Attachment D

Forest Stand Delineation Report And Wetland Delineation Report

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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
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Hunt Valley, Maryland 21031

January 2019
Version: FINAL
EA Project No. 15646.01

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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	Facultative
FACU	Facultative upland
FACW	Facultative wetland
the Landfill	Gude Landfill
LF	Linear feet
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OBL	Obligate
OHWM	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 seven-tenths (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

Soil Mapping Unit	Symbol	Hydric 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, 15 to 25 percent slopes	16D	Yes	Well drained
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, very rocky	116D	Yes	Well drained
Blocktown channery silt loam, 25 to 45 percent slopes, very rocky	116E	Yes	Well drained
Source: Adapted from U.S. Department of Agriculture Natural Resources Conservation Service 2018a, 2018b.			

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 ground-truth all potential wetlands, as described in the following sections of this report.

Table 2 NWI Wetlands

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 from USFWS 2018.

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 for the criterion 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 non-hydrophytic 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 non-hydrophytic 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.

Table 3 Delineated Features Identified

Delineated Feature	Resource	Significant Nexus Determination	Dimensions 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.
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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Appendix A

Figures

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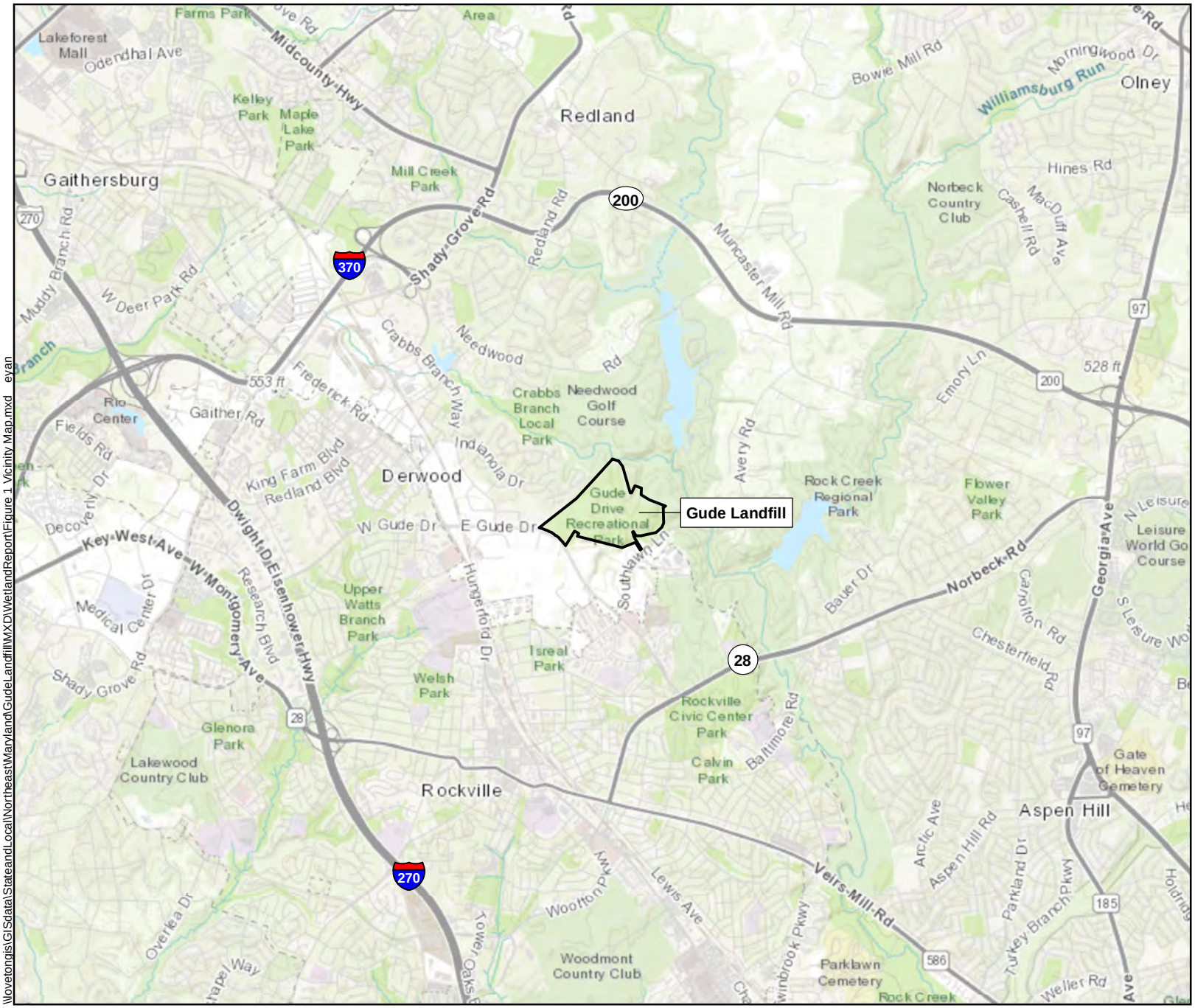


VICINITY MAP

Legend

Property Boundary

Map Date: 5/17/2018
Source: ESRI 2016
Projection: NAD 1983 State Plane Maryland US Feet

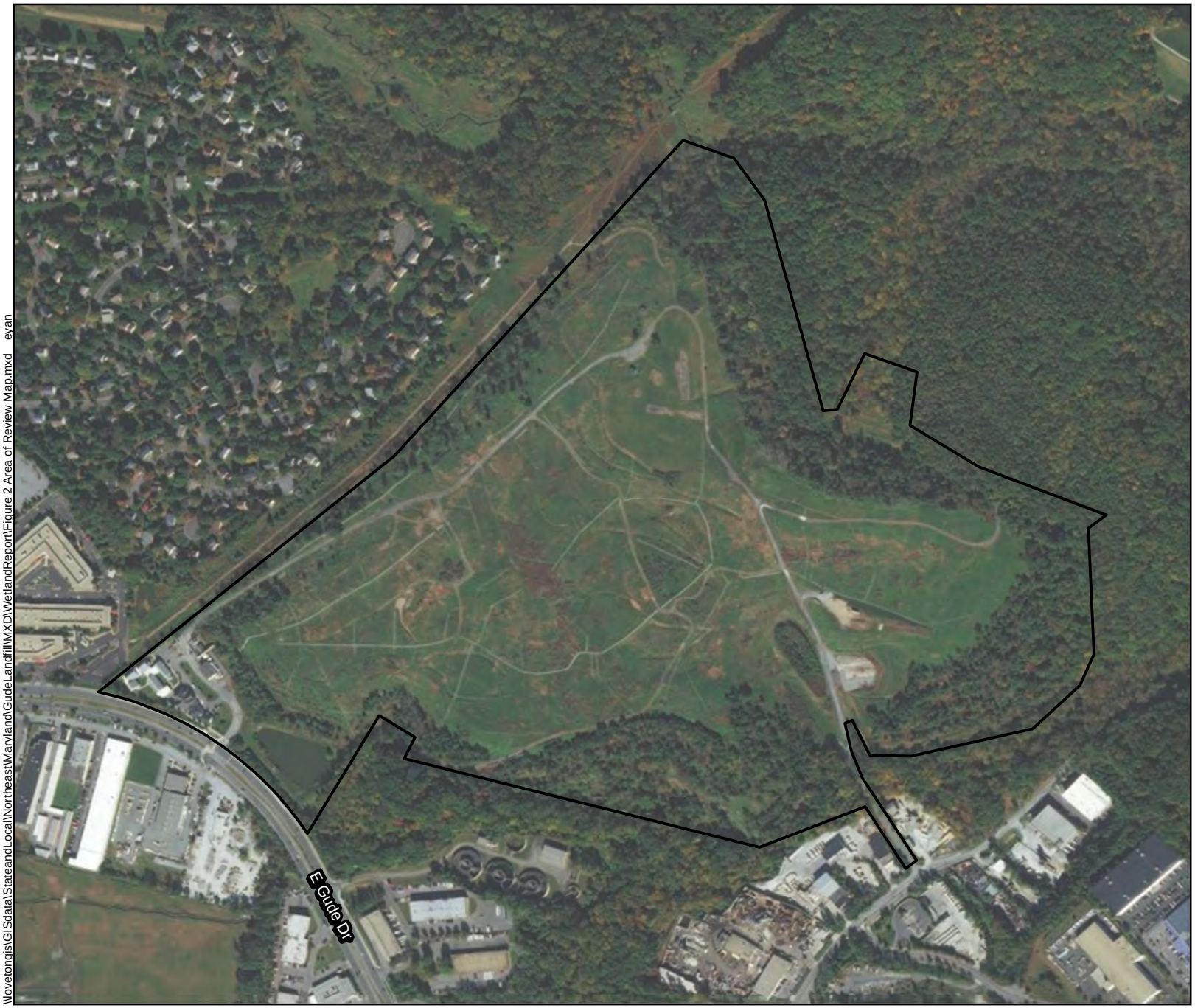
N

0 0.5 1

Miles

Figure 1
Vicinity Map
Gude Landfill
Rockville, Maryland

\\lovetongis\GIS\data\StateandLocal\Northeast\Maryland\GudeLandfill\MXD\WetlandReport\Figure 1 Vicinity Map.mxd eyan



VICINITY MAP

Legend

Property Boundary

Map Date: 5/17/2018
Source: ESRI 2015
Projection: NAD 1983 State Plane Maryland US Feet

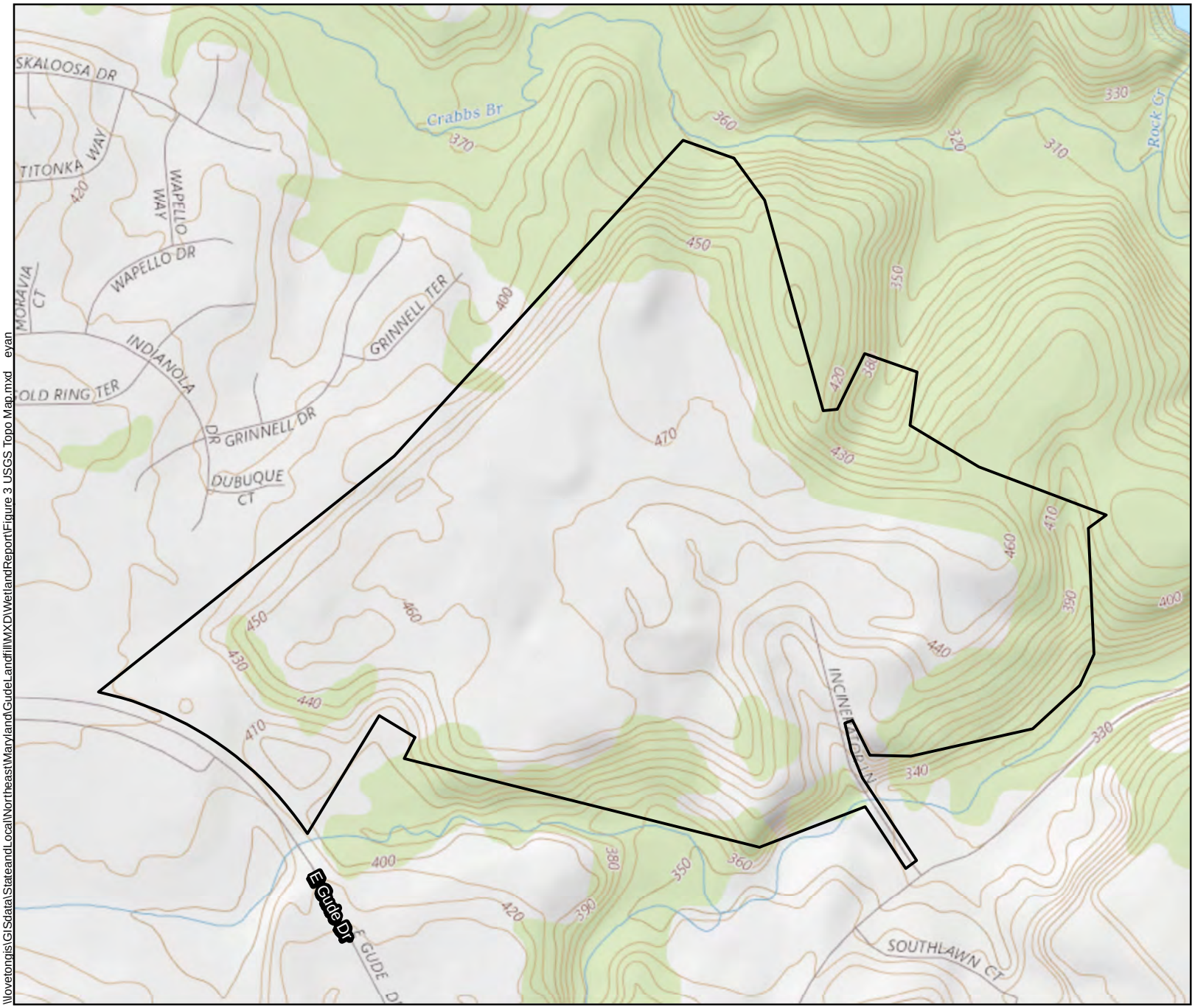
N

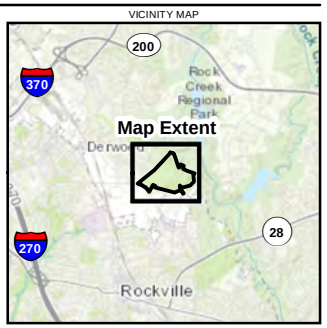
0 200 400

Feet

Figure 2
Area of Review Map
Gude Landfill
Rockville, Maryland

\\lovetongis\GIStata\StateandLocal\Northeast\Maryland\GudeLandfill\MXD\WetlandReport\Figure 2 Area of Review Map.mxd evan





Legend

Property Boundary

Map Date: 5/17/2018
Source: USGS 2016
Projection: NAD 1983 State Plane Maryland US Feet

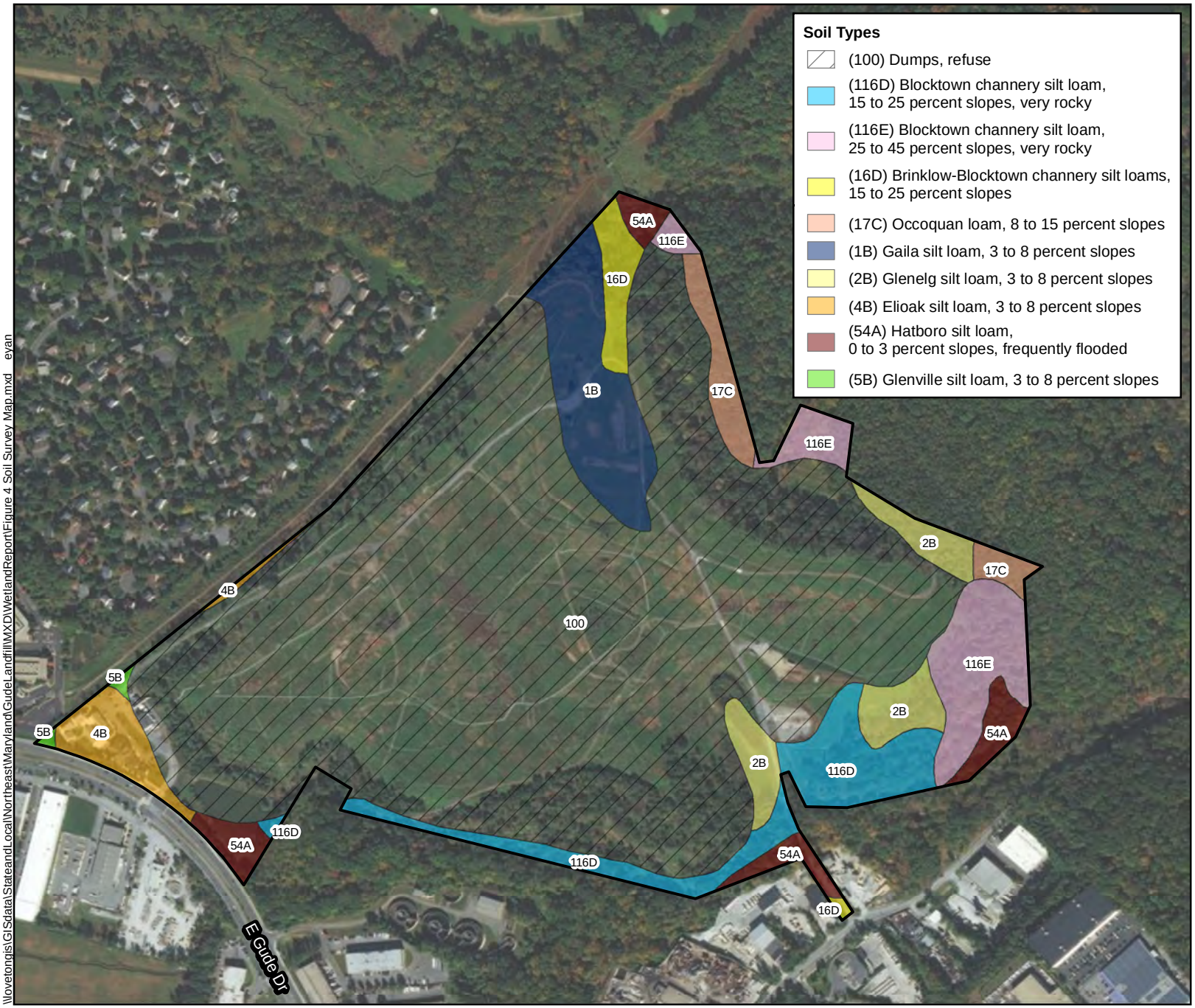
N

0 200 400

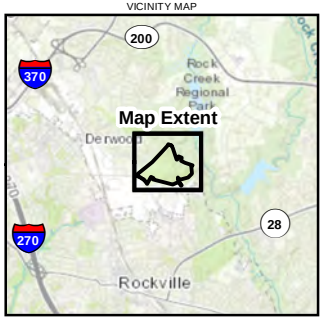
Feet

Figure 3
USGS Topographic Map
Gude Landfill Rockville, Maryland

\\lovetongis\GIStata\StateandLocal\Northeast\Maryland\GudeLandfillMXD\WetlandReport\Figure 3 USGS Topo Map.mxd evan



VICINITY MAP



Legend

Property Boundary

Map Date: 5/17/2018
Source: ESRI 2015, USDA 2013
Projection: NAD 1983 State Plane Maryland US Feet

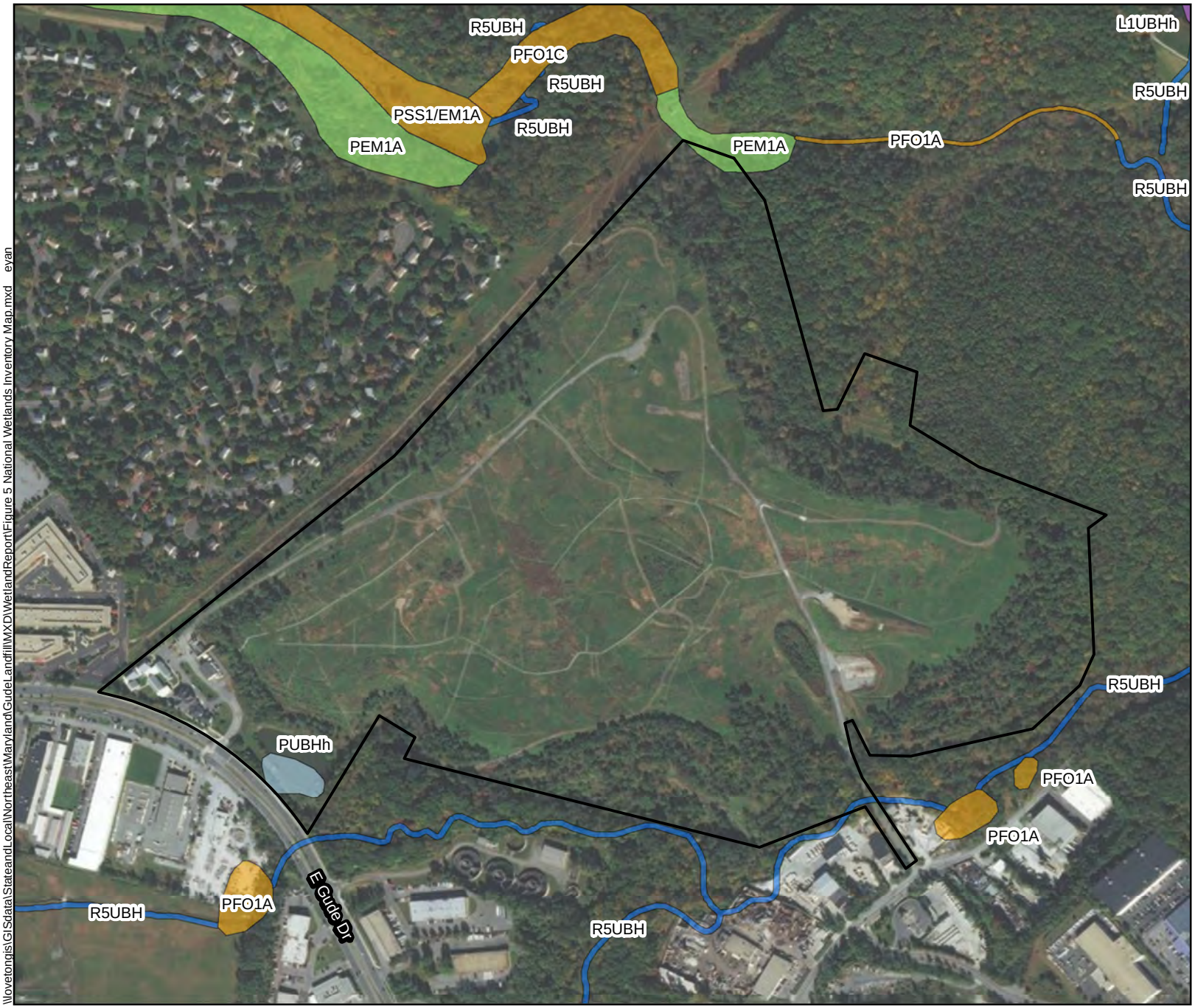
N

0 200 400

Feet

Figure 4
Soil Survey Map
Gude Landfill
Rockville, Maryland

\\lovetongis\GIStata\StateandLocal\Northeast\Maryland\GudeLandfill\MXD\WetlandReport\Figure 4 Soil Survey Map.mxd eyan



VICINITY MAP

Legend

- Property Boundary
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

Map Date: 12/10/2018
Source: ESRI 2015, USFWS 2017
Projection: NAD 1983 State Plane Maryland US Feet

N

0 200 400

Feet

Figure 5
National Wetlands Inventory Map
Gude Landfill
Rockville, Maryland

\\lovetongis\GIStata\StateandLocal\Northeast\Maryland\GudeLandfill\MXD\WetlandReport\Figure 5 National Wetlands Inventory Map.mxd evan

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Appendix B

Wetland Delineation Data Forms

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WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Project/Site: Gude Landfill | City/County: Montgomery County | Sampling Date: 5/1/18

Applicant/Owner: DEP/DSWS | State: MD | Sampling Point: WETA

Investigator(s): TMK | Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain | Local Relief (concave, convex, none): concave

Slope %: <5% | Latitude: 39° 06' 29" N | Longitude: 77° 08' 16" W | Datum: NAD83 state plane

Soil Map Unit Name: Hatboro silt loam, 0-3% slopes | NWI Classification: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ **Is the Sampled Area within a Wetland? Yes ☑ No ☐**

Hydric Soil Present? Yes ☑ No ☐

Wetland Hydrology Present? Yes ☑ No ☐ If yes, optional Wetland Site ID: Wetland A

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Veg. Concave Surface(B8)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):

Water Table Present? Yes ☑ No ☐ Depth (inches): 4 inches

Saturation Present? Yes ☑ No ☐ Depth (inches): surface

(includes capillary fringe)

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream guage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use Scientific Names of Plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1 *Acer rubrum*	15	YES	FAC
2			
3			
4			
5			
6			
7			
	15 = Total cover		
	7.5 = 50%	3 = 20%	
Sapling/Shrub Stratum (Plot size: 30 ft)			
1 *Acer rubrum*	15	YES	FAC
2 *Liquidamber styraciflua*	10	YES	FAC
3 *Salix nigra*	15	YES	FACW
4			
5			
6			
7			
	40 = Total Cover		
	20 = 50%	8 = 20%	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1
FACW species	x 2
FAC species	x 3
FACU species	x 4
UPL Species	x 5
Column Totals: (A)	(B)

Prevalance Index = B/A =

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Vegetation (continued)

Sampling Point: WETA

Herb Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1 *Polystichun acrostichoides*	5	NO	FACU
2 *Symplocarpus foetidus*	25	YES	OBL
3 *Boehmeria cylindrica*	10	YES	FACW
4 *Juncus effusus*	10	YES	FACW
5 *Polygonum sagittatum*	10	YES	FACW
6			
7			
	60	= Total Cover	
	30	= 50% 12	= 20%

Woody Vine Stratum (Plot size: 30 ft)			
1			
2			
3			
4			
5			
6			
7			
	0	= Total Cover	
	0	= 50% 0	= 20%

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree: Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub: Woody plants less than 3 in. DBH and greater then 3.28 ft (1m) tall.

Herb: All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vines: All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR32/2	100					organic	
2-10	10YR 4/2	90	7.5YR 4/6	10	C	M	Silt loam	
10-20	10YR 5/1	80	10YR 4/6	20	C	M	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydron Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prarie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophtic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Project/Site: Gude Landfill | City/County: Montgomery County | Sampling Date: 5/1/18

Applicant/Owner: DEP/DSWS | State: MD | Sampling Point: WETB

Investigator(s): TMK | Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain | Local Relief (concave, convex, none): concave

Slope %: <5% | Latitude: 39° 06' 29" N | Longitude: 77° 08' 16" W | Datum: NAD83 state plane

Soil Map Unit Name: Blocktown channery silt loam, 15-25% slopes | NWI Classification: PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ **Is the Sampled Area within a Wetland? Yes ☑ No ☐**

Hydric Soil Present? Yes ☑ No ☐

Wetland Hydrology Present? Yes ☑ No ☐ If yes, optional Wetland Site ID: WETLAND B

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Veg. Concave Surface(B8)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? Yes ☑ No ☐ Depth (inches): surface

(includes capillary fringe)

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream guage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use Scientific Names of Plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1 *Acer rubrum*	15	YES	FAC
2 *Liquidambar styraciflua*	15	YES	FAC
3 *Quercus phellos*	10	YES	FACW
4			
5			
6			
7			
	40 = Total cover		
	20 = 50%	8 = 20%	
Sapling/Shrub Stratum (Plot size: 30 ft)			
1 *Acer rubrum*	15	YES	FAC
2			
3			
4			
5			
6			
7			
	15 = Total Cover		
	7.5 = 50%	3 = 20%	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1
FACW species	x 2
FAC species	x 3
FACU species	x 4
UPL Species	x 5
Column Totals: (A)	(B)

Prevalance Index = B/A =

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Vegetation (continued)

Sampling Point: WETB

Herb Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1 *Juncus effusus*	10	YES	FACW
2 *Polygonum sagittatum*	10	YES	FACW
3			
4			
5			
6			
7			
	20 = Total Cover		
	10 = 50%	4 = 20%	
Woody Vine Stratum (Plot size: 30 ft)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		
	0 = 50%	0 = 20%	

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree: Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub: Woody plants less than 3 in. DBH and greater then 3.28 ft (1m) tall.

Herb: All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vines: All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	97	10YR 4/4	3	C	M	fine sandy loam	
6-20	10YR 5/1	90	10YR 4/6	10	C	M	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydron Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prarie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophtic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Project/Site: Gude Landfill City/County: Montgomery County Sampling Date: 5/1/18

Applicant/Owner: DEP/DSWS State: MD Sampling Point: WETC

Investigator(s): TMK Section, Township, Range:

Landform (hillslope, terrace, etc.): hillslope - drainage swale Local Relief (concave, convex, none): concave

Slope %: 5% Latitude: 39° 06' 29" N Longitude: 77° 08' 16" W Datum: NAD83 state plane

Soil Map Unit Name: Dump,refuse NWI Classification: PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ **Is the Sampled Area within a Wetland? Yes ☑ No ☐**

Hydric Soil Present? Yes ☑ No ☐

Wetland Hydrology Present? Yes ☑ No ☐ If yes, optional Wetland Site ID: Wetland C

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Veg. Concave Surface(B8)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? Yes ☑ No ☐ Depth (inches): surface

(includes capillary fringe)

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream guage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use Scientific Names of Plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
	0 = Total cover		
	0 = 50%	0 = 20%	
Sapling/Shrub Stratum (Plot size: 30 ft)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		
	0 = 50%	0 = 20%	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1
FACW species	x 2
FAC species	x 3
FACU species	x 4
UPL Species	x 5
Column Totals: (A)	(B)

Prevalance Index = B/A =

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Vegetation (continued)

Sampling Point: WETC

Herb Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1 *schoenoplectus tabernaemontani*	25	YES	OBL
2 *Eleocharis obtusa*	35	YES	OBL
3			
4			
5			
6			
7			
	60 = Total Cover		
	30 = 50%	12	= 20%
Woody Vine Stratum (Plot size: 30 ft)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		
	0 = 50%	0	= 20%

Hydrophytic Vegetation Indicators:

- ☑ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree: Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub: Woody plants less than 3 in. DBH and greater then 3.28 ft (1m) tall.

Herb: All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vines: All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					organic	
2-5	2.5Y 5/2	95	7.5YR 4/6	5	C	PL	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 Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydron Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prarie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophtic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Project/Site: Gude Landfill City/County: Montgomery County Sampling Date: 5/1/18

Applicant/Owner: DEP/DSWS State: MD Sampling Point: UPL1

Investigator(s): TMK Section, Township, Range:

Landform (hillslope, terrace, etc.): hillslope Local Relief (concave, convex, none): convex

Slope %: 5% -10% Latitude: 39° 06' 29" N Longitude: 77° 08' 16" W Datum: NAD83 state plane

Soil Map Unit Name: dump, refuse NWI Classification: upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☑ **Is the Sampled Area within a Wetland? Yes ☐ No ☑**

Hydric Soil Present? Yes ☐ No ☑

Wetland Hydrology Present? Yes ☐ No ☑ If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

on upland slope adjacent to wetland A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Veg. Concave Surface(B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? Yes ☐ No ☑ Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream guage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use Scientific Names of Plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1 *Acer rubrum*	10	YES	FAC
2 *Liquidambar styraciflua*	5	NO	FAC
3 *Quercus alba*	15	YES	FACU
4 *Liriodendron tulipfera*	20	YES	FACU
5			
6			
7			
	50 = Total cover		
	25 = 50%	10 = 20%	
Sapling/Shrub Stratum (Plot size: 30 ft)			
1 *Ilex opaca*	10	YES	FAC
2 *Kalmia latifolia*	10	YES	FACU
3			
4			
5			
6			
7			
	20 = Total Cover		
	10 = 50%	4 = 20%	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1
FACW species	x 2
FAC species	x 3
FACU species	x 4
UPL Species	x 5
Column Totals: (A)	(B)

Prevalance Index = B/A =

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Vegetation (continued)

Sampling Point: UPL1

Herb Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		
	0 = 50%	0 = 20%	

Woody Vine Stratum (Plot size: 30 ft)			
1			
2			
3			
4			
5			
6			
7			
	0 = Total Cover		
	0 = 50%	0 = 20%	

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree: Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub: Woody plants less than 3 in. DBH and greater then 3.28 ft (1m) tall.

Herb: All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vines: All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					silt loam	
4-18	10YR 6/3	100					sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydron Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prarie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophtic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☐ No ☑

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Project/Site: Gude Landfill | City/County: Montgomery County | Sampling Date: 5/1/18

Applicant/Owner: DEP/DSWS | State: MD | Sampling Point: UPL2

Investigator(s): TMK | Section, Township, Range:

Landform (hillslope, terrace, etc.): hillslope | Local Relief (concave, convex, none): convex

Slope %: 5% -10% | Latitude: 39° 06' 29" N | Longitude: 77° 08' 16" W | Datum: NAD83 state plane

Soil Map Unit Name: dump, refuse | NWI Classification: upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐ , Soil ☐ , or hydrology ☐ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Hydric Soil Present? Yes ☐ No ☑

Wetland Hydrology Present? Yes ☐ No ☑

Is the Sampled Area within a Wetland? Yes ☐ No ☑

If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

Upland slope located adjacent to Wetland B and Pond #4

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Veg. Concave Surface(B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):

Water Table Present? Yes ☐ No ☑ Depth (inches):

Saturation Present? Yes ☐ No ☑ Depth (inches):

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream guage, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use Scientific Names of Plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1 *Acer rubrum*	5	NO	FAC
2 *Liquidambar styraciflua*	5	NO	FAC
3 *Quercus alba*	15	YES	FACU
4 *Liriodendron tulipfera*	20	YES	FACU
5 *Fagus grandifolia*	2	NO	FACU
6			
7			
	47 = Total cover		
	23.5 = 50%	9.4 = 20%	
Sapling/Shrub Stratum (Plot size: 30 ft)			
1 *Liriodendron tulipfera*	15	YES	FACU
2 *Nyssa sylvatica*	10	YES	FAC
3			
4			
5			
6			
7			
	25 = Total Cover		
	12.5 = 50%	5 = 20%	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1
FACW species	x 2
FAC species	x 3
FACU species	x 4
UPL Species	x 5
Column Totals: (A)	(B)

Prevalance Index = B/A =

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region - Interim Version

Vegetation (continued)

Sampling Point: UPL2

Herb Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1 *Polystichum acrostichoid*	10	YES	FACU
2			
3			
4			
5			
6			
7			
	10 = Total Cover		
	5 = 50%	2	= 20%
Woody Vine Stratum (Plot size: 30 ft)			
1 *Lonicera japonica*	15	YES	FAC
2			
3			
4			
5			
6			
7			
	15 = Total Cover		
	7.5 = 50%	3	= 20%

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree: Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub: Woody plants less than 3 in. DBH and greater then 3.28 ft (1m) tall.

Herb: All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vines: All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					silt loam	
4-12	10YR 4/4	100					silt loam	
12+	rock refusal							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydron Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prarie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophtic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☐ No ☑

Remarks:

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 2: Upstream portion of Stream Channel #2.

Photograph 3: Hydric Soils within Wetland A.

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 6: Overview of Pond #4.

Photograph 7: Overview of Wetland C.

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 10: Overview of Gude Landfill, cleared plateau.

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

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

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Appendix D

Wetland Delineation Map

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NOTES

1. PROJECT NAME: GUDE LANDFILL
2. LOCATION: 600 EAST GUDE DRIVE, ROCKVILLE, MARYLAND
3. OWNER: MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION DIVISION OF SOLID WASTER SERVICES (DEP/DSWS)
4. PLAN PREPARED BY: EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC 225 SCHILLING CIRCLE, SUITE 400, HUNT VALLEY, MARYLAND
5. TOTAL AREA OF REVIEW: 162.7 ACRES±
6. PROPERTY BOUNDARIES AND OWNER INFORMATION ARE BASED ON BASED ON A DRAWING ENTITLED "GUDE LANDFILL - PROPERTY EXCHANGE WITH M-NCPPC" PREPARED BY C.C. JOHNSON & MALHOTRA, P.C., DATED 05/23/2012.
7. THIS WETLAND DELINEATION PLAN WAS PREPARED FROM A BASE PLAN TITLED GUDE LANDFILL BOUNDARY COMPOSITE, DATED OCTOBER 8, 2009 PREPARED BY CCJM ENGINEERING INFRASTRUCTURE SOLUTIONS (CCJM).
8. THE WATERS OF THE U.S. INCLUDING FEDERALLY REGULATED WETLANDS WERE DELINEATED BY EA ENGINEERING ON OCTOBER 28TH, 30TH, AND NOVEMBER 2, 2009. FLAGS WERE LOCATED USING A TRIMBLE GEO XH GLOBAL POSITIONING SYSTEM INSTRUMENT. EA RE-VISITED THE SITE ON MAY 1, 2018 TO VERIFY THE BOUNDARIES AND CONDITIONS OF THE WATERWAYS. SLIGHT REVISIONS TO THE WETLAND BOUNDARIES WERE MADE AND RE-LOCATED USING A TRIMBLE GEO7X GLOBAL POSITIONING SYSTEM INSTRUMENT.
9. THE WATERS OF THE U.S. INCLUDING FEDERALLY REGULATED WETLANDS IDENTIFIED CONTRIBUTE TO ROCK CREEK. ALL TRIBUTARIES OF ROCK CREEK IN THIS AREA ARE LISTED IN THE CODE OF MARYLAND REGULATIONS (COMAR) STREAM USE CLASSIFICATION INDEX AS USE IV (RECREATIONAL TROUT WATERS).
10. THE RESULTS OF EA'S DELINEATION ARE BASED ON OBSERVATIONS OF EXISTING CONDITIONS, PROFESSIONAL EXPERIENCE IN THE AREA WITH SIMILAR PROJECTS, AND GENERALLY ACCEPTED PROFESSIONAL ENVIRONMENTAL PRACTICE UNDER SIMILAR CIRCUMSTANCES. SEASONAL FLUCTUATIONS IN PRECIPITATION OR WEATHER CONDITIONS CAN RESULT IN DIFFERENCES IN THE PERCEPTION OF HYDROLOGIC CONDITIONS, WHICH CAN ALTER EA'S EVALUATION OF WETLANDS/WATERWAYS.
11. IT IS IMPORTANT TO NOTE THE USACE IS THE FEDERAL AGENCY THAT DETERMINES THE OFFICIAL JURISDICTIONAL STATUS OF WETLANDS/WATERWAYS. FURTHERMORE, THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) CAN REGULATE WETLANDS/WATERWAYS CONSIDERED NON-JURISDICTIONAL BY THE USACE. TO DETERMINE WHETHER THE USACE OR THE MDE WILL TAKE JURISDICTION OVER ANY AREAS OF THE SUBJECT PROPERTY, AN APPLICATION FOR A PERMIT OR JURISDICTIONAL DETERMINATION REQUEST SHOULD BE SUBMITTED JOINTLY TO THESE AGENCIES.

LEGEND

DESCRIPTION	EXISTING	PROPOSED
PROPERTY BOUNDARY AND AREA OF REVIEW		NA
ADJOINER BOUNDARY		NA
CONTOUR		NA
TREE LINE		NA
FENCE LINE		NA
DIRT ROAD		NA
APPROXIMATE STREAM CENTER LINE		NA
NONTIDAL WETLAND		NA
POND		NA

AREA OF WETLANDS/WATERS

DELINEATED FEATURE	RESOURCE	SIGNIFICANT NEXUS DETERMINATION	DIMENSIONS WITHIN PROJECT SITE
STREAM CHANNEL #1	PERENNIAL STREAM	RPW (YEAR ROUND)	67.43 L.F.
STREAM CHANNEL #2	PERENNIAL STREAM	RPW (YEAR ROUND)	452.21 L.F.
*STREAM CHANNEL #3	EPHEMERAL STREAM	NON-RPW	187.71 L.F.
WETLAND SYSTEM A	EMERGENT WETLAND	ABUTTING RPW	9,702.28 S.F. / 0.22 AC.
WETLAND SYSTEM B	FORESTED WETLAND	ABUTTING RPW	2,965.06 S.F. / 0.06 AC.
WETLAND SYSTEM C	EMERGENT WETLAND	ADJACENT RPW	1,342.46 S.F. / 0.03 AC.
POND #4	OPEN WATER POND W/ EMERGENT WETLAND	ADJACENT RPW	6,303.30 S.F. / 0.15 AC.**

* LOCATED OUTSIDE PROJECT SITE

** APPROXIMATE AREA DETERMINED FROM TOPOGRAPHY AND AERIAL PHOTOGRAPHY

0 100 200 400
GRAPHIC SCALE IN FEET

REVISIONS

NO.	DATE	BY	DESCRIPTION

DESIGN INFORMATION
DESIGNED BY: TK
DRAWN BY: SMB
CHECKED BY: TK
PROJECT MANAGER: LJO

SEAL

GUDE LANDFILL
REMEDIATION DESIGN
MONTGOMERY COUNTY, MARYLAND
WETLAND DELINEATION PLAN

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

DATE: MAY 2018

PROJECT NUMBER: 1564601

W-1

SHEET: 1 OF 1

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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

June 2019

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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)

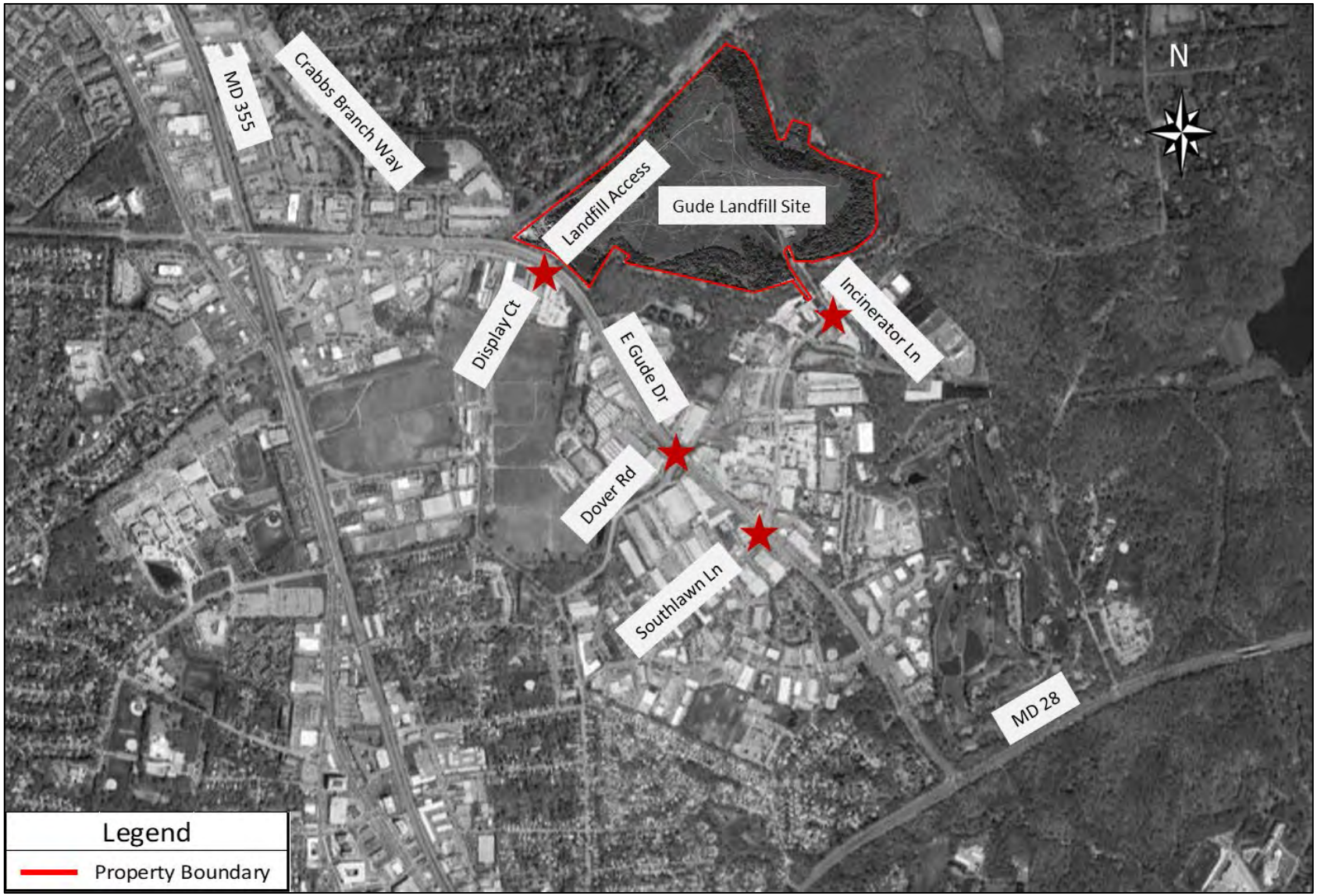
Although construction is expected to last for about four years (beginning in 2020 and finishing sometime in 2023) the background and total conditions analyses were conducted for 2022 when the background traffic is expected to be at maximum.

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.

1. East Gude Drive at Landfill Access North – 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.

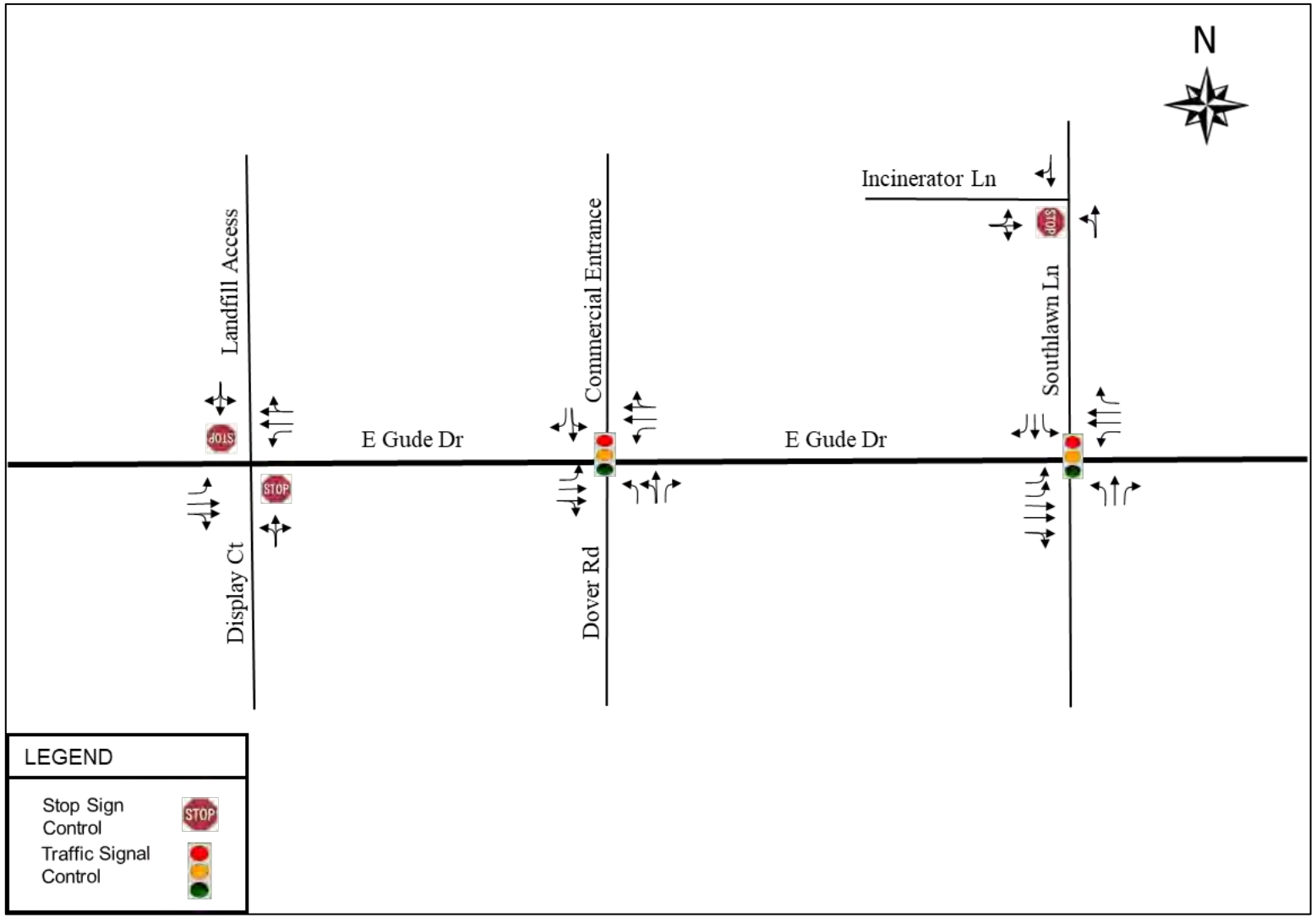
2. East Gude Drive at Dover Road – is a four-legged signalized intersection. The northbound and southbound approaches on Dover Road operate with "split" phases. There are marked pedestrian crosswalks on the east, west, and south sides of the intersection with pedestrian signal heads.

3. East Gude Drive at Southlawn Lane – 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.

4. Southlawn Lane and Incinerator Lane – 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.

Figure 2: Study Intersection Lane Configuration and 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.

Figure 3: Existing Year (2018) AM and PM Peak Hour Volume

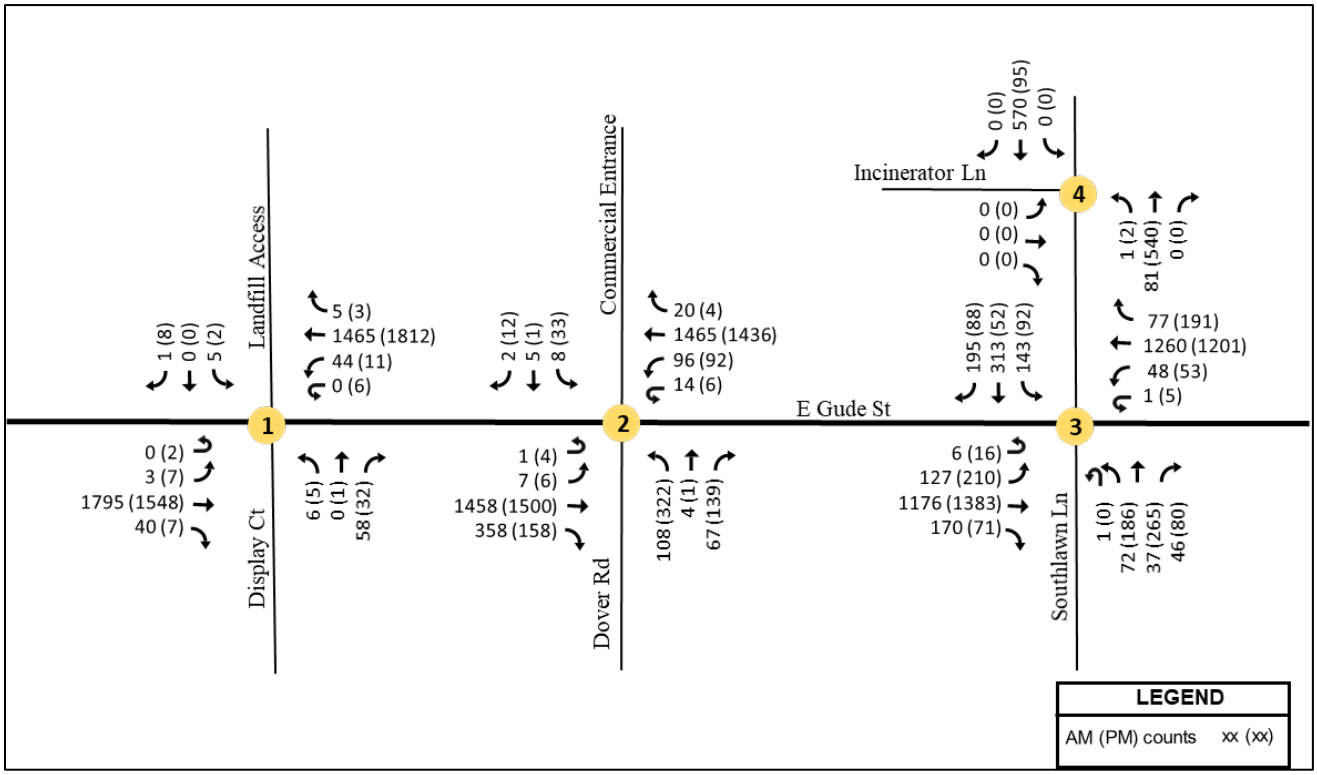


Table 1 displays the 2017 average annual daily traffic (AADT) volumes published by State Highway Administration (SHA) for roadways adjacent to the study site.

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.

Table 2: CLV Level of Service (LOS) Criteria

LOS		CLV	v/c
A	≤	1000	0.63
B	≤	1150	0.72
C	≤	1300	0.81
D	≤	1450	0.91
E	≤	1600	1
F	>	1600	1

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

Table 3: LOS – Existing Conditions

Intersection #	Intersections	Existing Condition (2018)	
		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)

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.

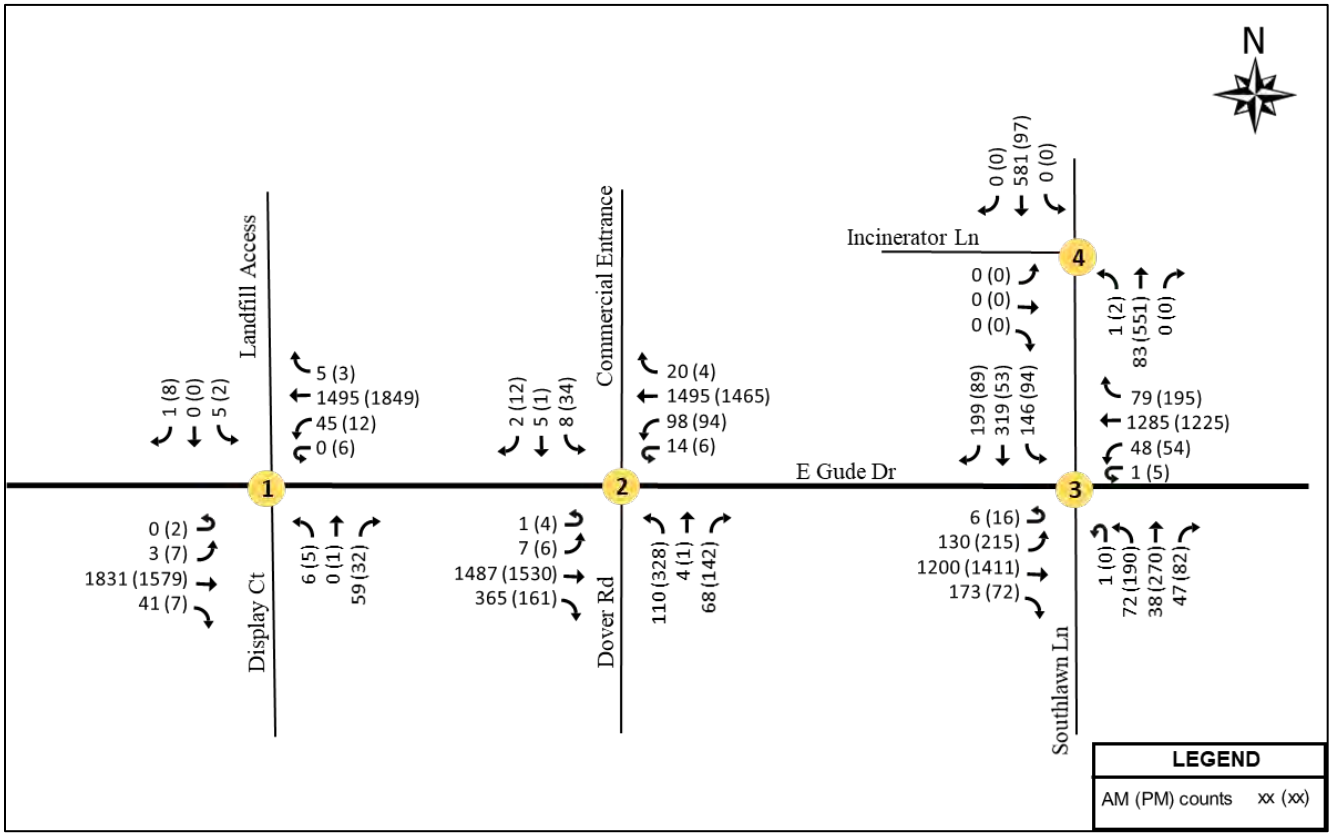
For long-range traffic improvements, the County indicated a future improvement planned at the intersection of East Gude Road at Crabbs Branch Way that is not likely to generate additional traffic impacting the study intersections.

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.

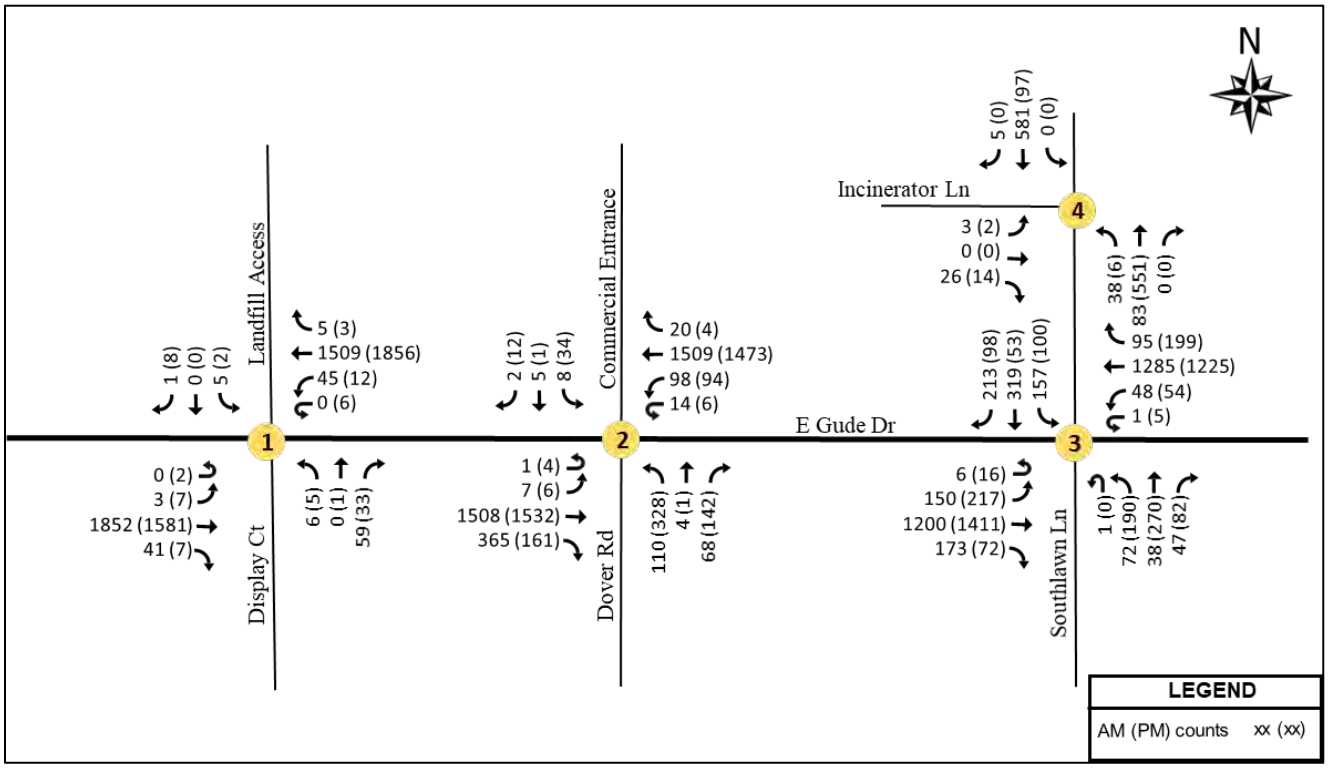
Table 4: Construction-Related Vehicle Trips Generated

Type	AM			PM		
	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.

Table 5: LOS – Background vs. Total Traffic Conditions

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

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

Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

Job No.:

Location: Display Court at E Gude Drive
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:30	08:30	3422				16:45	17:45	3444		

Street Name-->	Landfill Entrance					Display Court					E Gude Drive					E Gude Drive					GRAND TOTAL
HOUR	From North					From South					From East					From West					
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	
00:15					0					0					0					0	0
00:30					0					0					0					0	0
00:45					0					0					0					0	0
01:00					0					0					0					0	0
01:15					0					0					0					0	0
01:30					0					0					0					0	0
01:45					0					0					0					0	0
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02:15					0					0					0					0	0
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03:00					0					0					0					0	0
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04:30					0					0					0					0	0
04:45					0					0					0					0	0
05:00					0					0					0					0	0
05:15					0					0					0					0	0
05:30					0					0					0					0	0
05:45					0					0					0					0	0
06:00					0					0					0					0	0
06:15	0	0	0	0	0	0	0	0	6	6	0	8	147	0	155	0	0	139	3	142	303
06:30	0	0	0	0	0	0	0	0	5	5	0	10	171	0	181	1	0	176	8	185	371
06:45	0	0	0	0	0	0	0	0	5	5	0	14	187	0	201	0	1	233	6	240	446
07:00	0	0	0	0	0	0	1	0	11	12	0	11	243	0	254	0	1	333	9	343	609
07:15	0	0	0	0	0	0	2	0	7	9	0	10	229	0	239	0	0	317	2	319	567
07:30	0	0	0	0	0	0	0	0	15	15	0	11	316	1	328	2	0	367	6	375	718
07:45	**0**	**1**	**0**	**1**	**2**	**0**	**3**	**0**	**8**	**11**	**0**	**12**	**331**	**2**	**345**	**0**	**1**	**441**	**13**	**455**	**813**
08:00	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**18**	**20**	**0**	**10**	**403**	**2**	**415**	**0**	**1**	**505**	**8**	**514**	**949**
08:15	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**23**	**23**	**0**	**11**	**384**	**1**	**396**	**0**	**1**	**440**	**12**	**453**	**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	0	1	0	1	2	0	3	0	7	10	0	11	349	0	360	3	4	398	13	418	790
09:00	0	0	0	0	0	0	0	0	9	9	2	12	310	2	326	0	2	388	11	401	736
09:15					0					0					0					0	0
09:30					0					0					0					0	0
09:45					0					0					0					0	0
10:00					0					0					0					0	0
10:15					0					0					0					0	0
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11:00					0					0					0					0	0
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15:00					0					0					0					0	0
15:15	0	0	0	1	1	0	5	0	5	10	0	5	360	3	368	1	2	321	5	329	708
15:30	0	1	0	0	1	0	2	0	4	6	0	4	367	0	371	0	0	284	6	290	668
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	0	1	0	1	2	0	3	0	8	11	0	3	318	4	325	3	1	360	3	367	705
16:15	0	4	0	2	6	0	1	0	9	10	1	5	418	1	425	3	2	374	1	380	821
16:30	0	0	0	3	3	0	4	0	8	12	0	3	395	3	401	0	2	325	2	329	745
16:45	0	0	0	4	4	0	2	0	9	11	1	2	445	0	448	0	1	365	2	368	831
17:00	**0**	**0**	**0**	**4**	**4**	**0**	**3**	**1**	**4**	**8**	**3**	**0**	**404**	**1**	**408**	**1**	**5**	**397**	**1**	**404**	**824**
17:15	**0**	**1**	**0**	**2**	**3**	**0**	**1**	**0**	**17**	**18**	**1**	**8**	**483**	**0**	**492**	**0**	**0**	**414**	**4**	**418**	**931**
17:30	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**8**	**8**	**2**	**1**	**440**	**1**	**444**	**0**	**1**	**366**	**1**	**368**	**821**
17:45	**0**	**1**	**0**	**1**	**2**	**0**	**1**	**0**	**3**	**4**	**0**	**2**	**485**	**1**	**488**	**1**	**1**	**371**	**1**	**374**	**868**
18:00	0	0	0	1	1	0	2	0	5	7	0	8	388	0	396	2	0	373	4	379	783
18:15					0					0					0					0	0
18:30					0					0					0					0	0
18:45					0					0					0					0	0
19:00					0					0					0					0	0
19:15					0					0					0					0	0
19:30					0					0					0					0	0
19:45					0					0					0					0	0
20:00					0					0					0					0	0
20:15					0					0					0					0	0
20:30					0					0					0					0	0
20:45					0					0					0					0	0
21:00					0					0					0					0	0
21:15					0					0					0					0	0
21:30					0					0					0					0	0
21:45					0					0					0					0	0
22:00					0					0					0					0	0
22:15					0					0					0					0	0
22:30					0					0					0					0	0
22:45					0					0					0					0	0
23:00					0					0					0					0	0
23:15					0					0					0					0	0
23:30					0					0					0					0	0
23:45					0					0					0					0	0
00:00					0					0					0					0	0
TOTAL	**0**	**15**	**0**	**24**	**39**	**0**	**38**	**1**	**211**	**250**	**11**	**184**	**8272**	**23**	**8490**	**17**	**26**	**8413**	**133**	**8589**	**17368**
AM Peak Vol	0	5	0	1	6	0	6	0	58	64	0	44	1465	5	1514	0	3	1795	40	1838	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

Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

Job No.:

Location: Display Court at E Gude Drive
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15
(In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:30	08:30	3422				16:45	17:45	3444		

SCHOOL CHILDREN, PEDESTRIANS & BICYCLES

Hour	North Leg Landfill Entrance			South Leg Display Court			East Leg E Gude Drive			West Leg E Gude Drive		
Ending	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
00:15												
00:30												
00:45												
01:00												
01:15												
01:30												
01:45												
02:00												
02:15												
02:30												
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04:00												
04:15												
04:30												
04:45												
05:00												
05:15												
05:30												
05:45												
06:00												
06:15	0	0	0	0	0	2	0	0	0	0	3	0
06:30	0	0	1	0	0	0	0	0	0	0	0	0
06:45	0	0	1	0	0	0	0	0	0	0	1	0
07:00	0	0	0	0	1	0	0	0	0	0	2	0
07:15	0	1	0	0	0	0	0	0	0	0	3	0
07:30	0	0	0	0	2	1	0	0	0	0	1	0
07:45	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
08:00	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	**0**
08:15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**
08:30	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**0**
08:45	0	0	0	0	0	0	0	0	0	0	1	0
09:00	0	0	0	0	0	0	0	0	0	0	2	0
09:15												
09:30												
09:45												
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14:45												
15:00												
15:15	0	0	0	0	0	0	0	0	0	0	1	0
15:30	0	1	0	0	0	1	0	0	0	0	2	0
15:45	0	0	0	0	0	0	0	0	0	0	3	0
16:00	0	0	0	0	0	1	0	0	0	0	2	0
16:15	0	0	0	0	1	0	0	0	0	0	5	0
16:30	0	0	0	0	0	2	0	0	0	0	2	0
16:45	0	0	0	0	1	0	0	0	0	0	2	0
17:00	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**
17:15	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
17:30	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
17:45	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
18:00	0	0	0	0	0	0	0	0	0	0	2	0
18:15												
18:30												
18:45												
19:00												
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22:15												
22:30												
22:45												
23:00												
23:15												
23:30												
23:45												
00:00												
TOTAL	**0**	**2**	**3**	**0**	**7**	**10**	**0**	**0**	**0**	**0**	**42**	**0**
AM Peak Vol	0	0	0	0	2	1	0	0	0	0	8	0
PM Peak Vol	0	0	1	0	0	2	0	0	0	0	2	0

Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

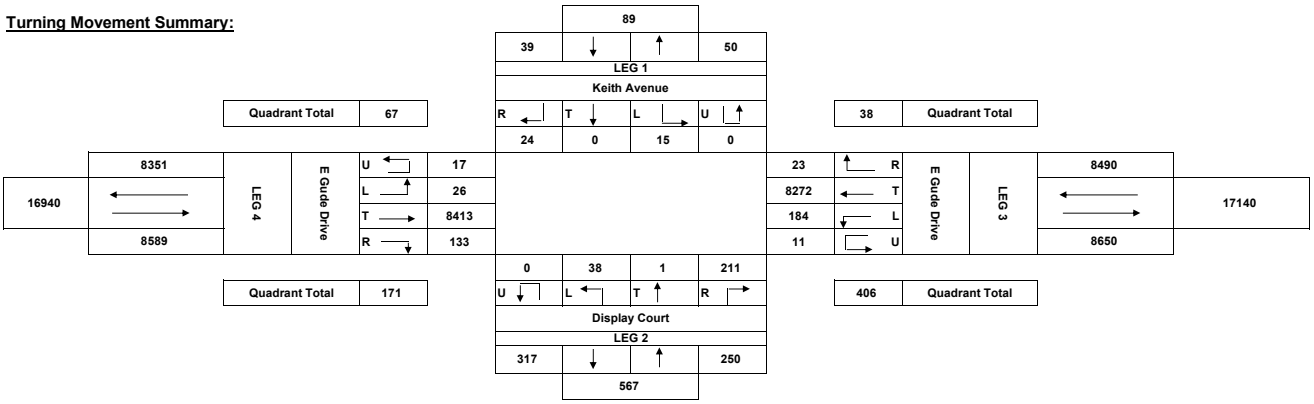
Job No.:

Location: Display Court at E Gude Drive
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

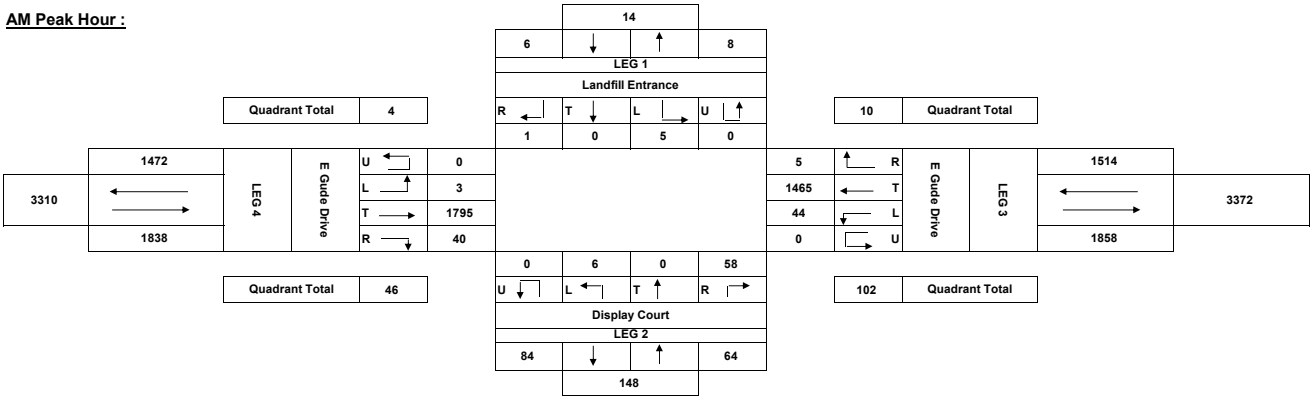
PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:30	08:30	3422				16:45	17:45	3444		

Turning Movement Summary:

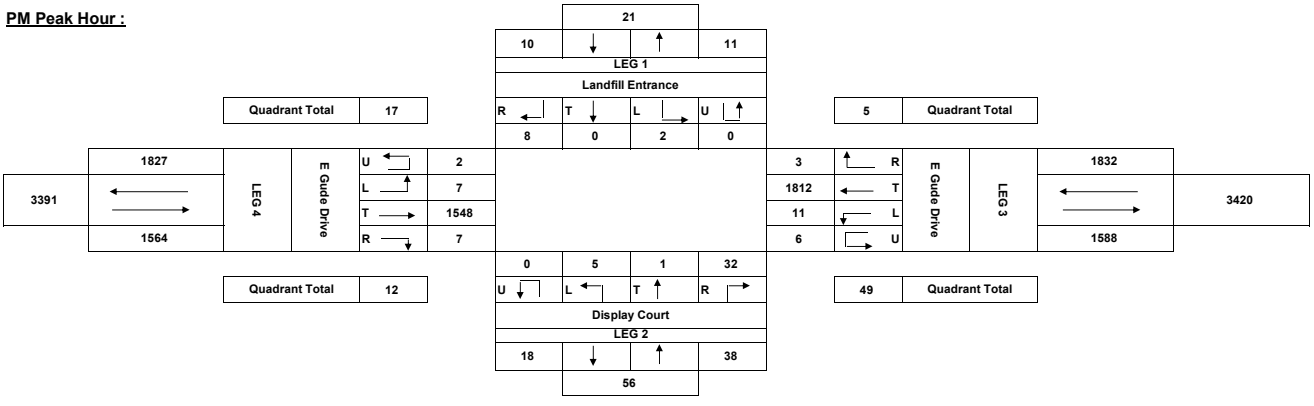


Comments:

AM Peak Hour :



PM Peak Hour :



Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

Job No.:

Location: Dover Road at E Gude Drive
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:30	08:30	3613				16:45	17:45	3714		

Street Name-->	Unnamed Road					Dover Road					E Gude Drive					E Gude Drive					GRAND TOTAL
HOUR	From North					From South					From East					From West					
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	
00:15					0					0					0					0	0
00:30					0					0					0					0	0
00:45					0					0					0					0	0
01:00					0					0					0					0	0
01:15					0					0					0					0	0
01:30					0					0					0					0	0
01:45					0					0					0					0	0
02:00					0					0					0					0	0
02:15					0					0					0					0	0
02:30					0					0					0					0	0
02:45					0					0					0					0	0
03:00					0					0					0					0	0
03:15					0					0					0					0	0
03:30					0					0					0					0	0
03:45					0					0					0					0	0
04:00					0					0					0					0	0
04:15					0					0					0					0	0
04:30					0					0					0					0	0
04:45					0					0					0					0	0
05:00					0					0					0					0	0
05:15					0					0					0					0	0
05:30					0					0					0					0	0
05:45					0					0					0					0	0
06:00					0					0					0					0	0
06:15	0	0	0	2	2	0	5	0	11	16	4	10	146	1	161	1	6	115	18	140	319
06:30	0	1	0	0	1	0	9	2	10	21	5	14	174	0	193	0	2	140	26	168	383
06:45	0	1	0	1	2	2	20	1	6	29	0	25	195	0	220	0	2	188	33	223	474
07:00	0	0	0	0	0	0	16	0	10	26	2	20	241	1	264	0	2	256	49	307	597
07:15	0	1	0	0	1	0	20	1	19	40	1	22	238	0	261	1	2	253	49	305	607
07:30	0	1	1	3	5	0	31	3	23	57	5	13	297	5	320	0	1	295	54	350	732
07:45	**0**	**2**	**1**	**0**	**3**	**0**	**24**	**1**	**18**	**43**	**6**	**28**	**326**	**2**	**362**	**0**	**3**	**353**	**84**	**440**	**848**
08:00	**0**	**3**	**1**	**1**	**5**	**0**	**26**	**2**	**14**	**42**	**5**	**20**	**395**	**4**	**424**	**0**	**3**	**381**	**87**	**471**	**942**
08:15	**0**	**1**	**1**	**1**	**3**	**0**	**27**	**1**	**14**	**42**	**3**	**23**	**412**	**11**	**449**	**0**	**1**	**386**	**76**	**463**	**957**
08:30	**0**	**2**	**2**	**0**	**4**	**0**	**31**	**0**	**21**	**52**	**0**	**25**	**332**	**3**	**360**	**1**	**0**	**338**	**111**	**450**	**866**
08:45	0	5	0	1	6	0	38	2	14	54	6	20	337	6	369	0	0	318	89	407	836
09:00	0	4	3	3	10	0	26	0	28	54	4	16	309	12	341	0	2	320	67	389	794
09:15					0					0					0					0	0
09:30					0					0					0					0	0
09:45					0					0					0					0	0
10:00					0					0					0					0	0
10:15					0					0					0					0	0
10:30					0					0					0					0	0
10:45					0					0					0					0	0
11:00					0					0					0					0	0
11:15					0					0					0					0	0
11:30					0					0					0					0	0
11:45					0					0					0					0	0
12:00					0					0					0					0	0
12:15					0					0					0					0	0
12:30					0					0					0					0	0
12:45					0					0					0					0	0
13:00					0					0					0					0	0
13:15					0					0					0					0	0
13:30					0					0					0					0	0
13:45					0					0					0					0	0
14:00					0					0					0					0	0
14:15					0					0					0					0	0
14:30					0					0					0					0	0
14:45					0					0					0					0	0
15:00					0					0					0					0	0
15:15	0	5	0	0	5	0	51	0	22	73	3	12	315	3	333	0	0	286	30	316	727
15:30	0	2	0	2	4	0	50	1	13	64	2	15	313	4	334	1	1	271	26	299	701
15:45	0	8	2	0	10	0	38	2	25	65	3	16	329	3	351	0	1	291	39	331	757
16:00	0	5	1	0	6	0	53	0	22	75	4	19	274	3	300	1	5	323	36	365	746
16:15	0	8	4	4	16	0	68	0	14	82	6	17	398	5	426	2	1	336	23	362	886
16:30	0	6	1	3	10	0	33	1	12	46	8	29	360	3	400	5	2	325	38	370	826
16:45	0	5	1	4	10	0	80	0	14	94	3	10	380	5	398	2	0	328	30	360	862
17:00	**0**	**6**	**0**	**4**	**10**	**0**	**64**	**0**	**36**	**100**	**1**	**29**	**318**	**0**	**348**	**1**	**5**	**385**	**38**	**429**	**887**
17:15	**0**	**10**	**0**	**5**	**15**	**0**	**96**	**0**	**38**	**134**	**2**	**21**	**387**	**1**	**411**	**2**	**1**	**402**	**32**	**437**	**997**
17:30	**0**	**7**	**1**	**1**	**9**	**0**	**89**	**1**	**35**	**125**	**1**	**25**	**334**	**3**	**363**	**0**	**0**	**364**	**41**	**405**	**902**
17:45	**0**	**10**	**0**	**2**	**12**	**0**	**73**	**0**	**30**	**103**	**2**	**17**	**397**	**0**	**416**	**1**	**0**	**349**	**47**	**397**	**928**
18:00	0	7	0	0	7	0	86	1	21	108	1	19	311	0	331	0	2	350	34	386	832
18:15					0					0					0					0	0
18:30					0					0					0					0	0
18:45					0					0					0					0	0
19:00					0					0					0					0	0
19:15					0					0					0					0	0
19:30					0					0					0					0	0
19:45					0					0					0					0	0
20:00					0					0					0					0	0
20:15					0					0					0					0	0
20:30					0					0					0					0	0
20:45					0					0					0					0	0
21:00					0					0					0					0	0
21:15					0					0					0					0	0
21:30					0					0					0					0	0
21:45					0					0					0					0	0
22:00					0					0					0					0	0
22:15					0					0					0					0	0
22:30					0					0					0					0	0
22:45					0					0					0					0	0
23:00					0					0					0					0	0
23:15					0					0					0					0	0
23:30					0					0					0					0	0
23:45					0					0					0					0	0
00:00					0					0					0					0	0
TOTAL	**0**	**100**	**19**	**37**	**156**	**2**	**1054**	**19**	**470**	**1545**	**77**	**465**	**7518**	**75**	**8135**	**18**	**42**	**7353**	**1157**	**8570**	**18406**
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

Maryland State Highway Administration
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Job No.:

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(In Minutes)

County: Montgomery
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PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:30	08:30	3613				16:45	17:45	3714		

SCHOOL CHILDREN, PEDESTRIANS & BICYCLES

Hour	North Leg Unnamed Road			South Leg Dover Road			East Leg E Gude Drive			West Leg E Gude Drive		
Ending	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
00:15												
00:30												
00:45												
01:00												
01:15												
01:30												
01:45												
02:00												
02:15												
02:30												
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04:15												
04:30												
04:45												
05:00												
05:15												
05:30												
05:45												
06:00												
06:15	0	0	0	0	0	2	0	0	0	0	0	0
06:30	0	0	2	0	1	0	0	0	0	0	0	0
06:45	0	0	0	0	1	1	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	1	0	0	0	0	0	0	0
07:30	0	0	0	0	2	0	0	0	0	0	1	0
07:45	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
08:00	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
08:15	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
08:30	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
08:45	0	1	0	0	2	0	0	0	0	0	1	0
09:00	0	1	1	0	0	0	0	1	2	0	0	0
09:15												
09:30												
09:45												
10:00												
10:15												
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14:00												
14:15												
14:30												
14:45												
15:00												
15:15	0	0	0	0	0	0	0	0	0	0	1	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	4	0	0	4	0	0	0	0
16:00	0	0	0	0	2	1	0	0	0	0	0	0
16:15	0	2	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	3	2	0	1	0	0	0	0
16:45	0	0	0	0	2	0	0	1	0	0	0	0
17:00	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
17:15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
17:30	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
17:45	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
18:00	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0
19:15												
19:30												
19:45												
20:00												
20:15												
20:30												
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22:00												
22:15												
22:30												
22:45												
23:00												
23:15												
23:30												
23:45												
00:00												
TOTAL	**0**	**4**	**4**	**0**	**21**	**7**	**0**	**7**	**2**	**0**	**4**	**0**
AM Peak Vol	0	0	0	0	3	1	0	0	0	0	1	0
PM Peak Vol	0	0	1	0	0	0	0	0	0	0	0	0

Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

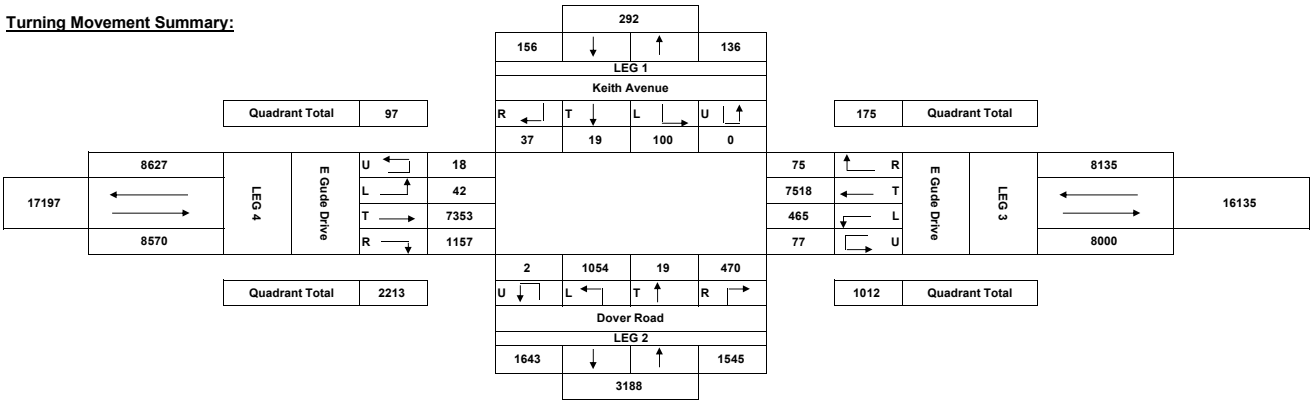
Job No.:

Location: Dover Road at E Gude Drive
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

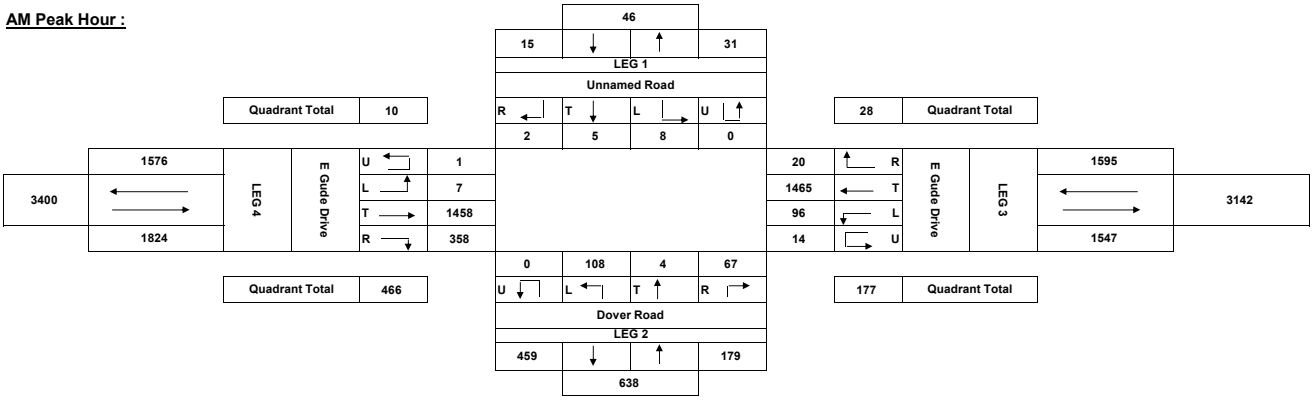
PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:30	08:30	3613				16:45	17:45	3714		

Turning Movement Summary:

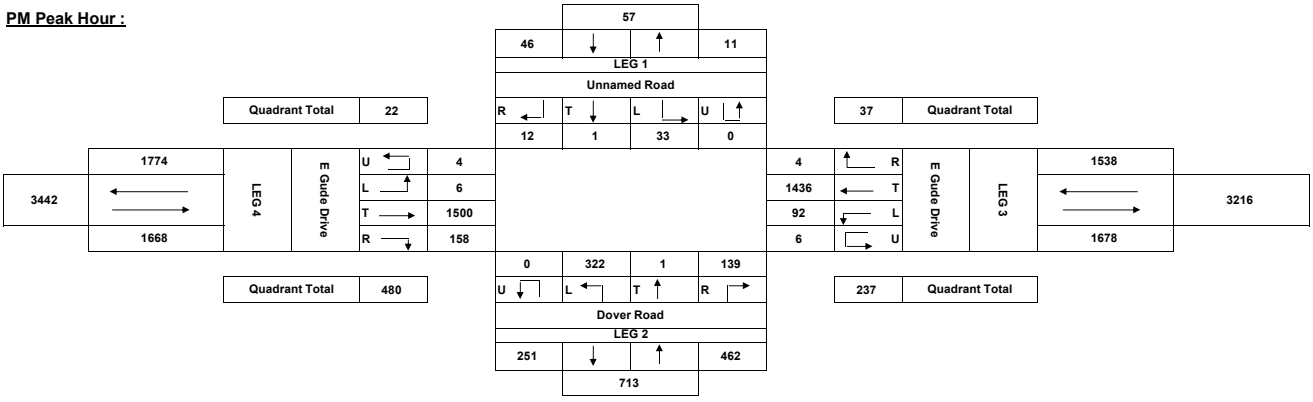


Comments:

AM Peak Hour :



PM Peak Hour :



Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

Job No.:

Location: Southlawn Lane at Incerator Lane
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:45	08:45	652				17:00	18:00	637		

Street Name-->	Southlawn Lane					Southlawn Lane					N/A					Incerator Lane					GRAND TOTAL
HOUR	From North					From South					From East					From West					
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	
00:15					0					0					0					0	0
00:30					0					0					0					0	0
00:45					0					0					0					0	0
01:00					0					0					0					0	0
01:15					0					0					0					0	0
01:30					0					0					0					0	0
01:45					0					0					0					0	0
02:00					0					0					0					0	0
02:15					0					0					0					0	0
02:30					0					0					0					0	0
02:45					0					0					0					0	0
03:00					0					0					0					0	0
03:15					0					0					0					0	0
03:30					0					0					0					0	0
03:45					0					0					0					0	0
04:00					0					0					0					0	0
04:15					0					0					0					0	0
04:30					0					0					0					0	0
04:45					0					0					0					0	0
05:00					0					0					0					0	0
05:15					0					0					0					0	0
05:30					0					0					0					0	0
05:45					0					0					0					0	0
06:00					0					0					0					0	0
06:15	0	0	21	0	21	0	0	5	0	5					0	0	0	0	0	0	26
06:30	0	0	48	0	48	0	0	13	0	13					0	0	0	0	0	0	61
06:45	0	0	49	0	49	0	0	13	0	13					0	0	0	0	0	0	62
07:00	0	0	77	0	77	0	0	14	0	14					0	0	0	0	0	0	91
07:15	0	0	82	0	82	0	0	12	0	12					0	0	0	0	0	0	94
07:30	0	0	116	0	116	0	0	13	0	13					0	0	0	0	0	0	129
07:45	0	0	143	0	143	0	0	10	0	10					0	0	0	0	0	0	153
08:00	**0**	**0**	**156**	**0**	**156**	**0**	**0**	**23**	**0**	**23**					**0**	**0**	**0**	**0**	**0**	**0**	**179**
08:15	**0**	**0**	**138**	**0**	**138**	**1**	**0**	**19**	**0**	**20**					**0**	**0**	**0**	**0**	**0**	**0**	**158**
08:30	**0**	**0**	**136**	**0**	**136**	**0**	**0**	**20**	**0**	**20**					**0**	**0**	**0**	**0**	**0**	**0**	**156**
08:45	**0**	**0**	**140**	**0**	**140**	**0**	**0**	**19**	**0**	**19**					**0**	**0**	**0**	**0**	**0**	**0**	**159**
09:00	0	0	136	0	136	0	0	15	0	15					0	0	0	0	0	0	151
09:15					0					0					0					0	0
09:30					0					0					0					0	0
09:45					0					0					0					0	0
10:00					0					0					0					0	0
10:15					0					0					0					0	0
10:30					0					0					0					0	0
10:45					0					0					0					0	0
11:00					0					0					0					0	0
11:15					0					0					0					0	0
11:30					0					0					0					0	0
11:45					0					0					0					0	0
12:00					0					0					0					0	0
12:15					0					0					0					0	0
12:30					0					0					0					0	0
12:45					0					0					0					0	0
13:00					0					0					0					0	0
13:15					0					0					0					0	0
13:30					0					0					0					0	0
13:45					0					0					0					0	0
14:00					0					0					0					0	0
14:15					0					0					0					0	0
14:30					0					0					0					0	0
14:45					0					0					0					0	0
15:00					0					0					0					0	0
15:15	0	0	23	0	23	0	0	51	0	51					0	0	0	0	0	0	74
15:30	0	0	27	0	27	0	0	46	0	46					0	0	0	0	0	0	73
15:45	0	0	30	0	30	0	0	62	0	62					0	0	0	0	0	0	92
16:00	0	0	25	0	25	0	0	46	0	46					0	0	0	0	0	0	71
16:15	0	0	26	0	26	0	0	74	0	74					0	0	0	0	0	0	100
16:30	0	0	20	0	20	0	0	106	0	106					0	0	0	0	0	0	126
16:45	0	0	23	0	23	0	0	92	0	92					0	0	0	0	0	0	115
17:00	0	0	34	0	34	0	0	97	0	97					0	0	0	0	0	0	131
17:15	**0**	**0**	**23**	**0**	**23**	**1**	**0**	**143**	**0**	**144**					**0**	**0**	**0**	**0**	**0**	**0**	**167**
17:30	**0**	**0**	**24**	**0**	**24**	**0**	**0**	**136**	**0**	**136**					**0**	**0**	**0**	**0**	**0**	**0**	**160**
17:45	**0**	**0**	**24**	**0**	**24**	**1**	**0**	**141**	**0**	**142**					**0**	**0**	**0**	**0**	**0**	**0**	**166**
18:00	**0**	**0**	**24**	**0**	**24**	**0**	**0**	**120**	**0**	**120**					**0**	**0**	**0**	**0**	**0**	**0**	**144**
18:15					0					0					0	0	0	0	0	0	0
18:30					0					0					0					0	0
18:45					0					0					0					0	0
19:00					0					0					0					0	0
19:15					0					0					0					0	0
19:30					0					0					0					0	0
19:45					0					0					0					0	0
20:00					0					0					0					0	0
20:15					0					0					0					0	0
20:30					0					0					0					0	0
20:45					0					0					0					0	0
21:00					0					0					0					0	0
21:15					0					0					0					0	0
21:30					0					0					0					0	0
21:45					0					0					0					0	0
22:00					0					0					0					0	0
22:15					0					0					0					0	0
22:30					0					0					0					0	0
22:45					0					0					0					0	0
23:00					0					0					0					0	0
23:15					0					0					0					0	0
23:30					0					0					0					0	0
23:45					0					0					0					0	0
00:00					0					0					0					0	0
TOTAL	**0**	**0**	**1545**	**0**	**1545**	**3**	**0**	**1290**	**0**	**1293**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2838**
AM Peak Vol	0	0	570	0	570	1	0	81	0	82	0	0	0	0	0	0	0	0	0	0	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

Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

Job No.:

Location: Southlawn Lane at Incerator Lane
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15
(In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:45	08:45	**652**				17:00	18:00	**637**		

SCHOOL CHILDREN, PEDESTRIANS & BICYCLES

Hour Ending	North Leg Southlawn Lane			South Leg Southlawn Lane			East Leg N/A			West Leg Incerator Lane		
	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
00:15												
00:30												
00:45												
01:00												
01:15												
01:30												
01:45												
02:00												
02:15												
02:30												
02:45												
03:00												
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03:45												
04:00												
04:15												
04:30												
04:45												
05:00												
05:15												
05:30												
05:45												
06:00												
06:15	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0
08:00	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
08:15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
08:30	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
08:45	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
09:00	0	0	0	0	0	0	0	0	0	0	0	0
09:15												
09:30												
09:45												
10:00												
10:15												
10:30												
10:45												
11:00												
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13:15												
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13:45												
14:00												
14:15												
14:30												
14:45												
15:00												
15:15	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	1
15:45	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0
17:15	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
17:30	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
17:45	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
18:00	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
18:15	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0
19:15												
19:30												
19:45												
20:00												
20:15												
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22:00												
22:15												
22:30												
22:45												
23:00												
23:15												
23:30												
23:45												
00:00												
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
AM Peak Vol	0	0	0	0	0	0	0	0	0	0	0	0
PM Peak Vol	0	0	0	0	0	0	0	0	0	0	0	0

Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

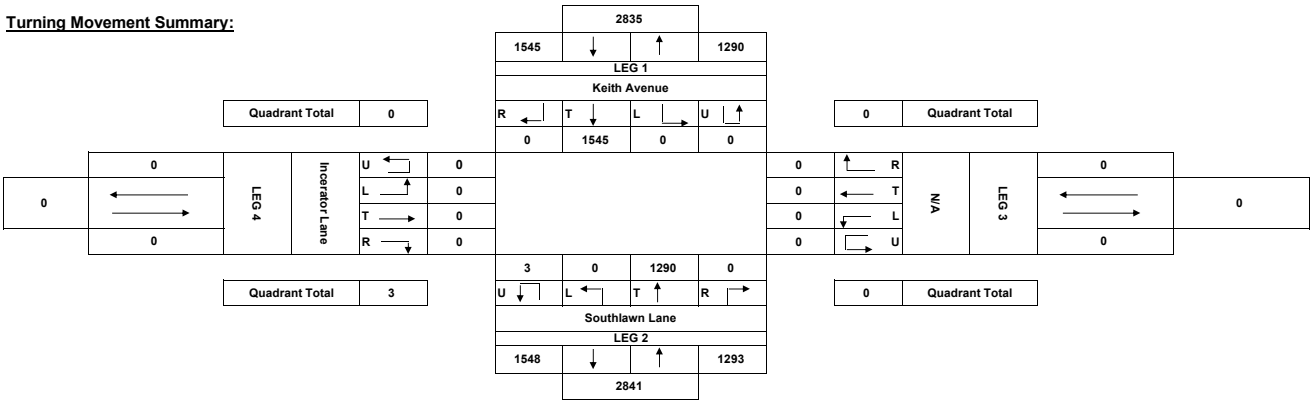
Job No.:

Location: Southlawn Lane at Incerator Lane
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15
(In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

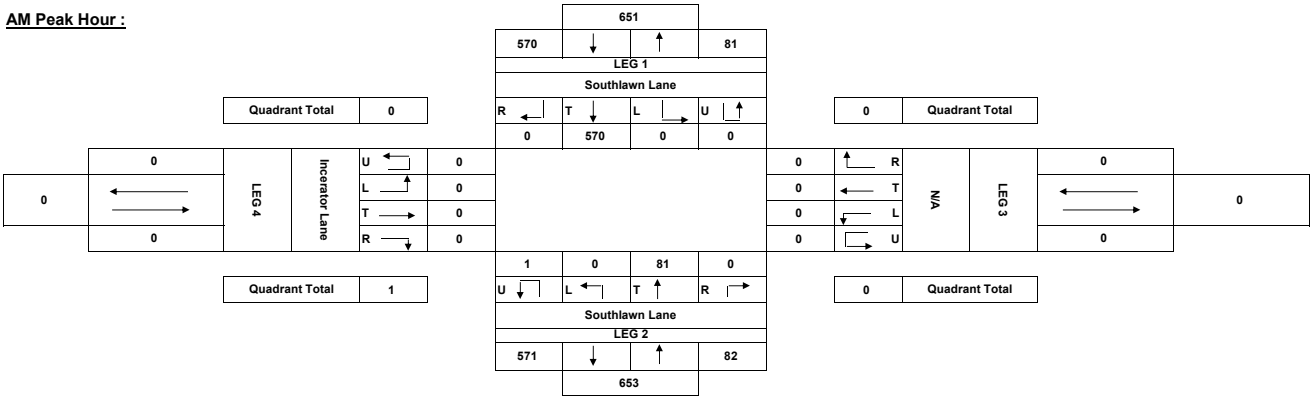
PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:45	08:45	652				17:00	18:00	637		

Turning Movement Summary:

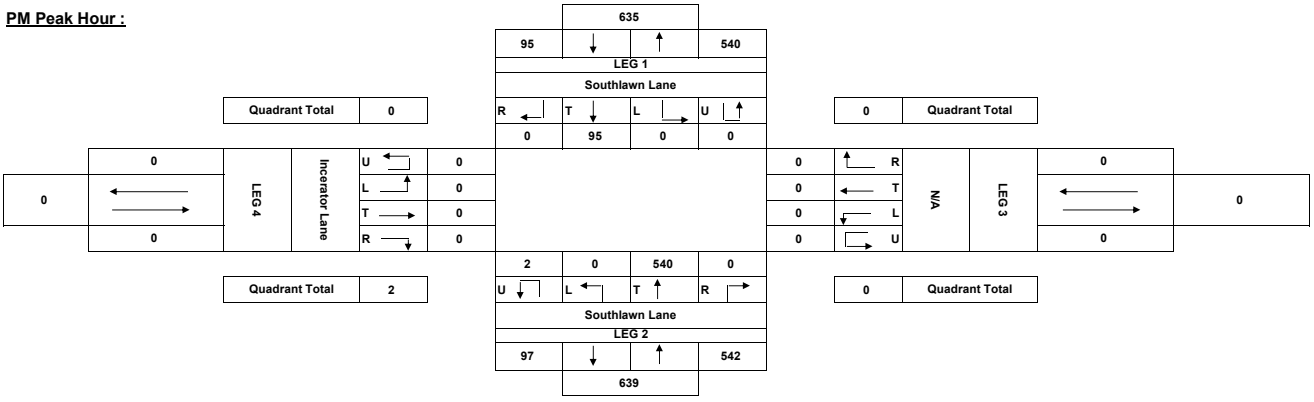


Comments:

AM Peak Hour :



PM Peak Hour :



Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

Job No.:

Location: Southlawn Lane at E Gude Drive
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
PEAK HOURS	6:00AM-12:00PM	07:30	08:30	3671			12:00PM-7:00PM	16:45	17:45	3893		

Street Name-->	Southlawn Lane					Southlawn Lane					E Gude Drive					E Gude Drive					GRAND
HOUR	From North					From South					From East					From West					
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
00:15					0					0					0					0	0
00:30					0					0					0					0	0
00:45					0					0					0					0	0
01:00					0					0					0					0	0
01:15					0					0					0					0	0
01:30					0					0					0					0	0
01:45					0					0					0					0	0
02:00					0					0					0					0	0
02:15					0					0					0					0	0
02:30					0					0					0					0	0
02:45					0					0					0					0	0
03:00					0					0					0					0	0
03:15					0					0					0					0	0
03:30					0					0					0					0	0
03:45					0					0					0					0	0
04:00					0					0					0					0	0
04:15					0					0					0					0	0
04:30					0					0					0					0	0
04:45					0					0					0					0	0
05:00					0					0					0					0	0
05:15					0					0					0					0	0
05:30					0					0					0					0	0
05:45					0					0					0					0	0
06:00					0					0					0					0	0
06:15	0	18	9	16	43	0	5	4	3	12	0	3	131	30	164	0	23	84	18	125	344
06:30	0	18	27	15	60	0	6	10	1	17	0	1	149	29	179	0	31	99	21	151	407
06:45	1	26	25	15	67	0	11	3	8	22	0	4	171	38	213	0	25	160	22	207	509
07:00	0	21	30	25	76	0	11	9	9	29	0	10	226	24	260	1	37	200	41	279	644
07:15	0	43	41	32	116	0	8	10	12	30	0	6	199	32	237	0	29	214	31	274	657
07:30	0	37	80	43	160	0	7	12	12	31	0	14	261	18	293	6	32	259	17	314	798
07:45	**0**	**36**	**76**	**53**	**165**	**0**	**19**	**10**	**16**	**45**	**1**	**12**	**296**	**24**	**333**	**3**	**27**	**299**	**37**	**366**	**909**
08:00	**0**	**33**	**84**	**58**	**175**	**0**	**17**	**13**	**9**	**39**	**0**	**10**	**313**	**15**	**338**	**1**	**32**	**303**	**63**	**399**	**951**
08:15	**0**	**38**	**75**	**49**	**162**	**1**	**18**	**7**	**10**	**36**	**0**	**12**	**339**	**21**	**372**	**2**	**38**	**287**	**41**	**368**	**938**
08:30	**0**	**36**	**78**	**35**	**149**	**0**	**18**	**7**	**11**	**36**	**0**	**13**	**312**	**17**	**342**	**0**	**30**	**287**	**29**	**346**	**873**
08:45	1	35	75	43	154	0	21	9	9	39	0	5	297	24	326	2	28	278	25	333	852
09:00	0	30	64	37	131	0	12	7	12	31	2	14	272	20	308	5	32	287	30	354	824
09:15					0					0					0					0	0
09:30					0					0					0					0	0
09:45					0					0					0					0	0
10:00					0					0					0					0	0
10:15					0					0					0					0	0
10:30					0					0					0					0	0
10:45					0					0					0					0	0
11:00					0					0					0					0	0
11:15					0					0					0					0	0
11:30					0					0					0					0	0
11:45					0					0					0					0	0
12:00					0					0					0					0	0
12:15					0					0					0					0	0
12:30					0					0					0					0	0
12:45					0					0					0					0	0
13:00					0					0					0					0	0
13:15					0					0					0					0	0
13:30					0					0					0					0	0
13:45					0					0					0					0	0
14:00					0					0					0					0	0
14:15					0					0					0					0	0
14:30					0					0					0					0	0
14:45					0					0					0					0	0
15:00					0					0					0					0	0
15:15	1	23	11	23	58	0	26	21	10	57	1	16	249	34	300	7	39	236	33	315	730
15:30	0	19	8	25	52	0	26	22	16	64	2	8	273	33	316	2	38	224	16	280	712
15:45	0	27	14	21	62	0	40	21	13	74	1	11	262	31	305	2	38	252	20	312	753
16:00	0	25	12	29	66	0	26	20	14	60	2	12	234	25	273	9	41	308	19	377	776
16:15	1	25	12	29	67	0	34	33	15	82	2	11	316	43	372	8	43	313	16	380	901
16:30	0	16	9	21	46	0	37	42	21	100	5	15	312	31	363	5	42	267	17	331	840
16:45	0	15	11	33	59	0	52	46	17	115	1	13	305	45	364	2	43	300	24	369	907
17:00	**0**	**23**	**12**	**27**	**62**	**0**	**42**	**43**	**25**	**110**	**0**	**16**	**260**	**40**	**316**	**1**	**47**	**343**	**29**	**420**	**908**
17:15	**0**	**22**	**13**	**24**	**59**	**0**	**42**	**66**	**20**	**128**	**3**	**12**	**312**	**51**	**378**	**5**	**58**	**397**	**14**	**474**	**1039**
17:30	**0**	**22**	**13**	**24**	**59**	**0**	**51**	**75**	**15**	**141**	**1**	**11**	**303**	**54**	**369**	**6**	**56**	**308**	**18**	**388**	**957**
17:45	**0**	**25**	**14**	**13**	**52**	**0**	**51**	**81**	**20**	**152**	**1**	**14**	**326**	**46**	**387**	**4**	**49**	**335**	**10**	**398**	**989**
18:00	0	16	13	14	43	0	26	64	13	103	0	8	261	42	311	3	42	306	13	364	821
18:15					0					0					0					0	0
18:30					0					0					0					0	0
18:45					0					0					0					0	0
19:00					0					0					0					0	0
19:15					0					0					0					0	0
19:30					0					0					0					0	0
19:45					0					0					0					0	0
20:00					0					0					0					0	0
20:15					0					0					0					0	0
20:30					0					0					0					0	0
20:45					0					0					0					0	0
21:00					0					0					0					0	0
21:15					0					0					0					0	0
21:30					0					0					0					0	0
21:45					0					0					0					0	0
22:00					0					0					0					0	0
22:15					0					0					0					0	0
22:30					0					0					0					0	0
22:45					0					0					0					0	0
23:00					0					0					0					0	0
23:15					0					0					0					0	0
23:30					0					0					0					0	0
23:45					0					0					0					0	0
00:00					0					0					0					0	0
TOTAL	**4**	**629**	**806**	**704**	**2143**	**1**	**606**	**635**	**311**	**1553**	**22**	**251**	**6379**	**767**	**7419**	**74**	**900**	**6346**	**604**	**7924**	**19039**
AM Peak Vol	0	143	313	195	651	1	72	37	46	156	1	47	1260	77	1385	6	127	1176	170	1479	3671
PM Peak Vol	0	92	52	88	232	0	186	265	80	531	5	53	1201	191	1450	16	210	1383	71	1680	3893

Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

Job No.:

Location: Southlawn Lane at E Gude Drive
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15
(In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:30	08:30	3671				16:45	17:45	3893		

SCHOOL CHILDREN, PEDESTRIANS & BICYCLES

Hour Ending	North Leg Southlawn Lane			South Leg Southlawn Lane			East Leg E Gude Drive			West Leg E Gude Drive		
	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
00:15												
00:30												
00:45												
01:00												
01:15												
01:30												
01:45												
02:00												
02:15												
02:30												
02:45												
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03:45												
04:00												
04:15												
04:30												
04:45												
05:00												
05:15												
05:30												
05:45												
06:00												
06:15	0	0	0	0	0	1	0	3	0	0	0	0
06:30	0	2	1	0	1	0	0	4	0	0	0	0
06:45	0	1	0	0	2	0	0	0	0	0	0	0
07:00	0	2	0	0	0	0	0	3	0	0	1	0
07:15	0	1	0	0	1	0	0	0	0	0	0	0
07:30	0	1	0	0	1	0	0	1	0	0	0	0
07:45	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
08:00	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
08:15	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
08:30	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**
08:45	0	2	0	0	2	1	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0
09:15												
09:30												
09:45												
10:00												
10:15												
10:30												
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14:15												
14:30												
14:45												
15:00												
15:15	0	1	0	0	1	0	0	1	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	2	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	1	0	1	0	0	3	0
16:15	0	1	0	0	10	0	0	0	0	0	0	0
16:30	0	1	0	0	0	0	0	0	0	0	1	0
16:45	0	0	0	0	4	2	0	0	1	0	0	0
17:00	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**3**	**0**	**0**	**0**	**0**
17:15	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
17:30	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**
17:45	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
18:00	0	0	0	0	1	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0
19:15												
19:30												
19:45												
20:00												
20:15												
20:30												
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22:00												
22:15												
22:30												
22:45												
23:00												
23:15												
23:30												
23:45												
00:00												
TOTAL	**0**	**20**	**2**	**0**	**27**	**7**	**0**	**18**	**1**	**0**	**9**	**0**
AM Peak Vol	0	3	1	0	2	1	0	1	0	0	1	0
PM Peak Vol	0	3	0	0	2	1	0	4	0	0	3	0

Maryland State Highway Administration
Data Services Engineering Division
Turning Movement Counts - Field Sheet

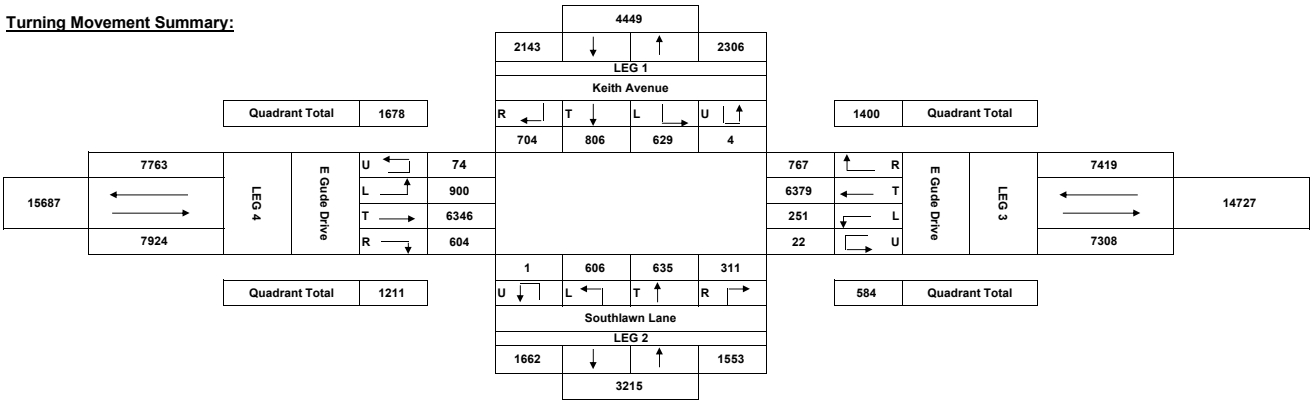
Job No.:

Location: Southlawn Lane at E Gude Drive
Date: 5/30/2018 Wednesday
Recorder: T3D
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Rockville
Weather: Clear

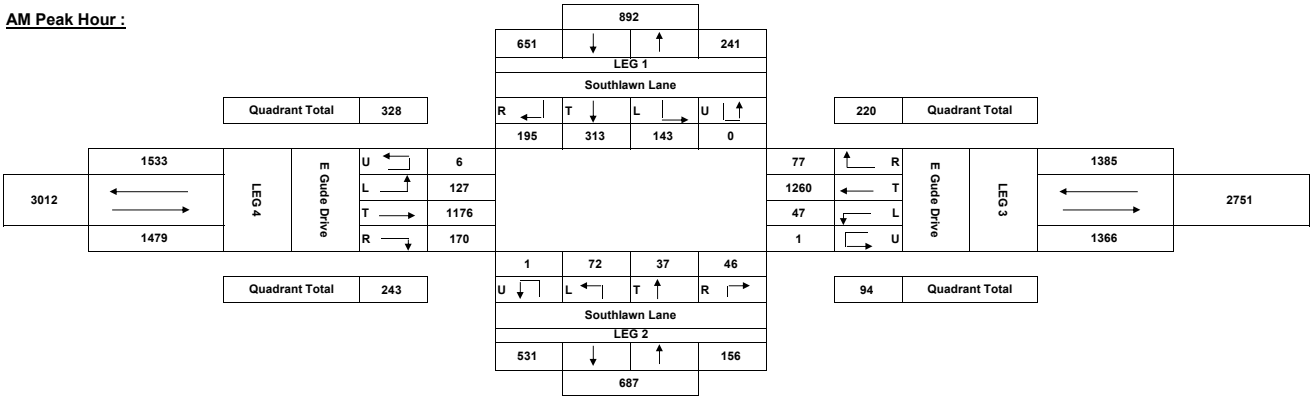
PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:30	08:30	3671				16:45	17:45	3893		

Turning Movement Summary:

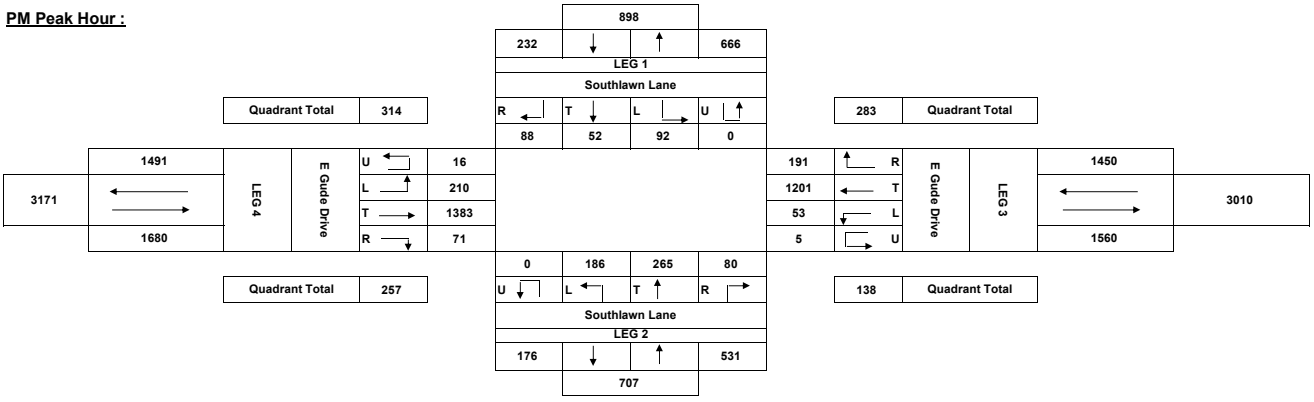


Comments:

AM Peak Hour :



PM Peak Hour :



Appendix B – CLV Results - Existing Conditions

T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

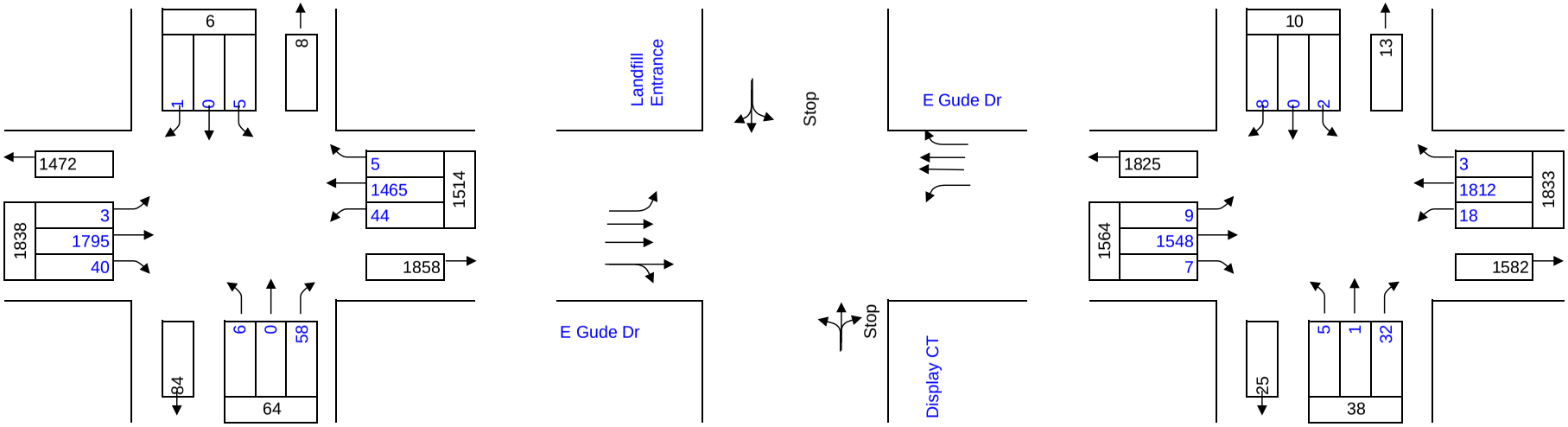
COUNT DATE:
CONDITIONS: Existing
DESIGN YEAR: 2018
COMPUTED BY: ASM DATE: 11/20/2018
CHECKED BY: AA DATE: 12/3/2018

LOCATION: E. Gude Dr
Landfill Entrance

AM PEAK HOUR: 7:30 - 8:30

LANE CONFIGURATION

PM PEAK HOUR: 4:45 - 5:45



Intersection Control:
Signal
Stop X Ways 1

No. of Lanes		Lane Use Factor
1	=	1.00
2	=	0.55
3	=	0.40
4	=	0.30
Dble. Left	=	0.60
Trpl. Left	=	0.45

Level of Service	Critical Lane Volumes Total	Opposing Volume (vph)	PCE
A	≤ 1000	≤ 199	1.1
B	≤ 1150	≤ 599	2.0
C	≤ 1300	≤ 799	3.0
D	≤ 1450	≤ 999	4.0
E	≤ 1600	> 1000	5.0
F	> 1600		

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1835	0.55	1009	44	1.00	44	1053	*
	WB	1465	0.55	806	3	1.00	3	809	
	NB	65	1.00	65	0	1.00	0	65	*
	SB	7	1.00	7	0	1.00	0	7	*

REMARKS

* Critical Volume **AM TOTAL** **1124**

V/C = **0.70** **LEVEL OF SERVICE** **B**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1555	0.55	855	18	1.00	18	873	
	WB	1812	0.55	997	9	1.00	9	1006	*
	NB	39	1.00	39	0	1.00	0	39	*
	SB	10	1.00	10	0	1.00	0	10	*

REMARKS
NBR is a free movement.

* Critical Volume **PM TOTAL** **1055**

V/C = **0.66** **LEVEL OF SERVICE** **B**

T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

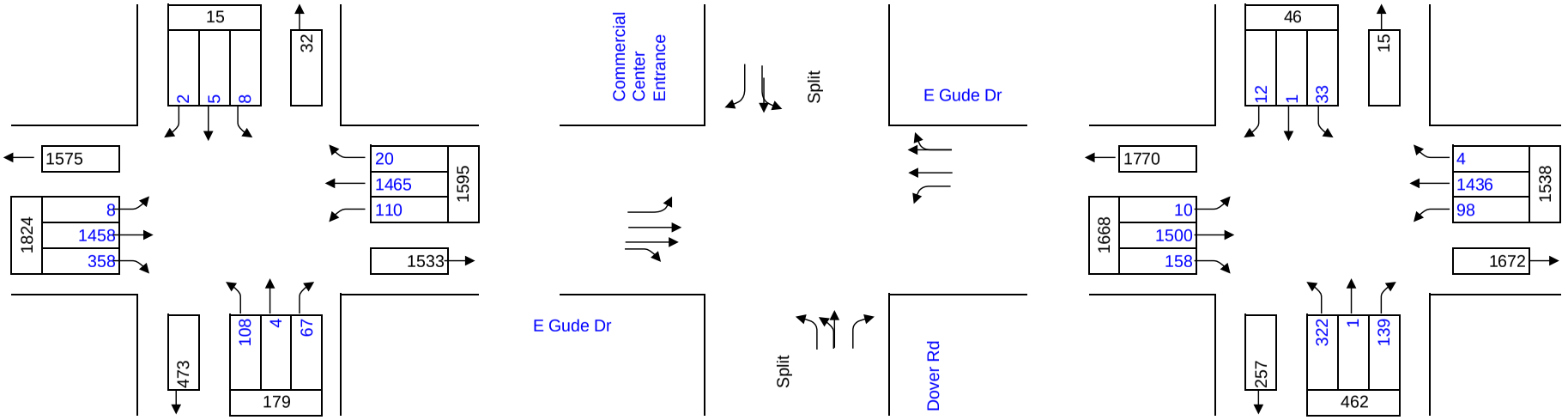
COUNT DATE:
CONDITIONS: Existing
DESIGN YEAR: 2018
COMPUTED BY: ASM DATE: 11/20/2018
CHECKED BY: AA DATE: 12/3/2018

LOCATION: E. Gude Dr at Dover Rd

AM PEAK HOUR: 7:30 - 8:30

LANE CONFIGURATION

PM PEAK HOUR: 4:45 - 5:45



Intersection Control:
Signal x
Stop
Ways

Side street: split
LT: pt+pm

No. of Lanes		Lane Use Factor
1	=	1.00
2	=	0.55
3	=	0.40
4	=	0.30
Dble. Left	=	0.60
Trpl. Left	=	0.45

Level of Service		Critical Lane Volumes Total
A	≤	1000
B	≤	1150
C	≤	1300
D	≤	1450
E	≤	1600
F	>	1600

Opposing Volume (vph)		PCE
≤ 199		1.1
≤ 599		2.0
≤ 799		3.0
≤ 999		4.0
> 1000		5.0

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1816	0.55	999	110	1.00	110	1109	*
	WB	1485	0.55	817	8	1.00	8	825	
	NB	123	0.55	68	0	1.00	0	68	*
	SB	14	1.00	14	0	1.00	0	14	*

REMARKS

* Critical Volume **AM TOTAL** **1190**

V/C = **0.74** **LEVEL OF SERVICE** **C**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1658	0.55	912	98	1.00	98	1010	*
	WB	1440	0.55	792	10	1.00	10	802	
	NB	355	0.40	142	0	1.00	0	142	*
	SB	79	0.55	43	0	1.00	0	43	*

REMARKS

* Critical Volume **PM TOTAL** **1195**

V/C = **0.75** **LEVEL OF SERVICE** **C**

T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

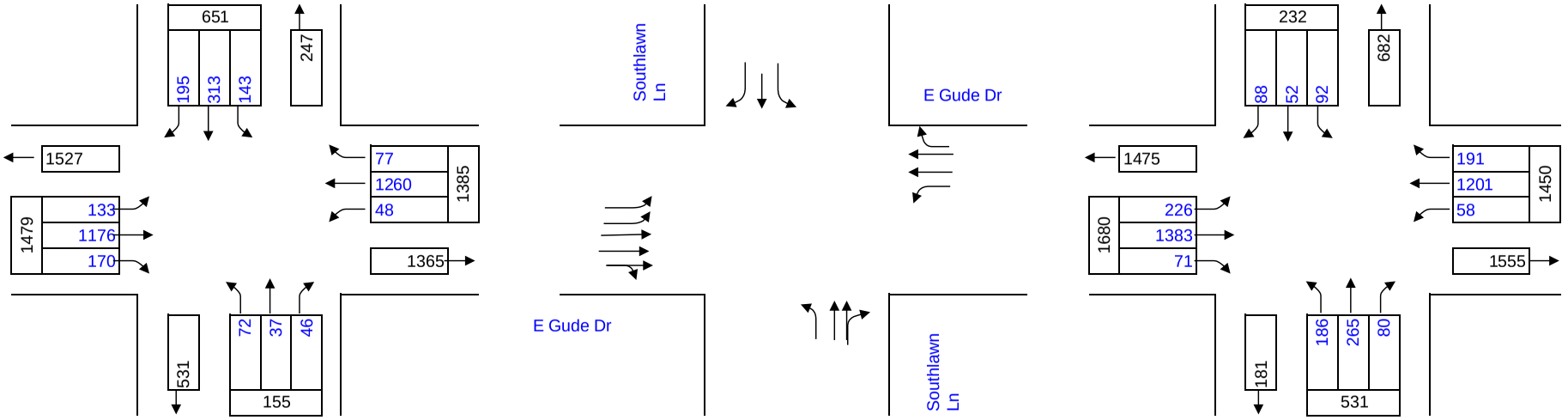
COUNT DATE:
CONDITIONS: EXISTING
DESIGN YEAR: 2018
COMPUTED BY: ASM DATE: 8/20/2018
CHECKED BY: AA DATE: 8/25/2018

LOCATION: E. Gude Dr
11 at Southlawn

AM PEAK HOUR: 7:30 - 8:30

LANE CONFIGURATION

PM PEAK HOUR: 4:45 - 5:45



NBL&SBL pm+pt
NBR & EBL OL
EB&WB exclusive LT

Intersection Control:
Signal x
Stop ____ Ways ____

	No. of Lanes		Lane Use Factor
	1	=	1.00
	2	=	0.55
	3	=	0.40
	4	=	0.30
	Dble. Left	=	0.60
	Trpl. Left	=	0.45

Critical Lane Level of Service		Volumes Total
A	≤	1000
B	≤	1150
C	≤	1300
D	≤	1450
E	≤	1600
F	>	1600

Opposing Volume (vph)		PCE
≤	199	1.1
≤	599	2.0
≤	799	3.0
≤	999	4.0
>	1000	5.0

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1346	0.40	538	48	1.00	48	586	
	WB	1260	0.55	693	133	0.60	80	773	*
	NB	216	1.00	216	143	1.00	143	359	*
	SB	375	0.55	206	72	1.00	72	278	

REMARKS

* Critical Volume **AM TOTAL** **1132**

V/C = **0.71** **LEVEL OF SERVICE** **B**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1454	0.40	582	59	1.00	59	641	
	WB	1201	0.55	661	226	0.60	136	797	*
	NB	345	0.55	190	92	1.00	92	282	
	SB	184	1.00	184	186	1.00	186	370	*

REMARKS

* Critical Volume **PM TOTAL** **1167**

V/C = **0.73** **LEVEL OF SERVICE** **C**

T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

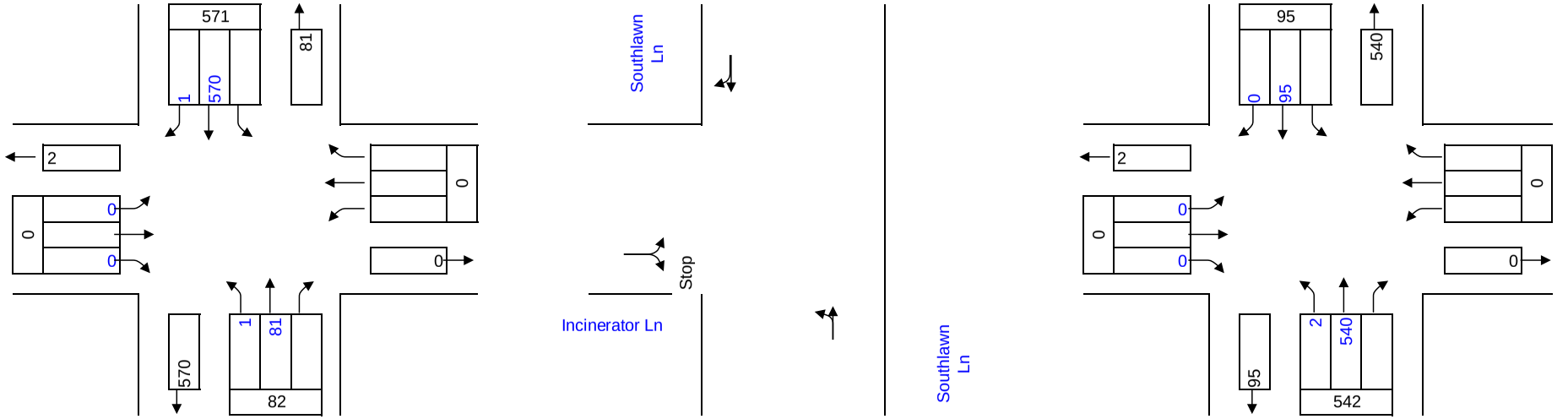
COUNT DATE:
CONDITIONS: EXISTING
DESIGN YEAR: 2018
COMPUTED BY: ASM DATE: 8/20/2018
CHECKED BY: AA DATE: 8/25/2018

LOCATION: Southlawn Ln
21 at Incinerator Ln

AM PEAK HOUR: 7:30 - 8:30

LANE CONFIGURATION

PM PEAK HOUR: 4:45 - 5:45



Intersection Control:
Signal
Stop X Ways 1

	No. of Lanes		Lane Use Factor
1	=		1.00
2	=		0.55
3	=		0.40
4	=		0.30
Dble. Left	=		0.60
Trpl. Left	=		0.45

Level of Service	Critical Lane Volumes Total		Opposing Volume (vph)	PCE
A	≤	1000	≤ 199	1.1
B	≤	1150	≤ 599	2.0
C	≤	1300	≤ 799	3.0
D	≤	1450	≤ 999	4.0
E	≤	1600	> 1000	5.0
F	>	1600		

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	NB	83	1.00	83	0	1.00	0	83	
	SB	571	1.00	571	1	1.00	1	572	*
	EB	0	1.00	0	0	1.00	0	0	*

REMARKS

* Critical Volume **AM TOTAL** 572

V/C = **0.36** **LEVEL OF SERVICE** **A**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	NB	542	1.00	542	0	1.00	0	542	*
	SB	95	1.00	95	2	1.00	2	97	
	EB	0	1.00	0	0	1.00	0	0	*

REMARKS

* Critical Volume **PM TOTAL** 542

V/C = **0.34** **LEVEL OF SERVICE** **A**

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 - T raffic Data Request from Montgomery County DOT and City of Rockville

3 messages

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

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>

WSSC
Where Water Matters

14501 Sweitzer Lane • Laurel, Maryland 20707-5901

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

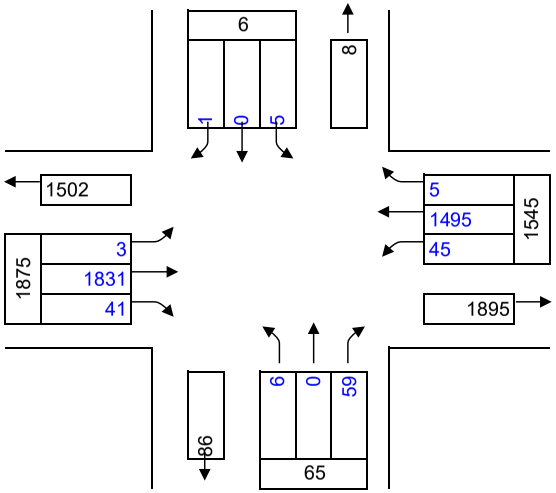
Appendix D – CLV Results - Background and Total Traffic Conditions

T3 design
Fairfax, VA 22030

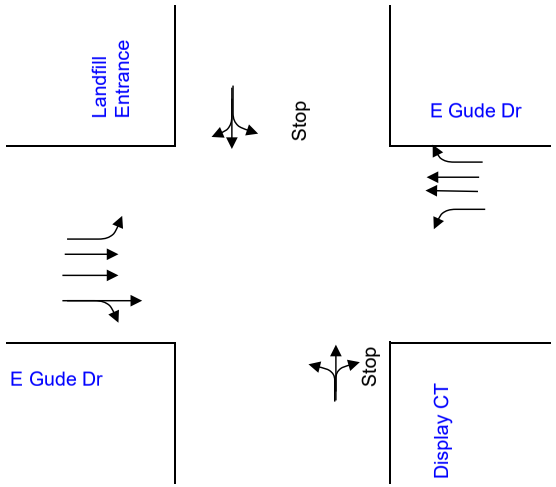
TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

COUNT DATE:		LOCATION:	E. Gude Dr
CONDITIONS:	Background	24	Landfill Entrance
DESIGN YEAR:	2022		
COMPUTED BY:	ASM	DATE:	11/20/2018
CHECKED BY:	AA	DATE:	12/3/2018

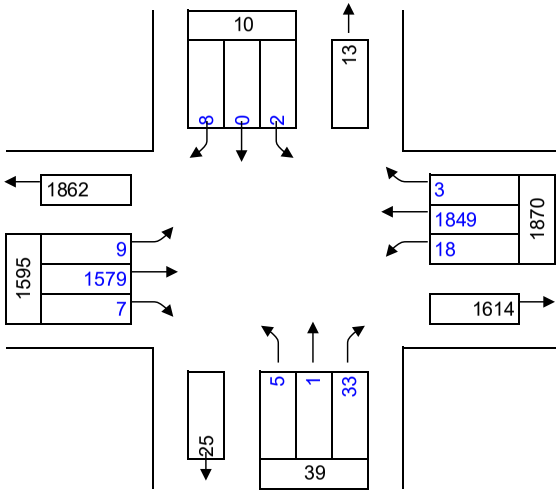
AM PEAK HOUR: 7:30 - 8:30



LANE CONFIGURATION



PM PEAK HOUR: 4:45 - 5:45



Intersection Control:
Signal
Stop X Ways 1

No. of Lanes		Lane Use Factor
1	=	1.00
2	=	0.55
3	=	0.40
4	=	0.30
Dble. Left	=	0.60
Trpl. Left	=	0.45

Level of Service	Critical Lane Volumes Total	Opposing Volume (vph)	PCE
A	≤ 1000	≤ 199	1.1
B	≤ 1150	≤ 599	2.0
C	≤ 1300	≤ 799	3.0
D	≤ 1450	≤ 999	4.0
E	≤ 1600	> 1000	5.0
F	> 1600		

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1872	0.55	1030	45	1.00	45	1075	*
	WB	1495	0.55	822	3	1.00	3	825	
	NB	66	1.00	66	0	1.00	0	66	*
	SB	7	1.00	7	0	1.00	0	7	*

REMARKS

* Critical Volume **AM TOTAL** **1147**

V/C = **0.72** **LEVEL OF SERVICE** **B**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1586	0.55	872	18	1.00	18	890	
	WB	1849	0.55	1017	9	1.00	9	1026	*
	NB	40	1.00	40	0	1.00	0	40	*
	SB	10	1.00	10	0	1.00	0	10	*

REMARKS
NBR is a free movement.

* Critical Volume **PM TOTAL** **1076**

V/C = **0.67** **LEVEL OF SERVICE** **B**

T3 design
Fairfax, VA 22030

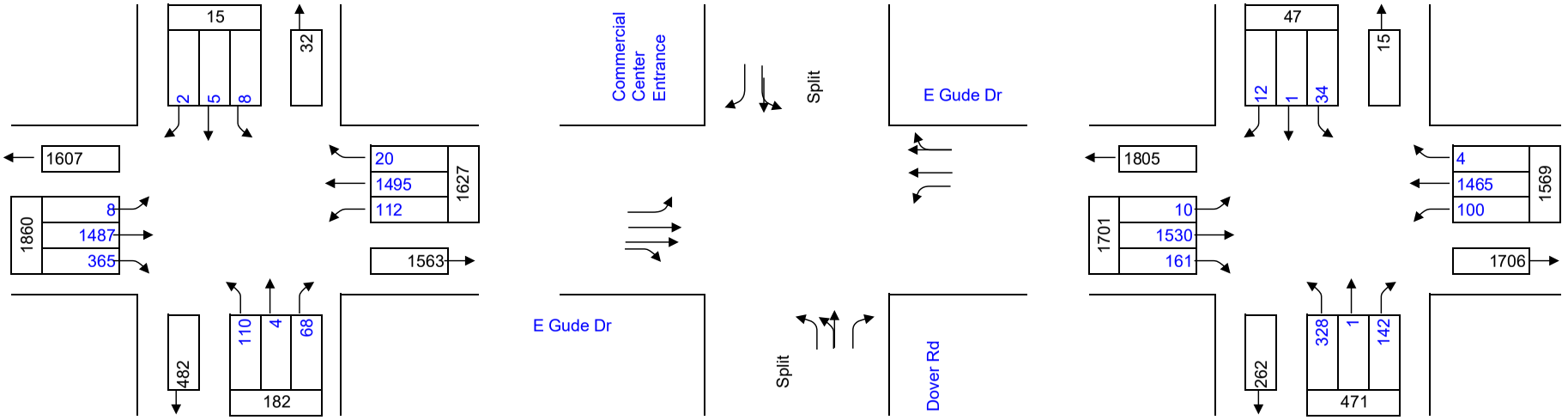
TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

COUNT DATE:		LOCATION:	E. Gude Dr
CONDITIONS:	Background	11	at Dover Rd
DESIGN YEAR:	2022		
COMPUTED BY:	ASM	DATE:	11/20/2018
CHECKED BY:	AA	DATE:	12/3/2018

AM PEAK HOUR: 7:30 - 8:30

LANE CONFIGURATION

PM PEAK HOUR: 4:45 - 5:45



Intersection Control:
Signal x
Stop
Ways

Side street: split
LT: pt+pm

No. of Lanes		Lane Use Factor
1	=	1.00
2	=	0.55
3	=	0.40
4	=	0.30
Dble. Left	=	0.60
Trpl. Left	=	0.45

Level of Service		Critical Lane Volumes Total
A	≤	1000
B	≤	1150
C	≤	1300
D	≤	1450
E	≤	1600
F	>	1600

Opposing Volume (vph)		PCE
199	≤	1.1
599	≤	2.0
799	≤	3.0
999	≤	4.0
1000	>	5.0

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1852	0.55	1019	112	1.00	112	1131	*
	WB	1515	0.55	833	8	1.00	8	841	
	NB	125	0.55	69	0	1.00	0	69	*
	SB	14	1.00	14	0	1.00	0	14	*

REMARKS

* Critical Volume **AM TOTAL** 1214

V/C = **0.76** **LEVEL OF SERVICE** **C**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1691	0.55	930	100	1.00	100	1030	*
	WB	1469	0.55	808	10	1.00	10	818	
	NB	362	0.40	145	0	1.00	0	145	*
	SB	81	0.55	45	0	1.00	0	45	*

REMARKS

* Critical Volume **PM TOTAL** 1220

V/C = **0.76** **LEVEL OF SERVICE** **C**

T3 design
Fairfax, VA 22030

TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

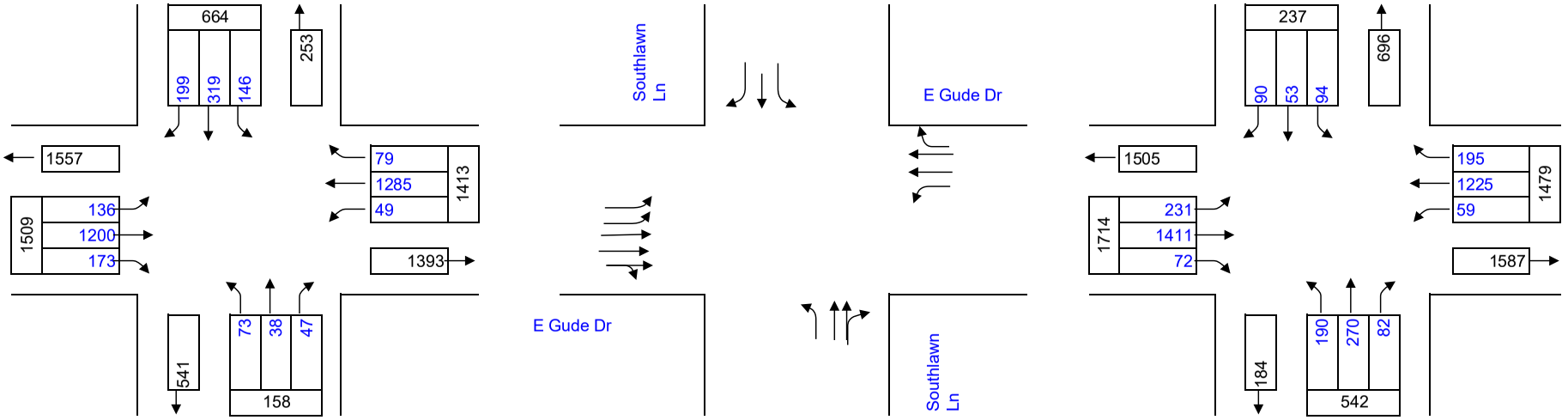
COUNT DATE:
CONDITIONS: Background
DESIGN YEAR: 2022
COMPUTED BY: ASM DATE: 11/20/2018
CHECKED BY: AA DATE: 12/3/2018

LOCATION: E. Gude Dr at Southlawn 11

AM PEAK HOUR: 7:30 - 8:30

LANE CONFIGURATION

PM PEAK HOUR: 4:45 - 5:45



NBL&SBL pm+pt
NBR & EBL OL
EB&WB exclusive LT

Intersection Control:
Signal x
Stop ____ Ways ____

	No. of Lanes		Lane Use Factor
	1	=	1.00
	2	=	0.55
	3	=	0.40
	4	=	0.30
	Dble. Left	=	0.60
	Trpl. Left	=	0.45

Critical Lane Level of Service		Volumes Total
A	≤	1000
B	≤	1150
C	≤	1300
D	≤	1450
E	≤	1600
F	>	1600

Opposing Volume (vph)		PCE
≤ 199		1.1
≤ 599		2.0
≤ 799		3.0
≤ 999		4.0
> 1000		5.0

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1373	0.40	549	49	1.00	49	598	
	WB	1285	0.55	707	136	0.60	82	789	*
	NB	219	1.00	219	146	1.00	146	365	*
	SB	382	0.55	210	73	1.00	73	283	

REMARKS

* Critical Volume **AM TOTAL** 1154

V/C = **0.72** **LEVEL OF SERVICE** **C**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1483	0.40	593	59	1.00	59	652	
	WB	1225	0.55	674	231	0.60	139	813	*
	NB	352	0.55	194	94	1.00	94	288	
	SB	188	1.00	188	190	1.00	190	378	*

REMARKS

* Critical Volume **PM TOTAL** 1191

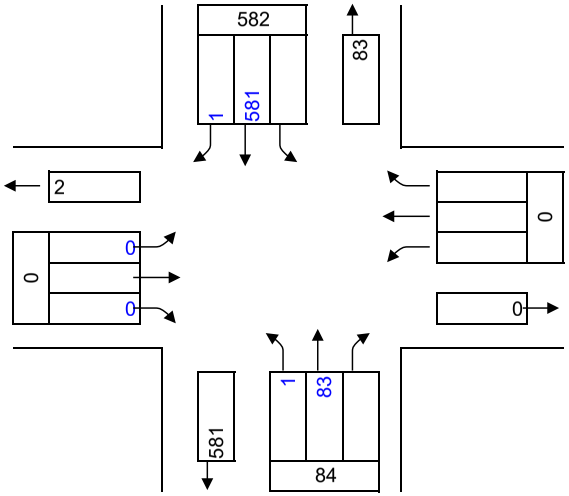
V/C = **0.74** **LEVEL OF SERVICE** **C**

T3 design
Fairfax, VA 22030

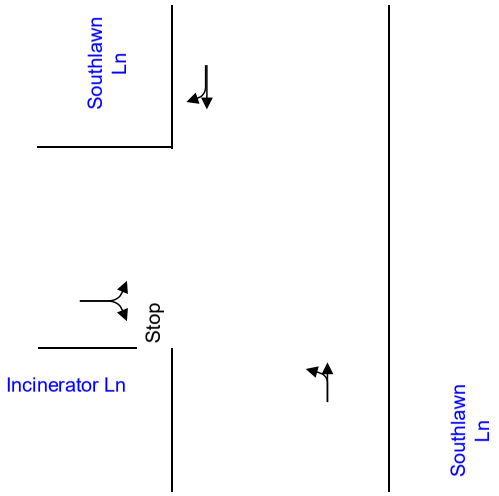
TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

COUNT DATE:		LOCATION:	Southlawn Ln
CONDITIONS:	Background	21	at Incinerator Ln
DESIGN YEAR:	2022		
COMPUTED BY:	ASM	DATE:	11/20/2018
CHECKED BY:	AA	DATE:	12/3/2018

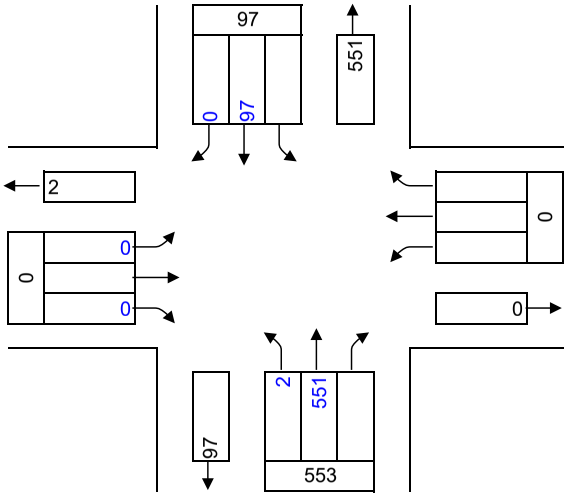
AM PEAK HOUR: 7:30 - 8:30



LANE CONFIGURATION



PM PEAK HOUR: 4:45 - 5:45



Intersection Control:
Signal
Stop X Ways 1

	No. of Lanes		Lane Use Factor
1	=		1.00
2	=		0.55
3	=		0.40
4	=		0.30
Dble. Left	=		0.60
Trpl. Left	=		0.45

Level of Service	Critical Lane Volumes Total		Opposing Volume (vph)	PCE
A	≤	1000	≤ 199	1.1
B	≤	1150	≤ 599	2.0
C	≤	1300	≤ 799	3.0
D	≤	1450	≤ 999	4.0
E	≤	1600	> 1000	5.0
F	>	1600		

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	NB	85	1.00	85	0	1.00	0	85	
	SB	582	1.00	582	1	1.00	1	583	*
	EB	0	1.00	0	0	1.00	0	0	*

REMARKS

* Critical Volume **AM TOTAL** 583

V/C = **0.36** **LEVEL OF SERVICE** **A**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	NB	553	1.00	553	0	1.00	0	553	*
	SB	97	1.00	97	2	1.00	2	99	
	EB	0	1.00	0	0	1.00	0	0	*

REMARKS

* Critical Volume **PM TOTAL** 553

V/C = **0.35** **LEVEL OF SERVICE** **A**

T3 design
Fairfax, VA 22030

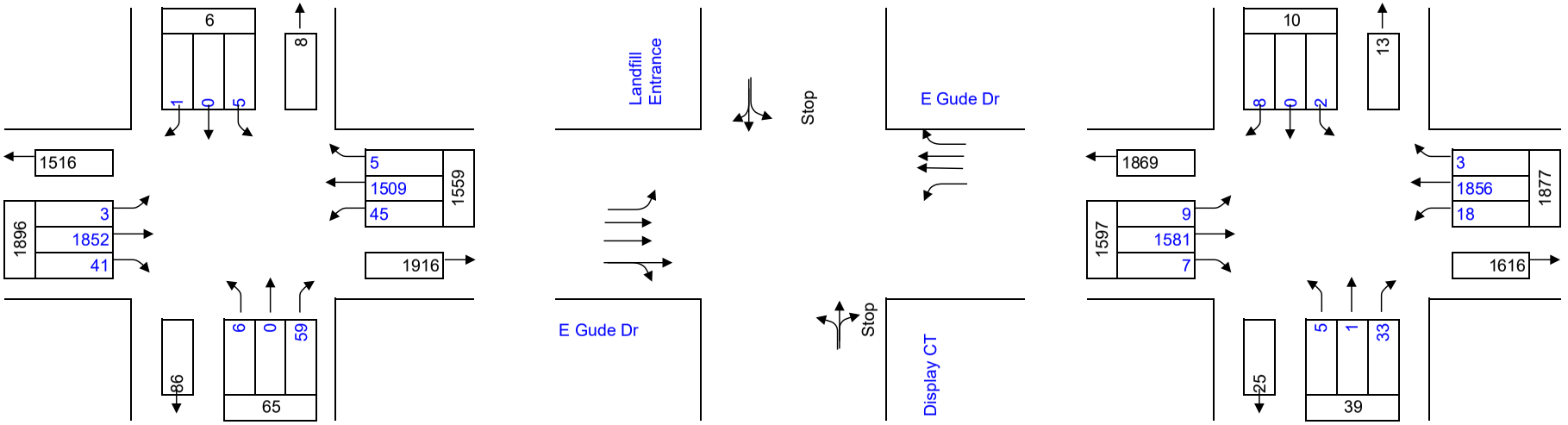
TURNING MOVEMENT & LEVEL OF SERVICE SUMMARY

COUNT DATE:		LOCATION:	E. Gude Dr
CONDITIONS:	Total	24	Landfill Entrance
DESIGN YEAR:	2022		
COMPUTED BY:	ASM	DATE:	11/30/2018
CHECKED BY:	AA	DATE:	12/3/2018

AM PEAK HOUR: 7:30 - 8:30

LANE CONFIGURATION

PM PEAK HOUR: 4:45 - 5:45



Intersection Control:
Signal
Stop X Ways 1

No. of Lanes		Lane Use Factor
1	=	1.00
2	=	0.55
3	=	0.40
4	=	0.30
Dble. Left	=	0.60
Trpl. Left	=	0.45

Level of Service	Critical Lane Volumes Total	Opposing Volume (vph)	PCE
A	≤ 1000	≤ 199	1.1
B	≤ 1150	≤ 599	2.0
C	≤ 1300	≤ 799	3.0
D	≤ 1450	≤ 999	4.0
E	≤ 1600	> 1000	5.0
F	> 1600		

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1893	0.55	1041	45	1.00	45	1086	*
	WB	1509	0.55	830	3	1.00	3	833	
	NB	66	1.00	66	0	1.00	0	66	*
	SB	7	1.00	7	0	1.00	0	7	*

REMARKS

* Critical Volume **AM TOTAL** **1158**

V/C = **0.72** **LEVEL OF SERVICE** **C**

Ø	Movement	Volume (1)	Lane Use Factor (2)	Lane Volume (1)*(2)=(3)	Opposing Lefts (4)	Lane Use Factor (5)	Lane Volume (4)*(5)=(6)	CLV (3)+(6)	*
	EB	1588	0.55	873	18	1.00	18	891	
	WB	1856	0.55	1021	9	1.00	9	1030	*
	NB	40	1.00	40	0	1.00	0	40	*
	SB	10	1.00	10	0	1.00	0	10	*

REMARKS
NBR is a free movement.

* Critical Volume **PM TOTAL** **1080**

V/C = **0.68** **LEVEL OF SERVICE** **B**