HYDROLOGIC DETERMINATION (HD) REPORT
4105 Saunders Avenue
Nashville, Davidson County, Tennessee

Prepared for:

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Cumberland Advisory Group LLC
Nashville, Tennessee

Prepared by:

RS Miller Group LLC
and C&T Engineering LLC
Hermitage, Tennessee 37076
Project No. E22-014/

RS Miller Group LLC

ENVIRONMENTAL AND GEOTECHNICAL
ENGINEERING SERVICES

June 1, 2022

RS Miller Group LLC

INTRODUCTION

A Hydrologic Determination as performed on natural resource features located on the property of the planned development located at 4105 Saunders Avenue in Nashville, Davidson County, Tennessee (Parcel #'s 06110009500, 06110009600 and 0611009700) (+/- 2 acres) (See **Figure 1** - Site Location Map). The hydrologic determination of the features located onsite were conducted on May 20, 2022 by Brandon Garrett, TN-QHP (1130-TN15) and Rebecca Miller (RS Miller Group LLC). During this field review, information was gathered regarding any drainage feature present onsite. Any drainage features observed were to be analyzed following the Tennessee Department of Environment and Conservation (TDEC) standard operating procedures for Hydrologic Determinations. Field data sheets completed during the course of the delineation are provided in **Appendix IV**. Also, during this field review, information was gathered following the routine three parameter approach to wetland delineation as published by the U.S. Army Corps of Engineers (USACE), 1987 edition (Technical Report Y-87-1). USACE wetland field data sheets completed during the course of the delineation are provided in **Appendix V**.

SITE DESCRIPTION

The Subject Property includes approximately 2 acres of wooded vacant property with on vacant home on the northeast property corner. One drainage feature was observed flowing from near the northwestern property corner and flows southeast and leaves the property near the southeastern property corner. No other drainage features or potential wetlands were observed on the property. C&T investigated the entire 2 acres of the Subject Property. The surroundings of the proposed project include residential properties.

The site is located on the Nashville East, Tennessee US Geological Survey 7.5 Minute Topographic Quadrangle dated 2016 and the elevation ranges from 540 feet at the northeastern and southwestern property corner to 530 feet near the southeastern property corner. (**Figure 1**).

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SITE INFORMATION

The Subject Property includes approximately 2 acres of vacant wooded property with a vacant dilapidated home in the northeastern property corner. One drainage feature was observed flowing northwest to southeast across the Subject Property. The surroundings of the proposed project include mostly residential properties.

No other drainage features, wetlands or ponds were identified or observed during the site investigation. The lower portion of the channel identified (southeastern property corner) was labeled on the Nashville East, Tennessee US Geological Survey 7.5 Minute Topographic Quadrangle dated 2016 as Cooper Creek. No other water resources were identified on the above-mentioned topographic map. The site layout can be found in (**Appendix I**) section of this report.

NATIONAL WETLANDS INVENTORY (NWI) MAP

The NWI map was reviewed to identify any previously mapped wetlands within the boundaries of the site. The NWI map did not identify any wetlands or potential wetlands on the property **(Appendix II).** The drainage feature was identified on The US Fish and Wildlife National Wetland Inventory Map (NWI).

SOIL SURVEY

As shown in (**Appendix III)**, the site is predominantly underlain by soils listed in **Table 1** located below. None of the listed soils were found to be hydric in the Davidson County hydric soils list.

Symbol	Soil Name	Description	Hydric
McB	Maury Urban Land Complex 2 to 7 percent slopes	Loess over clayey residuum and/or alluvium derived from limestone	NO

Source: NRCS Web Soil Survey

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ON-SITE FINDINGS

One drainage feature was identified during the site assessment. The channel was found to flow across the property from northwestern property corner to southeastern property corner. The channel is listed on local topographic maps as Cooper Creek near the southeastern property corner. No wetlands or ponds were identified during the field assessment. During this field review, information was gathered following the routine three parameter approach to wetland delineation as published by the U.S. Army Corps of Engineers (USACE), 1987 edition (Technical Report Y-87-1). USACE wetland field data sheets completed during the course of the delineation are provided in **Appendix V.** Approximate locations of sample points are also shown on figures in **Appendix I**. If present, wetland boundaries were flagged with pink wetland flagging.

The following drainage features were identified on-site:

- **WWC-1**– Enters property near northwestern property corner at **Latitude: N36.224206° Longitude: W-86.735820°** across the property and leaves property at southeastern property corner at **Latitude: N36.223591° Longitude: W-86.735095°**. No primary indicators were observed. Secondary indicators were evaluated. The channel included mostly weak secondary indicators with exception to moderate scores for bed and bank structure, natural valley or drainageway and grade controls. No flowing water was observed in channel, no pooled water was observed in channel. Macrobenthos observed included isopods in isolated locations. Earthworms were observed within the channel in some locations as well. Upstream and downstream sections of the channel located off the property included upland vegetation observed in the channel. The channel ultimately scored 16 on the HDFD sheet. Based on the observations this channel has been assessed to be a wet weather conveyance. More information regarding the channel assessment can be found on the Hydrologic Determination Field Data Sheet (HDFD) in Appendix IV.

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No wetlands, ponds or other surface water features were identified during this assessment.

Any wetland boundaries are marked with pink wetland flagging in the field. Any wetland area identified in this study is subject to verification by the U.S. Army Corps of Engineers (USACE) and the Tennessee Department of Environment and Conservation (TDEC). After field verification by these two regulatory agencies, the area should then be surveyed and tied to the property boundaries. Any boundaries indicated on the enclosed site maps (**Appendix I**) are general based on visual observations related to obvious features in the landscape along with a handheld GPS unit and not the result of a field survey. Because of this, exact wetland boundaries and overall acreage are subject to change based on a field survey (by a TN registered surveyor) of the approved delineation flagging.

More information regarding on-site findings of the drainage features can be found in the field data sheets included in **Appendix IV.** Photographs taken during the investigation are included in **Appendix VI**.

I certify under penalty of law that this report and all attachments are, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. As specified in Tennessee Code Annotated Section 39-16-1702 (a)(4), this declaration is made under penalty of perjury.

C. Brandon Garrett, TN-QHP # 1130-15
Sr. Environmental Scientist/Project Manager

Rebecca Miller

Rebecca Miller
Partner/Sr. Environmental Scientist/Principal

APPENDIX I

Figures

FIGURE 2- SITE LAYOUT
4105 SAUNDERS AVE
NASHVILLE, TENNESSEE
C&T PROJECT NO. 03-22023
HYDROLOGIC DETERMINATION

C&T ENGINEERING
1113 MURFREESBORO RD
SUITE 106-102
FRANKLIN, TENNESSEE 37064
WWW.CT-ENG.NET

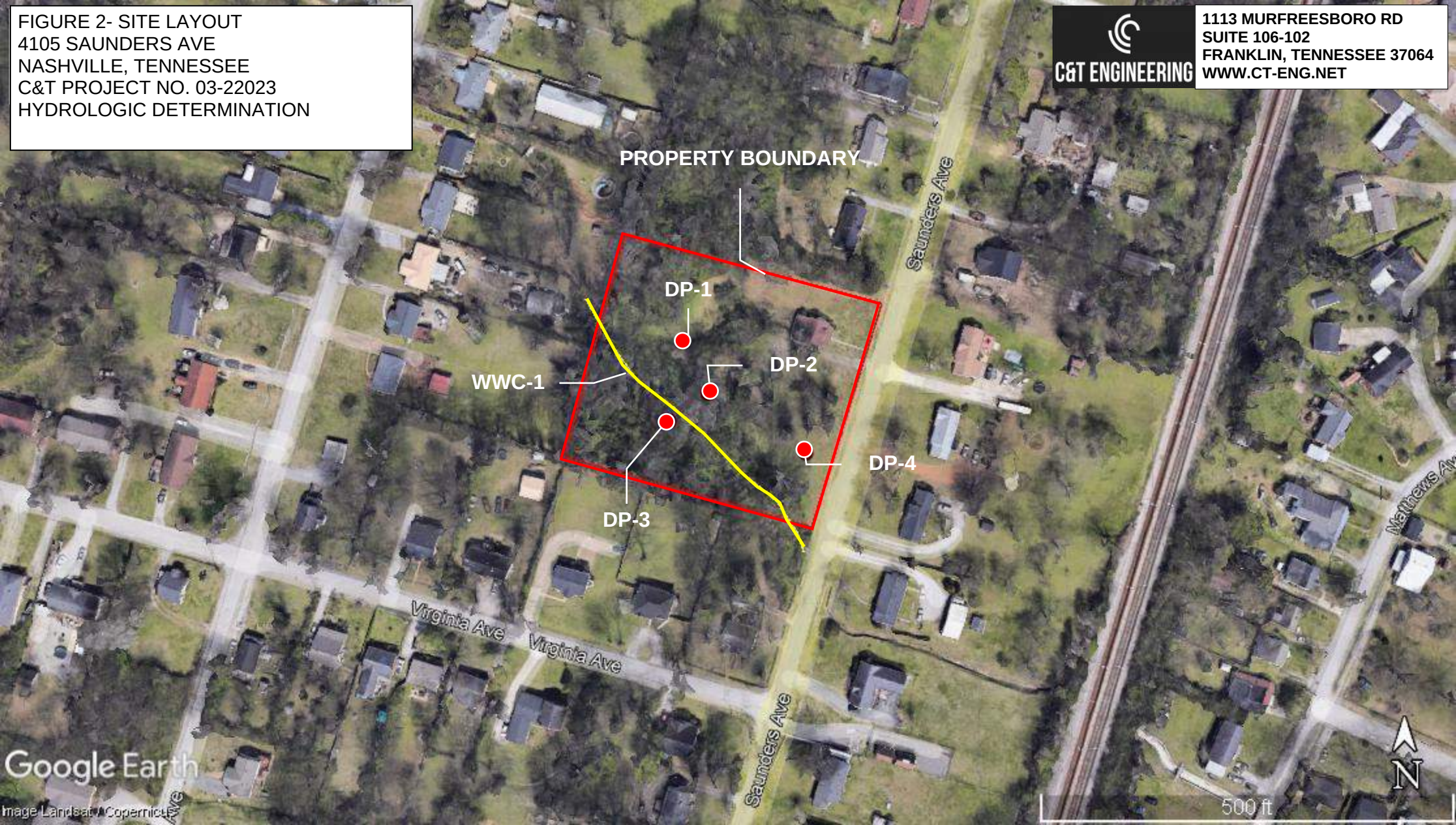
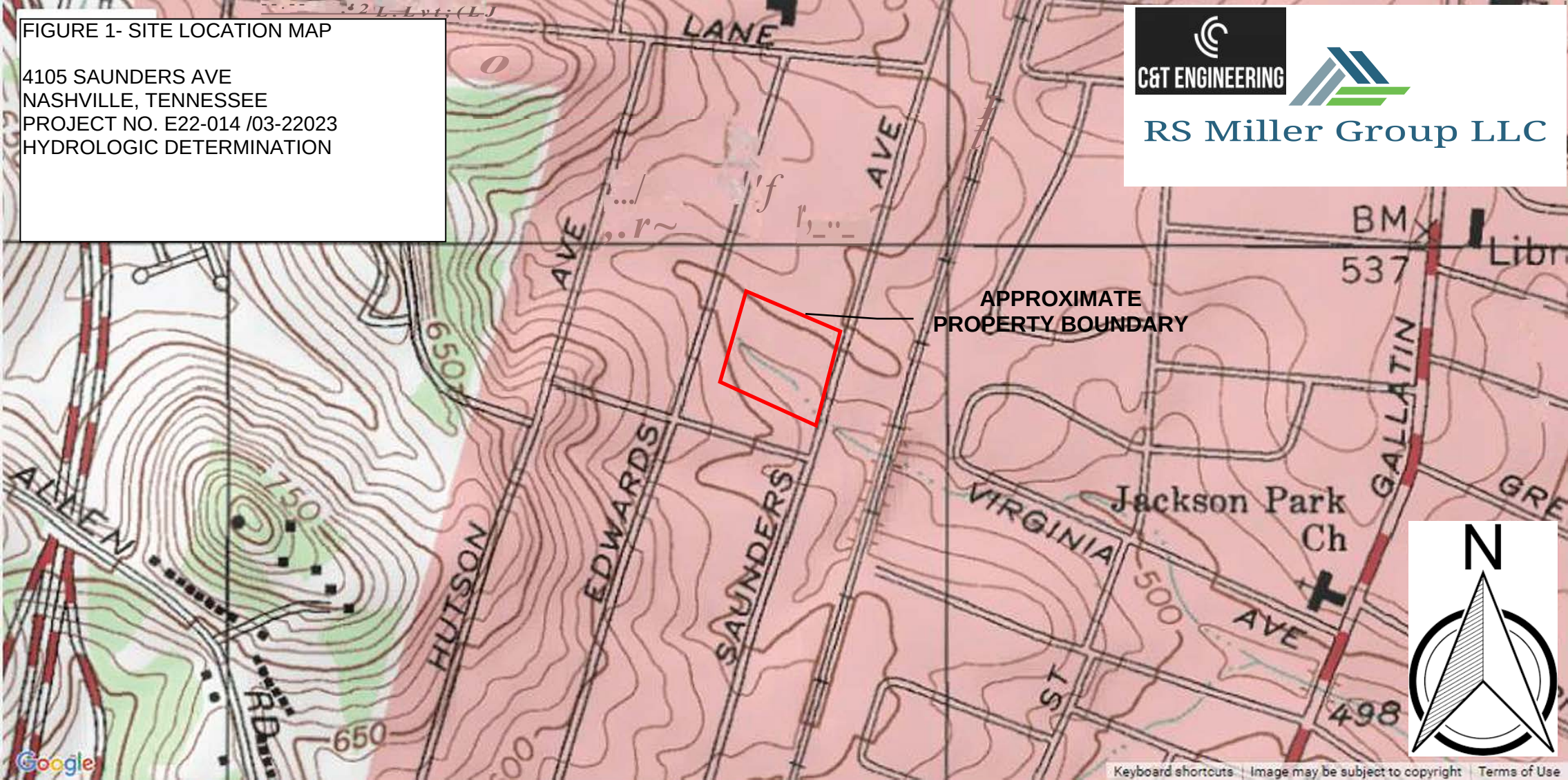


FIGURE 1- SITE LOCATION MAP

4105 SAUNDERS AVE
NASHVILLE, TENNESSEE
PROJECT NO. E22-014 /03-22023
HYDROLOGIC DETERMINATION

C&T ENGINEERING

RS Miller Group LLC



APPENDIX II

National Wetland Inventory Maps

U.S. Fish and Wildlife Service
National Wetlands Inventory

4105 SAUNDERS AVENUE

June 1, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

APPENDIX III

NRCS Soil Survey Maps

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Davidson County, Tennessee

May 26, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:805 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Davidson County, Tennessee
Survey Area Data: Version 19, Sep 10, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 2, 2019—Nov 16, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
McB	Maury-Urban land complex, 2 to 7 percent slopes	1.9	100.0%
Totals for Area of Interest		**1.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Davidson County, Tennessee

McB—Maury-Urban land complex, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: kknq
Elevation: 160 to 750 feet
Mean annual precipitation: 39 to 57 inches
Mean annual air temperature: 48 to 70 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Maury and similar soils: 60 percent
Urban land: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maury

Setting

Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Loess over clayey residuum and/or alluvium derived from limestone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 24 inches: silty clay loam
H3 - 24 to 65 inches: silty clay

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s

Hydric soil rating: No

Minor Components

Minor components

Percent of map unit: 5 percent
Hydric soil rating: No

References

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APPENDIX IV

HD Field Data Sheets

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: COOPER CREEK	Date/Time: 5.20.22
Assessors/Affiliation: BRANDON GARRETT QHP-1130 TN-15	Project ID : 03-22023
Site Name/Description: 4105 SAUNDERS AVENUE-PROPOSED DEVELOPMENT	
Site Location: 4105 SAUNDERS AVENUE-NASHVILLE, TN	
HUC (12 digit): 051302020302-CUMBERLAND RIVER -DRY CREEK	Lat/Long:
Previous Rainfall (7-days) : 0.01 INCHES	N36.223741 W-86.735284
Precipitation this Season vs. Normal : abnormally wet elevated **average** low abnormally dry unknown Source of recent & seasonal precip data :	
Watershed Size : +/- 15 ACRES	County: DAVIDSON
Soil Type(s) / Geology : MAURY URBAN LAND COMPLEX	Source: NRCS
Surrounding Land Use : RESIDENTIAL	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe Moderate **Slight** Absent	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	X	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	X	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	NA	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	X	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	X	Stream
6. Presence of fish (except *Gambusia*)	X	Stream
7. Presence of naturally occurring ground water table connection	X	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	X	Stream
9. Evidence watercourse has been used as a supply of drinking water	X	Stream

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 16

Justification / Notes : Information received by client indicates the channel has been assessed as part of a HD report in the past. this HD was performed to gather more up to date information regarding the channel. It was relayed that the original HD report had assessed this channel to be a WWC. Based on on-site observations, this channel appears to be a WWC across this property.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 9)	**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	0	1	2	3
2. Sinuous channel	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	1	2	3
4. Sorting of soil textures or other substrate	0	1	2	3
5. Active/relic floodplain	0		1	1.5
6. Depositional bars or benches	0	1	2	3
7. Braided channel	0	1	2	3
8. Recent alluvial deposits	0	0.5	1	1.5
9. Natural levees	0	1	2	3
10. Headcuts	0	1	2	3
11. Grade controls	0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0		Yes = 3	

B. Hydrology (Subtotal = 1)	**Absent**	**Weak**	**Moderate**	**Strong**
14. Subsurface flow/discharge into channel	0	1	2	3
15. Water in channel and >48 hours since sig. rain	0	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5	

C. Biology (Subtotal = 6)	**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel bed [1]	3	2	1	0
21. Rooted plants in the thalweg [1]	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	1	2	3
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28.Wetland plants in channel bed [2]	0	0.5	1	1.5

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 16

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes : Channel displayed weak to moderate geomorphic secondary indicators. Most notably bed/bank structure, grade controls and natural valley/drainageway. Most other secondary indicators were weak or absent. No flowing water was observed from just downstream of property or just upstream of property. Leaf litter was observed in channel in some locations. Some wrack lines were observed in some areas. Macrobenthos observed included isopods. Earthworms were present underneath a number of rock within the channel reach assessed. Based on observations, the channel appears to experience high flows based on channel structure, but most likely the flows are associated with rain events only. The channel is shown on topo maps as the head of Cooper Creek. The channel likely includes stronger geomorphic features further downstream, but the portion assessed does not appear to experience constant flows and seems to be more associated with rain events.

APPENDIX V

Wetland Field Data Sheets

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: 4105 SAUNDERS AVENUE City/County: NASHVILLE/DAVIDSON Sampling Date: 5.20.22

Applicant/Owner: RS MILLER GROUP State: TN Sampling Point: DP-1

Investigator(s): BRANDON GARRETT Section, Township, Range:

Landform (hillslope, terrace, etc.): HILLSLOPE Local relief (concave, convex, none): CONVEX Slope (%): 0-2

Subregion (LRR or MLRA): Lat: N36.224159 Long: W-86.73551 Datum: UPL

Soil Map Unit Name: MAURY URBAN LAND COMPLEX NWI classification: NONE

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 ✓	

Remarks:

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 two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (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? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. PRUNUS SEROTINA	10	NO	FACU
2. ROBINIA PSUEDEOACACIA	10	NO	FACU
3. FRAXINUS AMERICANA	25	YES	FACU
4. JUGLANS NIGRA	5	NO	FACU
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. LIGUSTRUM SINENSE	25	YES	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	25	= Total Cover	
Herb Stratum (Plot size:)			
1. AMBROSIA TRIFIDA	20	YES	FAC
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	20	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. LONICERA JAPONICA	5	NO	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	25	x 3 =	75
FACU species	75	x 4 =	300
UPL species		x 5 =	
Column Totals:	100 (A)		375 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - 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 Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vine – 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

Sampling Point: DP-1

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
0-12	10YR 3/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen 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) **(MLRA 147, 148)**
- ___ 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)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic 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

Project/Site: 4105 SAUNDERS AVENUE City/County: NASHVILLE/DAVIDSON Sampling Date: 5.20.22

Applicant/Owner: RS MILLER GROUP State: TN Sampling Point: DP-2

Investigator(s): BRANDON GARRETT Section, Township, Range:

Landform (hillslope, terrace, etc.): HILLSLOPE Local relief (concave, convex, none): CONVEX Slope (%): 0-2

Subregion (LRR or MLRA): Lat: N36.224001 Long: W-86.735412 Datum: UPL

Soil Map Unit Name: MAURY URBAN LAND COMPLEX NWI classification: NONE

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 ✓	

Remarks:

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 two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (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? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. ACER SACCHARINUM	5	NO	FACW
2. JUGLANS NIGRA	10	NO	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	15	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1. LIGUSTRUM SINENSE	25	YES	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	25	= Total Cover	

Herb Stratum (Plot size:)			
1. TRIFOLIUM REPENSE	20	YES	FACU
2. SCHEDONOROUS ARUNDENACEA	25	YES	FACU
3. MENTHA ARVENSIS	5	NO	FACW
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	50	= Total Cover	

Woody Vine Stratum (Plot size:)			
1. LONICERA JAPONICA	10	NO	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	10	x 2 =	20
FAC species		x 3 =	
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	100 (A)		380 (B)

Prevalence Index = B/A = 3.80

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - 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 Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vine – 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

Sampling Point: DP-2

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
0-12	10YR 5/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen 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) **(MLRA 147, 148)**
- ___ 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)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic 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

Project/Site: 4105 SAUNDERS AVENUE City/County: NASHVILLE/DAVIDSON Sampling Date: 5.20.22

Applicant/Owner: RS MILLER GROUP State: TN Sampling Point: DP-3

Investigator(s): BRANDON GARRETT Section, Township, Range:

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 0-2

Subregion (LRR or MLRA): Lat: N36.223898 Long: W-86.735564 Datum: UPL

Soil Map Unit Name: MAURY URBAN LAND COMPLEX NWI classification: NONE

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 ✓	

Remarks:

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 two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (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? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-3

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. FRAXINUS AMERICANA	25	YES	FACU
2. CELTIS OCCIDENTALIS	25	YES	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. LIGUSTRUM SINENSE	25	YES	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	25	= Total Cover	
Herb Stratum (Plot size:)			
1.		-	-
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	0	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. HEDERA HELIX	25	YES	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	25	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 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	100	x 4 =	400
UPL species		x 5 =	
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - 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 Four Vegetation Strata:

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

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vine – 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

Sampling Point: DP-3

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
0-12	10YR 5/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen 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) **(MLRA 147, 148)**
- ___ 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)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic 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

Project/Site: 4105 SAUNDERS AVENUE City/County: NASHVILLE/DAVIDSON Sampling Date: 5.20.22

Applicant/Owner: RS MILLER GROUP State: TN Sampling Point: DP-4

Investigator(s): BRANDON GARRETT Section, Township, Range:

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 0-2

Subregion (LRR or MLRA): Lat: N36.223792 Long: W-86.735014 Datum: UPL

Soil Map Unit Name: MAURY URBAN LAND COMPLEX NWI classification: NONE

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 ✓	

Remarks:

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 two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (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? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-4

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. FRAXINUS AMERICANA	5	YES	FACU
2. CELTIS OCCIDENTALIS	25	YES	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. LIGUSTRUM SINENSE	25	YES	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
	25	= Total Cover	
Herb Stratum (Plot size:)			
1. TRIFOLIUM REPENSE	20	YES	FACU
2. SCHEDONOROUS ARUNDENACEA	20	YES	FACU
3.		-	-
4.		-	-
5.		-	-
6.		-	-
7.		-	-
8.		-	-
9.		-	-
10.		-	-
11.		-	-
12.		-	-
	40	= Total Cover	
Woody Vine Stratum (Plot size:)			
1. LONICERA JAPONICA	5	NO	FACU
2.		-	-
3.		-	-
4.		-	-
5.		-	-
6.		-	-
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 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	100	x 4 =	400
UPL species		x 5 =	
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Woody vine – 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

Sampling Point: DP-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 5/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen 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) **(MLRA 147, 148)**
- ___ 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)**
- Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic 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 VI

FIELD PHOTOGRAPHS

Photograph 1: Downstream view of channel just across road from property (N36.223352 W-86.734914)

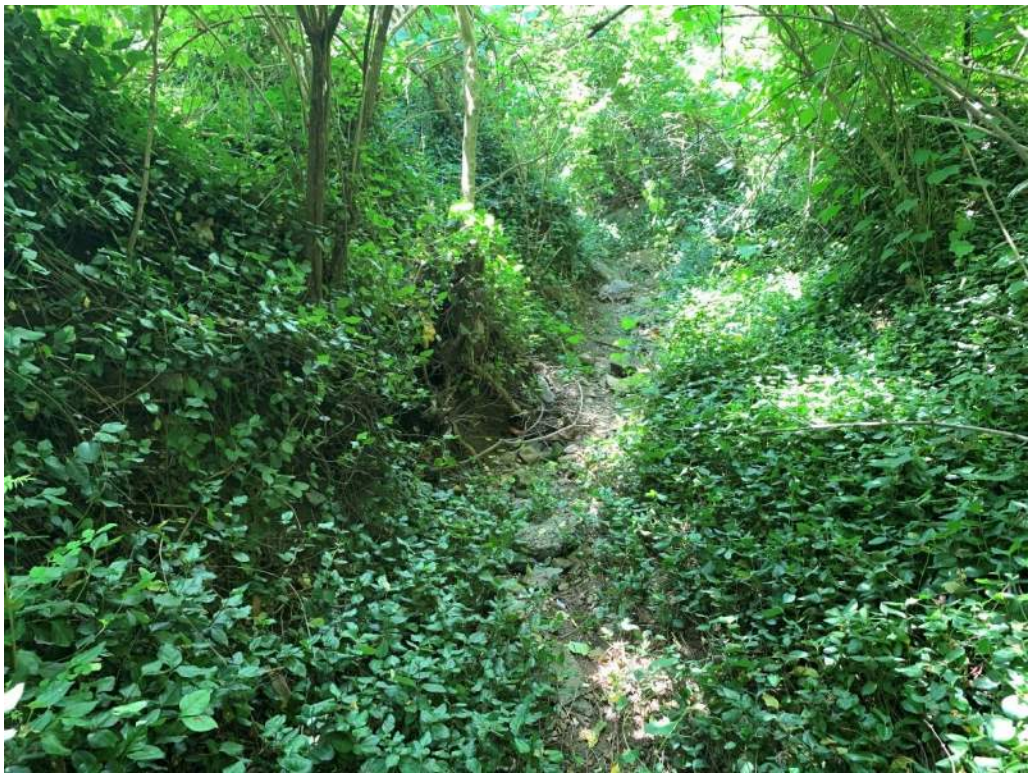
Photograph 2: View upstream from previous photograph location.

Photograph 3: Upstream view from culvert inlet at southeastern property corner (N36.223530 W-86.735066)

Photograph 4: Upstream view of WWC-1 (N36.223719 W-86.735273).

Photograph 5: Upstream view of WWC-1 (N36.223878 W-86.735487)

Photograph 6: Downstream view from previous photograph location.



Photograph 7 : Upstream view of WWC-1 (N36.223984 W-86.735652)

Photograph 8: Upstream view of WWC-1 (N36.224089 W-86.735751)

Photograph 9: Upstream view of WWC-1 (N36.224293 W-86.735898) Just west of property boundary.

Photograph 10: Upstream view of WWC-1 from just west of property and east of Edwards Ave.

Photograph 11: Soils encountered at DP-1 location.

Photograph 12: Upstream view of WWC-1 from Edwards Avenue (N36.224977 W-86.736689)

Photograph 13: Overview of property, view looking north from southeastern property corner.

Photograph 14: View looking northwest from southeastern property corner.

Photograph 15: View overlooking southeastern property corner.

Photograph 16: View looking east from near southeastern property corner.

APPENDIX VII

SUPPLEMENTAL INFORMATION

HYDROLOGIC DETERMINATION (HD) RENEWAL
WET WEATHER CONVEYANCE
4105 Saunders Avenue
Nashville, Tennessee

Photo 1: View of from southwest of 4105 Saunders Avenue near property entrance.

Photo 2: View of wet weather conveyance northwest of Lots 57-58 near Hurston.

Photo 3: View of soil sampled at Location 1.
Coordinates: 36.224155, -86.73551

Photo 4: View of soil sampled at Location 2.
Coordinates: 36.224325, -86735342

Photo 5: View of soil sampled at Location 3.
Coordinates:36.223878, -86.735564

Photo 6: View of soil sampled at Location 4.
Coordinates: 36.223792, -86.735014

Photo 5: View of soil sampled at Location 3.
Coordinates: 36.223878, -86.735564

Photo 6: View of soil sampled at Location 4.
Coordinates: 36.223792, -86.735014

Photo 7: View of culvert piping near entrance of Lot 57-58 on northside of Saunders Avenue.

Photo 8: View of vegetation on floor bottom of wet weather conveyance facing north-northwest from Saunders Ave. entrance.

Photo 9: View of wet weather conveyance continuing north-northwest exiting Lots 57-58.

Photo 10: Floor of wet weather conveyance near north-northwest property boundary. Note: Leaves on floor bottom.

Photo 15: View along the wet weather conveyance.

Photo 16: View along the wet weather conveyance near northern end.

limatological Data for ashville A ea, TN (Th eadEx) - Ma h 2022

ate	Temperature				HD	CD	P ecipitation	ew Snow	Snow epth
	Maximum	Minimum	Ave age	Departure					
2022-03-01	73	32	52.5	5.3	12	0	0.00	0.0	0
2022-03-02	80	43	61.5	14.1	3	0	0.00	0.0	0
2022-03-03	76	50	63.0	15.3	2	0	0.00	0.0	0
2022-03-04	79	43	61.0	13.0	4	0	0.00	0.0	0
2022-03-05	77	57	67.0	18.7	0	2	0.00	0.0	0
2022-03-06	80	67	73.5	24.9	0	9	0.00	0.0	0
2022-03-07	71	40	55.5	6.7	9	0	0.47	0.0	0
2022-03-08	49	38	43.5	-5.6	21	0	0.10	0.0	0
2022-03-09	55	38	46.5	-2.9	18	0	0.14	0.0	0
2022-03-10	62	39	50.5	0.8	14	0	0.00	0.0	0
2022-03-11	67	27	47.0	-3.0	18	0	0.18	**2.0**	2
2022-03-12	32	22	27.0	-23.3	38	0	0.07	0.8	**3**
2022-03-13	58	**20**	39.0	-11.5	26	0	0.00	0.0	0
2022-03-14	68	36	52.0	1.2	13	0	0.00	0.0	0
2022-03-15	70	51	60.5	9.4	4	0	T	0.0	0
2022-03-16	63	50	56.5	5.1	8	0	0.11	0.0	0
2022-03-17	73	47	60.0	8.3	5	0	0.00	0.0	0
2022-03-18	69	51	60.0	8.0	5	0	0.39	0.0	0
2022-03-19	57	40	48.5	-3.8	16	0	T	0.0	0
2022-03-20	70	35	52.5	-0.1	12	0	0.00	0.0	0
2022-03-21	75	41	58.0	5.1	7	0	0.00	0.0	0
2022-03-22	79	61	70.0	16.8	0	5	**1.45**	0.0	0
2022-03-23	66	48	57.0	3.5	8	0	0.00	0.0	0
2022-03-24	62	40	51.0	-2.8	14	0	0.00	0.0	0
2022-03-25	53	44	48.5	-5.6	16	0	T	0.0	0
2022-03-26	61	41	51.0	-3.4	14	0	0.00	0.0	0
2022-03-27	55	35	45.0	-9.7	20	0	0.00	0.0	0
2022-03-28	57	40	48.5	-6.5	16	0	0.00	0.0	0
2022-03-29	76	43	59.5	4.2	5	0	0.00	0.0	0
2022-03-30	**83**	60	71.5	15.9	0	7	0.88	0.0	0
2022-03-31	60	44	52.0	-3.9	13	0	0.01	0.0	0
Sum	2056	1323	-	-	341	23	3.80	2.8	-
Average	66.3	42.7	54.5	3.0	-	-	-	-	0.2
Normal	62.7	40.2	51.5	-	431	11	4.52	0.7	-

Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).
Max Temperature : midnight
Min Temperature : midnight
Precipitation : midnight
Snowfall : midnight
Snow Depth : 6am

limatological Data for ashville A ea, TN (Th eadEx) - Ap il 2022

ate	Temperature				HDD	DD	Pre ipitation	ew Snow	Snow epth
	Maximum	Minimum	Average	eparture					
2022-04-01	57	41	49.0	-7.2	16	0	0.00	0.0	0
2022-04-02	64	35	49.5	-7.0	15	0	0.00	0.0	0
2022-04-03	65	41	53.0	-3.9	12	0	0.00	0.0	0
2022-04-04	75	40	57.5	0.3	7	0	0.00	0.0	0
2022-04-05	59	50	54.5	-3.0	10	0	0.40	0.0	0
2022-04-06	72	50	61.0	3.2	4	0	0.24	0.0	0
2022-04-07	62	45	53.5	-4.6	11	0	0.00	0.0	0
2022-04-08	49	40	44.5	-13.9	20	0	0.03	0.0	0
2022-04-09	59	39	49.0	-9.8	16	0	0.00	0.0	0
2022-04-10	79	36	57.5	-1.6	7	0	0.00	0.0	0
2022-04-11	67	60	63.5	4.1	1	0	0.40	0.0	0
2022-04-12	79	61	70.0	10.3	0	5	1.79	0.0	0
2022-04-13	85	61	73.0	13.0	0	8	1.11	0.0	0
2022-04-14	69	47	58.0	-2.3	7	0	0.03	0.0	0
2022-04-15	73	40	56.5	-4.1	8	0	0.30	0.0	0
2022-04-16	71	54	62.5	1.5	2	0	0.22	0.0	0
2022-04-17	62	46	54.0	-7.3	11	0	0.05	0.0	0
2022-04-18	57	42	49.5	-12.1	15	0	0.90	0.0	0
2022-04-19	61	38	49.5	-12.4	15	0	0.00	0.0	0
2022-04-20	75	42	58.5	-3.7	6	0	T	0.0	0
2022-04-21	80	59	69.5	7.0	0	5	0.11	0.0	0
2022-04-22	84	58	71.0	8.2	0	6	0.00	0.0	0
2022-04-23	84	62	73.0	9.9	0	8	0.00	0.0	0
2022-04-24	84	62	73.0	9.6	0	8	0.00	0.0	0
2022-04-25	78	59	68.5	4.8	0	4	0.50	0.0	0
2022-04-26	65	47	56.0	-8.0	9	0	0.00	0.0	0
2022-04-27	72	40	56.0	-8.2	9	0	0.00	0.0	0
2022-04-28	79	47	63.0	-1.5	2	0	0.00	0.0	0
2022-04-29	82	58	70.0	5.2	0	5	0.00	0.0	0
2022-04-30	82	62	72.0	6.9	0	7	0.00	0.0	0
Sum	2130	1462	-	-	203	56	6.08	0.0	-
Average	71.0	48.7	59.9	-0.9	-	-	-	-	0.0
Normal	72.6	48.9	60.8	-	180	52	4.72	0.0	-

Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).
Max Temperature : midnight
Min Temperature : midnight
Precipitation : midnight
Snowfall : midnight
Snow Depth : 6am

limatological Data for ashville A ea, TN (Th eadEx) - May 2022

ate	Temperat re				HDD	DD	Pre ipitation	ew Snow	Snow epth
	Maxim m	Minimum	Average	eparture					
2022-05-01	81	57	69.0	3.6	0	4	0.29	0.0	0
2022-05-02	86	52	69.0	3.4	0	4	T	0.0	0
2022-05-03	85	65	75.0	9.1	0	10	T	0.0	0
2022-05-04	75	58	66.5	0.3	0	2	0.00	0.0	0
2022-05-05	86	56	71.0	4.5	0	6	0.28	0.0	0
2022-05-06	76	58	67.0	0.3	0	2	0.17	0.0	0
2022-05-07	61	56	58.5	-8.5	6	0	0.02	0.0	0
2022-05-08	73	50	61.5	-5.8	3	0	0.00	0.0	0
2022-05-09	81	55	68.0	0.5	0	3	0.00	0.0	0
2022-05-10	86	61	73.5	5.7	0	9	0.00	0.0	0
2022-05-11	91	64	77.5	9.5	0	13	0.00	0.0	0
2022-05-12	91	68	79.5	11.2	0	15	0.00	0.0	0
2022-05-13	88	63	75.5	6.9	0	11	0.00	0.0	0
2022-05-14	89	64	76.5	7.7	0	12	0.01	0.0	0
2022-05-15	89	61	75.0	5.9	0	10	0.00	0.0	0
2022-05-16	82	59	70.5	1.2	0	6	0.00	0.0	0
2022-05-17	88	55	71.5	1.9	0	7	0.00	0.0	0
2022-05-18	90	58	74.0	4.1	0	9	0.00	0.0	0
2022-05-19	94	74	84.0	13.9	0	19	0.00	0.0	0
2022-05-20	91	74	82.5	12.1	0	18	0.00	0.0	0
2022-05-21	93	67	80.0	9.3	0	15	0.73	0.0	0
2022-05-22	78	64	71.0	0.1	0	6	0.19	0.0	0
2022-05-23	70	61	65.5	-5.7	0	1	0.04	0.0	0
2022-05-24	81	60	70.5	-1.0	0	6	0.91	0.0	M
2022-05-25	80	66	73.0	1.3	0	8	0.49	0.0	M
2022-05-26	M	M	M	M	M	M	M	M	M
2022-05-27	M	M	M	M	M	M	M	M	M
2022-05-28	M	M	M	M	M	M	M	M	M
2022-05-29	M	M	M	M	M	M	M	M	M
2022-05-30	M	M	M	M	M	M	M	M	M
2022-05-31	M	M	M	M	M	M	M	M	M
Sum	2085	1526	-	-	9	196	3.13	0.0	-
Average	83.4	61.0	72.2	3.6	-	-	-	-	0.0
Normal	79.7	57.5	68.6	-	40	129	4.15	0.0	-

Above Normals represent the month through 2022-05-25.

Observations for ea h day cover the 24 hours ending at the time given below (Local Standard Time).
Max Temperature : midnight
Min Temperature : midnight
Precipitation : midnight
Snowfall : midnight
Snow Depth : 6am

Tennessee Department of Environment & Conservation

This is to certify that

C Brandon Garrett

successfully completed the one-day
Tennessee Hydrologic Determination Refresher Course

September 8, 2021

Jonathon Burr, DWR

Timothy Gangaware, TNWRRC

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

This certifies that the recipient has earned 6 Professional Development Hours

TNQHP
TENNESSEE QUALIFIED HYDROLOGIC PROFESSIONAL