



**HYDROLOGIC FEATURES REPORT
and
CORRECTIVE ACTION PLAN
For
Travel America Truck Stop Project
Putnam County, Tennessee**



2 June 2022

Prepared For:

*Saffron Builders
900 South Jefferson Avenue
Cookeville, Tennessee 38501*

Prepared By:

*MRW Environmental, LLC
32 North Main Street
Sparta, Tennessee 38583*

TABLE OF CONTENTS

1	INTRODUCTION	1
2	LOCATION	1
3	METHODS	2
3.1	Literature Review	2
3.1.1	Aquatic Features	2
4	ON-SITE DATA RECORDING	3
4.1	Aquatic Features	3
4.1.1	Wetlands	3
4.1.2	Deepwater Aquatic Habitat	4
4.1.3	Drainage Features, Streams, and/or Wet Weather Conveyances	4
5	RESULTS	5
5.1	Aquatic Features	5
5.1.1	Wetlands	6
5.1.2	Deepwater Aquatic Habitat	7
5.1.3	Streams, WWC, and Upland Drainage Features	7
6	CORRECTIVE ACTION PLAN	7
7	LITERATURE CITED	9

Figures and Tables

Figure 1.	Vicinity Map outlining the location of the Subject Property	1
Figure 2.	Wetlands indicated by NWI adjacent to the Subject Property	2
Figure 3.	Soils found within and adjacent to the Subject Property	3
Figure 4.	Hydrologic Features (i.e., wetland area) identified within the Subject Property	6
Figure 5.	Approximate fill area shown in green, that was placed within the wetland area without proper approvals..	7

Table 1.	Wetland indicator definitions according to Reed (1988) used to determine the status of plant species documented at the site.	4
Table 2.	“Normal Weather Conditions” Chart	5
Table 3.	Characteristics of Identified Wetlands	6

Property Owner/Client:

Mr. Chris Shah
Saffron Builders
900 South Jefferson Avenue
Cookeville, Tennessee 38501

**Qualified Hydrologic
Professional:**

Matthew Granstaff
TN QHP – 1105-TN11
MRW Environmental LLC.
32 North Main Street
Sparta, Tennessee 38583

This report is being submitted to the Tennessee Department of Environment and Conservation by a Qualified Hydrologic Professional (TN QHP 1105-TN11). All submitted information is true, accurate, and complete.

A handwritten signature in black ink, appearing to read 'M. Granstaff', is positioned above a horizontal blue line.

Matthew Granstaff
TN QHP 1105-TN11 (expiration date 12/31/2023)

1 INTRODUCTION

During May 2022, MRW Environmental LLC (“MRW”) was contacted by Mr. Ron Gardner with Saffron Builders, (“Client”), to assess a potential wetland impact within a portion (0.2+/- acres) (“Subject Property”) within a seven (7+/-) acre parcel of property. The following report identifies and assesses only aquatic features such as streams, wetlands, and WWCs, and provides a Corrective Action Plan (“CAP”) (if required) for features identified by MRW within the Subject Property. The primary objective of this inventory was to identify and delineate Waters within the Subject Property subject to jurisdiction under Sections 404 and/or 401 of the Clean Water Act, and any Tennessee legislation (e.g., Tennessee Water Control Act of 1977) that prohibits the destruction or degradation of Waters of the U.S. (“WOUS”) and/or Waters of the State (“WOS”). A secondary objective was to provide a CAP for any potential unauthorized impacts to WOUS and/or WOS. The term “Waters” as related to this document refers to drainage features, streams, WWC, and/or wetlands.

2 LOCATION

The Subject Property is located adjacent to Salem Road and Southside Drive in Cookeville, Putnam County, Tennessee (Figure 1). Approximate coordinates of the property are 36.130291° N / 85.477535° W.

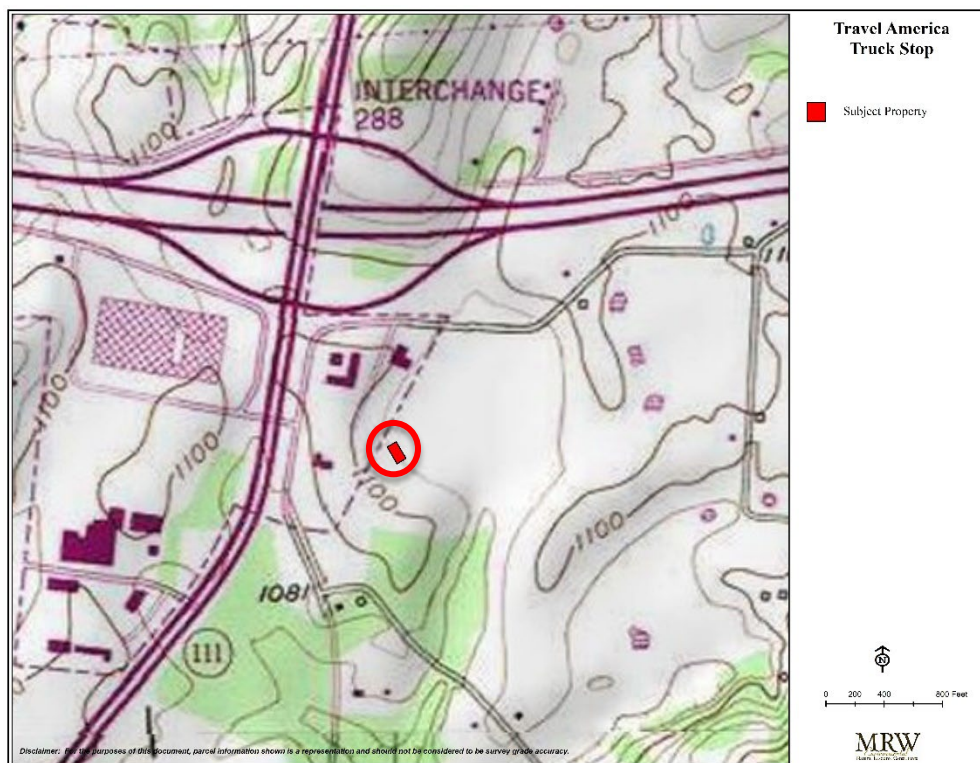


Figure 1. Vicinity Map outlining the location of the Subject Property.

3 METHODS

3.1 Literature Review

3.1.1 Aquatic Features

Prior to conducting the field investigation, data that might provide information regarding potential jurisdictional waters on the property were examined. The principal databases included National Wetland Inventory (“NWI”) data, National Hydrography Dataset (“NHD”), and local soil surveys for the area. No streams and/or wetland area were present within the Subject Property based on the NHD and NWI dataset. However, multiple wetland areas were identified adjacent to the Subject Property based on the NWI dataset (Figure 2).

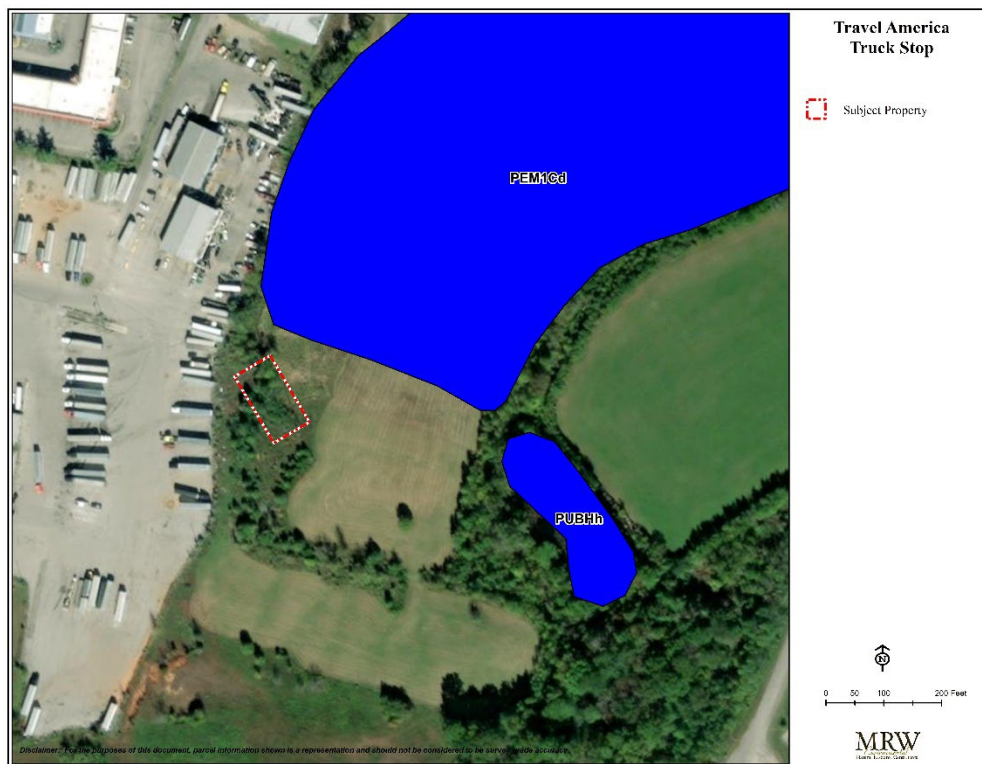


Figure 2. Wetlands indicated by NWI adjacent to the Subject Property.

Soils data for the Subject Property indicated multiple soil series present within and adjacent to the Subject Property. Purdy Silt Loam, which is located directly adjacent to the Subject Property, is considered a hydric soil within Putnam County, Tennessee (Figure 3). Following this “office” investigation, the Subject Property was assessed by systematically transecting it on foot to determine if jurisdictional waters were present.

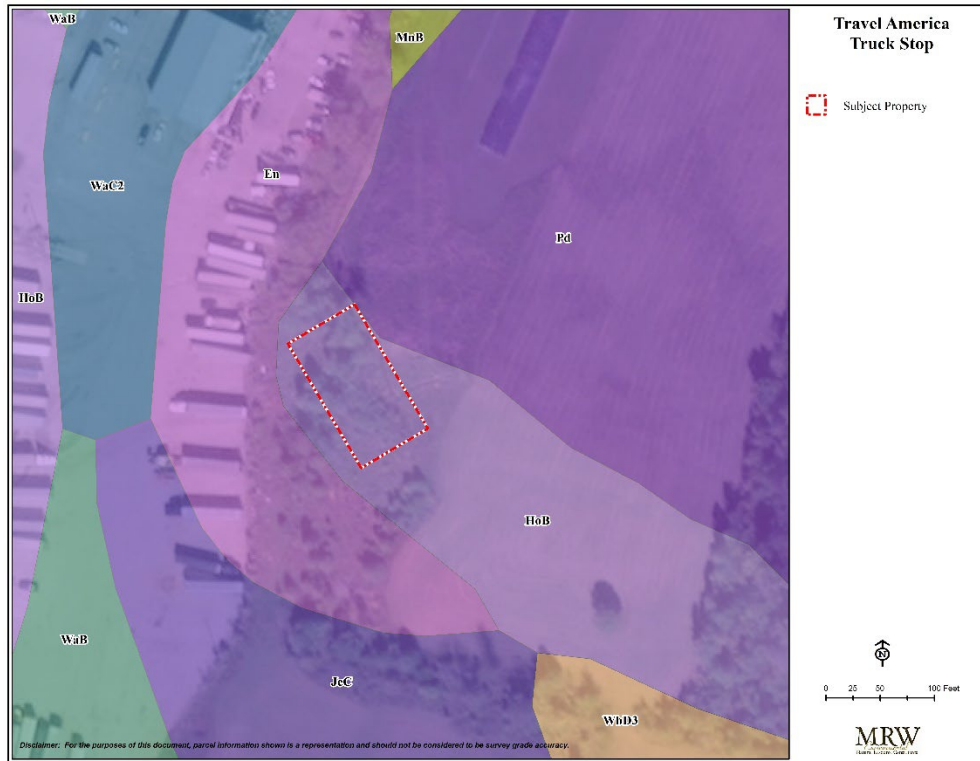


Figure 3. Soils found within and adjacent to the Subject Property.

4 ON-SITE DATA RECORDING

4.1 Aquatic Features

4.1.1 Wetlands

Wetlands are typically defined as “areas *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.*” (33 CFR328.3(b);1984.).

Whenever potential wetland areas were located, procedures described in the U.S. Army Corps of Engineers (“Corps”) Wetland Delineation Manual (“WDM”) (Corps 1987) and Regional Supplement to the Corps WDM: Eastern Mountain and Piedmont (“EMP”) (Corps 2012), were employed to: (1) determine if the area was a wetland, and if so, (2) delineate the boundary of the wetland. This process involved documenting the dominant plant species and carefully examining potential indicators of soils and hydrology. The dominant plants (i.e., tree, shrub, ground, and woody vine) were identified to species if possible, using Radford et al. (1968) and Godfrey and Wooten (1979) and their indicator status (Obligate, Facultative Wetland, etc.) (Table 1) was determined from Lichvar (2016). If more than 50% of the dominant species were Facultative, Facultative Wetland, or Obligate, the site was considered dominated by hydrophytic vegetation.

Table 1. Wetland indicator definitions according to Reed (1988) used to determine the status of plant species documented at the site.

Category	Abbreviation	Definition
Obligate Wetland	OBL	Occur almost always (estimated probability >99%) in wetlands under natural conditions
Facultative Wetland	FACW	Usually occur in wetlands (estimated probability 67-99%), but occasionally found in non-wetlands
Facultative	FAC	Equally likely to occur in wetlands or non-wetlands (estimated probability 33-66%)
Facultative Upland	FACU	Usually occur in non-wetlands (estimated probability 67-99%), but occasionally found in wetlands
Upland	UPL	Occur almost always (estimated probability >99%) in non-wetlands under natural conditions

Soils were exposed by extracting samples with a soil probe or digging soil pits to a depth of approximately 12-18 inches. Color of the soil matrix (the primary color) and of the mottles (color within the matrix, if present) were described using standard Munsell color notation. Other indicators of hydric soil also were noted if present (U.S. Dept. of Agriculture 2010).

A determination of whether the site had a hydroperiod prolonged enough to be considered “wetland hydrology” was made based on field indicators described in the EMP supplement. Additional information regarding each of the indicators/parameters of wetland hydrology can be found in the WDM and EMP supplement.

Once an area was determined to be a wetland, its boundaries were delineated based on the presence or absence of each of the wetland parameters. A flag or other marker was placed in the ground to indicate the point at which one or more of the parameters ceased to be present, thus denoting the edge of the wetland. Each wetland then was assigned to the most detailed Cowardin and Hydrogeomorphic class (“HGM”) possible.

4.1.2 Deepwater Aquatic Habitat

Deepwater Aquatic Habitat is defined in the WDM as any open water area that has a mean annual water depth >6.6ft, lacks soil, and is either unvegetated or supports only floating or submersed macrophytes.

4.1.3 Drainage Features, Streams, and/or Wet Weather Conveyances

All other aquatic features, (other than wetlands), were documented utilizing Tennessee Department of Environment and Conservation’s (“TDEC”) Division of Water Pollution Control *Guidance for Making Hydrologic Determinations, Version 1.5* (“Guidance”) (TDEC 2020). Prior to conducting a field evaluation, MRW reviewed the recent precipitation patterns for the local area, and the long-term seasonal precipitation trends. Local weather conditions over the previous one week, one

month, and three-month intervals, prior to the field investigation date were assessed. This information was utilized to determine if “Normal Weather Conditions” existed in the area. In addition, MRW considered other available information such as historic land-use, regional geology and soil types, or previous hydrologic determinations near the site. All hydrologic determinations were made by a Qualified Hydrologic Professional (1105-TN11).

5 RESULTS

5.1 Aquatic Features

According to local rain data, Climatological Data for Cookeville, Tennessee (Station ID: USC00402009 (GHCN)), 0.65 inches of precipitation had fallen within 48 hours prior to the assessment completed on May 24, 2022. No additional precipitation occurred seven days prior to the assessment completed on May 24, 2022. In order to calculate if “normal” weather conditions were present, including the standard deviation, data from the McMinnville weather station were utilized since data for Cookeville were not available. Following the review of the weather data, MRW determined that the weather conditions were “average” based on the Hydrologic Determination Guidance (Table 2).

Table 2. “Normal Weather Conditions” Chart

	Long-term rainfall records					Actual Rainfall	Condition	Condition value	Month weight value	Product of previous two columns
	Month	Standard Deviation	Minus One Standard Deviation	Normal (Mean inches)	Plus One Standard Deviation					
1st prior Month	April	2.07	3.47	5.54	7.61	5.45	Average	2	X 3	6
2nd prior Month	March	2.70	2.48	5.18	7.88	3.33	Average	2	X 2	4
3rd prior Month	February	1.89	3.87	5.76	7.65	8.87	Elevated	3	X 1	3
									Sum =	13

Based on the on-site review, one wetland area was identified within the Subject Property (Figure 4). However, note that that a drainage feature is located outside of the Subject Property and the identified wetland area continues across the larger parcel and adjoining lands. The drainage feature appears to be a historic diversion channel.

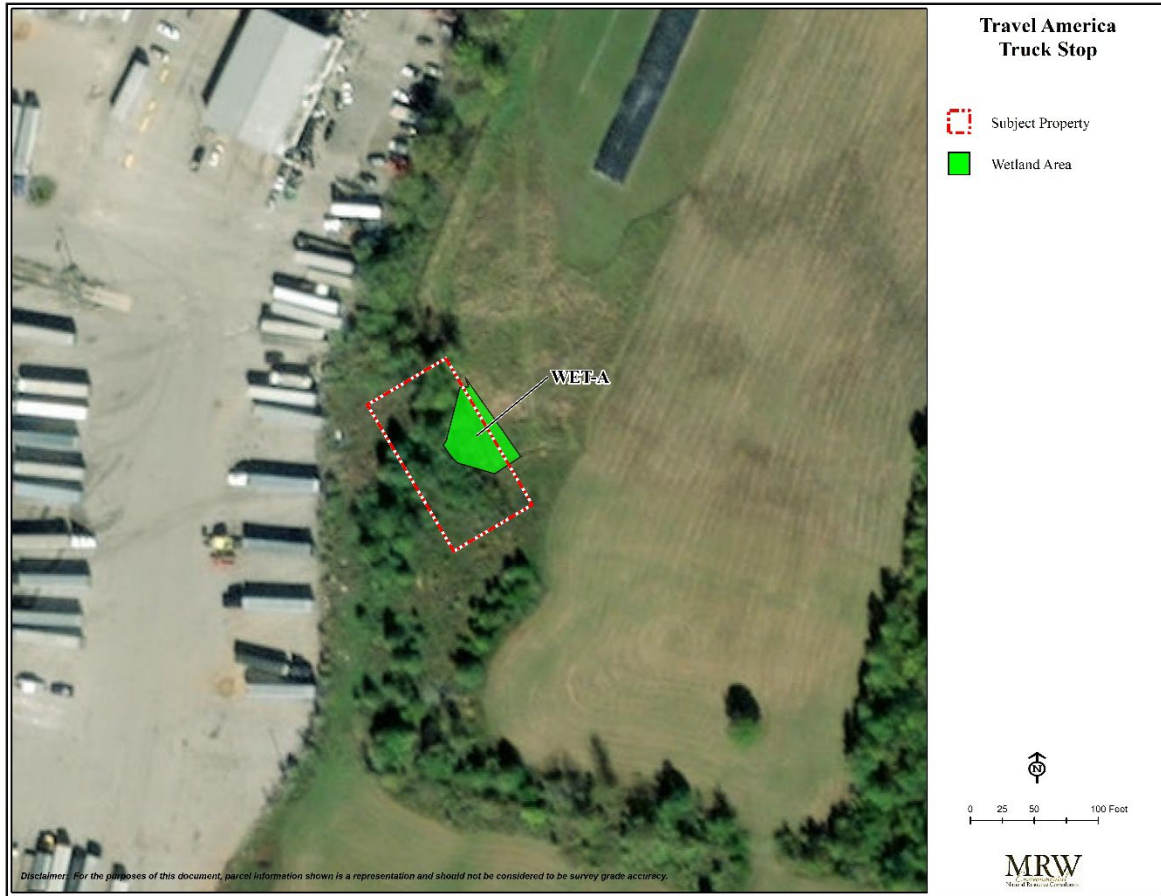


Figure 4. Hydrologic Features (i.e., wetland area) identified within the Subject Property.

5.1.1 Wetlands

Table 3 below depicts the acreage, HGM classification, and Cowardin classification of the wetlands identified within the Subject Property. Sample locations, wetland delineation forms, and pictures are included in Appendix A.

Table 3. Characteristics of Identified Wetlands.

ID	Acreage	Cowardin Classification	HGM Classification	Latitude	Longitude
WET-A	0.04	PEM1A	Slope	36.130331	-85.477461

Wetland-A

Wetland-A (“WET-A”), approximately 0.04 acres in size, is a palustrine emergent, slope wetland. Note WET-A continues on to the adjoining lands. Hydrology indicators included; saturation and water-stained leaves. Hydrophytic vegetation dominated the wetland areas and included species such as; green bulrush (*Scirpus atrovirens*), fox sedge (*Carex vulpinoidea*), and shallow sedge (*Carex lurida*).

5.1.2 Deepwater Aquatic Habitat

No deepwater aquatic habitat was identified within the Subject Property

5.1.3 Streams, WWC, and Upland Drainage Features

No streams, WWC, and/or upland drainage features were identified within the Subject Property. However, as noted above, one drainage feature is present outside of the Subject Property. This feature appears to be a historic drain used to divert water around the airfield. A hydrologic determination was not completed for this feature since it is outside of the Subject Property.

6 CORRECTIVE ACTION PLAN

Based on the MRW assessment of the Subject Property, approximately 0.02 acres of fill (i.e., tree tops and loose soil) have been placed within the wetland areas without proper approvals from the appropriate agencies. In order to determine the extent of the wetland impact, MRW excavated through the fill material until the original surface was identified. A soil sample was then taken to determine if wetland hydrology and hydric soils were present.



Figure 5. Approximate fill area shown in green, that was placed within the wetland area without proper approvals.

Regarding the unauthorized wetland impact to include buffer areas and the existing slopes found surrounding the wetland area, MRW discussed a path forward with both the City of Cookeville and the TDEC, Cookeville Environmental Field Office.

Following these conversations, MRW, on behalf of our client, is proposing the following:

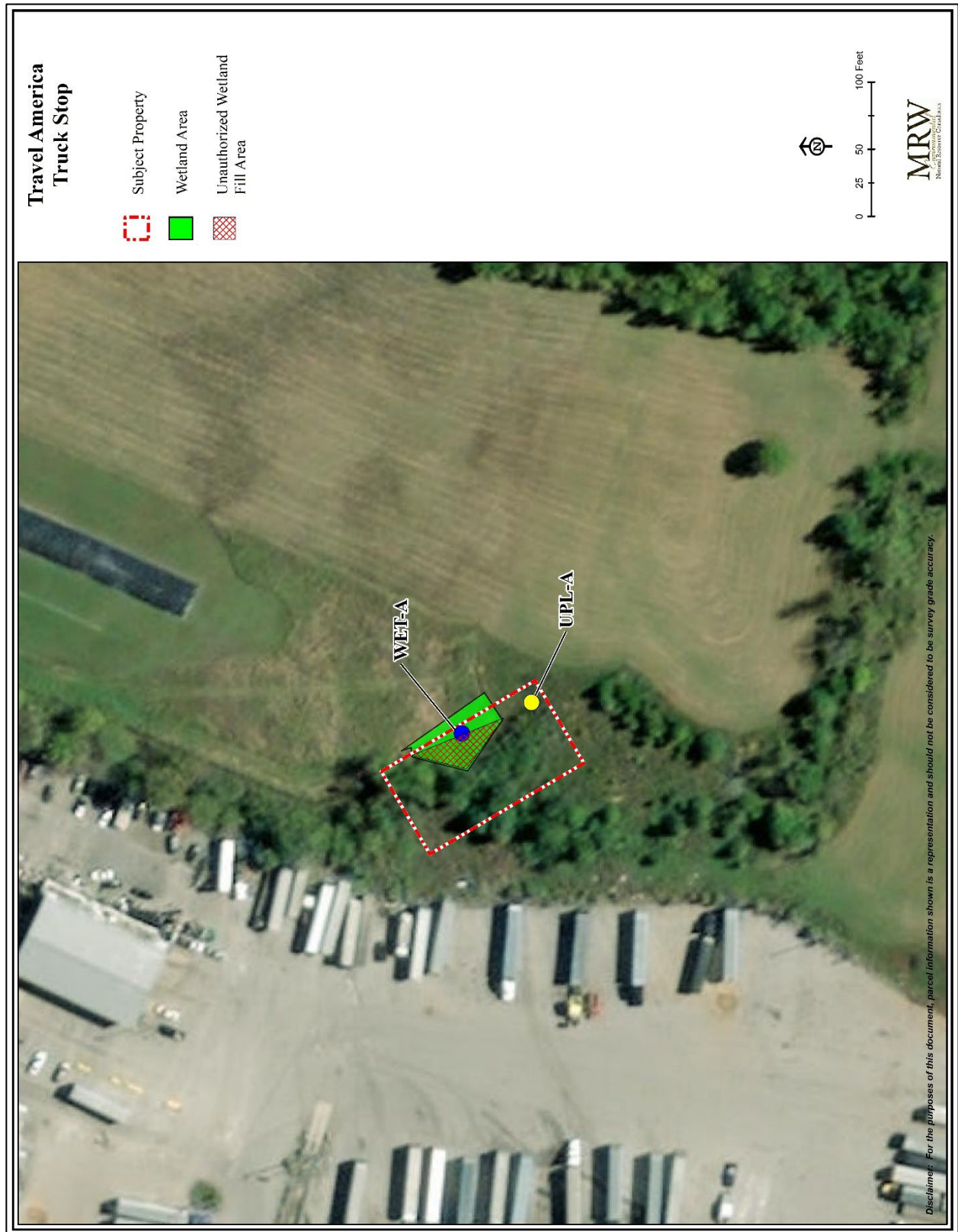
1. The fill and remainder of the tree tops are to be removed back to the original surface.
2. Unauthorized fill area would then be seeded with an annual rye or wheat at a rate of 50 pounds per acre and then strawed. This would allow for the area to have a temporary coverage allowing for the natural seedbank to reestablish within this area.
3. Banks surrounding the wetland area would be sloped to an approximate 2:1 ratio if not already. Due to the potential for further disturbance, geotextile would then be placed followed by the placement of riprap. This would be an equivalent measure allowing for the buffer width to be reduced and also prevent any future erosion and/or sedimentation from entering WOS.
 - a. The riprap proposed to be utilized would be a Class A-1 from the Tennessee Department of Transportation's Standard Specifications for Road and Bridge Construction Section 709.03. "Machined Riprap (Class A-1) shall vary in size from 2 inches to 1.25 feet with no more than 20 percent by weight being less than 4 inches."
4. Once the area has been stabilized and the temporary seed mix has produced a coverage of greater than 70 percent, documentation to included photographs would be submitted to both TDEC and the City of Cookeville for final review.

7 LITERATURE CITED

- Cowardin, L. M., V. Carter, F. C. Golet, and L. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. FWS/OBS-79/31. U. S. Fish and Wildlife Service. Washington, DC.
- Godfrey, R. K., and J. W. Wooten. 1979. Aquatic and wetland plants of southeastern United States, monocotyledons. University of Georgia Press. Athens, GA.
- Lichvar, R. W., D. L. Banks, W. N. Kirchner, and N. C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings.
- Radford, A. E., H. E. Ahles, and C. R. Bell. 1968. Manual of the vascular flora of the Carolinas. The University of North Carolina Press. Chapel Hill, NC.
- Smith, R. D., A. Ammann, C. Bartoldus, and M. M. Brinson. 1995. An approach for assessing wetland functions using hydrogeomorphic classification, reference wetlands, and functional indices. Technical Report WRP-DE-9. U. S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS.
- Tennessee Department of Environment and Conservation. 2020. *Guidance for Making Hydrologic Determinations*. Version 1.5.
- Tennessee Department of Environment and Conservation. Tennessee Rapid Assessment Method for Wetlands
- U.S. Department of Agriculture, Natural Resource Conservation Service. 2010. *Field Indicators of Hydric Soils in the United States*. Version 7.0. L. M. Vasilas, G. W. Hurt, and C. V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- U. S. Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. Waterways Experiment Station Technical Report Y-87-1.
- U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0*, ed. J. F. Berkowitz, J. S. Wakeley, R. W. Lichvar, C. V. Noble. ERDC/EL TR-12-9. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

APPENDIX A

Additional Information



Aerial photo of the Subject Property depicting the location of each aquatic feature and datapoints.



Picture 1. Photograph of WET-A with fill material present.



Picture 2. Photograph of WET-A below the fill area within the Subject Property. The silt fence present in the photograph depicts the Subject Property eastern boundary.



Picture 3. Photograph of UPL-A.



Picture 4. Photograph of fill material to the north of the identified wetland area (WET-A). This area has been seeded and strawed and would be up-gradient from the proposed riprap slopes.

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Travel America Truck Stop City/County: Cookeville/Putnam Sampling Date: May 24, 2022
 Applicant/Owner: Saffron Builders - Mr. Chris Shah State: TN Sampling Point: WET-A
 Investigator(s): Ken Morgan and Matt Granstaff Section, Township, Range: _____

Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 1-2
 Subregion (LRR or MLRA): LRR Lat: 36.130331 Long: -85.477461 Datum: NAD83

Soil Map Unit Name: HoB NWI Classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil X, or Hydrology X 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	<u>X</u>	No	_____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes	<u>X</u>	No	_____	
Wetland Hydrology Present?	Yes	<u>X</u>	No	_____	

Remarks: Unauthorized fill material has been placed within the upper end of the wetland area. A large debris pile, fill dirt, and rock is located within the edge of the wetland. Data was able to be collected up gradient of the wetland line in order to determine the extent of the fill. Data depicted below is from the lower side (outside of the fill) of the wetland area within the Subject Property. Note the wetland continue on to the adjoining land.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required):	
Primary Indicators (minimum of one is required: check all that apply):			
<u>_____</u> Surface Water (A1)	<u>_____</u> True Aquatic Plants (B14)	<u>_____</u> Surface Soil Cracks (B6)	
<u>_____</u> High Water Table (A2)	<u>_____</u> Hydrogen Sulfide Odor (C1)	<u>_____</u> Sparsely Vegetated Concave Surface (B8)	
<u>X</u> Saturation (A3)	<u>_____</u> Oxidized Rhizospheres on Living Roots (C3)	<u>_____</u> Drainage Patterns (B10)	
<u>_____</u> Water Marks (B1)	<u>_____</u> Presence of Reduced Iron (C4)	<u>_____</u> Moss Trim Lines (B16)	
<u>_____</u> Drift Deposits (B3)	<u>_____</u> Recent Iron Reduction in Tilled Soils (C6)	<u>_____</u> Dry-Season Water Table (C2)	
<u>_____</u> Algal mat or Crust (B4)	<u>_____</u> Thin Muck Surface (C7)	<u>_____</u> Crayfish Burrows (C8)	
<u>_____</u> Iron Deposits (B5)	<u>_____</u> Other (Explain in Remarks)	<u>_____</u> Saturation Visible on Aerial Imagery (C9)	
<u>_____</u> Inundation Visible on Aerial Imagery (B7)		<u>_____</u> Stunted or Stressed Plants (D1)	
<u>X</u> Water-Stained Leaves (B9)		<u>_____</u> Geomorphic Position (D2)	
<u>_____</u> Aquatic Fauna (B13)		<u>_____</u> Shallow Aquitard (D3)	
		<u>_____</u> Microtopographic Relief (D4)	
		<u>_____</u> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present?	Yes _____ No <u>X</u> Depth (Inches): _____	
Water Table Present?	Yes _____ No <u>X</u> Depth (Inches): _____	
Saturation Present? (includes capillary fringe)	Yes <u>X</u> No _____ Depth (Inches): <u>surface</u>	

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

Remarks:

VEGETATION (Five Strata) - Use scientific names of plants.

 Sampling Point: WET-A

Tree Stratum (Plot Size: <u>30 meters</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____

_____ = Total Cover

50% of total cover: _____ 20% of total cover: _____

Sapling Stratum (Plot Size: <u>30 meters</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____

_____ = Total Cover

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot Size: <u>30 meters</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____

_____ = Total Cover

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot Size: <u>30 meters</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Scirpus atrovirens</u>	<u>40</u>	<u>Yes</u>	<u>OBL</u>
2. <u>Juncus effusus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>
3. <u>Carex vulpinoidea</u>	<u>20</u>	<u>No</u>	<u>OBL</u>
4. <u>Carex bromoida</u>	<u>5</u>	<u>No</u>	<u>FACW</u>
5. <u>Rumex crispus</u>	<u>1</u>	<u>No</u>	<u>FAC</u>
6. <u>Schedonorus arundinaceus</u>	<u>15</u>	<u>No</u>	<u>FACU</u>
7. <u>Carex lurida</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>
8. <u>Agrostis stolonifera</u>	<u>5</u>	<u>No</u>	<u>FACW</u>
9. _____	_____	_____	_____
10. _____	_____	_____	_____

121 = Total Cover

 50% of total cover: 60.5 20% of total cover: 24.2

Woody Vine Stratum (Plot Size: <u>30 meters</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

_____ = Total Cover

50% of total cover: _____ 20% of total cover: _____

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

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL Species <u>90</u>	X 1 = <u>90</u>
FACW Species <u>15</u>	X 2 = <u>30</u>
FAC Species <u>1</u>	X 3 = <u>3</u>
FACU Species <u>15</u>	X 4 = <u>60</u>
UPL species <u>0</u>	X 5 = <u>0</u>
Column Totals: <u>121</u> (A)	<u>183</u> (B)

 Prevalence Index = B/A = 1.51
Hydrophytic Vegetation Indicators:

_____ - Rapid Test for Hydrophytic Vegetation

X - Dominance Test is > 50%

X - Prevalence Index is ≤ 3.0¹

 _____ - Morphological Adaptations (Provide supporting
data in Remarks or on a separate sheet)

_____ - Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines,
approximately 20 ft (6 m) or more in height and 3 in.
(7.6 cm) or larger in diameter at breast height (DBH).
Sapling – Woody plants, excluding woody vines,
approximately 20 ft (6 m) or more in height and less
than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines,
approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including
herbaceous vines, regardless of size, and woody
plants, except woody vines, less than approximately 3
ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

**Hydrophytic
Vegetation**
Present? Yes X No _____

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

Depth (inches)	Matrix Color (moist)	%	Color (moist)	Redox Features %	Type ¹	Loc ²	Texture	Remarks
0-8	10YR 4/2	90	10YR 5/8	10				
8+	10YR 5/1	90	10YR 5/8	10				

¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=masked Sand Grains.Location: ² PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:****Indicators for Problematic Hydric Soils : ³**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> Statified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> (MLRA 136, 147)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> IronManganese Masses (F12) (LRR N, MLRA 136)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)	

³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes ☒ No _____

Remarks:

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Travel America Truck Stop City/County: Cookeville/Putnam Sampling Date: May 24, 2022
Applicant/Owner: Saffron Builders - Mr. Chris Shah State: TN Sampling Point: UPL-A
Investigator(s): Ken Morgan and Matt Granstaff Section, Township, Range: _____
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 2-5
Subregion (LRR or MLRA): LRR Lat: 36.13019 Long: -85.477372 Datum: NAD83
Soil Map Unit Name: HoB NWI Classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u>
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required):
Primary Indicators (minimum of one is required: check all that apply):		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ True Aquatic Plants (B14)	_____ Sparsely Vegetated Concave Surface (B8)
_____ High Water Table (A2)	_____ Hydrogen Sulfide Odor (C1)	_____ Drainage Patterns (B10)
_____ Saturation (A3)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Moss Trim Lines (B16)
_____ Water Marks (B1)	_____ Presence of Reduced Iron (C4)	_____ Dry-Season Water Table (C2)
_____ Drift Deposits (B3)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Crayfish Burrows (C8)
_____ Algal mat or Crust (B4)	_____ Thin Muck Surface (C7)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Iron Deposits (B5)	_____ Other (Explain in Remarks)	_____ Stunted or Stressed Plants (D1)
_____ Inundation Visible on Aerial Imagery (B7)		_____ Geomorphic Position (D2)
_____ Water-Stained Leaves (B9)		_____ Shallow Aquitard (D3)
_____ Aquatic Fauna (B13)		_____ Microtopographic Relief (D4)
		_____ FAC-Neutral Test (D5)
Field Observations:		Wetland Hydrology Present? Yes _____ No <u>X</u>
Surface Water Present? Yes _____ No <u>X</u> Depth (Inches): _____	Water Table Present? Yes _____ No <u>X</u> Depth (Inches): _____	
Saturation Present? Yes _____ No <u>X</u> Depth (Inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Five Strata) - Use scientific names of plants.

 Sampling Point: UPL-A

Tree Stratum (Plot Size: <u>30 meters</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
_____ = Total Cover			
50% of total cover: _____ 20% of total cover: _____			
Sapling Stratum (Plot Size: <u>30 meters</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
_____ = Total Cover			
50% of total cover: _____ 20% of total cover: _____			
Shrub Stratum (Plot Size: <u>30 meters</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
_____ = Total Cover			
50% of total cover: _____ 20% of total cover: _____			
Herb Stratum (Plot Size: <u>30 meters</u>)			
1. <u>Schedonorus arundinaceus</u>	<u>70</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Sorghum halepense</u>	<u>5</u>	<u>No</u>	<u>FACU</u>
3. <u>Apocynum cannabinum</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
4. <u>Trifolium campestre</u>	<u>3</u>	<u>No</u>	<u>FACU</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
_____ <u>80</u> = Total Cover			
50% of total cover: <u>40</u> 20% of total cover: <u>20</u>			
Woody Vine Stratum (Plot Size: <u>30 meters</u>)			
1. <u>Vitis spp.</u>	<u>1</u>	<u>Yes</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
_____ <u>1</u> = Total Cover			
50% of total cover: <u>0.5</u> 20% of total cover: <u>0.2</u>			

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (C)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL Species _____ X 1 = _____

FACW Species _____ X 2 = _____

FAC Species _____ X 3 = _____

FACU Species 80 X 4 = 320

UPL species _____ X 5 = _____

Column Totals: 80 (A) 320 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

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

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present?

Yes _____ No X

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

SOIL

Sampling Point: UPL-A

[illegible]