



August 2, 2021

Chris Fortune Construction  
1509 Duncan Road  
Knoxville, Tennessee 37919

Attention: Mr. Chris Fortune  
[food4worms33@gmail.com](mailto:food4worms33@gmail.com)

Subject: **Jurisdictional Waters Report**  
Henderson Road Pond  
Pigeon Forge, Tennessee  
GEOServices Project No. 24-21986

Dear Mr. Fortune:

GEOServices, LLC has completed a Hydrologic Determination, and created this Jurisdictional Waters Report for a hydrologically isolated historic farm pond at 540 Henderson Road in Pigeon Forge, Tennessee. Please see our findings in the attached report.

GEOServices appreciates the opportunity to continue providing services to you and looks forward to working with you in the future. If you have any questions, please do not hesitate to contact us at your convenience.

Sincerely,  
**GEOServices, LLC**

Jason Mann, PE, TN-QHP # 1042-TN10  
Environmental Project Manager

**JURISDICTIONAL WATERS REPORT**  
**FOR**  
**HENDERSON ROAD POND**  
**PIGEON FORGE, TENNESSEE**

Prepared For:

Chris Fortune Construction  
1509 Duncan Road  
Knoxville, Tennessee 37919

Prepared by:



GEOServices, LLC  
2561 Willow Point Way  
Knoxville, Tennessee 37931

August 2, 2021

GEOServices Project # 24-21986

## **1.0 INTRODUCTION**

GEOservices, LLC (GEOservices) performed a hydrologic determination and jurisdictional waters investigation on a single upland pond located in the headwaters of West Prong Little Pigeon River. The pond is located at 540 Henderson Road in Pigeon Forge, Tennessee. The site investigation and hydrologic determination was conducted on July 28, 2021 by Jason Mann of GEOservices.

## **2.0 SITE DESCRIPTION**

The subject project location is described on Map 072, Parcel 109.00 according to the Sevier County Property Assessor. The overall parcel is relatively large, but the pond's surface area is roughly 0.23 acres in size; **Map 1** in Appendix A provides an overview of the subject location. The site is bordered on all sides by residential and agricultural properties.

**Map 2** in Appendix A illustrates the location of the hydrologic resource evaluated on site. The isolated farm pond is located at the top of a hill, and has a very small contributing watershed. There are no channels coming into the pond, and no channels leave the isolated water feature. West Prong Little Pigeon River surrounds the property, but no water discharges from the pond under normal circumstances.

Based on the Pigeon Forge USGS 7.5 - Minute Topographic Quadrangle (**Map 3** in Appendix A), the subject channel is not associated with a "blue line" feature. Additionally, the topography of the parcel has an approximate elevation range between approximately 972 and 948 feet above mean sea level.

The soils map associated with this site is shown as **Map 4** in Appendix A. While there are multiple soil types found in the general area, only one of the soils mapped on site is correlated with hydric conditions. The mapped soils in the area of the pond are not associated with hydric conditions.

The subject parcel lies entirely in the Lower West Prong Little Pigeon River Watershed (HUC 060101070207), which is nested within the Lower French Broad Watershed (HUC 06010107). All water must drain toward West Prong Little Pigeon River which is listed on the most-recent 303(d) list of impaired waterways in Tennessee. West Prong Little Pigeon River is considered to be impaired for siltation, nutrients, and bacterial pollution.

### **3.0 RESOURCE DESCRIPTION**

The single pond evaluated on site is a hydrologically-isolated historic farm pond. There are no jurisdictional streams coming into or out of the subject pond. Since the isolated pond is located entirely within a single parcel, the artificial pond is a non-jurisdictional water feature. No other water resources were found or evaluated during this investigation.

### **4.0 METHODS**

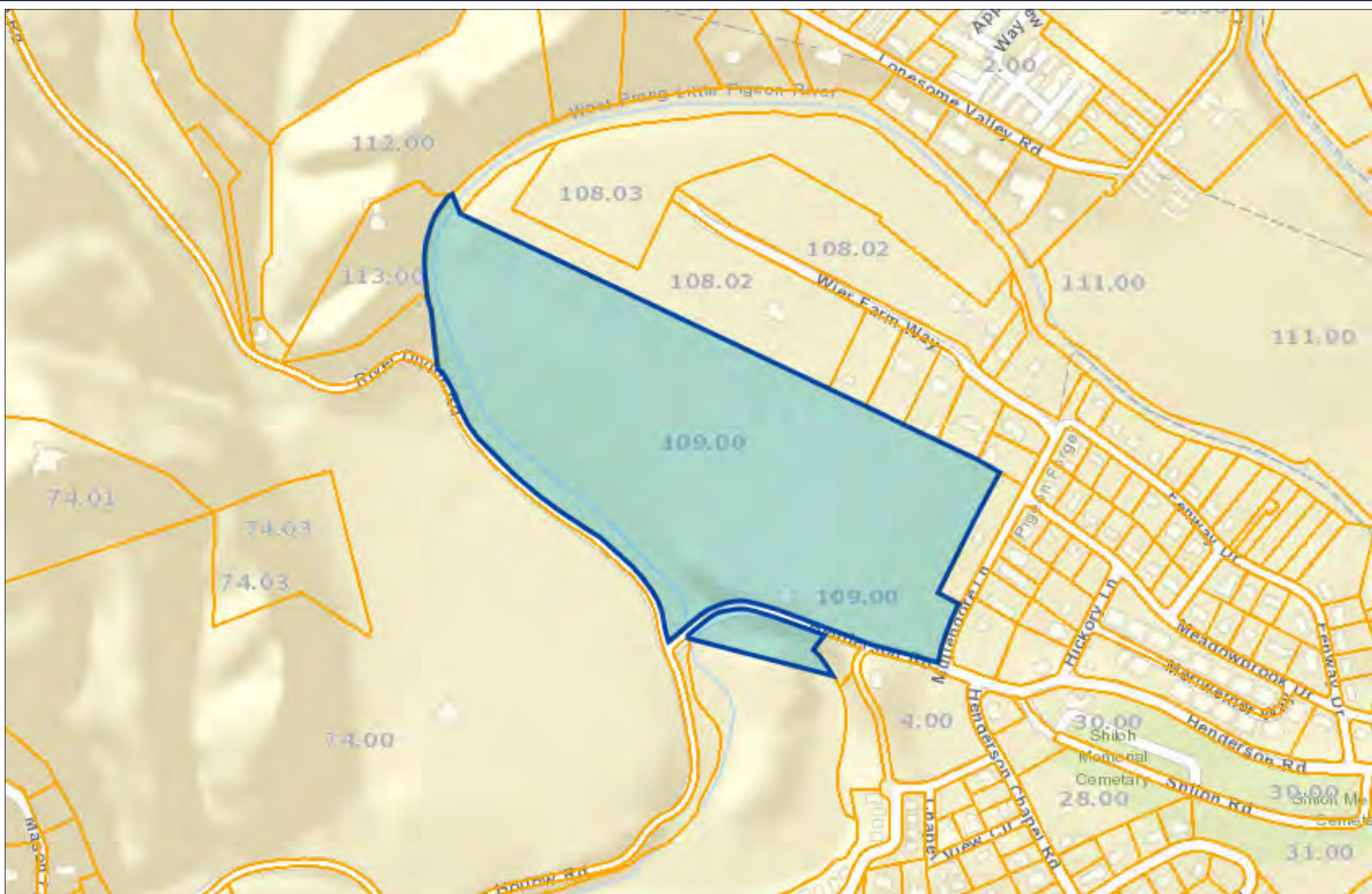
The water feature was evaluated using the Tennessee Department of Environment and Conservation Hydrologic Determination Field Data form v1.5. Weather calculations, field data sheets, photos, and a copy of QHP Certification 1042-TN10 is provided in the attached appendices.

### **5.0 RESULTS**

**Hydrologically Isolated Pond: Non-jurisdictional Feature** due to secondary stream indicators; a secondary score of 10.5 was calculated using a rigorous and reasonable amount of effort.

**Map 2** illustrates the georeferenced location of the water resource in question, and is included in Appendix A.

**Appendix A**  
**Maps**



Note:  
Site boundary and features shown are approximate only.  
Drawing composed from field notes and observations only.

— Subject Property.

SCALE:	NTS
CHECKED BY:	JM
DRAWN BY:	CSG
DATE:	8-2-2021



2651 Willow Point Way  
Knoxville, Tennessee 37931

Phone: (865) 539-8242  
Fax: (865) 539-8252

SUBJECT LOCATION  
HENDERSON ROAD PROJECT  
POND EVALUATION  
540 HENDERSON ROAD  
PIGEON FORGE, TENNESSEE

JOB NO: 24-21986





Note:  
Site boundary and features shown are approximate only.  
Drawing composed from field notes and observations only.

— Subject Property.

SCALE:	NTS
CHECKED BY:	JM
DRAWN BY:	CSG
DATE:	8-2-2021



2651 Willow Point Way  
Knoxville, Tennessee 37931

Phone: (865) 539-8242  
Fax: (865) 539-8252

WATER RESOURCE MAP  
HENDERSON ROAD PROJECT  
POND EVALUATION  
540 HENDERSON ROAD  
PIGEON FORGE, TENNESSEE

JOB NO: 24-21986





Note:  
 Site boundary and features shown are approximate only.  
 Drawing composed of field notes and observations only.  
 — Subject Property.

SCALE:	NTS
CHECKED BY:	JM
DRAWN BY:	CSG
DATE:	8-2-2021

# GEOS

GEIServices, LLC-Geotechnical and Materials Engineers

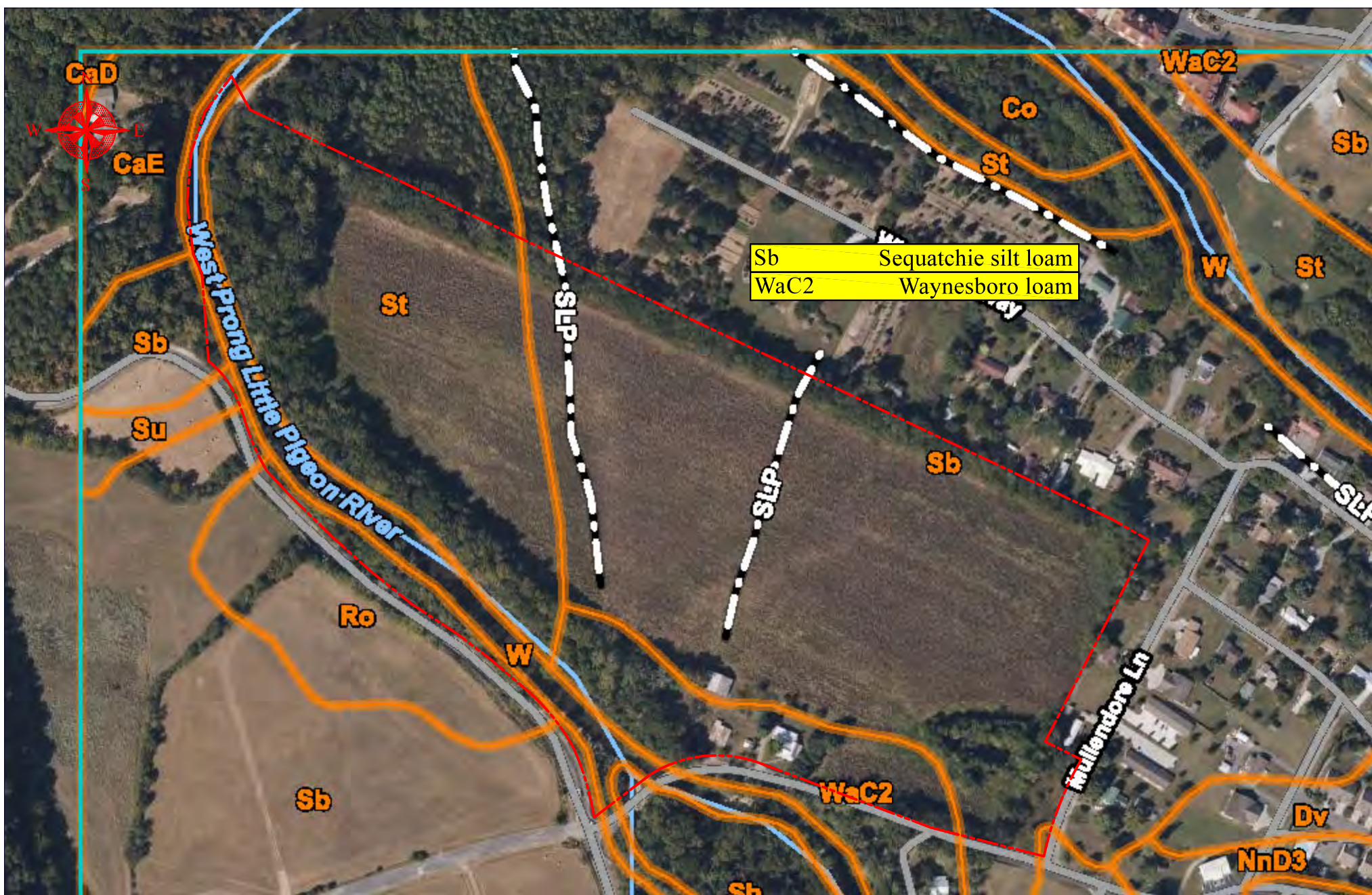
2651 Willow Point Way  
Knoxville, Tennessee 37931

Phone: (865) 539-8242  
 Fax: (865) 539-8252

TOPOGRAPHIC MAP  
 HENDERSON ROAD PROJECT  
 POND EVALUATION  
 540 HENDERSON ROAD  
 PIGEON FORGE, TENNESSEE

JOB NO: 24-21986





Note:  
 Site boundary and features shown are approximate only.  
 Drawing composed from field notes and observations only.  
 — Subject Property.

SCALE:	NTS
CHECKED BY:	JM
DRAWN BY:	CSG
DATE:	8-2-2021

**GEOS**  
 GEOServices, LLC Geotechnical and Materials Engineers  
 2651 Willow Point Way  
 Knoxville, Tennessee 37931  
 Phone: (865) 539-8242  
 Fax: (865) 539-8252

WEB SOIL SURVEY  
 HENDERSON ROAD PROJECT  
 POND EVALUATION  
 540 HENDERSON ROAD  
 PIGEON FORGE, TENNESSEE

JOB NO: 24-21986

**Appendix B**  
**Photographs**





Photo 1: There are no channels coming into or out of this isolated pond



Photo 2: The hydrologically isolated farm pond is  $\sim 0.23$  acres in size





Photo 3: The earthen berm around the pond is a man-made structure



Photo 4: The overflow swale lacks definition and is dominated with upland vegetation



**Appendix C**  
**Field Data Sheets**

**Hydrologic Determination Field Data Sheet**  
Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: <u>Isolated Farm Pond</u>		Date/Time: <u>7/28/21</u>
Assessors/Affiliation: <u>Jason Mann, GEOServices</u>		Project ID: <u>24-21986</u>
Site Name/Description: <u>Henderson Road Project</u>		
Site Location: <u>540 Henderson Road Pigeon Forge</u>		
HUC (12 digit): <u>060101070207</u>		Lat/Long: <u>35.8175°</u>
Previous Rainfall (7-days): <u>0"</u>		<u>-83.5874°</u>
Precipitation this Season vs. Normal: abnormally wet elevated <u>average</u> low abnormally dry unknown		
Source of recent & seasonal precip data: <u>NOAA</u>		
Watershed Size: <u>~2 acres</u>		County: <u>Sevier</u>
Soil Type(s) / Geology: <u>Sequatchie Loam</u>		Source: <u>WSS</u>
Surrounding Land Use: <u>Agricultural &amp; Residential</u>		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes): Severe <u>Moderate</u> Slight Absent		

**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	✓	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 <i>Gambusia</i> )	✓	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-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

<b>Overall Hydrologic Determination =</b> <u>Hydrologically Isolated Pond</u> <b>Secondary Indicator Score (if applicable) =</b> <u>10.5</u>
---

**Justification / Notes :**

No channels coming into, or out of, this artificial farm pond at the top of a hill.

7/28/21

## Secondary Field Indicator Evaluation

Henderson  
Pond

## A. Geomorphology (Subtotal = 1.5)

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

## B. Hydrology (Subtotal = 4)

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

## C. Biology (Subtotal = 5)

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

<sup>1</sup> Focus is on the presence of terrestrial plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 10.5

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

## Notes :

This HD evaluation is meant for channels, not  
an isolated farm pond. Regardless, this  
pond is a non-jurisdictional feature

**Appendix D**  
**Weather Data**



# Normal Weather Conditions Calculations Table

Knoxville - July 2021

			Long-term rainfall records							
	Month	Standard Deviation	Minus One Std. Dev. (DRY)	Normal (Mean inches)	Plus One Std. Dev. (WET)	Actual Rainfall	Condition (elevated, low, average)	Condition value	Month weight value	Product of previous two columns
1 <sup>st</sup> prior month*	JUN	1.80	2.01	3.81	5.61	2.85	AVE	2	3	6
2 <sup>nd</sup> prior month*	MAY	1.97	1.83	3.80	5.77	3.62	AVE	2	2	4
3 <sup>rd</sup> prior month*	APR	1.84	1.91	3.75	5.59	1.23	LOW	1	1	1
									Sum =	11

Note:

If sum is:	11 - Average
6-9	then prior period has been <b>abnormally dry</b>
10-14	then prior period has been normal ( <b>average</b> )
15-18	Then prior period has been <b>abnormally wet</b>

Condition value:	
<b>Low</b> =	1
<b>Average</b> =	2
<b>Elevated</b> =	3

CLIMATE REPORT  
NATIONAL WEATHER SERVICE MORRISTOWN, TN  
955 AM EDT THU JUL 01 2021

.....

...THE KNOXVILLE MCGHEE TYSON AIRPORT CLIMATE SUMMARY FOR THE  
MONTH OF JUNE 2021...

CLIMATE NORMAL PERIOD: 1991 TO 2020  
CLIMATE RECORD PERIOD: 1871 TO 2021

WEATHER	OBSERVED VALUE	DATE(S)	NORMAL VALUE	DEPART FROM NORMAL
---------	-------------------	---------	-----------------	--------------------------

.....

TEMPERATURE (F)

HIGHEST	93	06/28		
LOWEST	57	06/23		
AVG. MAXIMUM	85.2		85.7	-0.5
AVG. MINIMUM	65.7		64.9	0.8
MEAN	75.5		75.3	0.2
DAYS MAX >= 90	6			
DAYS MAX <= 32	0			
DAYS MIN <= 32	0			
DAYS MIN <= 0	0			

PRECIPITATION (INCHES)

RECORD

MAXIMUM	11.83	1928		
MINIMUM	0.20	1944		
TOTALS	2.85		4.24	-1.39
DAYS >= .01	14			
DAYS >= .10	10			
DAYS >= .50	1			
DAYS >= 1.00	0			

GREATEST

24 HR. TOTAL 0.92 06/21 TO 06/22

SNOWFALL (INCHES)

TOTALS	0.0		0.0	0.0
SINCE 7/1	5.3			
SNOWDEPTH AVG.	0			
DAYS >= TRACE	0			
GREATEST				
SNOW DEPTH	0			

DEGREE DAYS			
HEATING TOTAL	0	2	-2
SINCE 7/1	3366	3527	-161
COOLING TOTAL	323	311	12
SINCE 1/1	475	495	-20
.....			

WEATHER CONDITIONS. NUMBER OF DAYS WITH			
THUNDERSTORM	9	RAIN	8
SNOW	0	FOG	13
FOG W/VIS <= 1/4 MILE	1		

- INDICATES NEGATIVE NUMBERS.  
R INDICATES RECORD WAS SET OR TIED.  
MM INDICATES DATA IS MISSING.  
T INDICATES TRACE AMOUNT.

---

CLIMATE REPORT  
NATIONAL WEATHER SERVICE MORRISTOWN, TN  
657 AM EDT WED JUN 02 2021

.....

...THE KNOXVILLE MCGHEE TYSON AIRPORT CLIMATE SUMMARY FOR THE  
MONTH OF MAY 2021...

CLIMATE NORMAL PERIOD: 1991 TO 2020  
CLIMATE RECORD PERIOD: 1871 TO 2021

WEATHER	OBSERVED VALUE	DATE(S)	NORMAL VALUE	DEPART FROM NORMAL
---------	-------------------	---------	-----------------	--------------------------

.....

TEMPERATURE (F)

HIGHEST	90	05/25 05/26		
LOWEST	41	05/13		
AVG. MAXIMUM	76.9		78.9	-2.0
AVG. MINIMUM	55.0		56.9	-1.9
MEAN	65.9		67.9	-2.0
DAYS MAX >= 90	2			
DAYS MAX <= 32	0			
DAYS MIN <= 32	0			
DAYS MIN <= 0	0			

PRECIPITATION (INCHES)

RECORD

MAXIMUM	10.98	1974		
MINIMUM	0.71	1941		
TOTALS	3.62		4.13	-0.51
DAYS >= .01	8			
DAYS >= .10	4			
DAYS >= .50	3			
DAYS >= 1.00	1			
GREATEST				
24 HR. TOTAL	1.30	05/28 TO 05/29		

SNOWFALL (INCHES)

TOTALS	0.0		0.0	0.0
SINCE 7/1	5.3			
SNOWDEPTH AVG.	0			
DAYS >= TRACE	0			
GREATEST				
SNOW DEPTH	0			



DEGREE DAYS

HEATING TOTAL	91	53	38
SINCE 7/1	3366	3525	-159
COOLING TOTAL	125	143	-18
SINCE 1/1	152	184	-32

.....

WEATHER CONDITIONS. NUMBER OF DAYS WITH

THUNDERSTORM	4	RAIN	4
SNOW	0	FOG	8
FOG W/VIS <= 1/4 MILE	1		

- INDICATES NEGATIVE NUMBERS.

R INDICATES RECORD WAS SET OR TIED.

MM INDICATES DATA IS MISSING.

T INDICATES TRACE AMOUNT.

---

CLIMATE REPORT  
NATIONAL WEATHER SERVICE MORRISTOWN, TN  
847 AM EDT MON MAY 03 2021

.....

...THE KNOXVILLE MCGHEE TYSON AIRPORT CLIMATE SUMMARY FOR THE  
MONTH OF **APRIL 2021**...

CLIMATE NORMAL PERIOD: 1981 TO 2010  
CLIMATE RECORD PERIOD: 1871 TO 2021

WEATHER	OBSERVED VALUE	DATE(S)	NORMAL VALUE	DEPART FROM NORMAL
---------	-------------------	---------	-----------------	--------------------------

.....

TEMPERATURE (F)

HIGHEST	83	04/09		
LOWEST	27	04/03		
AVG. MAXIMUM	69.7		70.3	-0.6
AVG. MINIMUM	45.9		47.3	-1.4
MEAN	57.8		58.8	-1.0
DAYS MAX >= 90	0			
DAYS MAX <= 32	0			
DAYS MIN <= 32	3			
DAYS MIN <= 0	0			

PRECIPITATION (INCHES)

RECORD

MAXIMUM	17.62	1874		
MINIMUM	0.39	1976		
TOTALS	<b>1.23</b>		4.01	-2.78
DAYS >= .01	7			
DAYS >= .10	4			
DAYS >= .50	1			
DAYS >= 1.00	0			

GREATEST

24 HR. TOTAL 0.64 04/24 TO 04/24

SNOWFALL (INCHES)

TOTALS	0.0		0.5	-0.5
SINCE 7/1	5.3			
SNOWDEPTH AVG.	0			
DAYS >= TRACE	0			
GREATEST				
SNOW DEPTH	0			

DEGREE DAYS			
HEATING TOTAL	236	218	18
SINCE 7/1	3275	3576	-301
COOLING TOTAL	26	32	-6
SINCE 1/1	27	37	-10

.....

WEATHER CONDITIONS. NUMBER OF DAYS WITH

THUNDERSTORM	0	RAIN	4
SNOW	0	FOG	7
FOG W/VIS <= 1/4 MILE	0		

- INDICATES NEGATIVE NUMBERS.  
R INDICATES RECORD WAS SET OR TIED.  
MM INDICATES DATA IS MISSING.  
T INDICATES TRACE AMOUNT.

---

Explanation of the Preliminary Monthly Climate Data (F6) Product

**These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - <http://www.ncdc.noaa.gov>.**

**WFO Monthly/Daily Climate Data**

542  
CXUS54 KMRX 301030  
CF6TYS  
PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: KNOXVILLE MCGHEE TYSON AIRPORT  
MONTH: JULY  
YEAR: 2021  
LATITUDE: 35 49 N  
LONGITUDE: 83 59 W

TEMPERATURE IN F:					:PCPN:			SNOW:		WIND		:SUNSHINE:			SKY		:PK WND		
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18	
										12Z	AVG	MX	2MIN						
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR	
1	90	72	81	3	0	16	0.63	0.0	0	10.7	25	230	M	M	9	138	31	240	
2	84	67	76	-2	0	11	0.07	0.0	0	8.1	14	360	M	M	7	1	20	360	
3	80	60	70	-8	0	5	0.00	0.0	0	6.9	14	60	M	M	2		21	10	
4	85	59	72	-6	0	7	0.00	0.0	0	1.7	9	360	M	M	1	8	13	360	
5	90	65	78	0	0	13	0.00	0.0	0	3.2	9	360	M	M	5	18	12	360	
6	91	68	80	2	0	15	0.00	0.0	0	3.7	10	360	M	M	4		16	320	
7	80	69	75	-3	0	10	0.03	0.0	0	3.1	13	100	M	M	9	13	16	100	
8	88	68	78	0	0	13	T	0.0	0	7.1	14	200	M	M	8		19	220	
9	83	71	77	-1	0	12	0.02	0.0	0	10.7	20	210	M	M	8	3	26	200	
10	88	70	79	0	0	14	0.15	0.0	0	7.7	24	200	M	M	8	138	30	210	
11	88	69	79	0	0	14	0.56	0.0	0	9.5	28	260	M	M	6	1	38	280	
12	88	69	79	0	0	14	T	0.0	0	7.9	23	210	M	M	8	3	31	230	
13	86	69	78	-1	0	13	0.00	0.0	0	10.1	21	220	M	M	8		26	240	
14	87	70	79	0	0	14	T	0.0	0	5.8	14	320	M	M	6	3	22	200	
15	90	70	80	1	0	15	0.00	0.0	0	5.5	17	250	M	M	3		23	250	
16	92	71	82	3	0	17	T	0.0	0	5.9	20	250	M	M	4		26	250	
17	85	70	78	-1	0	13	0.03	0.0	0	8.9	21	210	M	M	7		29	200	
18	86	70	78	-1	0	13	0.15	0.0	0	4.9	18	190	M	M	9	13	24	160	
19	83	70	77	-2	0	12	0.01	0.0	0	4.6	14	150	M	M	10		19	160	
20	85	69	77	-2	0	12	0.00	0.0	0	5.6	16	60	M	M	9		20	60	
21	90	66	78	-1	0	13	0.00	0.0	0	3.3	10	30	M	M	4	1	17	30	
22	91	67	79	0	0	14	0.00	0.0	0	4.7	12	20	M	M	1	18	16	20	
23	91	67	79	0	0	14	0.00	0.0	0	3.4	12	330	M	M	1		16	330	
24	92	68	80	1	0	15	0.00	0.0	0	6.2	14	250	M	M	2	18	21	220	
25	94	73	84	5	0	19	0.00	0.0	0	5.6	15	230	M	M	5		20	250	
26	90	73	82	3	0	17	T	0.0	M	5.4	23	10	M	M	7		31	360	
27	95	71	83	4	0	18	0.00	0.0	M	3.6	13	20	M	M	6	18	17	20	
28	97	71	84	5	0	19	0.00	0.0	M	4.9	14	290	M	M	2		19	320	
29	94	67	81	2	0	16	0.00	0.0	0	5.9	15	230	M	M	5		22	230	
SM	2563	1989			0	398	1.65	0.0		174.6			M		164				
AV	88.4	68.6								6.0	FASTST		M	M	6		MAX(MPH)		
										MISC	----	28	260					38	280



## NOTES:

# LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: KNOXVILLE MCGHEE TYSON AIRPORT  
MONTH: JULY  
YEAR: 2021  
LATITUDE: 35 49 N  
LONGITUDE: 83 59 W

## [TEMPERATURE DATA]

AVERAGE MONTHLY: 78.5  
DPTR FM NORMAL: -0.2  
HIGHEST: 97 ON 28  
LOWEST: 59 ON 4

## [PRECIPITATION DATA]

TOTAL FOR MONTH: 1.65  
DPTR FM NORMAL: -3.30  
GRTST 24HR 0.70 ON 1- 2  
  
SNOW, ICE PELLETS, HAIL  
TOTAL MONTH: 0.0 INCH  
GRTST 24HR 0.0  
GRTST DEPTH: 0

## SYMBOLS USED IN COLUMN 16

1 = FOG OR MIST  
2 = FOG REDUCING VISIBILITY  
TO 1/4 MILE OR LESS  
3 = THUNDER  
4 = ICE PELLETS  
5 = HAIL  
6 = FREEZING RAIN OR DRIZZLE  
7 = DUSTSTORM OR SANDSTORM:  
VSBY 1/2 MILE OR LESS  
8 = SMOKE OR HAZE  
9 = BLOWING SNOW  
X = TORNADO

## [NO. OF DAYS WITH]

MAX 32 OR BELOW: 0  
MAX 90 OR ABOVE: 14  
MIN 32 OR BELOW: 0  
MIN 0 OR BELOW: 0

## [WEATHER - DAYS WITH]

0.01 INCH OR MORE: 9  
0.10 INCH OR MORE: 4  
0.50 INCH OR MORE: 2  
1.00 INCH OR MORE: 0

## [HDD (BASE 65) ]

TOTAL THIS MO. 0  
DPTR FM NORMAL 0  
TOTAL FM JUL 1 0  
DPTR FM NORMAL 0

CLEAR (SCALE 0-3) 6  
PTCLDY (SCALE 4-7) 17  
CLOUDY (SCALE 8-10) 6

## [CDD (BASE 65) ]

TOTAL THIS MO. 398  
DPTR FM NORMAL -1  
TOTAL FM JAN 1 873  
DPTR FM NORMAL -21

## [PRESSURE DATA]

HIGHEST SLP M ON M  
LOWEST SLP 29.83 ON 2

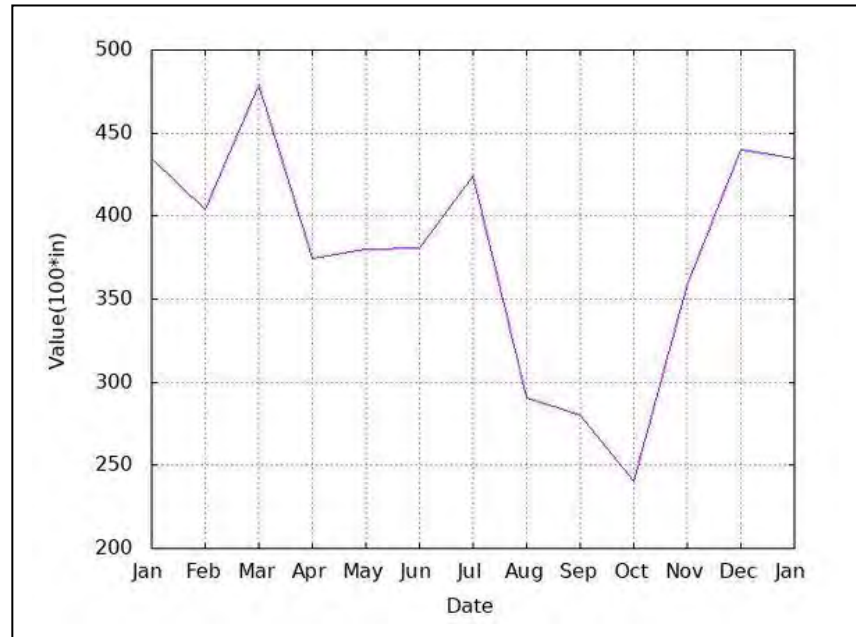
## [REMARKS]

## Knoxville Normal Weather Data

1991-2020

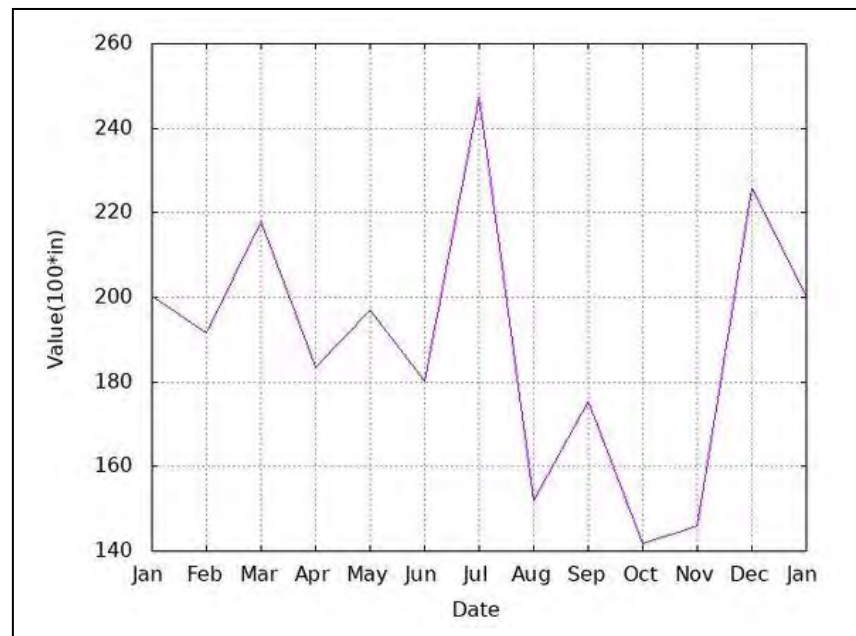
Mean (in.)

- 1) 4.346
- 2) 4.037
- 3) 4.790
- 4) 3.750
- 5) 3.802
- 6) 3.807
- 7) 4.239
- 8) 2.906
- 9) 2.803
- 10) 2.404
- 11) 3.586
- 12) 4.401



Standard Deviation (in.)

- 1) 2.002
- 2) 1.915
- 3) 2.180
- 4) 1.835
- 5) 1.969
- 6) 1.800
- 7) 2.474
- 8) 1.519
- 9) 1.754
- 10) 1.419
- 11) 1.459
- 12) 2.256



**Appendix E**  
**Certifications**



11/1/10

Jason Mann  
TDEC  
3711 Middlebrook Pike  
Knoxville, TN 37921

RE: Tennessee Qualified Hydrologic Professional Certification

Dear Mr. Mann

Congratulations, you have successfully completed the Tennessee Hydrologic Determination course. By completing the TN-HDT course, you have also earned 20 Professional Development Hours (PDH). You have now met all the requirements to become a certificated Tennessee Qualified Hydrologic Professional (TN-QHP). Your TN-QHP certification card is attached below.

The TN-QHP certification is valid for three years. You must complete a refresher course within that three year period and submit evidence of course completion along with a renewal application at least 90 days before expiration of your certificate. Should you allow your certification to lapse after 3 years, you will be required to retake the TN-HDT course and submit a new application in order to become a certified TN-QHP.

Please refer to the TDEC website, <http://tn.gov/environment/wpc> or the TN-HDT training website, [www.tnhdt.org](http://www.tnhdt.org) for refresher course details and application forms.

Sincerely,

Paul E. Davis, Director  
Water Pollution Control

Cc: Timothy Gangaware  
TN-HDT Training Program  
Coordinator



This card certifies that:

Tennessee Qualified  
Hydrologic Professional



**Jason Mann**

has successfully completed the 3-day TN HDT course and is a  
Tennessee Qualified Hydrologic Professional

Certification number **1042-TN10**

Expires: **12/31/2014**

  
Paul E. Davis, P.E.  
Director, TDEC-WPC  
Timothy Gangaware, AICP  
Director, TNWRRC-UT



# Tennessee Department of Environment & Conservation



This is to certify that

**Jason Mann**

has successfully completed the three day course to become a  
**Tennessee Qualified Hydrologic Professional**

TN QHP Number 1042-TN10

*Paul E. Davis*

Paul E. Davis, P.E.

*Timothy Gangaware*

Timothy Gangaware, A.I.C.P



*This certifies that the recipient has earned 20  
Professional Development Hours*





# Tennessee Department of Environment & Conservation

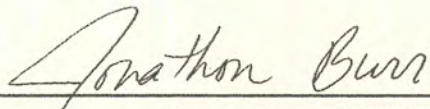


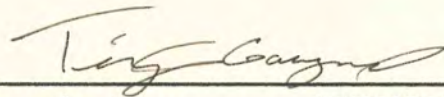
This is to certify that

**Jason Mann**

successfully completed the one-day  
**Tennessee Hydrologic Determination Refresher Course**

September 22, 2020

  
\_\_\_\_\_  
Jonathon Burr, DWR

  
\_\_\_\_\_  
Timothy Gangaware, TNWRRC



*This certifies that the recipient has earned 6  
Professional Development Hours*

