Preliminary Water Resources Assessment

Project Bison

Bridge, Greenway, Water Amenity, and Campus

Nashville, Davidson County, Tennessee

March 30, 2022

Terracon Project No. 18217100

Prepared for:

STG Design, Inc.

Nashville, Tennessee

Prepared by:

Terracon Consultants, Inc.

Nashville, Tennessee

March 30, 2022

STG Design, Inc.
211 Union Street, Suite 103
Nashville, Tennessee 37201

Attn: Mr. Richard Grandt
P: (615) 248-4400
E: rgrandt@stgdesign.com

Re: Preliminary Water Resource Assessment
Project Bison
Bridge, Greenway, Water Amenity, and Campus
Nashville, Davidson County, Tennessee
Terracon Project No. 18217100

Dear Mr. Grandt:

Terracon Consultants, Inc. (Terracon) is pleased to present the Preliminary Water Resources Assessment prepared for the bridge, greenway, water amenity, and campus associated with the Project Bison development located in Nashville, Davidson County, Tennessee. If you have any questions regarding this report or need assistance with any other aspect of this project, please contact us at (615) 333-6444.

Sincerely,
Terracon Consultants, Inc.

Caitlan Howard, QHP-IT
Staff Geologist

Dallas Whitmill, P.E.
Senior Engineer
Environmental Department Manager

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Nashville, Davidson County, Tennessee
Terracon Project No. 18217100
May 2021

EXECUTIVE SUMMARY

On April 15th, 2021, Terracon personnel performed a Preliminary Water Resources Assessment at a location west of Cowan Road in Nashville, Davidson County, Tennessee. The subject property is owned by Oracle America, Inc. and is intended to be developed as office space and related uses.

Land use at the location is characterized as industrial; however, there are two wooded areas abutting Cheatham Lake at the location. The location is illustrated on exhibits included in Appendix A.

The purpose of this report was to evaluate onsite conditions for the presence of potential wetlands and Waters of the United States and the State of Tennessee in connection with a request for an Approved Jurisdictional Determination (AJD). This report was developed by completing an assessment of the current onsite conditions, including site topography, storm water drainage patterns, vegetative cover, and aquatic fauna within the review area.

The stream determination was performed in general accordance with the guidelines and methods described in the Tennessee Department of Environment and Conservation Division of Water Pollution Control *Guidance for Making Hydrologic Determinations* Version 1.5 dated April 2020 using the Hydrologic Determination Field Data Sheet Version 1.5 included as Appendix B. Wetland delineations were evaluated in general accordance with the guidelines and methods described in the 1987 version of the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual for routine determinations and the Regional Supplement: Eastern Mountains and Piedmont Region.

The assessment was performed by collection of available published information and by on-site investigation. Terracon's investigation included examining the channel resources in question and evaluating soils and hydrologic data along stream reaches and wetland areas present onsite. The site is within the Cumberland River – Browns Creek Watershed (HUC051302020305). and is depicted on the USGS *Nashville West, Tennessee* topographic quadrangle dated 1997. The onsite investigation identified one process discharge (Outfall 001) that handles stormwater and process water from the truck washdown stations on the IMI concrete batch plant located on-site at 1433 Cowan Court and is approximately 779 feet in length; and four wetlands (WTLD1-WTLD4) totaling approximately 0.164 acres in area.

Natural Resource Summary

AQUATIC RESOURCE	Stream		WWC/ Ephemeral (ft)	Upland Drainage (ft)	Wetland (Acre)
	Perennial (ac)	Intermittent (ft)			
Outfall 001	--	--	779	--	--
WTLD1	--	--	--	--	0.02
WTLD2	--	--	--	--	0.01
WTLD3	--	--	--	--	0.004
WTLD4	--	--	--	--	0.13
Total:	**--**	**--**	**779 ft**	--	**0.164 ac**

Note:
a. Approximate distances and acreage only, not intended for construction or mitigation purposes.
b. Please see Preliminary Water Resources Map included in Appendix A for further information.

During the April site visit, the area was mapped using a Garmin GPSMAP 64 hand-held unit using an NAD83 datum. Resource locations, channel lengths, and acreage sizing are approximated; Terracon recommends surveying the resources if additional accuracy is needed. **The final jurisdictional determination of waters located onsite is subject to verification by the USACE and TDEC.**

1.0 INTRODUCTION

On April 15th, 2021, Terracon personnel performed a Preliminary Water Resources Assessment at a location west of Cowan Road in Nashville, Davidson County, Tennessee. The subject property is owned by Oracle America, Inc. and is intended to be developed as office space and related uses. Land use of the location is characterized as industrial; however, there are two wooded areas abutting Cheatham Lake (Cumberland River) at the location. Exhibits are included in Appendix A.

The purpose of this report was to evaluate onsite conditions for the presence of potential wetlands and Waters of the United States and the State of Tennessee. This report was developed by completing an assessment of the current onsite conditions, including site topography, storm water drainage patterns, vegetative cover, and aquatic fauna within the review area.

The stream determination was performed in general accordance with the guidelines and methods described in the Tennessee Department of Environment and Conservation Division of Water Pollution Control *Guidance for Making Hydrologic Determinations* Version 1.5 dated April 2020 using the Hydrologic Determination Field Data Sheet Version 1.5 included in Appendix B. Wetland delineations were evaluated in general accordance with the guidelines and methods described in the 1987 version of the U.S. Army Corps of Engineers (USACE) Wetlands

Delineation Manual for routine determinations and the Regional Supplement: Eastern Mountains and Piedmont Region.

The assessment was performed by collection of available published information and by on-site investigations. The on-site investigations included traversing the property and obtaining vegetation, soils and hydrology data along each stream reach and wetland area.

2.0 SITE LOCATION AND DESCRIPTION

The subject location is west of Cowan Road, in Nashville, Davidson County, Tennessee. The site location is illustrated on a portion of the USGS Nashville West, *Tennessee* 7.5' quadrangle map dated 1997 in Exhibit 1.

Weather data was collected from www.wunderground.com and indicated approximately 0.67" of precipitation fell between April 8, 2021 and April 14th, 2021 in the Nashville, Tennessee area. The following table summarizes the rainfall amounts for each day.

Precipitation Data: Nashville, Tennessee (Recorded at the Nashville International Airport Station*)

Date	Precipitation (in.)
April 8, 2021	0.45"
April 9, 2021	0.02"
April 10, 2021	0.04"
April 11, 2021	0.16"
April 12, 2021	0.00"
April 13, 2021	0.00"
April 14, 2021	0.00"

3.0 PRELIMINARY DATA COLLECTION

As indicated on the *Nashville West, Tennessee*, quadrangle map dated 1997, presented as Exhibit 1, the location ranges in elevation from approximately 390 feet to 420 feet above mean sea level with topography generally sloping to the west. USGS topographic information indicates the site is within the Cumberland River – Browns Creek Watershed (HUC051302020305). The National Wetlands Inventory Mapper published by the U.S. Fish and Wildlife Service (USFWS) indicated the following features may be present at the location*:

- 1.78-acre Freshwater Pond habitat classified as a PUBHx
- 0.71-acre Freshwater Emergent Wetland habitat classified as a PEM1/UBFx
- An approximately 1.25-acre portion of an 8133.28-acre Lake habitat classified as a L1UBHh

*Wetlands and deepwater habitats in this area were photo interpreted using 1:58,000 scale, color, infrared imagery from 1981.

A review of information contained in the USDA Natural Resource Conservation Web Soil Survey Publication *Soil Survey of Davidson County, Tennessee* dated May 29, 2020 was performed to determine the nature of soils at the subject location. According to the publication, the soils in this project area consist of Lindell- Urban land complex. Lindell-Urban land complex has a hydric rating of 0 according to the above- referenced soil survey.

4.0 WATERS ASSESSMENT

4.1 HYDROLOGY AND STREAM DETERMINATION

The project was assessed for stream characteristics in general accordance with the guidelines and methods described in the Tennessee Department of Environment and Conservation Division of Water Resources *Guidance for Making Hydrologic Determinations* Version 1.5 dated April 2020 using the Hydrologic Determination Field Data Sheet Version 1.5 included in Appendix B. Appendix C is included as a photographic log of aquatic channel resources on site.

Water transport channel types are defined as follows:

- **Upland Drainage** – vegetated, manmade or naturally occurring channels that are erosional features with no rested vegetation line within the channel and show no sign of sustained substrate or ordinary high-water mark. As stormwater runoff flows along these erosional features, scour promotes sedimentation and filtering through a subsoil matrix, and/or infiltration into the underlying soils.

- **Wet Weather Conveyance (WWC)** – man-made or natural watercourses, including natural watercourses that have been modified by channelization: that flow only in direct response to precipitation runoff in their immediate locality; whose channels are at all times above the ground water table; that are not suitable for drinking water supplies; and in which hydrological and biological analyses indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow there is not sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months.

- **Ephemeral Stream** – Ephemeral (stormwater) stream means a feature that carries only stormwater in direct response to precipitation with water flowing only during and shortly after large precipitation events. An ephemeral stream may or may not have a well-defined channel, the aquatic bed is always above the water table, and stormwater runoff is the primary source of water. An ephemeral stream typically lacks the biological,

hydrological, and physical characteristics commonly associated with the continuous or intermittent conveyance of water.

- **Intermittent Stream** – have flowing water periods during the wet season (winter-spring) but are normally dry during hot summer months. Intermittent streams do not have continuous flowing water year-round and are not "relatively permanent waters."

- **Perennial Stream**– streams that hold water throughout the year continuously under normal weather patterns.

Primary Field Stream Morphology Indicators:
Primary field indicators for stream morphology as described in the Tennessee Department of Environment and Conservation Division of Water Resources *Guidance for Making Hydrologic Determinations* Version 1.5 dated April 2020, includes the following indicators: 1. Hydrologic features existing solely due to process discharge from wastewater or non-natural sources. 2. The presence or absence of defined bed and banks with dominate upland and facultative upland species. 3. Watercourse dry anytime during February through April 15th, under normal precipitation and/or ground water conditions. 4. Daily flow and precipitation records showing the feature only flows in direct response to rainfall. 5. Presence of multiple populations of obligate lotic organisms with ≥ 2 months aquatic phase. 6. Presence of fish (except Gambusia). 7. Presence of naturally occurring ground water table connection. 8. Flowing water in channel and 7 days since last precipitation > 0.1" in local watershed. 9. Evidence watercourse has been used as a supply of drinking water. If any of the Primary Indicators are established as a 'Yes' or 'Positive' determination, no further evaluation of secondary indicators is needed.

Secondary Field Stream Morphology Indicators:
The scoring methodology for the Secondary Indicator Evaluation was adapted from the NC DWQ Identification Methods for the Origins of Intermittent and Perennial streams, Version 3.1, as defined by the Tennessee Department of Environment and Conservation Division of Water Resources *Guidance for Making Hydrologic Determinations* Version 1.5 dated April 2020. All stream systems are characterized by interactions among hydrologic, geomorphic (physical) and biological processes, and attributes of these three processes are used to produce a numeric score. Scores less than 19.0 indicate the channel carries only storm flow ephemerally, and is therefore a wet weather conveyance, whereas scores 19.0 or greater typically indicate that the channel is at least an intermittent stream. However, professional judgement is used during periods of abnormally dry or wet weather when making hydrologic determinations on watercourses when scores are in the vicinity of 19.

<u>Overview</u>
The onsite investigation identified one process discharge (Outfall 001) that handles stormwater and process water from the truck washdown stations on the IMI concrete batch plant located on-site at 1433 Cowan Court and is approximately 779 feet in length.

Channel ID	Onsite Length	Start Coordinates*	End Coordinates**
Outfall 001	779 ft	36.183861°, -86.779325°	36.183763°, -86.780982°

*Start Coordinates provide the location where the feature either begins or enters the site.
**End Coordinates provide the location where the feature either terminates or exits the site.

Outfall 001:

Outfall 001 is a permitted process discharge associated with the onsite IMI concrete batch plant (Permit No. TNG110099) which was determined to be a wet weather conveyance with one primary indicator. Outfall 001 was evaluated from where it starts on the IMI property (Tract 9) at approximately 36.183861° N latitude and 86.779325° W longitude and ends where it discharges into Cheatham Lake at approximately 36.183763° N latitude and 86.780982° W longitude. Outfall 001 exhibited the following primary indicator: (1) Hydrologic feature exists solely due to a process discharge. According to a previously conducted Preliminary Geotechnical Engineering Investigation conducted by Terracon dated February 10, 2021, the water table was encountered from 13 to 37 ft bgs at the site, indicating that Outfall 001 has no groundwater connection. The relevant field form and boring logs from the above-mentioned Preliminary Geotechnical Engineering Report are provided in Appendix B. Due to this hydrologic feature existing solely due to process water discharges this feature is not considered regulated Waters of the US or State.

The above-described resources are depicted on Exhibit 3 in Appendix A; hydrologic determination forms for the above-described features and boring logs from the above-mentioned Preliminary Geotechnical Report are included in Appendix B; and photographs can be found in Appendix C.

4.2 WETLAND DELINEATION

The current USACE (Federal Register 1982) and the EPA (Federal Register 1980) joint definition of wetlands contain the consideration of key environmental parameters. The wetland evaluation of the area was performed by evaluation of available maps, photographs, and reports and by on-site evaluation at observation points. Sufficient observations were made to adequately determine the presence or absence of wetland areas. At the observation points the three parameters were evaluated and recorded on Data Forms, which are included as Appendix B. A USGS topographic map showing the site location is included as Exhibit 1 in Appendix A; and a map showing channel resources is included as Exhibit 2. Appendix C is included as a photographic log of conditions on site. The following sections describe the observations of the key indicators.

Wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wetlands are characterized by the following three parameters:

- Hydrophytic vegetation
- Hydric soils
- Wetland hydrology

If natural or anthropogenic *Problematic Conditions* are evident within vegetation, soil, or hydrology of a suspected wetland area, the wetland criteria may be 'assumed' based on the combination of observations from the latter two criteria of having both, one primary or two secondary indicators. (http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/EMP_Piedmont_v2b.pdf)

4.2.1 HYDROPHYTIC VEGETATION

"National List of Plants Species That Occur in Wetlands (Eastern Mountains and Piedmont Region)" was used to conduct the wetland delineation for this project. The plants are listed in this document by indicator status based on the probability that each species occurs in wetlands. The indicator categories for vegetation are as follows:

- **Obligate Wetland (OBL)** – Occur almost always (estimated probability 99%) under natural conditions in wetlands.

- **Facultative Wetland (FACW)** – Usually occur in wetlands (estimated probability 67% to 99%), but occasionally found in non-wetlands.

- **Facultative (FAC) –** Equally likely to occur in wetlands and non-wetlands (estimated probability 34% to 66%).

- **Upland (UPL)** – Rarely occur in wetlands but occur almost always (estimated probability greater than 99%) under natural conditions in non-wetlands.

An area is determined to meet the required hydrophytic vegetation parameter when more than 50% of the dominant species are obligate wetland, facultative wetland, or facultative.

WTLD1:

Vegetation found rooted in WTLD1 included: green ash (*Fraxinus pennsylvanica* – FACW), sugarberry (*Celtis laevigata* – FACW), black willow (*Salix nigra* – OBL), eastern narrowleaf sedge (*Carex amphibola* – FAC), giant goldenrod (*Solidago gigantea* – FACW), and posion ivy (*Toxicodendron radicans* – FAC). Collectively, vegetation within the wetland boundaries was determined to meet the wetland vegetation criteria by passing the Dominance Test with a value of 100%.

WTLD2:

Vegetation found rooted in WTLD2 included: black willow (*Salix nigra* – OBL), eastern cottonwood (*Populus deltoides* – FAC), eastern narrowleaf sedge (*Carex amphibola* – FAC), Cattails (*Typha latifolia* – OBL), and giant goldenrod (*Solidago gigantea* – FACW). Collectively, vegetation within

the wetland boundaries was determined to meet the wetland vegetation criteria by passing the Dominance Test with a value of 100%.

WTLD3:
Vegetation found rooted in WTLD3 included: black willow (*Salix nigra* – OBL), eastern cottonwood (*Populus deltoides* – FAC), Cattails (*Typha latifolia* – OBL), giant goldenrod (*Solidago gigantea* – FACW), and spiny sowthistle (*Sonchus asper* – FAC). Collectively, vegetation within the wetland boundaries was determined to meet the wetland vegetation criteria by passing the Dominance Test with a value of 100%.

WTLD4:
Vegetation found rooted in WTLD4 included: black willow (*Salix nigra* – OBL), eastern cottonwood (*Populus deltoides* – FAC), Cattails (*Typha latifolia* – OBL), giant goldenrod (*Solidago gigantea* – FACW), and muscadine (*Vitis rotundifolia* – FAC). Collectively, vegetation within the wetland boundaries was determined to meet the wetland vegetation criteria by passing the Dominance Test with a value of 100%.

4.2.2 HYDRIC SOIL

Hydric soil indicators have been established to determine whether an area contains the required hydric soil parameters. Soil sample pits were dug and the soil profile was documented on data sheets. Munsell Soil Color Charts are used to determine the matrix and mottle colors of the soil. Other required soil characteristics are documented on the data sheets. The most common field indicators of hydric soils are low chroma colors (iron depletion) and mottling (redoximorphic features).

Soil characteristics observed onsite were consistent with those described in the USDA-SCS publication Soil Survey of Davidson County, Tennessee and Web Soil Survey for upland areas. As defined by the USDA-SCS Soil Survey, hydric soil may be either drained or undrained. A drained hydric soil may not continue to support hydrophytic vegetation; therefore, not all areas having hydric soils will qualify as wetlands. Conversely, development of hydric soils requires many years of frequent inundation and non-hydric soils may support hydrophytic vegetation.

As defined by NRCS.USDA.gov, “Hydric soil means a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. This definition includes soils that developed under anaerobic conditions in the upper part but no longer experience these conditions due to hydrologic alteration such as those hydric soils that have been artificially drained or protected (e.g. ditches or levees).”

WTLD1:
NRCS soil survey maps indicate WTLD1 to be found in Lindell-Urban land complex soils. The soil profile within WTLD1 soil pit #1 indicated a 0-1-inch depth soil matrix of 10YR6/1 with 20% 10YR5/2 redox concentrations; a 1-3-inch depth layer of partially decomposed leaves (10YR2/1); a 3-5-inch layer of partially decomposed leaves (10YR4/2); and a 5-11-inch soil matrix of 10YR3/1

with 25% 2.5YR5/8. Soil conditions within WTLD1 include the hydric soil indicator of Depleted Matrix (F3). Wetland Determination Forms can be found in Appendix B and photos of WTLD1 can be found in Appendix C.

WTLD2:

NRCS soil survey maps indicate WTLD2 to be found in Lindell-Urban land complex soils. The soil profile within WTLD2 soil pit #1 indicated a 0-13-inch depth soil matrix of 10YR6/1 with 5% 2.5YR5/8 oxidized rhizospheres. Soil conditions within WTLD2 include the hydric soil indicators of Depleted Matrix (F3). Wetland Determination Forms can be found in Appendix B and photos of WTLD2 can be found in Appendix C.

WTLD3:

NRCS soil survey maps indicate WTLD3 to be found in Lindell-Urban land complex soils. The soil profile within WTLD3 soil pit #1 indicated a 0-3-inch depth soil matrix of 10YR6/1 with 5% 2.5YR5/8 oxidized rhizospheres; a 3-5" layer of partially decomposed leaves (10YR4/3 with 20% 2.5YR5/8); and a 5-12-inch depth soil matrix of 10YR3/1 with 15% 2.5YR5/8 redox concentrations. Soil conditions within WTLD3 include the hydric soil indicators of Depleted Matrix (F3). Wetland Determination Forms can be found in Appendix B and photos of WTLD3 can be found in Appendix C.

WTLD4:

NRCS soil survey maps indicate WTLD4 to be found in Lindell-Urban land complex soils. The soil profile within WTLD4 soil pit #1 indicated a 0-11-inch depth soil matrix of 10YR6/1 with 10% 2.5YR5/8 oxidized rhizospheres. Soil conditions within WTLD4 include the hydric soil indicators of Depleted Matrix (F3). Wetland Determination Forms can be found in Appendix B and photos of WTLD4 can be found in Appendix C.

4.2.3 WETLAND HYDROLOGY

Wetland hydrology is more specifically defined as flooding, ponding, or saturation within 12 inches of the surface for a long or very long duration during the growing season. Long duration is a single event that lasts 7 to 30 days. Very long duration is a single event that lasts more than 30 days. Wetland hydrology is sometimes defined as flooding, ponding, or saturation for 3% - 5% of the growing season. Field indicators have been developed to document whether an area meets the mandatory criteria to establish if the required wetland parameters exist. The presence of surface water on any given day is insufficient to establish that an area is flooded, ponded, or saturated long enough to meet wetland hydrology requirements. Other indicators have been established and used to assess the duration of soil saturation (i.e. water stained leaves, sediment deposits, watermarks, oxidized root channels, etc.). Likewise, the absence of water on the date of wetland delineations does not mean that wetlands are not present. Most wetlands are dry during a portion of the year.

WTLD1:
Observations of wetland hydrology within WTLD1 boundaries were found to include primary indicators of Saturation (A3), Sediment Deposits (B2), and Water-Stained Leaves. Photos of WTLD1 can be found in Appendix C.

WTLD2:
Observations of wetland hydrology within WTLD2 boundaries were found to include primary indicators of Saturation (A3), Sediment Deposits (B2), and Oxidized Rhizospheres on Living Roots (C3). Photos of WTLD2 can be found in Appendix C.

WTLD3:
Observations of wetland hydrology within WTLD3 boundaries were found to include primary indicators of Saturation (A3), Sediment Deposits (B2), and Oxidized Rhizospheres on Living Roots (C3). Photos of WTLD3 can be found in Appendix C.

WTLD4:
Observations of wetland hydrology within WTLD4 boundaries were found to include primary indicators of Saturation (A3), Sediment Deposits (B2), and Oxidized Rhizospheres on Living Roots (C3). Photos of WTLD4 can be found in Appendix C.

WETLAND FINDINGS:

Four (4) wetland areas were found within the site, totaling approximately 0.164 acres. Based on observations made during the site visit, process water from Outfall 001 supplies the four wetlands with hydrology and deposits silt in the wetlands. According to a previously conducted Preliminary Geotechnical Engineering Investigation conducted by Terracon dated February 10, 2021, the water table was encountered from 13 to 37 ft bgs at the site, indicating that the wetlands have no groundwater connection. Boring logs from the above-mentioned Preliminary Geotechnical Engineering Report are included in Appendix B. Due to process water being the sole source of hydrology for these wetlands they are not considered regulated Waters of the US or State.

5.0 CONCLUSIONS

Evaluation of preliminary data and on-site investigation of geomorphology, hydrology, and biology allow for conclusions to be made with regard to the environmental status of the site. These conclusions are as follows:

- One wet weather conveyance (Outfall 001) that has hydrology as the result of process water discharges was found on-site totaling approximately 779 feet and is not considered regulated Waters of the US or State;
- And four wetlands (WTLD1-WTLD4) that exist due solely to process water discharges were identified on site totaling approximately 0.164 acres and are not considered regulated Waters of the US or State.

This determination is subject to a final verification by the U.S. Army Corps of Engineers (USACE) and the Tennessee Department of Environment and Conservation (TDEC).

6.0 RECOMMENDATIONS

This report should be submitted to the U.S. Army Corps of Engineers and to the Tennessee Department of Environment and Conservation for a final jurisdictional determination prior to any land disturbance activities at the site that could impact these resources. Early and continued consultation with USACE/TDEC is recommended so that development does not conflict with applicable laws, rules, regulations and/or permit requirements. Terracon can provide assistance with requesting a jurisdictional determination and any necessary permitting, if desired.

7.0 LIMITATIONS

Terracon performed a preliminary water resource assessment in accordance with generally accepted practices. This report does not warrant against future operations or conditions, nor does it warrant against conditions present of a type or at locations not investigated. This report does not constitute a jurisdictional determination of the Waters of the United States and/or State of Tennessee. Any such determination must be made by appropriate regulatory authorities.

The use of this report is expressly limited to the client for the project being discussed. We make no representation for its use by third parties. The conclusions presented in this report are based on our professional opinions with regard to the subject matter as supplied by the above, for the above-referenced site. Any contractor or consultant reviewing this report must draw their own conclusions regarding further investigation or data collection deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories or other third parties supplying information, which may have been used in the preparation of this report. No warranty, express, or implied is made.

APPENDIX A

Exhibit 1 –Topographic Map
Exhibit 2 – Websoil Survey Map
Exhibit 3 – Preliminary Water Resources Map

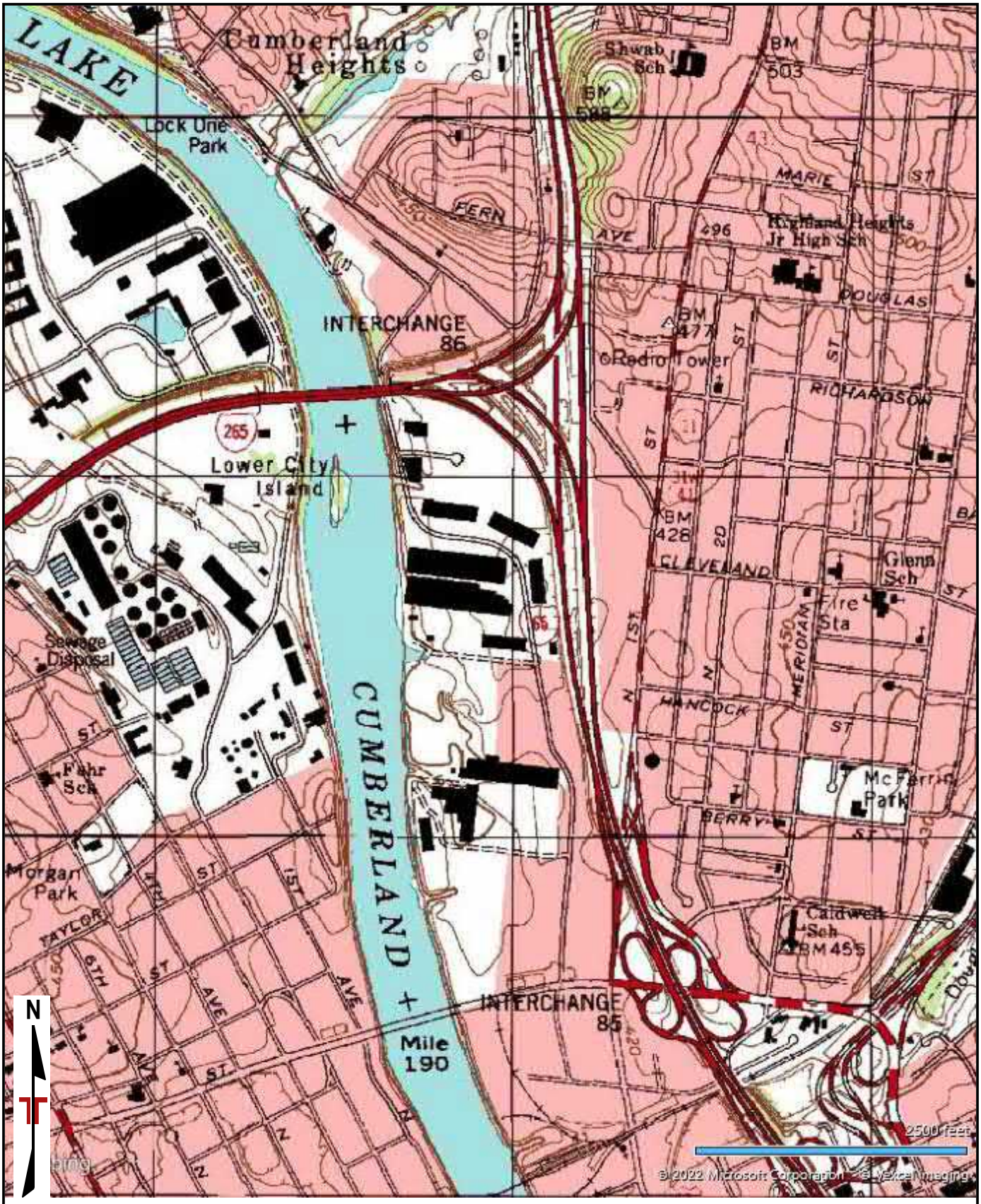

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

UNITED STATES GEOLOGIC SURVEY, 7.5-MINUTE MAP, NASHVILLE WEST, TENNESSEE QUADRANGLE, 1997

Project Mgr. AMH	Project No. 18217100	Terracon Consulting Engineers & Scientists	TOPOGRAPHIC MAP	EX
Drawn by: CNH	Scale: Not to Scale	5217 Linbar Drive, Suite 309 Nashville, Tennessee 37211	Project Bison Nashville, Davidson County, Tennessee	1
Reviewed by: DEW	File Name: EX1	PH. (615) 333-6444 FAX. (615) 333-6443		
Approved by: DEW	Date: March 2022			

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

NRCS / Web Soil Survey Map of Davidson County, September 10, 2021

Project Mgr. AMH	Project No. 18217100	Terracon Consulting Engineers & Scientists	Web Soil Survey Map	EX
Drawn by: CNH	Scale: Not to Scale	5217 Linbar Drive, Suite 309 Nashville, Tennessee 37211	Project Bison Nashville, Davidson County, Tennessee	2
Reviewed by: DEW	File Name: EX2	PH. (615) 333-6444 FAX. (615) 333-6443		
Approved by: DEW	Date: March 2022			

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

Hydric (100%)

Hydric (66 to 99%)

Hydric (33 to 65%)

Hydric (1 to 32%)

Not Hydric (0%)

Not rated or not available

Soil Rating Lines

Hydric (100%)

Hydric (66 to 99%)

Hydric (33 to 65%)

Hydric (1 to 32%)

Not Hydric (0%)

Not rated or not available

Soil Rating Points

Hydric (100%)

Hydric (66 to 99%)

Hydric (33 to 65%)

Hydric (1 to 32%)

Not Hydric (0%)

Not rated or not available

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.

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: May 31, 2019—Nov 2, 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.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ln	Lindell-Urban land complex	0	885.6	46.5%
McB	Maury-Urban land complex, 2 to 7 percent slopes	0	565.6	29.7%
MsD	Mimosa-Urban land complex, 2 to 15 percent slopes	0	6.0	0.3%
Pt	Pits	0	29.2	1.5%
SvD	Stiversville-Urban land complex, 3 to 25 percent slopes	0	234.9	12.3%
W	Water	0	184.1	9.7%
Totals for Area of Interest			**1,905.4**	**100.0%**

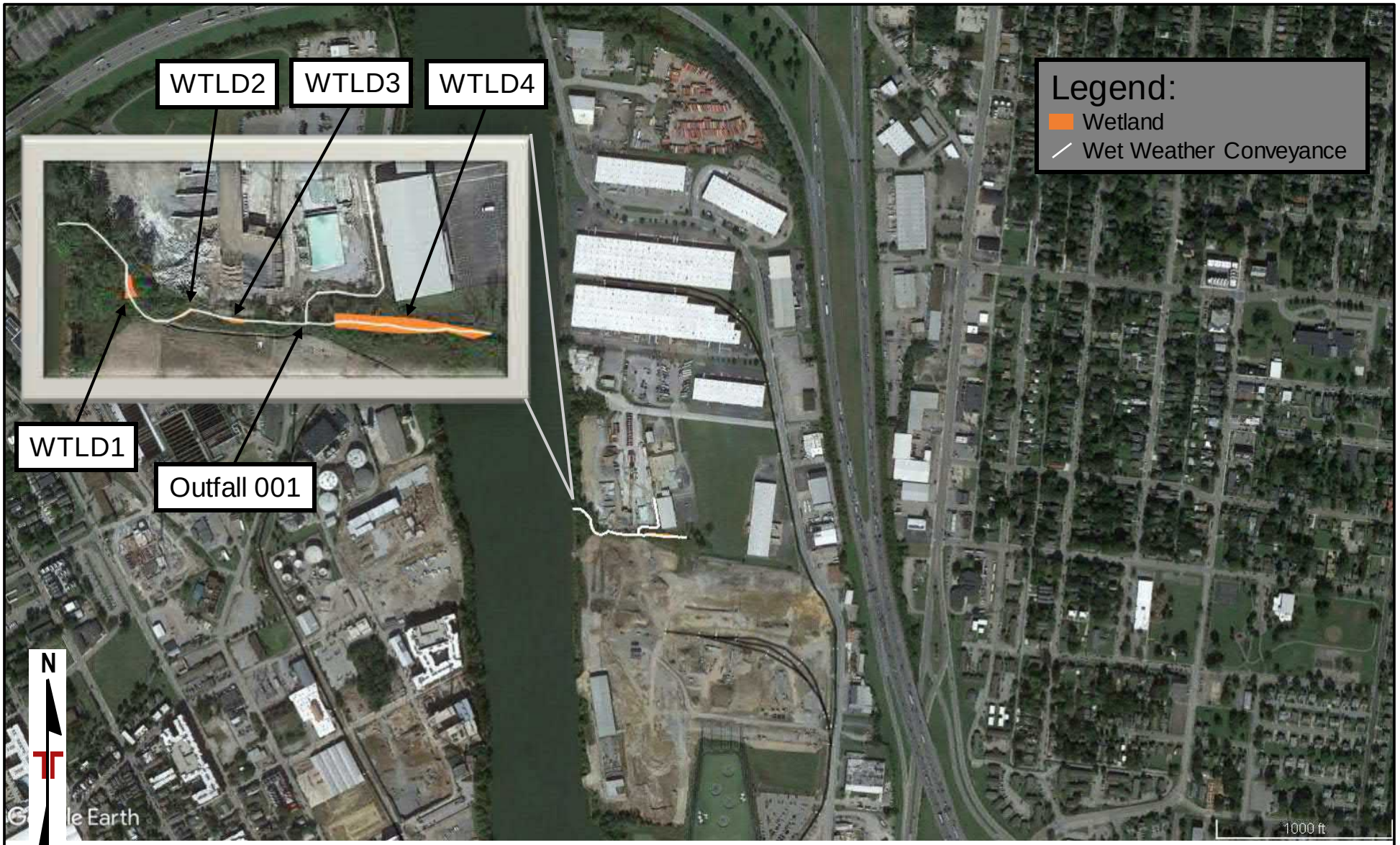

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: AMH	Project No. 18217100
Drawn by: CNH	Scale: Not to Scale
Checked by: DEW	File Name: EX3
Approved by: DEW	Date: March 2022

Terracon
Consulting Engineers & Scientists
5217 Linbar Drive, Suite 309 Nashville, Tennessee 37211
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Preliminary Water Resources Map

Project Bison
Nashville, Davidson County, Tennessee

Exhibit 3

APPENDIX B

Wetland Determination Forms
TN Hydrologic Field Determination Data Forms
Referenced Materials

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Project Bison / Cowan Street City/County: Nashville/Davidson Sampling Date: April 15, 2021

Applicant/Owner: Oracle America, Inc. State: TN Sampling Point: WTLD1

Investigator(s): Caitlan Howard, QHP-IT / Terracon Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): LRRN Lat: 36.183396° Long: -86.780581° Datum: NAD83

Soil Map Unit Name: Lindell-Urban land complex NWI classification: None

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

Are Vegetation N, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation N, Soil N, or Hydrology N 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 X	No_____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes X	No_____	
Wetland Hydrology Present?	Yes X	No_____	

Remarks:
A process discharge (Outfall 001) fromt he concrete batch plant to the northeast of WTLD1 runs through WTLD1 supply hydrology and depositing silt.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] 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)
- [x] 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 X	Depth (inches): N/A
Water Table Present?	Yes _____	No X	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 10"

Wetland Hydrology Present? **Yes** X **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: WTLD1

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	40	Y	FACW
2. Celtis laevigata	30	Y	FACW
3. Salix nigra	10	N	OBL
4.			
5.			
6.			
7.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		

Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Salix nigra	20	Y	OBL
2. Fraxinus pennsylvanica	10	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		

Herb Stratum (Plot size: 5 ft)			
1. Carex amphibola	30	Y	FAC
2. Solidago gigantea	20	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		

Woody Vine Stratum (Plot size: 30 ft)			
1. Toxicodendron radicans	2	Y	FAC
2.			
3.			
4.			
5.			
	2 = Total Cover		
50% of total cover: 1	20% of total cover: 0.4		

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 (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)

Prevalence Index = B/A =

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 or equal to 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** X **No** ___

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

SOIL Sampling Point: _____

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
0-1	10YR6/1	80	10YR5/2	20	-	M	Si	Recently deposited
1-3	10YR2/1	100						Partially decomposed leaves
3-5	10YR4/2	100						Partially decomposed leaves
5-11	10YR3/1	75	2.5YR5/8	25	C	M	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** X **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Project Bison / Cowan Street City/County: Nashville/Davidson Sampling Date: April 15, 2021

Applicant/Owner: Oracle America, Inc. State: TN Sampling Point: WTLD2

Investigator(s): Caitlan Howard, QHP-IT / Terracon Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 0.05

Subregion (LRR or MLRA): LRRN Lat: 36.183317° Long: -86.780339° Datum: NAD83

Soil Map Unit Name: Lindell-Urban land complex NWI classification: None

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

Are Vegetation N, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation N, Soil N, or Hydrology N 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Outfall 001 runs through WTLD2 supplying hydrology and depositing silt.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [x] 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)
- [x] 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 X	No _____	Depth (inches): N/A
Water Table Present?	Yes _____	No X	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0"

Wetland Hydrology Present? **Yes** X **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: WTLD2

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Silix nigra	35	Y	OBL
2. Populus deltoides	10	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	45 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9		

Herb Stratum (Plot size: 5 ft)			
1. Carex amphibola	50	Y	FAC
2. Typha latifolia	35	Y	OBL
3. Solidago gigantea	10	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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)

Prevalence Index = B/A = _____

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 or equal to 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** X **No** _____

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

SOIL Sampling Point: WTLD2

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
0-13"	10YR6/1	95	2.5YR5/8	5	C	PL	Si	Oxidized rhizospheres

[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** X **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Project Bison / Cowan Street City/County: Nashville/Davidson Sampling Date: April 15, 2021

Applicant/Owner: Oracle America, Inc. State: TN Sampling Point: WTLD3

Investigator(s): Caitlan Howard, QHP-IT / Terracon Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 0.05

Subregion (LRR or MLRA): LRRN Lat: 36.183291° Long: -86.780119° Datum: NAD83

Soil Map Unit Name: Lindell-Urban land complex NWI classification: None

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

Are Vegetation N, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation N, Soil N, or Hydrology N 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Outfall 001 runs adjacent to WTLD3 supply hydrology and deposting silt.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [x] 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)
- [x] 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 X	Depth (inches): N/A
Water Table Present?	Yes _____	No X	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 5"

Wetland Hydrology Present? **Yes** X **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: WTLD3

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Salix nigra	10	Y	OBL
2. Populus deltoides	5	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		

Herb Stratum (Plot size: 5 ft)			
1. Typha latifolia	40	Y	OBL
2. Solidago gigantea	20	Y	FACW
3. Sonchus asper	10	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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)

Prevalence Index = B/A = _____

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 or equal to 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** X **No** _____

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

SOIL Sampling Point: WTLD3

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 %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR6/1	95	2.5YR5/8	5	C	PL	Si	Oxidized rhizospheres
3-5	10YR4/3	80	2.5YR5/8	20	-	-	-	Partially decomposed leaves
5-12	10YR3/1	85	2.5YR5/8	15	C	M	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** X **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Project Bison / Cowan Street City/County: Nashville/Davidson Sampling Date: April 15, 2021

Applicant/Owner: Oracle America, Inc. State: TN Sampling Point: WTLD4

Investigator(s): Caitlan Howard, QHP-IT / Terracon Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 0.05

Subregion (LRR or MLRA): LRRN Lat: 36.183235° Long: -86.778762° Datum: NAD83

Soil Map Unit Name: Lindell-Urban land complex NWI classification: None

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

Are Vegetation N, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation N, Soil N, or Hydrology N 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 X	No _____	**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Outfall 001 runs adjacent to WTLD4 supplying hydrology and depositing silt.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [x] 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)
- [x] 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 X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 10"

Wetland Hydrology Present? **Yes** X **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: WTLD4

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	10	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		

Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Salix nigra	30	Y	OBL
2. Populus deltoides	5	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	35 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7		

Herb Stratum (Plot size: 5 ft)			
1. Typha latifolia	80	Y	OBL
2. Solidago gigantea	18	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	98 = Total Cover		
50% of total cover: 49	20% of total cover: 19.6		

Woody Vine Stratum (Plot size: 30 ft)			
1. Vitis rotundifolia	2	Y	FAC
2.			
3.			
4.			
5.			
	2 = Total Cover		
50% of total cover: 1	20% of total cover: 0.4		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (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)

Prevalence Index = B/A =

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 or equal to 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** X **No** ___

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

SOIL Sampling Point: WTLD4

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
0-11"	10YR6/1	90	2.5YR5/8	10	C	PL	Si	Oxidized rhizospheres

[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** X **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Project Bison / Cowan Street City/County: Nashville/Davidson Sampling Date: April 15, 2021

Applicant/Owner: Oracle America, Inc. State: TN Sampling Point: UPL

Investigator(s): Caitlan Howard, QHP-IT / Terracon Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0.2

Subregion (LRR or MLRA): LRRN Lat: 36.183238° Long: -86.779819° Datum: NAD83

Soil Map Unit Name: Lindell-Urban land complex NWI classification: None

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

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N, Soil N, or Hydrology N 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 X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Representative upland data point for WTLD1-WTLD4.

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 X	Depth (inches): N/A
Water Table Present?	Yes _____	No X	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): N/A

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

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: UPL

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Populus deltoides	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Herb Stratum (Plot size: 5 ft)			
1. Lonicera japonica	95	Y	FACU
2. Rubus allegheniensis	2	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	97 = Total Cover		
50% of total cover: 48.5	20% of total cover: 19.4		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	5	x 3 = 15
FACU species	97	x 4 = 388
UPL species	0	x 5 = 0
Column Totals:	102 (A)	403 (B)

Prevalence Index = B/A = 3.95

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 or equal to 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** X

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

SOIL Sampling Point: UPL

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
0-20"	10YR4/3	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** X

Remarks:

Tennessee Department of Environment and Conservation - Division of Water Resources
312 Rosa L. Parks Ave. 11th Floor. Nashville, TN 37243

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Resources, Version 1.5 (Fillable Form)

Named Waterbody: Outfall 001 (Permit No.: TNG110099)	Date/Time: 4/15/21
Assessors/Affiliation: Caitlan Howard, QHP-IT / Terracon	Project ID : Outfall 001
Site Name/Description: Project Bison	
Site Location: Cowan Street, Nashville, Tennessee	
HUC (12 digit): 051302020305 (Cumberland River - Browns Creek)	Latitude: See notes
Previous Rainfall (7-days) : 0.67"	Longitude: See notes
Precipitation this Season vs. Normal : average Source of recent & seasonal precip. data : NOAA	
Watershed Size : 6.7 acres	County: Davidson
Soil Type(s) / Geology : Lindell-Urban land complex	Source: NRCS
Surrounding Land Use : Industrial, commercial, interstate	
Degree of historical alteration to natural channel morphology & hydrology (select one & describe fully in Notes) : Severe	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☐	WWC
2. Defined bed and bank absent, vegetation composed of upland and FACU species	✔	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions N/A	✔	WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✔	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✔	Stream
6. Presence of fish (except *Gambusia*)	✔	Stream
7. Presence of naturally occurring ground water table connection	✔	Stream
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	✔	Stream
9. Evidence watercourse has been used as a supply of drinking water	✔	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-DWR Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WET WEATHER CONVEYANCE

Secondary Indicator Score (if applicable) = 0.00

Justification / Notes :

Start: 36.183861°, -86.779325° / Stop: 36.183763°, -86.780982°

Severe alteration: Area brought to existing grade in 1980s. This feature is a process discharge that handles truck wash-down water and stormwater from the IMI concrete batch plant. 1.) The feature is a permitted process discharge. 4.) No daily flow records available for the feature. 8.) Only 4 days since the last rain event.

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 0.00)	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0	1	2	3	0
2. Sinuous channel	0	1	2	3	0
3. In-channel structure: riffle-pool sequences	0	1	2	3	0
4. Sorting of soil textures or other substrate	0	1	2	3	0
5. Active/relic floodplain	0	0.5	1	1.5	0
6. Depositional bars or benches	0	1	2	3	0
7. Braided channel	0	1	2	3	0
8. Recent alluvial deposits	0	0.5	1	1.5	0
9. Natural levees	0	1	2	3	0
10. Headcuts	0	1	2	3	0
11. Grade controls	0	0.5	1	1.5	0
12. Natural valley or drainageway	0	0.5	1	1.5	0
13. At least second order channel on existing USGS or NRCS map	0	1	2	3	0

B. Hydrology (Subtotal = 0.00)	Absent	Weak	Moderate	Strong	
14. Subsurface flow/discharge into channel	0	1	2	3	0
15. Water in channel and >48 hours since sig. rain	0	1	2	3	NA
16. Leaf litter in channel	1.5	1	0.5	0	NA
17. Sediment on plants or on debris	0	0.5	1	1.5	0
18. Organic debris lines or piles (wrack lines)	0	0.5	1	1.5	0
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5		0

C. Biology (Subtotal = 0.00)	Absent	Weak	Moderate	Strong	
20. Fibrous roots in channel bed [1]	3	2	1	0	NA
21. Rooted plants in the thalweg [1]	3	2	1	0	NA
22. Crayfish in stream (exclude in floodplain)	0	1	2	3	0
23. Bivalves/mussels	0	1	2	3	0
24. Amphibians	0	0.5	1	1.5	0
25. Macrobenthos (record type & abundance)	0	1	2	3	0
26. Filamentous algae; periphyton	0	1	2	3	0
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5	0
28. Wetland plants in channel bed [2]	0	0.5	1	1.5	0

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

Total Points = 0.00

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

Notes :

Outfall 001 meets Primary Indicator #1 as it is a permitted process discharge. No Secondary Indicator score is needed.

EXPLORATION RESULTS

Contents:

Boring Logs (GB-1 through GB-10)

Note: All attachments are one page unless noted above.

BORING LOG NO. GB-1

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1858° Longitude: -86.7801°

MODEL LAYER	GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		3.0	**CONCRETE**				4-5-9 N=14		
1		8.5	**FILL - LEAN CLAY**, with concrete fragments, brown	5			4-5-9 N=14		
							50/1"		
		10.5	**FILL - LEAN CLAY**, with crushed limestone, brown	10			6-50/3"		
			Auger Refusal at 10.5 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Two offset borings drilled:
B-1A refused at 4.8'
B-1B refused at 5.7'

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-11-2020
Boring Completed: 12-11-2020
Drill Rig: CME 55 Truck Mount
Driller: Master Drillers, Inc.
Project No.: 18195177

BORING LOG NO. GB-2

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1849° Longitude: -86.7806°

MODEL LAYER	GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
1			**FILL - LEAN CLAY**, with few silt, sand and gravel, possible cinders, dark gray				2-50/3"		
				5			4-6-8 N=14		
							2-5-6 N=11		
				10			6-9-13 N=22		
		13.5							
2			**LEAN CLAY (CL)**, trace silt, dark brown, stiff to very stiff	15			2-4-6 N=10		
				20			3-4-8 N=12		
				25	▽		3-7-9 N=16		
		28.5							
3			**CLAYEY SAND (SC)**, dark brown, loose	30			2-1-3 N=4		
				35			1-2-3 N=5		
				40			1-2-2 N=4		
		43.5							
2			**FAT CLAY WITH SAND (CH)**, dark gray, medium stiff	45			1-2-4 N=6		
		48.4							
			Auger Refusal at 48.4 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-10-2020
Boring Completed: 12-10-2020
Drill Rig: CME 55 Truck Mount
Driller: Master Drillers, Inc.
Project No.: 18195177

BORING LOG NO. GB-3

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1836° Longitude: -86.7802°

MODEL LAYER	GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		2.5	**CONCRETE**						
1		6.0	**FILL - LEAN CLAY**, with some concrete gravel and brick fragments, tan brown to dark brown	5			15-8-10 N=18		
		7.5	**FILL - NO RECOVERY**				50/1"		
		18.5	**FILL - FAT CLAY**, with some gravel and asphalt fragments, dark gray	10	▽		3-5-8 N=13		
				15			7-14-21 N=35		
		20.0	**FILL - NO RECOVERY**	20			6-4-9 N=13		
		33.5	**FILL - FAT CLAY**, with some gravel and asphalt fragments, dark gray creosote odor and dimensional wood fragments	25			5-8-5 N=13		
				30			20-32-13 N=45		
			Boring Terminated at 33.5 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Driller noted methane gas in boring at 33.5 feet; boring was terminated due to vapors not dissipating from boring after 1 hour

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-10-2020	Boring Completed: 12-10-2020
Drill Rig: CME 55 Truck Mount	Driller: Master Drillers, Inc.
Project No.: 18195177	

BORING LOG NO. GB-4

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1826° Longitude: -86.7788°

MODEL LAYER	GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
1			**FILL - LEAN CLAY**, with limestone fragments, brown				50/3"		
		3.5	**FILL - LEAN CLAY**, with limestone fragments, gray	5			50/3"		
		6.0	**FILL - NO RECOVERY**				2-3-3 N=6		
				10			1-2-2 N=4		
		13.5	**FILL - LEAN CLAY**, with few weathered limestone fragments, dark gray	15			50/1"		
		21.3		20	▽		50/2"		
			Auger Refusal at 21.3 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:
Grab sample obtained from spoils at bottom.

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-17-2020
Boring Completed: 12-17-2020
Drill Rig: CME 55 Truck Mount
Driller: Master Drillers, Inc.
Project No.: 18195177

BORING LOG NO. GB-5

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1858° Longitude: -86.7775°

MODEL LAYER	DEPTH		FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
1	0	**FILL - LEAN CLAY**, with limestone fragments, dark gray	6-50/2"	8.0	
			9-50/2"	12.8	
	5		7-50/2"	17.0	
	10.0		3-6-11 N=17	22.3	
2	10	**LEAN CLAY (CL)**, with limestone fragments, gray, very stiff			
	13.5	**LEAN CLAY (CL)**, brown, medium stiff	2-3-3 N=6	21.4	
	15				
	18.5	**LEAN CLAY (CL)**, with black mineral staining, tan brown, stiff	4-4-6 N=10	19.2	
	20				
			2-3-5 N=8	21.3	
	25				
	28.5	**LEAN CLAY (CL)**, with black mineral staining and a few silt pockets, tan brown, stiff	1-3-4 N=7	20.0	30-16-14
	30				
	32.7	***Auger Refusal at 32.7 Feet***			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-11-2020
Boring Completed: 12-11-2020
Drill Rig: CME 55 Truck Mount
Driller: Master Drillers, Inc.
Project No.: 18195177

BORING LOG NO. GB-6

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1845° Longitude: -86.7773°

MODEL LAYER	GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		0.4	**5" TOPSOIL**						
			FAT CLAY (CH), with trace organics, dark gray, medium stiff				2-2-3 N=5		
		3.5							
			LEAN CLAY (CL), with trace organics, brown, medium stiff	5			2-3-4 N=7		
		6.0							
			LEAN CLAY (CL), with trace organics, with some black mineral staining, trace silt, brown, medium stiff				3-3-4 N=7		
				10			2-4-4 N=8		
				15			2-3-5 N=8		
		18.5							
2			**LEAN CLAY (CL)**, with some organics, dark gray, medium stiff	20			1-3-3 N=6		
				25			2-3-5 N=8		
		28.5							
			LEAN CLAY (CL), with trace organics, with some black mineral staining, brown and tan, medium stiff	30			1-3-4 N=7		
				35			2-2-3 N=5		
		37.0			▽				
3			**CLAYEY SAND (SC)**, with few subangular gravel, brown, dense	40			2-3-19 N=22		
		43.4							
			Auger Refusal at 43.4 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-14-2020
Boring Completed: 12-14-2020
Drill Rig: CME 55 Truck Mount
Driller: Master Drillers, Inc.
Project No.: 18195177

BORING LOG NO. GB-7

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1839° Longitude: -86.7784°

MODEL LAYER	GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		0.4	**5" TOPSOIL**						
2			**LEAN CLAY (CL)**, with few roots and silt pockets, brown, stiff			X	2-4-5 N=9	17.4	
		3.5							
			LEAN CLAY (CL), with trace black mineral staining, brown, stiff	5		X	2-4-7 N=11	20.1	
						X	3-3-6 N=9	23.6	
				10		X	3-5-7 N=12	16.3	
			with trace brick fragments 13.5'-15', Noted brick fragments unable to determine if fill or possible drag down from the ground surface	15		X	2-5-8 N=13	25.3	
				20		X	2-4-6 N=10	18.3	
				25		X	3-4-5 N=9	18.3	
				30		X	2-3-6 N=9	19.1	
				35	▽	X	2-2-4 N=6	18.9	
		38.5							
3			**CLAYEY SAND (SC)**, brown, loose	40		X	2-2-2 N=4	28.4	NP
			with few subangular gravel fragments from 43.5'-45'	45		X	2-2-3 N=5	20.6	
		48.7							
			Auger Refusal at 48.7 Feet				50/2"		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-14-2020
Boring Completed: 12-14-2020
Drill Rig: CME 55 Truck Mount
Driller: Master Drillers, Inc.
Project No.: 18195177

BORING LOG NO. GB-8

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1832° Longitude: -86.7777°

MODEL LAYER	GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
1			**POSSIBLE FILL, LEAN CLAY**, with trace roots, brown				2-4-5 N=9	22.2	
			with few sand pockets from 3.5'-5'	5			3-5-8 N=13	13.3	
							4-7-7 N=14	22.4	
				10			3-7-9 N=16	21.7	
				15			3-9-9 N=18	19.5	
			with some silt seams	20			4-9-10 N=19	16.0	
		23.5							
			POSSIBLE FILL, SILTY CLAY, with trace sand pockets, brown	25	▽		3-10-10 N=20	16.7	
		28.5							
3			**CLAYEY SAND (SC)**, brown, loose	30			3-3-6 N=9	20.4	
		32.7							
			Auger Refusal at 32.7 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-17-2020
Boring Completed: 12-17-2020
Drill Rig: CME 55 Truck Mount
Driller: Master Drillers, Inc.
Project No.: 18195177

BORING LOG NO. GB-9

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1824° Longitude: -86.7767°

MODEL LAYER	GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		0.3	**3" ASPHALT**						
1		3.5	**FILL - LEAN CLAY**, with trace gravel and sand, brown				2-3-4 N=7		
		8.5	**FILL - LEAN CLAY**, brown	5			2-3-5 N=8		
							2-5-4 N=9		
		13.5	**FILL - LEAN CLAY**, with trace gravel and sand, with trace silt, brown and gray	10			2-3-3 N=6		
		18.5	**FILL - LEAN CLAY**, with glass fragments and possible cinders, dark brown and gray	15			3-4-3 N=7		
		28.5	**FILL - LEAN CLAY**, tan and brown	20			3-7-12 N=19		
				25	▽		3-5-6 N=11		
3		39.7	**CLAYEY SAND (SC)**, with trace gravel, brown, loose	30			3-5-4 N=9		
				35			3-3-4 N=7		
							2-2-50/3"		
			Auger Refusal at 39.7 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-15-2020
Boring Completed: 12-15-2020
Drill Rig: CME 55 Truck Mount
Driller: Master Drillers, Inc.
Project No.: 18195177

BORING LOG NO. GB-10

PROJECT: Project Bison Preliminary Geo

CLIENT: STG Design Group
Nashville, TN

SITE: Cowan Court and Cowan Street
Nashville, TN

LOCATION See Exploration Plan

Latitude: 36.1812° Longitude: -86.7773°

MODEL LAYER	GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
			LEAN CLAY (CL), with roots, brown				50/4"	10.7	
		3.5							
			LEAN CLAY (CL), brown, stiff	5			2-4-7 N=11	21.3	
							3-4-6 N=10	22.7	33-20-13
			medium stiff	10			2-3-4 N=7	18.5	
2			with iron staining from 13.5'-15'	15			2-3-3 N=6	20.1	
			with trace silt pockets, stiff	20			2-5-6 N=11	18.4	
				25	▽		3-6-6 N=12	19.4	
		28.5							
3			**CLAYEY SAND (SC)**, with trace gravel and black mineral staining, medium brown, medium dense	30			3-9-16 N=25	15.9	
		32.9							
			Auger Refusal at 32.9 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow stem auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Terracon
5217 Linbar Dr, Ste 309
Nashville, TN

Boring Started: 12-15-2020
Boring Completed: 12-15-2020
Drill Rig: CME 55 Truck Mount
Driller: Master Drillers, Inc.
Project No.: 18195177

APPENDIX C

Water Resource Photographic Log

Photographic Log
of
WTLD1

Photo 1 View of WTLD1 looking north/northeast from approximately 36.183389°, -86.780537°.

Photo 2 View of WTLD1 looking southeast from approximately 36.183389°, -86.780537°.

Photo 3 View of herb stratrum in WTLD1 at approximately 36.183396°, -86.780581°.

Photo 4 View of soils from WTLD1 soil pit at approximately 36.183396°, -86.780581°.

Photographic Log
of
WTLD2

Photo 1 View of WTLD2 looking east/northeast from approximately 36.183316°, -86.780356°.

Photo 2 View of WTLD2 looking west/southwest from approximately 36.183338°, -86.780226°.

Photo 3 View of soils from WTLD2 soil pit at approximately 36.183317°, -86.780339°.

Photographic Log
of
WTLD3

Photo 1 View of WTLD3 looking east from approximately 36.183294°, -86.780110°.

Photo 2 View of soils from WTLD3 soil pit at approximately 36.183291°, -86.780119°.

Photographic Log
of
WTLD4

Photo 1 View of WTLD4 looking east from approximately 36.183262°, -86.779649°.

Photo 2 View of WTLD4 looking west from approximately 36.183250°, -86.779341°.

Photo 3 View of WTLD4 looking east from approximately 36.183250°, -86.779341°.

Photo 4 View of WTLD4 looking eaest from approximately 36.183230°, -86.779037°.

Photo 5 View of WTLD4 looking west from approximately 36.183221°, -86.778502°.

Photo 6 View of soils from WTLD4 soil pit at approximately 36.183235°, -86.778762°.

Photographic Log
of
Outfall 001

Photo 1 Downstream view of the end of Outfall 001 at approximately 36.183754°, -86.780800°.

Photo 2 Upstream view of Outfall 001 at approximately 36.183754°, -86.780800°.

Photo 3 Upstream view of Outfall 001 from approximately 36.183505°, -86.780537°.

Photo 4 Upstream view of Outfall 001 from approximately 36.183378°, -86.780526°.

Photo 5 Downstream view of Outfall 001 from approximately 36.183288°, -86.780095°.

Photo 6 Downstream view of Outfall 001 from approximately 36.183274°, -86.779855°

Photo 7 Upstream view of Outfall 001 from approximately 36.183274°, -86.779855°

Photo 8 View of where Outfall 001 backflows into WTLD4 at approximately 36.183262°, -86.779649°.

Photo 9 Upstream view of Outfall 001 from approximately 36.183308°, -86.779655°.

Photo 10 Upstream view of Outfall 001 from approximately 36.183424°, -86.779614°.

Photo 11 Downstream view of Outfall 001 from approximately 36.183571°, -86.779298°.

Photo 12 Upstream view of Outfall 001 from approximately 36.183571°, -86.779298°.