, Japanese honeysuckle, Japanese barberry, bush honeysuckle, wineberry (*Rubus phoenicolasius*), poison ivy, and oniongrass (*Allium vineale*) with one hundred (100) percent coverage. Invasive species observed in the sample plots include Japanese stiltgrass, wineberry, bush honeysuckle, and Japanese barberry.

Environmental features within stand 4 include an emergent wetland, a stream (Crabbs Creek), steep slopes, and one (1) specimen tree, as noted in Section 4.5. Stand 4 contains steep slopes and

relatively high invasive cover. Adjacent land uses include M-NCPPC-owned land. The wildlife value of the stand is high due to the presence of cover and food, with water along the boundary.

The stand was rated as Priority Area 1 due to the presence of steep slopes, but the stand also has a higher percentage of invasive coverage than other stands onsite. Additional summary details of stand 4 are provided in **Table 5**.

Table J.	Stanu + Summary
Sample Plots	2
Successional Stage	Early-Successional
Priority Area	1
Cover Type	Red Cedar/Box Elder/Bush
	Honeysuckle
Size within AOR	9.97 acres

Table 5.Stand 4 Summary

4.5 SPECIMEN TREES

As part of the FSD site visit, specimen trees were identified in the project area. Specimen trees are trees that have a dbh greater than thirty (30) inches or have a dbh that is seventy-five (75) percent or more of the state champion tree dbh for that species. Champion trees are also considered specimen trees. Ten (10) specimen trees representing five (5) species were identified in the project area. Several of these specimen trees are within stands in the area of review for the FSD, but are located outside the Landfill property. Specimen trees within the Landfill property line include two (2) silver maples (T-4 and T-5). **Table 6** outlines the species, dbh, and condition of specimen trees identified in the area of review.

Tree	Stand	DBH	Common		G
Number	Location	(inches)	Name	Scientific Name	Condition
T-1	2	38.8	White oak	Quercus alba	Good
Т-2	2	32.7	Tulip poplar	Liriodendron tulipifera	Double trunk with included bark
T-3	2	38.0	White oak	Quercus alba	Good
T-4	4	59.0	Silver maple	Acer saccharinum	Fair multi-trunk with many dead limbs
T-5	2	59.3	Silver maple	Acer saccharinum	Fair multi-trunk in pond
T-6	2	35.1	Tulip poplar	Liriodendron tulipifera	Good, double trunk
T-7	2	33.2	Tulip poplar	Liriodendron tulipifera	Good
T-8	2	31.5	Tulip poplar	Liriodendron tulipifera	Good
T-9	2	35.2	Scarlet oak	Quercus coccinea	Fair with many dead limbs
T-10	2	34.3	Red oak	Quercus rubra	Good

Table 6.Specimen Trees

5. AGENCY REVIEW STATEMENTS

In addition to the FSD, EA completed written inquiries to USFWS and MDNR in 2009 as part of an original field delineation effort. These written inquiries were regarding whether the agencies are aware of any records of rare, threatened, or endangered species present within the project boundary. EA also completed a written inquiry to the Office of Preservation and Compliance, Maryland Historical Trust to determine whether there are known occurrences of historical, cultural, and/or archaeological sites/features present at the site. EA has received responses associated with these inquiries and they are included in **Appendix F** of this report.

USFWS and MDNR have determined that no state or federal records exist for rare, threatened, or endangered species within the project area that could be impacted by the project. Furthermore, the Maryland Historical Trust has determined that there are no records regarding the presence of cultural, archaeological, or historic resources within the project area that may be affected by remedial activities.

6. CONCLUSION

Four (4) forest stands were delineated and assessed within the area of review within and bordering the Landfill site. The cover types were chestnut oak/red oak, oak/hickory/maple, red maple, and green ash/box elder. Ten (10) specimen trees (white oak [two (2)], scarlet oak [one (1)], red oak [one (1)], tulip poplar [four (4), and silver maple [two (2)]) were located within the area of review, specifically within Forest Stands 2 and 4. Two (2) of these ten (10) trees (T-4 and T-5) are located on the Landfill property. The site contains wetlands, streams, and steep slopes. Invasive plant species were present in each of the delineated stands except for Stand 1, which was recently burned and had little to no understory cover. Invasive species occurred at higher percent coverage in disturbed or regrowth stands (Forest Stands 3 and 4) located on the Landfill. Due to the presence of steep slopes within the project area, all stands were ranked as Priority 1 PRAs. As stated previously, Priority 1 PRAs "contain slopes greater than twenty-five (25) percent" (M-NCPPC 1994).

This FSD Report and Plan should be submitted to the M-NCPPC for approval. Once the FSD Report and Plan has been approved by M-NCPPC, the proposed site design plan will be used to create a Forest Conservation Plan or exemption in an effort to determine impacts to forest resources within the proposed limit of disturbance. The Forest Conservation Plan will then be submitted to M-NCPPC for agreement and approval.

EA Engineering, Science, and Technology, Inc., PBC

7. **REFERENCES**

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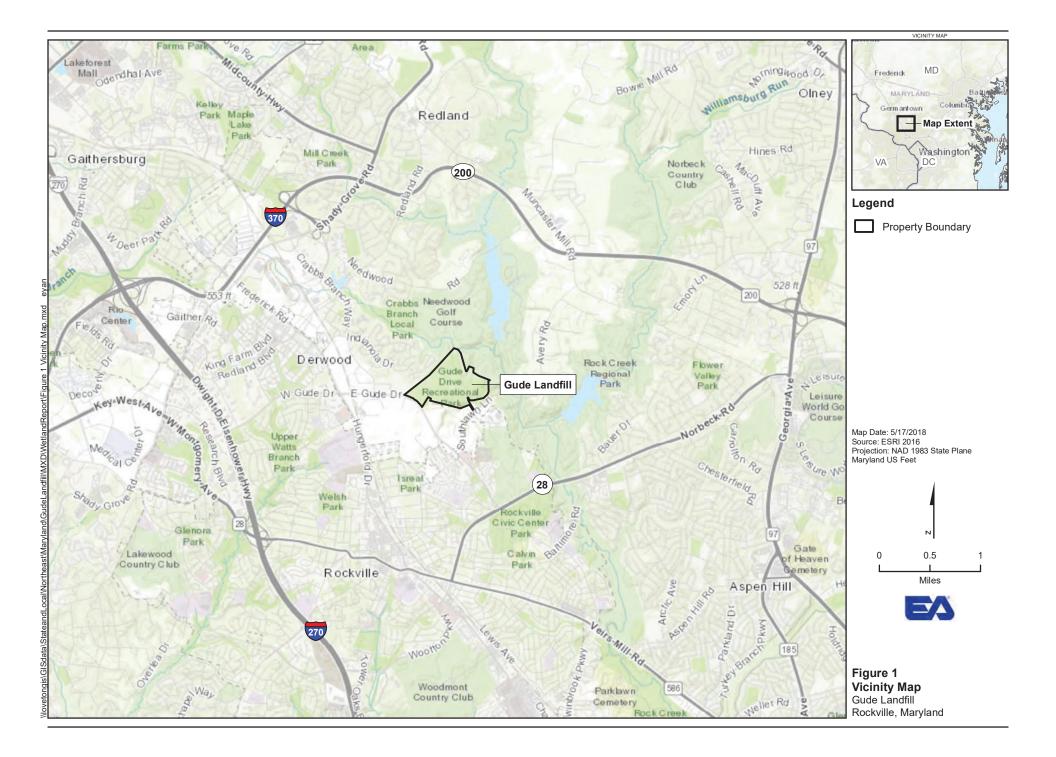
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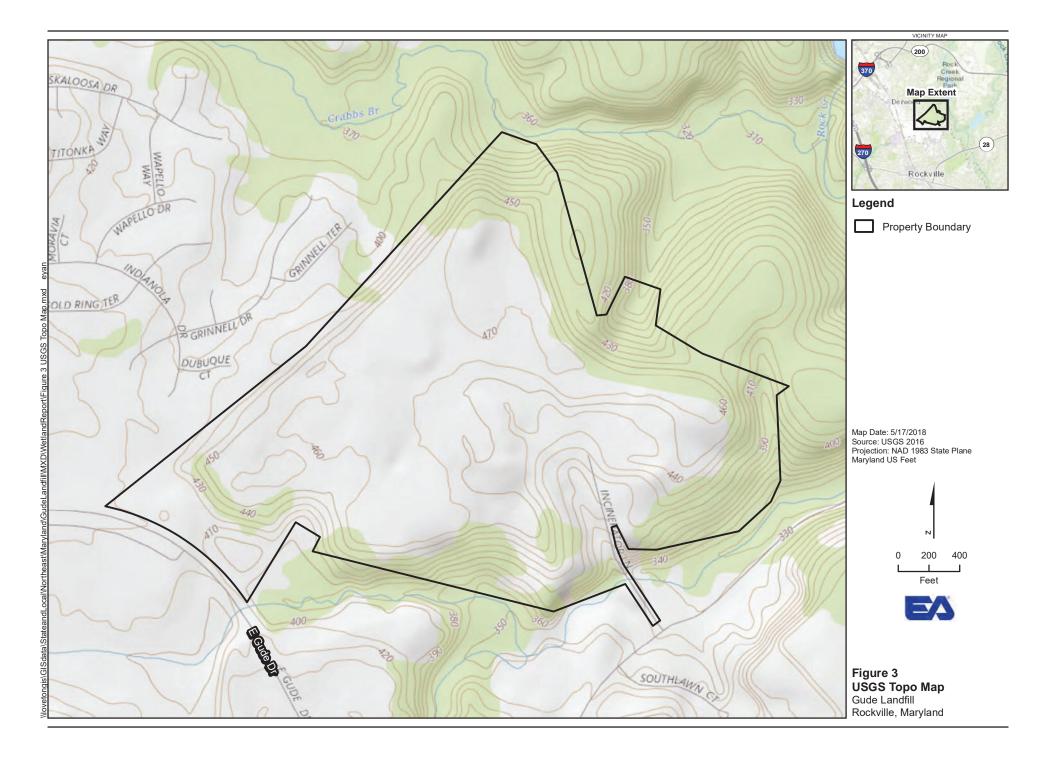
Appendix A

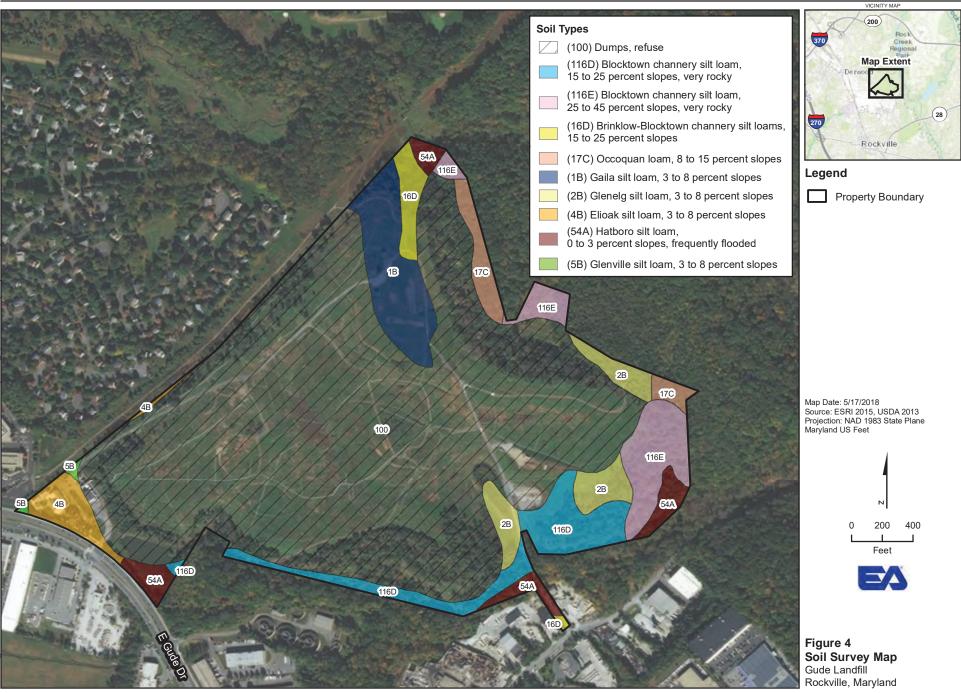
Figures

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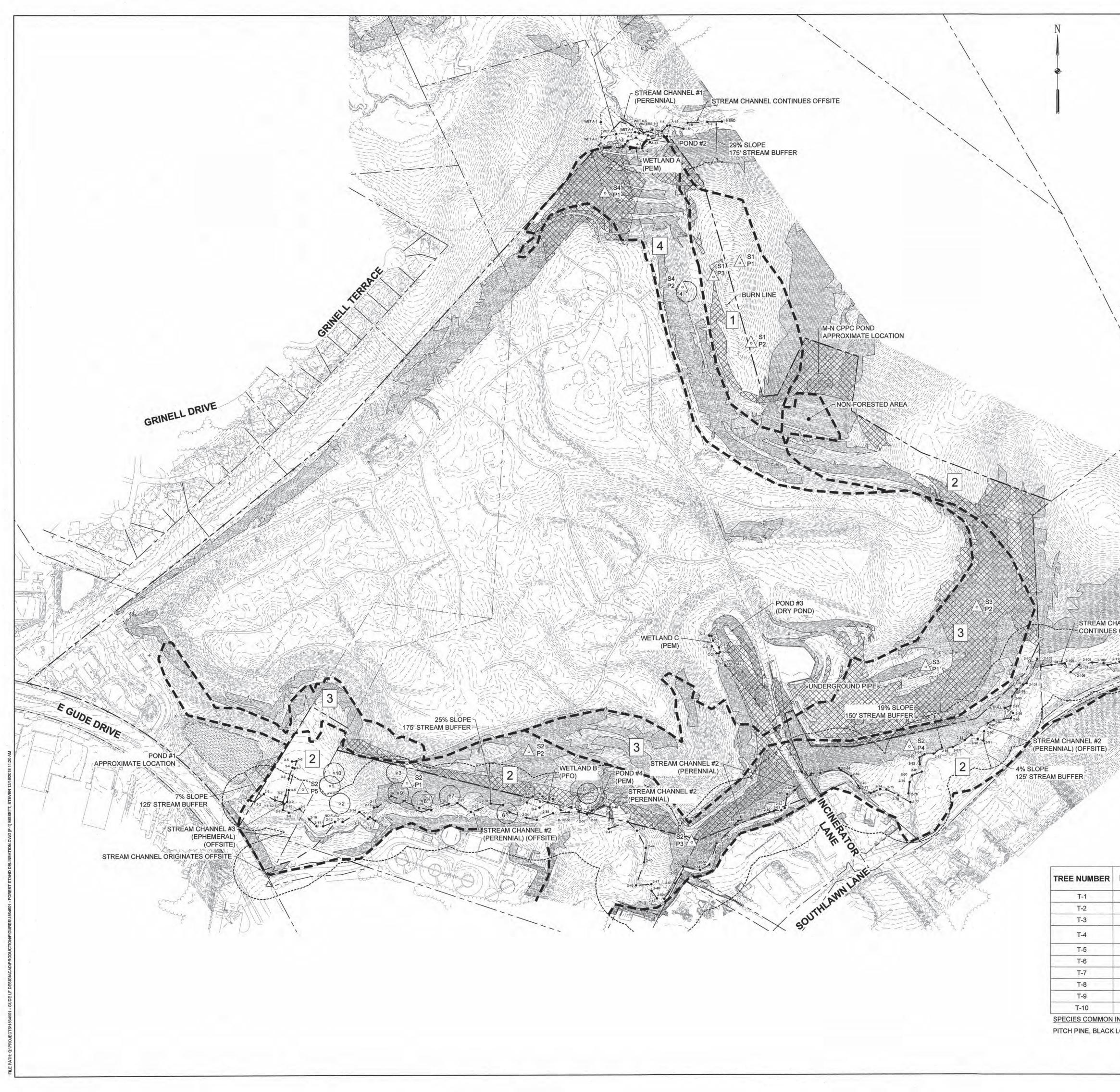






Appendix B

Forest Stand Delineation Plan



NOT	<u> </u>									
1.	PROJECT NAME:	GUDE LANDFILL								
2.	LOCATION:	600 EAST GUDE DRIVE,	ROCKVILLE, MARYLAND							
3.	OWNER:		DEPARTMENT OF ENVIRONMENTAL OF SOLID WASTER SERVICES (DEP/DSWS)	-	NOL					
4.	PLAN PREPARED BY:		NCE, AND TECHNOLOGY, INC., PBC SUITE 400, HUNT VALLEY, MARYLAND		DESCRIPTION					
5.	TOTAL AREA OF REVIE	W: 162.7 ACRES±		IONS						
		FILL - PROPERTY EXCHANGE	ARE BASED ON BASED ON A DRAWING WITH M-NCPPC" PREPARED BY C.C. JOHNSON	REVISIONS						
			R TO NRI/FSD NARRATIVE REPORT.						-	
8.	FOR FLOOD PLAIN INFO	DRMATION REFER TO NRI/FSD	NARRATIVE REPORT.		BY					
9.	ALL STANDS ARE CONS	SIDERED PRIORITY 1 AREAS.			DATE					
		LEGE	ND		NO.				-	
	DESCRIPTION	NDARY AND AREA OF REVIEW	EXISTING PROPOSED	NOI		T				÷
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	DIRT ROAD	TREAM CENTER LINE	NA	-						
	NONTIDAL WETL		[] NA							
	POND STAND (S: STANI	D. P: PLOT)	NA ▲ S# NA P# NA							
	STAND BOUNDAI	RY	NA NA							
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/	WETLAND BUFFE	ER	NA							
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						DESI		JUNTY, MARYLAND		
2-115						DESI		GOMERY COUNTY, MARYLAND		
2-115		THOMAS M. KING MD DNR QUALIFIED F	1-8-19 DATE			REMEDIATION DESIGN		MONTGOMERY COUNTY, MARYLAND		
2-115		MD DNR QUALIFIED F	DATE			DESI		MONTGOMERY COUNTY, MARYLAND		
2-115			DATE			DESI		MONTGOMERY COUNTY, MARYLAND		
2-115		MD DNR QUALIFIED F FOREST STAND 1 2	DATE PROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.)			DESI		MONTGOMERY COUNTY, MARYLAND		
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2-115		MD DNR QUALIFIED F FOREST STAND 1 2	DATE PROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.)			DESI		MONTGOMERY COUNTY, MARYLAND		NATURAL RESOURCE INVENTORY / FOREST STAND DELINEATION PLAN
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Attachment D

Forest Stand Delineation Report and Wetland Delineation Report



Gude Landfill Remediation Project Design Engineer Contract

Natural Resources Inventory/ Forest Stand Delineation Report

Prepared for

Department of Environmental Protection Division of Solid Waste Services Montgomery County, Maryland

Prepared by EA Engineering, Science, and Technology, Inc., PBC 225 Schilling Circle, Suite 400 Hunt Valley, Maryland 21031

> March 2019 Version: FINAL EA Project No. 15646.01

Gude Landfill Remediation Project Design Engineer Contract

Natural Resources Inventory/ Forest Stand Delineation Report

Prepared for

Department of Environmental Protection Division of Solid Waste Services Montgomery County, Maryland

Prepared by EA Engineering, Science, and Technology, Inc., PBC 225 Schilling Circle Hunt Valley, Maryland 21031

> March 2019 Version: FINAL EA Project No. 15646.01

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3/13/2019

Thomas M. King Maryland Department of Natural Resources Qualified Professional Date

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- 4 Stand 3 Summary
- 5 Stand 4 Summary
- 6 Specimen Trees

LIST OF ACRONYMS AND ABBREVIATIONS

the County	Montgomery County Department of Environmental Protection, Division of Solid Waste Services	
dbh	Diameter at breast height	
EA	EA Engineering, Science, and Technology, Inc., PBC	
FEMA FSD	Federal Emergency Management Agency Forest Stand Delineation	
the Landfill	Gude Landfill	
MDNR M-NCPPC	Maryland Department of Natural Resources Maryland-National Capital Park and Planning Commission	
NRCS NRI	National Resources Conservation Service Natural Resources Inventory	
PRA	Priority Retention Area	
USDA USFWS USGS	U.S. Department of Agriculture U.S. Fish and Wildlife Service U.S. Geological Survey	

1. INTRODUCTION

This Natural Resources Inventory (NRI) and Forest Stand Delineation (FSD) Report was prepared for the Engineering, Bid Preparation, and Support Services for the Gude Landfill (the Landfill) Remediation Project for Montgomery County, Maryland (the Remediation Design), under the Northeast Maryland Waste Disposal Authority and the Montgomery County Department of Environmental Protection, Division of Solid Waste Services (the County).

The Landfill Remediation Design is for the recommended Corrective Measure Alternative, Toupee Capping and Additional Landfill Gas Collection, as approved by the Maryland Department of the Environment on July 8, 2016.

1.1 PURPOSE

The purpose of this NRI/FSD Report is to review, identify, and/or delineate natural resources and forest stands located on and within the vicinity of the Landfill (the project site). The Landfill consists of approximately one hundred sixty-two and seven-tenths (162.7) acres, located at 600 East Gude Drive in Rockville, Maryland (**Appendix A, Figure 1**).

As part of the design effort, EA Engineering, Science, and Technology, Inc., PBC (EA) performed an NRI of the site, including a full FSD and a Wetland Delineation. Wetlands delineated at the site are discussed in the *Gude Landfill Remediation Project, Design Engineer Contract, Wetland Delineation Report* (EA 2018). This report provides information on the Forest Stand Delineation conducted at the site. The FSD was conducted in accordance with the guidelines of the *State Forest Conservation Technical Manual* (Maryland Department of Natural Resources [MDNR] 1997) and in accordance with the regulations in the Montgomery County *Trees: Approved Technical Manual* (Maryland-National Capital Park and Planning Commission [M-NCPPC] 1994).

As part of the development of the FSD Report, an NRI/FSD Plan was prepared to the specifications and methodologies outlined in the Montgomery County *Trees: Approved Technical Manual* (M-NCPPC 1994), including delineated stands, wetlands, streams, buffers, steep slopes, and erodible soils. This plan figure is provided as sheet F-1 in **Appendix B**.

2. SITE DESCRIPTION

2.1 SITE LOCATION

At the time of EA's FSD on April 30 and May 1, 2018, the project site consisted of approximately one hundred six-two and seven-tenths (162.7) acres of land predominantly comprised of open grass and vegetative covered fields (**Appendix A, Figure 2**). The border of the project site consisted of undeveloped forested land. Major site features included an extensive landfill gas collection piping system throughout the property, a paved open area in the southeastern portion of the Landfill, a model airplane flying area in the northern portion of the Landfill, and a landfill gas to energy flare station and shelter in the southwest corner of the property.

The site is bordered to the south by industrial operations, to the west/northwest by the community of Derwood Station South, and to the north and east by M-NCPPC property. The surrounding area was mixed use with the Derwood residential community to the northwest, commercial and industrial properties to the south, and predominantly undeveloped wooded areas to the north and east. The approximate latitude/longitude of the property is 39° 06' 29" N and 77° 08' 16" W, respectively. The Landfill is located at 600 East Gude Drive in Rockville, Maryland (**Appendix A**, **Figure 1**). The property is identified as Parcels 151, 230, and 240 on Montgomery County Tax Maps. The area of review for the FSD is provided on **Figure 2** (**Appendix A**).

2.2 TOPOGRAPHY

The site is located in the upland section of the Piedmont Plateau Physiographic Province. The general topography of the site consists of moderate slopes with steeper slopes along the south and east edge of the Landfill property. Elevation of the site ranges from three hundred thirty (330) to four hundred seventy-five (475) feet above mean sea level (**Appendix A, Figure 3**). The underlying geology of the site is metamorphic and igneous rock formations of the Paleozoic and Precambrian Age. These formations consist of phyllite, slate, marble, schist, gneiss, and gabbro formations.

The U.S. Geological Survey (USGS) topographic map for the area (*Rockville Quadrangle*, **Figure 3** in **Appendix A**) was also used as a reference to identify possible wetlands and waterways on the property. Topographic maps identify elevations, forested areas, streams, ponds, roads, and structures. The USGS map identified multiple buildings and roads within the project site and depicted the majority of the site as being non-forested. Three (3) blue-line stream channels were depicted within the vicinity of the project site on the USGS map, including Crabbs Creek, Rock Creek, and an unnamed channel. Crabbs Creek was identified as being located on the northeastern corner of the project site. Crabbs Creek flowed in a southeasterly direction where it contributed to Rock Creek. Rock Creek was depicted to the east of the project site. Rock Creek was not located within the area of review. The third blue-line stream channel (unnamed) was located along the southern property line and conveyed flow in an easterly direction to Rock Creek. The streams discussed above are listed in the Code of Maryland Regulations stream use classification index as Use IV (Recreational Trout Waters), with an in-stream restriction during the period of March 1 through May 31.

The site topography was plateau-like and consisted of gentle relief along the top of the plateau and sharp relief along the entirety of the Landfill boundary. The elevation along the top of the plateau gently sloped to the south, with localized mounds and depressions throughout. The topography around the edges of the waste layer fell sharply from the plateau to elevations ranging from sixty (60) to ninety (90) feet below the plateau.

2.3 SOIL CHARACTERISTICS

The online U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey for Montgomery County was reviewed for the area of review prior to the field visit (**Appendix A, Figure 4**). Ten (10) soil types were identified within the project site (USDA NRCS 2018a). According to the NRCS hydric soils list by state (USDA NRCS 2018b), seven (7) of the soil units within the project site were listed as a hydric soil. In addition, all but two (2) of the soil types within the area of review are considered erodible soils, or soils with a K factor value greater than thirty-five one-hundredths (0.35). Soil types found within the project site are identified in **Table 1**.

		Hydric	Erosion		Prime Agricultural
Soil Mapping Unit	Symbol	Soil	(K factor)	Drainage Class	T This Agricultur
Gaila silt loam, 3 to 8 percent slopes	1B	Yes	0.43	Well drained	Prime Farmland
Glenelg silt loam, 3 to 8 percent slopes	2B	No	0.37	Well drained	Prime Farmland
Elioak silt loam, 3 to 8 percent slopes	4B	No	0.37	Well drained	Prime Farmland
Glenville silt loam, 3 to 8 percent slopes	5B	Yes	0.37	Moderately well drained	Prime Farmland
Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes	16D	Yes	0.37	Well drained	Not Prime Farmland
Occoquan loam, 8 to 15 percent slopes	17C	Yes	0.37	Well drained	Farmland of Statewide Importance
Hatboro silt loam, 0-3% slopes, frequently flooded	54A	Yes		Poorly drained	Not Prime Farmland
Dump, refuse	100	No			Not Prime Farmland
Blocktown channery silt loam, 15-25 percent slopes, very rocky	116D	Yes	0.49	Well drained	Not Prime Farmland
Blocktown channery silt loam, 25-45 percent slopes, very rocky	116E	Yes	0.49	Well drained	Not Prime Farmland
Source: Adapted from U.S. Department of	of Agricultu	re, Natural	Resources Co	nservation Service	1995, 2018a, 2018b.

Table 1Mapped Soil Types

2.4 WETLANDS, WATERS OF THE U.S., AND FLOODPLAINS

Wetlands and Waters of the U.S. at the Landfill were delineated as part of the Natural Resource Inventory, and are provided in the *Wetland Delineation Report* (EA 2018). Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps were consulted prior to the field visit to identify floodplain areas at the site. The Landfill falls within the Flood Insurance Rate Map identified as Map ID 24031C03320D, dated September 29, 2006. A review of the Flood Insurance

Rate Map generated by FEMA's online Map Service Center indicates that portions of the unnamed tributary to Rock Creek, Rock Creek, and Crabbs Creek are located within the one hundred (100)-year floodplain. The remainder of the subject site is identified within an area of minimal flood hazard.

3. METHODOLOGY

A standard FSD was conducted on April 30 and May 1, 2018, in accordance with the guidelines of the *State Forest Conservation Technical Manual* (MDNR 1997) and in accordance with the regulations in the Montgomery County *Trees: Approved Technical Manual* (M-NCPPC 1994).

A one-tenth (1/10) acre fixed plot sampling technique was used to assess forest stand conditions and forest structure. Sampling plots were selected so as to be evenly distributed throughout each stand. A stick flag was placed in the center of each plot and along the perimeter of the circular plot in each of the four (4) cardinal directions. The plot center was marked in the field with orange flagging and the stand and plot number labeled with a black marker. The forest stand and forest structure procedures used for data collection followed guidelines of the *State Forest Conservation Technical Manual* (MDNR 1997). The priorities of the stands were assigned according to the guidelines in the Technical Manual.

The priorities of the stands and sensitive features mapped within each stand are determined according to the guidelines in the *State Forest Conservation Technical Manual* and the *Trees: Approved Technical Manual*. Priority Retention Areas (PRA) are specific vegetated and sensitive environmental areas identified including: steep slopes (greater than twenty-five [25] percent); erodible soils on slopes of fifteen (15) percent or greater; one hundred (100)-year floodplains; intermittent and perennial streams; nontidal wetlands; fifty (50) foot buffers to intermittent/perennial streams and nontidal wetlands (which are expanded by four [4] feet for every one [1] percent of adjacent slope or extend to the top of contiguous steep slopes twenty-five [25] percent or greater); tidal wetlands and their one hundred (100)-foot buffers; and habitats for rare, threatened, and endangered species. PRAs also include contiguous forests that connect the largest undeveloped or most vegetated tracts of land within and adjacent to the site, and trees having a diameter at breast height (dbh) of thirty (30) inches or greater (specimen trees), or that are seventy-five (75) percent or more of the dbh of the current state champion tree of that species.

Within Montgomery County, Priority (Retention) Areas are further described based on whether they are Priority 1 through Priority 4. These areas are defined in the *Trees: Approved Technical Manual* (M-NCPPC 1994) as follows:

- Priority Area 1 (High)—Area contains trees, shrubs, or herbaceous plants associated with intermittent and perennial streams and their buffers; slopes greater than twenty-five (25) percent; nontidal wetlands and their buffers; one hundred (100)-year floodplains; critical habitats of rare, threatened, or endangered species; contiguous forest connected to large undeveloped or most vegetated tracts of land. In addition, Priority Area 1 areas may also have trees that are part of a historic site or associated with a historic structure; designated as a champion tree at the local, state, or national level; have a dbh that is seventy-five (75) percent or more of the dbh of the designated state champion; or specimen trees (trees with a dbh of thirty (30) inches or greater).
- Priority Area 2 (Moderate)—Areas that contain stands or portions of stands with good forest structural diversity; forested areas providing a corridor three hundred (300) feet wide

or more of primarily native vegetation between two (2) larger forested tracts; forested stream buffers up to forest corridor width (three hundred [300] feet); trees which act as buffers between incompatible land uses and between dwellings and roads; and specific trees with a dbh of twenty-four (24) inches or greater on a site that will significantly enhance the site through their preservation.

- Priority Area 3 (Low)—Areas that contain stands or portions of stands with poor forest structural diversity or areas with none of the characteristics mentioned in the descriptions of the other Priority Area characterizations.
- Priority Area 4 (Disturbed)—Areas that have approximately forty (40) percent land cover of exotic or invasive species in the dominant canopy layer.

As noted in Section 2, topographic maps, the Montgomery County soil survey (USDA [NRCS] 2018a), and aerial photographs were reviewed prior to field investigations to identify probable forest stand boundaries. A field investigation of the project area was conducted in April and May 2018 to identify, delineate, and characterize forest stands. Forest stands were distinguished primarily by differences in species composition and successional stage. This report provides the results of this field delineation of forest stands.

4. SYSTEMS IDENTIFIED

Four (4) forest stands were identified within the area of review, predominantly along the perimeter of the Landfill. The cover types were chestnut oak/red oak, oak/hickory/maple, red maple, and green ash/box elder (**Appendix A, Figure 5**). Stand variations resulted from changes in topographic position, degree of slope, and amount and type of historical human disturbance. Forest stand conditions and forest structure were assessed at sample plots within the stand as detailed in the following stand description. Additional information on the stands is provided in the datasheets (**Appendix C**) and a summary of forest conditions within the stand is included in **Appendix D**.

The attached *Forest Stand Delineation Plan* (drawing F-1, provided in **Appendix B**) depicts the approximate location of the sampling plots and boundary of forest cover type. Brief descriptions of the forest stands are included in this section. A photographic record is provided in **Appendix E**.

4.1 FOREST STAND 1

Stand 1 is located on the northeastern side of the project site and is dominated by chestnut oak (*Quercus prinus*) and red oak (*Quercus rubra*) in the dominant size class of six (6) to eleven and nine-tenths (11.9) inches dbh. The average basal area of this stand is one hundred thirteen (113) square feet per acre. Stand 1 has an average canopy closure of sixty-six (66) percent. Other species found in the canopy include black gum (*Nyssa sylvatica*) and mockernut hickory (*Carya tomentosa*). A portion of stand 1 appears to have been recently burned in a leaf-litter fire. As a result, there is little to no vegetation, including herbaceous vegetation in the three (3) to twenty (20) foot understory or the zero (0) to three (3) foot understory. The portion of stand 1 that does not appear to have been recently burned appears to have been previously burned, and also has little to no understory growth. In this area, black cherry (*Prunus serotina*) and striped wintergreen (*Chimaphila maculata*) are present in the understory from zero (0) to three (3) feet, but do not provide appreciable understory coverage.

Environmental features present in stand 1 include steep slopes, and a portion of the stand was recently burned. The stand continues offsite, and adjacent land uses include undeveloped forested land. Stand 1 is within the one hundred (100)-year floodplain of an offsite stream, Crabbe Creek, and has high wildlife value, as it provides cover and food sources for wildlife species. No specimen trees were identified in stand 1.

Stand 1 is rated as a Priority Area 1 due to the presence of steep slopes. Additional summary details of stand 1 are provided in **Table 2**.

	Stand I Summary
Sample Plots	3
Successional Stage	Mid-Successional
Priority Area	1
Cover Type	Chestnut Oak/Red Oak
Size within AOR	3.21 acres

Table 2	Stand 1	Summary

4.2 FOREST STAND 2

Stand 2 is located along the eastern, southern, and southeastern edge of the area of review, and continues offsite. Stand 2 is dominated by mixed oak (Quercus spp.) and mockernut hickory of an average size class of twelve (12) to nineteen and nine-tenths (19.9) inches dbh, with eighty-four (84) percent canopy closure. Stand plots on the slopes tend to be dominated by oak species, while those in the bottomland near streams are more dominated by red maple (Acer rubrum). The average basal area of stand 2 is one hundred eighteen (118) square feet per acre. Oak species found within stand 2 include white oak (Quercus alba), chestnut oak, and northern red oak. Species found in the canopy within the plots include mockernut hickory, black gum, black cherry, tulip poplar (Liriodendron tulipifera), American sycamore (Platanus occidentalis), black haw (Viburnum prunifolium), and mountain laurel (Kalmia latifolia). The understory from three (3) to twenty (20) feet tall averages sixty-eight (68) percent coverage, and includes red maple, mockernut hickory, black gum, chestnut oak, black cherry, northern red oak, mountain laurel, and common privet (Ligustrum vulgare). Common herbaceous and woody species zero (0) to three (3) feet tall consisted of striped wintergreen, partridge berry (Mitchella repens), bush honeysuckle (Lonicera tartarica), Asiatic bittersweet (Celastrus orbiculatus), garlic mustard (Alliaria petiolata), Japanese honeysuckle (Lonicera japonica), American holly (Ilex opaca), Japanese stiltgrass (Microstegium vimineum), common privet, poison ivy (Toxicodendron radicans), and soft rush (Juncus effusus). Coverage of understory herbaceous plants during the forest stand delineation was twenty-four (24) percent. Invasive species observed in the sample plots included Japanese honeysuckle, garlic mustard, Asiatic bittersweet, bush honeysuckle, Japanese stiltgrass, and common privet.

Environmental features within stand 2 include a forested wetland, a stream (an unnamed tributary to Rock Creek), steep slopes, and several specimen trees. The wildlife value of the stand is high due to the presence of cover, food, and water. The stand continues offsite, and adjacent land uses include industrial property and M-NCPPC owned land. EA identified seven (7) specimen trees (white oak, scarlet oak, red oak, silver maple [*Acer saccharinum*], and several tulip poplars) within stand 2 as described in Section 4.5.

The stand is a Priority Area 1 because of the presence of specimen trees, steep slopes, a stream, and wetlands. Additional summary details of stand 2 are provided in **Table 3**.

Sample Plots	5
Successional Stage	Mature
Priority Area	1
Cover Type	Oak/Hickory/Red Maple
Size within AOR	16.10 acres

Table 3Stand 2 Summary

4.3 FOREST STAND 3

Stand 3 is located on the southwest and southeast corners of the project site upslope of stand 2. Stand 3 is dominated by red maple of size class six (6) to eleven and nine-tenths (11.9) inches dbh, with eighty (80) percent canopy closure. Other species in the canopy are red cedar (*Juniperus*

virginiana), black cherry, Virginia pine (*Pinus virginiana*), silver maple, black locust (*Robinia pseudo-acacia*), and black gum. The average basal area in stand 3 is seventy (70) square feet per acre. The understory from three (3) to twenty (20) feet tall averages forty (40) percent coverage, and includes red maple, black gum, red cedar, Asiatic bittersweet, and Japanese barberry (*Berberis thunbergii*). Common herbaceous and woody species zero (0) to three (3) feet tall consist of American holly, Japanese barberry, Chinese silvergrass (*Miscanthus sinensis*), Japanese stiltgrass, poison ivy, Asiatic tearthumb (*Polygonum perfoliatum*), Indian strawberry (*Duchesnea indica*), red maple, red cedar, and common reed (*Phragmites australis*). Cover of herbaceous understory species are present and were observed in the sample plots including Japanese barberry, Japanese stiltgrass, Japanese silvergrass, Asiatic bittersweet, Asiatic tearthumb, and common reed.

Environmental features found within stand 3 include steep slopes and relatively high invasive plant species cover. Adjacent land uses include M-NCPPC owned land. The stand provides moderate wildlife value, due to the presence of cover and food. Stand 3 does not provide water for wildlife. No specimen trees were identified in stand 1.

The stand was rated as a Priority Area 1 due of the presence of steep slopes, but the stand also has a higher percentage of invasive coverage than other stands onsite. Additional summary details of stand 3 are provided in **Table 4**.

Iusie	Stund C Summary
Sample Plots	2
Successional Stage	Mid-Successional
Priority Area	1
Cover Type	Red Maple
Size within AOR	19.12 acres

Table 4Stand 3 Summary

4.4 FOREST STAND 4

Stand 4 is located on the northeast portion of the project site and is dominated by green ash (*Fraxinus pennsylvanica*) and box elder (*Acer negundo*). Other canopy species present are black cherry, black locust, apple (*Malus* spp.), bush honeysuckle, silver maple, red maple, and red cedar. The overstory in stand 4 has an average canopy closure of fifty (50) percent, with dominant trees of size class six (6) to eleven and nine-tenths (11.9) inches dbh. The average basal area in stand 4 is seventy-five (75) square feet per acre. The understory from three (3) to twenty (20) feet tall also averages fifty (50) percent coverage, and includes bush honeysuckle and Japanese barberry. Common herbaceous and woody species zero (0) to three (3) feet tall consist of horse balm (*Collinsonia canadensis*), Japanese stiltgrass, Japanese honeysuckle, Japanese barberry, bush honeysuckle, wineberry (*Rubus phoenicolasius*), poison ivy, and oniongrass (*Allium vineale*) with one hundred (100) percent coverage. Invasive species observed in the sample plots include Japanese stiltgrass, wineberry, bush honeysuckle, and Japanese barberry.

Environmental features within stand 4 include an emergent wetland, a stream (Crabbs Creek), steep slopes, and one (1) specimen tree, as noted in Section 4.5. Stand 4 contains steep slopes and

relatively high invasive cover. Adjacent land uses include M-NCPPC-owned land. The wildlife value of the stand is high due to the presence of cover and food, with water along the boundary.

The stand was rated as Priority Area 1 due to the presence of steep slopes, but the stand also has a higher percentage of invasive coverage than other stands onsite. Additional summary details of stand 4 are provided in **Table 5**.

Table 5.	Stanu 4 Summary
Sample Plots	2
Successional Stage	Early-Successional
Priority Area	1
Cover Type	Red Cedar/Box Elder/Bush
	Honeysuckle
Size within AOR	9.97 acres

Table 5.Stand 4 Summary

4.5 SPECIMEN TREES

As part of the FSD site visit, specimen trees were identified in the project area. Specimen trees are trees that have a dbh greater than thirty (30) inches or have a dbh that is seventy-five (75) percent or more of the state champion tree dbh for that species. Champion trees are also considered specimen trees. Ten (10) specimen trees representing five (5) species were identified in the project area. Several of these specimen trees are within stands in the area of review for the FSD, but are located outside the Landfill property. Specimen trees within the Landfill property line include two (2) silver maples (T-4 and T-5). **Table 6** outlines the species, dbh, and condition of specimen trees identified in the area of review.

Table 0. Specifien Trees						
Tree	Stand	DBH	Common			
Number	Location	(inches)	Name	Scientific Name	Condition	
T-1	2	38.8	White oak	Quercus alba	Good	
T-2	2	32.7	Tulip poplar	Liriodendron tulipifera	Double trunk with included	
1-2	2	52.7	i unp popiai	Entouenaron inipijera	bark	
T-3	2	38.0	White oak	Quercus alba	Good	
T-4	4	59.0	Silver maple	Acer saccharinum	Fair multi-trunk with many	
1-4	4	39.0	Silver maple	Acer succharman	dead limbs	
T-5	2	59.3	Silver maple	Acer saccharinum	Fair multi-trunk in pond	
T-6	2	35.1	Tulip poplar	Liriodendron tulipifera	Good, double trunk	
T-7	2	33.2	Tulip poplar	Liriodendron tulipifera	Good	
T-8	2	31.5	Tulip poplar	Liriodendron tulipifera	Good	
T-9	2	35.2	Scarlet oak	Quercus coccinea	Fair with many dead limbs	
T-10	2	34.3	Red oak	Quercus rubra	Good	

Table 6.Specimen Trees

5. AGENCY REVIEW STATEMENTS

In addition to the FSD, EA completed written inquiries to USFWS and MDNR in 2009 as part of an original field delineation effort. These written inquiries were regarding whether the agencies are aware of any records of rare, threatened, or endangered species present within the project boundary. EA also completed a written inquiry to the Office of Preservation and Compliance, Maryland Historical Trust to determine whether there are known occurrences of historical, cultural, and/or archaeological sites/features present at the site. EA has received responses associated with these inquiries and they are included in **Appendix F** of this report.

USFWS and MDNR have determined that no state or federal records exist for rare, threatened, or endangered species within the project area that could be impacted by the project. Furthermore, the Maryland Historical Trust has determined that there are no records regarding the presence of cultural, archaeological, or historic resources within the project area that may be affected by remedial activities.

6. CONCLUSION

Four (4) forest stands were delineated and assessed within the area of review within and bordering the Landfill site. The cover types were chestnut oak/red oak, oak/hickory/maple, red maple, and green ash/box elder. Ten (10) specimen trees (white oak [two (2)], scarlet oak [one (1)], red oak [one (1)], tulip poplar [four (4), and silver maple [two (2)]) were located within the area of review, specifically within Forest Stands 2 and 4. Two (2) of these ten (10) trees (T-4 and T-5) are located on the Landfill property. The site contains wetlands, streams, and steep slopes. Invasive plant species were present in each of the delineated stands except for Stand 1, which was recently burned and had little to no understory cover. Invasive species occurred at higher percent coverage in disturbed or regrowth stands (Forest Stands 3 and 4) located on the Landfill. Due to the presence of steep slopes within the project area, all stands were ranked as Priority 1 PRAs. As stated previously, Priority 1 PRAs "contain slopes greater than twenty-five (25) percent" (M-NCPPC 1994).

This FSD Report and Plan should be submitted to the M-NCPPC for approval. Once the FSD Report and Plan has been approved by M-NCPPC, the proposed site design plan will be used to create a Forest Conservation Plan or exemption in an effort to determine impacts to forest resources within the proposed limit of disturbance. The Forest Conservation Plan will then be submitted to M-NCPPC for agreement and approval.

EA Engineering, Science, and Technology, Inc., PBC

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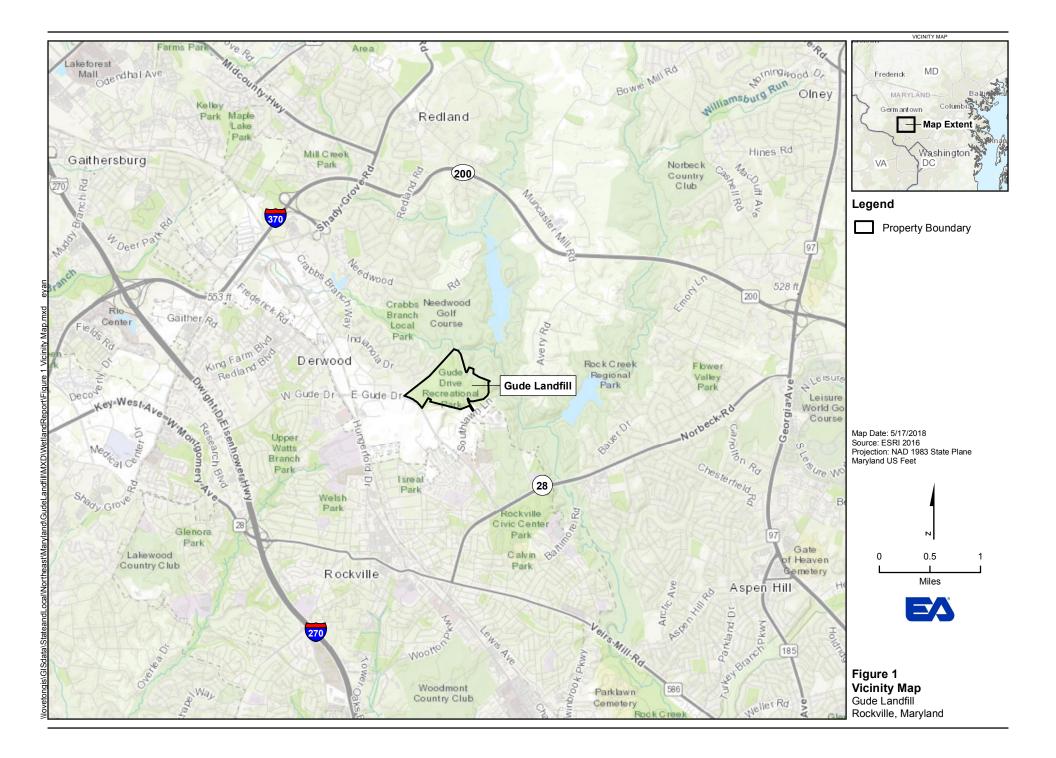
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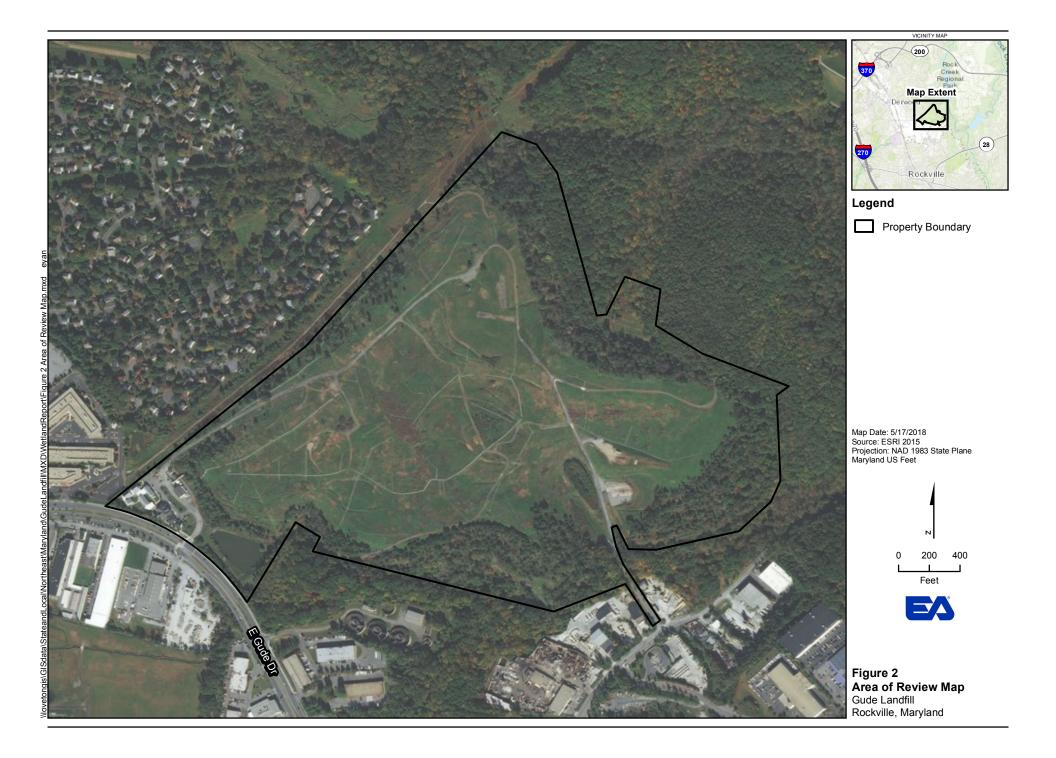
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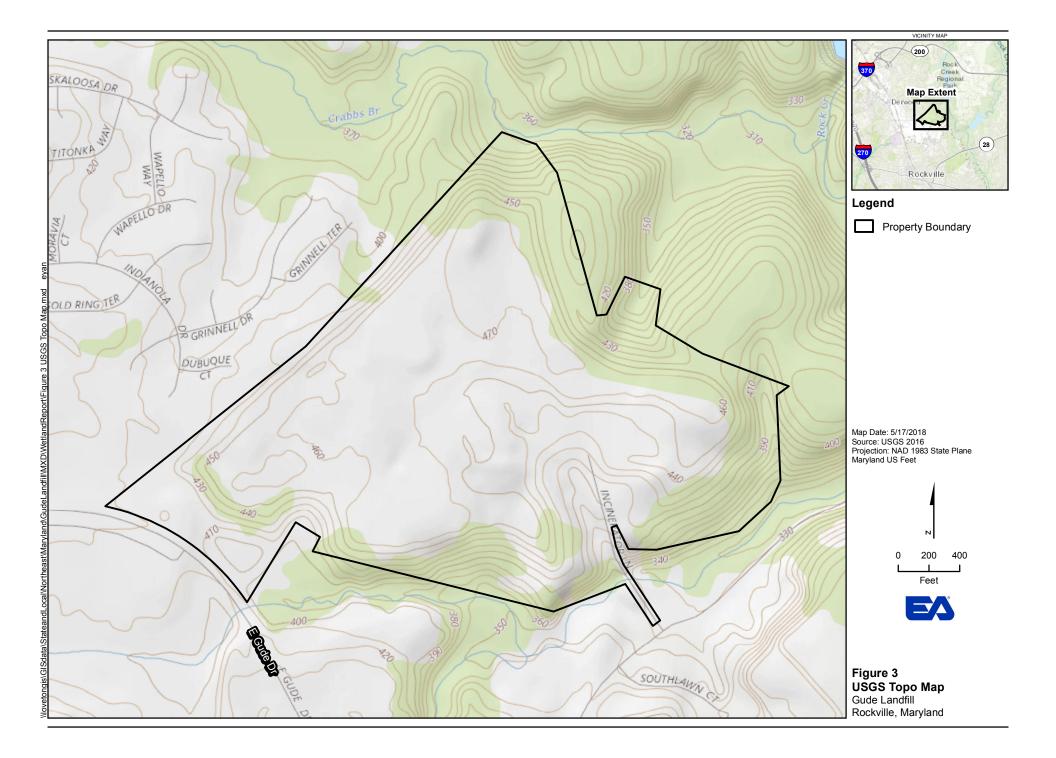
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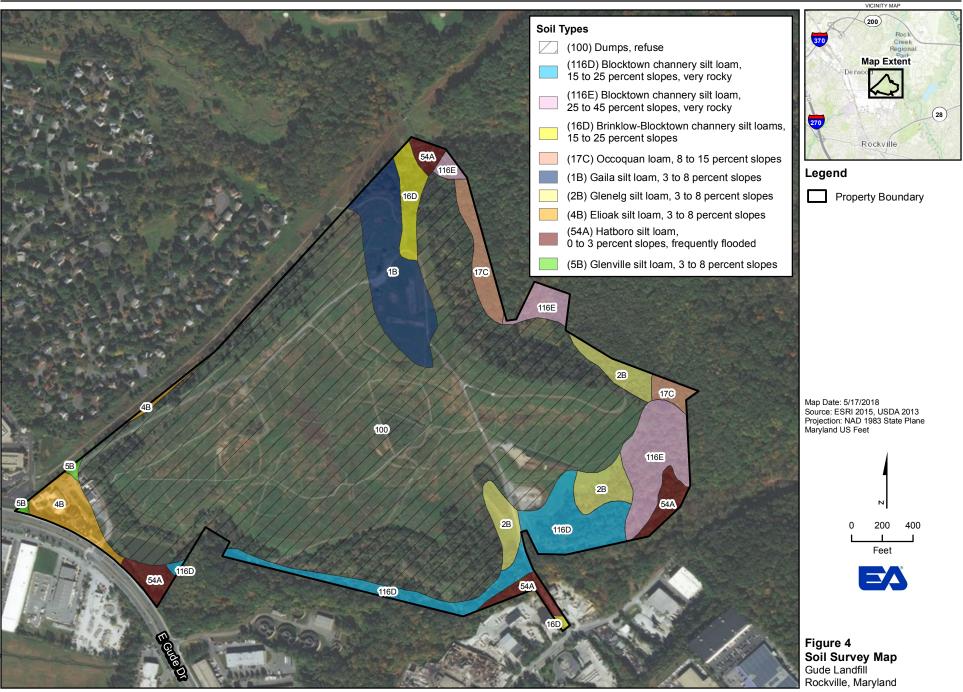
Appendix A

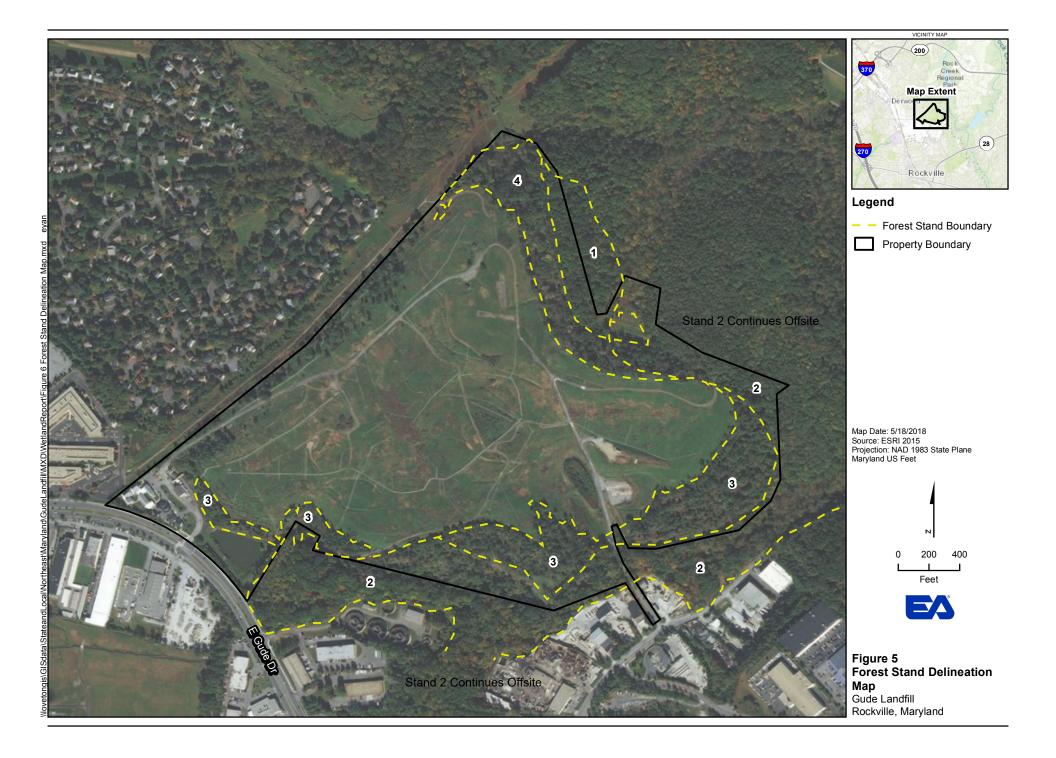
Figures











Appendix B

Forest Stand Delineation Plan

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	PROJECT NAME:	GUDE LANDFILL							
2.	LOCATION:	600 EAST GUDE DRIVE, F	ROCKVILLE, MARYLAND						
3.	OWNER:	MONTGOMERY COUNTY	DEPARTMENT OF ENVIRONMENTAL						
			OF SOLID WASTER SERVICES (DEP/DSWS)		PTION				
4.	PLAN PREPARED BY:		NCE, AND TECHNOLOGY, INC., PBC SUITE 400, HUNT VALLEY, MARYLAND		DESCRIPTION				
	TOTAL AREA OF REVIE			REVISIONS					
		FILL - PROPERTY EXCHANGE W	ARE BASED ON BASED ON A DRAWING VITH M-NCPPC" PREPARED BY C.C. JOHNSON	REV					
7.	FOR SOIL CLASSIFICAT	TIONS AND INFORMATION REFE	R TO NRI/FSD NARRATIVE REPORT.						
8. I	FOR FLOOD PLAIN INF	ORMATION REFER TO NRI/FSD N	NARRATIVE REPORT.		BY				
9.	ALL STANDS ARE CON	SIDERED PRIORITY 1 AREAS.			DATE				
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	DESCRIPTION PROPERTY BOU	NDARY AND AREA OF REVIEW	EXISTING PROPOSED	ATION					
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	TREE LINE		NA	DESIGN IN	DESIGNE	T DRAWN B	S	CHECKED	
	FENCE LINE DIRT ROAD		<u> </u>	DES	ŭ	- NA		통	[
			NA						
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	STAND (S: STAN STAND BOUNDA		▲ S# NA ₽# NA						
	SPECIMEN TREE								
	STREAM BUFFE		NA NA						
		15%> IN HIGHLY ERODIBLE SOIL	장님, 그렇는 한 동안 것을 알고 있는 것을 알고 있는 것을 가지 않는 것이 없다. 것을 가지 않는 것을 했다.						
N	STEEP SLOPES	25%>	NA						
1				SEAL					
				S	I				
			방법 가슴을 알려야 하는 것이라는 것이 가지 않는 것이다. 같은 것 것 같은 것은 것은 것이다. 같은 것이 가지 않는 것이다. 그 것은 방법은 것 같은 것이다. 이가 같은 것이 같은 것이 같은 것이다.						
i			양성은 가장 가장 방법을 가 가장하는 것이다. 가장						N V
1			가 같은 것 같은 것이 같은 것은 것이 있는 것이 있는 것이 같은 것이 있다. 같은 것은 것은 것이 있는 것을 것이 같은 것이 있는 것이 같은 것이 같은 것이 같은 것이 없다.						ā
						SN			
						SIGN		LAND	
2-115						DESIGN		ARYLAND	
ΓΕ 2-115					IDFILL	N DESIGN		Y, MARYLAND	
ΓΕ 2-115					ANDFILL			JUNTY, MARYLAND	
TE 2-115						LION		RY COUNTY, MARYLAND	
TE 2-115						LION		DMERY COUNTY, MARYLAND	
TE 2-115						LION		VTGOMERY COUNTY, MARYLAND	
TE 2-115					GUDE LANDFILL	LION		MONTGOMERY COUNTY, MARYLAND	
TE 2-115		IMM M	<u>1-8-19</u>					MONTGOMERY COUNTY, MARYLAND	
		Imm m THOMAS M. KING MD DNR QUALIFIED P	DATE			LION		MONTGOMERY COUNTY, MARYLAND	
		THOMAS M. KING MD DNR QUALIFIED P	DATE			LION		MONTGOMERY COUNTY, MARYLAND	
		THOMAS M. KING	DATE DATE SIZE WITHIN AREA OF REVIEW			LION		MONTGOMERY COUNTY, MARYLAND	
2-115		THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1	DATE DATE SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.)			LION		MONTGOMERY COUNTY, MARYLAND	
TE 2-115		THOMAS M. KING MD DNR QUALIFIED P	DATE DATE SIZE WITHIN AREA OF REVIEW			LION		MONTGOMERY COUNTY, MARYLAND	
ΓΕ 2-115		THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2	DATE DATE SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.)			LION		MONTGOMERY COUNTY, MARYLAND	
2-115		THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3	DATE DATE SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.)			LION		MONTGOMERY COUNTY, MARYLAND	
2-115		THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3	DATE DATE SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.)			LION		MONTGOMERY COUNTY, MARYLAND	
TE 2115 22115 (IN.)		THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3 4	DATE PROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.) 434,280 SQ. FT. (9.97 AC.)			LION		MONTGOMERY COUNTY, MARYLAND	
TE 2115 22173 (IN.) 8		THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3 4	DATE PROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.) 434,280 SQ. FT. (9.97 AC.) CONDITION			LION		MONTGOMERY COUNTY, MARYLAND	
TE 2-115 3 2-113 (IN.) .8 .7	WHITE OAK	THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3 4 SCIENTIFIC NAME QUERCUS ALBA	DATE PROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.) 434,280 SQ. FT. (9.97 AC.) CONDITION GOOD DOUBLE TRUNK WITH INCLUDED BARK GOOD			REMEDIATION			
TE 2-115 2-113 (IN.) 8 7 0	WHITE OAK TULIP POPLAR	THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3 4 SCIENTIFIC NAME QUERCUS ALBA LIRIODENDRON TULIPIFERA	DATE PROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.) 434,280 SQ. FT. (9.97 AC.) CONDITION GOOD DOUBLE TRUNK WITH INCLUDED BARK			REMEDIATION			
TE 2-115 2-113 (IN.) .8 .7 .0 .0	WHITE OAK TULIP POPLAR WHITE OAK	THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3 4 SCIENTIFIC NAME QUERCUS ALBA LIRIODENDRON TULIPIFERA QUERCUS ALBA	DATE ROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.) 434,280 SQ. FT. (9.97 AC.) CONDITION GOOD DOUBLE TRUNK WITH INCLUDED BARK GOOD FAIR MULTI-TRUNK WITH MANY DEAD LIMBS FAIR MULTI-TRUNK IN POND			REMEDIATION			
TE 2-115 3 2-113 (IN.) .8 .7 .0 .0 .0 .3 .1	WHITE OAK TULIP POPLAR WHITE OAK SILVER MAPLE SILVER MAPLE TULIP POPLAR	THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3 4 SCIENTIFIC NAME QUERCUS ALBA LIRIODENDRON TULIPIFERA QUERCUS ALBA ACER SACCHARINUM ACER SACCHARINUM LIRODENDRON TULIPIFERA	DATE ROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.) 434,280 SQ. FT. (9.97 AC.) 434,280 SQ. FT. (9.97 AC.) CONDITION GOOD DOUBLE TRUNK WITH INCLUDED BARK GOOD FAIR MULTI-TRUNK WITH MANY DEAD LIMBS FAIR MULTI-TRUNK IN POND GOOD, DOUBLE TRUNK		GUDE L EV	REMEDIATION			
³ 22113 (IN.) .8 .7 .0 .0 .3 .1 .2	WHITE OAK TULIP POPLAR WHITE OAK SILVER MAPLE SILVER MAPLE TULIP POPLAR TULIP POPLAR	THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3 4 SCIENTIFIC NAME QUERCUS ALBA LIRIODENDRON TULIPIFERA QUERCUS ALBA ACER SACCHARINUM ACER SACCHARINUM LIRODENDRON TULIPIFERA LIRODENDRON TULIPIFERA LIRODENDRON TULIPIFERA	DATE ROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.) 434,280 SQ. FT. (9.97 AC.) 434,280 SQ. FT. (9.97 AC.) CONDITION GOOD DOUBLE TRUNK WITH INCLUDED BARK GOOD FAIR MULTI-TRUNK WITH MANY DEAD LIMBS FAIR MULTI-TRUNK IN POND GOOD, DOUBLE TRUNK GOOD		GUDE L EV	KEMEDIATION Engin Tech	heerin	ng,	R Scier Inc.,
TE 2-115 3 2-113 	WHITE OAK TULIP POPLAR WHITE OAK SILVER MAPLE SILVER MAPLE TULIP POPLAR TULIP POPLAR TULIP POPLAR	THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3 4 SCIENTIFIC NAME QUERCUS ALBA LIRIODENDRON TULIPIFERA QUERCUS ALBA ACER SACCHARINUM ACER SACCHARINUM LIRODENDRON TULIPIFERA	DATE ROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.) 434,280 SQ. FT. (9.97 AC.) CONDITION GOOD DOUBLE TRUNK WITH INCLUDED BARK GOOD FAIR MULTI-TRUNK WITH MANY DEAD LIMBS FAIR MULTI-TRUNK IN POND GOOD GOOD GOOD		L H H H H H H H H H H H H H H H H H H H	KEMEDIATION Engir Tech ^{Hun} 25 Schill		ng, gy, yy Ce	R Scient Scient Suite 4
TE 2-115 2-113 (IN.) .8 .7 .0 .0 .0 .3 .1 .2 .5	WHITE OAK TULIP POPLAR WHITE OAK SILVER MAPLE SILVER MAPLE TULIP POPLAR TULIP POPLAR	THOMAS M. KING MD DNR QUALIFIED P FOREST STAND 1 2 3 4 SCIENTIFIC NAME QUERCUS ALBA LIRIODENDRON TULIPIFERA QUERCUS ALBA ACER SACCHARINUM ACER SACCHARINUM LIRODENDRON TULIPIFERA LIRODENDRON TULIPIFERA LIRODENDRON TULIPIFERA LIRODENDRON TULIPIFERA LIRODENDRON TULIPIFERA	DATE ROFESSIONAL SIZE WITHIN AREA OF REVIEW 139,666 SQ. FT. (3.21 AC.) 701,383 SQ. FT. (16.10 AC.) 832,963 SQ. FT. (19.12 AC.) 434,280 SQ. FT. (9.97 AC.) 434,280 SQ. FT. (9.97 AC.) CONDITION GOOD DOUBLE TRUNK WITH INCLUDED BARK GOOD FAIR MULTI-TRUNK WITH MANY DEAD LIMBS FAIR MULTI-TRUNK IN POND GOOD, DOUBLE TRUNK GOOD		L H H H H H H H H H H H H H H H H H H H	KEMEDIATION Engir Tech 25 Schill funt Val		ng, gy, y Ce rcle, arylar	R Scien Inter Scien Inter

Appendix C

Field Sampling Datasheets

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Pr	operty: Gude Landf	ill								Prepa	ared E	By: то	om Kir	ıg			
	oject #: 15646.01									Stand	d #: 1			Plot #	#: 1		
	orest Cover Type: Cl			d Oak						Date:	: 5/1/1	8					
PI	ot Size: 1/10 Acre (37	'.5' rad	dius)														
	Basal Area in Square															_	
	Feet per Acre: 120	N									<u>GHT V</u>			MPLE	PLO		
			Imber		-	Imber	-	-	Imber	-	-	mbei	-				
		Tre	es 2-	5.9"	Tre	es 6-1	1.9"	Tree	s 12-1	19.9"	Tree		29.9"	-	Imper	-	
	TREE SPECIES	_	dbh		_	dbh		_	dbh		_	dbh				" dbh	
1	Crown Position	Dom	CoD	Other	Dom	CoD	Other		CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
2	Chestnut oak			5		3		4			3						15
2	Mockernut hickory			2			3			1							6
4	Black gum			3			2										5
4	Red oak			4			4										8
э С																	0
6	7 0 0																
7																	
8																	
																0	
	Total Number of Trees per Size Class		14			12			5			3			0		34
	Number & Size of		14			12			5			5			0		54
	Standing Dead Trees		2			0			0			0			0		2
	st of Woody Plant Sp	ecies	3'-20'	:				Ca	nopy	Closu	ire:		Percei	nt of Inv	vasive	Plot Su	uccessional
no	ne						С	Ν	E	S	W	%	Cover	per Plo	ot	Stage:	
							Yes	Yes	Yes	Yes	No	80	(All La	yers): 0%		Ma	ture/Burn
l i	st of Understory Spe	cies 0	'-3'				1	Inder	story	Cover	r 3'-20	•.	l ist d		or Inv		Species
no			•••				C	N	E	S	W	•		lot (A			opooloo
							No	No	No	No	No	0				one	
P	are, etc. Species?	No					l Harba		s & \//	oodv		r 0'-2'	ЦАРІТ	AT- \A/F	at eno	cies pre	sont?
	becimen Trees?	No					C	N	E	S	W	%	White-		-	-	South:
Hi	storic Sites?	No					No	No	No	No	No	0					guration:
	sease?	No											ł	-			
	sects/Infestation?	No							_		Debris		Upslop		-		
	totic Plants?	No					С	N	E	S	W	%			r/food/	water?	
	eaf litter?	No - k					No	No	No	No	No	0	Food/c			• •	notok
	wned woody debris:	No - k										ft f		corrido	or/patc	n'?	patch
	NCTION: Where is stand i									pe ov	er 200	it tro	m stre	am			
	stand a buffer to surface r		-						Yes	No							
	af litter/soil eroding or inc					stand s		e?		No							
_	trient uptake/loss affected	-					No		0.0000			<u></u>	of 1:44				
	omments: Recent B	um Al	ea, n	o una	ei Stol	y or r	ier Da(Jeous	spec	185. F	ire wa	5 d 16	ai-1111	er Dur	11.		

Property: Gude Landf	ill											om Kir	-			
Project #: 15646.01										d #: 1			Plot #	#: 2		
Forest Cover Type: Cl			d Oak						Date:	: 5/1/′	18					
Plot Size: 1/10 Acre (37	.5' rac	dius)														
Basal Area in Square Feet per Acre: 110				SIZE	CLAS	SS OF	TREE	ES >2(0' HEI	-		-	MPLE	PLOT	Г	
	Nu	ımber	' of	Νι	ımber	of	Nu	ımber	of	Νι	ımbeı	' of				
	Tre	es 2-	5.9"	Tree	es 6-1	1.9"	Tree	s 12-'	19.9"	Tree	s 20-2	29.9"	Nu	mber	r of	
TREE SPECIES		dbh			dbh			dbh			dbh		Tree	s >30	" dbh	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
¹ Chestnut oak			3		4			2			2					11
² Red oak			5		1			1								7
³ Mockernut hickory						1										1
4																0
5																0
6																0
7 0 0 8 0 0																
															0	
9																0
Total Number of Trees per Size Class		8			6			3			2			0		19
Number & Size of																
Standing Dead Trees		1			2											3
List of Woody Plant Sp	ecies	3'-20'	:						Closu						Plot Si	uccessional
none						С	Ν	E	S	W	%		per Plo	ot	Stage:	
						Yes	Yes	Yes	Yes	No	80	(All La	yers): 0%		Ма	ture/Burn
List of Understory Spe	cies O	'-3':				ι	Inders	story	Cover	· 3'-20		List o	of Maj	or Inv	asive	Species
none						С	Ν	E	S	W	%	per P	lot (A	ll Lay	ers):	•
						No	No	No	No	No	0			N	one	
Rare, etc. Species?	No					Horba		s & W	loody		r 0'_3'	царіт	AT. \A/L	ot one	cies pre	
Specimen Trees?	No					C	N	E	S	W	%		tailed d	-	-	Sent
Historic Sites?	No					No	No	No	No	No	0					iguration:
Disease?	No										-					
Insects/Infestation?	No						Downe				5:		e of flo			
Exotic Plants?	No					С	Ν	Е	S	W	%	1	e cove	r/food/	water?	
Leaf litter?	No - k					No	No	No	No	No	0	Food/c				
Downed woody debris:	No - k												corrido	or/patc	h?	patch
FUNCTION: Where is stand i						e?			pe ov	er 200) ft fro	m stre	am			
Is stand a buffer to surface r		-						Yes								
Leaf litter/soil eroding or inc	_	_			stand s		e?		No							
Nutrient uptake/loss affected						No				•		- (1144				
Comments: Recent B	urn Ar	ea, n	o und	erstoi	y or f	ierba	ceous	spec	ies. F	ire wa	is a le	ar-litte	er bur	n.		

Property: Gude Landf	ill								Prepa	ared E	By: To	om Kir	ng			
Project #: 15646.01									Stand	d #: 1			Plot #	#: 3		
Forest Cover Type: C	hestn	ut/Re	d Oak						Date:	: 5/1/1	8					
Plot Size: 1/10 Acre (37	'.5' rad	dius)														
Basal Area in Square															_	
Feet per Acre: 110				-					-	GHT V		-	MPLE	PLOT		
		Imber		-	umber	-	-	Imber	-	-	Imbei	-				
	Tre	es 2-	5.9"	Tre	es 6-1	1.9"	Tree	s 12-1	19.9"	Tree		29.9"	-	Imber	-	
TREE SPECIES		dbh			dbh			dbh			dbh	1			" dbh	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
¹ Chestnut oak			3		4			2			3					12
² Red oak			2		2			1								5
³ Mockernut hickory			5			3			1							9
4																0
5																0
6	7 0															
9 0 0															0	
Total Number of Trees per Size Class		10			9			4			3			0		26
Number & Size of					•			-			-			•		
Standing Dead Trees		3			0			0			0			0		3
List of Woody Plant Sp	ecies	3'-20'	:				Ca	nopy	Closu	ire:		Perce	nt of In	vasive	Plot Su	uccessional
none						С	Ν	Ε	S	W	%	Cover	per Plo	ot	Stage:	
						Yes	No	No	No	Yes	40	(All La	i yers): 0%			Mature
List of Understory Spe	cies O	'-3':				ι	Inders	storv	Cover	r 3'-20	:	List o	of Mai	or Inv	asive	Species
Black cherry, striped winter						С	Ν	Ē	S	W	%		, Plot (A			•
	-					No	No	No	No	No	0	1	·	•	one	
Rare, etc. Species?	No					Horba		e & W	oodv		r 0'_3'	ПУВІТ	·AT. \\//	at eno	cies pre	sont?
Specimen Trees?	No					C	N	E	S	W	%		tailed d	-	•	Sent:
Historic Sites?	No					No	No	No	No	No	0					guration:
Disease?	No									Ļ						
Insects/Infestation?	No									Debris			be of flo			
Exotic Plants?	No					С	Ν	Е	S	W	%		fe cove	r/food/	water?	
Leaf litter?	Mediu					No	No	Yes	Yes	Yes	60	Food/c				natah
Downed woody debris:	No - I		a) ft fra		corrido	pr/patcl	n?	patch
FUNCTION: Where is stand i									ihe on	er 200	πιπο	in stre	am			
Is stand a buffer to surface r		-					• 2	Yes	No							
Leaf litter/soil eroding or inc		-			stand S	tructur No	81		INU							
Nutrient uptake/loss affected Comments: No under	-				00110	-	Mar	have	heer	an al	deer	trolla	dhur			
Comments. No under	3101 Y	VVILII I			cous	COVE	. way	nave	ושכנו							

Property: Gude Land	ill								Prep	ared E	Зу: То	om Kir	ıg			
Project #: 15646.01										d #: 2			Plot #	<i>‡</i> : 1		
Forest Cover Type: O			Maple	;					Date	: 5/1/1	18					
Plot Size: 1/10 Acre (37	'.5' rad	dius)														
Basal Area in Square Feet per Acre: 120				SIZE	CLAS	SS OF	TREE	ES >2(0' HEI	GHT V	итні	N SAN	MPLE	PLOT	-	
	Nu	ımber	of	Νι	ımber	r of	Nu	ımber	' of	Nu	ımber	of				
	Tre	es 2-	5.9"	Tre	es 6-1	1.9"	Tree	s 12-′	19.9"	Tree	s 20-2	29.9"	Nu	mber	of	
TREE SPECIES		dbh			dbh			dbh			dbh		Tree	s >30'	" dbh	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
¹ Chestnut oak								2			1					3
² White oak			1		2			2								5
³ Black gum			8			4										12
⁴ Red maple			3													3
⁵ Mockernut hickory			2			1			1							4
6																0
7																0
8																0
9																0
Total Number of Trees		4.4			7			~			4			0		07
per Size Class Number & Size of		14			7			5			1			0		27
Standing Dead Trees		0			2			0			0			0		2
List of Woody Plant Sp	ecies	3'-20	:				Ca	nopy	Closu	ire:		Percei	nt of Inv	asive	Plot Su	uccessional
black gum, mockernut hick	ory, re	d mapl	е			С	Ν	E	S	W	%	Cover	per Plo	ot	Stage:	
						Yes	No	Yes	Yes	Yes	80	(All La	yers): 0%			Mature
List of Understory Spe	cies O	'-3'-				l 1	Inder	story	Cove	r 3'-20	·.	l ist d		or Inv		Species
partridge berry, striped win						c	N	E	S	W	. %		lot (A			opeelee
,	J					Yes	Yes	No	Yes	Yes	80			,	,.	
Dara ata Spanias?	No					Horbo		<u> </u>	loody	Cove	- 01 21		AT 14/1	- 4		
Rare, etc. Species? Specimen Trees?	No	ear pl	ot				N	E	S	W				•		
Historic Sites?	No	ear pi	01				IN	–			%					shoulder hawk
Disease?	No					No	Yes	No	No	No	20					-
Insects/Infestation?	No						Downe	ed Wo	body [Debris	;:	off-site		nooupi	ann ann	contiguous to
Exotic Plants?	No					С	Ν	Ε	S	W	%		e cove	/food/	water?	
Leaf litter?	mode	rate				Vaa	Vaa	Vaa	Vaa	Vaa	400	cover/\	water/fo	od		
Downed woody debris:	heavy	/				Yes	Yes	Yes	Yes	Yes	100	Stand	corrido	or/patcl	h?	patch
FUNCTION: Where is stand	in relati	on to s	ensitiv	e areas	s on sit	e?		on ste	eep sl	opes a	above	floodp	lain a	nd stre	eam	
Is stand a buffer to surface r	unoff o	r grou	ndwate	r flow?	How?			yes								
Leaf litter/soil eroding or inc					stand s	tructur	e?		increa	asing						
	Nutrient uptake/loss affected by stand structure?															
Comments: Mature o		-	stand	with	much	dowr	ned w	oody	debri	s and	very	spars	e grou	Indco	ver. T	here are
several large dead oak	s in st	and.														

Property: Gude Landf	ill								Prepa	ared E	By: To	om Kir	ng			
Project #: 15646.01									Stan	d #: 2			Plot #	#: 2		
Forest Cover Type: Oa			Maple	;					Date:	: 5/1/1	8					
Plot Size: 1/10 Acre (37	.5' rac	dius)														
Basal Area in Square															_	
Feet per Acre: 110										GHT V			MPLE	PL01	[
		Imber		-	Imber	-	-	Imber	-	-	Imbei	-				
	Tre	es 2-	5.9"	Tre	es 6-1	1.9"	Tree	s 12-′	19.9"	Tree	s 20-2	29.9"	-	ımber	-	
TREE SPECIES		dbh			dbh			dbh			dbh				" dbh	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
¹ Chestnut oak					1			1			2					4
² White oak			1		2			1								4
³ Black gum			4													4
⁴ Black cherry			2													2
⁵ Tulip poplar						3										3
⁶ Mockernut hickory			3			1										4
⁷ Red maple			2			1										3
8																0
9																0
Total Number of Trees								•						•		
per Size Class		12			8			2			2			0		24
Number & Size of Standing Dead Trees		0			1			2			0			0		3
List of Woody Plant Sp	acias	-	•				Ca		Closu	Iro.	0	Porco	nt of Inv	v	Plot S	iccessional
Chestnut oak, mockernut h				north	ern	С	N	E		W	%		per Plo		Stage:	
red oak, red maple	lonory,	bluok	onony	, norar	0111				-			(All La	-	<i>n</i>	Stage.	
						Yes	No	Yes		Yes	80		5%			Mature
List of Understory Spec								story	1	r 3'-20	': 		-			Species
Garlic mustard, Japanese h	noneys	uckle				С	Ν	Е	S	W	%	per F	Plot (A	ll Lay	ers):	
						Yes	Yes	Yes	Yes	No	80	Garl	lic must	ard, Ja	panese	honeysuckle
Rare, etc. Species?	No					Herba	ceou	s & W	loody	Cove	r 0'-3'	HABIT	AT: W	nat spe	cies pre	esent?
Specimen Trees?	No					С	Ν	Е	S	W	%		tailed d	-	•	
Historic Sites?	No					No	No	No	Yes	No	20					guration:
Disease?	No) a h ri a				floodpl	ain and	contiguous to
Insects/Infestation?	No					C		E		Debris W			e forest			
Exotic Plants? Leaf litter?	No	roto					Ν		S	vv	%		fe cove		water?	
	mode					Yes	Yes	No	No	Yes	60		water/fo		h 0	notob
Downed woody debris:	mode		onciti	0.0105	on oli			on ct		opes a	hove		corrido	<u> </u>		patch
FUNCTION: Where is stand in						5			eeh si	opes s	nove	ποσαμ	naili d	าน รถ	call	
Is stand a buffer to surface re Leaf litter/soil eroding or inc		-				fr. 104	~?	yes	increa	acina						
Nutrient uptake/loss affected					siana s	uctur	51		nciea	asiriy						
Comments: Mature of					much	dowr	ned w	oody	debri	s and	very	spars	e grou	Indco	over.	

Р	roperty: Gude Landf	ill								Prepa	ared E	By: To	om Kir				
-	roject #: 15646.01									Stan	d #: 2			Plot #	#: 3		
	orest Cover Type: O			Maple	;					Date:	: 5/1/1	8					
Ρ	lot Size: 1/10 Acre (37	'.5' rad	dius)														
	Basal Area in Square															_	
	Feet per Acre: 130										GHT V			MPLE	PL01		
			Imper		-	umber	-	-	umber	-	-	Imbei	-				
		Tre	es 2-	5.9"	Tre	es 6-1	1.9"	Tree	es 12-′	19.9"	Tree		29.9"	-	Imber	-	
	TREE SPECIES		dbh			dbh			dbh			dbh				" dbh	
	Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
1	Chestnut oak			2			1		2								5
2	Tulip poplar			2			1		3								6
3	Black gum			4													4
4 F	Mountain laurel						1										1
о С	Red maple			6			3										9
6	White oak			2						2							4
/ 6	7 8 9																
9																0	
	Total Number of Trees		40			0			7			0			0		20
	per Size Class Number & Size of		16			6			7			0			0		29
	Standing Dead Trees		0			1			0			0			0		1
L	ist of Woody Plant Sp	ecies	-	':		•		Са	-	Closu	ire:		Percei	nt of Inv	•	Plot S	uccessional
	ack gum, red maple						С	N	E	S	W	%	Cover			Stage:	
							Yes	Yes	Yes	Yes	Yes	100	(All La	•		_	Mature
	ist of Understory Spe	cios 0	1.21.				<u> </u>	Indor	story		r 3'-20	·.	Licto		orlow		Species
	ush honeysuckle		-3.				c	N	E	S	3-20 W	•		lot (A			Species
	ush honeysückle						Yes	Yes	No	No	Yes	-7 6	per r	•	-	neysuck	le
6		N.							- 0 \4		0						
_	are, etc. Species?	No					1								-	cies pre	esent?
_	pecimen Trees? istoric Sites?	No No					C No	N No	E No	S No	W No	% 0	White- Habita			n, confi	guration:
	isease? sects/Infestation?	No No									Debris	-	upslop off-site		floodpl	ain and	contiguous to
	xotic Plants?	Yes					c	N	E		W	%	Wildlif		/food/	water?	
_	eaf litter?	mode	rate										cover/\			water	
_	owned woody debris:	mode					No	No	Yes	Yes	No	40	_	corrido		h?	patch
_	JNCTION: Where is stand i			ensitiv	e areas	s on sit	e?	1	on st	een sl	opes a	above			· ·		F 41011
_	stand a buffer to surface r								yes								
	eaf litter/soil eroding or inc							e?	,	increa	asina						
	utrient uptake/loss affected										9						
-	omments: Mature o	-				much	dowi	ned w	oody	debri	s and	very	spars	e grou	Indco	over.	

Property: Gude Landf	ill								Prepa	ared E	By: то	om Kir	-			
Project #: 15646.01									Stand	d #: 2			Plot #	#: 4		
Forest Cover Type: Oa			Maple	;					Date:	: 5/1/1	8					
Plot Size: 1/10 Acre (37	.5' rad	dius)														
Basal Area in Square															-	
Feet per Acre: 130										<u>GHT V</u>			MPLE	PLOT		
		Imber		-	Imper	-	-	Imber	-	-	mbei	-				
	Tre	es 2-	5.9"	Tre	es 6-1	1.9"	Tree	s 12-′	19.9"	Tree		29.9"	-	Imber	-	
TREE SPECIES	_	dbh		_	dbh		_	dbh		_	dbh				" dbh	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
¹ Chestnut oak			1		2			3								6
² White oak					1											1
[°] Red oak			3		4			1								8
⁴ Black gum			4			2										6
⁵ Red maple			1			1			1							3
⁶ Mockernut hickory						2										2
⁷ Sycamore					1			1								2
8																0
9																0
Total Number of Trees		0			10			6			0			0		20
per Size Class Number & Size of		9			13			0			0			0		28
Standing Dead Trees		0			2			1			0			0		3
List of Woody Plant Sp	ecies	3'-20'	:				Ca	nopy	Closu	ire:		Percer	nt of Inv	vasive	Plot St	uccessional
mountain laurel, chestnut o				maple,		С	Ν	E	S	W	%	Cover	per Plo	ot	Stage:	
mockernut hickory		-				Yes	No	Yes	Yes	Yes	80	(All La	-			Mature
List of Understory Spe	cios O	יצי.				· ·	Indore	story	Covor	r 3'-20 '	•.	l ist d		or Inv	-	Species
striped wintergreen		-J.				c	N	E	S	W	•		Plot (A			Opecies
						Yes	Yes	No	Yes	Yes	80				one	
	N1.							- 0 14								
Rare, etc. Species?	No					-	r		-	1 1				-	cies pre	sent?
Specimen Trees? Historic Sites?	No No					С	N	Е	S	W	%		ailed de	,	n confi	guration:
Disease?	No					No	Yes	No	No	No	20					contiguous to
Insects/Infestation?	No						Downe	ed Wo	ody [Debris	:		forest	nooupi	ann ann	contiguous to
Exotic Plants?	No					C .	N	E	S	W	•		e cove	r/food/	water?	
Leaf litter?	mode	rate											water/fo			
Downed woody debris:	heavy	/				Yes	Yes	No	Yes	Yes	80	Stand	corrido	or/patcl	h?	patch
FUNCTION: Where is stand i			ensitiv	e areas	s on sit	e?		on ste	ep slo	opes a	bove			· ·		<u>. </u>
Is stand a buffer to surface r								yes					-			
Leaf litter/soil eroding or inc		-					e?		increa	asing						
Nutrient uptake/loss affected	l by sta	nd stru	cture?													
Comments: Mature o	ak/hic	kory	stand	with	much	dowr	ned w	oody	debris	s and	very	spars	e grou	Indco	over.	
1																

Ρ	operty: Gude Landf	ill								Prepa	ared E	By: то	om Kir	ng			
Ρ	roject #: 15646.01									Stand	d #: 2			Plot #	#: 5		
		ak/Hic		Maple	;					Date:	: 5/1/1	8					
Ρ	ot Size: 1/10 Acre (37	'.5' rad	dius)														
	Basal Area in Square															_	
	Feet per Acre: 100													IPLE	PLOT		
			Imber		-	Imper	-	-	umber	-	-	Imber	-				
		Tre	es 2-	5.9"	Tre	es 6-1	1.9"	Tree	es 12-′	19.9"	Tree	s 20-2	29.9"	-	Imber	-	
	TREE SPECIES		dbh			dbh			dbh			dbh				" dbh	
L	Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
1	Tulip poplar			1		2			4			1					8
2	Red maple			7		6			3								16
3	Black gum			3			1										4
4	Black cherry			2													2
5	Black haw			1													1
6																	0
7	7 0 0 8 0 0																
8																	
9																	0
	Total Number of Trees								_								
-	per Size Class		14			9			7			1			0		31
	Number & Size of Standing Dead Trees		0			1			0			0			0		1
Li	st of Woody Plant Sp	ecies	-	:		-		Са	nopy	Closu	ire:	•	Perce	nt of Inv	vasive	Plot Si	iccessional
	ack gum, red maple, com						С	N	E	S	W	%	1	per Plo		Stage:	
	0 / 1 /	·					Yes	Yes	Yes	Yes	No	80	(All La	yers):			
		· .					<u> </u>	<u> </u>						10%		-	Mature
	st of Understory Spe							1	-		· 3'-20						Species
	nerican holly, Japanese I					t	С	N	E	S	W	%		Plot (A	-	•	
	ltgrass, common privet, p ft rush, Japanese barber		ivy, As	Sauc D	litersw	eet,	Yes	No	No	Yes	No	40	Japan		-	de,stiltg ic bitters	rass, common sweet
R	are, etc. Species?	No					Herba	iceou	s & W	oody	Cove	r 0'-3'	HABIT	AT: Wh	nat spe	cies pre	esent?
S	pecimen Trees?	No					С	Ν	Е	S	W	%	white-t	ailed de	er, box	turtle	
	storic Sites?	No No					Yes	Yes	No	No	Yes	60					guration:
	sects/Infestation?	No									Debris		located site for		dplain a	and cont	iguous to off-
	sects/intestation?	Yes					C	N		S	W			est fe cove	*/food/	water2	
	eaf litter?	mode	rato				<u>۲</u>			3	VV	%	1	vater/fo		waler?	
	owned woody debris:	mode					Yes	No	No	Yes	Yes	60		corrido		h2	patch
-	INCTION: Where is stand i			oncitiv	0.01000	00 014	<u></u>		locate		floodp	lain	Sidiid	corrido	n/patc	11 f	μαιστ
	stand a buffer to surface r								yes		nooup						
	af litter/soil eroding or inc							•2	yes	increa	asing						
	itrient uptake/loss affected					stantu S	auctur	G (110160	Joing						
	-	-				stand	locate	ed on	flood	plain	of stre	eam, f	thin u	nders	tory,	low oc	currence
	invasives.									-					•		
1																	

Property: Gude Land	fill								Prepa	ared E	By: To	om Kir	ng			
Project #: 15646.01									Stan	d #: 3			Plot #	#: 1		
Forest Cover Type: R	ed Ma	ple							Date	: 5/1/1	8					
Plot Size: 1/10 Acre (37	7.5' rad	dius)														
Basal Area in Square															_	
Feet per Acre: 80							_			GHT V			MPLE	PLOT		
		Imber		-	Imper	-	-	umber	-	-	Imbei	-				
	Tre	es 2-	5.9"	Tree	es 6-1	1.9"	Tree	es 12-′	19.9"	Tree	s 20-2	29.9"	-	Imper	-	
TREE SPECIES		dbh			dbh			dbh			dbh				" dbh	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
¹ Silver maple			3	5			1									9
² Black locust			3			3										6
³ Red cedar			6													6
⁴ Black gum			5			3										8
⁵ Black cherry						1										1
⁶ Virginia pine			2			3										5
7 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0															0	
8 9															0	
9																0
Total Number of Trees per Size Class		19			15			1			0			0		35
Number & Size of		13			15			1			0			0		
Standing Dead Trees		0			1			0			0			0		1
List of Woody Plant Sp	ecies	3'-20'	:				Ca	nopy	Closu	ire:	-	Percei	nt of In	vasive	Plot S	uccessional
Black gum, red cedar, Japa						С	Ν	Ē	S	W	%	Cover	per Plo	ot	Stage:	
						Yes	Yes	Yes	Yes	Yes	100	(All La	yers): 50%			Mid
List of Understory Spe	cies 0	י_זי.				· ·	Inder	story		r 3'-20		l ist d		or Inv	l vasiva	Species
American holly, Japanese			anese	silver	arass	c	N	E	S	W	•		Plot (A			Opecies
poison ivy, Japanese stiltg strawberry		•			-	No	Yes	No	No	Yes	40	Japa	inese ba	arberry,	, Japane	ese stiltgrass, tic tearthumb
	No					Horbo		<u> </u>	loody	Covo	- 0' 2'					
Rare, etc. Species? Specimen Trees?	No No						N		S	W	° U- 3			-	cies pre	
Historic Sites?	No					No	No	Yes	No	Yes	- 40			-	y squirre n, conf i	iguration:
Disease?	No													floodpl	ain and	contiguous to
Insects/Infestation?	No									Debris			forest			
Exotic Plants?	Yes					С	N	E	S	W	%		e cove		water?	
Leaf litter?	light					No	No	No	No	No	0		ood/wa			(.]
Downed woody debris:	mode				~								corrido			patch
FUNCTION: Where is stand									eep sl	opes a	evoa	noodb	piain a	na stř	eam	
Is stand a buffer to surface i								yes			alari					
Leaf litter/soil eroding or inc		-			stand s	tructur	e?		erodi	ng on :	siope					
Nutrient uptake/loss affected	-				40.01						6 4 kr = 1					
Comments: Mid succ	622101	idi Sta	anu de	JIIIIIa	neu D	y red	maple	: 011 (1	16 210	hes o	i ule	anun	11			
1																

Property: Gude Landf	ill								Prepa	ared E	Зу: то	om Kir	ng			
Project #: 15646.01									Stand	d #: 3			Plot	#: 2		
Forest Cover Type: R	ed Ma	ple							Date:	5/1/1	18					
Plot Size: 1/10 Acre (37	'.5' rad	dius)														
Basal Area in Square Feet per Acre: 60				SIZE	CLAS	SS OF	TREE	ES >2()' HEI	GHT V	NITHI	N SAI	MPLE	PLOT	Г	
	Nu	ımbeı	r of	Νι	ımber	' of	Nu	ımber	of	Nu	ımbei	r of				
	Tre	es 2-	5.9"	Tre	es 6-1	1.9"	Tree	s 12-′	19.9"	Tree	s 20-2	29.9"	Νι	ımber	r of	
TREE SPECIES		dbh			dbh			dbh			dbh		Tree	s >30	" dbh	
Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
¹ Red maple			2		1		1	2								6
² Red cedar			1			1										2
³ Black cherry						1										1
⁴ Virginia pine			2		1			1								4
5																0
6															0	
7 8 9															0	
															0	
																0
Total Number of Trees		~			4			4			0			0		40
per Size Class Number & Size of		5			4			4			0			0		13
Standing Dead Trees		0			1			0			0			0		1
List of Woody Plant Sp	ecies	-			-		Са	-	Closu	ire:		Perce	nt of Inv	vasive	Plot S	uccessional
Asiatic bittersweet, red mar						С	N	E	S	W	%		per Plo		Stage:	
							NI.	M.	N		00	(All La	•			
						Yes	No	Yes	No	Yes	60		10%			Mid
List of Understory Spe									Cover							Species
red maple , red cedar, Japa	anese	stiltgra	ss, cor	nmon	reed	С	Ν	E	S	W	%	per F	Plot (A	ll Lay	ers):	
						No	No	No	Yes	Yes	40	A	siatic b	itterswe	eet, com	imon reed
Rare, etc. Species?	No					Herba	ceou	s & W	oody	Cove	r 0'-3'	HABIT	AT: Wh	at spe	cies pre	esent?
Specimen Trees?	No					С	Ν	Ε	S	W	%	white-t	ailed de	er, gra	y squirre	əl
Historic Sites?	No					No	Yes	Yes	Yes	Yes	80	Habita	t size,	locatio	n, confi	iguration:
Disease?	No											upslop	be from	floodpl	ain and	contiguous to
Insects/Infestation?	No					[[Downe	ed Wo	ody [Debris	5:	off-site	forest			-
Exotic Plants?	Yes					С	Ν	Е	S	W	%	Wildli	ie cove	r/food/	water?	
Leaf litter?	light					Yes	No	Yes	No	Yes	60	cover/f	iood/wa	ter		
Downed woody debris:	mode	erate t	o hea\	/y		163	INU	163	INU	163	00	Stand	corrido	or/patc	h?	patch
FUNCTION: Where is stand i						e?		on ste	eep slo	opes a	above	floodp	olain a	nd str	eam	
Is stand a buffer to surface r	unoff o	or grou	ndwate	r flow?	How?			yes								
Leaf litter/soil eroding or inc	eaf litter/soil eroding or increasing? How affected by stand structure? eroding on slope															
	lutrient uptake/loss affected by stand structure?															
Comments: Mid succe	omments: Mid successional stand dominated by red maple on the slopes of the landfill.															

Property: Gu	de Landf	ill								Prepa	ared E	By: To	om Kin	-			
Project #: 1564										Stand	d #: 4			Plot #	#: 1		
Forest Cover 7				ox Eld	er					Date:	: 5/1/1	8					
Plot Size: 1/10	Acre (37	'.5' rad	dius)														
Basal Area in S	-															_	
Feet per Acre:	70										GHT V			APLE	PLO		
			Imber		-	Imper	-	-	Imber	-		Imber			_		
		Tre	es 2-	5.9"	Tre	es 6-1	1.9"	Tree	s 12-1	19.9"	Tree	s 20-2	29.9"		Imper		
TREE SPE		_	dbh		_	dbh		_	dbh		_	dbh				" dbh	
Crown Pos	sition	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
Black cherry				2													2
² Green ash				4			5										9
³ Black locust						2											2
⁴ Apple				1													1
⁵ Bush honeys	uckle			5													5
^b Box elder											1						1
/																	0
8																	0
9																	0
Total Number o	of Trees		40			7			0			4			0		20
per Size Class Number & Size	of		12			7			0						0		20
Standing Dead	-		2			2			0			0			0		4
List of Woody		ecies						Са	-	Closu	ire:	•	Percer	nt of Inv	-	Plot S	uccessional
bush honeysuckl				-			С	N	E	S	W	%		per Plo		Stage:	
, ,	, I		,				No	Yes	Yes	Yes	Yes	80	(All La	yers):		J	
		<u> </u>												>60%		l _	Early
List of Unders								r		1	3'-20			-			Species
Japanese stilt gra			•		•	ckie,	С	N	E	S	W	%	1 .	lot (A	-		
barberry, bush ho	Sheysuckie	e, wine	berry,	poison	iivy		Yes	Yes	Yes	Yes	Yes	100			-		eysuckle, bush barberry
Rare, etc. Spe	cies?	No					Herba	iceou	s & W	loody	Cove	r 0'-3'	HABIT	AT: Wh	nat spe	cies pro	esent?
Specimen Tree	es?	No					С	Ν	Ε	S	W	%					
Historic Sites? Disease?		No No					Yes	Yes	Yes	Yes	Yes	100					guration:
Insects/Infesta	tion?	No					,		ad Wa		Debris	-	upslop off-site		tioodpl	ain and	contiguous to
Exotic Plants?		Yes					C	N	E		W	%			r/food/	water?	
Leaf litter?		very l	iaht				⊢ Ŭ							over, wa			
Downed woody de	abris	high	igin				Yes	Yes	Yes	Yes	Yes	100		corrido			patch
FUNCTION: Where		<u> </u>	on to s	onsitiv	o areas		∟ ₀?	1	on sta	L Den sli	opes a	hove					paton
Is stand a buffer to									yes		00000	10046	nooup	nan a		cam	
Leaf litter/soil ero			-					e?	yuu	erodi	ng on	slone					
Nutrient uptake/lo	-						autur	• •		5, 5ul	ig on	Siope					
Comments:		-				nated	by bo	ox eld	er and	d busl	h hon	eysuc	kle or	n the s	slope	s of th	e landfill

Ρ	Property: Gude Landfill Prepared By: Tom King																
Project #: 15646.01					Stand #: 4 Plot #: 2												
F	orest Cover Type: Gr	een A	sh/Bo	ox Eld	er					Date	: 5/1/	18					
Plot Size: 1/10 Acre (37.5' radius)																	
	Basal Area in Square Feet per Acre: 80 SIZE CLASS OF TREES >20' HEIGHT WITHIN SAMPLE PLOT																
		Nu	ımber	r of	_	umber						Number of					
		Trees 2-5.9"			Trees 6-11.9"			Trees 12-19.9"			Trees 20-29.9			9" Number of			
TREE SPECIES		dbh			dbh			dbh			dbh		Trees >30		" dbh		
	Crown Position	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Dom	CoD	Other	Total
1	Green ash						4										4
2	Silver maple						1								1		2
3	Red cedar			1													1
4	Box elder									2							2
5	Red maple					1			2								3
6																	0
7																	0
8																	0
9																	0
	Total Number of Trees		1			6			4			0			1		12
-	per Size Class Number & Size of					0			4			0					12
	Standing Dead Trees		6			0			0			0		0		6	
List of Woody Plant Species 3'-20': Canopy Closure: Percent of Invasive								Plot S	uccessional								
В	ush honeysuckle						С	Ν	E	S	W	%	Cover per Plot Stage:				
						No	No	Yes	No	No. 20		(All Layers):					
							INO	INO	res	INO	No No 20			75% Early			
List of Understory Species 0'-3': Underst						story	Cove	3'-20': List			ist of Major Invasive Species						
Japanese stiltgrass, horse balm, Japanese honeysuckle,				С	Ν	Е	S	W	%	per Plot (All Layers):							
wineberry, oniongrass				No	No	No	No	No	0	Japanese stiltgrass and bush honeysuck				h honeysuckle			
Rare, etc. Species? No Herbaceous & Woody Cover 0'-3' HABITAT: What species present?								esent?									
Specimen Trees? No				С													
Historic Sites? No				Yes	Yes	Yes	Yes	Yes	100	Habita	t size,	locatio	n, confi	iguration:			
Disease? No Test Test Test Test Test Test Test Test																	
Exotic Plants? Yes C											%	Contiguous to off-site forest Wildlife cover/food/water?					
					IN		3		% 60		over, wa						
Leaf litter? light Downed woody debris: moderate				Yes	No	Yes	No							patch			
Downed woody debris: moderate Stand corridor/patch? patch FUNCTION: Where is stand in relation to sensitive areas on site? on steep slopes above floodplain and stream																	
Is stand a buffer to surface runoff or groundwater flow? How? Yes																	
Leaf litter/soil eroding or increasing? How affected by stand structure? eroding on slope																	
	utrient uptake/loss affected	-	-			Juna 3	autora	••		oroar	ng on	01000					
		-				e slor	oes of	the la	andfill								
ſ	Comments: Early successional stand on the slopes of the landfill.																

Appendix D

Forest Stand Summary Sheets

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FOREST STAND DELINEATION - FOREST STAND SUMMARY SHEET

Project Name: Gude Landfill

Project #: 15646.01 Location: Rockville, Montgomery County Prepared By: Tom King

Date: 05/01/18

Stand Variable	Stand # 1	Stand # 2				
1. Dominant species/ Codominant species	Chestnut Oak/Red Oak	Oak/Hickory/Maple				
2. Successional stage	Mature/Burn	Mature				
3. Basal area in s.f. per acre	113	118				
4. Size class of dominant species	6-11.9" dbh	12-19.9" dbh				
5. Percent of canopy closure	40-80%	80-100%				
6. Average number of tree species per plot	3	6				
7. Common understory species 3' to 20' tall	none	black gum, mockernut hickory, red maple, chestnut oak, black cherry, northern red oak, mountain laurel, common privet				
8. Percent of understory cover 3' to 20' tall	0%	68%				
9. Number of woody plant species 3' to 20' tall	0	8				
10. Common understory species 0' to 3' tall	none in burned areas, black cherry, striped wintergreen	partridge berry, striped wintergreen, garlic mustard, Japanese honeysuckle, bush honeysuckle, American holly, Japanese stiltgrass, common privet, poison ivy, Asiatic bittersweet, soft rush				
11. Percent of herbaceous & woody plant cover 0' to 3' tall	0%	24%				
12. List of major invasive plant species & percent of cover	none	garlic mustard. Japanese honesuckle, bush honeysuckle, Japanese stiltgrass, common privet, Asiatic bittersweet				
13. Number of standing dead trees <u>></u> 6" dbh per acre	50	100				
14. Comments	Mature stand located on floodplain of off-site stream. Stand had areas of recent and older leaf-litter burn that has resulted in low invasives and little understory or herbaceous	Mature oak/hickory stand located on steep slopes surrounding the off-site stream, moving into bottomlands. Stand has downed wood and sparse groundcover, with several specimen trees.				
15. Priority (1,2,3,4)	1	1				

FOREST STAND DELINEATION - FOREST STAND SUMMARY SHEET

Project Name: Gude Landfill

Prepared By: Tom King

Project #: 15646.01 Location: Rockville, Montgomery County

Date: 05/01/18

Stand Variable	Stand # 3	Stand # 4				
1. Dominant species/ Codominant species	Red Maple	Green Ash/Box Elder				
2. Successional stage	Mid	Early				
3. Basal area in s.f. per acre	70	75				
4. Size class of dominant species	6-11.9" dbh	6-11.9" dbh				
5. Percent of canopy closure	60-100%	20-80%				
6. Average number of tree species per plot	5	5				
7. Common understory species 3' to 20' tall	black gum, red cedar, Japanese barberry, Asiatic bittersweet, red maple	bush honeysuckle, Japanese barberry				
8. Percent of understory cover 3' to 20' tall	40%	50%				
9. Number of woody plant species 3' to 20' tall	5	2				
10. Common understory species 0' to 3' tall	American holly, Japanese barberry, silvergrass, poison ivy, Japanese stiltgrass, Asiatic tearthumb, indian strawberry, red maple, red cedar, common reed	Japanese stiltgrass, horse balm, Japanese honeysuckle, Japanese barberry, bush honeysuckle, wineberry, poison ivy, oniongrass				
11. Percent of herbaceous & woody plant cover 0' to 3' tall	60%	100%				
12. List of major invasive plant species & percent of cover	Japanese barberry, Japanese stiltgrass, Japanese silvergrass, Asiatic tearthumb, Asiatic bittersweet, common reed	Japanese stiltgrass, bush honeysuckle, Japanese honeysuckle, wineberry, Japanese barberry				
13. Number of standing dead trees <u>></u> 6" dbh per acre	20	100				
14. Comments	Mid-successional red maple stand located on the slopes of the landfill upslope from the fooldplain and contiguous to off-site forest. Moderate invasive coverage.	Early successional stand on the slopes of the landfill above the floodplain and stream. Stand is contiguous to off-site forest.				
15. Priority (1,2,3,4)	1	1				

Appendix E

Forest Stand Delineation Photographs

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Forest Stand Delineation Photographs Gude Landfill Photos Taken: April 30 and May 1, 2018



Photograph 1: Forest Stand 1 in recently burned area.



Photograph 3: Forest Stand 2, near plot 5.



Photograph 2: Forest Stand 1 in potential older burn area.



Photograph 4: Forest Stand 2, specimen silver maple (T-5) found in retention pond area.

Forest Stand Delineation Photographs Gude Landfill Photos Taken: April 30 and May 1, 2018



Photograph 5: Forest Stand 3, near plot 1.



Photograph 6: Forest Stand 4, near plot 1.



Photograph 7: Non-forested landfill area.



Photograph 8: Non-forested landfill area.

Appendix F

Agency Review Statements

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200904466



Woodbridge Office Center 1319 Woodbridge Station Way, Suite 200 Edgewood, MD 21040 Telephone: 410-538-8202 Fax: 410-538-8207 www.eaest.com

November 20, 2009

Ms. Elizabeth Cole Project Review and Compliance, Office of Preservation Services Maryland Historical Trust 100 Community Place Crownsville, MD 21032

Gude Landfill Re: 600 East Gude Drive, Rockville Montgomery County, Maryland

Dear Ms. Cole:

On behalf of the Montgomery County Department of Environmental Protection - Division of Solid Waste Services (DEP/DSWS), EA Engineering, Science & Technology has been tasked to perform a characterization of the nature and extent of potential ground and surface water impacts from the landfill leachate.

Federal and/or State involvement for this project is Federal USACE Section 404 CWA permitting. No readily visible historic structures, ruins or other cultural resources are identified in the project area. Adjacent property use consists of state roads, county roads, residential, commercial and industrial property and contiguous forest.

As required by the State/Federal involvement, we are requesting any information or records regarding the presence of cultural, archaeological, or historic resources within the project area. Thank you for your assistance. We look forward to working with your agency to successfully complete this needed project. Should you require additional information, please contact me at (410) 538-8202 ext. 1405. , obring

Sincerely,

EA Engineering, Science & Technology

Daniel Cockerham **Environmental Scientist** Enclosures: Site Location Map



The Maryland Historical Trust has determined that there are no historic properties affected by this undertaking.





Martin O'Malley, Governor Anthony G. Brown, Lt. Governor John R. Griffin, Secretary Eric Schwaab, Deputy Secretary

December 14, 2009

Daniel Cockerham EA Engineering, Science and Technology 1319 Woodbridge Station Way, Suite 200 Edgewood, MD 21040

RE: Environmental Review for Gude Landfill, 600 East Gude Dr. Rockville – study of potential ground and surface water impacts from leachate, Montgomery County, MD.

Dear Mr. Cockerham:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Roi a. Bym

Lori A. Byrne, Environmental Review Coordinator Wildlife and Heritage Service MD Dept. of Natural Resources

ER# 2009.1992

Tawes State Office Building • 580 Taylor Avenue • Annapolis, Maryland 21401

410.260.8DNR or toll free in Maryland 877.620.8DNR • www.dnr.maryland.gov • TTY users call via Maryland Relay



United States Department of the Interior

FISH AND WILDLIFE SERVICE Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401 410/573-4575



January 12, 2010

EA Engineering, Science and Technology 1319 Woodbridge Station Way, Suite 200 Edgewood, MD 21040

RE: Gude Landfill 600 East Gude Drive, Rockville Montgomery County MD

Dear: Daniel Cockerham

This responds to your letter, received November 23, 2009, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

Effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (Service) removed (delist) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. As a result, starting on August 8, 2007, if your project may cause "disturbance" to the bald eagle, please consult the "National Bald Eagle Management Guidelines" dated May 2007.

If any planned or ongoing activities cannot be conducted in compliance with the National Bald Eagle Management Guidelines (Eagle Management Guidelines), please contact the Chesapeake Bay Ecological Services Field Office at 410-573-4573 for technical assistance. The Eagle Management Guidelines can be found at:

<u>http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuid</u>elines.pdf.

In the future, if your project can not avoid disturbance to the bald eagle by complying with the Eagle Management Guidelines, you will be able to apply for a permit that authorizes the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally where the take to be authorized is associated with otherwise lawful activities. This proposed permit process will not be available until the Service issues a final rule for the issuance of these take permits under the Bald and Golden Eagle Protection Act.

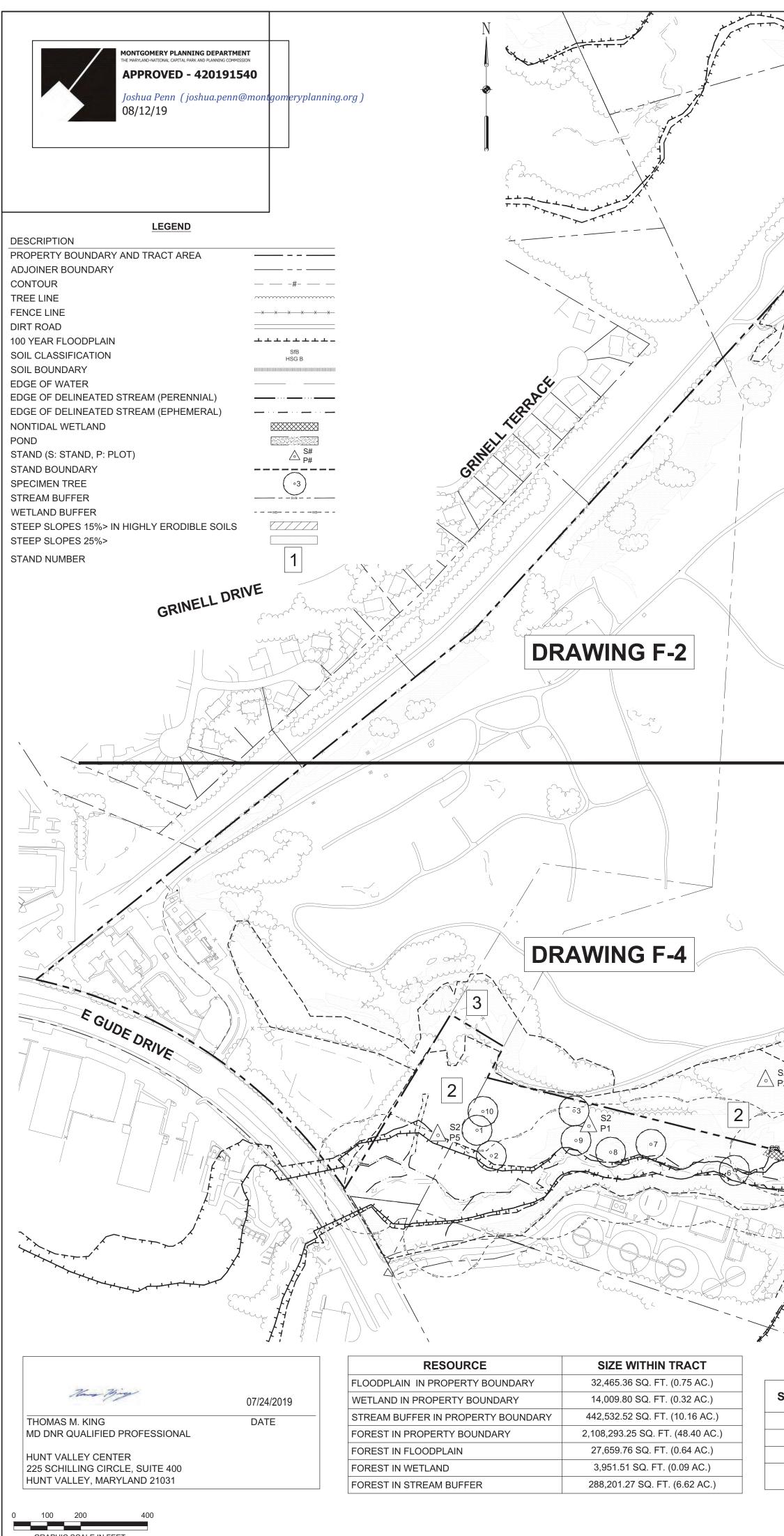
An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Devin Ray at (410) 573-4531.

Sincerely,

an Mi

Leopoldo Miranda Field Supervisor



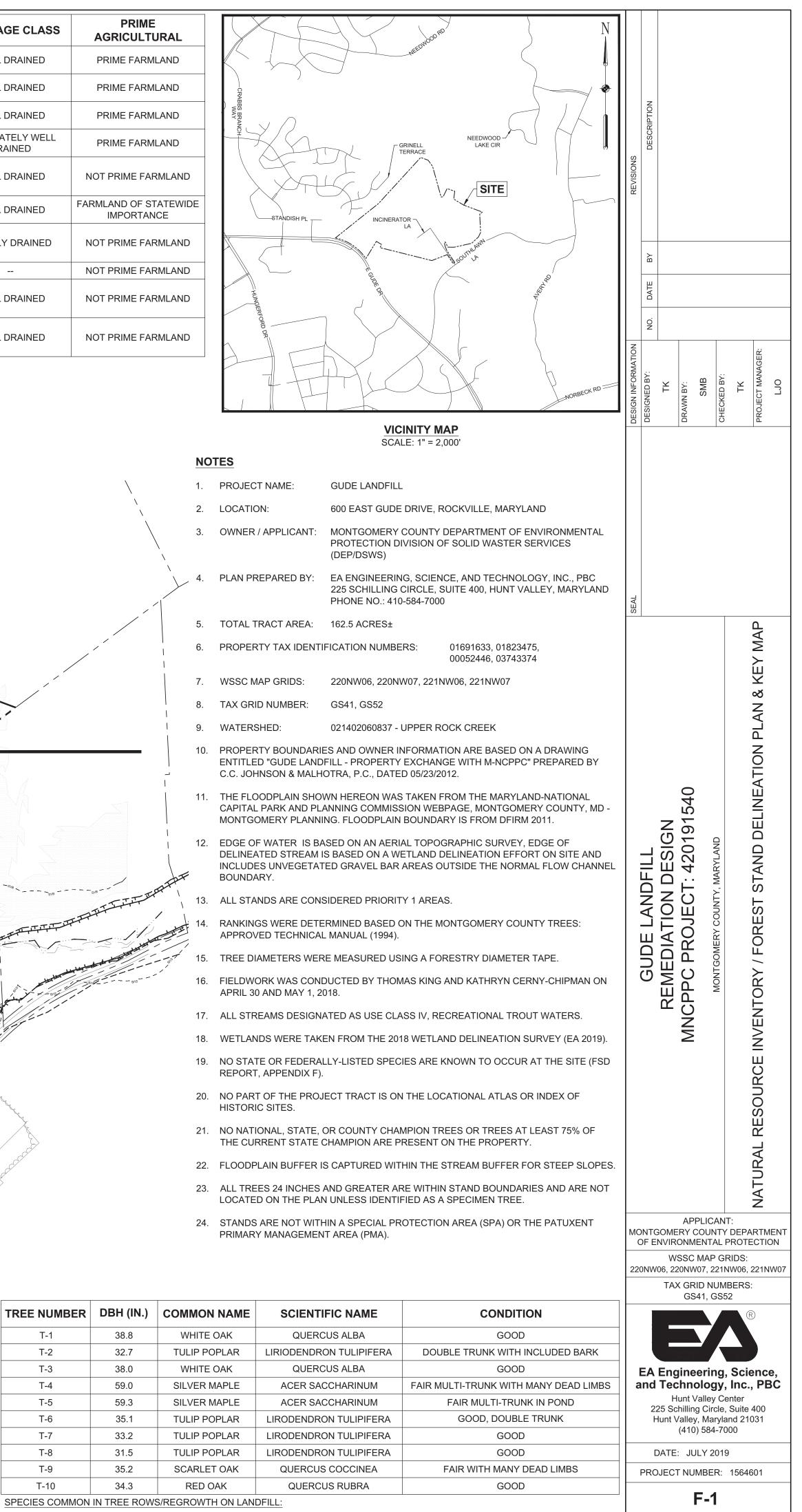
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	h Entre con	PERCENT SLOPES (1B) GLENELG SILT LOAM, 3 TO 8	NO	0.37	WELL DRAINED	
1		PERCENT SLOPES (2B) ELIOAK SILT LOAM, 3 TO 8	NO	0.37	WELL DRAINED	
×44	the the transferrer to the trans	PERCENT SLOPES (4B) GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES (5B)	YES	0.37	MODERATELY WELL DRAINED	
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STAND	ACRES IN TRACT	SUCCESSIONAL STAGE	DOMINANT COVER TYPE	DOMINANT SIZE CLASS	BASAL AREA (FT ² /ACRE)	CANOPY CLOSURE (%)
1	3.21	MID-SUCCESSIONAL	CHESTNUT OAK/RED OAK	6-11.9" DBH	113	40-80
2	16.10	MATURE	OAK/HICKORY/RED MAPLE	12-19.9" DBH	118	80-100
3	19.12	MID-SUCCESSIONAL	RED MAPLE	6-11.9" DBH	70	60-100
4	9.97	EARLY-SUCCESSIONAL	RED CEDAR/BOX ELDER/ BUSH HONEYSUCKLE	6-11.9" DBH	75	20-80

T-3 T-4 T-5 T-6 T-7 T-8 T-9 T-10

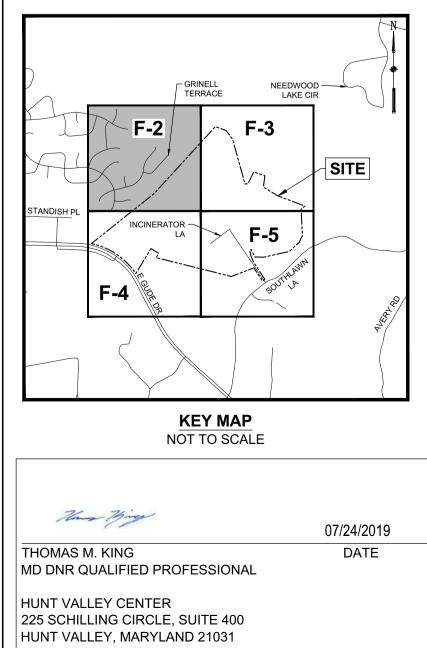
PITCH PINE, BLACK LOCUST, RED CEDAR, HONEY LOCUST, WHITE PINE



SHEET: 1 OF 5

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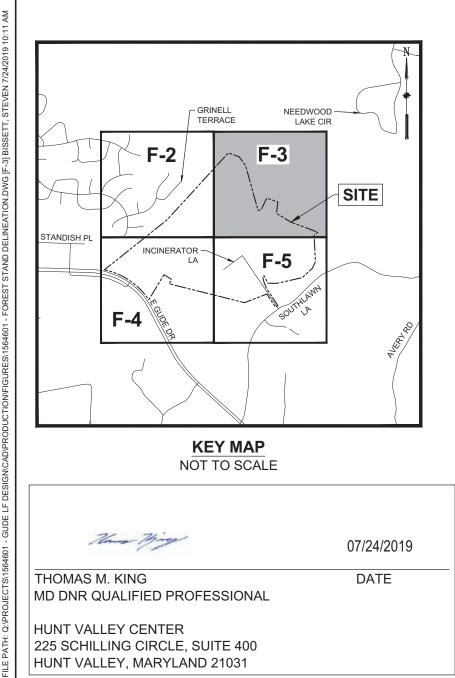
- 1. SEE DRAWING NO. F-1 FOR NOTES, DATA REFERENCES, AND FOREST STAND DELINEATION INFORMATION.
- 2. EDGE OF WATER IS BASED ON AN AERIAL TOPOGRAPHIC SURVEY, EDGE OF DELINEATED STREAM IS BASED ON A WETLAND DELINEATION EFFORT ON SITE AND INCLUDES UNVEGETATED GRAVEL BAR AREAS OUTSIDE THE NORMAL FLOW CHANNEL BOUNDARY.

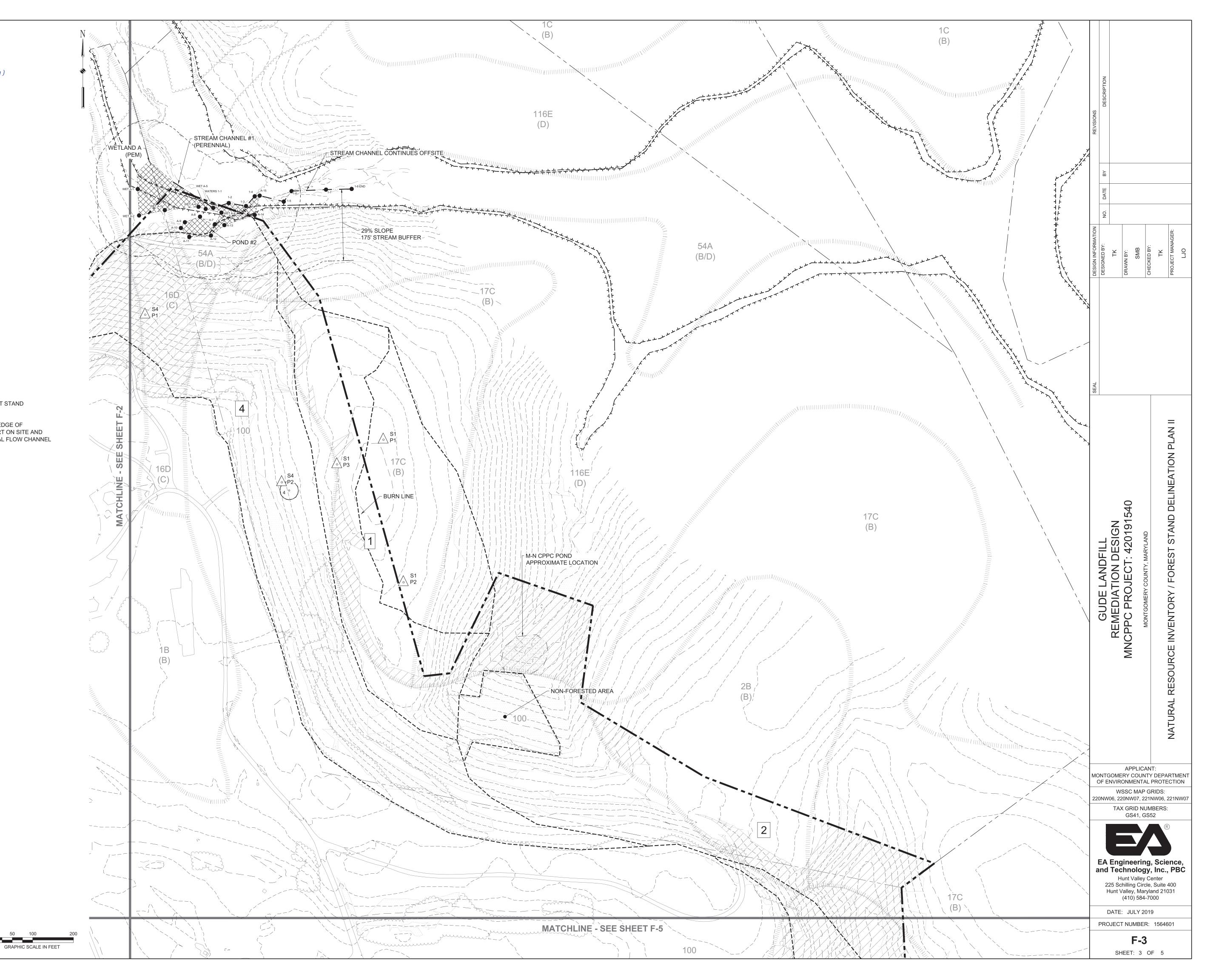




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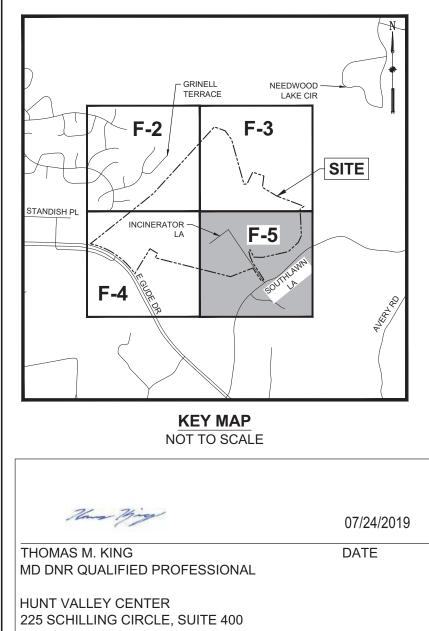
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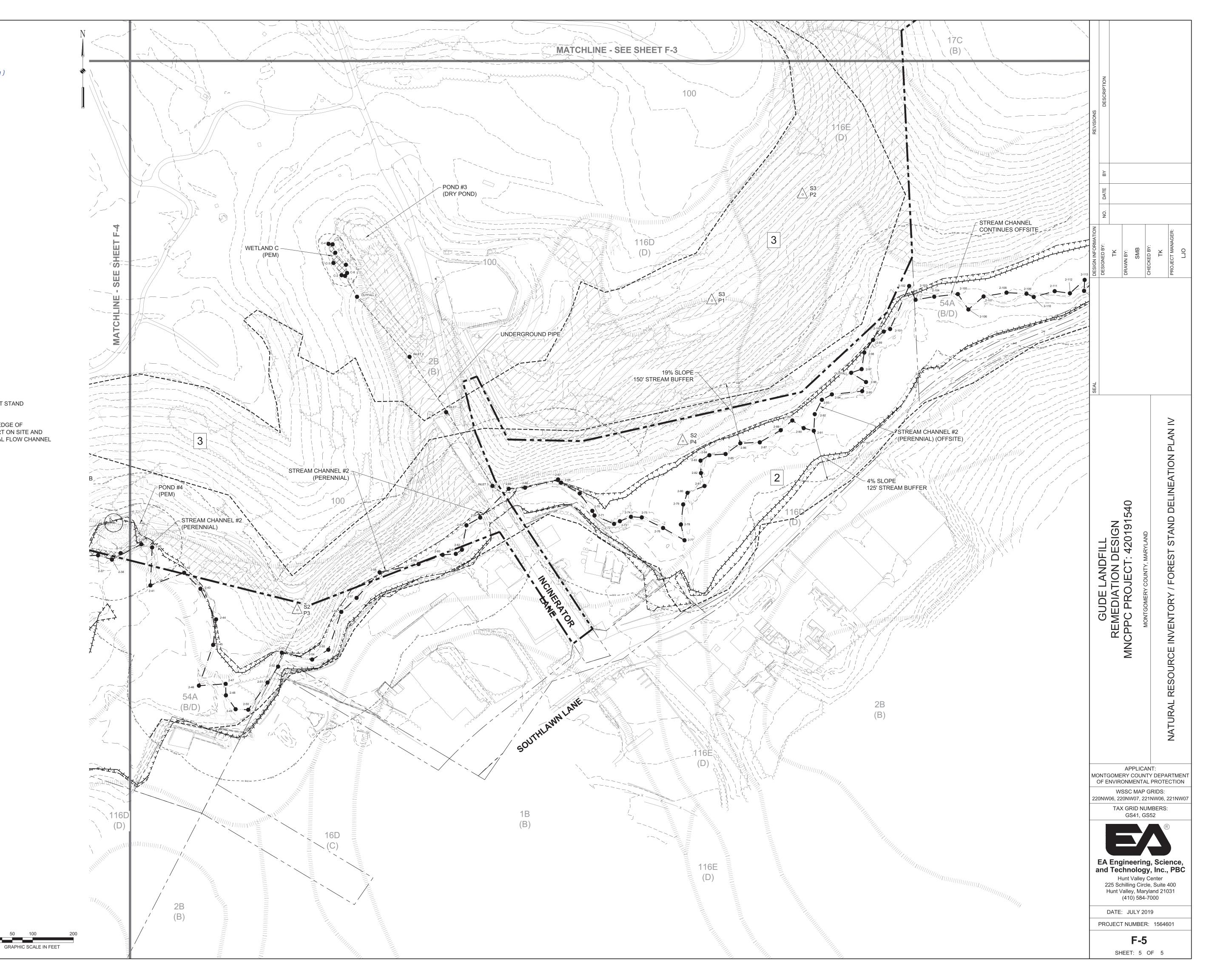


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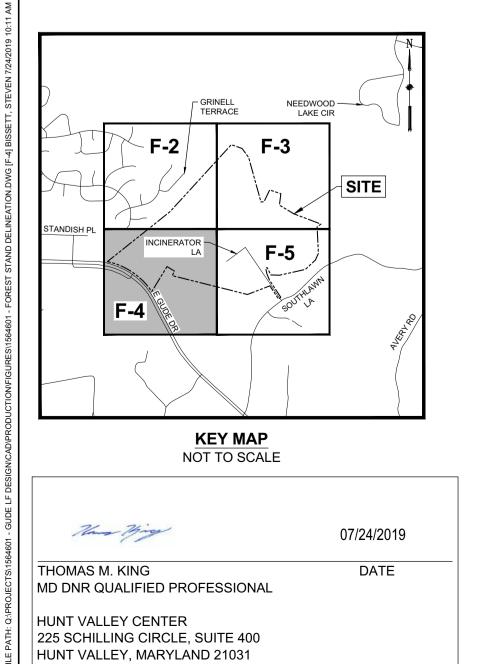


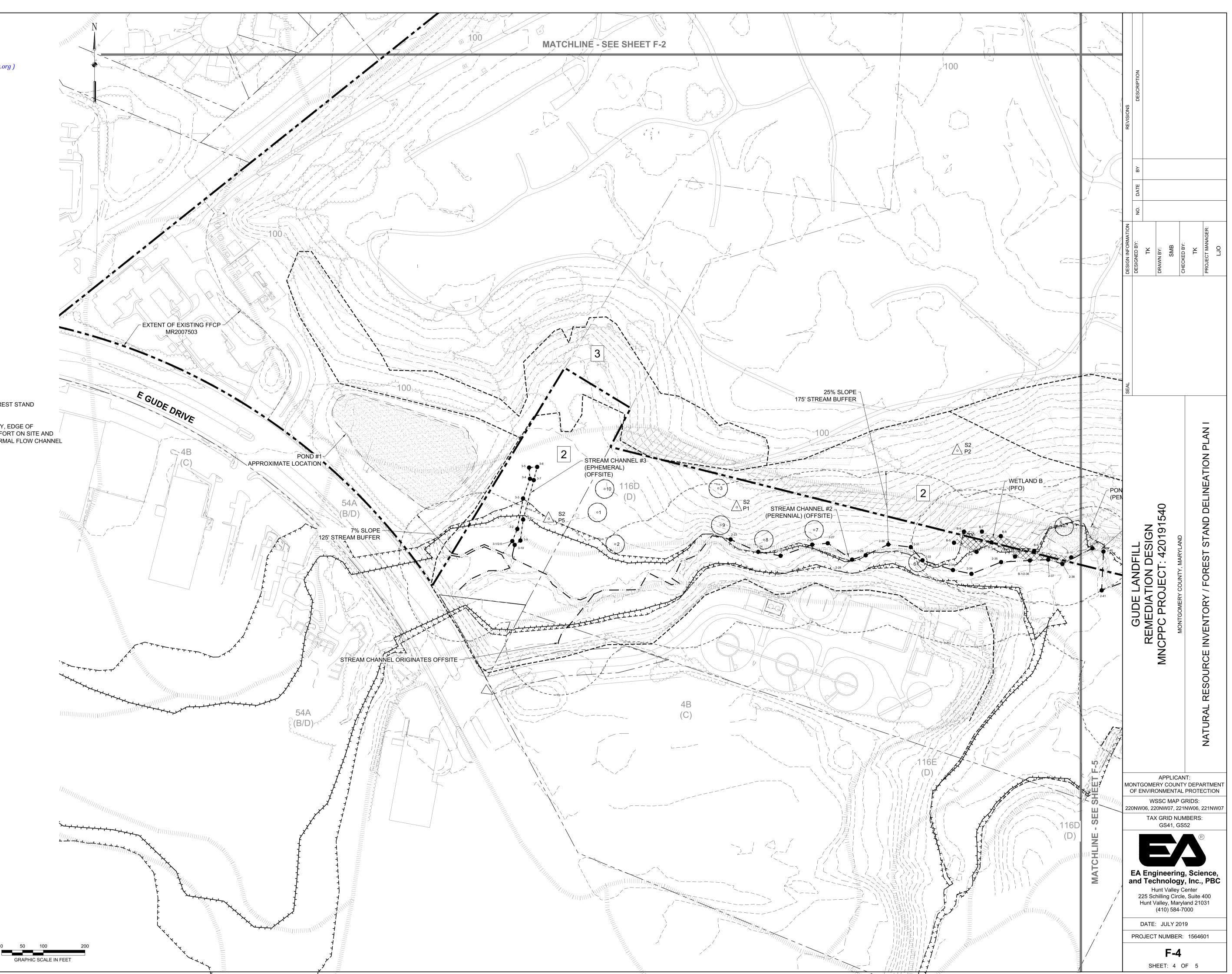
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	Joshua Penn (joshua.penn@ 08/12/19	omontgomeryplanning.org
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## Gude Landfill Remediation Project Design Engineer Contract

### **Wetland Delineation Report**

Prepared for

Department of Environmental Protection Division of Solid Waste Services Montgomery County, Maryland

Prepared by EA Engineering, Science, and Technology, Inc., PBC 225 Schilling Circle, Suite 400 Hunt Valley, Maryland 21031

> January 2019 Version: FINAL EA Project No. 15646.01

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## Gude Landfill Remediation Project Design Engineer Contract

### **Wetland Delineation Report**

Prepared for

Department of Environmental Protection Division of Solid Waste Services Montgomery County, Maryland

Prepared by

EA Engineering, Science, and Technology, Inc., PBC 225 Schilling Circle, Suite 400 Hunt Valley, Maryland 21031 (410) 584-7000

> January 2019 Version: FINAL EA Project No. 15646.01

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Mapped Soil Types
NWI Wetlands
Delineated Features Identified

#### LIST OF ACRONYMS AND ABBREVIATIONS

the County	Montgomery County Department of Environmental Protection, Division of Solid Waste Services
EA	EA Engineering, Science, and Technology, Inc., PBC
FAC FACU FACW	Facultative Facultative upland Facultative wetland
the Landfill LF	Gude Landfill Linear feet
NRCS NWI	Natural Resources Conservation Service National Wetlands Inventory
OBL OHWM	Obligate Ordinary high water mark
RPW	Relatively Permanent Water
UPL	Upland
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WUS	Waters of the United States

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#### 1. INTRODUCTION

This Wetland Delineation Report was prepared for the Engineering, Bid Preparation, and Support Services for the Gude Landfill (the Landfill) Remediation Project for Montgomery County, Maryland (the Remediation Design), under the Northeast Maryland Waste Disposal Authority and the Montgomery County Department of Environmental Protection, Division of Solid Waste Services (the County).

The Landfill Remediation Design is for the recommended Corrective Measure Alternative, Toupee Capping and Additional Landfill Gas Collection, as approved by the Maryland Department of the Environment on July 8, 2016.

#### 1.1 PURPOSE

The purpose of this Wetland Delineation Report is to review and delineate the wetlands and/or Waters of the United States (WUS) located on and within the vicinity of the Gude Landfill (the Landfill) project site. The Landfill consists of approximately one hundred sixty-two and seventenths (162.7) acres, located at 600 East Gude Drive in Montgomery County in Rockville, Maryland (**Appendix A, Figure 1**).

In November 2009, EA Engineering, Science, and Technology, Inc. (EA) conducted an initial wetland delineation of the proposed project site. In order to complete a thorough review of the wetlands/WUS that could potentially be impacted, EA established an area of review to extend outside of the property boundary and include portions of the surrounding properties. In April 2018, EA was tasked with re-evaluating the project site for wetlands and waterways. The area of review for the 2018 wetland delineation effort is depicted on **Figure 2** in **Appendix A**.

#### 2. RESEARCH OF AVAILABLE DOCUMENTS

#### 2.1 BACKGROUND INFORMATION

At the time of EA's environmental review in April 2018, the project site consisted of approximately one hundred sixty-two and seven-tenths (162.7) acres of land predominantly comprised of open grass and vegetative covered fields (**Appendix A, Figure 2**). The outer portions of the project site consisted of undeveloped forested land. Major site features included an extensive landfill gas collection piping system throughout the property, a paved open area in the southeastern portion of the Landfill, a model airplane flying area in the northern portion of the Landfill, and a landfill gas-to-energy flare station and shelter in the southwest corner of the property.

The site is bordered to the south by industrial operations, to the west/northwest by the community of Derwood Station South, and to the north and east by Maryland-National Capital Park and Planning Commission property. The surrounding area was mixed use with the Derwood residential community to the northwest, commercial and industrial properties to the south, and predominantly undeveloped wooded areas to the north and east. The approximate latitude/longitude of the property is 39° 06' 29" N and 77° 08' 16" W, respectively.

Prior to conducting the wetland delineation in the field, relevant site-specific data for the area of review was reviewed to identify the likely location of potential wetlands and streams.

#### 2.2 UNITED STATES GEOLOGICAL SURVEY TOPOGRAPHIC MAP

The U.S. Geological Survey (USGS) topographic map for the area (*Rockville Quadrangle*, **Figure 3 in Appendix A**) was also used as a reference to identify possible wetlands and waterways on the property. Topographic maps identify elevations, forested areas, streams, ponds, roads, and structures. The USGS map identified multiple buildings and roads within the project site and depicted the majority of the site as being non-forested. Three (3) blue-line stream channels were depicted within the vicinity of the project site on the USGS map, including Crabbs Creek, Rock Creek, and an unnamed channel. Crabbs Creek was identified as being located on the northeastern corner of the project site. Crabbs Creek flowed in a southeasterly direction where it contributed to Rock Creek. Rock Creek was depicted to the east of the project site. Rock Creek was not located within the area of review. The third blue-line stream channel (unnamed) was located along the southern property line and conveyed flow in an easterly direction to Rock Creek. The streams discussed above are listed in the Code of Maryland Regulations stream use classification index as Use IV (Recreational Trout Waters), with an in-stream restriction during the period of March 1 through May 31.

The site topography was plateau-like and consisted of gentle relief along the top of the plateau and sharp relief along the entirety of the Landfill boundary. The elevation along the top of the plateau gently sloped to the south, with localized mounds and depressions throughout. The topography around the edges of the waste layer fell sharply from the plateau to elevations ranging from sixty (60) to ninety (90) feet below the plateau.

#### 2.3 SOIL SURVEY INFORMATION

The online Natural Resources Conservation Service (NRCS) Web Soil Survey for Montgomery County was reviewed for the area of review (**Appendix A, Figure 4**). Ten soil types were identified within the project site (U.S. Department of Agriculture [USDA] NRCS 2018a). According to the USDA NRCS hydric soils list by state (NRCS 2018b), seven (7) of the soil units within the project site were listed as a hydric soil. Soil types found within the project site are identified in **Table 1**.

Table 1 Mapped Soil Types					
		Hydric			
Soil Mapping Unit	Symbol	Soil	Drainage Class		
Gaila silt loam, 3 to 8 percent slopes	1B	Yes	Well drained		
Glenelg silt loam, 3 to 8 percent slopes	2B	No	Well drained		
Elioak silt loam, 3 to 8 percent slopes	4B	No	Well drained		
Glenville silt loam, 3 to 8 percent slopes	5B	Yes	Moderately well drained		
Brinklow-Blocktown channery silt loams,	16D	Yes	Well drained		
15 to 25 percent slopes	10D	1 65	wen dramed		
Occoquan loam, 8 to 15 percent slopes	17C	Yes	Well drained		
Hatboro silt loam, 0 to 3% slopes, frequently flooded	54A	Yes	Poorly drained		
Dump, refuse	100	No			
Blocktown channery silt loam, 15 to 25 percent slopes,	116D	Yes	Well drained		
very rocky	TIOD	105	wendramed		
Blocktown channery silt loam, 25 to 45 percent slopes,	116E	Yes	Well drained		
very rocky	11012	105	wen dramed		
Source: Adapted from U.S. Department of Agriculture Natural Resources Conservation Service 2018a, 2018b.					

Table 1	<b>Mapped Soil T</b>	vpes
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#### 2.4 NATIONAL WETLAND INVENTORY MAP

EA's environmental scientists reviewed wetland data from the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) (USFWS 2018). The NWI map (Appendix A, Figure 5) identified NWI wetlands and streams within the general vicinity of the blue-line streams, identified on the USGS map (Appendix A, Figure 3). More specifically, the NWI map identified one (1) wetland system on the northeastern corner of the site, one (1) pond adjacent to the southwestern corner, and two (2) wetlands along the southeastern portion of the site. Each wetland system was classified with a Cowardin designation (Cowardin et al. 1979). The system to the northeast was designated as PEM1A (Palustrine Emergent Persistent, Temporarily Flooded). The two (2) wetlands identified along the southeastern side of the site were classified as PFO1A (Palustrine Forested Deciduous, Temporarily Flooded). The large pond located to the southwest was identified as PUBHh (Palustrine Unconsolidated Bottom, Permanently Flooded, Diked/Impounded). A riverine system was also identified in the NWI maps as R5UBH (Riverine, Unknown Perennial, Unconsolidated Bottom, Permanently Flooded) flowing adjacent to the southwestern side of the area of review. NWI wetlands and riverine systems within and adjacent to the area of review are presented in Table 2. It is important to note that not all NWI wetlands identified in the mapper may currently exist, hence the need for a wetland investigation to groundtruth all potential wetlands, as described in the following sections of this report.

Wetland Types	Description	Location in Project Area
PEM1A	Palustrine, Emergent Persistent, Temporarily Flooded	Northeastern boundary
PFO1A	Palustrine, Forested Deciduous, Temporarily Flooded	Adjacent to southeastern boundary; outside area of review
PUBHh	Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded	Southwestern boundary
R5UBH	Riverine, Unknown Perennial, Unconsolidated Bottom, Permanently Flooded	Adjacent to southwestern boundary; largely outside area of review
Source: Adapted fr	om USFWS 2018.	

Table 2NWI Wetlands

#### 3. METHODOLOGY

The wetland delineation was conducted in accordance with the Routine Determination procedures outlined in the *Corps of Engineers Wetland Delineation Manual* (U.S. Army Corps of Engineers [USACE] 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0) (USACE 2012). This approach is based on the presence of three (3) parameters (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) including indicators, delineation guidance, and other information that is specific to the region. The USACE technical guidance for identifying wetlands requires that a positive wetland indicator be present for each of the three (3) identified parameters except in limited instances identified as an atypical situation.

#### **3.1 HYDROPHYTIC VEGETATION**

Hydrophytic vegetation is defined in the USACE manual as a community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence. A plant-community approach to evaluate vegetation is used and, therefore, hydrophytic vegetation decisions are based on the community of plant species growing in a particular area rather than the presence or absence of particular indicator species. Common wetland plant species have been categorized regionally by USACE in the 2016 National Wetland Plant List, Version 3.3 (USACE 2016). Each plant is classified into one (1) of five (5) categories as follows:

- Obligate (OBL) = Greater than ninety-nine (99) percent estimated probability of occurring in wetlands.
- Facultative Wetland (FACW) = sixty-seven (67) to ninety-nine (99) percent estimated probability of occurring in wetlands.
- Facultative (FAC) = thirty-four (34) to sixty-six (66) percent estimated probability of occurring in wetlands.
- Facultative Upland (FACU) = one (1) to thirty-three (33) percent estimated probability of occurring in wetlands.
- Upland (UPL) = less than one (1) percent estimated probability of occurring in wetlands.

Plants that have an indicator status of OBL, FACW, or FAC are considered to be typically adapted for life in anaerobic soil conditions. When the dominant species in a plant community are typically adapted for life in anaerobic soil conditions, hydrophytic vegetation is present. Several indicators may be used to determine whether hydrophytic vegetation is present on a site; however, the presence of a single individual of a hydrophytic species does not mean that hydrophytic vegetation is present.

Evaluation of the vegetation begins with a rapid field test for hydrophytic vegetation to determine if there is a need to collect more detailed vegetation data. If the area is not dominated solely by OBL and FACW species, the standard dominance test is performed to determine if more than fifty (50) percent of the dominant species are OBL, FACW, or FAC. Some wetland plant communities may not be considered hydrophytic based only on dominant species. Therefore, in those cases where indicators of hydric soil and wetland hydrology are present, the vegetation would be reevaluated with the prevalence index taking into account non-dominant plant species as well. A plant community is considered hydrophytic if any one of these tests are passed.

### 3.2 HYDRIC SOILS

Hydric soils are soils that are saturated, ponded, or flooded long enough during the growing season to develop anaerobic conditions in the upper portion of the soil column (typically within the upper eighteen (18) inches). The prolonged presence of water results in the chemical reduction of elements, particularly iron and manganese. Reduced soils often exhibit a gray (or gleyed) color that reflects either the leaching of elements or the presence of reduced elements.

Hydric soils are often characterized by bright mottles, sometimes called redoximorphic features. Mottles are an indication of incomplete saturation. They typically represent isolated pockets where elements (mainly iron) have remained oxidized. Another feature of hydric soils is a low matrix chroma in the diagnostic zone, which is typically identified as the upper eighteen (18) inches of the soil layer, but may vary. For mineral hydric soils, the diagnostic zone typically must have a matrix chroma of two (2) or less for soils with mottles, or a matrix chroma of one (1) or less for soils without mottles. To make this determination, soil cores are collected in the field in suspected wetland areas and the soil colors are compared to a Munsell Soil Color Chart (Kollmorgen Instruments Corporation 1988). Other examples of field indicators for hydric soils include, but are not limited to, high organic content, histic epipedons, concretions, sandy redox, and/or a sulfidic odor and are defined in the Regional Supplement to the Wetland Delineation Manual (USACE 2012).

#### **3.3 WETLAND HYDROLOGY**

Wetland hydrology supplies the moisture required to support wetland vegetation and also creates the conditions necessary for the formation of hydric soils. Primary indicators of wetland hydrology include, but are not limited to, observed inundation or saturation, water marks, drift deposits, sediment deposits, aquatic fauna, oxidized rhizospheres on living roots, and water-stained leaves. Secondary indicators of wetland hydrology include, but are not limited to, drainage patterns, surface soil cracks, crayfish burrows, and the FAC-Neutral test. The FAC-Neutral test involves comparing the number of OBL and FACW plant species to the number of FACU and UPL plant species, with FAC species being neutral. If fifty (50) percent or more of the plant species are OBL or FACW, the FAC-Neutral test is considered a secondary indicator of wetland hydrology. An area must contain at least one (1) primary indicator or two (2) secondary indicators of wetland hydrology to be met.

#### 3.4 STREAM CHANNELS

In addition to identifying wetlands, stream channels were flagged that would likely be considered jurisdictional WUS. Stream channels were identified by the presence of a defined bed and bank, as well as a defined ordinary high water mark (OHWM). Furthermore, identified stream channels were classified into one (1) of three (3) categories: perennial stream channels that typically flow year-round, intermittent stream channels that only flow seasonally, and ephemeral stream channels that typically flow less than seasonally. Ephemeral channels receive hydrology from surficial sources such as runoff from surrounding uplands during and immediately following precipitation events and/or snow melt (i.e., do not have a direct connection to groundwater and are not hydraulically connected to wetlands). Desktop information such as USGS maps, soil surveys, NWI maps, and other materials were used to assist in classifying stream channels in addition to observations made during the site visits.

#### 3.5 FIELD DATA COLLECTION

Locations for collection of data were established onsite to evaluate the presence or absence of jurisdictional wetlands/waterways, and to demonstrate the typical characteristics of uplands and wetlands along the line of delineation. Surrounding vegetative species and hydrologic indicators were observed at the sample locations. EA personnel collected soil to a depth of approximately eighteen (18) inches or until refusal was encountered to observe soil conditions and classify the soil as either hydric or non-hydric. The sample plot within the wetland boundary was marked and surveyed with a Trimble Geo 7x – sub-meter accurate global positioning system. Routine wetland determination data sheets were used to summarize observations on vegetation, soils, and hydrology for both the wetland and upland sample plots. Copies of these wetland determination data forms are included in **Appendix B**.

Photographs of the wetlands and streams identified in the area of review were taken and are included in **Appendix C** of this report.

#### **3.6 FIELD DELINEATION**

A field review to evaluate whether wetlands and/or waterways were present within the area of review was originally performed in October 2009. The field delineation of wetlands and WUS consisted of identifying the limits of the wetlands and waterways with pink and black flags, which were numbered sequentially. Wetland flag locations were located in the field using a handheld Trimble Geo 7x global positioning system with sub-meter horizontal accuracy and collected in the North American Datum of 1983, Maryland State Plane South Coordinate System.

On May 1, 2018, EA's wetland scientists re-visited the site to re-evaluate the wetland and stream boundaries and confirmed very little change to these resources. Slight variations in the wetland and stream boundaries that were observed were re-surveyed and included on the attached Wetland Delineation Map (**Appendix D**).

#### 4. SYSTEMS IDENTIFIED

On May 1, 2018, EA's wetland scientists conducted onsite investigations of the project site and identified four (4) potentially jurisdictional wetlands and three (3) defined WUS within the project site. Additionally, a series of ponds, drainage swales, outfalls, and pipes were identified throughout the project site, but have not been identified as jurisdictional since these features are part of the stormwater management system and were created in previously upland habitat. The four (4) wetlands and three (3) WUS, as well as the non-jurisdictional features, are described in the following sections of this report and are provided on the figure found in **Appendix D**.

#### 4.1 STREAM CHANNEL #1 (CRABBS BRANCH)

Stream Channel #1 consisted of one (1) perennial stream channel referred to on the USGS map as Crabbs Branch (**Appendix A, Figure 3**). Stream Channel #1 originated offsite to the north and entered the area of review through the existing utility right-of-way (**Appendix D**). Stream Channel #1 generally flowed in the area of review in a southeasterly direction for approximately sixty-eight (68) feet and adjacent to Wetland A before exiting the area of review. Outside of the project site, Crabbs Branch continued in an easterly direction for over two thousand one hundred (2,100) feet to the confluence with Rock Creek. EA's wetland scientists observed a defined bed and bank and an OHWM within the limits of the stream channel. Based on observations made during the wetland delineation effort and subsequent site visits, it has been determined that Crabbs Branch is a perennial stream channel with relatively permanent flow throughout the year. This stream channel has been classified as a Relatively Permanent Water (RPW) with directly abutting wetlands (Wetland A).

#### 4.2 WETLAND A / POND #2 (EMERGENT WETLAND)

Wetland A was predominately located within the utility right-of-way on the northeast portion of the site (**Appendix D**). This wetland was identified as an emergent wetland encompassing a small open water pond and directly abutting Stream Channel #1. The source of hydrology for Wetland A appeared to be groundwater, as well as runoff from the surrounding land.

Wetland A contained predominantly hydrophytic vegetation consisting of red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*) saplings, and black willow (*Salix nigra*) saplings, as well as skunk cabbage (*Symplocarpus foetidus*) false nettle (*Boehmeria cylindrica*), sensitive fern (*Onoclea sensibilis*), soft rush (*Juncus effusus*), sedge species (*Carex spp.*), and arrowleaf tearthumb (*Polygonum sagittatum*). The soil matrix within the wetland area had a chroma value of two (2) or less with mottling of the matrix. Redox features and depletions were observed in soil samples throughout the wetland. Wetland hydrology indicators included saturation in the upper twelve (12) inches, water-stained leaves, and drainage patterns.

This wetland extended from the right-of-way into the forested edge of the Landfill and included a small pond that appears to have been a sediment basin for the existing landfill (referred to as Pond #2 by the County). Although Pond #2 was surrounded by a chain-link fence, it was evident that

Wetland A included the surrounding area outside of the fence; therefore, the entire fenced area was included in the delineation.

#### 4.3 STREAM CHANNEL #2 (UNNAMED TRIBUTARY TO ROCK CREEK)

Stream Channel #2 consisted of a perennial stream channel depicted on the USGS map as an unnamed tributary to Rock Creek (Appendix A, Figure 3). Stream Channel #2 originated offsite to the west and entered the area of review from a box culvert located beneath East Gude Drive (Appendix D). Additionally, a second channel originates from the large pond (referred to as Pond #1 by the County and considered a non-jurisdictional feature) located offsite to the west that outfalls onto the project site and contributes to Stream Channel #2. Stream Channel #2 generally flowed onsite in an easterly direction for approximately four hundred fifty-two (452) feet and adjacent to Wetland B before exiting the area of review. The majority of this stream channel is located outside of the project site to the south. From the southeastern corner of the project site. Steam Channel #2 flows in an easterly direction for approximately one thousand six hundred (1,600) feet to the confluence with Rock Creek. EA personnel observed a defined bed and bank and OHWM within the limits of the stream channel. Based on observations made during the wetland delineation effort and subsequent site visits, it has been determined that this unnamed tributary to Rock Creek is a perennial stream channel with relatively permanent flow throughout the year. Stream Channel #2 has been classified as an RPW with directly abutting wetlands (Wetland B) and adjacent wetlands (Wetland C).

#### 4.4 WETLAND B (PALUSTRINE FORESTED WETLAND)

Wetland B was located along Stream Channel #2 on the south-central portion of the site (**Appendix D**). This wetland was classified as a forested wetland directly abutting Stream Channel #2. The source of hydrology for Wetland B appeared to be groundwater, as well as runoff from the surrounding land.

Wetland B contained predominantly hydrophytic vegetation consisting of red maple, sweetgum, and willow oak (*Quercus phellos*), soft rush, sedge species, and arrowleaf tearthumb. The soil matrix within the wetland area had a chroma value of two (2) or less with mottling of the matrix. Redox features and depletions were observed in soil samples throughout the wetland. Wetland hydrology indicators included saturation in the upper twelve (12) inches, water-stained leaves, and drainage patterns.

Within the areas outside of the wetland boundaries, EA personnel observed predominantly nonhydrophytic vegetation species, including tulip poplar (*Liriodendron tulipifera*), white oak (*Quercus alba*), and Christmas fern (*Polystichum acrostichoides*). No evidence of wetland hydrology was observed in the adjacent upland areas during the site visit.

#### 4.5 WETLAND C (PALUSTRINE EMERGENT WETLAND)

Wetland C was located upslope from Stream Channel #2 within the cleared area for the Landfill on the central portion of the site (**Appendix D**). This wetland was classified as an emergent

wetland that has developed within a depression adjacent to a large basin (referred to as Pond #3 by the County, and considered a non-jurisdictional feature). Wetland C does not directly abut any stream channel onsite. However, EA personnel identified a series of inlets, outfalls, pipes, and drainage swales that convey flow from this wetland down to Stream Channel #2.

Within the limits of the wetland, EA personnel observed predominantly hydrophytic vegetation species, including soft rush, softstem bullrush (*Schoenoplectus tabernaemontani*), blunt spikerush (*Eleocharis obtusa*), and sedge species. Evidence of observed wetland hydrology included saturated soil within twelve (12) inches of the ground surface and inundation. EA personnel excavated test pits to depths of approximately eighteen (18) inches and observed gleyed or low-chroma soils.

Within the areas outside of the wetland boundaries, EA personnel observed predominantly nonhydrophytic vegetation species, including multiflora rose (*Rosa multiflora*), red cedar (*Juniperus virginiana*), barnyardgrass (*Echinochloa crus-galli*), and black locust (*Robinia pseudoacacia*). No evidence of wetland hydrology was observed in the upland areas during the site visit, and the soils sample predominately consisted of fill material.

#### 4.6 POND #4 (PALUSTRINE EMERGENT WETLAND)

EA personnel identified a fenced pond (referred to as Pond #4 by the County) associated with the stream/wetland system located on the south side of the project site (**Appendix D**). Pond #4 appeared to be a historical sediment basin, and classified as a potential emergent wetland. This pond was located adjacent to Wetland B but appeared to be hydrologically separated by an earthen berm. A deteriorated eighteen (18)-inch corrugated metal pipe was identified at this location and directly connects the pond to Stream Channel #2. This pond was identified as a potentially jurisdictional feature due to its location, directly adjacent to Stream Channel #2, and its location within the floodplain. Furthermore, groundwater was observed in the soil pit during the field effort; the presence of hydrophytic emergent vegetation within the pond as well as larger hydrophytic trees was documented along the pond boundary. Unlike other ponds identified onsite this pond does not appear to have been constructed solely in uplands and, therefore, this pond has potential to be considered jurisdictional.

Pond #4 contained predominantly hydrophytic vegetation consisting of red maple, silver maple (*Acer saccharinum*), and black willow along the edge of the pond, and sensitive fern, soft rush, and sedge species within the central portion of the pond. The soil matrix within the wetland area had a chroma value of two (2) or less with mottling of the matrix. Redox features were observed in soil samples throughout the wetland. Wetland hydrology indicators included inundation and saturation in the upper twelve (12) inches, along with water-stained leaves, and water marks.

#### 4.7 WATERS OF THE U.S. #3 (EPHEMERAL CHANNEL)

Stream Channel #3 consisted of an ephemeral stream channel just offsite of the southeast corner of the project site (**Appendix D**). This ephemeral channel originated near the toe of the steep slopes surrounding the Landfill and flowed in a southerly direction for approximately one hundred eighty-

eight (188) linear feet before contributing to Stream Channel #2 near the outfall of Pond #1. Although this stream channel is located outside of the project site, it was flagged due to its proximity to the project site. EA personnel observed a defined bed and bank and OHWM within the limits of the stream channel; however, no evidence of recent flow was observed at the time of the site visit. Based on observations made during the wetland delineation effort and subsequent site visits, it has been determined that this channel is an ephemeral stream channel. This channel appeared to have been formed from surficial runoff from the Landfill. Within the forested area along the ephemeral channel, EA personnel observed predominantly non-hydrophytic vegetation species, including tulip poplar, white oak, American beech (Fagus grandifolia), and Japanese honeysuckle (Lonicera japonica). Stream Channel #3 has been classified as a Non-Relatively Permanent Water (Non-RPW) with no adjacent or abutting wetlands that contributed surface flow directly to an RPW.

A description of the wetlands and stream channels with a list of dimensions is provided in **Table 3**, with a preliminary significant nexus determination for each feature.

		Significant	Dimensions		
Delineated Feature	Resource	Nexus Determination	within the Project Site	Location within the Area of Review	
Wetland A	Forested Wetland	Abutting an RPW	0.22 acre	Northeastern corner of area of review	
Wetland B	Forested Wetland	Abutting an RPW	0.06 acre	Along southwestern boundary of area of review	
Wetland C	Emergent Wetland	Isolated	0.03 acre	Central area of review	
Pond #4	Perennial Stream	Year-Round RPW	0.15 acre	Along south boundary of area of review	
Stream Channel #1	Perennial Stream	Year-Round RPW	68 LF	Northern corner of area of review	
Stream Channel #2	Perennial Stream	Year-Round RPW	452 LF	Adjacent to the southern boundary of the area of review	
Stream Channel #3	Ephemeral Stream	Non-RPW	188 LF ^(a)	Southeastern corner of area of review	
(a) Dimension includes feature located outside of the project site.					
Notes: $LF = Linear feet.$					

Table 3 **Delineated Features Identified** 

#### RPW = Relatively Permanent Water.

#### 4.8 NON-JURISDICTIONAL STORMWATER MANAGEMENT FEATURES

EA wetland scientists identified multiple locations throughout the area of review as part of the existing landfill, including stormwater management infrastructure, that are not typical of natural wetland systems. EA reviewed these areas and, with the exception of Ponds #2 and #4, did not identify any other stormwater management infrastructure as a potentially jurisdictional feature. Although most ponds are designed to outfall to an existing stream channel, and therefore could be seen as contributing to waters of the U.S., it is EA's professional experience that stormwater management infrastructure is typically only regulated as wetlands or streams if it is believed to be constructed in previous wetland or stream areas or is considered to be an in-line feature. For example:

- In-line ponds, where a likely jurisdictional stream channel was identified to flow into a pond and then continued below the pond—In this situation, the pond would likely be considered jurisdictional.
- Located within floodplains—If a pond appears to be located within a floodplain of an existing stream channel and the pond banks are surrounded with wetland vegetation, it would be difficult to determine whether or not the pond was originally constructed in uplands. These areas would typically be flagged as an abutting or adjacent wetland.

Ponds #1, #3, and the M-NCPPC, as well as swales identified throughout the site, appeared to be maintained features that were constructed completely in uplands with no wetlands or streams contributing to them from upslope locations. Since no natural stream or wetland feature was identified upslope from these ponds, EA believes that jurisdictional status will begin immediately below the pond outfall.

Many of the riprap swales throughout the facility were identified along existing roads and throughout the upland portion of the Landfill and were viewed as stormwater management drainage swales. These riprap and grass swales receive surficial runoff from the roads and other impervious or unvegetated surfaces and do not receive hydrology from natural stream channels or wetlands. Furthermore, these areas are underlain by fill material and refuse of the landfill.

#### 5. CONCLUSION

The four (4) potentially jurisdictional wetlands and three (3) stream channels identified within the area of review either exhibited characteristics of regulated WUS (such as a defined bed and bank and presence of an OHWM) or all three (3) wetland parameters (hydrophytic vegetation, hydric soils, and wetland hydrology) as defined in the Regional Supplement (USACE 2012). Therefore, these areas were identified in the field and mapped on the wetland delineation map provided in **Appendix D**.

It is important to note that USACE is the federal agency that determines the official jurisdictional status of wetlands/waterways. Furthermore, the Maryland Department of the Environment can regulate wetlands/waterways considered non-jurisdictional by USACE. To determine whether USACE or the Maryland Department of the Environment will take jurisdiction over any areas of the subject property, a Jurisdictional Determination request should be submitted jointly to these agencies.

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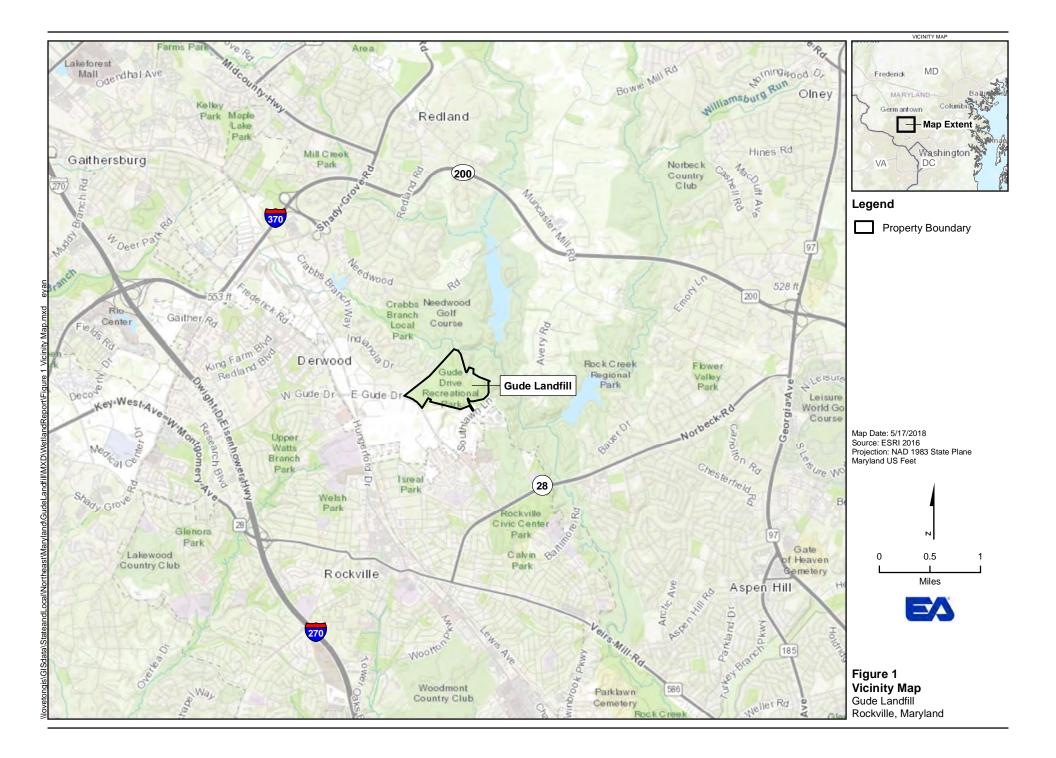
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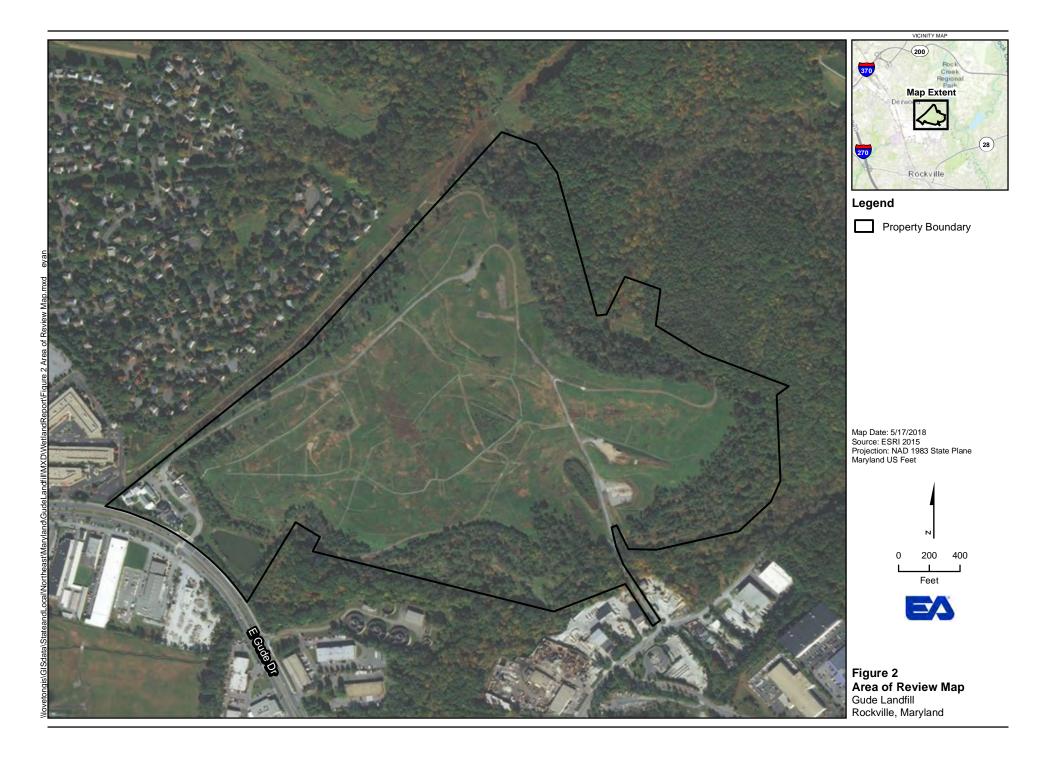
2018b. State Soil Data Access (SDA) Hydric Soils List.
 <u>https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316619.html</u>. Accessed on May 15, 2018.

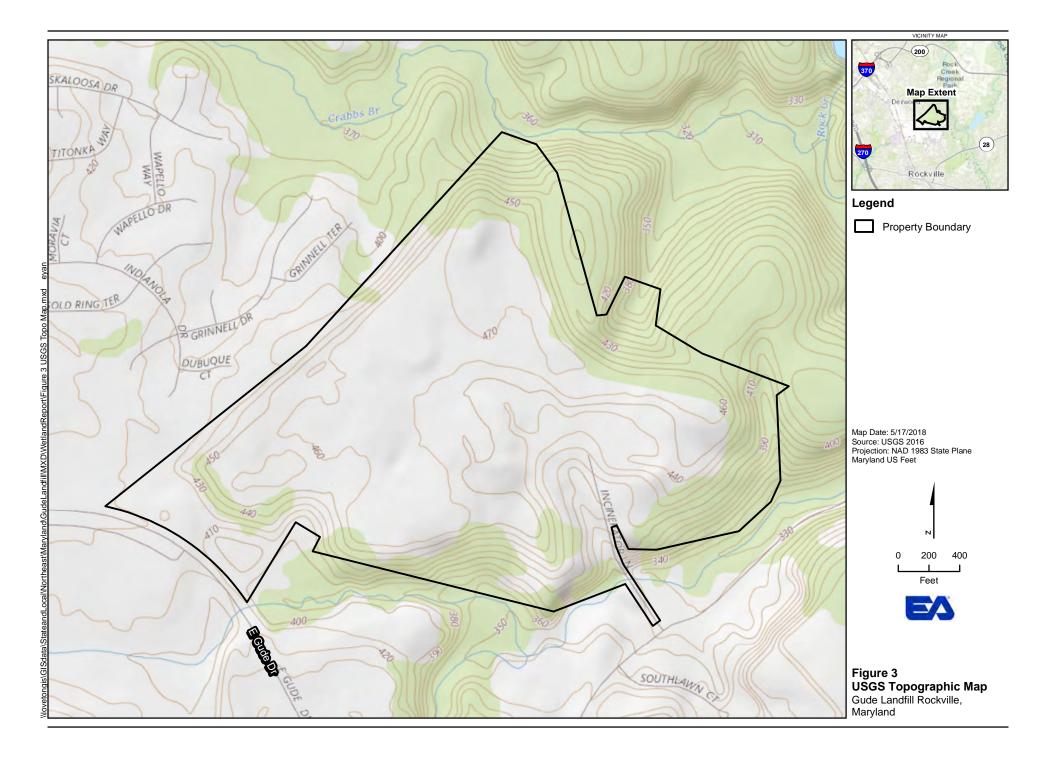
U.S. Fish and Wildlife Service. 2018. *National Wetlands Inventory*. <u>https://www.fws.gov/wetlands/</u>. Accessed on May 22, 2018. Appendix A

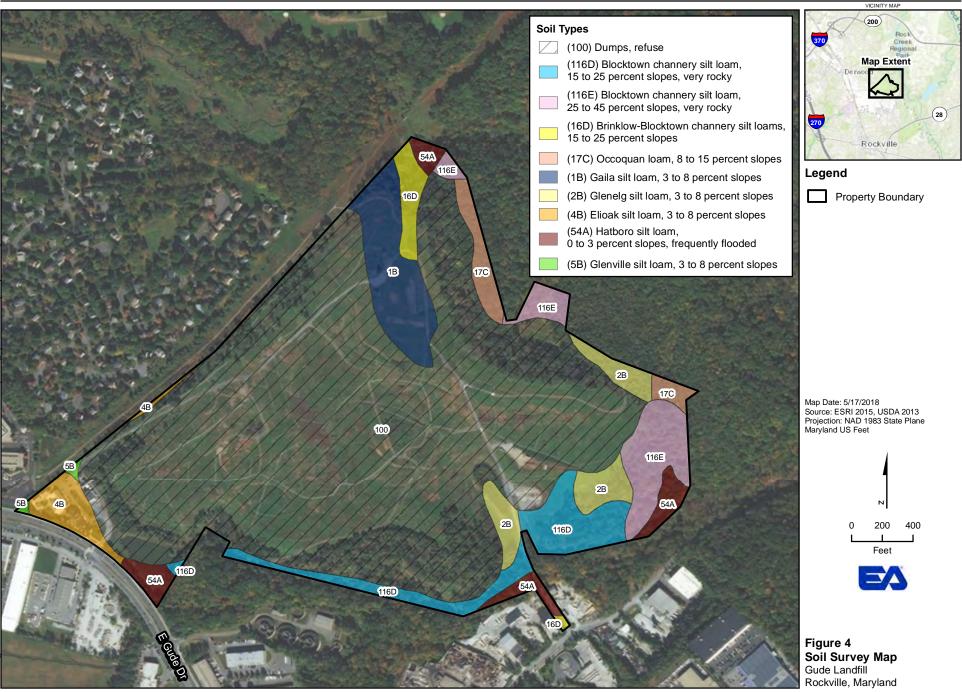
Figures

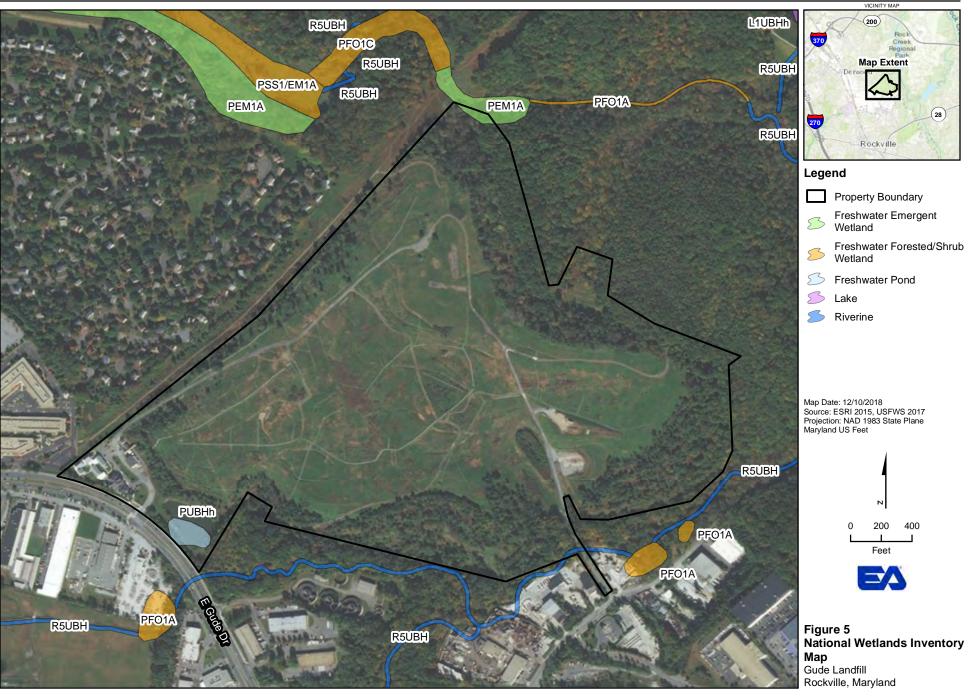
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Appendix B

**Wetland Delineation Data Forms** 

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Project/Site: Gude Landfill		City/County: Mo	ontgomery Cou	nty	Sam	pling Date: <u>5/1/</u> 2	18
Applicant/Owner: DEP/DSWS				State:	MD Samp	pling Point: W	/ETA
Investigator(s): TMK		Sectio	on, Township, R	lange:			
Landform (hillslope, terrace, etc.):	floodplain		Local Relie	ef (concave, c	onvex, none): co	oncave	
Slope %: <5% Latitude:	39° 06' 29" N	Longitu	de: 77° 08'	16" W	Datum:	NAD83 state pla	ane
Soil Map Unit Name: Hatboro silt	loam, 0-3% slopes				NWI Classificati	on: PEM	
Are climatic/hydrologic conditions of	on the site typical for the	his time of year?	Yes☑ No□	☐ (If no, e	explain in Remarks.)	)	
Are Vegetation , Soil , or hydr	ology 🛛 significantly	disturbed?	Are "Normal Ci	rcumstances"	present? Yes 🗵	No 🗆	
Are Vegetation $\Box$ , Soil $\Box$ , or hydr	ology 🛛 naturally pro	oblematic?	(If needed, exp	lain any answ	ers in remarks.)		
SUMMARY OF FINDINGS - At	tach site man sho	wing sampling poi	nt locations	transects	important feat	ures etc	
Hydrophytic Vegetation Present?	Yes 🗹 No 🗆		Sampled Area		_		
Hydric Soil Present?	Yes 🗹 No 🗆	15 110	Samplearaca				
Wetland Hydrology Present?	Yes 🗹 No 🗆	If yes	optional Wetla	and Site ID.	Wetland A		
Remarks: (Explain alternative proce					Wettand A		
HYDROLOGY							
Wetland Hydrology Indicators:					Secondary Indicate	ors (minimum of	f 2)
Primary Indicators (minimum of one	e is required; check all	that apply)			Surface Soil C		_/
Surface Water (A1)					Sparsely Veg	. Concave Surfac	ce(B8)
High Water Table (A2)		Aquatic Fauna (B13)			Drainage Pat		
Saturation (A3)		True Aquatic Plants (E Hydrogen Sulfide Odd	,		Moss Trim Li Dry-Season V	nes (B16) Nater Table (C2)	
<ul> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> </ul>		Oxidized Rhizosphere		ts (C3)	Crayfish Burr		
Drift Deposits (B3)		Presence of Reduced	-	(00)		isible on Aerial(	(C9)
☐ Algal Mat or Crust (B4)		Recent Iron Reduction	. ,	(C6)		tressed Plants (D	. ,
Iron Deposits (B5)		Thin Muck Surface (C	7)		Geomorphic	Position (D2)	
Inundation Visible on Aerial Im	nagery (B7)	Other (Explain in Rem	arks)		Shallow Aqui		
Water-Stained Leaves (B9)					Microtopogra	aphic Relief (D4)	)
					☐ FAC-Neutral	Test (D5)	
Field Observations: Surface Water Present? Yes	No☑ Depth (inche	ec).					
Water Table Present? Yes 🗸	No Depth (inche						
Saturation Present? Yes ☑	No Depth (inche		Wetlan	d Hydrology	Present? Yes 🗹	No	
(includes capillary fringe)							
Describe Recorded Data (stream gua	age, monitoring well, a	aerial photos, previous	inspections), if	available:			
Remarks:							
VEGETATION - Use Scientific	Names of Plants.	Absolute Dominar	nt Indicator	Dominanco	Test worksheet:		
Tree Stratum (Plot size: 30 ft	)	% Cover Species			ominant Species		
1 Acer rubrum	_/	15 YES	FAC		L, FACW, or FAC:	8	(A)
2							_
3					er of Dominant		
4			_	Species Acro	ss All Strata:	8	(B)
5			_	Dorcont of D	ominant Species		
7					L, FACW, or FAC:	100.0	(A/B)
·		15 = Total co	/er		L, 17 (CW), OF 17 (C.	100.0	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
		7.5 = 50%	3 = 20%				
Sapling/Shrub Stratum (Plot size	:: <u>30 ft</u> )				ndex worksheet:		
1 Acer rubrum		15 YES	FAC	Total % Co	ver of:	Multiply	by:
2 Liquidamber styraciflua		10 YES	FAC	OBL species		x1	
3 <u>Salix nigra</u> 4		15 YES	FACW	FACW specie FAC species		x 2 x 3	
5		<u> </u>		FACU species	s	x 4	
6				UPL Species		x 5	
7				Column Tota	lls:	(A)	(B)
		40 = Total Cov		Prevala	ince Index = B/A =		
		20 = 50%	8 = 20%	1			



Vegetation (continued)				Sampling Point: WETA
	Absolute		Indicator	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 30 ft )	% Cover	Species?	Status	Rapid Test for Hydrophytic Vegetation
1 Polystichun acrostichoides	5	NO	FACU	☑ Dominance test is >50%
2 Symplocarpus foetidus	25	YES	OBL	Prevalence Index is $\leq 3.0^{1}$
3 Boehmeria cylindrica	10	YES	FACW	Morphological Adaptations ¹ (Provide Supporting
4 Juncus effusus	10	YES	FACW	data in Remarks or on a separate sheet)
5 Polygonum sagittatum	10	YES	FACW	Problematic Hydrophytic Vegetation ¹ (Explain)
6				¹ Indicators of hydric soil and wetland hydrology must
7				be present, unless disturbed or problematic.
		= Total Cover		
	30	= 50% 12	= 20%	Definitions of Vegetation Strata:
Woody Vine Stratum (Plot size: 30 ft )				Tree: Woody plants 3 in. (7.6cm) or more in diameter
1		·		at breast height (DBH), regardless of height.
2				Sapling/shrub: Woody plants less than 3 in. DBH
3				and greater then 3.28 ft (1m) tall.
4				Herb: All herbaceous (non-woody) plants, regardless
5				of size, and woody plants less than 3.28 ft tall.
7				Woody Vines: All woody vines greater than 3.28 ft in beight
/	0	= Total Cover		height.
			= 20%	Hydrophytic Vegetation Present? Yes 🗹 No
		= 50% 0	- 20%	
Remarks: (Include photo numbers here or on a separate	sheet.)			
SOIL				
Profile Description: (Describe to the depth needed to do		ndiantar ar conf		econom of indicators )
	edox Features		irm the at	osence of indicators.)
			Tavt	Demortes
(inches) Color (moist) % Color (moist) 0-2 10YR32/2 100	% Ту	vpe ¹ Loc ²	Textu	
0-2         10YR32/2         100           2-10         10YR 4/2         90         7.5YR 4/6	10	C M	orgar Silt lo	
10-20 10YR 5/1 80 10YR 4/6		<u>с м</u>	Silt lo	
<u>10-20</u> <u>101K 5/1</u> <u>80</u> 101K 4/6	20		Slit IO	am
¹ Type: C=Concentration, D=Depletion, RM=Reduced Mat		ed or Coated Sa	nd Grains	² Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :
	rk Surface (S7			
		[,] Surface (S8) <b>(M</b> :e (S9) (LRR R, M		
			LKA 149DJ	
	amy Gleyed N pleted Matrix			(MLRA 136, 147)     Ded Derent Material (TE2)
	dox Dark Surf	. ,		<ul> <li>Red Parent Material (TF2)</li> <li>Very Shallow Dark Surface (TF12)</li> </ul>
	pleted Dark Sull			Other (Explain in Remarks)
	dox Depressic	. ,		
	-	e Masses (F12) <b>(L</b>	RR N	
	.RA 136)	11103505 (1 12) (1	,	
-		(F13) <b>(MLRA 136</b>	5 122)	
		plain Soils (F19)	-	8)
Stripped Matrix (S6)		50115 (1 15)		5,
³ Indicators of hydrophtic vegetation and wetland hydrole	ogy Dust be r	recent unless d	listurhad a	or problematic
Restrictive Layer (if observed):	Jgymust be p	nesent, unless u	listui beu c	i problematic.
Type:				Hydric Soil Present? Yes 🗹 No
Depth (inches):				
Remarks:				



Project/Site: Gude Landfill		City/Cou	inty: Montgo	omery Cour	ity	Samp	pling Date: <u>5/1/</u> 2	18
Applicant/Owner: DEP/DSWS					State:	MD Samp	pling Point: W	ETB
Investigator(s): TMK			Section, To	ownship, Ra	ange:			
Landform (hillslope, terrace, etc.):	floodplain			Local Relie	f (concave, co	onvex, none): co	oncave	
Slope %: <5% Latitude:	39° 06′ 29″ N		Longitude:	77° 08′ 1	l6" W	Datum:	NAD83 state pla	ane
	hannery silt loam, 15-	25% slopes				NWI Classificati	on: PFO	
Are climatic/hydrologic conditions o	n the site typical for th	nis time of year	·? Yes	.⊡ No□	] (If no, e	explain in Remarks.)	)	
Are Vegetation , Soil , or hydr	ology 🗌 significantly	disturbed?	Are "	Normal Cir	cumstances"	present? Yes 🗹	No 🗆	
Are Vegetation , Soil , or hydr	ology   naturally prc	blematic?	(If ne	eded, expl	ain any answ	ers in remarks.)		
					·			
SUMMARY OF FINDINGS - At		wing sampli						
Hydrophytic Vegetation Present?	Yes 🗹 No 🗆		Is the Sam	pled Area	within a Wet	land? Yes 🗹	No	
Hydric Soil Present?	Yes 🗹 No 🗌							
Wetland Hydrology Present?	Yes 🗹 🛛 No 🗆		If yes, opti	ional Wetla	nd Site ID:	WETLAND B		
Remarks: (Explain alternative procee	dures here or in a sepa	irate report.)						
HYDROLOGY								
Wetland Hydrology Indicators:						Secondary Indicate	ors (minimum of	2)
Primary Indicators (minimum of one	is required; check all	that apply)				Surface Soil C		2)
Surface Water (A1)						□ Sparsely Veg.	. Concave Surfac	e(B8)
High Water Table (A2)		Aquatic Fauna				☑ Drainage Pat		
<ul> <li>Saturation (A3)</li> <li>Water Marks (B1)</li> </ul>		True Aquatic I Hydrogen Sulf	. ,	1		Moss Trim Lii Dry-Season V	nes (B16) Vater Table (C2)	
<ul> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> </ul>		Oxidized Rhize			s (C3)	Crayfish Burr		
Drift Deposits (B3)		Presence of R			- ( )		isible on Aerial(	C9)
Algal Mat or Crust (B4)		Recent Iron R		illed Soils (	C6)		tressed Plants (D	1)
Iron Deposits (B5)		Thin Muck Su	• •				Position (D2)	
<ul> <li>Inundation Visible on Aerial Im</li> <li>Water-Stained Leaves (B9)</li> </ul>	agery (B7)	Other (Explair	i in Kemarks	)		Shallow Aqui Microtopogra	aphic Relief (D4)	
						FAC-Neutral		
Field Observations:								
Surface Water Present? Yes	No Depth (inche							
Water Table Present? Yes ☐ Saturation Present? Yes ☑	No☑ Depth (inche No□ Depth (inche	/	<u>,                                     </u>	Wetlan	d Hydrology I	Present? Yes 🗹	No	
(includes capillary fringe)		.57. 5011000		wettan	u nyunology i			
Describe Recorded Data (stream gua	age, monitoring well, a	erial photos, p	revious inspe	ections), if a	available:			
Remarks:								
Remarks.								
VEGETATION - Use Scientific	Names of Plants.	Absolute [	Dominant	Indicator	Dominance	Test worksheet:		
Tree Stratum (Plot size: 30 ft	)		Species?	Status		ominant Species		
1 Acer rubrum	-'	15	YES	FAC	That Are OBI	, FACW, or FAC:	6	(A)
2 Liquidambar styraciflua		15	YES	FAC				
3 Quercus phellos 4		10	YES	FACW	Total Numbe Species Acro	er of Dominant	6	(B)
4 5					Species Acio	SS All Stidtd.	0	(B)
6					Percent of D	ominant Species		
7					That Are OBI	, FACW, or FAC:	100.0	(A/B)
			Total cover	- 20%				
Sapling/Shrub Stratum (Plot size	: 30 ft )	20 = 5	0% 8	= 20%	Prevalence l	ndex worksheet:		
1 Acer rubrum		15	YES	FAC	Total % Co		Multiply	by:
2					OBL species		x 1	
3					FACW specie	s	x 2	
4					FAC species FACU species		x 3 x 4	
6					UPL Species		x 5	
7					Column Tota		(A)	(B)
	_	15 = T	otal Cover		Prevala	nce Index = B/A =		

7.5 = 50%

3

= 20%



Vegetation (contin	ued)							Sampling Point: WETB
-	· ·		Absolute	e Dom	ninant l	Indicator	Hyd	Irophytic Vegetation Indicators:
Herb Stratum (Plot siz	e: <u>30 ft</u> )		% Cove		ecies?	Status		Rapid Test for Hydrophytic Vegetation
1 Juncus effusus			10		YES	FACW	~	Dominance test is >50%
2 Polygonum sagittatu	m		10	<u> </u>	YES	FACW		Prevalence Index is $\leq 3.0^{1}$
3								Morphological Adaptations ¹ (Provide Supporting
4								data in Remarks or on a separate sheet)
5								Problematic Hydrophytic Vegetation ¹ (Explain)
6								icators of hydric soil and wetland hydrology must
7							be p	resent, unless disturbed or problematic.
			20	= Total		- 00/		•···
		2011	10	= 50%	4	= 20%		nitions of Vegetation Strata:
Woody Vine Stratum	(Plot size:	30 ft )						:: Woody plants 3 in. (7.6cm) or more in diameter
1								reast height (DBH), regardless of height. ing/shrub: Woody plants less than 3 in. DBH
3								greater then 3.28 ft (1m) tall.
4								: All herbaceous (non-woody) plants, regardless
5								ze, and woody plants less than 3.28 ft tall.
6								ody Vines: All woody vines greater than 3.28 ft in
7							heig	ht.
			0	= Total	l Cover			
			0	= 50%	0	= 20%	Hyd	rophytic Vegetation Present? Yes 🗹 No
Remarks: (Include phote	o numbers here	or on a separa	ate sheet.)				1	
· · ·								
SOIL								
Profile Description: (De	scribe to the de	pth needed to	o document th	e indicate	or or confi	irm the al	bsenc	e of indicators.)
Depth N	latrix		Redox Featu					
(inches) Color (me		Color (moist	<u> </u>	Type ¹	Loc ²	Text	ure	Remarks
0-6 10YR 4		10YR 4/4	3	С	М	fine sand	ly loam	
6-20 10YR 5	/1 90	10YR 4/6	10	С	Μ	Silt lo	bam	
¹ Type: C=Concentration	D-Depletion F	2N1-Reduced N	Matrix CS=Cov	ured or (	Costed Sau	nd Grains		² Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:	, D-Depiction, .	(IVI-ICCUUCCU .					•	Indicators for Problematic Hydric Soils ³ :
Histosol (A1)			Dark Surface (	(67)				□ 2 cm Muck (A10) (MLRA 147)
<ul> <li>Histosol (A1)</li> <li>Histic Epipedon (A</li> </ul>	21		Polyvalue Belo		~~ (SR) (M	DA 147	142)	Coast Prarie Redox (A16) (MLRA 147, 148)
Black Histic (A3)	2)		Thin Dark Sur					<ul> <li>Piedmont Floodplain Soils (F19)</li> </ul>
Hydron Sulfide (A4)	1)		Loamy Gleyed			LIU ( 2 ,	,	(MLRA 136, 147)
Stratified Layers (A	•		Depleted Mat		,			Red Parent Material (TF2)
2 cm Muck (A10) (	-		Redox Dark Su		5)			<ul> <li>Very Shallow Dark Surface (TF12)</li> </ul>
Depleted Below D	-		Depleted Darl	-	-			Other (Explain in Remarks)
Thick Dark Surface	e (A12)		Redox Depres	sions (F8	)			_
Sandy Mucky Mine	eral (S1) <b>(LRR N,</b>		Iron-Mangane	ese Masse	es (F12) <b>(L</b>	.RR N,		
MLRA 147, 148	-		MLRA 136)					
Sandy Gleyed Mat	rix (S4)		Umbric Surfac			-		
Sandy Redox (S5)			Piedmont Floo	odplain So	oils (F19) (	(MLRA 14	8)	
Stripped Matrix (S			_					
³ Indicators of hydrophti		d wetland hyd	rologyLlust b	e present	t, unless d	isturbed o	or pro	blematic.
Restrictive Layer (if obs	erved):						ц	ydric Soil Present? Yes 🗸 No
Type: Depth (inches):			ļ.				п	ydric Soil Present? Yes 🗹 No
,			·					
Remarks:								



Project/Site: Gude Landfill		City/Cor	unty: <u>Montg</u>	omery Cour	nty	Samp	oling Date: 5/1/1	18
Applicant/Owner: DEP/DSWS					State: M	D Samp	oling Point: W	/ETC
Investigator(s): TMK			Section, T	Township, Ra	ange:			
Landform (hillslope, terrace, etc.):	hillslope - drainage s	wale		Local Relie	ef (concave, conv	/ex, none): co	ncave	
Slope %: 5% Latitude:	39° 06′ 29″ N		Longitude:	77° 08′ 1	16" W	Datum:	NAD83 state pla	ane
Soil Map Unit Name: Dump,refus	e		·			NWI Classificatio	on: PEM	
Are climatic/hydrologic conditions o	n the site typical for the	his time of yea	ir? Ye	es⊡ No□	] (If no, exp	lain in Remarks.)		
Are Vegetation $\Box$ , Soil $\Box$ , or hydrodian diameters of the second se	ology 🛛 significantly	disturbed?	Are	"Normal Cir	cumstances" pre	esent? Yes 🗹	No 🗆	
Are Vegetation $\Box$ , Soil $\Box$ , or hydr	ology 🗆 naturally pro	oblematic?	(If n	eeded, expl	ain any answers	in remarks.)		
SUMMARY OF FINDINGS - At							uros etc	
		Will's samp			within a Wetlan			
Hydrophytic Vegetation Present?			IS the Sam	npied Area	within a wetian	d? Yes 🗠	No	ŀ
Hydric Soil Present?	Yes 🗹 No 🗌							ł
Wetland Hydrology Present?	Yes 🗹 No 🗆		If yes, opt	tional Wetla	nd Site ID: W	etland C		
Remarks: (Explain alternative procee	dures here or in a sepa	arate report.)						ļ
HYDROLOGY								
Wetland Hydrology Indicators:						condary Indicato		2)
Primary Indicators (minimum of one	is required; check all	that apply)						()
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> </ul>		Aquatic Faun	(R12)			_ · · ·	. Concave Surfac terns (B10)	.e(B8)
☐ High Water Table (A2) ☑ Saturation (A3)		True Aquatic		ı		-		
Water Marks (B1)		Hydrogen Sul	. ,			_	Vater Table (C2)	,
Sediment Deposits (B2)	<u> </u>	Oxidized Rhiz		-				
Drift Deposits (B3)		Presence of F	Reduced Iron	ı (C4)	E	] Saturation Vi	sible on Aerial (	C9)
Algal Mat or Crust (B4)		Recent Iron F		Tilled Soils (			ressed Plants (D	1)
Iron Deposits (B5)		Thin Muck Su						
Inundation Visible on Aerial Im	agery (B7)	Other (Explai	in in Remarks	s)		•		
Water-Stained Leaves (B9)							aphic Relief (D4)	
			<u> </u>		L	FAC-Neutral	Fest (D5)	
Field Observations: Surface Water Present? Yes 🗌	No⊡ Depth (inche	oc).						
Water Table Present? Yes	No Depth (inche		— I					
Saturation Present? Yes 🗸	No Depth (inche		e	Wetlan	d Hydrology Pre	sent? Yes 🗸	No	
(includes capillary fringe)								
Describe Recorded Data (stream gua	age, monitoring well, a	ierial photos, p	previous insp	ections), it a	available:			
Remarks:								
VEGETATION - Use Scientific	Names of Plants.	A.L	De sel sant	1		· · · · · · · · · · · · · · · · · · ·		
Tree Stratum (Plot size: 30 ft	١	Absolute % Cover	Dominant Species?		Dominance Tes Number of Dom			
1	_)	70 COVE	Sheries:		That Are OBL, F	•	2	(A)
2								
3					Total Number o	of Dominant		
4					Species Across A	All Strata:	2	(B)
5								
6				-	Percent of Dom		100.0	( 1 ( D )
7		0 =	Total cover		That Are OBL, F	ACW, or FAC:	100.0	(A/B)
			Total cover 50% 0	= 20%				
Sapling/Shrub Stratum (Plot size	: 30 ft )				Prevalence Inde	ex worksheet:		
1					Total % Cover	of:	Multiply	by:
2					OBL species		x 1	
3					FACW species		x 2	
4					FAC species		x 3	
5					FACU species		x 4	
6					UPL Species Column Totals:		x 5 (A)	(B)
/		0 = 1	Total Cover			e Index = B/A =	(A)	(0)
			50% 0	= 20%				



Vegetation (continued)			Sampling Point: WETC
	Absolute Dominant		drophytic Vegetation Indicators:
Herb Stratum (Plot size: 30 ft )	% Cover Species?	Status 🔽	
1 schoenoplectus tabernaemontani	25 YES	OBL 🔽	Dominance test is >50%
2 Eleocharis obtusa	35 YES		Prevalence Index is $\leq 3.0^{1}$
3			Morphological Adaptations ¹ (Provide Supporting
4			data in Remarks or on a separate sheet)
5			Problematic Hydrophytic Vegetation ¹ (Explain)
6			dicators of hydric soil and wetland hydrology must
7		be p	present, unless disturbed or problematic.
	60 = Total Cover		· · · · · · · · · · · · · · · · · · ·
	30 = 50% 12		finitions of Vegetation Strata:
Woody Vine Stratum (Plot size: <u>30 ft</u> )			e: Woody plants 3 in. (7.6cm) or more in diameter
1			preast height (DBH), regardless of height. Jling/shrub: Woody plants less than 3 in. DBH
3			greater then 3.28 ft (1m) tall.
۵ <u>ــــــــــــــــــــــــــــــــــــ</u>	<u> </u>		<b>b:</b> All herbaceous (non-woody) plants, regardless
5			size, and woody plants less than 3.28 ft tall.
6			ody Vines: All woody vines greater than 3.28 ft in
7		heig	
	0 = Total Cover		
	0 = 50% 0	= 20% Hyd	drophytic Vegetation Present? Yes 🗹 No
Remarks: (Include photo numbers here or on a separate s	heet.)		
······································			
SOIL			
Profile Description: (Describe to the depth needed to doc	ument the indicator or co	nfirm the absend	ce of indicators.)
Depth Matrix Red	dox Features	_	
(inches) Color (moist) % Color (moist)	<u>%</u> Type ¹ Loc ²	Texture	Remarks
0-2 10YR 2/1 100		organic	
2-5 2.5Y 5/2 95 7.5YR 4/6	<u>5 C PL</u>	Silt loam	
5-12 10YR 4/1 85 10YR 6/8	15 C M	Silt loam	fill material present
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matri	iv CS-Covered or Costed S	and Grains	² Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :
	l. Cfaaa (CZ)		□ 2 cm Muck (A10) (MLRA 147)
	k Surface (S7) _/ value Below Surface (S8) <b>(I</b>	MIDA 147 140\	
	Dark Surface (S9) (LRR R, I		<ul> <li>Coast Prarie Redox (A16) (MLRA 147, 148)</li> <li>Piedmont Floodplain Soils (F19)</li> </ul>
	my Gleyed Matrix (F2)		(MLRA 136, 147)
	leted Matrix (F3)		Red Parent Material (TF2)
	ox Dark Surface (F6)		Very Shallow Dark Surface (TF12)
	leted Dark Surface (F7)		☐ Other (Explain in Remarks)
	ox Depressions (F8)		
Sandy Mucky Mineral (S1) (LRR N,	-Manganese Masses (F12)	(LRR N,	
MLRA 147, 148) MLR	RA 136)		
🗌 Sandy Gleyed Matrix (S4) 🗌 Umb	bric Surface (F13) (MLRA 13	36, 122)	
Sandy Redox (S5)	lmont Floodplain Soils (F19	) (MLRA 148)	
Stripped Matrix (S6)			
³ Indicators of hydrophtic vegetation and wetland hydrolog	gy□ust be present, unless	disturbed or pro	oblematic.
Restrictive Layer (if observed):			
Type:		н	Hydric Soil Present? Yes 🗹 No
Depth (inches):			
Remarks:			



Project/Site: Gude Landfill		City/C	ounty: <u>Mont</u> g	go <u>mery Cour</u>	nty	Sampling D	ate: <u>5/1/18</u>
Applicant/Owner: DEP/DSWS					State: MD	Sampling Po	oint: UPL1
Investigator(s): TMK			Section,	Township, Ra	ange:		
Landform (hillslope, terrace, etc.):	hillslope			Local Relie	ef (concave, convex, r	none): convex	
Slope %: <u>5% -10%</u> Latitude:	39° 06′ 29″ N		Longitude:	: 77° 08′ 1	16" W	Datum: NAD8	3 state plane
Soil Map Unit Name: dump, refuse	e		-		NWI	I Classification: u	upland
Are climatic/hydrologic conditions or		nis time of ye	ear? Yo	es⊡ No□		-	<u>.                                    </u>
Are Vegetation , Soil , or hydro		-			cumstances" present		
Are Vegetation $\Box$ , Soil $\Box$ , or hydro					ain any answers in re		
				•••			
SUMMARY OF FINDINGS - Att	•	wing samp	oling point	locations,	transects, impor		etc.
Hydrophytic Vegetation Present?	Yes 🗆 🛛 No 🗹		Is the Sa	mpled Area	within a Wetland?	Yes 🗌 No 🗹	
Hydric Soil Present?	Yes 🗌 🛛 No 🗹						
Wetland Hydrology Present?	Yes 🗆 🛛 No 🗹		If yes, op	otional Wetla	ind Site ID:		
Remarks: (Explain alternative proced	lures here or in a sepa	arate report.)	)				
on upland slope adjacent to wetland							
HYDROLOGY	A						
Wetland Hydrology Indicators:					Second	lary Indicators (mi	inimum of 2)
Primary Indicators (minimum of one	is required; check all	that apply)				urface Soil Cracks	
Surface Water (A1)		<u></u>				parsely Veg. Conca	
High Water Table (A2)		Aquatic Fau	ına (B13)			rainage Patterns (	
Saturation (A3)		•	ic Plants (B14)	•		loss Trim Lines (B1	
U Water Marks (B1)		, .	ulfide Odor (0			ry-Season Water 1	
Sediment Deposits (B2)			izospheres or			rayfish Burrows (C	
Drift Deposits (B3)			f Reduced Iron			aturation Visible o	. ,
Algal Mat or Crust (B4)		Thin Muck S	Reduction in			tunted or Stressed	
<ul> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aerial Ima</li> </ul>			ain in Remark	·c)		eomorphic Positio hallow Aquitard (D	
<ul> <li>Inundation Visible on Aerial Ima</li> <li>Water-Stained Leaves (B9)</li> </ul>	igery (b/)		alli III neman	.5)		nallow Aquitard (L 1icrotopographic R	
						AC-Neutral Test (D	
Field Observations:					·· ··	ACINEALIAI IESE (2	15]
Surface Water Present? Yes 🗌	No 🗹 Depth (inche	es):	_				
Water Table Present? Yes 🗌	No 🗹 Depth (inche						
Saturation Present? Yes	No 🗹 Depth (inche	2s):		Wetlan	d Hydrology Present	?Yes 🗌 🛛 No	<b>v</b>
(includes capillary fringe) Describe Recorded Data (stream gua	an monitoring well a	arial photos	provious ins	nactions) if	availabla		
Describe Recorded Data (stream Bua	ge, monitoring wen, a	enal prioros,	, previous maj	pections, in a			
Remarks:							
VEGETATION - Use Scientific I	Names of Plants.						
		Absolute	Dominant	Indicator	Dominance Test wo	rksheet:	
Tree Stratum (Plot size: <u>30 ft</u>	)	% Cover	Species?	Status	Number of Dominan	it Species	
1 Acer rubrum	-	10	YES	FAC	That Are OBL, FACW	, or FAC:	2 (A)
2 Liquidambar styraciflua		5	NO	FAC			
3 Quercus alba		15	YES	FACU	Total Number of Dor	minant	
4 Liriodendron tulipfera		20	YES	FACU	Species Across All St	rata:	5 (B)
5					- · · · · · · · · · · · · · · · · · · ·	· • •	
6 7					Percent of Dominant That Are OBL, FACW	•	40.0 (A/B)
/		50 =	Total cover		Indi Are Obl, FACVV	, OI FAC.	40.0 (A/B)
		-	= 50% 10	) = 20%			
Sapling/Shrub Stratum (Plot size:	30 ft )				Prevalence Index wo	orksheet:	
1 Ilex opaca		10	YES	FAC	Total % Cover of:		Multiply by:
2 Kalmia latifolia		10	YES	FACU	OBL species	x 1	
3			······		FACW species	x 2	
4					FAC species	x 3	
5					FACU species	x 4	
6					UPL Species Column Totals:	x 5 (A)	
_							(B)

20

10

= Total Cover

4

= 20%

= 50%

Prevalance Index = B/A =





Project/Site: Gude Landfill		City/C	County: Monte	gomery Coui	nty	Sampling Da	ate: 5/1/18
Applicant/Owner: DEP/DSWS			-		State: MD	Sampling Po	
Investigator(s): TMK			Section,	Township, R	ange:		
Landform (hillslope, terrace, etc.):	hillslope			Local Relie	ef (concave, convex, no	one): convex	
Slope %: <u>5% -10%</u> Latitude:	39° 06' 29" N		Longitude	77° 08′	16" W	Datum: NAD8	3 state plane
Soil Map Unit Name: dump, refus	se				NWI	Classification: u	upland
Are climatic/hydrologic conditions of	on the site typical for t	his time of ye	ear? Yo	es ☑ No □	(If no, explain in	Remarks.)	
Are Vegetation , Soil , or hydr		-		"Normal Ciu	rcumstances" present	Yes 🗹 No 🗆	
Are Vegetation $\Box$ , Soil , or hydr					lain any answers in rer		
SUMMARY OF FINDINGS - At			-				etc.
Hydrophytic Vegetation Present?	Yes 🗆 No 🗹		Is the Sa	mpled Area	within a Wetland?	Yes 🗌 🛛 No 🗹	
Hydric Soil Present?	Yes 🗌 🛛 No 🗹						
Wetland Hydrology Present?	Yes 🗆 🛛 No 🗹		If yes, op	tional Wetla	and Site ID:		
Remarks: (Explain alternative proce	dures here or in a sep	arate report.					
Upland slope located adjacent to W	etland B and Pond #4	·					
HYDROLOGY							
Wetland Hydrology Indicators:					Seconda	ary Indicators (mi	nimum of 2)
Primary Indicators (minimum of one	is required; check all	that apply)			🗌 Su	rface Soil Cracks (	(B6)
Surface Water (A1)			(= . = )			arsely Veg. Conca	
<ul> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> </ul>		Aquatic Fau	una (B13) ic Plants (B14	1		ainage Patterns (I oss Trim Lines (B1	
□ Water Marks (B1)		•	Sulfide Odor (			y-Season Water T	
Sediment Deposits (B2)			nizospheres o	-		ayfish Burrows (C	
Drift Deposits (B3)			f Reduced Iro	-		turation Visible o	
Algal Mat or Crust (B4)		Recent Iror	n Reduction in	Tilled Soils (		unted or Stressed	
Iron Deposits (B5)			Surface (C7)			omorphic Positio	
Inundation Visible on Aerial Im	nagery (B7)	Other (Expl	ain in Remark	s)		allow Aquitard (D	
Water-Stained Leaves (B9)						crotopographic R	
Field Observations:						C-Neutral Test (D	5)
Surface Water Present? Yes	No 🗹 Depth (inche	es):					
Water Table Present? Yes 🗌	No 🗹 Depth (inche						
Saturation Present? Yes	No 🗹 Depth (inche	es):		Wetlan	d Hydrology Present?	Yes 🗌 🛛 No	7
(includes capillary fringe) Describe Recorded Data (stream gua	ago monitoring well	orial photos		actions) if	available:		
Describe Recorded Data (stream gu	age, monitoring well, a		, previous iris	Jections), ii	avallable.		
Remarks:							
VEGETATION - Use Scientific	Names of Plants.						
		Absolute	Dominant	Indicator	Dominance Test worl	ksheet:	
Tree Stratum (Plot size: <u>30 ft</u>	)	% Cover	Species?	Status	Number of Dominant	Species	
1 Acer rubrum		5	NO	FAC	That Are OBL, FACW,	or FAC:	2 (A)
2 Liquidambar styraciflua		5	NO	FAC			
3 Quercus alba 4 Liriodendron tulipfera		<u>15</u> 20	YES	FACU	Total Number of Dom		( (D)
5 Fagus grandifolia		20	NO	FACU FACU	Species Across All Stra		6 (B)
6			110	TACO	Percent of Dominant	Species	
7					That Are OBL, FACW,		33.3 (A/B)
			= Total cover				
		23.5	= 50%9.4	= 20%			
Sapling/Shrub Stratum (Plot size						rkchooti	
1 Liriadandran tulinfara	:: <u>30 ft</u> )	15	VEC	EACU	Prevalence Index wor	iksheet.	Multiply by
1 Liriodendron tulipfera	: <u>30 ft</u> )	15 10	YES	FACU	Total % Cover of:		Multiply by:
2 Nyssa sylvatica	: <u>30 ft</u> )	15 10	YES YES	FACU FAC	Total % Cover of: OBL species	x 1	Multiply by:
	: <u>30 ft</u> )			-	Total % Cover of:		Multiply by:
2 Nyssa sylvatica 3	: <u>30 ft</u> )			-	Total % Cover of: OBL species FACW species	x 1 x 2	Multiply by:
2 Nyssa sylvatica 3 4	: <u>30 ft</u> )			-	Total % Cover of: OBL species FACW species FAC species	x 1 x 2 x 3	Multiply by:

25

12.5

= Total Cover

5

= 20%

= 50%

Prevalance Index = B/A =



Vegetation (continued)				Sampling Point: UPL2
	Absolute	Dominant	Indicator	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 30 ft )	% Cover	Species?	Status	Rapid Test for Hydrophytic Vegetation
1 Polystichum acrostichoid	10	YES	FACU	<ul> <li>Dominance test is &gt;50%</li> <li>Prevalence Index is ≤3.0[⊥]</li> </ul>
2				<ul> <li>Morphological Adaptations¹ (Provide Supporting</li> </ul>
3				data in Remarks or on a separate sheet)
5 5				<ul> <li>Problematic Hydrophytic Vegetation¹ (Explain)</li> </ul>
6		·		¹ Indicators of hydric soil and wetland hydrology must
7		. <u> </u>		be present, unless disturbed or problematic.
<u> </u>	10 =	Total Cover		
		= 50% 2	= 20%	Definitions of Vegetation Strata:
Woody Vine Stratum (Plot size: 30 ft )				Tree: Woody plants 3 in. (7.6cm) or more in diameter
1 Lonicera japonica	15	YES	FAC	at breast height (DBH), regardless of height.
2				Sapling/shrub: Woody plants less than 3 in. DBH
3		·		and greater then 3.28 ft (1m) tall.
4		·		Herb: All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
6				Woody Vines: All woody vines greater than 3.28 ft in
7		·		height.
	15 =	Total Cover		
	7.5 =	= 50% 3	= 20%	Hydrophytic Vegetation Present? Yes 🗌 No🗹
Remarks: (Include photo numbers here or on a separate	sheet.)			
	0.1000.0			
SOIL				
Profile Description: (Describe to the depth needed to do	ocument the ir	ndicator or con	firm the at	osence of indicators.)
Depth Matrix R	edox Features			
(inches) Color (moist) % Color (moist)	<u>%</u> Ty	pe ¹ Loc ²	Textu	ure Remarks
0-4 10YR 4/3 100			silt lo	
4-12 10YR 4/4 100			silt lo	am
12+ rock refusal			·	
└─── ── ── ──	<u> </u>		·	
<u>├─── ── ──</u> ───				
¹ Type: C=Concentration, D=Depletion, RM=Reduced Mat	rix. CS=Covere	ed or Coated Sa	nd Grains.	² Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:	,			Indicators for Problematic Hydric Soils ³ :
	rk Surface (S7)	1		□ 2 cm Muck (A10) <b>(MLRA 147)</b>
	• •	, Surface (S8) <b>(№</b>	1LRA 147. 1	
	,	e (S9) (LRR R, N		
	amy Gleyed M		,	☐ (MLRA 136, 147)
	pleted Matrix			Red Parent Material (TF2)
	dox Dark Surfa	. ,		Very Shallow Dark Surface (TF12)
Depleted Below Dark Surface (A11)	pleted Dark Su	urface (F7)		Other (Explain in Remarks)
Thick Dark Surface (A12) Re	dox Depressio	ns (F8)		
Sandy Mucky Mineral (S1) (LRR N, Iro	n-Manganese	Masses (F12) (	LRR N,	
	.RA 136)			
		F13) <b>(MLRA 13</b>	-	
	dmont Floodp	olain Soils (F19)	(MLRA 14	8)
Stripped Matrix (S6)	_			
³ Indicators of hydrophtic vegetation and wetland hydrol	ogyLlust be p	resent, unless o	disturbed c	or problematic.
Restrictive Layer (if observed):				Hudric Sail Drocont? Voc 🗌 No
Type: Depth (inches):				Hydric Soil Present? Yes 🗌 No 🗹
Remarks:				
Netharks.				



Appendix C

Site Photographs

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Wetland Delineation Photographs Gude Landfill Photos Taken: October 2009 and April 2018



**Photograph 1:** Stream Channel #1 on the northeast corner of the project site.



**Photograph 3:** Hydric Soils within Wetland A.



**Photograph 2:** Upstream portion of Stream Channel #2.



Photograph 4: Overview of Wetland A.

Wetland Delineation Photographs Gude Landfill Photos Taken: October 2009 and April 2018



**Photograph 5:** Overview of Wetland B.



**Photograph 7:** Overview of Wetland C.



**Photograph 6:** Overview of Pond #4.



**Photograph 8:** Wetland C, soil sample.

Wetland Delineation Photographs Gude Landfill Photos Taken: October 2009 and April 2018



**Photograph 9:** Upland soil sample typically observed throughout the upland forest slopes.



**Photograph 11:** M-NCPPC Pond located offsite to the east.



**Photograph 10:** Overview of Gude Landfill, cleared plateau.



**Photograph 12:** Pond #1 located offsite to the southwest.

Appendix D

Wetland Delineation Map

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	TES										
1.	PROJECT NAME	:: GUDE	LANDFILL								
2.	LOCATION:	600 E	AST GUDE DRIVE, ROCKVILLE	E, MARYLAND							
3.	OWNER:	-	GOMERY COUNTY DEPARTM ECTION DIVISION OF SOLID V	IENT OF ENVIRONMENTAL VASTER SERVICES (DEP/DSWS)		DION					
4.	PLAN PREPAREI		IGINEERING, SCIENCE, AND 1 CHILLING CIRCLE, SUITE 400,			DESCRIPTION					
5.	TOTAL AREA OF	REVIEW:	• • • • • • • • • • • • • • • • • • • •		SNOI						
6.	PROPERTY BOU	JNDARIES AND OWN	IER INFORMATION ARE BASE	D ON BASED ON A DRAWING	REVISIONS						
		E LANDFILL - PROPE P.C., DATED 05/23/20		PPC" PREPARED BY C.C. JOHNS	NC						
7.	BOUNDARY COM		CTOBER 8, 2009 PREPARED B	SE PLAN TITLED GUDE LANDFILI Y CCJM ENGINEERING		BY					
8.				WETLANDS WERE DELINEATED 2009. FLAGS WERE LOCATED	BY	DATE					
	USING A TRIMBL ON MAY 1, 2018 REVISIONS TO T	LE GEO XH GLOBAL TO VERIFY THE BO	POSITIONING SYSTEM INSTR UNDARIES AND CONDITIONS NDARIES WERE MADE AND RI	UMENT. EA RE-VISITED THE SIT OF THE WATERWAYS. SLIGHT E-LOCATED USING A TRIMBLE		NO					~~~~
9.	CONTRIBUTE TO THE CODE OF M	O ROCK CREEK. AL		WETLANDS IDENTIFIED EEK IN THIS AREA ARE LISTED IN CLASSIFICATION INDEX AS USE	10	SIGNED BY:	ТК	RAWN BY:	SMB HECKED BY:	Т	ROJECT MANAGER: LJO
10.	GENERALLY ACC	CEPTED PROFESSIONS SEASONAL FLU			••• <u></u>	• •	•••		• • • <del>•</del>		
11.	JURISDICTIONAL DEPARTMENT O CONSIDERED NO MDE WILL TAKE FOR A PERMIT C	L STATUS OF WETL OF THE ENVIRONME ON-JURISDICTIONA JURISDICTION OVE OR JURISDICTIONAL	ANDS/WATERWAYS. FURTHE NT (MDE) CAN REGULATE WE L BY THE USACE. TO DETERM R ANY AREAS OF THE SUBJE		THE						
	TO THESE AGEN	NCIES.	LEGEND		Ę						
/ /		TION TY BOUNDARY AND		EXISTING PROPOSED	SEAL						
	ADJOINE	R BOUNDARY		— — — — NA — — — — — NA							
	CONTOUR			— -#- — NA							
	FENCE LI		<u> </u>	<u>x x x x x</u> NA							
		AD IMATE STREAM CEN		NA NA							
		IMATE STREAM CEN L WETLAND									
	POND			NA							
	بر ا										
										4	
NNEL							2 5		D	ī	ך ד
DFFSITE							<u>S</u>		/LANI		Z
2-115 112 2-113						Ξ	Ш		MARY		
2-114						$\cap$	z		ЧТΥ, I	< L	1
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1						LANDFII	0		col	4	
						Ĺ	ATIO		ERY COL	- L	DELINE
						Ĺ	<b>DIATIO</b>		SOMERY COL		NU UELINE
						<b>GUDE LANI</b>	MEDIATIO		ONTGOMERY COL		LANU UELINE
						Ĺ	REMEDIATIO		MONTGOMERY COUNTY, MARYLAND		E I LANU DELINE
						Ĺ	<b>REMEDIATION DESIGN</b>		MONTGOMERY COL		WE I LAND DELINEATION FLAN
						Ĺ	REMEDIATIO		MONTGOMERY COL		WE I LANU UELINE
						Ĺ	REMEDIATIO		MONTGOMERY COL		WE I LANU DELINE
						Ĺ	REMEDIATIO		MONTGOMERY COL		VVE I LANU DELINE
						Ĺ	REMEDIATIO		MONTGOMERY COL		WE I LAIND DELINE
						Ĺ	REMEDIATIO		MONTGOMERY COL		
						Ĺ	REMEDIATIO		MONTGOMERY COL		
						Ĺ	REMEDIATIO		MONTGOMERY COL		WEILAND DELINE
						Ĺ	REMEDIATIO		MONTGOMERY COL		
			TLANDS/WATERS SIGNIFICANT NEXUS	DIMENSIONS WITHIN		Ĺ	REMEDIATIO		MONTGOMERY COL		
		RESOURCE	SIGNIFICANT NEXUS DETERMINATION	PROJECT SITE		Ĺ	REMEDIATIO		MONTGOMERY COL		
EAM CHAN	NEL #1 PE		SIGNIFICANT NEXUS			Ĺ					
EAM CHANI	NEL #1 PE	RESOURCE	SIGNIFICANT NEXUS DETERMINATION RPW (YEAR ROUND)	PROJECT SITE 67.43 L.F.		Ĺ					
EAM CHANN EAM CHANN EAM CHANN	NEL #1 PE NEL #2 PE NEL #3 EPH	RESOURCE RENNIAL STREAM RENNIAL STREAM	SIGNIFICANT NEXUS DETERMINATION RPW (YEAR ROUND) RPW (YEAR ROUND)	PROJECT SITE           67.43 L.F.           452.21 L.F.		Ĺ					
EAM CHANN EAM CHANN EAM CHANN TLAND SYST	NEL #1 PE NEL #2 PE NEL #3 EPH TEM A EME	RESOURCE RENNIAL STREAM RENNIAL STREAM HEMERAL STREAM	SIGNIFICANT NEXUS DETERMINATION RPW (YEAR ROUND) RPW (YEAR ROUND) NON-RPW	PROJECT SITE           67.43 L.F.           452.21 L.F.           187.71 L.F.		GUDE L	Eng	ginee	ering	R , Scier	) nce,
EAM CHANN EAM CHANN EAM CHANN LAND SYS	NEL #1 PE NEL #2 PE NEL #3 EPH TEM A EME TEM B FOR	RESOURCE RENNIAL STREAM RENNIAL STREAM HEMERAL STREAM ERGENT WETLAND	SIGNIFICANT NEXUS DETERMINATION RPW (YEAR ROUND) RPW (YEAR ROUND) NON-RPW ABUTTING RPW	PROJECT SITE           67.43 L.F.           452.21 L.F.           187.71 L.F.           9,702.28 S.F. / 0.22 AC.		GUDE L	Eng	ginee	ering	, Sciel	) nce,
EAM CHANN EAM CHANN EAM CHANN FLAND SYS ^T	NEL #1 PE NEL #2 PE NEL #3 EPH TEM A EME TEM B FOF TEM C EME OPE	RESOURCE RENNIAL STREAM RENNIAL STREAM HEMERAL STREAM ERGENT WETLAND RESTED WETLAND ERGENT WETLAND	SIGNIFICANT NEXUS DETERMINATION RPW (YEAR ROUND) RPW (YEAR ROUND) NON-RPW ABUTTING RPW ABUTTING RPW ADJACENT RPW	PROJECT SITE           67.43 L.F.           452.21 L.F.           187.71 L.F.           9,702.28 S.F. / 0.22 AC.           2,965.06 S.F. / 0.06 AC.		T BOD EA and 21	Eng Teo H 25 Sc Junt \	ginee chno lunt Va chilling /alley,	ering logy alley C Circle Maryla	R , Scien , Inc., enter , Suite 4 and 2103	<b>nce,</b> <b>PBC</b>
EAM CHANN EAM CHANN EAM CHANN TLAND SYST TLAND SYST POND #4	NEL #1 PE NEL #2 PE NEL #3 EPH TEM A EME TEM B FOF TEM C EME OPE EME	RESOURCE RENNIAL STREAM RENNIAL STREAM HEMERAL STREAM ERGENT WETLAND RESTED WETLAND ERGENT WETLAND EN WATER POND W/ ERGENT WETLAND	SIGNIFICANT NEXUS DETERMINATION         RPW (YEAR ROUND)         RPW (YEAR ROUND)         NON-RPW         ABUTTING RPW         ABUTTING RPW         ADJACENT RPW	PROJECT SITE           67.43 L.F.           452.21 L.F.           187.71 L.F.           9,702.28 S.F. / 0.22 AC.           2,965.06 S.F. / 0.06 AC.           1,342.46 S.F. / 0.03 AC.		T BODD EA and 22 +	Eng Teo H 25 So Junt V	ginee chilling /alley, (410)	ering logy alley C Circle Maryla 584-70	, Scier , Inc., enter , Suite 4 and 2103	<b>nce,</b> <b>PBC</b>
EAM CHANN EAM CHANN EAM CHANN TLAND SYST TLAND SYST TLAND SYST POND #4	NEL #1 PE NEL #2 PE NEL #3 EPF TEM A EME TEM B FOF TEM C EME OPE EME	RESOURCE RENNIAL STREAM RENNIAL STREAM HEMERAL STREAM ERGENT WETLAND RESTED WETLAND ERGENT WETLAND EN WATER POND W/ ERGENT WETLAND	SIGNIFICANT NEXUS DETERMINATION         RPW (YEAR ROUND)         RPW (YEAR ROUND)         NON-RPW         ABUTTING RPW         ABUTTING RPW         ADJACENT RPW	PROJECT SITE           67.43 L.F.           452.21 L.F.           187.71 L.F.           9,702.28 S.F. / 0.22 AC.           2,965.06 S.F. / 0.06 AC.           1,342.46 S.F. / 0.03 AC.           6,303.30 S.F. / 0.15 AC.**		T BODS	Eng Teo H 25 Sc Hunt \ DATE	ginee chno lunt Va chilling /alley, (410) : MA	Fring logy alley Ca Circle Maryla 584-70 Y 2018	, Scier , Inc., enter , Suite 4 and 2103 000	<b>nce,</b> <b>PBC</b> 00 31
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Attachment E

**Traffic Impact Study** 

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# FINAL TRAFFIC IMPACT STUDY for GUDE LANDFILL REMEDIATION PROJECT

## **ROCKVILLE, MARYLAND**

Prepared for

Montgomery County Department of Environmental Protection

**Division of Solid Waste Services** 

In Association With

EA Engineering Science and Technology, Inc., PBC

Prepared by:

T3 Design Corporation 10340 Democracy Lane, Suite 305 Fairfax, VA 22030 Phone: (703) 359-5861 Fax: (703) 359-5863



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## LIST OF ACRONYMS AND ABBREVIATIONS

- 1. AADT Average Annual Daily Traffic
- 2. CLV Critical Lane Volume
- 3. DEP Department of Environmental Protection
- 4. LOS Level of Service
- 5. MNCPPC Maryland National Capital Park and Planning Commission
- 6. v/c volume/capacity
- 7. WSSC Washington Suburban Sanitary Commission



## Introduction

This study evaluates traffic impacts from the Gude Landfill Remediation Project in Rockville, Maryland. The landfill is currently owned by Montgomery County, Maryland, and maintained by the Montgomery County Department of Environmental Protection (DEP). The landfill property currently encompasses 162 acres, of which approximately 140 acres is used for waste disposal.

The County performed a land exchange of 17 acres of land with the Maryland-National Capital Park and Planning Commission (MNCPPC) in 2014. The County plans to construct a toupee landfill capping system with a potential recreational land use component. This study determines the additional traffic generated during the construction of the proposed landfill capping system and its impacts on the adjacent roadways and intersections.

The scope of this study involves analyzing impacts of construction traffic at the following intersections adjacent to the landfill site:

- 1. East Gude Drive and Landfill Access (North)
- 2. East Gude Drive and Dover Road
- 3. East Gude Drive and Southlawn Lane
- 4. Southlawn Lane and Incinerator Lane (Landfill Access)

Figure 1 illustrates the location of Gude Landfill and the study intersections.

Construction for the project is expected to begin in 2020 and be completed in 2023. The traffic impact study follows the three-step process as required by MNCPPC for intersection analysis for the following traffic conditions:

- Existing traffic conditions (2018)
- Background traffic conditions (2022) Traffic projection due to other developments in the vicinity of the project area
- Total traffic conditions (background plus trips generated by the construction traffic)

Although construction is expected to last for about four years (beginning in 2020 and finishing sometime in 2023) the background and total conditions analyses were conducted for 2022 when the background traffic is expected to be at maximum.

Capacity was analyzed using Maryland State Highway Critical Lane Volume (CLV) methodology. Results were as follows:

- Existing conditions All intersections currently operate at level of service (LOS) C or better
- Background traffic conditions All intersections operate at LOS C or better
- **Total traffic conditions** All intersections operate at LOS C or better. The East Gude Drive at Landfill Access intersection drops from LOS B to C in the AM peak hour, but this is still within acceptable service levels.

The results of the capacity analyses indicate that there are no significant impacts of the construction traffic at the study intersections. Therefore, no roadway improvements are required due to the additional generated traffic.



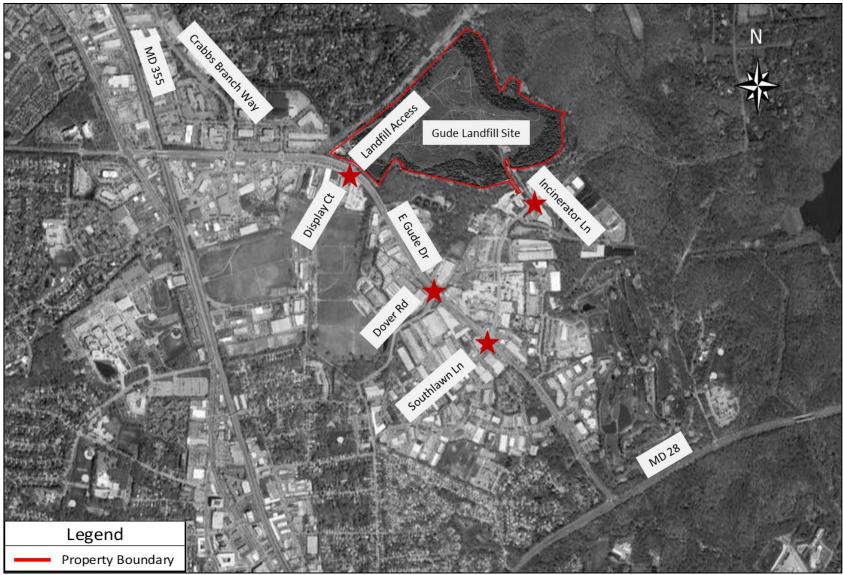


Figure 1: Site Location and Study Intersections

## **Existing Conditions**

## Site Access and Adjacent Development

There are two entrances to the landfill site:

- 1. From East Gude Drive, opposite from Display Court
- 2. From Southlawn Lane at Incinerator Lane

The traffic generated during construction will access the site via the intersection of Southlawn Lane and Incinerator Lane. Land use surrounding the project site consists of light industrial and residential developments, including the following specific properties:

- M-NCPPC land and Crabbs Branch Stream, located to the northeast of Gude Landfill site
- Asphalt and cement production facilities, equipment storage yards, scrap recycling facilities to the southeast of the site
- Washington Suburban Sanitary Commission (WSSC) property and Southlawn Branch stream to the south
- Williams Gas Pipeline Transco/Columbia Gas natural gas pipeline right-of-way and the community of Derwood Station residential development to the west

## **Study Intersections**

Four study intersections are located adjacent to the Gude Landfill site and are expected to be impacted by the construction traffic.

<u>1. East Gude Drive at Landfill Access North</u> – is a four-legged stop-controlled intersection. The north entrance to the Gude Landfill site intersects East Gude Drive opposite from Display Court. Traffic flows freely on East Gude Drive, and both the landfill site entrance and Display Court are stop-controlled. There is a signalized pedestrian crosswalk on the west sides of the intersection.

<u>2. East Gude Drive at Dover Road</u> – is a four-legged signalized intersection. The northbound and southbound approaches on Dover Road operate with "split" phases. There are marked pedestrian crosswalks on the east, west, and south sides of the intersection with pedestrian signal heads.

<u>3. East Gude Drive at Southlawn Lane</u> – is a four-legged signalized intersection. There are marked pedestrian crosswalks on the east, west, and north sides of the intersection with pedestrian signal indications.

<u>4. Southlawn Lane and Incinerator Lane</u> – is a T-intersection where Southlawn Lane flows freely and Incinerator Lane is the stop-controlled side street. There are no dedicated turn lanes at this intersection.

Figure 2 shows the lane configuration at each the study intersections, along with the type of traffic control.









#### (2018) Existing Volume

The 3-hour AM and PM peak period turning movement counts were collected by T3 Design on Wednesday, May 30, 2018, at the following intersections:

- 1. East Gude Drive and Landfill Access (North)
- 2. East Gude Drive and Dover Road
- 3. East Gude Drive and Southlawn Lane
- 4. Southlawn Lane and Incinerator Lane (Landfill Entrance)

A review of the counts indicates the AM peak hour is from 7:30 a.m. to 8:30 a.m. and the PM peak hour is from 4:45 to 5:45 p.m. Figure 3 presents AM and PM peak hour turning movement counts at the study intersections. The raw count data is provided in Appendix A.



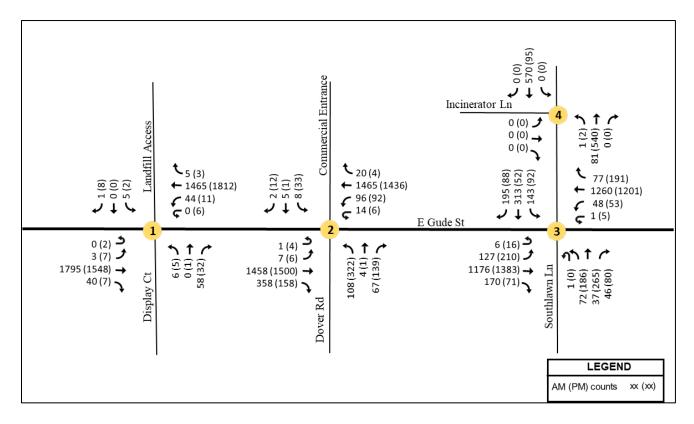


Table 1 displays the 2017 average annual daily traffic (AADT) volumes published by State Highway Administration (SHA) for roadways adjacent to the study site.

Table 1: 2017 AADT				
Roadway Vehicles per Day (vpd)				
East Gude Drive	33,300			
Dover Road	5,814			
Southlawn Lane	8,065			

The vehicle classification report published by SHA indicates that the daily heavy vehicle percentage for East Gude Road is 7.46 percent.



As part of the classified counts, the pedestrian volumes were recorded during both AM and PM peak periods. However, the counts during the peak period do not present a considerable demand for pedestrian along the study corridor.

#### **Capacity Analysis: Existing Conditions**

The study intersections were analyzed using SHA Critical Lane Volume (CLV) methodology. In this methodology, critical lane volumes at an intersection are calculated and added. The sum of the critical lane volume is then compared with the established maximum values for each level of service, LOS A through F, to evaluate the performance of each intersection.

The volume/capacity (v/c) ratio represents the sufficiency of an intersection to accommodate vehicular demand. It is calculated as the CLV divided by 1,600 vehicles/hour/lane. A v/c ratio greater than 0.91 is the threshold at which the intersection is considered to operate at an oversaturated condition.

Table 2 displays the CLV level of service criteria.

LOS		CLV	v/c
А	<b>VI</b>	1000	0.63
В	<1	1150	0.72
С	<1	1300	0.81
D	<	1450	0.91
Е	<1	1600	1
F	>	1600	1

#### Table 2: CLV Level of Service (LOS) Criteria

The CLV level of service results are presented in Table 3.

		Existing Cor	ndition (2018)
Intersection #	Intersections	AM LOS (CLV) (v/c)	PM LOS (CLV) (v/c)
1	E. Gude Drive at Landfill Access	B (1124) (0.70)	B (1055) (0.66)
2	E. Gude Drive at Dover Road	C (1190) (0.74)	C (1195) (0.75)
3	E. Gude Drive at Southlawn Lane	B (1132) (0.71)	B (1167) (0.73)
4	Southlawn Lane at Incinerator Lane	A (572) (0.36)	A (542) (0.34)

#### Table 3: LOS – Existing Conditions

The results show that all intersections currently operate at LOS C or better during both peak hours. The CLV calculation sheets are provided in Appendix B.



## Future Traffic Conditions (2022)

## **Background Traffic Volume**

The construction for the Gude Landfill Remediation project is expected to begin in 2020 and be completed by 2023. With or without the landfill project, traffic volumes are expected to increase along East Gude Road and roadways adjacent to the site. This increase in traffic volume is known as background traffic growth. It does not include trips generated by construction at the Gude Landfill site that are accounted for separately.

A 0.5 percent annual traffic growth rate was used to prepare future traffic volumes projections for 2022. The year 2022 was selected to evaluate the worst-case scenario, since most of the construction at the Gude Landfill site will be completed, and the potential development in the vicinity of the site is also expected to be built by then. The traffic growth rate was based on review of historical traffic volumes on East Gude Road, planned developments adjacent to the study site, engineering judgement, and coordination with the County and EA Engineering, as detailed below.

#### Annual Traffic Growth Rate

A review of the historical AADT along East Gude Road (from 2007 through 2016) indicates a decrease in daily traffic volume along the road over that period. The Montgomery County land use database did not indicate any future development planned in the proximity of the construction site that may directly impact the study intersections.

For long-range traffic improvements, the County indicated a future improvement planned at the intersection of East Gude Road at Crabbs Branch Way that is not likely to generate additional traffic impacting the study intersections.

The Washington Suburban Sanitary Commission (WSSC) has proposed construction of a Septage Discharge Facility adjacent to the Gude Landfill site that may overlap with the construction at the Gude Landfill site. A letter submitted by the WSSC Project Manager to the County dated February 20, 2018, indicates that the construction at the WSSC site is expected to generate less than 50 new trips during either the AM or PM peak hour. Construction vehicles for the WSSC site are not expected to cause queueing onto East Gude Drive, so no traffic impact study was prepared for that project.

Based on the review of all available resources and coordination with the County and EA Engineering, it is expected that projecting the existing peak hour traffic volumes by 0.5 percent annual growth rate over the 4-year period (2018 through 2022) will encompass increases in traffic volume due to any potential local and regional developments in the vicinity of the study area.

The resulting 2022 background traffic projections are presented in Figure 4. Appendix C includes calculations of the annual growth rate along East Gude Drive based on historical traffic volumes, a copy of letter from WSSC and a copy of the correspondence with the County for the improvements at the Gude Drive and Crabbs Branch.



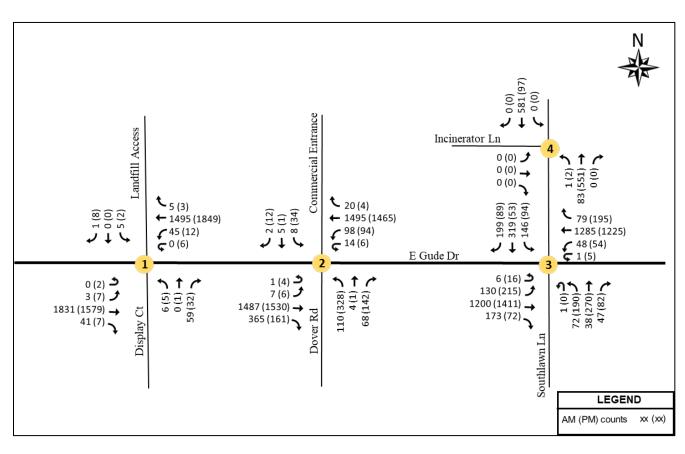


Figure 4: 2022 Background Traffic Volume Projections

#### **Total Future Traffic Volumes**

The total traffic volumes expected in 2022 are composed of two components added together:

- 1. Background traffic volume projections
- 2. Trips generated by construction during the Gude Landfill Remediation project

Based on the information provided by EA Engineering, about 50 construction trucks are expected to deliver the material at the site during the AM peak hour, with a 50/50 percent split between inbound and outbound trips. There is no expected truck traffic at the construction site in the PM peak hour. Additionally, 20 workers are expected to work at the site every day. To account for the workers, 20 additional trips were considered accessing the site during both AM and PM peak hours.

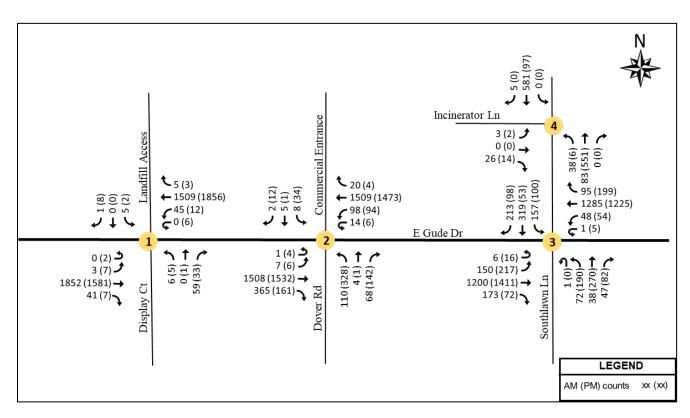
The inbound and outbound split for the workers' trips during each peak hour were estimated using the ITE Trip Generation Manual (9th Edition) for Light Industrial Land Use (LU 110). For this land use, 83 percent inbound and 13 percent outbound trips are expected in the AM peak hour, and 21 percent inbound and 79 percent outbound trips are expected in the PM peak hour. Table 5 itemizes trip estimates due to construction vehicle and worker commute traffic during both peak hours.



	AM			PM		
Туре	Total	Inbound	Outbound	Total	Inbound	Outbound
Truck Trips	50	25	25	0	0	0
Workers Trips	20	17	3	20	4	16
Total	70	42	28	20	4	16

All trips will enter and exit the site via the intersection of Southlawn Lane and Incinerator Lane. Trips are distributed to the adjacent roadways and intersections based on existing traffic patterns. Since East Gude Drive is connected with MD 28 (Norbeck Road) to the east and MD 355 (Frederick Road) to the west, 50 percent of the new trips were distributed to the west of the East Gude Drive and Southlawn Lane intersection, 40 percent to the east of the intersection, and 10 percent to Southlawn Lane north.

Figure 5 shows the total AM and PM peak period traffic volumes, including background traffic growth, plus the trips generated by construction.



#### Figure 5: 2022 Projected Total Peak Hour Traffic Volumes



### Future Conditions: Capacity Analysis

CLV results were compared at the study intersections for background growth only and for total traffic conditions in order to determine the impacts of construction. The LOS results are compared in Table 5. The analysis report sheets are provided in Appendix D.

		2022 Ana	lysis with	2022 Ana	lysis with
		Backgrou	nd Traffic	Total '	Traffic
	Intersections	AM	PM	AM	PM
Intersection		LOS (CLV)	LOS (CLV)	LOS	LOS
#		(v/c)	(v/c)	(CLV)	(CLV)
	E. Gude Drive at Landfill Access	B (1147)	B (1076)	C (1158)	B (1080)
1	E. Gude Drive at Landinii Access	(0.72)	(0.67)	(0.72)	(0.68)
	E. Cada Drive et Desser Band	C (1214)	C (1220)	C (1225)	C (1221)
2	E. Gude Drive at Dover Road	(0.76)	(0.76)	(0.77)	(0.76)
		C (1154)	C (1191)	C (1177)	C (1204)
3	E. Gude Drive at Southlawn Lane	(0.72)	(0.74)	(0.74)	(0.75)
		A (583)	A (553)	A (653)	A (574)
4	Southlawn Lane at Incinerator Lane	(0.36)	(0.35)	(0.41)	(0.36)

Table 5: LOS – Background vs. Total Traffic Conditions
--------------------------------------------------------

The results indicate that all intersections continue to operate at LOS C or better for both background and total (construction) traffic conditions. The only change in overall intersection service levels is at the intersection of East Gude Drive and the Landfill Access, where there is a decrease in the AM peak hour from LOS B to C. However, LOS C is still well within acceptable service levels.

The overall capacity analysis results indicate that despite the additional trips generated during construction, all intersections are expected to operate at LOS C or better during both peak hours for the existing lane configuration and traffic control type. Therefore, no additional improvements are required due to anticipated construction traffic.



### Conclusions

Traffic impacts were analyzed for the Gude Landfill Remediation Project. The construction is expected to begin in 2020 and be completed by 2023. The analyses were conducted for the existing (2018), background (2022) and total traffic conditions using Critical Lane Volume methodology for the following intersections:

- 1. East Gude Drive and Landfill Access (North)
- 2. East Gude Drive and Dover Road
- 3. East Gude Drive and Southlawn Lane
- 4. Southlawn Lane and Incinerator Lane (Landfill Access)

The results indicate that all intersections operate at LOS C or better during both AM and PM peak hours for all traffic scenarios, existing, background, and construction conditions. The impacts of the construction traffic at the study intersections are minimal, with no change in level of service or significant impact on the critical lane volume. Therefore, no improvements are proposed at the study intersection as a part of the Gude Landfill Remediation project.



Appendix A – Turning Movement Counts



Job No.:			]					<b>.</b>													
Location:		Display Co	urt at E Gude	Drive							County:		Montgomery	(	۰						
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Interval (dd) : (In Minutes)		15	]											-							
(111101101003)		PEAK		ERIOD	Start	End	Volume	LOS	V/C		D 12:00PM-		End	Volume	LOS	V/C					
Street		HOURS	6:00AM	-12:00PM	07:30	08:30	3422			7:0	0PM	16:45	17:45	3444							
Name>		L	andfill Entra					Display Cou	rt				E Gude Driv	e				E Gude Drive	)		
HOUR ENDING	U turn	Left	From Nort Through	h Right	Total	U turn	Left	From South Through		Total	U turn	Left	From East Through		Total	U turn	Left	From West Through		Total	GRAND TOTAL
00:15			1					1		0					0						0
00:30					0					0					0					0	0
00:45					0					0					0					0	0
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01:45					0					0					0					0	0
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06:45	0								5	5	0	14 11	187	0	201	0	1		6	240 343	446 609
07:15	0	0	0	0	0	0		0	7	9	0	10	243 229	0	239	0	0	317	2	319	567
07:30 07:45	0				2	0	3		15 8	11	0	11 12	331	2	345		0	441	6 13	455	718 813
<u>08:00</u> <u>08:15</u>	0								18 23			10 11			415 396		1		8 12		949 873
08:30	0	3	0	0	3	0	1	0	9	10	0	11	347	0	358	0	0	409	7	416	787
08:45 09:00	0				0	0			79	9	2	11 12			326	0	4		13 11	401	790 736
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15:45	0	1	0	2	3	0	2	0	8	10	1	12	352	1	366	0	0	317	5	322	701
16:00 16:15	0	4	0	2	6	0	1	0	9	10	1	3 5	418	1	425	3	1	374	3	380	705 821 745
16:30 16:45	0			3	3		4	0	8	12	0	3		3	401 448	0	2		2	329 368	831
<u>17:00</u>	0	0	0	4	4	0	3	1	4	8	3	0	404	1	408		5	397	1	404	824 931
<u>17:15</u> <u>17:30</u>	0		0			0		0	8		2	8		0 1	444	0	1		1	368	821
<u>17:45</u> 18:00	0	1	0	1	2	0	1	0	<b>3</b> 5	4	0	2	485 388	1	488 396	1	1	371 373	4	374 379	868 783
18:15 18:30		-			0					0					0			-		0	0
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19:30 19:45		+	+	+	0					0		-	+		0			+	-	0	0
20:00			1		0					0					0					0	0
20:30					0					0					0					0	0
20:45 21:00					0					0					0					0	0
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21:45					0					0					0					0	0
22:00 22:15					0					0					0					0	0
22:30			-		0					0					0			-		0	0
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		1								-											
TOTAL AM Peak Vol	0	15 5	0	24 1	<b>39</b> 6	0	38 6	1 0	211 58	250 64	11 0	<b>184</b> 44	8272 1465	23 5	8490 1514	17 0	26 3	8413 1795	133 40	8589 1838	17368 3422
PM Peak Vol	0	2	0	8	10	0	5	1	32	38	6	11	1812	3	1832	2	7	1548	7	1564	3444

Job No.:

Location:	D
Date:	5
Recorder:	T
Interval (dd) :	
(In Minutes)	
	L

 Ending

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 00:30

 00:45

 01:15

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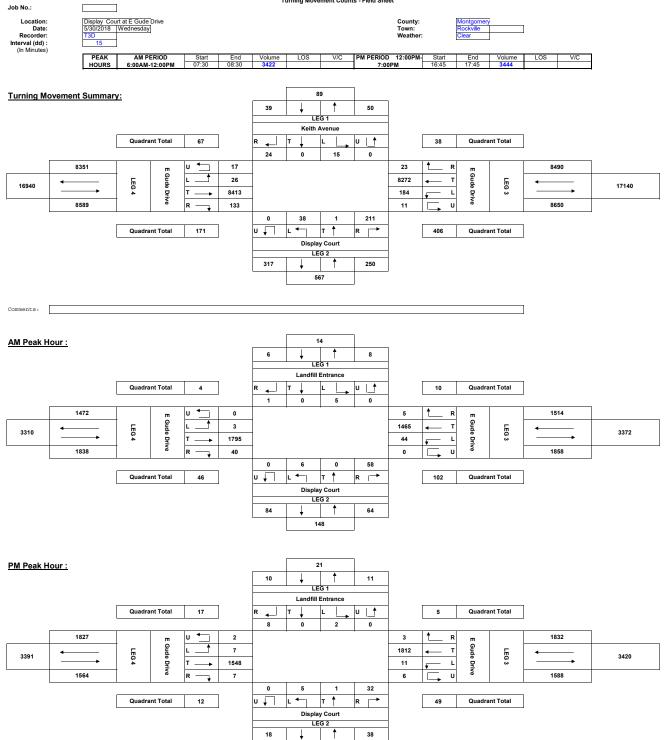
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TOTAL AM Peak Vol PM Peak Vol 

Display Court 5/30/2018 V T3D 15	t at E Gude I Wednesday	Drive							County: Town: Weather:		Montgomery Rockville Clear		]	
PEAK HOURS	AM PE 6:00AM-		Start 07:30	End 08:30	Volume 3422	LOS	V/C		0 12:00PM- 0PM	Start 16:45	End 17:45	Volume 3444	LOS	V/C
	North Leg			SCHOOL CI		EDESTRIAN	S & BICYCL		East Leg				West Leg	
Lan	ndfill Entran Pedestrians			School	Display Cour			School	E Gude Drive			School	E Gude Drive	
Children	Pedestrians	Bicycles		Children	Pedestrians	Bicycles		Children	Pedestrians	Bicycles		Children	Pedestrians	Bicycles
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Job No.:

Hour



Job No.:			]					5													
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Recorder:		T3D	weunesuay	1							Weather:		Clear	]	1						
Interval (dd) : (In Minutes)		15																			
		PEAK HOURS		ERIOD -12:00PM	Start 07:30	End 08:30	Volume 3613	LOS	V/C		D 12:00PM- 0PM	Start 16:45	End 17:45	Volume 3714	LOS	V/C	1				
Street			•		07.50	00.50				7.0							1				
Name> HOUR		U	Innamed Ro From North	ad h				Dover Road From South	I				E Gude Driv From East	t				E Gude Drive From West			GRAND
ENDING	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	TOTAL
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AM Peak Vol	0	8	5	2	15	0	108	4	67	179	14	96	1465	20	1595	1	7	1458	358	1824	3613
PM Peak Vol	0	33	1	12	46	0	322	1	139	462	6	92	1436	4	1538	4	6	1500	158	1668	3714

Job No.:

V/C

Bicycles

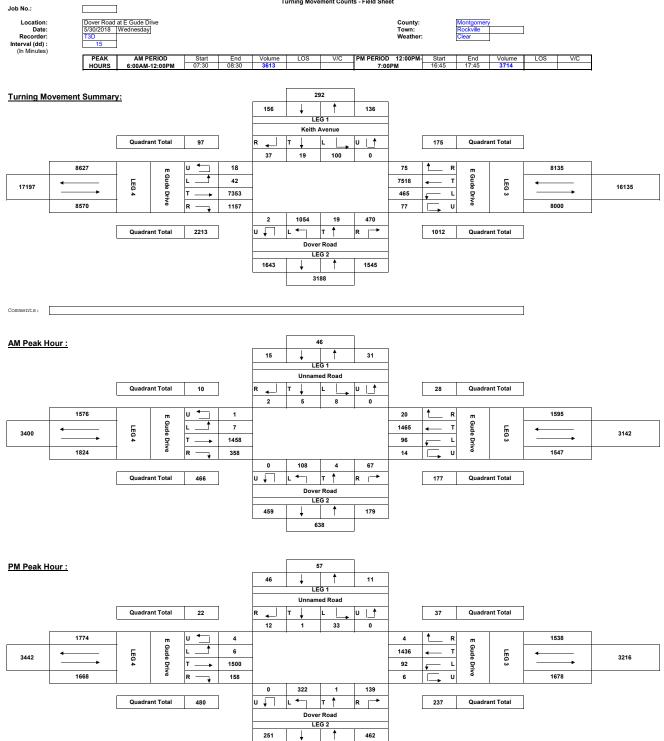
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	Job No.:		1				Т	urning Move	ment Coun	ts - Field She	et					
			1										<b>D</b>			
	Date:	5/30/2018	Wednesday	nve							Town:		Rockville		1	
Number           Example         Number			-								Weather:		Clear			
Note         Cash         Cash <th< td=""><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td>1/10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>				-					1/10							
								LOS	V/C						LOS	┝
Nor         Nor <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td>HILDREN, P</td> <td>EDESTRIAN</td> <td>S &amp; BICYCL</td> <td></td> <td></td> <td></td> <td>-</td> <td>1</td> <td>W</td> <td></td>					1		HILDREN, P	EDESTRIAN	S & BICYCL				-	1	W	
Gen         Num         Num <td>Hour</td> <td>U</td> <td>Innamed Roa</td> <td>ad</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>E</td> <td>East Leg E Gude Drive</td> <td>)</td> <td></td> <td></td> <td>E Gude Drive</td> <td>e</td>	Hour	U	Innamed Roa	ad						E	East Leg E Gude Drive	)			E Gude Drive	e
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AM Peak Vol 0 0 0 0 0 3 1 0 0 0 1	00:00 TOTAL	0	4	4	1	0	21	7		0	7	2	1	0	4	F
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	PM Peak Vol	0	0	1	]	0	0	0		0	0	0	1	0	0	L



Job No.:			1				т	Data Service urning Mover	nent Count	s - Field Sh	eet										
Location:		Southlawn L	ane at Incera	itor Lane							County:		Montgomery								
Date: Recorder:		5/30/2018 T3D	Wednesday	]							Town: Weather		Rockville Clear								
Interval (dd) : (In Minutes)		15 PEAK	AM D	ERIOD	Start	End	Volume	LOS	V/C		D 12:00PM	Start	End	Volume	LOS	V/C					
Street		HOURS		12:00PM	07:45	08:45	652	203	v/c	7:0	00PM	17:00	18:00	637	103	v/c					
Name> HOUR			From North	ı				outhlawn Lar From South					N/A From East					Incerator Lan From West			GRAND
ENDING	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right		U turn	Left	Through	Right	Total	TOTAL
00:15 00:30 00:45					0										0					0 0 0	0
01:00					0					0	1				0					0	0
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03:45 04:00					0					C					0					0	0
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05:30					0						1				0					0	
06:00 06:15	0	0	21	0	0	0	0		0	0					0	0	0		0	0	26
06:30 06:45	0	0	48 49	0	49	0	0	13	0 0	13 13					0	0	0	0	0	0	62
07:00 07:15	0	0	77 82 116	0		0		12	0						0	0	0	0	0 0 0		94
07:30 07:45	0 0 0	0 0 0	143		143	0	0	10	0 0 0	10					0	0	0	0	0		153
<u>08:15</u> 08:30	0	0	138	0	138	1	0	19	0	20					0	0	0	0	0	0	158
08:45 09:00	<b>0</b> 0	<b>0</b> 0		<b>0</b>	136	0			<b>0</b> 0	15	i.				<b>0</b>	0	<b>0</b> 0		<b>0</b> 0	0	159 151
09:15 09:30					0					0	I.				0					0	0
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10:30 10:45					0					C					0					0	0
11:00 11:15					0					C					0					0	0
11:30 11:45					0					0	1				0					0	0
12:00 12:15 12:30					0					0 0 0					0					0 0 0	0 0 0
12:45					0					0	1				0					0	0
13:15 13:30					0					C C	1				0					0	0
13:45 14:00					0					0					0					0	0
14:15 14:30 14:45					0	1					1				0					0 0 0	0
15:00 15:15	0	0	23	0	0 23	0	0	51	0	C 51					0		0	0	0	0	0
15:30 15:45	0			0	30	0	0	62	0	62					0	0	0 0	0	0 0		92
16:00 16:15	0	0	26	0	26	0	0	74	0	74					0	0	0	0	0	0	100
16:30 16:45 17:00	0	0 0 0		000000000000000000000000000000000000000	23	0		92	0 0 0	92					0	0	0	0	0	0 0 0	115
<u>17:15</u> 17:30	0	0	23	0	23 24	1	0	143 136	0	144					0	0	0	0	0		167
<u>17:45</u> <u>18:00</u>	0 0	0	24	0	24 24	1 0	0	141	0 0	120	1				0	0	0	0	0 0	0	144
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19:30 19:45					0					C	1				0					0	0
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TOTAL AM Peak Vol	<b>0</b> 0	<b>0</b>	<b>1545</b> 570	<b>0</b>	1545 570	<b>3</b> 1	<b>0</b>	1290 81	<b>0</b> 0	1293 82	<b>0</b> 0	<b>0</b> 0	<b>0</b> 0	<b>0</b>	<b>0</b>	<b>0</b> 0	<b>0</b> 0	<b>0</b> 0	<b>0</b> 0	<b>0</b> 0	2838 652
PM Peak Vol	0	0	95	0	95	2	0	540	0	542	0	0	0	0	0	0	0	0	0	0	637

Southlawn Lane at Incerator Lane 5/30/2018 Wednesday

V/C

Bicycles

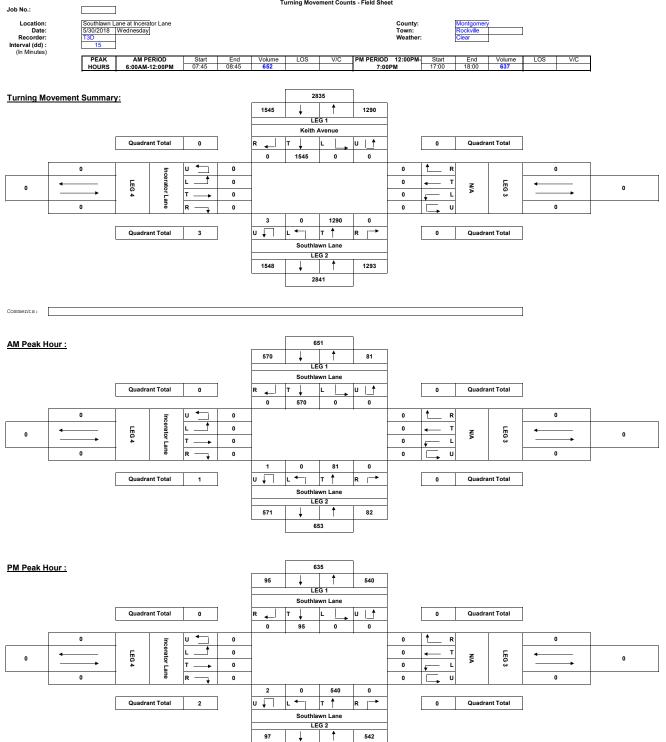
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Location:		ane at Incera								County:		Montgomery	<u> </u>	_	
Date:	5/30/2018	Wednesday	]							Town:		Rockville		]	
Recorder: Interval (dd) :	T3D 15									Weather:		Clear	J		
(In Minutes)	15	1													
	PEAK		ERIOD	Start	End	Volume	LOS	V/C		) 12:00PM-		End	Volume	LOS	
	HOURS	6:00AM-	12:00PM	07:45	08:45	652	DEOTOIAN			DPM	17:00	18:00	637		_
		North Leg		1	SCHOOL	South Leg	EDESTRIAN	S & BICYCLI	= 3	East Leg		1	· · · · · ·	West Leg	
Hour	S	outhlawn La	ne		S	outhlawn La	ne			N/A			lr	ncerator Lar	ne
Ending	School Children	Pedestrians	Bicycles		School Children	Pedestrians	Bicycles		School Children	Pedestrians	Bicycles		School Children	Pedestrians	
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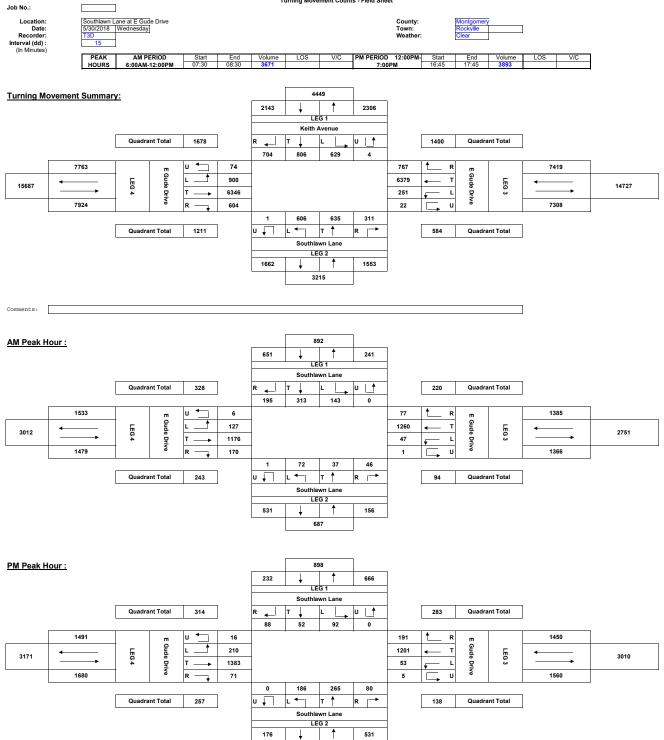
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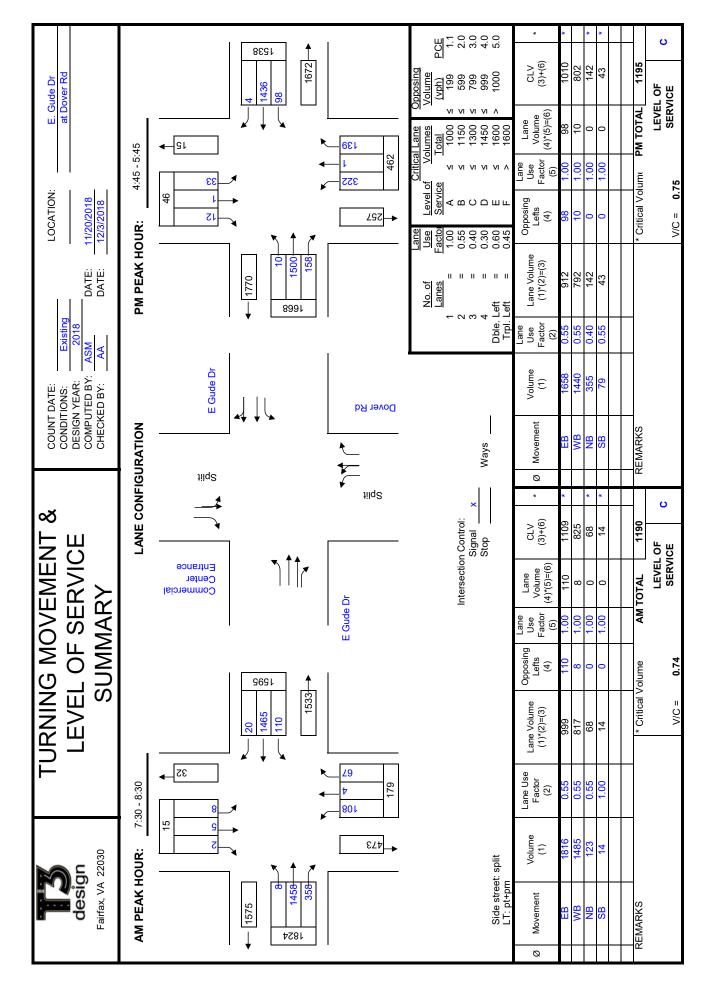


### Appendix B – CLV Results - Existing Conditions



PCE 1.1 3.0 5.0 m 1833 1582 CLV (3)+(6) 1055 900 Entrance (<u>vph)</u> 199 599 799 999 1000 39 5 Opposing /olume E. Gude Dr 1812 LEVEL OF SERVICE ∞ Critical Volum: PM TOTAL Landfill Volume (4)*(5)=(6) VI VI VI VI Lane 1000 1150 1300 1450 1600 1600 <u>Critical Lane</u> <u>Volumes</u> თ 0 0 Total 13 32 4:45 - 5:45 38 ι Lane Use Factor (5) VI VI VI VI 3 8 S 0.66 Level of Service 9 LOCATION: Opposing Lefts (4) 11/20/2018 < в О О Ш и 12/3/2018 97 ► V/C = **PM PEAK HOUR:** Lane Use 1.00 1.00 0.55 0.40 0.30 0.40 0.45 Lane Volume (1)*(2)=(3) 1548 DATE: DATE: 1825 ш п ш Ш 855 997 39 П 9 No. of Lanes Dble. Left Trpl. Left 1264 2 0 Lane Use Factor (2) Existing **6** 1.00 8 ¥ SS SS NBR is a free movement. COUNT DATE: CONDITIONS: DESIGN YEAR: COMPUTED BY: CHECKED BY: E Gude Dr Volume (1) δ TO velqaid Ways 1 LANE CONFIGURATION Movement REMARKS R m Z B Stop qof2 Ø * × ш **TURNING MOVEMENT &** Intersection Control: Signal Stop CLV (3)+(6) 1124 809 65 LEVEL OF SERVICE LEVEL OF SERVICE Volume (4)*(5)=(6) Entrance AM TOTAL Lane LiibneJ E Gude Dr 4 n 0 SUMMARY Lane Use Factor (5) Opposing Lefts 0.70 (4 1 **Critical Volume** 1214 1858 Lane Volume (1)*(2)=(3) V/C =465 1009 806 65 8 85 Lane Use Factor (2) 0.<u>55</u> 7:30 - 8:30 8. 8 0 64 ശ Volume <del>78</del> ► Ē 65 AM PEAK HOUR: Fairfax, VA 22030 design 40 1795 Movement 1472 REMARKS N B 1838 Ø

Gude CLA-Existing Vol#1-LandfillEnt@ Gude Dr



PCE 1.1 3.0 5.0 o 1555 1420 CLV (3)+(6) 1167 (<u>vph)</u> 199 599 799 999 1000 641 797 282 370 Opposing awn /olume E. Gude Dr LEVEL OF SERVICE 1201 191 South 58 Lane Volume (4)*(5)=(6) Critical Volum: PM TOTAL VI VI VI at ↓ 1000 1150 1300 1450 1600 36 186 92 <u>Critical Lane</u> <u>Volumes</u> 59 Total 289 08 4:45 - 5:45 531 Lane Use Factor (5) 565 VI VI VI VI 20 8 8 98L 65 0.73 Service Level of 232 Opposing Lefts (4) LOCATION 25 < в О О Ш и 8/20/2018 /25/2018 = 2// 5 181 88 92 **PM PEAK HOUR:** Lane Use 1.00 1.00 0.55 0.40 0.30 0.40 0.45 Lane Volume (1)*(2)=(3) 226 38 DATE: DATE: 582 661 190 1475 ш п ш Ш П 184 No. of Lanes Dble. Left Trpl. Left Ť 0891 2 0 EXISTING Lane Use Factor (2) **6** 0.55 8 SS SS ¥ COUNT DATE: CONDITIONS: DESIGN YEAR: COMPUTED BY: Volume (1) E Gude Dr 345 CHECKED BY: רט Southlawn ┦↓↓ LANE CONFIGURATION Movement REMARKS R 2 Z g Ways Ø * × m **TURNING MOVEMENT &** Intersection Control: Signal Stop I CLV (3)+(6) 1132 586 773 359 278 LEVEL OF SERVICE LEVEL OF SERVICE Volume (4)*(5)=(6) u٦ AM TOTAL **י**ןׂןןׂוֹוֹ Lane aweldtuos 48 80 143 72 SUMMARY E Gude Dr Lane Use Factor (5) Opposing Lefts 0.71 143 (4 Critical Volume 1365 1382 Lane Volume (1)*(2)=(3) V/C =1260 538 693 216 206 \$ 247 97 Lane Use Factor (2) 155 7:30 - 8:30 0.55 1.00 0.55 28 143 71 651 813 Volume (1) 96L 153 216 375 NBL&SBL pm+pt NBR & EBL OL EB&WB exclusive LT AM PEAK HOUR: Fairfax, VA 22030 design 133 1176 170 Movement 1527 REMARKS R B 627l Ø

Gude CLA-Existing Vo#3-Southlawn@Gude

PCE 1.1 3.0 5.0 4 0 CLV (3)+(6) 0 542 (<u>vph)</u> 199 599 799 999 1000 542 26 Southlawn Ln Incinerator /olume LEVEL OF SERVICE VIVIVIVIA Volume (4)*(5)=(6) PM TOTAL 1000 Lane 1150 1300 1450 1600 1600 ħ 2 Volumes ritical Lane **↓**079 4:45 - 5:45 542 **07**0 Use Factor (5) -ane VI Critical Volume 0.34 <u>evel of</u> Service LOCATION: 95 96 Opposing Lefts (4) ∢ ш С О Ш ш 8/20/2018 3/25/2018 //C = 96— 0 3 **PM PEAK HOUR:** <u>Use</u> -<u>actor</u> 1.00 0.55 0.40 0.30 0.60 Lane Volume (1)*(2)=(3) DATE: DATE: Ш 542 95 п ш <u>No. of</u> Lanes 2 Dble. Left Trpl. Left Ť 0 4 2 0 EXISTING Lane Use Factor (2) 8 1.00 ₹ COUNT DATE: CONDITIONS: DESIGN YEAR: COMPUTED BY: CHECKED BY: Volume Ē 47 36 uл Southlawn -LANE CONFIGURATION Movement REMARKS SB EB Ways P * Ø × * < **TURNING MOVEMENT &** Intersection Control: Signal Stop CLV (3)+(6) 572 83 572 0 LEVEL OF SERVICE LEVEL OF SERVICE dotS Lane Volume (4)*(5)=(6) u٦ Incinerator Ln AM TOTAL Southlawn c SUMMARY Lane Use Factor (5) 8 Opposing 0.36 (4) Critical Volume 1 0 6 V/C =Lane Volume (1)*(2)=(3) 83 571 0 ۶۱ Lane Use Factor (2) 7:30 - 8:30 00. 82 ۶۱ 571 029 029 Volume Ē 571 AM PEAK HOUR: Fairfax, VA 22030 design Movement REMARKS SB B 2 0 Ť Ø

Gude CLA-Existing Vol#4 Incinerator@Southlawn

### Appendix C – Traffic Growth Rate Calculations



E Gude Dr From MD 28 to MD 355		
Year	AADT	Traffic Growth Rate
2017	33,300	-13.82%
2016	38,642	1.90%
2015	37,921	2.60%
2014	36,960	-7.28%
2013	39,862	0.20%
2012	39,781	-0.80%
2011	40,100	-6.51%
2010	42,892	0.61%
2009	42,631	0.00%
2008	42,630	1.62%
2007	41,952	
	Avg.	-2.15%



Asma Ali <aali@t3design.us>

# FW: Gude Landfill Remediation Project - Traffic Data Request from Montgomery County DOT and City of Rockville

3 messages

**Oakes, Laura Jo** <loakes@eaest.com> To: Asma Ali <aali@t3design.us> Cc: Amy Morris <amorris@t3design.us>, "Gelder, Moriah" <mgelder@eaest.com> Mon, Apr 30, 2018 at 11:28 AM

Please let me know if this is enough information on this project or what specifics you would like me to request (see email chain below).

Thanks, Laura

From: Mitchell, Michael [mailto:Michael.Mitchell@montgomerycountymd.gov]
Sent: Monday, April 30, 2018 11:26 AM
To: Oakes, Laura Jo <loakes@eaest.com>
Subject: RE: Gude Landfill Remediation Project - Traffic Data Request from Montgomery County DOT and City of Rockville

Laura,

I do not believe the improvements will generate new traffic or increase it. One turn lane (right turn lane) is on west-bound Gude onto Crabbs Branch. The other improvement is extending the merge lane on East Gude, east of Crabbs Branch. Finally a turn lane onto a business parking lot.

Michael F. Mitchell, P.E.

Senior Engineer

Montgomery County Department of Transportation

100 Edison Park Drive, 4th Floor

Gaithersburg, Maryland 20878

Ph: 240-777-7262

Fax: 240-777-7277

michael.mitchell@montgomerycountymd.gov

From: Oakes, Laura Jo [mailto:loakes@eaest.com] Sent: Monday, April 30, 2018 11:23 AM To: Mitchell, Michael <Michael.Mitchell@montgomerycountymd.gov>

COMMISSIONERS



14501 Sweitzer Lane • Laurel, Maryland 20707-5901

Thomasina V. Rogers, Chair T. Eloise Foster, Vice Chair Fausto R. Bayonet Omar M. Boulware Howard A. Denis Chris Lawson

> GENERAL MANAGER Carla A. Reid

February 20, 2018

Ms. Katherine Nelson Montgomery County Planning Department 8787 Georgia Avenue Silver Spring, Maryland 20910

Dear Ms. Nelson:

The Washington Suburban Sanitary Commission (WSSC) proposes to construct Septage and FOG (Fats, Oils, and Grease) Discharge Facilities at the abandoned Rock Creek WWTP located at 700 East Gude Drive, in Rockville, Maryland. The site is located in a mixed industrial, commercial, and residential area. The Septage Discharge Facility and the FOG Discharge Facility will have footprints of 900 sq. ft. and 5,428 sq. ft., respectively. The Facilities would be staffed by two WSSC employees.

The facility is accessible from Rockville Pike, Maryland Route 355 and then proceeding onto East Gude Drive. East Gude Drive serves as a commercial thoroughfare connecting I-270 to the City of Rockville and is designed for the size and weight of the vehicles entering and exiting the Septage and FOG Discharge Facility. WSSC estimates that 20 to 30 vehicles per day would enter the site based on septage hauling records at existing facilities and future projections. The additional traffic generated by these vehicles would not impact the traffic patterns along East Gude Drive. The site provides ample space for waiting vehicles, so the vehicles would not back up on to East Gude Drive. An additional 5 to 10 trucks per week are estimated to visit the site to remove trash or FOG by-products.

Per the Montgomery County's Local Area Transportation (LATR) test, the project will generate less than 50 peak hour person trips in either the morning or evening peak hours and will not require a traffic study. Therefore, we request an exemption to this requirement.

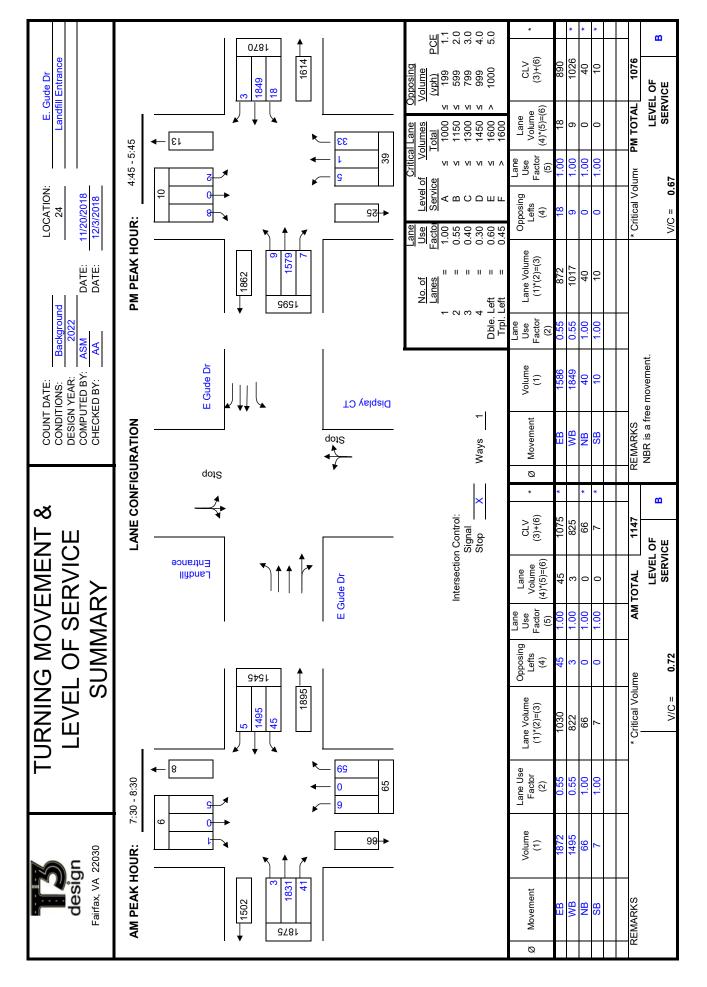
Sincerely,

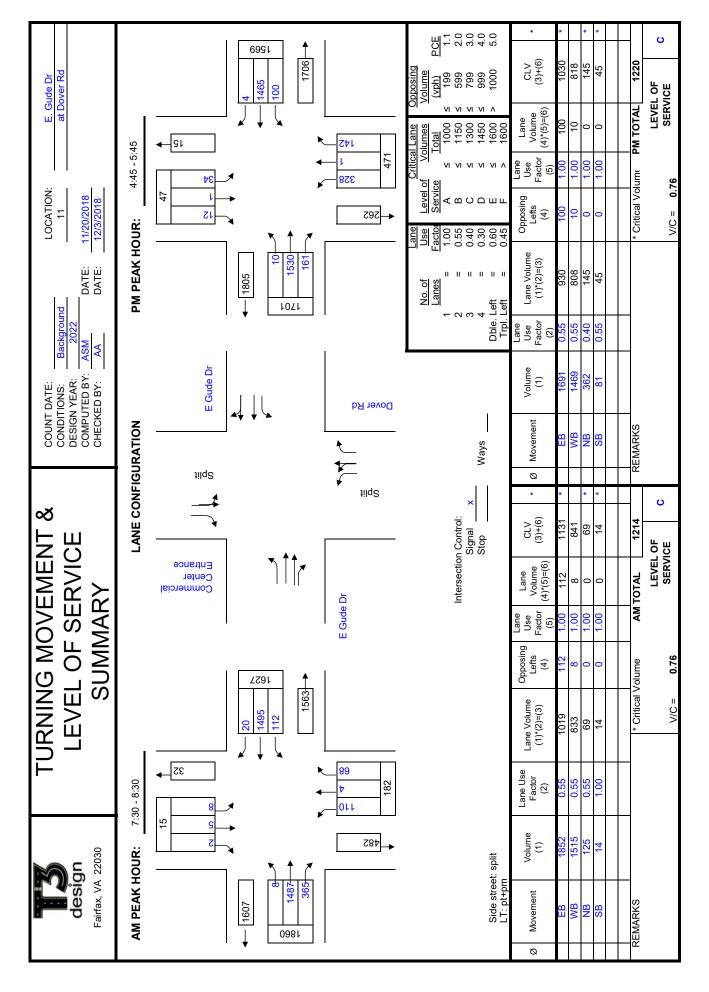
Philip Hwang, P.E., PMP, Project Manager, Facility Design & Construction Division

Washington Suburban Sanitary Commission

Appendix D – CLV Results - Background and Total Traffic Conditions

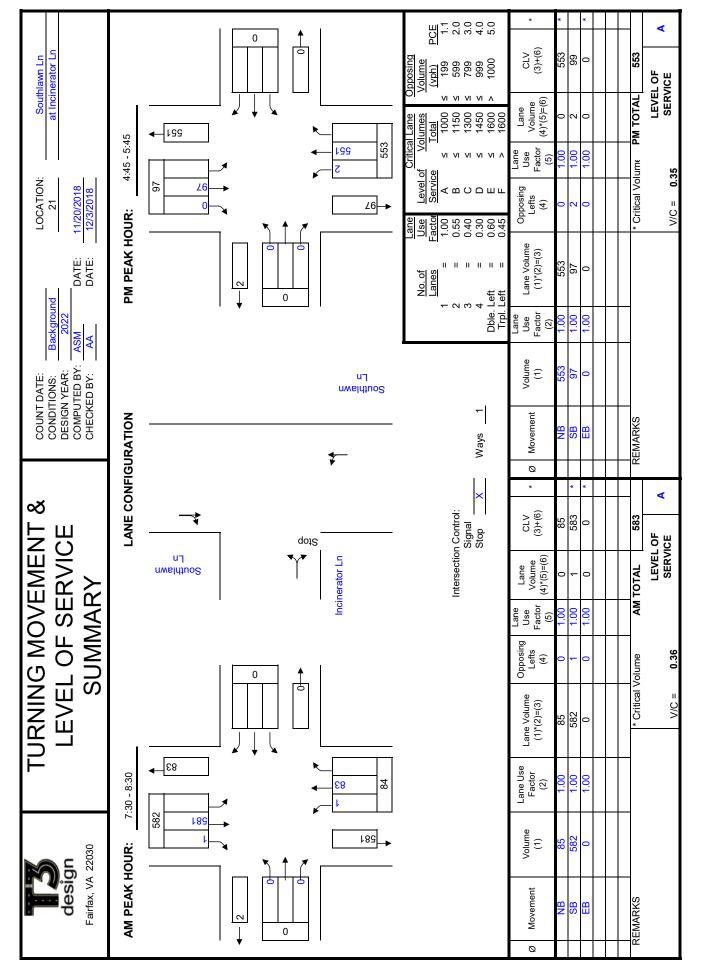






PCE 1.1 3.0 5.0 o 6271 1587 CLV (3)+(6) 1191 (<u>vph)</u> 199 599 799 999 1000 652 813 288 378 Opposing awn /olume E. Gude Dr 1225 LEVEL OF SERVICE 195 at South 59 Lane Volume (4)*(5)=(6) Critical Volum: PM TOTAL VI VI VI ↓ 1000 1150 1300 1450 1600 39 190 <u>Critical Lane</u> <u>Volumes</u> 59 94 Total 969 82 4:45 - 5:45 542 Lane Use Factor (5) 027 VI VI VI VI 20 8 8 06 L ₽6 0.74 Service Level of 237 Opposing Lefts (4) LOCATION 23 11/20/2018 < в О О Ш и 12/3/2018 V/C = 5 06 184 8 2 **PM PEAK HOUR:** Lane Use 1.00 1.00 0.55 0.40 0.30 0.40 0.45 Lane Volume (1)*(2)=(3) Ż 231 1411 DATE: DATE: 593 674 194 1505 Ш п ш Ш 188 П No. of Lanes Dble. Left Trpl. Left Ť 7171 Backaround 2 0 Lane Use Factor (2) **6** 0.55 8 ¥ NS A Volume (1) COUNT DATE: CONDITIONS: DESIGN YEAR: COMPUTED BY: E Gude Dr 222 352 CHECKED BY: רט Southlawn ┦↓↓ LANE CONFIGURATION Movement REMARKS R 2 Z g Ways Ø * × υ **TURNING MOVEMENT &** Intersection Control: Signal Stop I CLV (3)+(6) 1154 598 789 365 283 LEVEL OF SERVICE LEVEL OF SERVICE Volume (4)*(5)=(6) u٦ AM TOTAL **י**ןׂןןׂוֹוֹ Lane aweldtuos 49 82 146 73 SUMMARY E Gude Dr Lane Use Factor (5) Opposing Lefts 0.72 ŝ 146 (4 Critical Volume 1393 1413 Lane Volume (1)*(2)=(3) V/C =1285 549 707 219 210 62 <del>6</del> 553 42 Lane Use Factor (2) 158 7:30 - 8:30 0.55 1.00 0.55 38 971 664 615 Volume (1) 66L 143 219 NBL&SBL pm+pt NBR & EBL OL EB&WB exclusive LT AM PEAK HOUR: Fairfax, VA 22030 design 136 173 1200 Movement 1557 REMARKS R B 609l Ø

Gude CLA-Background Vol - 2022#3-Southlawn@Gude



12/6/2018

Gude CLA-Background Vol - 2022#4 Incinerator@Southlawn

